Notice of Completion and Availability
Draft Supplemental Environmental Impact Report (SEIR)
And Notice of Public Hearing
City of Pleasanton Planning Commission

TO:	All Responsible Agencies and Other Interested Parties	**FROM:**	City of Pleasanton Planning Division
DATE:	September 10, 2015		P.O. Box 520, Pleasanton, CA 94566

PROJECT TITLE: P14-0852 and PUD-105, Johnson Drive Economic Development Zone (JDEDZ)

PROJECT LOCATION: The JDEDZ is located along Johnson Drive between Stoneridge Drive and I-580, in the City of Pleasanton.

PROJECT DESCRIPTION: The City is proposing to implement a pilot Economic Development Zone (EDZ) within a 40-acre area along Johnson Drive currently developed with office, commercial, institutional, and industrial uses. The EDZ would allow the City to use zoning and land use designations, incentive programs, completed CEQA documentation, and standards and guidelines to streamline the development process and encourage investment, adding value to properties within the EDZ. The Supplemental EIR includes some assumptions about development that would take place within the EDZ in the short term ("Phase I," which includes the development of club retail, general retail, and hotel uses) and the long term ("Full Buildout," which includes Phase I as well as additional retail, commercial, and industrial/office uses). The JDEDZ is a part of the 2009 General Plan's program for business retention and expansion.

SIGNIFICANT ENVIRONMENTAL IMPACTS: The Draft Supplemental Environmental Impact Report (Draft SEIR) identifies the following significant unavoidable environmental impacts that would result from the JDEDZ: clean air plan consistency, criteria pollutants (NOx and PM10, project operational impact, cumulative impact, and plan consistency impact), and traffic (levels of service at local study intersections, project operational and cumulative impact; levels of service for freeway ramps and merge/diverge areas within I-680, project operational impacts and cumulative impacts). Each of these impacts is discussed in detail in the Draft SEIR.

HAZARDOUS MATERIALS USAGE: In compliance with the California Environmental Quality Act (CEQA), this notice discloses that properties within the boundaries of the JDEDZ currently use or have used reportable quantities of hazardous materials as indicated on lists enumerated under Government Code Section 65962.5. Mitigation measures as presented in the Draft SEIR reduce impacts of these hazards to a less than significant level.

LEAD AGENCY: City of Pleasanton, Department of Community Development, Planning Division

CONSULTING FIRM: ESA, 550 Kearny Street, Suite 800, San Francisco, CA 94108

DRAFT EIR AVAILABILITY: Copies of the Draft SEIR, prepared per the requirements of CEQA, may be obtained at the Planning Division, 200 Old Bernal Avenue, Pleasanton, between the hours of 8:00 a.m. and 5:00 p.m. during weekdays. The Draft SEIR is also available for review at the Pleasanton Library, 400 Old Bernal Avenue, Pleasanton, and on the City's webpage at:
www.cityofpleasantonca.gov/JDEDZSEIRSept2015

Paper or CD copies of the Draft SEIR may be requested using the staff contact information below.

PUBLIC HEARING: The Planning Commission of the City of Pleasanton has set 7:00 p.m., Wednesday, September 23, 2015, Council Chamber, 200 Old Bernal Avenue, Pleasanton, as the time and place to receive public input on the Draft SEIR.

REVIEW PERIOD: Written comments on the Draft SEIR will be accepted by the Planning Division, 200 Old Bernal Avenue, Pleasanton, through Friday, October 30, 2015 at 5:00 p.m., a 45-day review period.

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Adam Weinstein, Planning Manager PUBLISHED: September 10, 2015

CITY OF PLEASANTON
JOHNSON DRIVE ECONOMIC DEVELOPMENT ZONE

Draft Supplemental Environmental Impact Report

Prepared for
City of Pleasanton

September 2015

ESA

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CHAPTER 1
Introduction

This Draft Supplemental Environmental Impact Report (SEIR) has been prepared for the City of Pleasanton's (City's) proposed Johnson Drive Economic Development Zone (EDZ). This section describes: (1) the purpose and legal authority of the SEIR; (2) the scope and content of the SEIR; (3) lead, responsible, and trustee agencies; and (4) the environmental review process required under the California Environmental Quality Act (CEQA).

A. Project Overview

Background

The EDZ would result in the establishment of an economic development zone along Johnson Drive in the City of Pleasanton, presently identified in the City's General Plan as an area within the Commerce Circle/Johnson Drive Sub-Area, the approval of an associated General Plan amendment, and the rezoning of 12 parcels within the area to a commercial Planned Unit Development zone, for the purpose of facilitating the development of uses that would add value to the properties, and promote long-term economic sustainability for the City as a whole. In 2009, the City approved an update to its General Plan, including an Economic and Fiscal Element that contained an aggressive program of business retention and expansion. The City's establishment of the EDZ is a part of this program. The EIR certified for the 2009 General Plan, however, did not evaluate the establishment of the EDZ; specifically, it did not analyze the rezoning of the EDZ parcels to a commercial Planned Unit Development zone, nor did it evaluate a program of likely development of the parcels should the rezoning be approved. This SEIR evaluates the specific environmental impacts that would occur from the rezoning and focuses on the physical changes resulting from likely redevelopment of the EDZ area. A detailed project description is set forth in Chapter 3 (Project Description) of this SEIR.

Environmental Review Context

This SEIR addresses the environmental effects of the proposed EDZ in light of the previous environmental review contained in the City of Pleasanton General Plan 2005-2025 program EIR (State Clearinghouse No. 2005122139), certified in 2009 (General Plan EIR); and the Supplemental EIR for the City's proposed Housing Element, Climate Action Plan, and associated General Plan Amendment and Rezonings (State Clearinghouse No. 2011052002), which updated several areas of the General Plan EIR technical analyses and was certified in 2012 (2012 SEIR) as provided for under CEQA *Guidelines* sections 15162 and 15163. Copies of these previously certified documents

are available for public review on the City's website at http://www.cityofpleasantonca.gov/gov/depts/cd/planning/plans_n_programs/default.asp.

CEQA *Guidelines* Section 15162 states that "When an EIR has been certified for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete, shows any of the following:

    a. The project will have one or more significant effects not discussed in the previous EIR;

    b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;

    c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

    d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative." (CEQA Guidelines Section 15162[a])

As discussed above, the proposed EDZ builds on, supplements, and refines portions of the General Plan. Based on an initial review of the proposed EDZ and the criteria set forth in CEQA *Guidelines* Section 15162, the City determined that the proposed EDZ may result in new significant impacts that were not addressed in the General Plan EIR or the 2012 SEIR. The City has also determined that the proposed EDZ would be a substantial change from the project evaluated in the prior EIRs because of the EDZ's potential to result in new significant environmental effects, or a substantial increase in the severity of previously identified significant environmental effects. As described in Chapter 3 (Project Description) of this SEIR, the proposed EDZ includes a General Plan amendment and rezoning of parcels located in the EDZ area, adoption of EDZ-specific design guidelines, and other associated entitlement approvals. Construction and operation activities that could take place within the EDZ area would result in specific impacts to the EDZ area that were not previously analyzed under the General Plan EIR or 2012 SEIR.

Section 15163 of the CEQA *Guidelines* states that a lead agency may choose to prepare a "supplement" to an EIR rather than a "subsequent" EIR if:

1. Any of the conditions described in Section 15162 would require the preparation of a subsequent EIR; and

2. Only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.

Further, CEQA *Guidelines* Section 15163 states:

- The supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised.

- A supplement to an EIR shall be given the same kind of notice and public review as is given to a draft EIR under Section 15087.

- A supplement to an EIR may be circulated by itself without recirculating the previous draft or final EIR.

- When the agency decides whether to approve the project, the decision-making body shall consider the previous EIR as revised by the supplemental EIR. A finding under Section 15091 shall be made for each significant effect shown in the previous EIR as revised.

A supplemental EIR augments the EIR prepared for a prior project to address any project changes or changed circumstances since the time the prior document was certified. In the case of changes to a previously approved project, as is the case here, the purpose of a supplemental EIR is to provide the additional analysis necessary to make the previous EIR adequately apply to the project as modified. Accordingly, the SEIR need contain only the analysis necessary to respond to the proposed change in the project that triggered the need for additional environmental review (CEQA *Guidelines* Section 15163).

Approval of the proposed Johnson Drive EDZ would amend the adopted General Plan and result in other land use changes. The remainder of the General Plan remains, and would remain, in effect as previously adopted. Based on the scope of the EDZ, the City has determined that an addition to the previously certified EIRs is necessary to implement the EDZ, but much of the analysis in the previously certified EIRs will not need to be changed. Therefore, the proposed EDZ does not require a major revision to the previously certified EIRs, and a supplemental EIR is the appropriate document to respond to these project changes.

Purpose and Function of this SEIR

The purpose of this SEIR is to provide the City, public agencies, and the public in general with detailed information about the environmental effects of construction and operation activities that would take place after implementation of the EDZ, to examine and institute methods of mitigating any adverse environmental impacts should the EDZ be approved, and to consider alternatives to the EDZ as proposed. The lead agency, the City of Pleasanton, is the public agency

that has the principal responsibility for carrying out or approving the EDZ. CEQA provides that public agencies should not approve a project until all feasible means available have been employed to avoid or substantially lessen the significant environmental effects of the project. "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time taking into account economic, environmental, legal, social, and technological factors (CEQA *Guidelines* Section 15364). The City will use the SEIR, along with other information and public processes, to determine whether to approve, modify, or disapprove the proposed EDZ, and to specify any applicable environmental or other conditions of approval as part of approvals for the EDZ.

The purpose of the analyses contained in this Draft SEIR is not to assess whether the provisions of the proposed EDZ are desirable but rather to measure the environmental impacts that would result from construction and operation activities within the EDZ area. Future development proposals for areas within the EDZ (should it be adopted) would be required to adhere to the applicable regulations adopted for the EDZ and to implement the mitigation measures identified in this SEIR, as well as applicable provisions of the City's General Plan, Municipal Code, and any applicable design guidelines document.

Environmental Effects Analyzed in this SEIR

This SEIR presents detailed analysis of the environmental impacts of construction and operation activities within the EDZ area with relation to: changes to the aesthetic environment; impacts on air quality resulting from construction and operation activities that would take place within the EDZ area; noise impacts from construction and operation activities; and impacts related to increased traffic to and from the EDZ area, because the City, in its initial review, determined that the proposed EDZ may result in new and/or substantially more severe effects in these topic areas, compared to the impacts identified in the General Plan EIR and 2012 SEIR. Environmental topics also discussed, and analyzed at a lesser level of detail, include: agriculture and forestry resources; biological resources; cultural resources; geology and soils; greenhouse gas emissions; hazards and hazardous materials; hydrology and water quality; land use and planning; mineral resources; population and housing; public services and utilities systems; and recreation.

B. SEIR Scoping, Draft SEIR, and Final SEIR

In accordance with the CEQA *Guidelines*, the City distributed a Notice of Preparation of an EIR (NOP) to affected agencies and the public for the required 30-day period. The NOP indicated that all issues on the CEQA environmental checklist (CEQA *Guidelines* Appendix G) would be studied in the EIR. The NOP was posted on August 27, 2014, with a 30-day comment period running from August 27 to September 25, 2014. The City received two letters in response to the NOP, from the California Department of Transportation (Caltrans) and the California Native American Heritage Commission. The NOP and comments on the NOP are included in **Appendix A** of this Draft SEIR. NOP comments are addressed in the analyses presented in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures.

This Draft SEIR will be circulated for a 45-day public review and comment period, and prior to circulation the City will file a Notice of Completion with the State Clearinghouse, and provide public notice of the availability of the Draft SEIR, including posting a Notice of Availability of a Draft SEIR in the County Clerk's office, per the requirements of CEQA. After the 45-day public review period, the City will review comments received on the Draft SEIR, and will prepare a Final SEIR that includes copies of all comments received during public review; a list of persons and entities commenting; the City's responses to significant environmental points raised in the review process; and any necessary revisions to the Draft EIR, per the requirements of CEQA *Guidelines* Section 15132.

Prior to deciding whether to approve the proposed EDZ, the City may require changes to the EDZ to reduce or avoid significant environmental effects, or approve the EDZ despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (CEQA *Guidelines* sections 15042 and 15043). A Statement of Overriding Considerations would set forth the specific social, economic, or other reasons supporting the City's decision.

When an agency makes findings on significant effects identified in the SEIR, it must adopt a monitoring and/or reporting program for mitigation measures that were adopted or made conditions of approval to mitigate significant effects.

C. Issues of Concern

Pursuant to Section 15123(b)(2) of the CEQA *Guidelines*, a Draft EIR shall identify points of controversy known to the lead agency or issues of concern raised by local agencies or the public. Public comment during the NOP period included community concerns related to the redevelopment of the EDZ area, particularly related to traffic generation and the adequacy of the roadway infrastructure, compatibility of new development with existing nearby development, and impacts related to noise and air quality. The analysis in this SEIR indicates that development facilitated by the EDZ would generate air emissions that would result in a net increase of criteria pollutants which would conflict with implementation of the applicable air quality plan, and increased traffic which would affect levels of service for freeway ramps at merge/diverge areas within I-680. These impacts would be significant and unavoidable, even after incorporation of mitigation measures. As a result, issues related to air quality and transportation and traffic impacts are potential areas of controversy. These issues are discussed in Sections 4.A through 4.D of this SEIR.

D. Lead, Responsible, and Trustee Agencies

The CEQA *Guidelines* require the identification of "lead," "responsible," and "trustee" agencies. The City of Pleasanton is the lead agency for the proposed EDZ because it has the principal responsibility for approving the EDZ.

A “responsible agency” is a public agency other than the lead agency that has discretionary approval authority over a project (the CEQA *Guidelines* define a public agency as a state or local agency, but specifically exclude federal agencies from the definition). The agencies whose approvals are required are identified in Chapter 3, Project Description, of this SEIR. A “trustee agency” refers to a state agency having jurisdiction by law over natural resources affected by a project. The California Department of Fish and Wildlife may be a trustee agency for development facilitated by the EDZ due to the proximity of the Alamo Canal.

CHAPTER 2
Summary

A. Introduction

As provided by Section 15123 of the California Environmental Quality Act (CEQA) Guidelines (CEQA *Guidelines*), this chapter provides a brief summary of the proposed Johnson Drive Economic Development Zone (EDZ) and its consequences. This chapter is intended to summarize in a stand-alone section the proposed EDZ described in Chapter 3 (Project Description), the impacts and mitigation measures discussed in Chapter 4 (Environmental Setting, Impacts, and Mitigation Measures), and the alternatives analysis presented in Chapter 5 (Alternatives to the EDZ).

This Draft Supplemental Environmental Impact Report (Draft SEIR) has been prepared to evaluate the anticipated environmental effects of the EDZ in conformance with the provisions of CEQA and the CEQA *Guidelines*. The lead agency, the City of Pleasanton (City), is the public agency that has the principal responsibility for implementing the EDZ, which includes a General Plan amendment, rezoning of the parcels within the EDZ area, and other approvals (referred to collectively hereafter as the EDZ or proposed EDZ).

This Draft SEIR addresses the environmental effects of implementing the proposed EDZ in light of the previous environmental review contained in the City of Pleasanton General Plan 2005-2025 program EIR (State Clearinghouse No. 2005122139), certified in 2009 (General Plan EIR); and the Supplemental EIR for the City's proposed Housing Element, Climate Action Plan, and associated General Plan Amendment and Rezonings (State Clearinghouse No. 2011052002), which updated several areas of the General Plan EIR technical analyses and was certified in 2012 (2012 SEIR) as provided for under CEQA *Guidelines* sections 15162 and 15163.

The City's creation of its Economic Development Zone program builds on the General Plan, and the EDZ "project" is a refinement of a part of the General Plan project. Based on an initial review of the proposed EDZ, the City determined that the proposed EDZ may result in new significant impacts that were not addressed in the General Plan EIR or the 2012 SEIR; in addition, the proposed EDZ would be a substantial change from the project evaluated in the prior EIRs. Construction activities and intensified commercial and retail uses that would be permitted under the new EDZ designation would result in specific impacts to the Johnson Drive area that were not previously analyzed under the General Plan EIR or 2012 SEIR. As a result, the City has chosen to prepare this Draft SEIR.

B. Regional Location and Planning Area

Pleasanton is located within Alameda County, one of nine Bay Area counties bordering the San Francisco Bay. The city is generally bounded to the west by the Pleasanton ridgelands, to the north by Interstate 580 (I-580) and the city of Dublin, to the east by the city of Livermore and unincorporated Alameda County, and to the south by San Francisco Water Department lands and other rangelands. Interstate 680 (I-680) bisects the western portion of the City, intersecting I-580 in the northwestern part of the city. The EDZ area is located southeast of the intersection of I-680 and I-580, a major regional transportation node.

The EDZ area consists of 12 parcels located at 7106-7315 Johnson Drive and 7080 Commerce Circle, comprising approximately 40 acres and currently containing a mixture of land uses, including light industrial, office, retail, and institutional uses. The area is bounded by a fitness center and parking uses on the north; light industrial, wastewater treatment, and Park and Ride uses to the east; Stoneridge Drive and the I-680 interchange to the south; and I-680 to the west. The EDZ area currently contains 224,688 square feet of building space.

The EDZ area is currently designated Business Park in the City's General Plan, which is: "Intended primarily to accommodate high-quality, campus like development, including administrative, professional office, and research uses. Retail commercial uses are limited to those primarily serving business park employees. Floor-area-ratios (FARs) are not to exceed 0.6" (City of Pleasanton 2009). Properties within the EDZ area are currently zoned General Industrial (I-G-40), Planned Unit Development-General and Light Industrial (PUD-G&LI), or Planned Unit Development Industrial/Commercial-Office (PUD-I/C-O).

C. Project Description

The EDZ entails the implementation of rules, regulations, and guidelines to allow for and facilitate future development and redevelopment within the EDZ area. As part of the proposed EDZ, the City would also specify fees and fee credits for prospective uses; specify off-site improvements; and execute one or more Development Agreements with identified property owners. A tax incentive or rebate program may also be established.

The mix of uses expected to occur within the EDZ area with full buildout includes club retail (also known as warehouse club), hotel, recreational, and small- and large-format general retail establishments. Existing uses within the EDZ area would operate until redevelopment activities occur on those specific parcels. With development of the EDZ, the area could contain up to 509,990 square feet of occupied building space, a net increase of 285,302 square feet over the existing occupied buildings within the EDZ area. It is assumed that development of the EDZ area would occur in two or more phases, including an initial phase (Phase I) during which Parcels 6, 9 and 10 would be developed with hotel (88,000 square feet), club retail (148,000 square feet), and general retail (23,500 square feet) uses; and one or more future development phases. For a list of uses that would be permitted or conditionally permitted within the EDZ area, see **Appendix B**.

D. Project Objectives

The objectives of the proposed EDZ and associated General Plan amendment and rezoning are to:

1. Provide a consistent framework for the City's review and approval of new uses and projects in the EDZ area, encouraging investment in and adding value to these properties;

2. Maximize the benefits of the location of the EDZ area as an infill site located along transportation corridors and near transit by encouraging the development of both locally and regionally accessible uses in the EDZ area; and

3. Encourage the development of a diverse mix of uses in the City that would promote long-term economic growth by generating substantial new revenues for the City.

The Johnson Drive EDZ is the first economic development zone proposed by the City and is anticipated to be a model for future economic development zones.

E. Proposed EDZ Impacts

As provided by the CEQA *Guidelines* Section 15123(b)(1), an EIR must provide a summary of the impacts, mitigation measures and significant impacts after mitigation for a proposed project. This information is presented in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, of this Draft SEIR, and summarized in **Table 2-1** at the end of this chapter. The proposed EDZ would result in significant and unavoidable impacts with respect to air quality and transportation and traffic.

Significant and Unavoidable Air Quality Impacts:

> **Impact 4.B-2:** The EDZ would generate **operational emissions** that would result in a considerable net increase of **criteria pollutants and precursors (NOx and PM10) for which the air basin is in nonattainment under an ambient air quality standard.** Although Mitigation Measure 4.B-3 would reduce total criteria pollutants that would be generated (primarily from mobile vehicular emissions), the reduction is anticipated to be minor relative to overall emissions and would not reduce emissions to less-than-significant levels.
>
> **Impact 4.B-3:** Operation of uses within the proposed EDZ area would **conflict with or obstruct implementation of the applicable air quality plan.** Because the EDZ would cause operational emissions that would result in a considerable net increase of NOx and PM10, even with implementation of Mitigation Measure 4.B-3, the proposed EDZ would still conflict with or obstruct implementation of BAAQMD's 2010 Clean Air Plan, and this impact would be significant and unavoidable.
>
> **Impact 4.B-6:** The EDZ would generate operational emissions that would result in **cumulative criteria air pollutant (NOx and PM10) air quality impacts**, when combined with past, present and other reasonably foreseeable development in the vicinity.

Significant and Unavoidable Transportation and Traffic Impacts:

Impact 4.D-1: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Existing plus Project conditions**. Specifically, the addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in vehicle queue spillback.

Impact 4.D-2: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Near-term plus Project conditions.** The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in impacts related to vehicle queue spillback, and an impact at the intersection of Johnson Drive and the park and ride lot.

Impact 4.D-3: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Far-term (Cumulative) plus Project conditions.** The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in impacts related to vehicle queue spillback, and an impact at the intersection of Johnson Drive and the park and ride lot.

Impact 4.D-5: Development facilitated by the proposed EDZ would affect **levels of service for freeway ramps at merge/diverge areas within I-680** under **Existing plus Project conditions.**

Impact 4.D-7: Development facilitated by the proposed EDZ would affect **levels of service for freeway ramps at merge/diverge areas within I-680** under **Far-term (Cumulative) plus Project conditions.**

Other impacts from the EDZ on aesthetics, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services and utilities systems, transportation and traffic, and recreation would be mitigated (when appropriate) to less than significant levels.

F. Alternatives to the Proposed EDZ

Chapter 5, Alternatives, analyzes a range of reasonable alternatives to the proposed EDZ, including the No Project Alternative, the Reduced Retail Alternative, and the Partial Buildout Alternative. Each is summarized below.

Alternative 1: No Project

The No Project alternative assumes EDZ adoption would not occur. This alternative assumes that the same types of uses that exist in the area of the proposed EDZ would continue to operate, and also assumes that new development in the area would be similar to existing uses, with more office and commercial/general retail uses developed in the area within the next 10 years, especially on Parcels 6, 9, and 10, and with some new uses replacing existing uses. Under this alternative, it is

assumed that partial development of Parcels 6, 9, and 10 with office and retail uses would take place within the same buildout period for these parcels as described for the proposed EDZ.

Under the No Project alternative, the area of the proposed EDZ would be developed with some general retail uses but mostly office uses, with approximately 383,000 square feet of new building area, including:

- 338,000 square feet of office uses; and
- 45,000 square feet of general retail uses.

No club retail or hotel uses are assumed under this alternative.

The No Project alternative would not meet most of the objectives of the proposed EDZ: it would not result in the City's adoption of a consistent framework for the City's review and approval of new uses in the EDZ area. In addition, this alternative would primarily include the development of a mix of office uses and would not encourage the establishment of local and regionally accessible uses. Last, this alternative would not promote long-term economic growth because it would not facilitate development of uses within the area of the proposed EDZ that would generate substantial new revenues for the City.

Although it would not meet any of the objectives of the proposed EDZ, the No Project alternative would be feasible, and would avoid significant air quality impacts of the proposed EDZ: namely, operational air emissions of both PM10 and NOx would be less than significant under this alternative. This alternative would also, however, generate a volume of traffic trips to the EDZ area that would further degrade operations of freeway ramps at merge/diverge areas that are already operating at unacceptable levels, and would not lessen other significant traffic impacts of the proposed EDZ. Because CEQA requires evaluation of the No Project alternative, this alternative was carried forward for analysis.

Alternative 2: Reduced Retail Alternative

The Reduced Retail alternative would include some of the same uses as the proposed EDZ, including general retail and a hotel use, but would not include club retail uses. Under this alternative, the EDZ would be adopted, and Parcels 6, 9, and 10 would be developed in an initial phase that would take place within the same buildout period for these parcels as described for the proposed EDZ.

Under the Reduced Retail alternative, the area of the proposed EDZ would be developed with approximately 259,500 square feet of new building area, including:

- 171,500 square feet of general retail uses; and
- 88,000 square feet of hotel uses.

Under this alternative, it is assumed that development of the hotel uses would take place first and development of general retail uses would take place over a longer timeframe.

The Reduced Retail alternative would meet most of the objectives of the EDZ: it would result in the adoption of a consistent framework for the City's review and approval of new uses in the EDZ area, and would encourage the development of locally and regionally accessible uses. There is little evidence, however, that this alternative would promote long-term economic growth by facilitating the development of a mix or total volume of uses within the area of the proposed EDZ that would generate substantial new revenues for the City.

The Reduced Retail alternative would be feasible, and would avoid a significant air quality impact of the proposed EDZ: under this alternative, operational air emissions of PM10 would be less than significant. This alternative would also, however, generate a volume of traffic trips to the EDZ area that would further degrade operations of freeway ramps at merge/diverge areas that are already operating at unacceptable levels, and would also not lessen other significant traffic impacts of the proposed EDZ. Because the Reduced Retail alternative would avoid a significant impact of the proposed EDZ, this alternative was carried forward for analysis.

Alternative 3: Partial Buildout (Phase I Only)

The Partial Buildout alternative assumes that the EDZ would be adopted, and that only the uses anticipated for Phase I of the EDZ would be developed, and no other development would take place within the EDZ. This alternative includes a club retail use, a hotel use, and some general retail uses, with approximately 259,500 square feet of building area, including:

- 148,000 square feet of club retail;
- 23,500 square feet of general retail; and
- 88,000 square feet of hotel.

The Partial Buildout alternative would meet most of the objectives of the EDZ: it would result in the adoption of a consistent framework for the City's review and approval of new uses in the EDZ area, and would encourage the development of local and regionally accessible uses. In addition, this alternative would promote long-term economic growth to at least some degree (albeit not as robustly as the proposed EDZ), because it would result in the development of a mix and volume of uses within the area of the proposed EDZ that would generate substantial new revenues for the City.

Similar to the Reduced Retail alternative, the Partial Buildout alternative would be feasible, and would avoid a significant air quality impact of the proposed EDZ: under this alternative, operational emissions of PM10 would be less than significant. This alternative would also, however, generate a volume of traffic trips to the EDZ area that would further degrade operations of freeway ramps at merge/diverge areas that are already operating at unacceptable levels, and would also not lessen other significant traffic impacts of the proposed EDZ. Because the Partial Buildout alternative would avoid a significant impact of the proposed EDZ, this alternative was carried forward for analysis.

G. Comments on Notice of Preparation

In accordance with the CEQA *Guidelines*, the City distributed a Notice of Preparation of an EIR (NOP) for the SEIR to affected agencies and the public for the required 30-day period. The NOP was posted on August 27, 2014, with a 30-day comment period running from August 27 to September 25, 2014. The City received two letters, both from State agencies, in response to the NOP, from the California Department of Transportation (Caltrans) and the Native American Heritage Commission. The NOP and comments on to the NOP are included in **Appendix A** of this Draft SEIR.

H. Areas of Controversy

Section 15123(b)(2) of the CEQA *Guidelines* requires that an EIR summary identify areas of controversy known to the lead agency, including those issues raised by other agencies and the public. The analysis in this EIR indicates that air emissions would result in a net increase of criteria pollutants which would conflict with implementation of the applicable air quality plan, and increased traffic which would affect levels of service for freeway ramps at merge/diverge areas within I-680. As a result, impacts would be significant and unavoidable, even after incorporation of mitigation measures. As a result, issues related to air quality, transportation and traffic impacts are potential areas of controversy.

I. Issues to be Resolved

Section 15123(b)(3) of the CEQA *Guidelines* requires that an EIR present the issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects. The major issues to be resolved for the proposed EDZ include decisions by the City of Pleasanton, as the Lead Agency, as to whether:

- This SEIR adequately describes the environmental impacts of the proposed EDZ;
- Recommended mitigation measures should be adopted or modified;
- Additional mitigation measures need to be applied to the proposed EDZ;
- Feasible alternatives exist that would achieve the objectives of the EDZ and reduce significant environmental impacts;
- Significant and unavoidable impacts would occur if the EDZ is implemented; and
- The proposed EDZ should or should not be approved.

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.A. Aesthetics			
Impact 4.A-1: Construction within the proposed EDZ area would have an adverse effect on a scenic vista (Less Than Significant).	None required		No New Impact or Changes
Impact 4.A-2: Construction within the proposed EDZ area would damage scenic resources, including, but not limited to, trees, rocks, outcroppings, and historic buildings within a state scenic highway (Less Than Significant).	None required		No New Impact or Changes
Impact 4.A-3: Construction within the proposed EDZ area would degrade the existing visual character or quality of the EDZ area (Less Than Significant).	None required		No New Impact or Changes
Impact 4.A-4: Operation of new uses within the EDZ area would create a new source of substantial light or glare which would adversely affect day or nighttime views on individual project sites (Less Than Significant).	None required		No New Impact or Changes
Impact 4.A-5: Construction within the proposed EDZ area, in combination with other past, present, existing, approved, pending, and reasonably foreseeable future projects, would result in cumulatively considerable impacts to aesthetic resources (Less Than Significant).	None required		No New Impact or Changes
4.B. Air Quality			
Impact 4.B-1: Construction activities within the proposed EDZ area would result in increased emissions of fugitive dust, criteria air pollutants, and TACs from construction activities (Less Than Significant With Mitigation).	**Mitigation Measure 4.B-1:** All developers of sites within the EDZ area shall ensure that construction plans include a requirement that the BAAQMD Best Management Practices for fugitive dust control be implemented. All developers of sites within the EDZ area are required to implement the following for all construction activities within the EDZ area, to reduce fugitive dust emissions that would be generated primarily during soil movement, grading, and demolition activities, but also during vehicle and equipment movement on unpaved construction sites:	Less than Significant	New Impact, New Mitigation Measure Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.B. Air Quality (cont.)			
Impact 4.B-1 (cont.)	1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour. 5. All streets, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. 8. A publicly visible sign shall be posted with the telephone number and person to contact at the City of Pleasanton Planning Division regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations. **Mitigation Measure 4.B-2:** All developers of sites within the EDZ area that are located within 1,000 feet of sensitive receptors including church, school, senior housing, or recreational uses (i.e., Valley Bible Church and Love & Care Preschool, Club Sport, or other recreational uses) shall ensure that construction contract specifications include a requirement that all off-road diesel-powered construction equipment used during the construction activities within the EDZ area be equipped with engines that meet or exceed either U.S. Environmental Protection Agency or California Air Resources Board Tier 2 off-road emission standards, and are fitted with Level 3 Verified Diesel Emissions Control (VDEC), which would reduce diesel particulate emissions by at least 85 percent; or ensure that off-road diesel-powered construction equipment engines meet interim or final Tier 4 emission standards.		

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.B. Air Quality (cont.)			
Impact 4.B-2: Uses within the EDZ area would generate operational emissions that would result in a considerable net increase of criteria pollutants and precursors for which the air basin is in nonattainment under an applicable federal or state ambient air quality standard (Significant and Unavoidable).	**Mitigation Measure 4.B-3:** All developers of sites within the EDZ area shall implement Transportation Demand Management (TDM) measures where feasible and appropriate, including increased transit accessibility to EDZ sites and establishment of voluntary commute trip reduction program(s) with employers to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as car-pooling, taking transit, walking, and biking. The voluntary commute trip reduction program(s) may include, but would not be limited to, a ride-sharing program for which 50 percent or greater of site employees are eligible, carpooling encouragement, preferential carpool parking, a transportation coordinator, and ride-matching assistance.	Significant and Unavoidable	New Impact, New Mitigation Measure Identified
Impact 4.B-3: Operation of uses within the proposed EDZ area would conflict with or obstruct implementation of the applicable air quality plan (Significant and Unavoidable).	Implement **Mitigation Measure 4.B-2**	Significant and Unavoidable	No New Impact or Changes
Impact 4.B-4: Operation of uses that would be developed within the proposed EDZ area would expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter (PM2.5) (Less Than Significant With Mitigation).	**Mitigation Measure 4.B-4:** If a new sensitive use such as senior housing or outdoor recreation is proposed within the EDZ area in close proximity to sources of toxic air contaminants (i.e., within 300 feet of a fuel station or within 1,000 feet of warehouse loading docks or Highway I-680), the developer of this use shall prepare a health risk assessment report (per BAAQMD requirements for health risk assessments, and to be reviewed and approved by the City) in order to ensure that potential exposure and risk for future residents or patrons would be below applicable thresholds.	Less than Significant	New Impact, New Mitigation Measure Identified
Impact 4.B-5: Operation of uses within the EDZ area would create objectionable odors affecting a substantial number of people (Less Than Significant).	None required		No New Impact or Changes
Impact 4.B-6: Operation of uses within the proposed EDZ area, when combined with past, present and other reasonably foreseeable development in the vicinity, would result in cumulative criteria air pollutant air quality impacts (Significant and Unavoidable).	Implement **Mitigation Measure 4.B-3**	Significant and Unavoidable	New Impact, New Mitigation Measure Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.C. Noise			
Impact 4.C-1 The EDZ would increase construction noise levels at sensitive receptors located near construction sites (Less Than Significant With Mitigation).	**Mitigation Measure 4.C-1a**: To address nuisance impacts of construction activities within the EDZ area, all developers of sites within the EDZ area shall ensure that construction contractors implement the following: • Signs shall be posted at all construction site entrances to the property upon commencement of construction, for the purposes of informing all contractors/subcontractors, their employees, agents, material haulers, and all other persons at the applicable construction sites, of the basic requirements of Mitigation Measures 4.C-1a and 4.C-1b. • Signs shall be posted at the construction sites that include permitted construction days and hours, a day and evening contact number for the job site, and a contact number in the event of problems. • An onsite complaint and enforcement manager shall respond to and track complaints and questions related to noise. **Measure 4.C-1b:** To reduce daytime noise impacts due to construction within the EDZ area, all project developers shall require construction contractors working within 55 feet of the construction site property boundary to implement the following measures: • Equipment and trucks used for construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds), wherever feasible. • Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered where feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.	Less than Significant	New Impact, New Mitigation Measure Identified
Impact 4.C-2: Construction associated with development within the EDZ area would generate ground-borne vibration at neighboring sensitive uses (Less Than Significant).	None required		No New Impact or Changes

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.C. Noise (cont.)			
Impact 4.C-3: Development within the EDZ area could locate commercial or residential uses near an existing rail (BART) line. Uses that may be developed within the EDZ area would be exposed to exterior and interior noise exposure from train noise events (Less Than Significant).	None required		No New Impact or Changes
Impact 4.C-4: Development within the EDZ area could locate commercial or residential uses near an existing rail (BART) line. Uses that may be developed within the EDZ would be exposed to vibration from train pass-by events (Less Than Significant).	None required		No New Impact or Changes
Impact 4.C-5: Development within the EDZ area would generate additional traffic on local area roadways that would increase traffic noise exposure relative to existing conditions (Less Than Significant).	None required		No New Impact or Changes
Impact 4.C-6: New commercial land uses developed under Phase I of the proposed EDZ would be exposed to noise levels in excess of the City of Pleasanton Noise Standards (Less Than Significant).	None required		No New Impact or Changes
Impact 4.C-7: Development within the EDZ area would be exposed to stationary (non-transportation) noise sources at levels in excess of the City of Pleasanton Noise Standards (Less Than Significant With Mitigation).	**Mitigation Measure 4.C-1c:** Prior to the approval of the development of senior housing projects within the EDZ area, the City shall require site-specific acoustical assessments to determine exposure to existing and approved noise sources, impact, and mitigation regarding non-transportation sources. Noise exposure shall be mitigated to satisfy the applicable City Municipal Code criterion using appropriate housing site design. **Mitigation Measure 4.C-1d:** For all senior housing proposed for development within the EDZ area, the City shall require noise disclosures and noise complaint procedures for new residents of these developments, which will include 1) a disclosure of potential noise sources in the project vicinity; and 2) the establishment of procedures and a contact phone number for a site manager the residents can call to address any noise complaints.	Less than Significant	New Impact, New Mitigation Measures Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.C. Noise (cont.)			
Impact 4.C-8: Development within the EDZ area would generate construction noise that, in combination with construction noise associated with other buildout in the City of Pleasanton, would have cumulative noise effects at noise-sensitive uses (Less Than Significant).	None required		No New Impact or Changes
Impact 4.C-9: Development within the EDZ area, in combination with other foreseen projects in the city would produce a cumulative increase in traffic noise exposure (Less Than Significant).	None required		No New Impact or Changes
4.D. Transportation and Traffic			
Impact 4.D-1: Development facilitated by the proposed EDZ would affect levels of service at the local study intersections under Existing plus Project conditions. (Significant and Unavoidable for vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours).	**Mitigation Measure 4.D-1a: Commerce Drive at Johnson Drive Intersection.** Install a traffic signal and construct a southbound left-turn lane to Commerce Drive at the Commerce Drive and Johnson Drive intersection. **Mitigation Measure 4.D-1b: Johnson Drive at Owens Drive (North) Intersection.** Install a traffic signal at the Johnson Drive at Owens Drive (North) intersection. **Mitigation Measure 4.D-1c: Johnson Drive at Stoneridge Drive Intersection.** Implement the following improvements: 1. Construct a third eastbound left-turn lane from Stoneridge Drive to Johnson Drive in conjunction with an additional northbound receiving lane on Johnson Drive (north side of intersection). 2. Construct an additional southbound right-turn lane on Johnson Drive. 3. Rebuild Johnson Drive as a six lane facility with three or four southbound lanes and three northbound receiving lanes for a minimum of 700 feet north of Stoneridge Drive. This improvement would require widening of Johnson Drive north of Stoneridge Drive by up to 36 feet and widening of Johnson Drive south of Stoneridge Drive a commensurate amount to align travel movements through the intersection. **Mitigation Measure 4.D-1d: Stoneridge Drive Queue Spillback (Stoneridge Drive and Johnson Drive Improvements).** Implement the following improvements: 1. Modify the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase. 2. Construct a second southbound left-turn lane from Johnson Drive to Stoneridge Drive.	Significant and Unavoidable	No New Impact, New Mitigation Measures Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.D. Transportation and Traffic (cont.)			
Impact 4.D-1 (cont.)	3. Extend the existing westbound right-turn pocket at the Johnson Drive and Stoneridge Drive intersection approximately 800 feet east by widening Stoneridge Drive and convert the resulting lane into a through-right-shared lane. Install lane markings in the curb lane and adjacent lane indicating I-680 Northbound Only to reduce lane changes between Johnson Drive and the northbound on-ramp. 4. Construct a second on-ramp lane to northbound I-680 from the westbound Stoneridge Drive approach. The two lane on-ramp should be merged to one lane prior to the freeway merge area. The lane drop will occur over a distance of at least 800 feet, and will require reconstruction and widening of the bridge at this on-ramp from one to two lanes, with the merge occurring after the bridge. (Note: This improvement is within Caltrans right-of-way and requires Caltrans design review and oversight.)		
Impact 4.D-2: Development facilitated by the proposed EDZ would affect levels of service at the local study intersections under Near-term plus Project conditions. (Significant and Unavoidable for vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours; Significant and Unavoidable for Johnson Drive and Park and Ride Lot Intersection).	Implement **Mitigation Measure 4.D-1a, 4.D-1b, 4.D-1c, and 4.D-1d**	Less than Significant	No New Impact, New Mitigation Measures Identified
Impact 4.D-3: Development facilitated by the proposed EDZ would affect levels of service at the local study intersections under Far-term (Cumulative) plus Project conditions. (Significant and Unavoidable for vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours; Significant and Unavoidable for Johnson Drive and Park and Ride Lot Intersection).	Implement **Mitigation Measure 4.D-1a, 4.D-1b, 4.D-1c, and 4.D-1d**	Significant and Unavoidable	No New Impact, New Mitigation Measures Identified
Impact 4.D-4: Development facilitated by the proposed EDZ would affect levels of service on mainline freeway segments under Existing plus Project conditions (Less Than Significant).	None required		New Impact, No New Mitigation Measure Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.D. Transportation and Traffic (cont.)			
Impact 4.D-5: Development facilitated by the proposed EDZ would affect levels of service for freeway ramps at merge/diverge areas within I-680 under Existing plus Project conditions (Significant and Unavoidable).	**Mitigation Measure 4.D-2: I-680 Northbound and Southbound Ramp Merge/Diverge Areas at Stoneridge Drive.** Construct improvements, such as the second phase of I-680/I-580 interchange improvements, widening of State Route 84, and other planned roadway system modifications that would relieve freeway congestion in the study area.	Significant and Unavoidable	New Impact, New Mitigation Measure Identified
Impact 4.D-6: Development facilitated by the proposed EDZ would affect levels of service on mainline freeway segments under Far-term (Cumulative) plus Project conditions (Less Than Significant).	None required		New Impact, No New Mitigation Measure Identified
Impact 4.D-7: Development facilitated by the proposed EDZ would affect levels of service for freeway ramps at merge/diverge areas within I-680 under Far-term (Cumulative) plus Project conditions (Significant and Unavoidable).	Implement **Mitigation Measure 4.D-2**	Significant and Unavoidable	New Impact, New Mitigation Measure Identified
Impact 4.D-8: Development facilitated by the proposed EDZ would have an impact on Metropolitan Transportation System roadways identified in the Congestion Management Plan, including freeways, major arterials, and other major roadways as designated by the Alameda CTC (Less Than Significant).	None required		New Impact, No New Mitigation Measure Identified
Impact 4.D-9: Development of the EDZ would increase traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways due to roadway design features, incompatible uses, or project-related vehicles trips (Less Than Significant With Mitigation).	**Mitigation Measure 4.D-3: Johnson Drive Improvements.** The City will review design plans for club retail and other traffic-intensive uses that would be developed as part of Phase I and buildout of the EDZ to determine needed improvements to accommodate additional traffic on Johnson Drive. If at the conclusion of this review the City determines that additional improvements to Johnson Drive are required, one or more of the following improvements shall be implemented: 1. If a club retail use is proposed for Parcel 6, signalize one or more entrances at Parcel 6, and widen Johnson Drive at this location, to accommodate a southbound left-turn pocket and a northbound right-turn pocket. 2. Widen Johnson Drive to provide up to two vehicle travel lanes in each direction from Stoneridge Drive to the main entries of sites with traffic-intensive uses (such as club retail). 3. Implement other improvements as needed at major driveways (signal control, provision of left-turn or right-turn pockets) to provide additional capacity.	Less than Significant	New Impact, New Mitigation Measures Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.D. Transportation and Traffic (cont.)			
	4. Final design of all improvements along Johnson Drive shall maintain or enhance existing bicycles, transit, and pedestrian facilities, and shall ensure bicycle and pedestrian facilities and access to the Alamo Canal Trail at the signalized crossing at Commerce Circle and any other signalized locations on Johnson Drive. **Mitigation Measure 4.D-4: Retention of Bicycle Lanes on Stoneridge Drive.** Final design of all improvements along Stoneridge Drive shall maintain or enhance existing bicycles and pedestrian facilities.		
Impact 4.D-10: Development facilitated by the proposed EDZ would result in inadequate access for emergency vehicles (Less Than Significant).	None required		No New Impact or Changes
Impact 4.D-11: Operation of uses within the proposed EDZ would be inconsistent with adopted polices, plans, and programs supporting alternative transportation (Less Than Significant).	Implement **Mitigation Measure 4.D-3** and **4.D-4**	Less than Significant	No New Impact, New Mitigation Measures Identified
Impact 4.D-12: Development facilitated by the proposed EDZ would result in increased demand for motor vehicle parking, or remove existing parking areas (Less Than Significant).	Implement **Mitigation Measure 4.D-3**	Less than Significant	No New Impact, New Mitigation Measure Identified
Impact 4.D-13: Development facilitated by the proposed EDZ would generate temporary increases in traffic volume and temporary effects on transportation conditions during construction activities (Less Than Significant).	None required		No New Impact or Changes
4.E-1 Biological Resources			
Impact 4.E-1: With mitigation, the proposed EDZ would not: a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species (Less Than Significant With Mitigation); b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community (Less Than Significant);	**(2012 SEIR) Modified Mitigation Measure 4.C-1a: Pre-construction Breeding Bird Surveys.** The City shall ensure that prior to development of all potential sites for rezoning (Sites 1-4, 6-11, 13, 14, and 16-21) and each phase of project activities that have the potential to result in impacts on breeding birds (e.g., tree removal or demolition of buildings or bridges), the project applicant shall take the following steps to avoid direct losses of nests, eggs, and nestlings and indirect impacts to avian breeding success: • If grading or construction activities occur only during the non-breeding season, between August 31 and February 1, no surveys will be required.	Less than Significant	No New Impact, New Mitigation Measures Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-1 Biological Resources (cont.)			
Impact 4.E-1 (cont.) c) Have a substantial adverse effect on federally protected wetlands (Less Than Significant With Mitigation); d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites (Less Than Significant); e) Conflict with any local policies or ordinances protecting biological resources (Less Than Significant); or **f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan (Less Than Significant).**	• Pruning and removal of trees and other landscaped vegetation, including grading of grasslands, should occur whenever feasible, outside the breeding season (February 1 through August 31). • During the breeding bird season (February 1 through August 31) a qualified biologist will survey project sites for nesting raptors and passerine birds not more than 14 days prior to any ground-disturbing activity or vegetation removal. Surveys will include all line-of-sight trees within 500 feet (for raptors) and all vegetation within 250 feet for all other species. • Based on the results of the surveys, avoidance procedures will be adopted, if necessary, on a case-by-case basis. These may include construction buffer areas (up to several hundred feet in the case of raptors) or seasonal avoidance. • Bird nests initiated during construction are presumed to be unaffected by project activities, and no buffer would be necessary except to avoid direct destruction of a nest or mortality of nestlings. • If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required <u>if work is initiated within 14 days of the survey</u>. Trees and shrubs that have been determined to be unoccupied by nesting or other special-status birds may be pruned or removed <u>within 14 days of the pre-construction survey. Should activities be delayed beyond 14 days, pre-construction surveys shall be repeated prior to the start of work</u>. **Mitigation Measure 4.E-1: Pre-Construction Bat Surveys.** Conditions of approval for building and grading permits issued for demolition and construction on sites within the EDZ area shall include a requirement for pre-construction special-status bat surveys when large trees constituting suitable habitat for roosting bats (e.g. trees with cavities or trees with bark that could be used for roosting such as eucalyptus and redwood) are to be removed or underutilized or vacant buildings are to be demolished. • Surveys shall be conducted by a qualified biologist prior to any tree removal or building demolition. Removal of trees and structures shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15; outside of bat maternity roosting season (approximately April 15 – August 31) and outside of months of winter torpor (approximately October 15 – February 28), to the extent feasible. • If removal of trees and structures during the periods when bats are active is not feasible and active bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the site where tree and structure removal is •		

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-1 Biological Resources (cont.)			
Impact 4.E-1 (cont.)	planned, a no disturbance buffer of 100 feet shall be established around these roost sites until they are determined to be no longer active by the qualified biologist. A 100-foot no disturbance buffer is a typical protective buffer distance; however, buffer width may be modified by the qualified biologist depending on existing screening around the roost site (such as dense vegetation or a building) as well as the type of construction activity which would occur around the roost site. • The qualified biologist shall be present during tree and structure removal if potential bat roosting habitat or active bat roosts are present. Trees and structures with active roosts shall be removed only when no rain is occurring or is forecast to occur for 3 days and when daytime temperatures are at least 50°F. • Removal of trees with potential bat roosting habitat or active bat roost sites shall follow a two-step removal process: 1. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using chainsaws. 2. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using chainsaws or other equipment (e.g. excavator or backhoe). Removal of structures containing or suspected to contain potential bat roosting habitat or active bat roosts shall be dismantled under the supervision of the qualified biologist in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. **Mitigation Measure 4.E-2: Wetland Delineation.** In coordination with the City, a qualified wetland ecologist shall conduct a wetland delineation of the proposed bridge expansion and replacement site to identify potential waters of the United States (U.S.) (including wetlands) or waters of the state which may be present. If no waters of the U.S. or waters of the state are identified onsite, no further action is required. Should waters of the U.S. or waters of the state be determined present within the site, features shall be mapped and documented in a report for submission to the appropriate jurisdictional agencies retaining authority over the identified features. **Mitigation Measure 4.E-3: Wetland Avoidance and Protection.** Access roads, work areas, and infrastructure shall be sited to avoid and minimize direct and indirect impacts to wetlands and waters. Where work will occur within and/or adjacent to federal and state jurisdictional wetlands and waters, protection measures shall be applied to minimize the footprint of overall impacts and protect these features. These measures shall include the following:		

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-1 Biological Resources (cont.)			
Impact 4.E-1 (cont.)	• A protective barrier (such as silt fencing) shall be erected around the work area (s) to minimize disturbance to wetland or water features and isolate adjacent to wetland or water features from construction activities to reduce the potential for incidental fill, erosion, or other disturbance beyond what is necessary for bridge expansion and replacement; • Signage shall be installed on the fencing to identify sensitive habitat areas and restrict construction activities; • No equipment mobilization, grading, clearing, or storage of equipment or machinery, or similar activity shall occur at the site until a representative of the City has inspected and approved the wetland protection fencing; and • The City shall ensure that the temporary fencing is continuously maintained until all construction activities are completed. A fencing material meeting the requirements of both water quality protection and wildlife exclusion shall be used. **Mitigation Measure 4.E-4: Compensation for Impacts to Wetlands and Other Waters.** Where jurisdictional wetlands and other waters cannot be avoided, to offset temporary and permanent impacts that would occur as a result of the bridge expansion and replacement, restoration and compensatory mitigation shall be provided through the following mechanisms: • Prior to construction, the City or Caltrans shall obtain relevant permits and authorizations from the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and the San Francisco Bay Regional Water Quality Control Board (RWQCB); • Consistent with the terms and conditions of these permits and authorizations, the City or Caltrans shall compensate for the unavoidable loss of wetlands and other waters at a minimum of a 1:1 ratio; and • Compensation may be provided by one or more of the following methods: 1) on-site creation or habitat restoration, 2) off-site habitat creation, restoration and/or enhancement, or 3) payment to an approved wetland mitigation bank. Mitigation bank credits, if available, shall be obtained prior to the start of construction. On-site or off-site creation/restoration/enhancement plans must be prepared by a qualified biologist prior to construction and approved by the permitting agencies. Implementation of creation/restoration/enhancement activities by the permittee shall occur prior to impacts, whenever possible, to avoid temporal loss. On- or off-site creation/restoration/enhancement sites shall be monitored by the City for at least five (5) years to ensure their success.		

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-2 Cultural Resources			
Impact 4.E-2: With mitigation, the proposed EDZ would not: a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 (Less than Significant); b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5 (Less than Significant With Mitigation); c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (Less than Significant With Mitigation); or d) Disturb any human remains, including those interred outside of formal cemeteries (Less than Significant With Mitigation).	**Mitigation Measure 4.E-5: Archeological Resources.** If prehistoric or historic-period archaeological resources are encountered during ground disturbing activities for a project under construction within the EDZ, the construction contractor shall halt all activities within 50 feet of the discovery, and the construction contractor shall notify the City. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. The project developer shall ensure that a Secretary of the Interior-qualified archaeologist will inspect the findings within 24 hours of discovery. If the archaeologist determines that construction activities could damage a historical resource or a unique archaeological resource (as defined pursuant to the CEQA Guidelines), mitigation will be implemented in accordance with Public Resources Code (PRC) Section 21083.2 and Section 15126.4 of the CEQA Guidelines, with a preference for preservation in place. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance is not feasible, a qualified archaeologist will prepare and implement a detailed treatment plan in consultation with the City. Treatment of unique archaeological resources shall follow the applicable requirements of PRC Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by project construction. The treatment plan will include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.	Less than Significant	No New Impact, New Mitigation Measures Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-2 Cultural Resources			
Impact 4.E-2 (cont.)	**(2012 SEIR) Mitigation Measure 4.D-3:** In the event that paleontological resources are encountered during the course of development, all construction activity must temporarily cease in the affected area(s) until the uncovered fossils are properly assessed by a qualified paleontologist and subsequent recommendations for appropriate documentation and conservation are evaluated by the Lead Agency. Excavation or disturbance may continue in other areas of the site that are not reasonably suspected to overlie adjacent or additional paleontological resources. **Mitigation Measure 4.E-6: Human Remains.** In the event that human remains are discovered during ground disturbing activities for a project under construction within the EDZ, the construction contractor shall stop work immediately. No disposition of such human remains shall take place, other than in accordance with the procedures and requirements set forth in California Health and Safety Code Section 7050.5 and Public Resources Section 5097.98. Per these code provisions, the project developer shall ensure appropriate notification of the County Coroner and the Native American Heritage Commission, who in turn must notify the persons believed to be most likely descended from the deceased Native American for appropriate disposition of the remains.		
4.E-4 Geology and Soils			
Impact 4.E-4: The proposed EDZ would not: a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, ii) Strong seismic ground shaking, iii) Seismic-related ground failure, including liquefaction, or iv) Landslides (Less than Significant); b) Result in substantial soil erosion or the loss of topsoil (Less than Significant); c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed EDZ (Less than Significant); or d) Be located on expansive soil (Less than Significant).	None required		No New Impact or Changes

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-3 Greenhouse Gases			
Impact 4.E-3: The proposed EDZ would not: a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (Less than Significant); or b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases (Less than Significant).	None required		No New Impact or Changes
4.E-5 Hazards and Hazardous Materials			
Impact 4.E-5: With mitigation, the proposed EDZ would not: a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (Less than Significant); b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (Less than Significant With Mitigation); c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (Less than Significant With Mitigation); d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment (Less than Significant With Mitigation); e) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Less than Significant); or f) Expose people or structures to a significant risk of loss, injury or death involving wildland fires. (Less than Significant)	**Mitigation Measure 4.E-7: Soil and Groundwater Plan.** For proposed development on all sites within the EDZ undergoing or requiring remediation of contaminated soil or groundwater, and prior to issuance of a building or grading permit, the project developer shall demonstrate that its construction specifications include implementation of a Soil and Groundwater Plan (SGP) prepared by a qualified environmental specialist (geologist or engineer) and reviewed and approved by the agency or agencies with oversight over cleanup (San Francisco Regional Water Quality Control Board [RWQCB] and/or State Department of Toxic Substances Control [DTSC]). The SGP shall describe requirements for excavation, stockpiling, and transport of soil and disturbance of groundwater. The SGP shall also include a contingency plan to respond to the discovery of previously unknown contamination. In addition, all construction activities shall require written approval by either RWQCB or DTSC prior to commencement. The SGP shall be present on site at all times as ensured by the construction lead, and readily available to site workers and City staff as needed. **Mitigation Measure 4.E-8: Soil Vapor Barriers.** For proposed development on all sites within the EDZ undergoing or requiring remediation of contaminated soil or groundwater, where residual contamination includes volatile components (such as the chlorinated solvent TCE), and prior to issuance of a building or grading permit, the project developer shall demonstrate to the City either that the building plans include vapor barriers reviewed and approved by San Francisco Regional Water Quality Control Board (RWQCB) or State Department of Toxic Substances Control (DTSC) to be installed beneath foundations for the prevention of soil vapor intrusion, or that RWQCB or DTSC has determined that installation of vapor barriers is not necessary.	Less than Significant	No New Impact, New Mitigation Measures Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-6 Hydrology and Water Quality			
Impact 4.E-6: The proposed EDZ would not: a) Violate any water quality standards or waste discharge requirements (Less than Significant); b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge (Less than Significant); c) Substantially alter the existing drainage pattern of the area (Less than Significant); d) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (Less than Significant); e) Otherwise substantially degrade water quality (Less than Significant); f) Place within a 100-year flood hazard area structures which would impede or redirect flood flows (Less than Significant); or g) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam (Less than Significant).	None required		No New Impact or Changes
4.E-7 Land Use and Planning			
Impact 4.E-7: The proposed EDZ would not: a) Physically divide an established community (Less than Significant); b) Conflict with any applicable land use plan, policy, or regulation (Less than Significant); or c) Conflict with any applicable habitat conservation plan or natural community conservation plan (Less than Significant).	None required		No New Impact or Changes
4.E-8 Population and Housing			
Impact 4.E-8: The proposed EDZ would not induce substantial population growth in an area, either directly or indirectly (Less than Significant).	None required		No New Impact or Changes

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-9 Public Services and Utilities			
Impact 4.E-9: With mitigation, the proposed EDZ would not: a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, or other public facilities (Less than Significant); b) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (Less than Significant); c) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities (Less than Significant); d) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities (Less than Significant); e) Lack sufficient water supplies to serve the proposed EDZ from existing entitlements and resources, or are new or expanded entitlements needed (Less than Significant With Mitigation); f) Result in a determination by the wastewater treatment provider which serves or may serve the proposed EDZ area that it does not have adequate capacity to serve the EDZ's projected demand in addition to the provider's existing commitments (Less than Significant); g) Be served by a landfill without sufficient permitted capacity to accommodate the EDZ's solid waste disposal needs (Less than Significant); or h) Not be in compliance with federal, state, and local statutes and regulations related to solid waste (Less than Significant).	**Mitigation Measure 4.E-9:** For any project proposed for development within the EDZ, prior to the recordation of a Final Map, the issuance of a grading permit, the issuance of a building permit, or utility extension approval, whichever is sooner, the project developer shall submit written verification from the Alameda County Flood Control and Water Conservation District Zone 7 (Zone 7) or the City's Utility Planning Division that water is available for the project. This approval does not guarantee the availability of sufficient water capacity to serve the project.	Less than Significant	No New Impact, New Mitigation Measure Identified

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation	Comparison to 2009 General Plan EIR and 2012 SEIR Findings
4.E-10 Recreation			
Impact 4.E-10: The proposed EDZ would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. (Less than Significant)	None required		No New Impact or Changes

References – Summary

City of Pleasanton, 2009. *Pleasanton General Plan 2005-2025,* adopted July 21, 2009.

CHAPTER 3
Project Description

This chapter describes the (1) EDZ location and boundaries; (2) characteristics of the EDZ area; (3) characteristics of the EDZ itself, including proposed development assumptions; (4) EDZ objectives; and (5) approval/intended uses of the SEIR.

A. Introduction

The City has identified the EDZ, which comprises 12 parcels in the northwestern part of the City, as a pilot economic development zone, designed to establish a vision and policy framework for the area with the purpose of encouraging investment in a highly-visible part of the City. The EDZ would replace or supplement current policies that apply within the EDZ area, and is intended to serve as a guide for future development in the EDZ area. To ensure consistency across the City's planning documents, the EDZ includes a proposed General Plan amendment, rezoning, and other entitlement approvals.

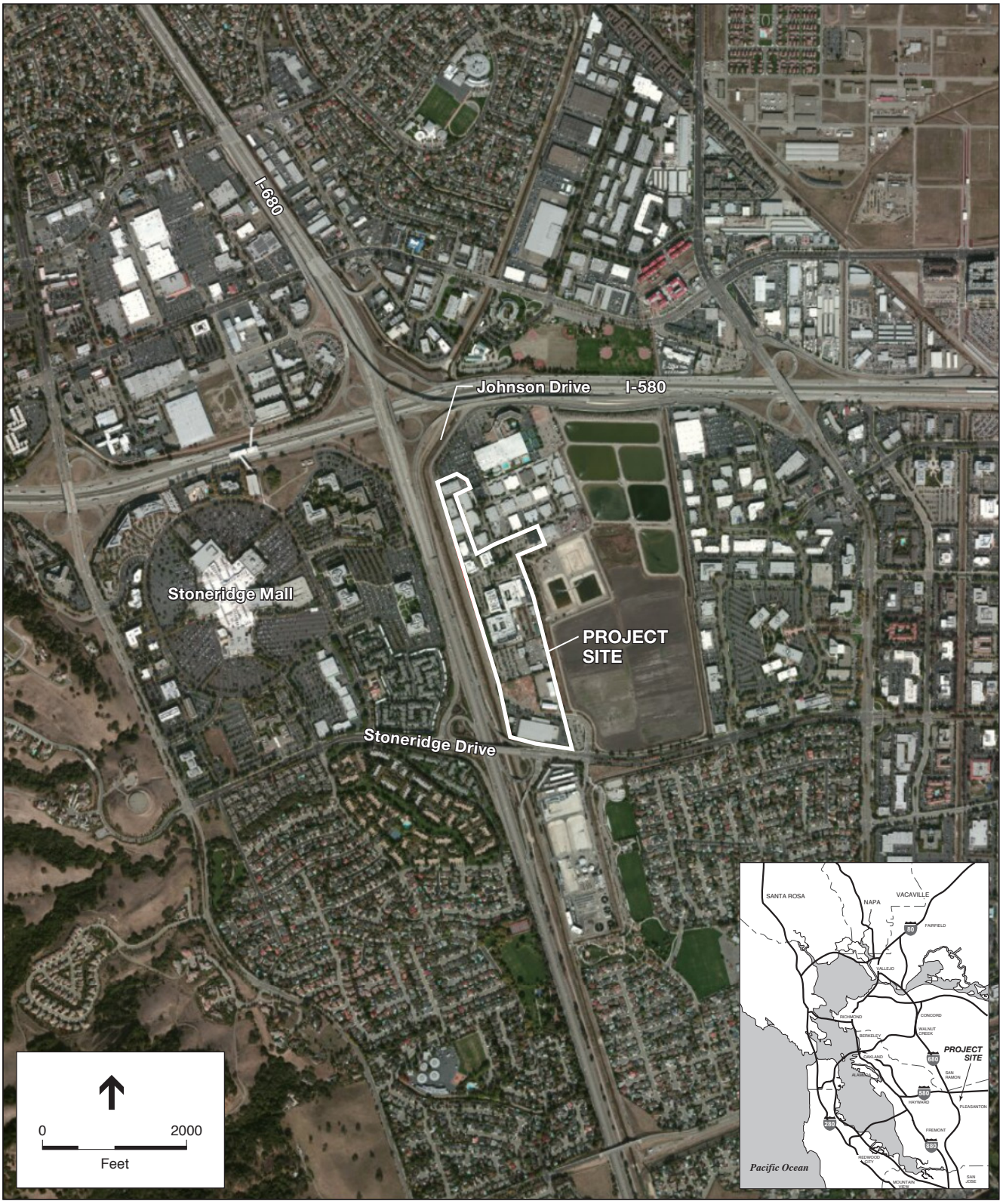
B. Regulatory Context

The EDZ area is currently designated Business Park in the City's General Plan, which is "Intended primarily to accommodate high-quality, campus like development, including administrative, professional office, and research uses. Retail commercial uses are limited to those primarily serving business park employees. Floor-area-ratios (FARs) are not to exceed 0.6" (City of Pleasanton 2009). Properties within the EDZ area are currently zoned General Industrial (I-G-40), Planned Unit Development-General and Light Industrial (PUD-G&LI), or Planned Unit Development Industrial/Commercial-Office (PUD-I/C-O).

C. Regional Location and Boundaries of EDZ Area

Regional Context

Pleasanton is located within Alameda County, one of nine Bay Area counties bordering the San Francisco Bay (see **Figure 3-1**). The city is generally bounded to the west by the Pleasanton ridgelands, to the north by Interstate 580 (I-580) and the city of Dublin, to the east by the city of Livermore and unincorporated Alameda County, and to the south by San Francisco Water Department lands and other rangelands. Interstate 680 (I-680) bisects the western portion of the City, intersecting I-580 in the northwestern part of the city. The EDZ area is located southeast of the intersection of I-680 and I-580, a major regional transportation node.



SOURCE: ESRI, 2014

Johnson Drive EDZ . 140421

Figure 3-1
Regional and Local Setting

Planning Area

The EDZ area (also referred to as the planning area) consists of 12 parcels located at 7106-7315 Johnson Drive and 7080 Commerce Circle, comprising approximately 40 acres and currently containing a mix of land uses, including light industrial, office, retail, and institutional uses. The area is bounded by a fitness center and parking uses on the north; light industrial, wastewater treatment, and Park and Ride uses to the east; Stoneridge Drive and the I-680 interchange to the south; and I-680 to the west. The EDZ area currently includes 224,688 square feet of occupied building space. The EDZ area previously included 573,723 square feet of building space; certain unoccupied vacant buildings have recently been demolished, as described below. **Figure 3-2** shows the planning area, and **Figure 3-3** shows the specific parcels in the planning area.

Ongoing Activities Within the EDZ Area

On September 23, 2014, the City approved a permit for demolition of all structures on Parcel 6 and Parcel 10 within the area of the proposed EDZ. Although all structure demolition has been completed, additional demolition activities are still on-going as of the date of this SEIR. The demolition is associated with ongoing remediation (underground contamination cleanup) activities, is separately permitted, and is outside the scope of the proposed EDZ analyzed in this SEIR.

Additionally, due to the nature of the existing uses within the EDZ area, other activities, such as the issuance of routine building permits, may occur on a regular basis within the EDZ area. Such permits are subject to separate review and approval by the City and are considered outside of the scope of the proposed EDZ.

D. EDZ Overview

The proposed EDZ consists of policies, regulations, and guidelines to allow for and facilitate future development and redevelopment within the EDZ area. As part of the proposed EDZ, the City could also specify fees and fee credits for prospective uses; specify off-site improvements; and execute one or more Development Agreements with identified property owners. A tax incentive or rebate program may also be established.

The EDZ would implement a number of existing General Plan goals, policies, and programs including:

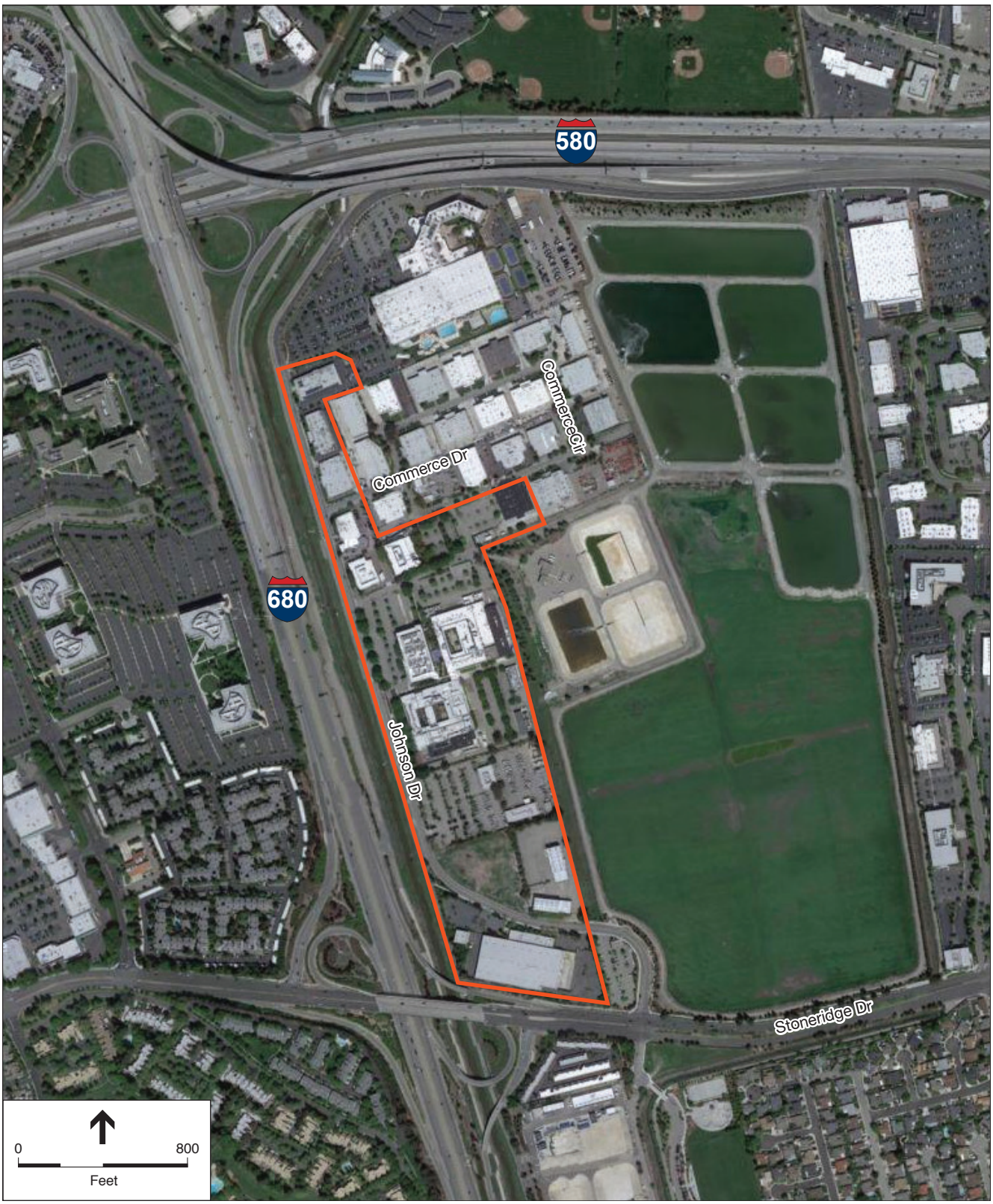
Land Use Element

Special Interest Areas

Policy 6: Develop comprehensive planning documents for undeveloped and underutilized areas of Pleasanton that are changing or have the potential to change. In the planning process, identify facility needs, explore opportunities for mixed-use development, and plan for a comprehensive circulation system.

Citizen Participation

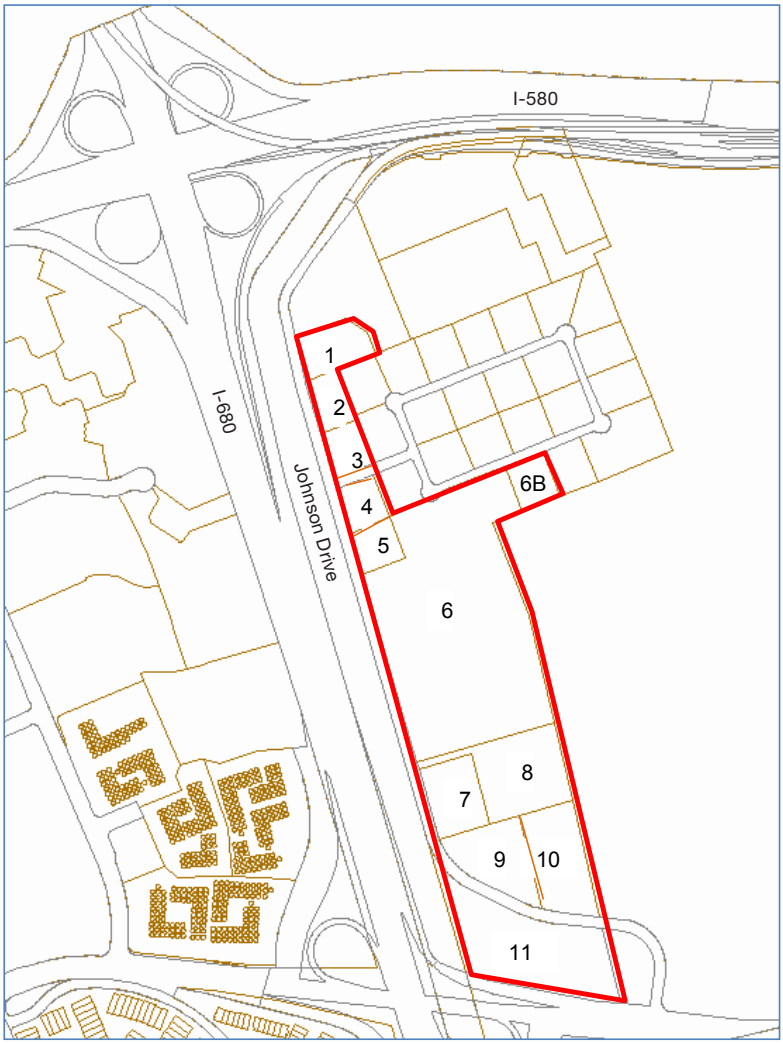
Policy 27: Review and update the Pleasanton General Plan as conditions change.



SOURCE: Google Maps

Johnson Drive EDZ . 140421

Figure 3-2
Johnson Drive Economic Development Zone
Project Location Map



Parcel	Area	Zoning	Ownership	Address / APN
1	1.47	I-G-40	Valley Bible Church	7106 Johnson Drive / 941-1311-335
2	0.93	PUD-I/C-O	Greater East Bay Properties, LLC	7116 Johnson Drive / 941-1311-1
3	0.92	I-G-40	Garnet Bear, LP	7132 Johnson Drive / 941-1311-2
4	0.94	I-G-40	William Wheeler	7080 Commerce Circle / 941-1311-21
5	0.94	I-G-40	Johnson Drive Holdings I, LLC	7164 Johnson Drive / 941-1311-22
6	+/- 17.15	I-G-40	Johnson Drive Holdings I, LLC	7200 Johnson Drive* / 941-1311-19
6B	0.93	I-G-40	Johnson Drive Holdings I, LLC	7035 Commerce Circle / 941-1311-016
7	1.95	PUD-G&LI	PT & T Co. 279-1-51-2	Johnson Drive / 941-1300-18
8	3.60	PUD-G&LI	PT & T Co. 279-1-51-2	7240 Johnson Drive / 941-1300-17
9	2.43	PUD-G&LI	Johnson Drive Holdings I, LLC	Johnson Drive / 941-1300-15
10	2.84	I-G-40	Johnson Drive Holdings I, LLC	7280 Johnson Drive / 941-1300-14
11	5.88	PUD-G&LI	Chamberlin Associates Johnson Drive I Ltd. PTP	7275 Johnson Drive / 941-1300-19
	+/- 39.98			*7200, 7202, 7206, 7208 Johnson Drive

SOURCE: City of Pleasanton

Johnson Drive EDZ . 140421

Figure 3-3
Parcel Subdivision

Economic and Fiscal Element

Economic Base

Goal 2: Sustain the community's quality of life with a vigorous and diverse economy.

Policy 1: Enhance Pleasanton's diversified economic base through an aggressive business retention and expansion program.

Program 1.1: Establish a business retention and expansion program that identifies needs and constraints to current business operations, and acknowledges the contributions and importance of existing businesses.

Policy 3: Strengthen the retail sector.

Revenue System

Goal 4: Maintain a diverse and stable revenue system.

Sustainable City Finances

Policy 18: Strive to maintain a diversified and stable revenue base that is not overly dependent on any land use, major taxpayer, revenue type, restricted revenue, inelastic revenue, or external revenue.

Subregional Planning Element

Goal 1: Achieve a coordinated, efficient, and environmentally sensitive pattern of development in the Tri-Valley area.

Policy 1: Ensure that new development occurs in a compact community-centered pattern which supports existing communities, improves mobility, minimizes public infrastructure costs, protects natural resources, and supports economic activity.

Development Assumptions

For the purpose of establishing the boundaries of analysis in this SEIR, various assumptions have been made regarding the level of development to be accommodated within the EDZ area. The assumed levels of development include new development on private property, and associated infrastructure improvements, in one or more phases.

No specific development projects have been proposed within the EDZ area. Detailed planning applications for specific development projects within the EDZ area would be submitted to the City at a later date.

Potential New Uses

While the extent of future development under the EDZ is unknown, the EDZ will provide parameters for future development that may take place. The uses authorized by the EDZ within the EDZ area include, as defined below, club retail (also known as warehouse club), hotel, recreational, office/commercial, and small- and large-format retail establishments. Existing uses within the EDZ area would be permitted to operate until redevelopment activities occur on those specific parcels.

With development of the EDZ, it is assumed that the area would contain a maximum of 509,990 square feet of building space. The level of actual development within the EDZ area may ultimately be less than assumed in the SEIR. For a complete list of uses that could be permitted or conditionally permitted within the EDZ area, see **Appendix B**.

TABLE 3-1
EXISTING USES WITHIN THE EDZ

Parcel #	Existing	
	Use	Size (sq. ft.)
1	Church/Institutional	20,000
2	Patioworld/Retail	18,995
3	Commercial/Retail	19,908
4	Black Tie Limo	14,460
5	Office	15,070
6	Vacant[a]	0
6B	Office/Light Industrial	27,550
7	Parking Lot	0
8	AT&T Facility	15,132
9	Vacant[b]	0
10	Vacant[b]	0
11	FedEx Distribution	93,573
Total		**224,688**
Subtotal General Retail	Parcels 2, 3	38,903
Subtotal Office	Parcel 5	15,070
Subtotal Commercial Service	Parcels 4, 7, 8, 10, 11	123,165
Subtotal Light Industrial	Parcel 6B	27,550
Subtotal Institutional	Parcel 1	20,000
Vacant	Parcels 6, 9, 10	0

[a] Does not include square footage of structures (approximately 329,035 square feet total) demolished independently of the proposed EDZ

[b] Does not include square footage of structures (approximately 20,000 square feet total) demolished independently of the proposed EDZ

SOURCE: City of Pleasanton, 2014

Proposed Phases of Development

For purposes of the SEIR analysis, it is assumed that development of the EDZ would occur in two or more phases, including an initial phase (Phase I) during which Parcels 6, 9 and 10 would be developed with hotel and retail uses, and one or more future development phases. Assumptions regarding likely development within the EDZ area are partly based on a fiscal impact analysis prepared for the proposed EDZ by Brion & Associates, which is presented in **Appendix C**. **Table 3-2** summarizes the characteristics of development assumed to take place during Phase I

and future development phases. "Full Buildout" as presented in Table 3-2 and analyzed in this SEIR, includes Phase I assumptions as well as future development phases, and represents the maximum assumed level of development within the entire EDZ area.

TABLE 3-2
SUMMARY OF EDZ DEVELOPMENT CHARACTERISTICS

Land Use or Other Characteristic	Unit	Existing Development	Phase I Development (Parcels 6, 9, and 10)	Full Buildout[1]
Employees	Jobs	369	642	1,149
General Retail	Square Feet	38,903	62,403	246,440
Club Retail	Square Feet	-	148,000	148,000
Commercial Service	Square Feet	123,165	123,165	-
Office	Square Feet	15,070	15,070	-
Industrial	Square Feet	27,550[3]	27,550	27,550
Hotel	Square Feet	-	88,000	88,000
Institutional/Religious	Square Feet	20,000	20,000	-
Total new gross building space	Square Feet	**-**	**259,500**	**285,302**
Total gross building space	Square Feet	**224,688**	**484,188**	**509,990**

1 Inclusive of all phases of development, including Phase I.
2 Includes 100% of population and 50% of employment.
3 Does not include square footage of structures demolished independently of the proposed EDZ.

Ac = Acres
SF = Square Feet

SOURCE: Appendix C (Brion & Associates, 2015).

Phase I Development Assumptions: Parcels 6, 9, and 10

During Phase I development of the EDZ, club retail uses could be developed on Parcel 6, and a select service hotel (a hotel that would provide certain dining and other specific services and amenities) and other general retail uses would be developed on Parcels 9 and 10.

Parcel 6 would be developed with up to 148,000 square feet of club retail uses, with building heights up to 40 feet, and associated uses, which may include a gas station. Parking for up to 800 vehicles and landscaping and site improvements, including bio-retention areas to manage on-site stormwater runoff and trees planted throughout the parcel to provide shading and visual screening around the perimeter, could also be developed on this parcel.

Parcels 9 and 10 could be developed with up to 88,000 square feet of hotel uses, with building heights up to 55 feet. Up to 23,500 square feet of general retail uses could also be developed on these parcels. Hotel and general retail uses would be surrounded by landscaping, and a landscaped buffer would be provided between each building and Johnson Drive.

For Phase I, it is assumed construction equipment and materials would be "staged" (stored and used) on each site as development takes place. **Figures 3-4** and **3-5** present conceptual plans for Phase I of development. As part of the proposed EDZ, the parcels would be re-zoned Planned Unit Development Commercial (PUD-C).

Full Buildout Development Assumptions

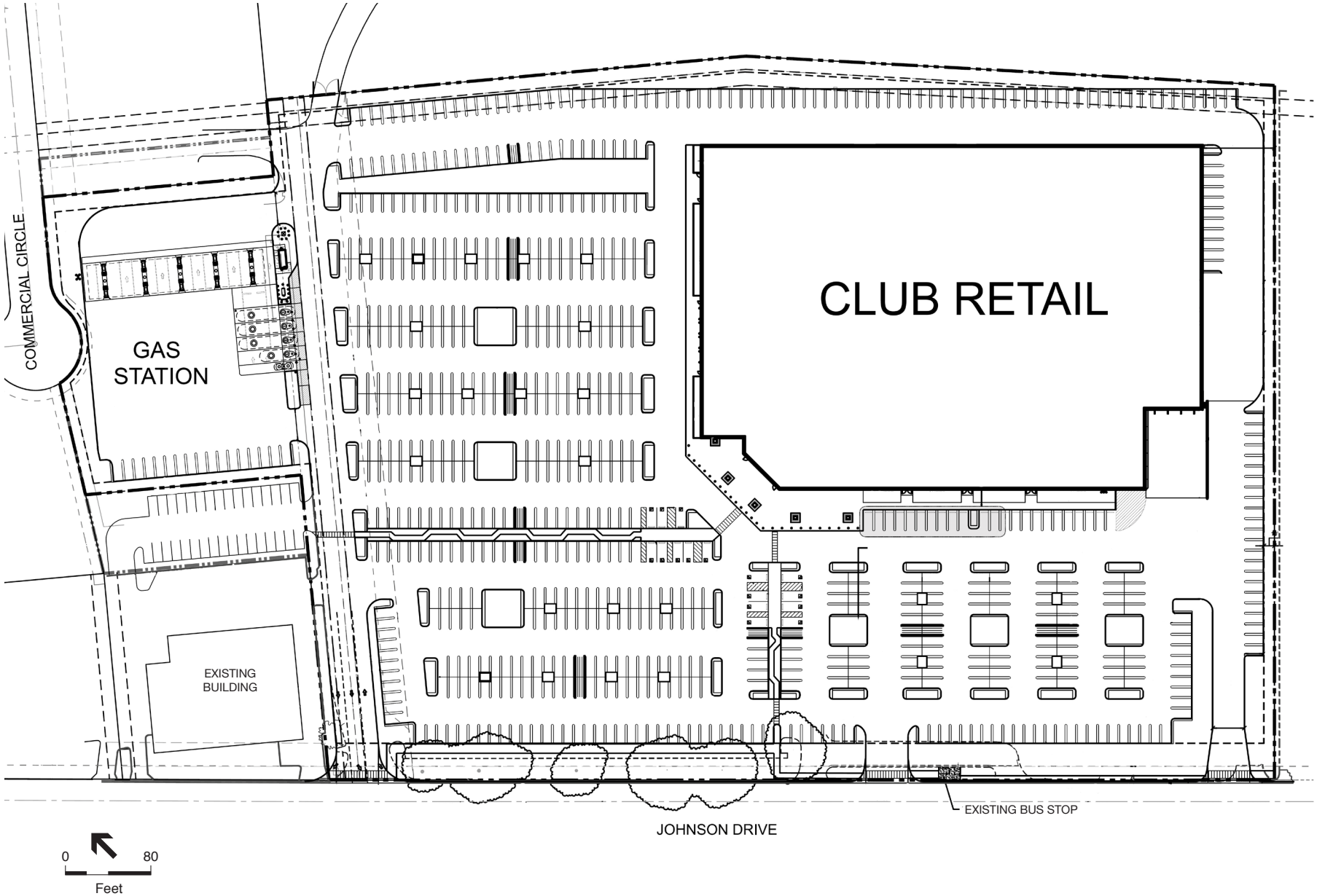
During future phases after the development of Parcels 6,9 and 10 under Phase I, it is assumed the other parcels within the EDZ would be redeveloped with types and intensities of uses consistent with fiscal projections recently prepared for the EDZ area and presented in Appendix C. Full buildout would include development as described for Phase I, and would include the development of up to 246,440 square feet of general retail uses, up to 148,000 square feet of club retail uses, up to 27,550 square feet of industrial uses, and up to 88,000 square feet of hotel uses, for a total of up to 509,990 square feet of uses. These later phases are assumed to take place over several years. No specific development activities are presented or analyzed in this SEIR at the level of detail that specific uses and locations are assumed for Phase I as described above.

Design Guidelines

The City has prepared Draft Design Guidelines for the EDZ (Design Guidelines), included in **Appendix D.** The purpose of the Design Guidelines is to provide urban design guidance at the planning application stage in order to achieve appropriate development for all uses within the EDZ. The Design Guidelines allow for the future development and redevelopment of the EDZ area in a way that is comprehensive and characterized by high-quality design, and that provides adequate landscaping and transportation access. The Design Guidelines provide direction on building height and setbacks, landscaping, parking supply, open spaces, building types and architectural features. All signage within the EDZ area would be subject to the Design Guidelines.

Utilities and Infrastructure

The EDZ area is currently served by water, sanitary sewer, stormwater, and other infrastructure. Development permitted under the EDZ may include upgrades to this infrastructure as needed to accommodate potential future development, as discussed further in Section 4.E, Other Topics, of this SEIR. The EDZ area is also served by the city's transportation network. The assumed level of development under the EDZ may require potential upgrades to the transportation network, as discussed further in Section 4.D., Transportation and Traffic, of this SEIR.

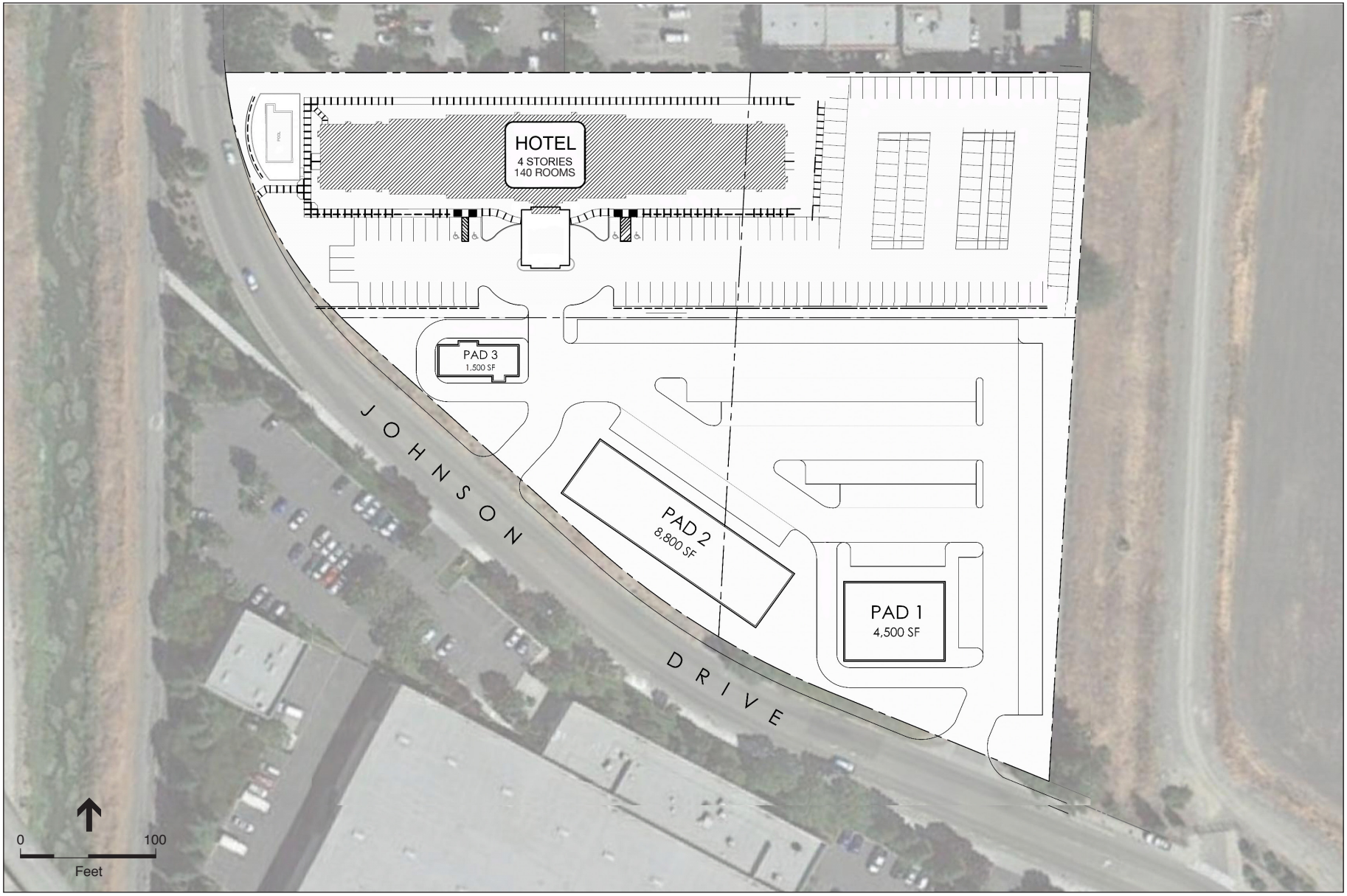


SOURCE: Kenneth Rodrigues & Partners, Inc.

Johnson Drive EDZ . 140421

Figure 3-4

Parcel 6 Conceptual Site Plan



SOURCE: Kenneth Rodrigues & Partners, Inc.

Figure 3-5
Parcels 9 and 10 Conceptual Site Plan

E. Statement of Objectives for the EDZ

CEQA *Guidelines* Section 15124(b) requires that the project description in an EIR include "a statement of the objectives sought by the proposed project," which should include "the underlying purpose of the project." The objectives of the proposed EDZ and associated approvals are to:

1. Provide a consistent framework for the City's review and approval of new uses and projects in the EDZ area, encouraging investment in and adding value to these properties;
2. Maximize the benefits of the location of the EDZ area as an infill site located along transportation corridors and near transit by encouraging the development of both locally and regionally accessible uses in the EDZ area; and
3. Encourage the development of a diverse mix of uses in the City that would promote long-term economic growth by generating substantial new revenues for the City.

The Johnson Drive EDZ is the first EDZ proposed by the City and is anticipated to be a model for future economic development zones.

F. EDZ Approvals/Intended Uses of SEIR

If the EDZ is approved, several actions may be undertaken by the City of Pleasanton:

- **General Plan Amendment.** The General Plan designation of the EDZ area would be amended from "Business Park" to "Retail/Highway/Service Commercial; Business and Professional Offices."
- **Rezoning.** The EDZ area would be rezoned from General Industrial (I-G-40), Planned Unit Development-General and Light Industrial (PUD-GL&I), and Planned Unit Development-Industrial/Commercial-Office (PUD-IIC-O) to Planned Unit Development-Commercial (PUD-C). This rezoning would include the approval of a list of permitted and conditionally permitted uses (**Appendix B**) for the EDZ.
- **Development Agreement.** If requested by an EDZ area property owner, a Development Agreement could be executed between the City and property owners.
- **Lot Line Adjustment.** If the City determines they are required, one or more lot line adjustments may be processed. For example, a lot line adjustment may be processed to combine Parcel 9 and Parcel 10.

In addition, the following incentives for development within the EDZ may be established:

- Fees and fee credits for specified uses; and
- Tax rebate/incentive program.

Other Governmental Agency Approvals

Additional subsequent approvals and permits that may be required for future development within the EDZ area from local, regional, state and federal agencies include, but are not limited to, the following:

- Bay Area Air Quality Management District (BAAQMD) approval of permits for point source emissions;
- Caltrans approval of improvements and/or funding for any future improvements on state facilities;
- Caltrans approval of encroachment permits;
- Extension of service and/or expansion of infrastructure facilities by area and nearby service districts (water district, electric utility district, sanitation district, fire district, school district);
- Regional Water Quality Control Board (RWQCB) approval of any activity impacting water features within the EDZ area, pursuant to the Clean Water Act and RWQCB standards;
- U.S. Army Corps of Engineers Clean Water Act Section 404 permit for work within jurisdictional waters of the U.S.;
- California Department of Fish and Wildlife Section 1600 Streambed Alteration Agreement, for removal of or disturbance to riparian habitat or Waters of the U.S.; and consultation under Section 2081 of the California Endangered Species Act;
- Review and approval by Zone 7 Water Agency of plans to work within the Alamo Canal; and
- Zone 7 Water Agency possible review and approval for some water reduction measures.

References – Project Description

City of Pleasanton, 2009. *Pleasanton General Plan 2005-2025, Land Use Element*. Adopted July 21, 2009.

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CHAPTER 4
Environmental Setting, Impacts, and Mitigation Measures

This chapter contains the analysis of the environmental effects of the EDZ. This chapter describes the existing environmental setting for each identified environmental topic area, the new or substantially more adverse impacts that would result from the EDZ (as compared to those impacts identified by previous environmental review under CEQA), and relevant plans and policies that would minimize or avoid adverse environmental effects that would result. Finally, this chapter identifies mitigation measures to reduce significant impacts resulting from development facilitated by the EDZ.

The impact analysis in this SEIR is based on development of all parcels within the EDZ. Where appropriate, the analysis discusses impacts that would result from construction and operation of each phase (Phase I and full buildout) of the EDZ. The following provides an overview of the scope of the analysis included in this chapter, organization of the sections, and the methods for determining the level of significance of each identified impact.

In the event the proposed EDZ is approved, future development projects within the EDZ area may require further discretionary approvals, such as (but not limited to) the approval of use permits and design review. The analysis in this chapter has been structured to address impacts to an extent that provides environmental review coverage for development activities that are consistent with the EDZ, including but not limited to major and minor subdivisions, site plan reviews, and use permits.

A. Environmental Topics

The following sections in this chapter present a detailed analysis of the environmental topics relevant to the proposed EDZ that were anticipated, after an initial review of the proposed EDZ, to result in new or substantially more severe impacts than those identified in the General Plan EIR or the 2012 SEIR:

4.A	Aesthetics	4.C	Noise
4.B	Air Quality	4.D	Transportation and Traffic

All other environmental topics as identified in Appendix G of the CEQA Guidelines (Environmental Checklist Form) were anticipated not to have significant effects; however, for some of these topic areas, significant impacts and appropriate mitigation measures were also identified, as discussed in section 4.E, Other Topics.

B. Format of Environmental Topic Sections, Impact Statements, and Mitigation Measures

Each environmental topic section generally includes two main subsections:

- *Existing Setting*, which includes baseline conditions, regulatory setting, Thresholds/Criteria of Significance; and
- *Impacts and Mitigation Measures*, which determines whether identified impacts are new or substantially more severe than impacts identified in the General Plan EIR and 2012 SEIR, and discusses whether new mitigation measures are required that would, to the extent possible, reduce or eliminate adverse impacts identified in this chapter.

This SEIR identifies all impacts with an alpha-numeric designation that corresponds to the environmental topic addressed in each section (e.g., "4.A" for Section 4.A, Aesthetics). The topic designator is followed by a number that indicates the sequence in which the impact statement occurs within the section. For example, "Impact 4.A-1" is the first (i.e., "1") aesthetic impact identified in the SEIR. All impact statements are presented in bold text.

The Impact Classification (discussed below) of the proposed EDZ's effects prior to implementation of mitigation measures is stated in parentheses immediately following the impact statement.

If a mitigation measure is identified, it is presented under the subheading of the respective topic. Where multiple mitigation measures address a single impact, each mitigation measure is numbered sequentially. For example "Mitigation Measure 4.A-1" is the first mitigation identified to address the first aesthetics impact (i.e., "4.A-1"). All mitigation measure statements are presented in **bold** text.

All mitigation measures presented in this SEIR were reviewed to confirm whether the mitigation measures would, themselves, result in further environmental impacts. For those mitigation measures that would result in an additional environmental impact, this impact is described after the presentation and discussion of the mitigation measure, and additional associated mitigation measures are identified, as needed.

Finally, the significance of the impact after mitigation or the statement that no mitigation is required, and the identification of whether a given impact or mitigation measure is "new" (i.e., not otherwise presented or addressed in the General Plan EIR or 2012 SEIR) is presented at the conclusion of each impact analysis.

C. Thresholds/Criteria of Significance

The CEQA *Guidelines* Section 15382 defines a significant effect on the environment as "*a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a*

physical change may be considered in determining whether the physical change is significant." Determinations of significance vary with the physical conditions affected and the setting in which the change occurs. The significance criteria used in this SEIR are the thresholds for determining significance of impacts and are based on Appendix G of the CEQA *Guidelines*.

D. Impact Classifications

The following level of significance classifications are used throughout the impact analysis in this SEIR:

- **No Impact** – No noticeable adverse effect on the environment would occur.
- **Less Than Significant –** The impact of the proposed EDZ would not be significant. No mitigation measure is required for a Less than Significant impact.
- **Less Than Significant With Mitigation** – The impact of the proposed EDZ is expected to reach or exceed the defined Threshold/Criteria of Significance; however, after implementation of standard conditions of approval and/or feasible mitigation measures, the impact does not reach or exceed the defined Threshold/Criteria of Significance, and is reduced to a less-than-significant level.
- **Significant and Unavoidable** – The impact of the proposed EDZ reaches or exceeds the defined Threshold/Criteria of Significance. Feasible mitigation measures may be available to reduce the impact, but not to a less-than-significant level. In these cases, feasible mitigation measures are identified to reduce the significant impact to the maximum feasible extent, and the significant impact is considered Significant and Unavoidable. Impacts are also classified as Significant and Unavoidable if a feasible mitigation measure is identified that would reduce the impact to less than significant, but the approval and/or implementation of the mitigation measure is not within the City of Pleasanton's or a project developer's sole control, in which case the analysis cannot presume implementation of the mitigation measure and therefore that the resulting impact would be less than significant. It is important to clarify that Significant and Unavoidable is an impact classification that only applies *after* consideration of possible mitigation measures.

E. Environmental Baseline

Overall, pursuant to CEQA *Guidelines* Section 15125(a), this SEIR measures the physical impacts of the proposed EDZ (i.e., the development within the EDZ area) against a "baseline" of physical environmental conditions at and in the vicinity of the EDZ area. Unless otherwise specified in the SEIR, the environmental baseline for the proposed EDZ is the combined circumstances existing around the time the NOP of the EIR was published, which is August 2014.[1] The baseline also includes the policy and planning context in which development facilitated by the EDZ is proposed, such as the existing land use designation, zoning, and General Plan policies that currently govern the city and the parcels that compose the EDZ area.

[1] Except as specified otherwise, any reference to "existing" conditions throughout this EIR refers to the baseline condition as of generally August 27, 2014.

F. Cumulative Analysis

Approach to the Cumulative Analysis

CEQA defines cumulative as "two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impact." CEQA *Guidelines* Section 15130 requires that an EIR evaluate environmental impacts when the project's incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past, present, existing, approved, pending and reasonably foreseeable future projects. These impacts can result from a combination of the proposed project together with other projects causing related impacts. "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects." In general, past, existing, approved, pending and reasonably foreseeable future projects should be considered in a cumulative impact evaluation.

Cumulative Context

The context used for assessing cumulative impacts typically varies depending on the specific topic being analyzed to reflect the different geographic scope of different impact areas. For example, considerations for the cumulative air quality analysis are different from those used for the cumulative analysis of aesthetics which focuses on public view corridors and scenic vistas. In assessing air quality impacts, all development within the air basin contributes to regional emissions of criteria pollutants, and basin-wide projections of emissions are the best tool for determining the cumulative effect. Accordingly, the geographic setting and other parameters of each cumulative analysis discussion are described under their respective cumulative analysis impact in Chapter 4.

In some cases, the cumulative context may include more development than the specific known projects. A primary example is the transportation analyses (and transportation-related traffic and air quality), which uses a growth rate to account for background traffic from projects citywide and the broader regional context. Projects contributing to cumulative effects to transportation and traffic would include development in and near the EDZ area as well as development citywide. Alternatively, as mentioned above, the aesthetics analysis would primarily consider projects within the viewsheds of the EDZ area, which may not, for example, include those located in distant areas, particularly low-rise development not affecting the views of hills and ridgelines from Pleasanton.

The cumulative discussions in each topical section throughout this chapter describe the cumulative geographic context considered for each topic at a level appropriate to the program-level analysis presented in this SEIR, considering regional development in combination with the buildout of the proposed EDZ and the City's General Plan.

A list of approved, pending, and foreseeable development projects within the City of Pleasanton and near the proposed EDZ area is presented in **Table 4-1**. This table does not include all projects that would contribute to cumulative impacts along with the proposed EDZ; rather, it includes a

number of concurrent projects in the area to demonstrate the scope and nature of development in this part of the City.

TABLE 4-1
REPRESENTATIVE CUMULATIVE PROJECTS

Name	Location	Type	Size	Status
Stoneridge Mall	Southwest of intersection of I-680 and I-580	Commercial, Residential	Residential: 750 units Commercial SF: 353,500	Approved
Hacienda Business Park	Adjacent to Dublin/ Pleasanton BART station	Mix of uses	Residential: 2,329 units Commercial SF: 1.7 million	Approved, pending, and foreseeable development projects
Koll Center Parkway	West of Alameda County Fairgrounds	Commercial	Commercial SF: 184,370	Approved
Downtown development	Downtown Pleasanton	Mix of uses	Residential: 70 units Commercial SF: 100,000 Public/Institutional SF: 47,420	Approved

SF = Square feet

SOURCE: City of Pleasanton, 2014

G. Use of General Plan EIR

Some impacts of the proposed EDZ were previously addressed in the General Plan EIR (City of Pleasanton, 2009), which is hereby incorporated by reference in this SEIR. Environmental impacts related to uses proposed for the EDZ area that were already analyzed adequately in the General Plan EIR are identified in this SEIR, as are any mitigation measures previously adopted in the General Plan EIR that address the impacts.

The General Plan EIR is summarized below and available in full at the City of Pleasanton Community Development Department.

General Plan EIR Summary

Description

The 2009 General Plan established a planning framework and policies to the planning horizon of 2025, and replaced the 1996 General Plan for all elements with the exception of Housing, which was revised starting in 2012. The General Plan reflects changes to and development in Pleasanton since the preparation of the 1996 General Plan, and provides goals, policies, and programs to shape future growth. The General Plan includes the seven elements required by State law, notably Land Use, Circulation, Housing, Open Space, Conservation, Noise, and Safety. It also includes seven optional elements that address local concerns: Public Facilities and Community Programs; Water; Air Quality; Energy; Community Character; Economic and Fiscal Matters; and Subregional Planning.

Guiding objectives of the General Plan include:

- Preserve Pleasanton's character;
- Encourage both resource sustainability and sustainable development;
- Confine development to within the Urban Growth Boundary;
- Promote the development of walkable communities;
- Achieve and maintain a complete well-rounded community of desirable neighborhoods and a strong employment base;
- Expand and improve the overall roadway/transit/trail network to provide more travel options;
- Provide housing opportunities for all age and socioeconomic groups;
- Protect the population and minimize risks to lives and property in the event of natural or human-caused hazards;
- Provide sufficient available and convenient community-program, park, open-space, and hiking/bicycling opportunities for all residents;
- Preserve agricultural uses and land;
- Provide adequate water and wastewater service to all residents and businesses;
- Promote high quality water and air resources in Pleasanton;
- Conserve energy through green building and other measures;
- Continue Pleasanton's economic vitality by supporting appropriate development; and
- Provide for Pleasanton's long-term fiscal sustainability.

If all land designated in the General Plan for commercial, office, industrial, and other employment-generating uses were built out, Pleasanton would contain approximately 32 million square feet of building floor area, enough to support about 88,000 jobs. Including "placeholder" development assumptions for the East Pleasanton Specific Plan area, this total could rise to approximately 35 million square feet and 109,000 jobs, according to the General Plan EIR.

Impacts and Mitigation Measures Identified

The General Plan's goals, policies, and programs in its various elements mitigate most of the significant effects that would occur due to buildout of the General Plan. In the General Plan EIR, the City identified the following significant environmental effect related to transportation and traffic that would be less than significant with mitigation implemented:

> **Impact TR-1:** Increased motor vehicle traffic due to implementation of proposed General Plan buildout would cause an increase in traffic at study intersections that would be substantial in relation to the existing traffic load and capacity of the street system.

The following air quality impact was identified as being significant and unavoidable with no mitigation available:

Impact AQ-1: Development due to buildout of the proposed General Plan buildout would result in an increase in population lower than that estimated in the newest air quality plan (2005 Ozone Strategy) and an increase in vehicle miles traveled. This would lead to increases in air pollutants due to cumulative development in the Planning Area that could conflict with implementation of the current air quality plan.

Table B-1 in **Appendix E** summarizes all of the environmental impacts and mitigation measures of the General Plan EIR.

H. Use of Housing Element and Climate Action Plan (2012) SEIR

In 2012, the City completed a supplemental environmental impact report (SEIR) to analyze the effects of the City's updated Housing Element and Climate Action Plan, and associated General Plan Amendment and Rezonings (2012 SEIR). Because environmental impacts related to the lands designated for residential use on the General Plan land use map were analyzed adequately in the General Plan EIR for all issues other than greenhouse gas emissions, the 2012 SEIR focused on the additional sites identified in the Housing Element that could be zoned for residential use, as well as greenhouse gas emission impacts of General Plan land uses throughout the General Plan Planning Area. Some impacts of the proposed EDZ were previously addressed in the 2012 SEIR (City of Pleasanton, 2012), which is hereby incorporated by reference in this SEIR.

The 2012 SEIR is summarized below and available in full at the City of Pleasanton Community Development Department.

Housing Element and Climate Action Plan SEIR Summary

Description

The State Attorney General took legal action against the City upon adoption of the General Plan 2005-2025 update and EIR, regarding the adequacy of the Housing Element and the greenhouse gas analysis in the EIR. In August 2010, following this legal action, the City entered into a Settlement Agreement and Covenant Not to Sue. Under the agreement, the City was obligated to update its Housing Element to meet regional housing needs (including eliminating a housing cap) and adopt a Climate Action Plan, both of which were subject to the provisions of CEQA. The 2012 SEIR analyzed the impacts that would occur from the updated Housing Element and adopted Climate Action Plan, which were intended to comply with the provisions of the Settlement Agreement.

The 2012 SEIR addressed the environmental impacts related to implementation of the proposed Housing Element, and associated land use and zoning revisions. In accordance with State law, the City of Pleasanton proposed to adopt a General Plan Amendment to update its existing Housing Element, along with revisions to the City's General Plan Land Use Element, to expand the inventory of land available for the development of new housing within the City. The City also proposed to rezone several sites sufficient to meet the remaining unmet housing need, or

approximately 55 acres of land zoned at a minimum of 30 units per acre and 14 acres of land zoned at a minimum of 23 units per acre.

The second component of the 2012 SEIR addressed the environmental impacts related to implementation of the City of Pleasanton Climate Action Plan (CAP). The CAP outlines strategies, goals, and actions for reducing municipal and community-wide GHG emissions. CAPs are generally recognized by regional and state agencies as being an important planning tool for reducing emissions at the local level. The CAP is a comprehensive document that functions as the framework for City GHG reduction strategies for the short, medium, and long term.

The CAP is designed to help the City do its part to meet the mandates of California's Global Warming Solutions Act of 2006 (AB 32), while taking into account the City's General Plan vision and its goal to become the "greenest" city in California. While several initiatives at the state level will help the City reduce GHG emissions, they alone will not be sufficient to meet the 2020 target recommended by the California Air Resources Board. The CAP provides a roadmap for the City to be proactive in reducing GHGs through a schedule of local actions, designed to enable the City to achieve a 15 percent reduction in GHGs below 2005 levels by 2020.

The City's 2005 baseline emissions are estimated at 770,844 metric tons (MT) of carbon dioxide equivalents (CO2e). The City's 2020 target of 15 percent below 2005 baseline equates to total annual emissions of 655,218 MT CO2e, a reduction of 115,626 MT CO2e below the 2005 baseline.

Impacts and Mitigation Measures Identified

Table B-2 in **Appendix E** summarizes all of the environmental impacts and mitigation measures of the 2012 SEIR.

Less than Significant with Mitigation

In addition to the impacts identified in the General Plan EIR, the 2012 SEIR identified the following significant impacts that would be less than significant with mitigation implemented:

Housing Element

Aesthetics:

Impact 4.A-1: Development facilitated by the General Plan Amendment and rezonings could have a potentially adverse effect on a scenic vista. (Significant)

Air Quality:

Impact 4.B-1: Implementation of the General Plan Amendment and rezonings would result in increased long-term emissions of criteria pollutants associated with construction activities that could contribute substantially to an air quality violation. (Significant)

Impact 4.B-4: Development facilitated by the General Plan Amendment and rezonings could potentially include residential or mixed-use developments that could expose sensitive receptors to substantial health risk from diesel particulate matter (DPM) and other TACs from mobile and stationary sources. (Significant)

Impact 4.B-5: Development facilitated by the proposed General Plan Amendment and rezonings could potentially include residential developments that expose occupants to sources of substantial odors affecting a substantial number of people. (Significant)

Biological Resources:

Impact 4.C-1: Development facilitated by the General Plan Amendment and rezonings could potentially have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFG, or the USFWS. (Significant)

Impact 4.C-2: Development facilitated by the General Plan Amendment and rezonings could potentially adversely affect wetlands, streams, or riparian habitat. (Significant)

Impact 4.C-3: Development facilitated by the General Plan Amendment and rezonings could potentially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Significant)

Impact 4.D-2: Development facilitated by the General Plan Amendment and rezonings has the potential to adversely affect archaeological resources. (Significant)

Cultural Resources:

Impact 4.D-3: Development facilitated by the General Plan Amendment and rezonings may directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Significant)

Impact 4.D-4: Development facilitated by the General Plan Amendment and rezonings has the potential to disturb human remains, including those interred outside of formal cemeteries. (Significant)

Impact 4.D-5: Development facilitated by the General Plan Amendment and rezonings, in combination with past, present, existing, approved, pending, and reasonably foreseeable future development that would adversely affect historical resources on or adjacent to cumulative project sites, could form a significant cumulative impact to historical resources. (Significant)

Hazards and Hazardous Materials:

Impact 4.G-2: Development facilitated by the General Plan Amendment and rezonings could accidentally release hazardous materials into the environment, creating a potentially significant hazard to the public or environment. (Significant)

Impact 4.G-4: Development facilitated by the General Plan Amendment and rezonings could potentially be located on one or more sites that are included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5, resulting in a hazard to the public or the environment. (Significant)

Impact 4.G-5: Development facilitated by the General Plan Amendment and rezonings could potentially be affected by the operations at the Livermore Municipal Airport or present a safety hazard to people residing or working in the vicinity. (Significant)

Noise:

Impact 4.J-1: Development facilitated by the General Plan Amendment and rezonings could potentially increase construction noise levels at sensitive receptors located near construction sites. (Significant)

Impact 4.J-2: Construction associated with development facilitated by the General Plan Amendment and rezonings could potentially generate ground-borne vibration at neighboring sensitive uses. (Significant)

Impact 4.J-3: Development facilitated by the General Plan Amendment and rezonings could potentially locate residential uses near an existing rail line. Future residents could potentially be exposed to excessive exterior and interior noise exposure from train noise events. (Significant)

Impact 4.J-5: Development facilitated by the General Plan Amendment and rezonings could potentially generate additional traffic on local area roadways and associated increases in traffic noise exposure relative to existing conditions. (Significant)

Impact 4.J-6: Development facilitated by the General Plan Amendment and rezonings could potentially be affected by existing, stationary (non-transportation) noise sources that would exceed the applicable City of Pleasanton Municipal Code criteria. (Significant)

Impact 4.J-7: Development facilitated by the General Plan Amendment and rezonings could potentially be exposed to aircraft noise associated with the closest airport which would exceed the applicable noise exposure criteria. (Significant)

Impact 4.J-9: Development facilitated by the General Plan Amendment and rezonings, in combination with other foreseen projects in the city could potentially produce a significant cumulative increase in traffic noise exposure under the project scenario. (Significant)

Impact 4.J-10: Development facilitated by the General Plan Amendment and rezonings could potentially locate residential uses or mixed-use buildings near an existing highway, arterial, or collector roadway, exposing future residents to excessive exterior and interior traffic noise exposure. (Significant)

Public Services and Utilities:

Impact 4.L-2: Development facilitated by the General Plan Amendment and rezonings could potentially require new or expanded water supply resources or entitlements. (Less than Significant)

Significant Unavoidable

In addition to the impacts identified in the General Plan EIR, the 2012 SEIR identified the following significant impacts that could not be feasibly mitigated to a less than significant level:

Cultural Resources:

Impact 4.D-1: Development facilitated by the General Plan Amendment and rezonings has the potential to adversely change the significance of historical resources. (Significant and Unavoidable)

Transportation and Traffic:

Impact 4.N-7: Development facilitated by the General Plan Amendment and rezonings could potentially add traffic to the regional roadway network to the point at which they would operate unacceptably under Cumulative plus Project conditions. (Significant and Unavoidable)

References – Environmental Setting, Impacts, and Mitigation Measures

City of Pleasanton, 2009. *Pleasanton General Plan 2005-2025 and Final EIR,* adopted July 21, 2009.

City of Pleasanton, 2012. *Final Supplemental Environmental Impact Report for the City of Pleasanton Housing Element and Climate Action Plan General Plan Amendment and Rezonings*. January 2012.

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4.A Aesthetics

To determine whether the proposed EDZ would result in any new impacts related to aesthetics, or increases in the severity of aesthetics impacts previously disclosed in the General Plan EIR and 2012 SEIR, this analysis considers the aesthetics impacts that would result from the proposed EDZ, and compares these impacts to those identified in the two previous EIRs, and to the applicability of mitigation measures in those EIRs. This section discusses the existing visual conditions within the EDZ area and vicinity, and considers the visual effects that would result from the proposed EDZ with respect to visual character, scenic and public views, and light and glare. This visual impact analysis is based on field observations at the EDZ area and vicinity, and a review of conceptual plans and visual simulations for Phase I of the EDZ. This section also discusses the aesthetic effects of light and glare associated with nighttime activities, and summarizes applicable policies related to visual quality contained in the Pleasanton General Plan Community Character Element and Land Use Element.

In the discussion below, the visual character of the EDZ area as of the date of the Notice of Preparation (August 27, 2014) is presented and discussed as the existing condition against which the aesthetic impacts of the proposed EDZ are compared. In addition, conditions within the EDZ area after demolition activities that took place on Parcel 6 since the NOP was circulated by the City are also considered.

Setting

Regional Setting

The EDZ area is located in the City of Pleasanton, a suburban community characterized by low- to medium-density residential development, large shopping centers, and smaller commercial districts with retail and/or office development, including the historic downtown. The visual character of the City of Pleasanton is varied, reflecting the unique characteristics of the community's topography, street grids, public open spaces, and distinct neighborhoods. The surrounding undeveloped hills, including those in Pleasanton Ridge Regional Park, which borders the city's western edge, provide a visual boundary that separates Pleasanton from surrounding communities, and provides a rural character along Pleasanton's western and southern edges. Agricultural land uses that consist primarily of grazing lands and vineyards are located in the western and southern hills next to the city. The majority of the topography in the developed portion of Pleasanton is relatively flat, sloping gently toward the surrounding foothills.

Visual Character of Proposed EDZ Area

The visual character of the proposed EDZ area is shown in the photos in **Figures 4.A-1a through 4.A-1h**. The EDZ area runs north to south along Johnson Drive, from the Interstate 680 (I-680) and I-580 interchange to Stoneridge Drive. The Alamo Canal Trail runs along the length of the EDZ area to the west, between Johnson Drive and I-680, with two access points located at the north and south end of the EDZ area. The EDZ area is visible to vehicles driving along I-680 and

I-580 (on the approach to the Hopyard Road exit), as well as bicyclists and pedestrians traveling along the Alamo Canal Trail, which parallels the northbound lanes of I-680 (**Photo 1**). Long-range views of the EDZ area are also afforded by vehicles traveling over the Stoneridge Drive freeway overpass to the south and from the Pleasanton Ridge foothills (from ridge-line trails in the regional park).

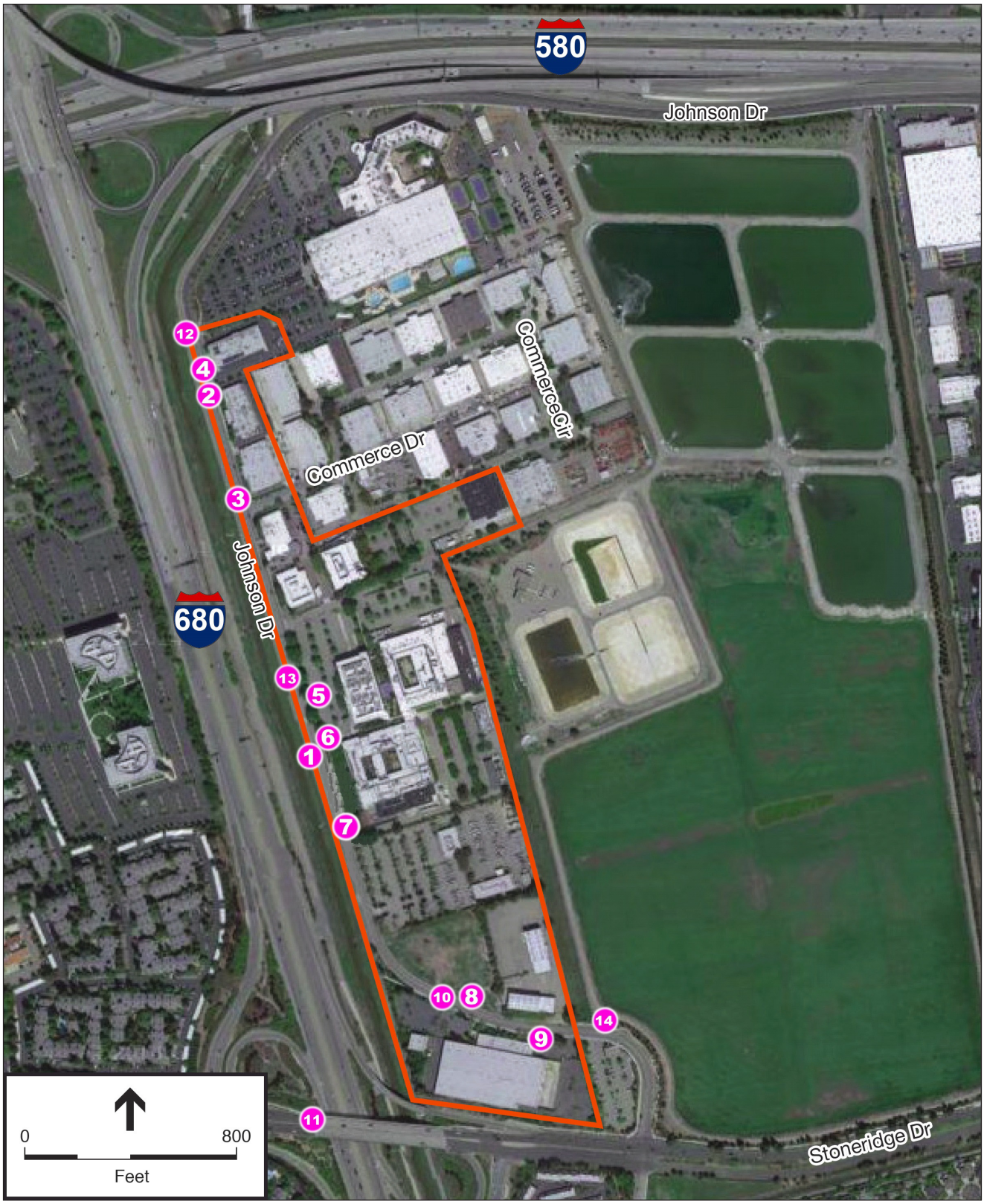
The EDZ area includes a series of industrial and commercial office buildings and parking lots that are screened by a mixture of mature deciduous and evergreen trees. The architecture of the existing buildings is a combination of modern buildings with stucco, brick, and glass facades. Sites (i.e., parcels) 1, 2, 3, 4, and 5 consist of light industrial buildings with stucco exteriors and large windows facing Johnson Drive (**Photos 2 and 3**). Parking lots are provided for each building, which are accessed off of Johnson Drive and are visible to vehicular and pedestrian traffic (**Photo 4**).

Views of Sites 6, 6B, and 7 as shown in **Photos 5** and **6** consist predominately of shaded parking lots; these photos also show multi-story office buildings located at the northwest and southeast corners of Site 6 featuring modern architecture with reflective glass facades. Other buildings on Site 6 shown in Photos 5 and 6 feature stucco exteriors with few windows. Since August, 2014, views of this site have changed because all structures on this site have been demolished; the site now has the barren appearance of a recently graded construction area, with several high piles of gravel and demolition materials. Site 8 is also screened from public viewpoints by Site 7, which consists of an existing parking lot with mature landscaping (**Photo 7**). Site 9 is a vacant lot lined by mature trees and covered by various non-native grasses and weeds (**Photo 8**). Views of Site 10 in **Photo 9** show a complex of large industrial buildings with metal siding that are visible through the property's entrance, and otherwise obscured by a privacy wall, large mature deciduous trees and a grouping of pines. Site 11 contains several light industrial buildings housing active businesses, including a FedEx Distribution Center (**Photo 10**).

Landforms and Significant Visual Features

Mount Diablo is located to the northeast of the proposed EDZ area. Rising to an elevation of 3,849 feet above sea level, it is a prominent landmark throughout Pleasanton, and dominates the northern skyline (**Photo 11**). Views of Mount Diablo from within the proposed EDZ area are afforded at few viewpoints and are generally blocked by existing buildings and trees. The I-680 and I-580 interchange rises above the horizon line, dominating views of the skyline to the north from within the EDZ area, while views of the Dublin Hills west of the interchange are also visible (**Photo 12**).

The Pleasanton ridgelands are located west of the EDZ area, and are generally bounded by I-580 to the north, Foothill Road to the east, Niles Canyon Road to the south and Palomares Road to the west. The Pleasanton ridgelands include Pleasanton Ridge Regional Park, and dominate the western skyline, with views afforded throughout the EDZ area, particularly from viewpoints along Johnson Drive (**Photo 13**). When looking to the west from the EDZ area near Commerce Drive and Sites 4, 5, and 6, these views are largely obscured by two multi-story commercial office buildings housing Workday Inc. and Blackhawk Network.



SOURCE: ESA

Johnson Drive EDZ . 140421

Figure 4.A-1a
Existing Conditions Photo Locations

PHOTO 1 – Site 6 as seen from Alamo Canal Trail.

PHOTO 2 – Sample architecture at Site 2.

SOURCE: ESA

Johnson Drive EDZ . 140421

Figure 4.A-1b
Existing Conditions

PHOTO 3 – Sample architecture at Site 4.

PHOTO 4 – Parking lot for Site 1 accessed from Johnson Drive.

SOURCE: ESA

Johnson Drive EDZ . 140421

Figure 4.A-1c
Existing Conditions

PHOTO 5 – Site 6.

PHOTO 6 – Site 6.

SOURCE: ESA

Johnson Drive EDZ . 140421

Figure 4.A-1d
Existing Conditions

PHOTO 7 – Parking lot at Site 7 in front of Site 8.

PHOTO 8 – Vacant lot at Site 9.

SOURCE: ESA

Johnson Drive EDZ . 140421

Figure 4.A-1e
Existing Conditions

PHOTO 9 – Industrial buildings at Site 10 obscured by fencing and mature trees.

PHOTO 10 – View of Site 11.

SOURCE: ESA

Johnson Drive EDZ . 140421

Figure 4.A-1f
Existing Conditions

PHOTO 11 – View of Mount Diablo from the Hopyard Road Overpass, looking across the EDZ area.

PHOTO 12 – View of Dublin Hills to the west of the I-680 and I-580 interchange.

SOURCE: ESA

Johnson Drive EDZ . 140421

Figure 4.A-1g
Existing Conditions

PHOTO 13 – View of the Pleasanton Ridgelands, looking west from Site 6.

PHOTO 14 – View of Dublin San Ramon Services District Biosolids Facility as seen from Johnson Drive looking north with Mount Diablo in the background.

SOURCE: ESA

Johnson Drive EDZ . 140421

Figure 4.A-1h
Existing Conditions

Views of the Pleasanton ridgelands are also slightly obscured when looking west from the southern end of the EDZ area by residential development located across I-680. Views to the east from within the EDZ area largely consist of the Dublin San Ramon Services District Biosolids Facility, which is located along the eastern boundary. Primary access to this facility is provided through Site 6 from either Johnson Drive or Commerce Drive, via a driveway that leads to the main facility building. The facility consists of treatment ponds and fields located on relatively flat land that stretches from Johnson Drive along I-580 to the north, down the length of the EDZ area to Stoneridge Drive in the south. Views of developed areas east of the facility are screened by mature landscaping. The facility can be seen from Johnson Drive near Stoneridge Drive and the entrance to Site 10 (**Photo 14**) where Mount Diablo can be seen rising beyond the facility and City of Dublin to the north.

The adjacent Alamo Canal is one of several major watercourse features in Pleasanton, though it features sparse vegetation and minimal habitat near the EDZ area. Water features provide a natural contrast to the predominantly urban and suburban development pattern of the surrounding area, which is largely defined by highways and commercial, residential, and industrial structures.

To the north, newer development along the Dublin side of the I-580 corridor includes moderate- to high-density residential and transit-oriented development around the existing Bay Area Rapid Transit (BART) station. This newer development introduces taller structures to otherwise low-rise development common in the area of the Amador, Livermore and San Ramon Tri-Valley. However, this development is not readily visible from the EDZ area due to the I-580 and I-680 freeway interchange that dominates the northern skyline, as well as landscape features and other development located to the northeast.

The EDZ area and the surrounding area are most reflective of business park-type development which occurred during the 1980s and 1990s and suburban neighborhood development from the 1960s to the present.

Scenic Routes/Viewsheds

Scenic routes are intended to preserve or enhance road corridors that afford pleasurable views. Views in the City and its vicinity range from distant views of Mount Diablo to rural farmland views of both flatland areas and surrounding hillsides. Scenic highways provide a passive recreational opportunity to observe scenic vistas. A scenic highway designation protects the scenic values of an area and can enhance community identity and pride. I-680, traversing Pleasanton in a north-south direction, is a State Scenic Highway as designated by Caltrans (Caltrans, 2014). I-580, traversing Pleasanton in an east-west direction, is an Eligible State Scenic Highway, but is not an officially designated scenic route. I-680 and I-580 (between Palomares and Foothill Roads) feature wooded hillsides, valleys, and other open-space qualities. I-580, between Foothill and El Charro Roads, provides mostly urbanized views with landscaping.

Light and Glare

Consistent with the light industrial and commercial developments in the city, sources of light and glare near the EDZ area include vehicle headlights on public roadways, lights in parking lots and along public streets, and building and parking security lighting.

Regulatory Setting

This section identifies policies related to the physical environment that pertain to the effects to scenic vistas, scenic resources, and visual quality and character that would result from the proposed EDZ.

State of California

State Scenic Highway Program

In 1963, the California Legislature established the State's Scenic Highway Program, intended to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq.

The State Scenic Highways program, a provision of the Streets and Highways code, is administered by the California Department of Transportation (Caltrans) and was established to preserve and enhance the natural beauty of California. The State Scenic Highway System includes highways that are either eligible for designation as scenic highways or have been designated as such. As stated above, I-680 is a designated state scenic highway through the City of Pleasanton. As such, the I-680 scenic corridor (defined as the area of land generally adjacent to and visible from the highway) is subject to protection. I-580 is an "eligible" scenic highway, though not officially designated. (Caltrans, 2014).

Title 24 of the California Code of Regulations Building Energy Efficiency Standards

All new development would be subject to the State's Nighttime Sky-Title 24 Outdoor Lighting Standards, which was passed by California Legislature in 2001. Lighting requirements for dark and rural areas are stricter in order to protect the areas from new sources of light pollution and light trespass. The Nighttime Sky-Title 24 Outdoor Lighting Standards require new public and private sector development to adopt energy efficiency standards for outdoor lighting.

Local Plans and Policies

City of Pleasanton General Plan

The following goals, policies and programs contained in the City's 2009 General Plan provide for protection of scenic resources:

Land Use Element

Goal 2: Achieve and maintain a complete well-rounded community of desirable neighborhoods, a strong employment base, and a variety of community facilities.

Program 8.2: Use the City's development review procedures to minimize intrusions into existing neighborhoods.

Policy 21: Preserve scenic hillside and ridge views of the Pleasanton ridgelands and Southeast Hills.

Program 21.1: Continue to implement the land-use and development standards of the Pleasanton Ridgelands Initiative of 1993 (Measure F).

Program 21.3: Develop a ridgeline preservation ordinance and scenic hillside design guidelines to improve safety and reduce the potential negative visual impacts of development in hilly areas.

Conservation and Open Space Element

Goal 1: Promote sustainability to preserve and protect natural resources and open space.

Goal 5: Preserve and protect existing and proposed open space lands for public health and safety, recreational opportunities, natural resources (e.g., agriculture, sand, and gravel mining), sensitive viewsheds, and biological resources.

Policy 2: Preserve heritage trees throughout the Planning Area.

Program 2.1: Strongly encourage preservation of heritage trees; where preservation is not feasible, the City will require tree replacement or a contribution to the Urban Forestry Fund. The City encourages no net loss of trees.

Program 2.2: Follow the provisions of the City's *Heritage Tree Ordinance, Pleasanton Municipal Code* Chapter 17.16, Tree Preservation, when reviewing future development projects.

Program 8.1: Develop a ridgeline preservation ordinance and scenic hillside design guidelines to improve safety and reduce the potential negative visual impacts of development in hilly areas.

Program 8.2: Implement the recommendations contained in the Scenic Highway Plan for I-680.

Program 8.3: Retain the scenic attributes of existing I-680 and proposed scenic highways (I-580 and State Route 84) including views of woodlands, hills and ridges, valleys, and grazing lands.

Program 8.4: Along freeway corridors, use setbacks, landscaping, and architecturally integrated screen walls to screen views of parking lots, loading docks, and service and storage areas.

Program 8.6: Encourage developers to provide open-space buffers in areas where there are conflicting land uses.

Program 13.1: Light only those trails in natural areas that provide a reasonable alternative to transportation, or important links, between residential areas, parks, and

commercial centers, as long as such lighting does not intrude upon environmentally sensitive areas or impact nearby residents.

Community Character Element

Goal 1: Preserve and enhance Pleasanton's community character.

Goal 4: Enhance the appearance of major city entryways.

Policy 7: Improve the visual quality of entryways to Pleasanton.

Program 7.1: As part of the design review process, encourage the installation of distinctive landscaping, and discourage advertising signage and bright franchise colors at major street entryways to the City.

Program 7.2: The City should be particularly sensitive to aesthetic considerations when land-use planning in areas adjacent to City entryways.

Program 7.3: Design and install City identification signs at major entryways to the City.

Program 7.4: Give the Hopyard/I-580 area a high priority for visual improvement when making land-use and public investment decisions.

Program 7.5: Consider new locations near entryways for community-service-organization signboards.

Goal 5: Enhance streetscapes and areas near the freeways.

Policy 9: Enhance landscaping along city streets and the freeways.

Program 9.1: Complete and infill the street tree and median landscaping along streets, when feasible.

Program 9.2: When the opportunity arises and when feasible, add landscaped parkway strips along street edges to soften their appearance and improve the pedestrian experience.

Program 9.3: Increase the width of existing narrow parkway strips when the opportunity arises, and encourage applicants of new developments to provide parkway strips which are at least 6-10 feet wide.

Program 9.4: Install landscaped instead of paved medians and replace paved medians with landscaped medians wider than 6 feet, whenever possible and feasible.

Program 9.5: In new developments, require developers, owners associations, or maintenance associations to maintain landscaped medians.

Program 9.6: Provide landscaping to soften the visual appearance of existing and new walls and fences that abut city streets, whenever possible and feasible.

Program 9.7: Require additional setbacks and screening of development adjacent to a freeway.

Program 9.8: Work with Caltrans to enhance landscaping along the freeways.

Program 9.9: Along streets, work with developers and property owners to place a greater emphasis on the use of native plant species and on pruning techniques which

allow species to appear more as they would in a natural setting, especially in larger planting areas.

Policy 10: Repair existing City-owned soundwalls and fences facing city streets, when in disrepair, and discourage the installation of new soundwalls facing city streets and freeways.

Policy 14: Improve the appearance of utility boxes and newspaper racks.

Goal 6: Preserve and enhance the city's commercial areas and residential neighborhoods.

Program 17.2: In high-density developments, encourage design treatments that enhance the attractiveness of the streetscape and other publicly accessible areas through architectural detail, neighborhood and public gathering areas, gardens, and public art.

Program 17.8: Adopt a City street tree ordinance to protect existing and future street trees that are maintained by property owners, and establish planting, care, and pruning standards.

Policy 18: Evaluate land-use changes in the context of overall City welfare and goals, as well as the desires of the surrounding neighborhoods.

Program 18.2: Require appropriate buffers, edges, and transition areas between dissimilar land uses and neighborhoods.

Program 18.3: Through the City's review process, address issues of privacy, proximity and orientation.

Policy 20: Preserve scenic hillside and ridge views, and other natural features in the hills.

Program 20.1: Continue to support the Pleasanton Ridgelands Initiative of 1993 (Measure F).

Program 20.2: In new developments, preserve scenic hillsides and other hillside features including ridges, plants, streams, and wildlife.

Pleasanton Municipal Code

Chapter 17.16 of the Pleasanton Municipal Code regulates the removal and preservation of heritage trees within the city. Heritage trees are defined in this chapter as any of the following:

1. Any single-trunked tree with a circumference of 55 inches or more measured four and one-half feet above ground level;
2. Any multi-trunked tree of which the two largest trunks have a circumference of 55 inches or more measured four and one-half feet above ground level;
3. Any tree 35 feet or more in height;
4. Any tree of particular historical significance specifically designated by official action;
5. A stand of trees, the nature of which makes each dependent upon the other for survival or the area's natural beauty.

Any removal of heritage trees is required to go through City staff review. Chapter 18.20 of the Municipal Code requires the review of a variety of development projects, including site plans,

landscape plans, building architecture, and other plans and reports, in order to preserve and enhance the city's aesthetic values and ensure the preservation of public health, safety and general welfare. Chapter 18.48 of the Municipal Code prevents any use, except for temporary construction operation, which would create changes in temperature or reflect glare, detectable by human senses without the aid of instruments beyond the boundaries of the site. It also establishes restrictions on exterior and interior illumination in relation to a site's boundaries. Chapter 18.88 of the Municipal Code provides regulations for street parking facilities which include requirements for the deflection of parking area illumination and lighting away from residential sites so as to prevent annoying glare. Chapter 18.96 of the Municipal Code regulates the location, height, size, and illumination of signs in order to maintain the attractiveness and orderliness of the city's appearance, to protect business sites from loss of prominence resulting from excessive signs on surrounding sites, and to protect the public safety and welfare.

Local Measures

In *Measure F*, passed in November of 1993, Pleasanton citizens voted to protect the existing visual quality of the Pleasanton ridgelands. In *Measures PP and QQ*, passed in November 2008, Pleasanton citizens voted to preserve hillside and ridge views in the hill areas.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No project features or mitigation measures addressing aesthetics that would be applicable to the proposed EDZ were adopted as part of the 2009 General Plan EIR or 2012 SEIR. The General Plan EIR did not identify any mitigation or improvement measures, beyond implementation of policies in the General Plan, that were required to reduce identified aesthetics impacts to a less-than-significant level. The 2012 SEIR identified one mitigation measure that was required to address significant aesthetics impacts associated with implementation of the Housing Element and Climate Action Plan; however, this mitigation measure applies to a specific rezoning site that is not located in the proposed EDZ area, and is not applicable to impacts from the EDZ that require mitigation as discussed below.

Approach to Analysis

"Visual impact" is measured by the amount of visual change adversely affecting an area's perceived aesthetic value or conditions of the setting. A highly visible change resulting from a project that is incompatible with the setting would substantially degrade the visual character or quality of the site or its surroundings and contribute to a significant adverse visual impact. Factors to be considered include: the physical layout of constructed elements with respect to each other and existing structures, the open and closed spaces defined between structural elements, the density or intensity of development, scale relationships between existing and proposed structures, site landscaping, and other features of development that affect the pedestrian scale of movement. For example, significant differences in mass or form or open space between existing and new structures would be expected to generate adverse visual impacts.

Adverse visual impact would also be expected to result from the removal of vegetation that had enhanced the appearance of existing development. Exceptions would include the removal of vegetative massings or plant specimens that are haphazard in placement, show evidence of crowding and overgrowth, retain poor health indicators or otherwise do not significantly contribute to the aesthetic quality of the setting.

Temporary adverse visual impacts would be expected during site construction where excavation, grading, and materials and equipment storage occur. However, these impacts would be short-term, lasting only during the construction period. In addition, adverse visual impact would be expected to result from any new lighting fixtures that introduce point sources of light or glare that interfere with nighttime views.

Significance Criteria

The visual character of a landscape depends on such attributes as color, texture, complexity, and the form of landscape components. Impacts on visual resources are evaluated and determined by comparing changes in these attributes that would result from a proposed project. The reduction of a view's complexity, or the obstruction of or encroachment upon background or middle ground views would contribute to the significance of impacts. Consistent with CEQA *Guidelines* Appendix G (Environmental Checklist) the proposed EDZ would have a significant impact on visual resources if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the EDZ area and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views of the area.

Impact 4.A-1: Construction within the proposed EDZ area would have an adverse effect on a scenic vista (Less Than Significant).

If new buildings were developed in a manner that obstructs views of a scenic vista from a public area or introduces a visual element that would dominate or upset the quality of a view, a significant impact would result. Design and density standards for new development within the EDZ area would be required to comply with all applicable General Plan policies and zoning requirements. However, the introduction of high intensity development in the EDZ area would affect nearby scenic vistas due to the potential for taller buildings and/or bulkier buildings to block views to the Pleasanton ridgelands, although impacts would be less than significant, as discussed below.

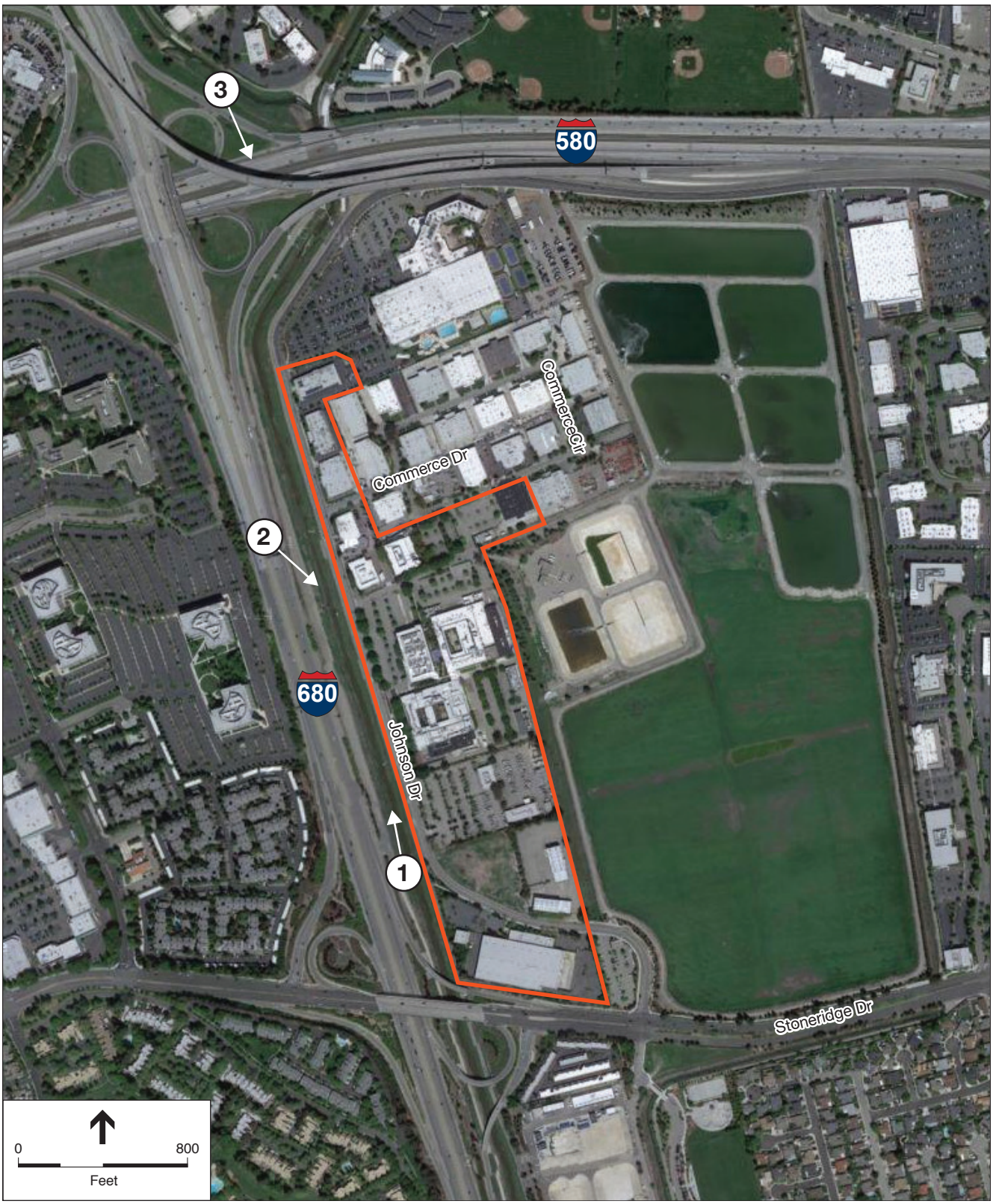
To illustrate the impacts that would result from buildout of the proposed EDZ, visual simulations were created from three separate viewpoints, the locations of which are shown in **Figure 4.A-2**.

Visual simulations were based on the development assumptions for Phase I of the proposed EDZ, as described in Chapter 3, Project Description, including a club retail use and hotel. **Figure 4.A-3** shows the existing area and construction that would occur under Phase I, looking north from the northbound lane of I-680. As shown, the viewpoint would not be significantly altered as a result of construction of Phase I elements. The existing parking lot would be reconfigured and existing landscaping and mature trees would be replaced with new landscaping and younger shade trees to screen the site from view. As shown at this viewpoint, development under the proposed EDZ would not affect views of Mount Diablo from I-680. **Figure 4.A-4** shows a view of the EDZ area looking south from the southbound lane of I-680. As shown, construction of the hotel that would be completed under Phase I would not obstruct views of the hills to the south of the EDZ area; rather, the removal of the trees fronting Site 6 would improve these views. The new building assumed to be developed at Site 6 would be smaller than the multi-story office building that formerly occupied the site and so would not affect views of the hills and ridgeline. **Figure 4.A-5** shows the view of the site looking south from the I-680 and I-580 interchange. As shown from the figure, the new building assumed to be developed at Site 6 would be mostly screened from view, while the upper stories of the hotel assumed to be developed on Site 10 would be visible, but would not obscure the views of the hills and ridgeline to the south.

Since the three visual simulations discussed above were completed, City-approved demolition activities have taken place on Site 6 and Site 10. Buildings and trees from these parcels have been removed, and views through these parcels are less obstructed. In general, changes in appearances and views that would occur between the post-demolition condition of these parcels and the assumed development under Phase I do not represent substantial changes, because development under Phase I would be relatively low profile as seen from existing views, trees and landscaping would be installed that would soften views, and views to hillsides and ridgelines would not be obstructed.

The proposed EDZ includes the adoption of Design Guidelines (included in this document as **Appendix D**) that would apply to all development within the EDZ area. The Design Guidelines are intended to "[encourage] visual continuity of the architecture in terms of mass, scale, materials, and color relative to adjacent development" and "[achieve] interesting, high-quality architectural design for all development, including large-format retail buildings." In addition, it is the intent of the Design Guidelines to "[enhance] landscaping, public open space, and environmental performance." The Design Guidelines would also limit the height of new buildings to generally less than 65 feet (less than 80 feet for new office buildings), which would help preserve views of hillsides and ridgelines. The Guidelines would ensure that the building massing, scale, height, architectural characteristics and landscaping features are compatible with surrounding uses and would reduce the potential for a significant impact on scenic vistas in the area of the EDZ.

Although views along the I-680 corridor would be altered with construction of new uses within the EDZ area, landscaping would screen parts of the new buildings from view and the relatively low profile of the new buildings (generally less than 55 feet, somewhat but not substantially taller than existing buildings within the EDZ area and consistent with heights of buildings recently



SOURCE: Google Maps

Johnson Drive EDZ . 140421

Figure 4.A-2
Location of Viewpoints for Visual Simulation

Existing view from I-680 southbound

Visual simulation of proposed project

SOURCE: Environmental Vision

Johnson Drive EDZ . 140421

Figure 4.A-3
Viewpoint #1

Existing view from I-680 northbound

Visual simulation of proposed project

SOURCE: Environmental Vision

Johnson Drive EDZ . 140421

Figure 4.A-4
Viewpoint #2

Existing view from I-680S to I-580E flyover ramp looking southeast

Visual simulation of proposed project

SOURCE: Environmental Vision

Johnson Drive EDZ . 140421

Figure 4.A-5
Viewpoint #3

demolished on Parcel 6) would prevent obstruction of the views of Mount Diablo to the north and the hills to the south of the EDZ area. Development on both sides of I-580 close to the EDZ area has already affected the scenic highway eligibility of this roadway segment; as shown in Figure 4.A-5, the EDZ area is visible from I-580 only briefly and the height of new development would not affect these views. Furthermore, new development within the EDZ area would be similar in character to the existing buildings onsite, the existing office buildings across the highway, and other surrounding buildings. Consistency with the General Plan policies, zoning requirements, and EDZ Design Guidelines would ensure that the proposed EDZ would not have an adverse effect on scenic resources along the I-680 or I-580 corridors. Impacts on scenic vistas would therefore be less than significant, and no mitigation is required.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact or Changes.

Impact 4.A-2: Construction within the proposed EDZ area would damage scenic resources, including, but not limited to, trees, rocks, outcroppings, and historic buildings within a state scenic highway (Less Than Significant).

The impact of commercial and office development of parcels within the EDZ area according to General Plan land use designations was evaluated in the General Plan EIR, which concluded that no negative visual impacts would be expected from views along I-580 or from other vantage points (City of Pleasanton, 2009). Proposed changes in land use designations would not result in an intensified level of development of Sites 1 through 5, 7 and 8. These sites are already designated and planned for commercial and office development, which would result in a similar intensity of development as uses that would be developed as part of the EDZ. Development of Sites 6, 9, and 10 would result in somewhat more intense land uses, and taller buildings than generally exist within the EDZ area; however, uses and building heights would not be substantially different from existing uses, and would be consistent with uses recently demolished at Site 6.

Sites 6, 9, and 10 include current and former industrial and commercial uses or parking lots for industrial, commercial or office uses, and as such, there are no scenic resources on any of the three sites that contribute to the scenic quality of the sites or would be affected by assumed development that would occur on these sites. Thus, since views from the freeway corridors are already urban in nature, and redevelopment of these sites under the proposed EDZ would not result in the loss of views of open vistas, the existing visual character or quality of the sites and their surroundings would not therefore be substantially degraded, and impacts on views from a scenic highway would be less than significant.

Implementation of the EDZ Design Guidelines would ensure that development of Sites 6, 9, and 10, as well as all future proposed projects within the EDZ area, would be designed to convey a high quality of architectural design that is complementary to surrounding development. In addition, setbacks and landscaping requirements would help to screen new buildings from view

and minimize adverse visual impacts. Although mature trees along Johnson Drive at or in front of Site 6 would be removed, new trees would be planted that would provide a similar level of building screening upon maturity. In accordance with Chapter 17.16 of the Pleasanton Municipal Code, a permit for removal would be obtained for any tree on site that qualifies as a heritage tree, and impacts that would result from removal of heritage trees would be addressed through this City process. See the discussion under Biological Resources in Chapter 4.E, Other Topics, for further discussion of impacts to heritage trees.

As discussed under Impact 4.A-1, development of the EDZ area would not result in substantial damage to views of the hillsides and ridgelines that surround the City and are designated as important scenic resources. The proposed EDZ would not result in any development on these hillsides or ridgelines and would not significantly alter or block existing views of these resources, including from public rights-of-way. Therefore, impacts on scenic resources from development within the EDZ area would be less than significant.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact or Changes.

Impact 4.A-3: Construction within the proposed EDZ area would degrade the existing visual character or quality of the EDZ area (Less Than Significant).

As described in the General Plan EIR, and 2012 SEIR, the existing character of Pleasanton is that of a tree-filled residential community that includes business parks and shopping centers, with historic and more compact urban design elements in its central Downtown Area. As the EDZ is developed, individual parcels would be developed as either infill or redevelopment sites. Adverse effects of new development on the visual character of the EDZ area and surrounding area would be reduced through adherence to the proposed EDZ Design Guidelines and the Design Review process required by Chapter 18.20 of the Pleasanton Municipal Code. The Design Guidelines would include requirements for new development to be visually compatible with existing development, as well as adherence to urban design elements that seek to maintain the quality of development in Pleasanton. For example, the EDZ Design Guidelines would include specific requirements for mass, scale, materials, and color to encourage visual continuity of architecture relative to adjacent development, and would also encourage building facades with a high level of visual interest from both auto and pedestrian viewpoints.

The General Plan also includes policies that would help mitigate impacts of future development of the EDZ area. In addition, all new development is required to adhere to City policies designed to preserve visual resources and view corridors.

Development on Sites 6, 9, and 10, as represented in the visual simulations in this section, would be consistent with the character of the surrounding area and, overall, would retain the existing visual character of the City. Although full buildout of the proposed EDZ would slightly

increase development intensity and density on the EDZ area beyond that existing (more building square footage would be developed, and somewhat, though not substantially, taller buildings would be built within the EDZ area than are existing), as noted above, any new development would comply with the policies in the General Plan, other City policies, and the EDZ Design Guidelines to ensure compatibility with the context of the site and city in general.

Large trees as components of the city's visual character are protected by existing ordinances, and no new development would be permitted to remove heritage trees without a permit as set forth in Chapter 17.16 of the Pleasanton Municipal Code and compliance with regulations and conditions of approval to replace removed trees. In compliance with this ordinance, developers of new projects within the EDZ area would replace trees at a ratio based on a recommendation provided by a certified arborist, based on the type and characteristics of the trees being removed. Compliance with this ordinance would serve to minimize impacts to the city's visual character caused by construction of new uses within the proposed EDZ area.

With adherence to the proposed EDZ Design Guidelines, compliance with the City's Design Review process and policies protecting resources such as heritage trees, and adherence to guidance and direction provided in the General Plan, impacts to the visual character or quality of the EDZ area would be less than significant.

Mitigation: None required.

Comparison to 2012 SEIR Findings: No New Impact or Changes.

Impact 4.A-4: Operation of new uses within the EDZ area would create a new source of substantial light or glare which would adversely affect day or nighttime views on individual project sites (Less Than Significant).

The proposed EDZ would introduce artificial light from new development, including lighted outdoor parking areas and pedestrian walkways, that would be subject to the City's General Plan policies and regulations. Some parcels within the EDZ area (Site 9, for example) are currently devoid of light sources; new development on sites within the EDZ area would change the conditions on those sites with respect to lighting and glare levels. Depending on the amount and type of glazing and the exterior building materials, future buildings that would be constructed within the EDZ area have the potential to reflect sunlight, which would create glare for residents across I-680 or motorists, and cause impacts to day or nighttime views of the area.

The design guidelines that would be adopted along with the EDZ include specific policies and guidance for reducing the effects of lighting and glare. Compliance with the EDZ Design Guidelines and the standards outlined in the General Plan and Municipal Code (specifically Sections 18.48.100, 18.88.040, and 18.96.020) would serve to limit glare and spillover light from signs as well as limit interior and exterior illumination, and would reduce light and glare that would affect views. In addition, individual development applications would be submitted to the

City and would be subject to review by the Planning Commission and City Council. All new developments in Pleasanton are also subject to the State's Nighttime Sky-Title 24 Outdoor Lighting Standards which require new development to adopt energy efficiency standards for outdoor lighting. Different lighting standards are set by classifying areas by lighting zone. The majority of Pleasanton is designated as LZ3 (urban). Application of Title 24 requirements would limit the amount of outdoor light new development in Pleasanton would create, thereby further reducing nighttime illumination impacts.

Through compliance with applicable rules, codes, and regulations related to lighting and glare, as well as the EDZ Design Guidelines, development per the proposed EDZ would result in a less-than-significant impact.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact or Changes.

Cumulative Impacts

Impact 4.A-5: Construction within the proposed EDZ area, in combination with other past, present, existing, approved, pending, and reasonably foreseeable future projects, would result in cumulatively considerable impacts to aesthetic resources (Less Than Significant).

The cumulative context for visual quality encompasses all other areas that are visible in the views of the EDZ area. In addition to the immediate vicinity of the EDZ area, this would also include other nearby areas in the City that would be viewed in combination with development within the EDZ area.

As analyzed in this section, development facilitated by the proposed EDZ would not result in a significant impact related to views, scenic resources, visual character, or light and glare, and would not require mitigation to address such impacts. Furthermore, development in areas surrounding the EDZ area would be subject to the goals, policies, and programs contained within the City's General Plan and other applicable guidelines and would require separate environmental and/or architectural and design review by the City. This process would reduce or mitigate impacts to visual quality that would result from the construction of other nearby projects.

Based on the information in this section and for the reasons summarized above, the proposed EDZ would not contribute to any significant adverse cumulative visual quality impacts when considered together with past, present, pending and reasonably foreseeable development.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact or Changes.

References – Aesthetics

California Department of Transportation (Caltrans), 2014. Eligible and Officially Designated Routes, updated 9-07-2011. Accessed at: www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm, on November 21, 2014.

City of Pleasanton, 2009. *Pleasanton General Plan 2005-2025*. Adopted July 21, 2009.

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4.B Air Quality

This section evaluates the impacts on air quality that would result from construction and operation activities that would take place within the area of the proposed EDZ. To determine whether the proposed EDZ would result in any new impacts related to air quality, or increases in the severity of air quality impacts previously disclosed in the General Plan EIR and 2012 SEIR, this analysis considers the air quality impacts that would result from construction and operation activities that would take place within the area of the proposed EDZ, and compares these impacts to those identified in the two previous EIRs, and mitigation measures in those EIRs. This assessment includes the potential for the proposed EDZ to violate an air quality standard or contribute substantially to an existing or projected air quality violation, to result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment, or to expose sensitive receptors to substantial pollutant concentrations, including odors. Air quality effects related to the proposed EDZ are evaluated against State and federal ambient air quality standards, as well as the standards established by the Bay Area Air Quality Management District (BAAQMD).

Greenhouse gas and climate change impacts are separately identified and discussed in Section 4.E, Other Topics.

Setting

Climate and Meteorology

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The proposed EDZ area is in the City of Pleasanton, which is within the boundaries of the San Francisco Bay Area (Bay Area) Air Basin. The Bay Area Air Basin encompasses the nine-county region including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin and Napa counties, and the southern portions of Solano and Sonoma counties. The climate of the Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. During winter, the Pacific high-pressure system shifts southward, allowing more storms to pass through the region. During summer and early fall, when few storms pass through the region, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants such as ozone, and secondary particulates such as nitrates and sulfates.

More specifically, the proposed EDZ area is located within the Livermore Valley climatological subregion. According to the BAAQMD, the western side of this valley is bordered by 1,000- to 1,500-foot hills with two gaps connecting the valley to the central Bay Area, the Hayward Pass and Niles Canyon. The eastern side of the valley is also bordered by 1,000- to 1,500-foot hills with one major passage to the San Joaquin Valley, called the Altamont Pass, and several secondary passages. To the north of the valley lie the Black Hills and Mount Diablo. A northwest to southeast channel

connects the Diablo Valley to the Livermore Valley. The south side of the Livermore Valley is bordered by mountains approximately 3,000 to 3,500 feet high (BAAQMD, 2011).

During the summer months, when there is a strong inversion with a low ceiling, air movement is weak and pollutants become trapped and concentrated. Maximum summer temperatures in the Livermore Valley range from the high 80s to the low 90s, with extremes in the 100s. At other times in the summer, a strong Pacific high pressure cell from the west, coupled with hot inland temperatures causes a strong onshore pressure gradient which produces a strong, afternoon wind. With a weak temperature inversion, air moves over the hills with ease, dispersing pollutants. In the winter, with the exception of an occasional storm moving through the area, air movement is often dictated by local conditions. At night and early morning, especially under clear, calm and cold conditions, gravity drives cold air downward. The cold air drains off the hills and moves into the gaps and passes. On the eastern side of the valley the prevailing winds blow from north, northeast and east out of the Altamont Pass. Winds are light during the late night and early morning hours. Winter daytime winds sometimes flow from the south through the Altamont Pass to the San Joaquin Valley. Average winter maximum temperatures range from the high 50s to the low 60s, while minimum temperatures are from the mid-to-high 30s, with extremes in the high teens and low 20s (BAAQMD, 2011).

Air pollution potential is high in the Livermore Valley, especially for photochemical pollutants in the summer and fall. High temperatures increase the potential for ozone to build up. The valley not only traps locally generated pollutants but can be the receptor of ozone and ozone precursors from San Francisco, Alameda, Contra Costa and Santa Clara counties. On northeasterly wind flow days, most common in the early fall, ozone may be carried west from the San Joaquin Valley to the Livermore Valley. During the winter, the sheltering effect of the valley, its distance from moderating water bodies, and the presence of a strong high pressure system contribute to the development of strong, surface-based temperature inversions. Pollutants such as carbon monoxide and particulate matter, generated by motor vehicles, fireplaces and agricultural burning, can become concentrated. Air pollution problems can intensify because of population growth and increased commuting to and through the subregion (BAAQMD, 2011).

Existing Air Quality

The BAAQMD and California Air Resources Board (CARB) operate a regional monitoring network that measures the ambient concentrations of criteria air pollutants. Existing and probable future levels of air quality in Pleasanton can generally be inferred from ambient air quality measurements at nearby monitoring stations. The monitoring station closest to the City of Pleasanton is the Rincon Avenue station in Livermore. The Rincon station monitors ozone (one-hour and eight-hour) and particulate matter that is 2.5 microns[1] or less in diameter (PM2.5). **Table 4.B-1** shows a three-year summary of monitoring data (2012 through 2014). Due to the proximity of the proposed EDZ area to these monitoring stations, the air quality measurements shown are generally representative of conditions in the City. Table 4.B-1 also compares measured pollutant concentrations with State and national ambient air quality standards.

[1] A micron is one-millionth of a meter.

TABLE 4.B-1
AIR QUALITY DATA SUMMARY (2012-2014) FOR THE REGION

Pollutant	Monitoring Data by Year		
	2012	**2013**	**2014**
Ozone – (Rincon Ave, Livermore Station)			
Highest 1 Hour Average (ppm)[b]	**0.102**	**0.096**	**0.093**
Days over State Standard (0.09 ppm)[a]	2	3	0
Highest 8 Hour Average (ppm)[b]	**0.090**	**0.077**	**0.080**
Days over National Standard (0.075 ppm)[a]	3	1	4
Days over State Standard (0.07 ppm)[a]	4	2	7
Particulate Matter (PM10) – (Treat Blvd, Concord Station)			
Highest 24 Hour Average – State/National ($\mu g/m^3$)[b]	35.4/33.7	**50.5**/47.6	43/NA
Estimated Days over National Standard (150 $\mu g/m^3$)[a,c]	0	0	0
Estimated Days over State Standard (50 $\mu g/m^3$)[a,c]	0	NA	0
State Annual Average (State Standard 20 $\mu g/m^3$)[a,b]	12.6	16.0	14.2
Particulate Matter (PM2.5) – (Rincon Ave, Livermore Station)			
Highest 24 Hour Average ($\mu g/m3$)[b] – National Measurement	31.1	**40.1**	**42.9**
Estimated Days over National Standard (35 $\mu g/m^3$)[a,c]	0	4	NA
State Annual Average (12 $\mu g/m3$)[b]	6.6	8.4	7.6

[a] Generally, State standards and national standards are not to be exceeded more than once per year.
[b] ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
[c] PM10 and PM2.5 is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

NA = Not Available. Values in **Bold** exceed the respective air quality standard.

SOURCES: CARB, 2014; BAAQMD, 2015.

Criteria Air Pollutants

Ozone

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Carbon Monoxide

Ambient carbon monoxide (CO) concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

CO concentrations have declined dramatically in California due to existing controls and programs, and most areas of the State including the region of the EDZ area meet the State and federal standards for CO. Since the 1980s, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, fewer emissions from new vehicles, and improvements in fuels.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. NO_2 may be visible on high pollution days, especially in conjunction with high ozone levels.

NO_2 is an air quality concern because it acts as a respiratory irritant and is a precursor of ozone. NO_2 is a major component of the group of gaseous nitrogen compounds commonly referred to as NOx. Nitrogen oxides are produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, nitrogen oxides emitted from fuel combustion are in the form of nitric oxide (NO) and NO_2. NO is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter, and contributes to potential atmospheric sulfuric acid formation that can precipitate downwind as acid rain.

Particulate Matter

Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. PM10 and PM2.5 represent fractions of particulate matter that can be inhaled

into the air passages and the lungs and can cause adverse health effects, and are a health concern particularly at levels above the federal and State ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, and acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM10 and PM2.5 because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite some important gaps in scientific knowledge, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope, 2006).

Lead

In the region that includes the EDZ area, ambient lead concentrations meet both the federal and State standards. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline products. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. Construction and operation of new uses within the proposed EDZ area would not introduce any new sources of lead emissions; consequently, lead emissions are not required to be quantified and are not further evaluated in this analysis.

Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

TACs do not have ambient air quality standards, but are regulated by the BAAQMD using a risk-based approach. This approach includes a health risk assessment to determine the sources and pollutants that are required to be controlled as well as the degree of control. A health risk assessment analyzes exposure to toxic substances and estimates the human health risks from exposure, based on the potency of the substances.[2]

[2] A health risk assessment is required for permitting approval if the BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source indicate a potential public health risk. Such an assessment generally evaluates chronic, long-term effects, calculating the increased risk of cancer as a result of exposure to one or more TACs.

Roadway traffic, especially on I-580 and I-680, would be the primary sources of TACs in the EDZ area. In addition, three permitted stationary TAC sources are located within 1,000 feet of the EDZ area, according to BAAQMD's Google Earth-based public source inventories of TAC emissions sources within its jurisdiction (May 2011). The BAAQMD inventory indicates that the three stationary TAC sources within 1,000 feet of the EDZ area include (1) the Livermore-Amador Valley Water Management facility (7176 Johnson Drive), (2) the Valley Crest Landscape facility (7043 Commerce Circle), and (3) the Dublin-San Ramon Services District Wastewater Treatment Plant (7399 Johnson Drive). The BAAQMD inventory also lists the Clorox Services Company facility at7200 Johnson Drive, which is assumed to no longer be operational since structures were demolished on Parcel 6. The listed active sources are predominantly associated with industrial uses in the area.

Odorous Emissions

Though offensive odors from stationary sources rarely cause any physical harm, they still remain unpleasant and can lead to public distress and citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, and should also be considered when new sensitive receptors would be located near existing odor sources. Generally, increasing the distance between the receptor and the source will mitigate odor impacts. BAAQMD provides examples of substantial odor sources which include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants.

Sensitive Land Uses

Some receptors are considered more sensitive than others to air pollutants. Greater than average sensitivity may be the result of pre-existing health problems, proximity to an emissions source, or duration of exposure to air pollutants. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational uses are also considered sensitive, due to the greater exposure to ambient air quality conditions, and because the presence of pollution detracts from the recreational experience.

Pleasanton contains a wide range of residential, commercial, industrial, public, and open space land uses. Sensitive receptors located within these uses include residential, hospital, school, and recreational receptors. The mix of uses expected to occur within the EDZ area with full buildout includes club retail, hotel, recreational, and small- and large-format general retail establishments which would generally not contain sensitive receptors with respect to localized air pollutants. Senior housing may also be developed within the EDZ area. Existing uses within the EDZ area would be permitted to operate until redevelopment activities occur on those specific sites. The nearest sensitive receptors to the EDZ area are a Club Sport athletic and recreation facility (about 200 feet north), multi-family residences across I-680 (approximately 600 feet west and southwest), single family residences across Stoneridge Drive (approximately 715 feet southeast), and Val Vista Park, which includes a skate park and ballfields and is located approximately

500 feet southeast of the proposed EDZ area. Valley Bible Church and Love & Care Preschool are located within the northern portion of the EDZ area.

Regulatory Setting

Federal

The federal Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to identify National Ambient Air Quality Standards (NAAQS or "national standards") to protect public health and welfare. National standards have been established for ozone, CO, NO_2, SO_2, respirable particulate matter (PM10 and PM2.5), and lead. **Table 4.B-2**, below, presents current national and State ambient air quality standards, as well as the Bay Area attainment status and common sources for each pollutant.

Pursuant to the 1990 federal Clean Air Act amendments, the USEPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutants, based on whether or not the national standards had been achieved. Table 4.B-2 shows the current attainment status of the Bay Area region.

The Clean Air Act requires each state to prepare an air quality control plan, referred to as the State Implementation Plan (SIP). The Clean Air Act amendments added requirements for states containing areas that violate the national standards to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA has responsibility to review all SIPs to determine if they conform to the mandates of the Clean Air Act amendments and will achieve air quality goals when implemented. If the USEPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

Regulation of TACs, termed Hazardous Air Pollutants (HAPs) under federal regulations, is achieved through federal, State and local controls on individual sources. The 1977 federal Clean Air Act amendments required the USEPA to identify National Emission Standards for Hazardous Air Pollutants to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals (there is uncertainty in the precise degree of hazard).

State

The CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county Air Pollution Control Districts and regional Air Quality Management Districts. CARB establishes state ambient air quality standards and vehicle emissions standards.

TABLE 4.B-2
AMBIENT AIR QUALITY STANDARDS AND BAY AREA ATTAINMENT STATUS

Pollutant	Averaging Time	State Standard	Bay Area Attainment Status for California Standard	Federal Primary Standard	Bay Area Attainment Status for Federal Standard	Major Pollutant Sources
Ozone	8 hour	0.070 ppm	Non-Attainment	0.075 ppm	Non-Attainment	Formed when ROG and NOx react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/ industrial mobile equipment.
	1 hour	0.090 ppm	Non-Attainment	---	---	
Carbon Monoxide	8 hour	9.0 ppm	Attainment	9.0 ppm	Attainment	Internal combustion engines, primarily gasoline-powered motor vehicles
	1 Hour	20 ppm	Attainment	35 ppm	Attainment	
Nitrogen Dioxide	Annual Average	0.030 ppm	---	0.053 ppm	Attainment	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads
	1 Hour	0.180 ppm	Attainment	0.100 ppm	Unclassified	
Sulfur Dioxide	Annual Average	---	---	0.03 ppm	Attainment	Fuel combustion, chemical plants, sulfur recovery plants and metal processing
	24 Hour	0.04 ppm	Attainment	0.14 ppm	Attainment	
	1 Hour	0.25 ppm	Attainment	0.075 ppm	Attainment	
Particulate Matter (PM10)	Annual Arithmetic Mean	20 μg/m3	Non-Attainment	---	---	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays)
	24 hour	50 μg/m3	Non-Attainment	150 μg/m3	Unclassified	
Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 μg/m3	Non-Attainment	15 μg/m3	Attainment	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	24 hour	---	---	35 μg/m3	Non-Attainment	
Lead	Calendar Quarter	---	---	1.5 μg/m3	Attainment	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	30 Day Average	1.5 μg/m3	Attainment	---	---	
Hydrogen Sulfide	1 hour	0.03 ppm	Unclassified	No Federal Standard	---	Geothermal Power Plants, Petroleum Production and refining
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	Unclassified	No Federal Standard	---	See PM2.5.

ppm = parts per million
μg/m3 = micrograms per cubic meter

SOURCE: BAAQMD, 2014; CARB, 2009.

California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants and include air quality standards for some pollutants for which there are no corresponding national standards. These are shown in Table 4.B-2. Under the California Clean Air Act patterned after the federal Clean Air Act, areas have been designated as attainment or nonattainment with respect to the State standards. Table 4.B-2 summarizes the attainment status with California standards in the Bay Area.

Toxic Air Contaminants

The California Health and Safety Code defines TACs as air pollutants which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807 (Tanner). A total of 243 substances have been designated TACs under California law; they include the 189 (federal) Hazardous Air Pollutants adopted in accordance with AB 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. Toxic air contaminant emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment and, if specific thresholds are violated, are required to communicate the results to the public in the form of notices and public meetings.

In August of 1998, CARB identified particulate emissions from diesel-fueled engines (diesel particulate matter, or DPM) as TACs. CARB subsequently developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB, 2000). The document represents proposals to reduce diesel particulate emissions, with the goal of reducing emissions and associated health risks by 75 percent in 2010 and by 85 percent in 2020. The program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra low sulfur diesel fuel on diesel-fueled engines. New diesel engines meeting the interim Tier 4 emissions standards, and Tier 2 or Tier 3 engines retrofitted with a Level 3 Verified Diesel Emissions Control System, can reduce diesel particulate by approximately 85 percent, compared to older equipment.

In April 2005, ARB published *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB, 2005). This handbook is intended to give guidance to local governments in the siting of sensitive land uses, such as residences, schools, daycare centers, playgrounds, or medical facilities, near sources of air pollution.

Regional

Air Quality Plans

The 1977 federal Clean Air Act amendments require that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the Clean Air Act. The 1988 California Clean Air Act also requires development of air quality plans

and strategies to meet state air quality standards in areas designated as non-attainment (with the exception of areas designated as non-attainment for the state PM standards). Maintenance plans are required for attainment areas that had previously been designated non-attainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as SIPs, discussed above.

Bay Area air quality plans are prepared with the cooperation of the BAAQMD, Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On September 15, 2010, the BAAQMD adopted the most recent revision to the Clean Air Plan (CAP) - the *Bay Area 2010 Clean Air Plan* (BAAQMD, 2010). The 2010 CAP serves to:

- Update the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented in the 2010 – 2012 timeframe.

BAAQMD Rules, Regulations, and CEQA Guidelines

The BAAQMD is the regional agency responsible for rulemaking, permitting, and enforcement activities affecting stationary sources in the Bay Area. BAAQMD does not have authority to regulate emissions from motor vehicles. Specific rules and regulations adopted by the BAAQMD limit the emissions that can be generated by various stationary sources, and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate emissions of the six criteria air pollutants; TAC emissions sources subject to these rules are also regulated through the BAAQMD's permitting process and standards of operation. Through this permitting process, including an annual permit review, the BAAQMD monitors generation of stationary emissions and uses this information in developing its air quality plans. Any sources of stationary emissions constructed as part of the proposed EDZ would be subject to the BAAQMD rules and regulations. Both federal and State ozone plans rely heavily upon stationary source control measures set forth in BAAQMD's rules and regulations.

With respect to construction activities associated with development of the EDZ area, applicable BAAQMD regulations would relate to portable equipment (e.g., concrete batch plants, and gasoline- or diesel-powered engines used for power generation, pumps, compressors, pile drivers, and cranes), architectural coatings, and paving materials. Equipment used during construction activities would be subject to the requirements of BAAQMD Regulation 2 (Permits), Rule 1 (General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and BAAQMD Regulation 8 (Organic Compounds), Rule 15 (Emulsified and Liquid Asphalts).

BAAQMD adopted updated *CEQA Air Quality Guidelines*, including new thresholds of significance in June 2010, and revised them in May 2011. These guidelines advise lead agencies on how to evaluate potential air quality impacts, including establishing quantitative and qualitative thresholds of significance. The BAAQMD resolutions adopting and revising the significance thresholds in 2011 were set aside by a judicial writ of mandate on March 5, 2012.[3] In May of 2012, BAAQMD updated its CEQA Air Quality Guidelines to continue to provide direction on recommended analysis methodologies, but without recommended quantitative significance thresholds (BAAQMD, 2012). On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA thresholds.[4] BAAQMD has not formally re-instated the thresholds or otherwise responded to this Appellate Court reversal at this time.

The air quality analysis below uses the previously-adopted 2011 thresholds of the BAAQMD to determine the impacts that would result from the EDZ. While the significance thresholds adopted by BAAQMD in 2011 are not currently recommended by the BAAQMD, these thresholds are based on substantial evidence identified in BAAQMD's 2009 *Justification Report* (BAAQMD, 2009) and are therefore used within this document to allow for a protective analysis of the air quality impacts of the EDZ.

Local

City of Pleasanton General Plan

The Pleasanton General Plan 2005 – 2025 was adopted in July 2009 and sets forth goals, policies, and programs for guiding decisions and the City's growth and development. The following goals, policies, and programs from the General Plan apply to air quality considerations associated with the proposed EDZ.

Air Quality and Climate Change Element

Goal 1: Implement a proactive approach, and use available technology to maintain and improve air quality within Pleasanton and the region to protect the public health, safety, and welfare.

Goal 2: Promote sustainable development and planning to minimize additional air emissions.

Policy 1: Adhere to federal and State air quality standards for local pollutants of concern.

Program 1.1: Incorporate measures in conditions of approval for development projects to reduce grading, construction, and operations-related air quality impacts.

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3 The thresholds BAAQMD adopted were called into question by a minute order issued January 9, 2012 in *California Building Industry Association v. BAAQMD,* Alameda Superior Court Case No. RGI0548693. The minute order states that "The Court finds [BAAQMD's adoption of thresholds] is a CEQA Project, the court makes no further findings or rulings." The claims made in the case concerned the CEQA impacts of adopting the thresholds, particularly, how the thresholds would affect land use development patterns. Petitioners argued that the thresholds for Health Risk Assessments encompassed issues not addressed by CEQA.

4 *California Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist*., Case No. A135335 & A136212 (Court of Appeal, First District, August 13, 2013)

Policy 2: Support development plans that reduce mobile-source emissions by reducing vehicle trips and vehicle miles traveled.

Implement programs from the Land Use Element to provide mixed-use developments, locate high-density uses near transit facilities, and provide neighborhood-serving retail uses convenient to residential neighborhoods. These programs would reduce vehicle trips and vehicle miles traveled, thus reducing air-pollutant emissions.

Policy 3: Separate air pollution sensitive land uses from sources of air pollution.

Program 3.1: Locate new air pollution point sources, such as manufacturing and extracting facilities, away from residential areas and other sensitive land uses following the California Air Resource Board's recommendations.

Policy 4: Reduce air pollution from motor-vehicle trips and vehicle-miles traveled.

To reduce vehicle miles traveled with commensurate reductions in air pollution and climate change, implement Transportation Demand Management (TDM) programs from the Circulation Element, including the addition of local and regional bicycle lanes. Also implement Circulation Element measures to facilitate the free flow of vehicular traffic, including continually updating computer-control technology for traffic lights.

Policy 5: Review proposed projects for their potential to impact air quality conditions.

Program 5.1: Include air quality as a factor in the City's environmental review process. Encourage development plans which minimize negative impacts on air quality.

Policy 7: Provide leadership to Pleasanton residents and businesses by implementing all technology-based air-pollutant reduction programs that are reasonable and feasible.

Program 7.6: Adopt a measure requiring large vehicles (gross weight rating of greater than 14,000 pounds) and offroad equipment owned by the City and/or private contractors to restrict engine idling to less than 5 consecutive minutes and to prohibit engine idling in parking lots, where feasible.

Policy 8: Minimize unpleasant odors in residential neighborhoods.

Policy 9: Strongly encourage citizen and business participation in reducing air pollution.

Implement measures from the Circulation Element to encourage public participation in Ride-Share and other public transportation programs.

Program 9.3: Develop incentives for the public to help reduce air pollution. This includes offering incentive programs for using non-motorized (i.e., pedestrian and bicycle) and low-polluting mobility alternatives.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No project features or mitigation measures addressing air quality that would be applicable to the proposed EDZ were adopted as part of the 2009 General Plan EIR or 2012 SEIR. The General Plan EIR did not identify any mitigation or improvement measures, beyond implementation of policies in the General Plan, that were feasible or required to reduce identified air quality impacts to a less-than-significant level. The 2012 SEIR identified several mitigation measures that were required to address significant air quality impacts associated with implementation of the Housing Element and Climate Action Plan; however, these mitigation measures apply to specific rezoning sites, none of which were located in the proposed EDZ area, and are not applicable to impacts from the EDZ that require mitigation as discussed below.

Approach to Analysis

The methodology for analysis of air quality impact is identified by the BAAQMD, the regional agency primarily responsible for developing air quality plans for the Bay Area, including the City of Pleasanton. This methodology is outlined in the BAAQMD document *CEQA Air Quality Guidelines*. Impacts are assessed by modeling the estimated daily emissions generated by construction and operations activities within the EDZ area using the CalEEMod land use emissions model version 2013.2.2. Emissions are then compared to the BAAQMD 2011 significance criteria. Demolition of unoccupied structures on Parcel 6 that was completed independently, as described in Chapter 3, Project Description, has not been evaluated, because it is not a part of the proposed EDZ.

Significance Criteria

The proposed EDZ would have significant air quality impacts if it would:

- Conflict with or obstruct implementation of the applicable air quality plan(s);
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

Specifically, and per the BAAQMD 2011 significance criteria, air quality emissions would be significant if the EDZ would:

- Result in total construction emissions of Reactive Organic Gases (ROG), nitrogen oxide (NOx), or PM2.5 (exhaust) of 10 tons per year or greater or 54 pounds per day or greater.

- Exceed a construction emission threshold for PM10 (exhaust) of 15 tons per year or greater, or 82 pounds per day or greater.
- For PM10 and PM2.5 as part of fugitive dust generated during construction, the BAAQMD Guidelines specify compliance with Best Management Practices as the threshold.
- Result in total operational emissions of ROG, NOx, or PM2.5 of 10 tons per year or greater, or 54 pounds per day or greater.
- Exceed an operational emission threshold for PM10 of 15 tons per year or greater, or 82 pounds per day.
- Result in carbon monoxide (CO) concentrations of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average) as estimated by roadway vehicle volumes exceeding 44,000 vehicles per hour at any intersection.
- For risks and hazards during construction and operations, exceedance of an increase in cancer risk exposure over 10 in one million, or contribution to hazard indices by a ratio of 1.0, or an increase local concentrations of PM2.5 by 0.3 micrograms per cubic meter ($\mu g/m^3$).

Per BAAQMD guidance, a project's contribution to cumulative impacts for criteria pollutants would be significant if the project's impact individually would be significant (i.e., if it exceeds the BAAQMD's quantitative thresholds).

With regard to cumulative impacts from PM2.5, a significant cumulative air quality impact would occur if localized annual average concentrations of PM2.5 would exceed 0.8 micrograms per cubic meter at any receptor from project operations in addition to existing emission sources and cumulative emissions sources within a 1,000-foot radius of the property line of the source or receptor.

With regard to cumulative impacts from TACs, a significant cumulative air quality impact would occur if the probability of contracting cancer for the maximally exposed individual (MEI) would exceed 100 in one million or if the project would expose persons to TACs such that a non-cancer chronic Hazard Index (HI) of 10.0 would be exceeded at any receptor as a result of project operations, in addition to existing emission sources and cumulative emissions sources within a 1,000 foot radius of a project site. However, a project's construction or operational impacts would result in a considerable contribution to an identified cumulative health risk impact if the project's construction or operation activities would exceed the project-level health risk significance thresholds identified above.

Construction Activities

Impact 4.B-1: Construction activities within the proposed EDZ area would result in increased emissions of fugitive dust, criteria air pollutants, and TACs from construction activities (Less Than Significant With Mitigation).

Fugitive Dust

As described in Chapter 3, Project Description, the proposed EDZ includes demolition of numerous structures in preparation for construction of new structures. Demolition, grading, and

other construction activities within the EDZ area would cause wind-blown dust that would generate particulate matter into the atmosphere. Fugitive dust includes not only PM10 and PM2.5 but also larger particles that can present or result in a nuisance impact. Demolition, excavation and other construction activities can cause wind-blown dust to add to particulate matter in the local atmosphere. Although there are federal standards for air pollutants and state and regional air quality control plans, air pollutants continue to have impacts on human health throughout the country. The California EPA has found that particulate matter exposure can cause health effects at levels lower than national standards. The current health burden of particulate matter requires that, where possible, public agencies take feasible available actions to reduce sources of particulate matter exposure.

For mitigation of fugitive dust emissions, the BAAQMD recommends using specific best management practices (BMPs), which has been a practical and effective approach to control these emissions. The guidelines note that individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent and conclude that projects that implement construction best management practices will reduce fugitive dust emissions to a less-than-significant level. To ensure implementation of BMPs recommended by the BAAQMD, **Mitigation Measure 4.B-1** requires that developers of sites within the EDZ area apply these measures during construction.

> **Mitigation Measure 4.B-1:** All developers of sites within the EDZ area shall ensure that construction plans include a requirement that the BAAQMD Best Management Practices for fugitive dust control be implemented. All developers of sites within the EDZ area are required to implement the following for all construction activities within the EDZ area, to reduce fugitive dust emissions that would be generated primarily during soil movement, grading, and demolition activities, but also during vehicle and equipment movement on unpaved construction sites:
>
> 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
>
> 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
>
> 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
>
> 4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
>
> 5. All streets, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
>
> 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. A publicly visible sign shall be posted with the telephone number and person to contact at the City of Pleasanton Planning Division regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Construction Criteria Air Pollutant Emissions

The air quality analysis completed for this section includes certain assumptions regarding the proposed EDZ, including the construction of new buildings consisting of 246,440 square feet of general retail uses; 148,000 square feet of club retail uses, including a fuel station; 27,550 square feet of light industrial uses; and a hotel with up to 140 rooms. The analysis also includes the assumption that up to 300,000 square feet of vacant or underutilized buildings would be demolished within the EDZ area during the period of full buildout and the assumption that all parcels within the EDZ area would ultimately be redeveloped with new uses. The analysis also takes into account annual emissions from approximately 224,688 square feet of existing uses within the EDZ area. The first phase of the proposed EDZ is expected to result in a worst-case concentrated construction period from September 2015 until September 2016, resulting in the possible demolition of the remainder of the structures on Parcels 6, 9, and 10 (up to 80,000 square feet of buildings), and the development of the 148,000 square-foot club retail use and fuel station, the hotel, up to 23,500 square feet of general retail uses, and associated parking lots. The remainder of demolition and construction would be phased over the buildout of the EDZ (potentially 10 years or more).

Construction activities would generate air emissions through the use of heavy-duty construction equipment, from vehicle trips hauling materials, and from construction workers traveling to and from the EDZ area. Mobile source emissions, primarily NOx, would be generated from the use of construction equipment such as excavators, bulldozers, wheeled loaders, and fork lifts. During the finishing phase, paving operations and the application of asphalt, architectural coatings (i.e., paints) and other building materials would release ROG. The assessment of construction air quality impacts considers each of these sources, and recognizes that construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions.

The CalEEMod model was used to quantify construction emissions for the worst-case concentrated construction period (Phase I) associated with off-road equipment, paving, architectural coatings, haul trucks associated with demolition, on-road worker vehicle emissions and vendor delivery trips. Unmitigated construction-related criteria pollutant exhaust emissions for Phase I are presented in **Table 4.B-3**.

As shown in Table 4.B-3, maximum average daily regional emissions would not exceed the BAAQMD daily significance thresholds during construction. Thus, the concentrated construction period represented by Phase I would have a less-than-significant impact, and therefore construction

activities within the EDZ area as a whole are anticipated to have a less-than-significant impact, in relation to regional criteria air pollutant emissions from construction activities.

TABLE 4.B-3
PHASE I AVERAGE DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS (pounds/day)[a]

Scenario	ROG	NOx	Exhaust PM10[b]	Exhaust PM2.5[b]
Phase I EDZ Emissions	16.6	43.6	2.2	2.1
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	No	No	No

[a] Emissions include results modeled with CalEEMod. Total construction emissions over the 12-month duration of construction were divided by the active days of construction in order to determine the average daily construction emissions. Additional data and assumptions are described in **Appendix F**.
[b] BAAQMD's construction-related significance thresholds for PM10 and PM2.5 apply to exhaust emissions only and not to fugitive dust.

Toxic Air Contaminants and PM2.5

Construction activities would produce diesel particulate matter (DPM) and PM2.5 emissions due to combustion equipment such as loaders, backhoes, and haul truck trips. These emissions could result in elevated concentrations of DPM and PM2.5 at nearby receptors. These elevated concentrations could lead to an increase in the risk of cancer or other health impacts. Exposure of sensitive receptors is the primary factor used to determine health risk. Exposure is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. A longer exposure period would result in a higher exposure level. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the California Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with a given development project. The duration of EDZ construction activities would only constitute a small percentage of the total 70-year exposure period and thus would not generate a substantial amount of TACs. However, based on the presence of sensitive uses within the EDZ area (church and preschool) and off-site (Club Sport and residential uses), as well as the potential for additional sensitive uses (such as outdoor recreation and senior housing) to be developed within the EDZ area, **Mitigation Measure 4.B-2** has been included below in order to ensure that DPM and PM2.5 emissions would be reduced to the extent feasible and that potential health risk would be less than significant. In addition, implementation of **Mitigation Measure 4.B-1**, which includes measures such as minimizing the idling time of diesel powered construction equipment and requiring that all construction equipment is maintained and properly tuned, would also reduce particulate exhaust emissions.

Notably, demolition activities could result in airborne entrainment of asbestos, a TAC, particularly where structures built prior to 1980 would be demolished. However, these materials would be removed in accordance with the procedures specified by Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing) of BAAQMD's regulations; therefore, with

adherence to regulatory requirements, asbestos would not be emitted to any substantial degree during demolition.

Localized emissions of fugitive dust would be less than significant with the implementation of **Mitigation Measure 4.B-1**, based on the substantial emission reductions due to applied controls. Implementation of **Mitigation Measure 4.B-2** as well as **Mitigation Measure 4.B-1** would reduce DPM emissions to the maximum feasible extent, would substantially reduce the health risk associated with exposure of nearby receptors to DPM during construction, and would reduce impacts from TACs and PM2.5 during construction to a less-than-significant level.

> **Mitigation Measure 4.B-2:** All developers of sites within the EDZ area that are located within 1,000 feet of sensitive receptors including church, school, senior housing, or recreational uses (i.e., Valley Bible Church and Love & Care Preschool, Club Sport, or other recreational uses) shall ensure that construction contract specifications include a requirement that all off-road diesel-powered construction equipment used during the construction activities within the EDZ area be equipped with engines that meet or exceed either U.S. Environmental Protection Agency or California Air Resources Board Tier 2 off-road emission standards, and are fitted with Level 3 Verified Diesel Emissions Control (VDEC), which would reduce diesel particulate emissions by at least 85 percent; or ensure that off-road diesel-powered construction equipment engines meet interim or final Tier 4 emission standards.

Significance after Mitigation: Less Than Significant.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measure Identified.

Operational Activities

Impact 4.B-2: Uses within the EDZ area would generate operational emissions that would result in a considerable net increase of criteria pollutants and precursors for which the air basin is in nonattainment under an applicable federal or state ambient air quality standard (Significant and Unavoidable).

Operation of new uses within the EDZ area would result in an increase in criteria air pollutant and precursor emissions, including ROG, NOx, PM10, and PM2.5 from a variety of emissions sources, including onsite area and energy sources and mobile on-road sources. Exhaust emissions from on-road vehicle traffic associated with operation of new uses within the EDZ area were calculated using the latest version of the CalEEMod program, which includes the EMFAC2011 emission factors for on-road vehicles.

Table 4.B-4 summarizes the operational daily emissions of criteria pollutants that would be generated by development within the EDZ area and existing uses, and compares the net increase to BAAQMD thresholds. **Table 4.B-5** summarizes the annual emissions from uses that are assumed would be developed within the EDZ and existing operations. As indicated in Tables 4.B-4 and 4.B-5, net operational emissions of NOx and PM10 associated with new uses within the EDZ area, primarily

from on-road vehicles, would exceed the BAAQMD significance thresholds during operations. The proposed EDZ would therefore have a significant impact in relation to regional operational emissions. Implementation of **Mitigation Measure 4.B-3** would address this impact as described below.

TABLE 4.B-4
DAILY OPERATIONAL-RELATED POLLUTANT EMISSIONS (pounds/day)[a]

Scenario	ROG	NOx	PM10	PM2.5
EDZ Unmitigated Operational Emissions – Year 2025	63	129	115	33
Existing Operational Emissions – Year 2015	13	27	10	3
Net Increase (EDZ minus Existing)	50	102	105	30
BAAQMD Operational Threshold	54	54	82	54
Significant Impact?	No	Yes	Yes	No

[a] Emissions include results modeled with CalEEMod for existing use and EDZ operations during the Winter season. Additional data and assumptions are in **Appendix F**.

TABLE 4.B-5
ANNUAL OPERATIONAL-RELATED POLLUTANT EMISSIONS (tons/year)[a]

Scenario	ROG	NOx	PM10	PM2.5
EDZ Unmitigated Operational Emissions – Year 2025	10	20	18	5
Existing Operational Emissions – Year 2015	2	4	2	<1
Net Increase (EDZ minus Existing)	8	16	16	5
BAAQMD Operational Threshold	10	10	15	10
Significant Impact?	No	Yes	Yes	No

[a] Emissions include results modeled with CalEEMod for existing use and EDZ operations. Additional data and assumptions are in **Appendix F**.

> **Mitigation Measure 4.B-3:** All developers of sites within the EDZ area shall implement Transportation Demand Management (TDM) measures where feasible and appropriate, including increased transit accessibility to EDZ sites and establishment of voluntary commute trip reduction program(s) with employers to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as car-pooling, taking transit, walking, and biking. The voluntary commute trip reduction program(s) may include, but would not be limited to, a ride-sharing program for which 50 percent or greater of site employees are eligible, carpooling encouragement, preferential carpool parking, a transportation coordinator, and ride-matching assistance.

In regards to localized CO concentrations, according to the 2011 BAAQMD thresholds, a project would result in a less-than-significant impact if the following screening criteria are met:

1. The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.

2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

As confirmed by the traffic analysis conducted for the proposed EDZ and discussed in Section 4.D, Transportation and Traffic (and **Appendix G**), of this SEIR, traffic from assumed EDZ uses would not exceed the BAAQMD screening criteria for CO, and therefore no further analysis was conducted for CO impacts. This impact is less than significant for the proposed EDZ as well as on a cumulative basis.

Although Mitigation Measure 4.B-3 would reduce total criteria pollutants that would be generated, the reduction is anticipated to be minor relative to overall emissions and would not reduce emissions to less-than-significant levels. The majority of all emissions that would contribute to this impact would be mobile (vehicular), and due to the nature of the assumed EDZ uses (club retail, general retail, hotel), additional substantial reductions in the amount of vehicular traffic to achieve a less-than-significant operational emissions level are not feasible. The California Air Pollution Control Officers Association (CAPCOA) cites literature studies regarding the effectiveness of TDM measures that would allow for up to 19 percent reductions in commute vehicle trips, and recommends a range of 1.0 to 6.2 percent reduction in vehicle running emissions (CAPCOA, 2010). Applying the upper end of CAPCOA-identified TDM reductions in order to estimate the effectiveness of Mitigation Measure 4.B-3 results in a calculation of post-mitigation emissions of 94 pounds per day of NOx and 98 pounds per day of PM10, both of which would still exceed their respective significance thresholds. Consequently, this impact would be significant and unavoidable.

The main health concern related to exposure to ground-level ozone, for which NOx is a precursor, is effects on the respiratory system, especially on lung function. PM10 particles are fine enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the ARB, studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks." Several factors influence these health impacts, including the concentrations of ground-level ozone and PM10 in the atmosphere, the duration of exposure, average volume of air breathed per minute, the length of intervals between short-term exposures, and the sensitivity of the person to the exposure (The World Bank Group, 1999; USEPA, 2008). The amount of concentrations of ground-level ozone in the atmosphere is influenced by the volume of air available for dilution, the temperature, and the intensity of ultraviolet light. In the Bay Area, the worst case conditions for ozone formation occur in the summer and early fall on warm, windless, sunny days (BAAQMD, 2013). Given these various factors, it is difficult to predict the magnitude of health effects from the proposed EDZ's exceedance of significance criteria for regional NOx emissions. The increase in emissions associated with the proposed EDZ represents a fraction of total SFBAAB regional NOx emissions (102 net new pounds per day compared to 265 tons per day in the SFBAAB region in 2012) (CARB 2014). Table 4.B-1 shows that the most stringent applicable

ozone standards have been exceeded at the Livermore monitoring station between 2011 and 2013. The proposed EDZ's NOx and PM10emissions could contribute to air quality violations in the SFBAAB region by contributing to more days of ozone and PM10 exceedance or result in Air Quality Index value levels that are unhealthy for sensitive groups and other populations.

Significance after Mitigation: Significant and Unavoidable.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measure Identified.

Consistency with the Clean Air Plan

Impact 4.B-3: Operation of uses within the proposed EDZ area would conflict with or obstruct implementation of the applicable air quality plan (Significant and Unavoidable).

The most recently adopted air quality plan in the Bay Area Air Basin is the *2010 Clean Air Plan*. The *2010 Clean Air Plan* is a roadmap showing how the Bay Area region will achieve compliance with the State 1-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary-source control measures to be implemented through BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the MTC, local governments, transit agencies, and others. The *2010 Clean Air Plan* also represents the Bay Area's most recent triennial assessment of the region's strategy to attain the state 1-hour ozone standard. In this, the *2010 Clean Air Plan* replaces the *2005 Ozone Strategy*. Under BAAQMD's updated 2012 methodology, a determination of consistency with the Clean Air Plan must demonstrate that a plan or project supports the primary goals of the Clean Air Plan, includes applicable control measures of the Clean Air Plan, and would not disrupt or hinder implementation of any control measures of the Clean Air Plan.

BAAQMD guidance indicates that any project (i.e., project or plan) that does not support the primary goals of the Clean Air Plan would not be considered consistent with the Clean Air Plan. Specifically, if approval of a project would not result in significant and unavoidable air quality impacts, after application of all feasible mitigation, the project may be considered consistent with the Clean Air Plan. As discussed under Impact 4.B-2, development within the area of the EDZ would result in significant and unavoidable emissions of criteria pollutants during operations. It does not necessarily follow that development of the EDZ would not support the primary goals of the Clean Air Plan, because any development proposal as large in scale and scope as the proposed EDZ would, simply by virtue of its trip generation volume, exceed numerical thresholds for significance with respect to criteria pollutants. By this reasoning, population and/or employment growth beyond a certain scale would necessarily be considered non-supportive of the Clean Air Plan's goals. Because regional projections anticipate substantial population and employment growth, more important with respect to attainment of air quality standards is whether a development proposal

accommodates population and employment growth in a manner that would result in relatively less than average increases in emissions region-wide. As noted in the traffic study, the proposed EDZ would result in a slight increase in VMT per household and VMT per capita, with a predicted increase in VMT per capita between 0.02 to 0.04 (also see Section 4.D, Transportation and Traffic, and **Appendix G**). Since the EDZ would result in operational emissions that would exceed the BAAQMD significance thresholds for NOx and PM10, the EDZ would conflict with the Clean Air Plan; this conclusion is supported by the results of the VMT analysis indicating that the proposed EDZ would result in increased VMT per household and per capita. This impact would be significant.

The 1988 California Clean Air Act, Section 40919(d) requires regions to implement "transportation control measures to substantially reduce the rate of increase in passenger vehicle trips and miles traveled." Consistent with this requirement, one of the goals of the 2010 Clean Air Plan is to reduce the number of trips and vehicle miles Bay Area residents travel in single-occupant vehicles through the implementation of five categories of transportation control measures (TCMs). **Table 4.B-6** identifies those five categories of TCMs that local governments should implement through local plans to be considered in conformance with the 2010 Clean Air Plan.

TABLE 4.B-6
TRANSPORTATION CONTROL MEASURES IN THE 2010 CLEAN AIR PLAN

1. Improve Transit Services (TCM A)
2. Improve System Efficiency (TCM B)
3. Encourage Sustainable Travel Behavior (i.e., voluntary employer-based trip reduction program) (TCM C)
4. Support Focused Growth (Bicycle and Pedestrian friendliness) (TCM D)
5. Implement Pricing Strategies (TCM E)

A review of the TCMs in Table 4.B-6 indicates that these measures lend themselves to application to large scale land use development projects. BAAQMD has identified examples of how a project or plan may cause the disruption or delay of control measures, such as a project that may preclude an extension of a transit line or bike path or propose excessive parking beyond parking requirements. Development within the proposed EDZ area would not disrupt or delay control measures.

The implementation of these TCMs for the area of the EDZ may help reduce the rate of increase in passenger vehicle trips and miles traveled; however, the effect of these TCMs is difficult to quantify and these TCMs may not be effective for the land use types contemplated as part of the EDZ (club retail); in addition, some of the measures are not within the control of the City of Pleasanton. Therefore, these measures are not likely to substantially reduce the increase in VMT per household and per capita that would result from the proposed EDZ.

After implementation of **Mitigation Measure 4.B-2**, operation of new uses within the proposed EDZ area would still conflict with or obstruct implementation of the 2010 Clean Air Plan, and this impact would be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Comparison to 2009 General Plan EIR Findings: No New Impact or Changes.

Air Toxic Emissions from Operations

Impact 4.B-4: Operation of uses that would be developed within the proposed EDZ area would expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter (PM2.5) (Less than Significant With Mitigation).

The proposed EDZ includes the demolition of existing vacant or underutilized buildings and construction of new buildings assumed to consist of up to 246,440 square feet of general retail uses, up to 148,000 square feet of club retail uses and a fuel station, up to 27,550 square feet of light industrial uses, and a hotel. The analysis assumes that all parcels within the EDZ area would ultimately be redeveloped with new uses, and takes into account annual emissions from approximately 224,688 square feet of existing uses within the EDZ area. The primary sources of long-term TACs and PM2.5 would be associated with on-road diesel delivery trucks and benzene from the fuel station. In some cases, CARB makes recommendations for specific buffer zones to protect sensitive receptors, such as residential uses, around certain types of TAC emitters of particular concern; this would be the case for a large gasoline dispensing facility (300-foot buffer) and distribution centers5 (1,000-foot buffer). The first phase of development of the EDZ area (Phase I), which includes development of the club retail use and fuel station, is anticipated to comply with these recommended buffer zones. Other land uses to be developed within the EDZ area over the period of full buildout (10 years or more) are anticipated to be located at greater distances from the nearest off-site sensitive receptors. As such, the EDZ would not result in substantial TAC or PM2.5 exposure at the nearest off-site sensitive receptors.

Notably, fitness or recreational facilities and senior housing facilities may also be developed within the EDZ area. Fitness or recreation facilities that would include outdoor recreational uses and senior housing would be sensitive receptors. Because the location and design of facilities of these types is unknown at this time, the long-term health risk impact from existing (particularly highway sources from I-680) and likely (fuel station, delivery trucks) sources of TACs would be significant without mitigation. Implementation of **Mitigation Measure 4.B-4** would ensure that sensitive receptors (such as senior housing and outdoor recreational uses) would not be exposed to significant TACs and that potential health risks would be less than significant.

> **Mitigation Measure 4.B-4:** If a new sensitive use such as senior housing or outdoor recreation is proposed within the EDZ area in close proximity to sources of toxic air contaminants (i.e., within 300 feet of a fuel station or within 1,000 feet of warehouse loading docks or Highway I-680), the developer of this use shall prepare a health risk

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5 Distribution center operations involve trucks, trailers, shipping containers, and other equipment with diesel engines. Distance recommendation based on distribution centers that either accommodate more than 100 trucks per day, more than 40 trucks with operating transport-refrigeration units (TRUs) operating per day, or where TRU unit operations exceed 300 hours per week.

assessment report (per BAAQMD requirements for health risk assessments, and to be reviewed and approved by the City) in order to ensure that potential exposure and risk for future residents or patrons would be below applicable thresholds.

Significance after Mitigation: Less Than Significant

Comparison to 2009 General Plan EIR Findings: New Impact, New Mitigation Measure Identified.

Objectionable Odors

Impact 4.B-5: Operation of uses within the EDZ area would create objectionable odors affecting a substantial number of people (Less Than Significant).

The BAAQMD has identified typical sources of odor in the BAAQMD 2011 *CEQA Air Quality Guidelines*, a few examples of which include manufacturing plants, rendering plants, coffee roasters, wastewater treatment plants, sanitary landfills, and solid waste transfer stations. While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally produced odors can exceed regulatory thresholds. The EDZ would not include uses that have been identified by BAAQMD as potential sources of objectionable odors. In addition, the uses that would be developed within the EDZ area would not locate new sensitive receptors in close proximity to substantial odor generating sources. This impact would be less than significant without mitigation.

Mitigation: None required.

Comparison to 2009 General Plan EIR Findings: No New Impact or Changes.

Cumulative Impacts

Impact 4.B-6: Operation of uses within the proposed EDZ area, when combined with past, present and other reasonably foreseeable development in the vicinity, would result in cumulative criteria air pollutant air quality impacts (Significant and Unavoidable).

According to the BAAQMD, no single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards for regional criteria pollutants. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. There are many projects throughout the Bay Area region that have been identified as having significant and unavoidable operational and construction-related regional pollutant impacts. Consequently, for assessment of cumulative regional pollutant impacts, the BAAQMD has developed a methodology for assessing whether a project would have a cumulatively considerable contribution. According to the BAAQMD *Justification Report*, if a project exceeds identified

significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD, 2009).

As described in Impact 4.B-2, the EDZ would result in operational emissions of NOx and PM10 that would exceed significance thresholds even with mitigation, and would therefore result in a significant impact. Because operational emissions from uses within the EDZ area would be significant and unavoidable, these emissions would make a cumulatively considerable contribution to an existing cumulative impact, which would result in cumulatively significant air quality operational impacts. As described for Impact 4.B-2, this impact would be mitigated with the implementation of **Mitigation Measure 4.B-3**, but would remain significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measure Identified.

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4.C Noise

To determine whether the proposed EDZ would result in any new impacts related to noise, or increases in the severity of noise impacts previously disclosed in the General Plan EIR and 2012 SEIR, this analysis considers the noise impacts that would result from the proposed EDZ, and compares these impacts to those identified in the two previous EIRs, and mitigation measures in those EIRs. The impacts evaluated in this section include the potential for the EDZ to create a substantial temporary and/or permanent increase in noise exposure relative to "no project" conditions in the vicinity of the EDZ area. Additionally, the following section addresses project-related noise exposure in excess of applicable noise exposure limits established by the City of Pleasanton General Plan and other applicable standards.

Setting

Technical Background

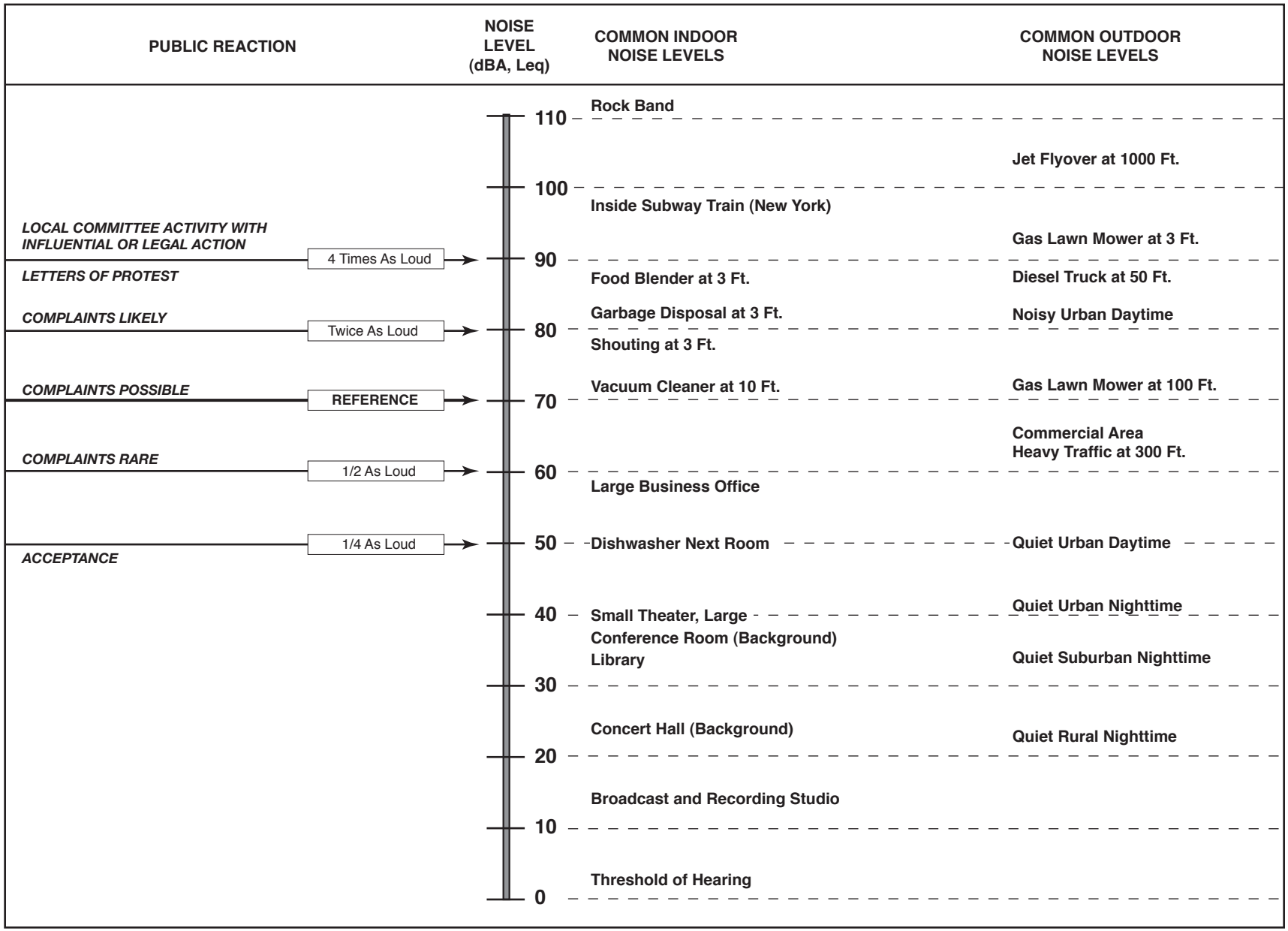
Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 4.C-1**.

Noise Exposure and Community Noise

Noise *exposure* is a measure of noise over a period of time. Noise *level* is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of



SOURCE: Caltrans Transportation Laboratory Noise Manual, 1982; and modification by ESA

Johnson Drive EDZ . 140421

Figure 4.C-1
Effects of Noise on People

distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor.

These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to accurately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The noise descriptors used in this analysis are summarized below:

L_{eq}: The energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{max}: The instantaneous maximum noise level for a specified period of time.

DNL: Also abbreviated L_{dn} and referred to as the Day/Night Average Sound Level, the DNL is a 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

As a general rule, in areas where the noise environment is dominated by traffic, the L_{eq} during the peak-hour is generally within one to two decibels of the L_{dn} at that location.

Effects of Noise on People

When a new noise is introduced to an environment, human reaction can be predicted by comparing the new noise to the *ambient* noise level, which is the existing noise level comprised of all sources of noise in a given location. In general, the more a new noise exceeds the ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans, 2013):

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion, hence the decibel scale was

developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but do so logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, learning; and
- Physiological effects such as hearing loss or sudden startling.

For the average person, environmental noise typically produces effects in the first two categories. Workers in industrial plants or others exposed to high noise exposure for extended periods may also experience physiological effects. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Long-term exposure to levels exceeding 70 dBA can cause hearing loss. In addition, brief periods of noise that exceed a sound pressure level of 140 decibels are a health hazard (City of Pleasanton, 2009).

Transportation Noise Sources

Common transportation noise sources include traffic on public roadways, main-line train operations, or aircraft over-flights. The City utilizes standards presented in the Noise Element of the General Plan to assess noise impacts associated with transportation sources.

Non-Transportation Noise Sources

Non-transportation noise sources are commonly considered to be any source of noise on private property. In addition to guidance in the Noise Element of the General Plan, the City also has adopted a Noise Ordinance that regulates the level of noise emanating from residential, commercial, and industrial properties.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the change in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles)

attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 2013).

Noise levels may also be reduced by intervening structures, such as a row of buildings, a solid wall, or a berm located between the receptor and the noise source. According to the U.S. Department of Housing and Urban Development (HUD) *Noise Guidebook* (HUD, 2009), standard building construction results in an exterior-to-interior noise reduction of 20 dBA with windows closed.

Fundamentals of Vibration

As described in the Federal Transit Administration (FTA)'s *Transit Noise and Vibration Impact Assessment* guidance manual (FTA, 2006) ground-borne vibration can be a serious concern for nearby neighbors, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, sheet pile-driving and operating heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to express RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration assessment include structures (especially older masonry structures), people who spend a lot of time indoors (especially residents, students, the elderly, and sick), and vibration sensitive equipment such as hospital analytical equipment and equipment used in computer chip manufacturing.

The effects of ground-borne vibration include movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and sheet pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance can be well below the damage threshold for normal buildings.

Existing Noise Environment and Sensitive Receptors

Pleasanton includes a wide range of residential, commercial, industrial, public, and open-space land uses. Of these, residential, hospital, school, worship, library, and recreational uses are considered to be noise sensitive. The mix of uses assumed to occur within the EDZ area at full build-out includes club retail, hotel, office/commercial, recreational, and small- and large-format retail establishments.

Senior housing may also be developed within the EDZ area. Existing uses within the EDZ area would be permitted to operate until redevelopment activities occur on specific parcels. The nearest noise-sensitive receptors to the EDZ area are multi-family residences across Interstate 680 (I-680) (approximately 600 feet to the west and southwest of the EDZ area), single family residences across Stoneridge Drive (approximately 715 feet southeast), and Val Vista Park, which includes a skate park and ballfields and is located approximately 500 feet southeast of the proposed EDZ area. Within the EDZ area, Valley Bible Church and Love & Care Preschool (in the northern portion of the EDZ area) are noise-sensitive receptors that could be affected by new uses within the EDZ area.

The ambient noise environment surrounding the proposed EDZ area is primarily the result of traffic noise from vehicular traffic along Interstate 580 (I-580) and I-680. Other noise sources in the vicinity include occasional aircraft overflights from Livermore Municipal Airport (located approximately 4.8 miles from the EDZ area's eastern boundary) and Bay Area Rapid Transit (BART) train pass-by events along the median of I-580. Noise exposure from BART train pass-by events tend to be overshadowed by traffic noise along I-580.

To quantify the existing ambient noise levels in the vicinity, a noise measurement survey was conducted within and near the EDZ area. The noise survey was conducted on Friday, December 12 and Saturday, December 13, 2014, and consisted of five 15-minute short-term measurements and one 24-hour long-term noise measurement. The locations where these measurements were taken are illustrated in **Figure 4.C-2**. The area surrounding the EDZ area is dominated by localized traffic noise, which was measured to be as high as approximately 68 dBA L_{eq}. The results of the 15-minute short-term noise survey are presented in **Table 4.C-1** and include the L_{eq} values and descriptions of localized noise sources at all five monitoring locations. The results of the 24-hour long-term noise measurement survey are presented in **Table 4.C-2**. All noise measurements were conducted using a Metrosonics Model db-308 sound level meter (SLM) that was calibrated before and after each noise measurement survey.

TABLE 4.C-1
15-MINUTE SHORT-TERM AMBIENT NOISE MONITORING RESULTS

Measurement	Start time	L_{eq} (dBA)	L_{max} (dBA)	Primary Noise Source(s)
ST-1	10:30	65.3	70.5	I-680
ST-2	11:55	67.3	69.7	I-580
ST-3	11:23	68.4	79.4	Johnson Drive, I-680
ST-4	10:03	51.8	67.8	Stoneridge Drive, Johnson Drive
ST-5	10:57	63.7	71.4	Stoneridge Drive

TABLE 4.C-2
24-HOUR LONG-TERM AMBIENT NOISE MONITORING RESULTS

Measurement	24-Hour L_{eq} (dBA)	L_{dn} (dBA)	L_{max} (dBA)	Primary Noise Source(s)
LT-1	52.4	55.5	77.4	Stoneridge Drive, Johnson Drive

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SOURCE: ESA 2015; ESRI 2013

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Figure 4.C-2
Noise Measurement Location

Regulatory Setting

City of Pleasanton General Plan

The City's General Plan serves as the overall guiding policy document for land use, development, and environmental quality for the City. Noise exposure is considered "normally acceptable" up to a level of 60 dBA L_{dn} for single-family residential uses, 65 dBA L_{dn} for multi-family uses, and 70 dBA L_{dn} for office building, business, commercial, and professional uses. A "conditionally acceptable" noise exposure level of up to 75 dBA L_{dn} for residential uses and up to 80 L_{dn} for office buildings, business, commercial, and professional uses may be allowed if a detailed analysis of the noise reduction requirements and needed noise insulation features are included in the design.

The General Plan Noise Element contains the following standards, goals, policies, and programs that would apply to the proposed EDZ:

Goal 1: Reduce noise to acceptable levels throughout the community.

Policy 1: Require new projects to meet acceptable exterior noise level standards.

Program 1.1: Use the normally acceptable designation and text description contained in the "Noise and Land-Use Compatibility Guidelines," to determine the acceptability of new development and to determine when noise studies are required. For new single-family residential development, maintain a maximum day/night average noise level standard of 60 dBA L_{dn} for exterior noise in private or shared outdoor use areas excluding front yards. For new multi-family residential development, maintain a maximum standard of 65 dBA L_{dn} in community outdoor recreation areas. Noise standards are not applied to balconies or front yards. In the Downtown, the City Council will evaluate the requirement to achieve these standards on a case-by-case basis.

Program 1.3: Use noise guidelines and contours to determine the need for noise studies, and require new developments to construct or pay for noise attenuation features as a condition of approving new projects. An exterior increase of more than 4 dBA (i.e., 5+ dBA) is considered significant.

Program 1.5: Encourage the use of setbacks, landscaped earth berms, and frontage roads where feasible to reduce exterior noise levels. The use of soundwalls should only be used where other mitigation measures are not feasible. Where sound and frontage roads walls are needed, design and high quality materials, as well as landscaping, should be used to mitigate their visual impact.

Program 1.6: Require a vibration study, prepared by a qualified vibration consultant, with a site-specific engineering assessment for any proposed construction project that would require pile-driving or similar vibration-causing impacts. The assessment would minimize potential vibration impacts through such measures as pre-drilling pile holes, driving piles hydraulically or enclosing sheet piles with rubber aprons. The City Engineer would review and approve all vibration studies.

Policy 2: Reduce outdoor noise levels in existing residential areas where economically and aesthetically feasible.

Program 2.2: Project and monitor noise levels using traffic projections and periodic noise monitoring.

Program 2.3: Where traffic volumes increase by more than 50 percent from baseline 2006 noise data, verify projected noise levels with noise monitors at locations adjacent to residential and other noise sensitive areas.

Program 2.4: When considering approval of uses with loading bays, drive-through restaurant facilities, or other features that could generate noise, ensure that any nearby residential neighborhoods are protected as much as possible from excessive noise.

Policy 3: Ensure that noise does not exceed interior noise levels of 45 dBA L_{dn} for residential uses and those levels specified in noise studies for other uses.

Program 3.1: Require new developments to pay their fair share of mitigation measures necessary to reduce interior noise levels within existing adjacent or impacted land uses.

Program 3.4: Appropriate interior noise levels in commercial, industrial, and office buildings are a function of the use of the space. Interior noise levels in noise-sensitive spaces (e.g., offices) generally should be maintained at 45 dBA L_{eq} or less (hourly average).

Policy 4: Control noise at its source to maintain existing noise levels, and in no case to exceed acceptable noise levels as established in the Noise and Land Use Compatibility Guidelines.

Program 4.4: Explore opportunities to reduce noise-impacted areas through alternative street paving methods and materials.

Program 4.6: Require developers of new projects that would significantly increase noise in nearby homes to mitigate noise impacts with walls, berms or other measures, and/or to provide noise attenuating measures in the homes.

Policy 6: Limit truck traffic in residential and commercial areas to designated truck routes, as consistent with State law.

Program 6.1: Limit construction, delivery, and through-truck traffic to designated routes.

Program 6.2: Enforce the use of truck routes.

City of Pleasanton Municipal Code (Title 9 Health and Safety)

The City Municipal Code contains the following noise control codes that would apply to the proposed EDZ (City of Pleasanton, 2011):

> *Code Section 9.04.030 Noise Limits – Residential Property* establishes an exterior noise exposure limit of 60 dBA L_{max} on residential property due to outside stationary sources. It is assumed, based on interpretation of the Ordinance language, that this standard is designed to limit noise from continuous or repetitive sources, and not single or infrequent sources.

Code Section 9.04.040 Noise Limits – Commercial Property prohibits noise at levels of 70 dBA or more from any machine, animal, device, or any combination of the same, at any point outside the property line.

Code Section 9.04.070 Daytime Exceptions specifies that any source which does not produce a level exceeding 70 dBA L_{max}/L_{eq} at a distance of 25 feet under its most noisy condition of operation shall be exempt from Code sections 9.04.030 and 9.04.040 between 8:00 a.m. and 8:00 p.m. Monday through Friday (except holidays) and 10:00 a.m. to 6:00 p.m. on Sundays and holidays.

Code Section 9.04.100 Construction provides construction noise exposure limits. No individual piece of construction equipment shall produce a noise level exceeding 83 dBA L_{eq} at a distance of 25 feet. Noise exposure from construction shall not exceed 86 dBA L_{eq} outside of the property plane (i.e., the property line).

Impacts and Mitigation Measures

The following evaluates the adverse noise and vibration impacts related to development that would result from the EDZ. Noise and vibration impacts are grouped into two categories: temporary impacts associated with construction and permanent impacts associated with operations.

Previously Adopted Features and Mitigation Measures

No project features or mitigation measures addressing noise that would be applicable to the proposed EDZ were adopted as part of the 2009 General Plan EIR or 2012 SEIR. The General Plan EIR did not identify any mitigation or improvement measures, beyond implementation of policies in the General Plan, that were otherwise required to reduce identified noise impacts to a less-than-significant level. The 2012 SEIR identified several mitigation measures that were required to address significant noise impacts associated with implementation of the Housing Element and Climate Action Plan; however, these mitigation measures apply to specific rezoning sites, none of which are located in the proposed EDZ area, and are therefore not applicable to impacts from the EDZ that require mitigation as discussed below.

Significance Criteria

Consistent with CEQA *Guidelines*, Appendix G (Environmental Checklist) the proposed EDZ would have a significant impact if it would:

- Expose persons to or generate noise levels in excess of standards established in the City of Pleasanton General Plan or Municipal Code, or applicable standards of other agencies;
- Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels;
- Create a substantial permanent increase in noise exposure above ambient noise levels in the vicinity of the proposed EDZ area;
- Create a substantial temporary or periodic increase in noise exposure above ambient noise levels in the vicinity of the EDZ area;

As described below, the following CEQA *Guidelines* Appendix G criterion is not relevant to the proposed EDZ; therefore, it will not be evaluated further in this SEIR:

> **Exposure of people residing or working in the EDZ area to excessive aircraft/airport noise levels.** The EDZ area is not located within an airport land use plan or within 2 miles of a public airport or public use airport. The nearest airport to the EDZ area is the Livermore Municipal Airport, which is located approximately 4.8 miles from the EDZ area's eastern boundary. The EDZ area is also not located within the vicinity of a private airstrip.

Thresholds of Significance

Transportation Noise Exposure

The Noise Element of the General Plan establishes an exterior traffic noise exposure limit of 70 dBA L_{dn} for office buildings, business, commercial, and professional uses. These limits are used in this analysis to assess the significance of transportation noise exposure at common outdoor activity areas (e.g., outdoor sitting areas), and may be increased to as high as 80 dBA L_{dn} if a detailed analysis of all reasonable noise mitigation is completed and if compliance with the interior noise exposure criterion can be demonstrated.

Some guidance as to the significance of impacts related to changes in ambient noise levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. Recommendations from these findings are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that causes speech interference, sleep disturbance, or interference with the desire for a tranquil environment. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been shown that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}, as shown in **Table 4.C-3**.

TABLE 4.C-3
MEASURES OF SUBSTANTIAL INCREASE FOR NOISE EXPOSURE

Ambient Noise Level without Project (L_{dn})	Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels By:
<60 dB	+ 5.0 dB or more
60-65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

SOURCE: FICON, 1992.

As described in Table 4.C-3, the proposed EDZ would result in a significant traffic noise impact if mobile noise would result in increased noise levels of 1.5 dBA L_{dn} or more in an ambient noise environment greater than 65 dBA L_{dn}; or increased noise of 3 dBA L_{dn} or more in an ambient noise environment between 60 and 65 dBA L_{dn}; or increased noise of 5 dBA L_{dn} or more in an ambient environment of less than 60 dBA L_{dn}. The FICON thresholds are representative of noise

increases that could adversely affect residential receptors along the roadway. Although an increase in noise may be significant based on the thresholds, if there are no residential receptors along the roadway and thus no receptors that would be adversely impacted, then the noise would be deemed less than significant.

Transportation Vibration Exposure

For transportation-related vibration levels, especially from train pass-by events, the thresholds presented in the FTA's guidance manual (FTA, 2006) are applicable. The proposed EDZ would result in a significant vibration impact if buildings would be exposed to the FTA vibration threshold level of 0.2 PPV for building damage or if sensitive receptors would be exposed to a vibration level of 80 VdB for residential land uses, and 83 VdB for institutional land uses. These criteria are for "infrequent" events. Although more stringent criteria are recommended for "frequent" or "occasional" events, these are not used since construction activities would occur during the daytime and would not be permanent.

Non-transportation Noise Exposure (Stationary Sources)

The proposed EDZ would result in a significant impact if stationary/non-transportation operational source noise levels would exceed the City of Pleasanton Municipal Code limit of 60 dBA L_{max} at any point outside of the property plane, unless otherwise specified in the Municipal Code (Section 9.04.030). Sources of noise that do not produce noise exposure in excess of 70 dBA L_{max}/L_{eq} at a distance of 25 feet are exempt from this criterion between the hours of 8:00 a.m. and 8:00 p.m. Monday through Friday (except holidays) and 10:00 a.m. and 6:00 p.m. on Sundays and holidays.

Project Construction-related Noise

The City of Pleasanton Municipal Code (Section 9.04.100) limits noise exposure from individual construction equipment/tools to a level of 83 dBA L_{eq} at a distance of 25 feet, and the combined construction noise from a given project site may not exceed 86 dBA L_{eq} outside of the project boundary. Exceedance of either of these limits would result in a significant impact.

Project Construction-related Vibration

Goal 1, Policy 1, Program 1.6 of the City General Plan Noise Element requires a construction vibration study where pile driving or similar vibration-producing activities would be performed. For construction-related vibration levels, the FTA's guidance manual (FTA, 2006) is applicable. The proposed EDZ would result in a significant vibration impact if buildings would be exposed to the FTA vibration threshold level of 0.2 PPV for building damage or if sensitive receptors would be exposed to a vibration level of 80 VdB for residential land uses, and 83 VdB for institutional land uses. These criteria are for "infrequent" events. Although more stringent criteria are recommended for "frequent" or "occasional" events, these are not used since construction activities would occur during the daytime and would not be permanent.

Impacts and Mitigation Measures

Impact 4.C-1: The EDZ would increase construction noise levels at sensitive receptors located near construction sites (Less Than Significant With Mitigation).

Construction activity noise levels at and near construction sites within the EDZ area would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction activities would include site preparation, paving, and building construction, in addition to construction for off-site improvements such as roadways, storm drainage, and utilities. Construction would involve the use of heavy equipment (e.g., front loaders, graders, haul trucks) in addition to small power tools, generators, and hand tools that would be sources of noise. Each phase of construction would involve a different mix of construction tools and/or sources, and resulting noise exposure would vary based on construction location (relative to receptors) and the type and quantity of construction equipment. **Table 4.C-4** shows typical noise levels produced by various types of construction equipment.

TABLE 4.C-4
REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS AT 50 FEET

Type of Equipment	L_{max}, dBA	Hourly L_{eq}, dBA/% Use
Backhoe	80	76/40%
Concrete Mixer Truck	85	81/40%
Loader	85	81/40%
Pneumatic Tools	85	82/50%
Air Compressor	81	77/40%

SOURCES: FTA, 2006. % used during the given time period (usually an hour – Hourly L_{eq}) were obtained from FHWA, 2006.

As previously discussed in this section, the City of Pleasanton Municipal Code allows construction between the hours of 8:00 a.m. and 8:00 p.m. daily, except Sunday and holidays, when construction is allowed between 10:00 a.m. and 6:00 p.m. The Municipal Code also indicates that construction, alteration, or repair activities that are authorized by a valid city permit shall be allowed if they meet at least one of the following noise limitations:

- No individual piece of construction equipment shall produce a noise level exceeding 83 dBA L_{eq} at a distance of 25 feet.
- Noise exposure from construction shall not exceed 86 dBA L_{eq} outside of the property plane.

The combined noise level generated by the construction equipment listed in Table 4.C-4 operating in the same place and at the same time would produce a noise level of approximately 87 dBA L_{eq} at a distance of 50 feet. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance. Based on the layout and terrain of the EDZ area, this analysis assumes an attenuation rate of 6 dBA per doubling of distance for construction-related noise. Assuming this attenuation rate, the distance to the 87 dBA L_{eq} contour would be

approximately 55 feet. Since onsite construction activities could take place within 55 feet of a construction site's boundary, construction noise exposure outside of the property plane (i.e., the construction site boundary) could exceed 86 dBA L_{eq}, exceeding the limits of the Municipal Code and resulting in a significant impact, especially to the closest noise-sensitive receptors at Valley Bible Church and Love & Care Preschool. In addition, the loudest noise level generated by pneumatic tools during building construction would result in noise levels of approximately 88 dBA L_{eq} at a distance of 25 feet, which would exceed the City's construction noise exemption threshold. Assuming application and compliance with City of Pleasanton Municipal Code Section 9.04.100, implementation of **Mitigation Measure 4.C-1a** and **4.C-1b** would reduce construction noise to a less-than-significant level.

Mitigation Measure 4.C-1a: To address nuisance impacts of construction activities within the EDZ area, all developers of sites within the EDZ area shall ensure that construction contractors implement the following:

- Signs shall be posted at all construction site entrances to the property upon commencement of construction, for the purposes of informing all contractors/subcontractors, their employees, agents, material haulers, and all other persons at the applicable construction sites, of the basic requirements of Mitigation Measures 4.C-1a and 4.C-1b.
- Signs shall be posted at the construction sites that include permitted construction days and hours, a day and evening contact number for the job site, and a contact number in the event of problems.
- An onsite complaint and enforcement manager shall respond to and track complaints and questions related to noise.

Mitigation Measure 4.C-1b: To reduce daytime noise impacts due to construction within the EDZ area, all project developers shall require construction contractors working within 55 feet of the construction site property boundary to implement the following measures:

- Equipment and trucks used for construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds), wherever feasible.
- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered where feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.

Significance After Mitigation: Less Than Significant.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measure Identified.

Impact 4.C-2: Construction associated with development within the EDZ area would generate ground-borne vibration at neighboring sensitive uses (Less Than Significant).

Construction activities would include excavation, site preparation work, foundation work, and new building, framing, and finishing. Construction activities may generate perceptible vibration when heavy equipment or impact tools such as jackhammers or hoe rams are used. Construction activities that would take place within the EDZ area would not require pile driving or blasting, which can cause excessive vibration.

The use of bulldozers during fine-site grading is expected to generate the highest vibration levels during construction. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Large bulldozers typically generate vibration levels of 78 VdB and 0.031 in/sec PPV at a distance of 50 feet, which would below the 80 VdB threshold for human annoyance and the 0.2 PPV threshold for building damage. As previously discussed, two noise-sensitive receptors, Valley Bible Church and Love & Care Preschool are located within the EDZ area, and senior housing may be developed within the EDZ area. According to the FTA's guidance manual (FTA, 2006), a vibration impact would occur for institutional land uses if vibration levels exceed 83 VdB, and for residential land uses if vibration levels exceed 80 VdB. For a large bulldozer to exceed this threshold for Valley Bible Church and Love & Care Preschool or for a future senior housing use, it would have to operate within 35 to 40 feet of such land uses. Construction activities that would take place within the EDZ area requiring a large bulldozer are not anticipated to occur within 40 feet of these land uses. Consequently, sensitive land uses near possible construction sites would not be affected by substantial groundborne vibration and this impact would be less than significant.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measure Identified.

Impact 4.C-3: Development within the EDZ area could locate commercial or residential uses near an existing rail (BART) line. Uses that may be developed within the EDZ area would be exposed to exterior and interior noise exposure from train noise events (Less Than Significant).

There is no freight train activity in the vicinity of the EDZ area; however, a BART rail line passes approximately 800 feet north of the EDZ area. As previously discussed, the City of Pleasanton General Plan Noise Element requires that indoor and outdoor areas of new projects are constructed such that they are not exposed to noise levels that exceed the City's "normally acceptable" noise standards. For the proposed EDZ, an impact would be significant if commercial land uses would be exposed to transportation-related noise levels above 70 dBA L_{dn}, per the Noise Element of the City's General Plan. For residential uses, such as senior housing, an impact would be significant if such uses would be exposed to transportation-related noise levels above 60 dBA L_{dn}.

Based on the BART weekday rail schedule, it was determined that approximately 150 pass-by events occur per day along the double tracks north of the EDZ area, which equates to approximately 11 train pass-by events per hour. According to the FTA's guidance manual (FTA, 2006), the typical Sound Exposure Level (SEL) from a rail transit bass-by is 82 dB at a reference distance of 50 feet. The combined rail noise generated by commuter rail traffic along the BART rail line north of the EDZ area, as calculated using rail noise predictions in the FTA guidance, would be about 60.9 dBA L_{dn} from a distance of 50 feet from the center of the rail tracks. This referenced noise level was propagated out to the northern-most boundary of the EDZ area, approximately 880 feet from the BART rail center line. The calculated light rail noise exposure level at the EDZ area's northern-most boundary was found to be approximately 48.5 dBA L_{dn}. Consequently, noise levels generated by commuter rail traffic along the BART rail line north of the EDZ area would be less than 60 dBA L_{dn} and would result in a less-than-significant impact.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measure Identified.

Impact 4.C-4: Development within the EDZ area could locate commercial or residential uses near an existing rail (BART) line. Uses that may be developed within the EDZ would be exposed to vibration from train pass-by events (Less Than Significant).

Commuter rail operations along the BART rail line, north of the EDZ area, may cause excessive groundborne vibration at land uses within the EDZ area. According to the FTA's guidance manual (FTA, 2006), the typical ground-surface vibration level for light rail trains traveling at a speed of 50 miles per hour and at a distance of 200 feet is approximately 60 VdB or 0.004 in/sec PPV. The EDZ area is located approximately 800 feet from the BART rail centerline. At this distance the nearest land use within the EDZ area would be exposed to a vibration level of approximately 41 VdB or 0.0004 in/sec PPV, which is substantially less than the FTA vibration impact threshold of 83 VdB for institutional land uses, 80 VdB for residential land uses, and 0.2 in/sec PPV for building damage. Consequently, vibration from train pass-by events along the existing BART rail line north of the EDZ area would not expose people to substantial vibration levels and would result in a less-than-significant impact.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measure Identified.

Impact 4.C-5: Development within the EDZ area would generate additional traffic on local area roadways that would increase traffic noise exposure relative to existing conditions (Less Than Significant).

Most of the noise generated by operation of uses within the EDZ area would primarily be traffic-generated noise. Buildout under the proposed EDZ would contribute to an increase in local traffic volumes (see Section 4.D), resulting in higher noise levels along local roadways, including roadways adjacent to residential uses. Using a spreadsheet based upon algorithms from the Federal Highway Administration's Highway Traffic Noise Prediction Model (FHWA-RD-77-108) and the traffic volumes found in the *Johnson Drive Economic Development Zone Transportation Assessment* prepared by Fehr & Peers (**Appendix G**), traffic noise levels were analyzed for 16 roadway segments. The segments analyzed and results of the modeling are shown in **Table 4.C-5**.

As shown in Table 4.C-5, all existing residential land uses located adjacent to roadways that would be affected by the proposed EDZ would not experience a substantial increase in traffic noise. The greatest effect on ambient noise levels would occur on roadways adjacent to existing commercial land uses located along Johnson Drive, between the Park and Ride facility and Stoneridge Drive, where traffic noise would increase by as much as 3.6 dBA L_{dn}. All other roadways analyzed are expected to not experience a traffic noise increase greater than 1 dBA L_{dn}. According to the City of Pleasanton General Plan Noise Element Program 1.3, an exterior increase of more than 4 dBA (i.e., 5 dBA or higher) is a significant increase. The highest increase in traffic noise adjacent to commercial land uses, 3.6 dBA L_{dn}, would not result in a substantial increase in traffic noise. Consequently, none of the roadway segments analyzed would experience a significant increase in traffic noise from operation of new uses within the EDZ area as compared to existing conditions; therefore, traffic noise associated with the proposed EDZ would result in a less-than-significant impact.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measure Identified.

Impact 4.C-6: New commercial land uses developed under Phase I of the proposed EDZ would be exposed to noise levels in excess of the City of Pleasanton Noise Standards (Less Than Significant).

With respect to new, non-residential on-site commercial land uses, the City of Pleasanton General Plan Noise Element "normally acceptable" noise exposure level for office, business, commercial and professional uses is 70 dBA L_{dn}. Therefore, an impact is significant if new commercial land uses would be exposed to transportation-related noise levels above 70 dBA L_{dn}. The commercial uses assumed to be developed as part of Phase I of the EDZ, as described in Chapter 3, Project Description, would be located within approximately 100 feet of the segment of Johnson Drive between Owens Drive (north) and Commerce Drive. As shown in **Table 4.C-5**, the calculated

TABLE 4.C-5
SUMMARY OF TRAFFIC NOISE MODELING RESULTS (EXISTING/EXISTING PLUS PROJECT) NOISE EXPOSURE (L_{DN}) AT 100 FEET FROM ROADWAY CENTERLINE

Roadway Segment	Adjacent to an Existing Residential Receptor (Yes or No)	Traffic Noise Level, dBA, L_{dn}[1]			Significant? (Yes or No)[2]
		Existing	Existing Plus Project	Incremental Increase	
		A	B	(B - A)	
1. Foothill Road, between I-580 and Stoneridge Drive	No	68.6	68.6	0.1	No
2. Foothill Road, south of Stoneridge Drive	No	63.2	63.2	0.0	No
3. Stoneridge Drive, between Foothill Road and I-680	Yes	67.8	68.0	0.2	No
4. Stoneridge Drive, between I-680 and Denker Drive	Yes	68.2	68.4	0.2	No
5. Stoneridge Drive, between Denker Drive and Hopyard Road	Yes	67.7	67.9	0.2	No
6. Stoneridge Drive, between Hopyard Road and Hacienda Drive	Yes	67.6	67.8	0.2	No
7. Stoneridge Drive, east of Hacienda Drive	No	64.4	64.6	0.1	No
8. Johnson Drive, between Stoneridge Drive and Owens Drive (south)	No	56.8	56.8	0.0	No
9. Johnson Drive, between Owens Drive (south) and Owens drive (north)	No	59.7	60.4	0.7	No
10. Johnson Drive, between Owens Drive (north) and Commerce Drive	No	59.5	60.8	1.4	No
11. Johnson Drive, between Commerce Drive and Park & Ride	No	61.3	64.7	3.4	No
12. Johnson Drive, between Park & Ride and Stoneridge Drive	No	61.0	64.7	3.6	No
13. Hopyard Road, between I-580 and Owens Drive	No	68.4	68.5	0.1	No
14. Hopyard Road, between Owens Drive and Stoneridge Drive	No	67.4	67.4	-0.1	No
15. Hopyard Road, between Stoneridge Drive and Las Positas Boulevard	Yes	67.7	67.8	0.1	No
16. Hopyard Road, south of Las Positas Boulevard	Yes	68.7	68.8	0.1	No

1 Noise levels 100 feet from roadway were determined using FHWA Traffic Noise Prediction Model (FHWA RD-77-108).
2 For commercial land uses a significant impact would occur if existing plus project traffic noise levels exceed 70 dBA L_{dn}. For residential uses a significant impact would occur if existing plus project traffic noise levels exceed 60 dBA L_{dn} for single-family homes and 65 dBA L_{dn} for multi-family homes, and where existing traffic noise levels exceed the City's established traffic noise standard, a significant impact would occur if the incremental increase in noise is greater than 5 dBA L_{dn} in a noise environment of 60 dBA L_{dn} or less, an increase of 3 dBA L_{dn} in a noise environment greater than 60 dBA and 65 dBA L_{dn}, or an increase of 1.5 dBA L_{dn} in a noise environment greater than 65 dBA L_{dn}.

traffic noise with the development of Phase I from that segment of Johnson Drive would be approximately 61.3 dBA L_{dn}, which is below the City's traffic noise threshold. Therefore, this impact would be less than significant.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measure Identified.

Impact 4.C-7: Development within the EDZ area would be exposed to stationary (non-transportation) noise sources at levels in excess of the City of Pleasanton Noise Standards (Less Than Significant With Mitigation).

Noise from stationary (non-transportation) sources in the vicinity of the EDZ area could exceed the applicable 60 dBA L_{max} exterior noise exposure limit established within the City Municipal Code. Some new uses that would be developed within the EDZ area adjacent to existing industrial or commercial areas would be subject to loading noise and late or 24-hour operations noise. Other stationary noise sources would include heating, ventilation, and air conditioning units (HVAC). Typically, noise levels of 80 dBA L_{max} at a distance of 50 feet would be generated during loading dock activities. HVAC units typically generate noise levels of approximately 55 dBA L_{max} at a reference distance of 100 feet from the operating units during maximum heating or air conditioning operations. The closest residential land uses to the EDZ area are located approximately 600 feet away. At this distance, the closest residential land uses to the EDZ area would be exposed to approximately 58 and 33 dBA L_{max} during loading/unloading activities and HVAC operations, respectively. The noise levels generated by both of these activities would be below the City's maximum allowed exterior noise standard for stationary sources for these existing uses.

If senior housing is developed within the area of the proposed EDZ near stationary noise sources such as loading docks, residential receptors would be affected. Assuming application and compliance with City of Pleasanton Municipal Code, implementation of **Mitigation Measures 4.C-1c** and **4.C-1d** would reduce this impact to a less-than-significant level.

> **Mitigation Measure 4.C-1c:** Prior to the approval of the development of senior housing projects within the EDZ area, the City shall require site-specific acoustical assessments to determine exposure to existing and approved noise sources, impact, and mitigation regarding non-transportation sources. Noise exposure shall be mitigated to satisfy the applicable City Municipal Code criterion using appropriate housing site design.
>
> **Mitigation Measure 4.C-1d:** For all senior housing proposed for development within the EDZ area, the City shall require noise disclosures and noise complaint procedures for new residents of these developments, which will include 1) a disclosure of potential noise sources in the project vicinity; and 2) the establishment of procedures and a contact phone number for a site manager the residents can call to address any noise complaints.

With the implementation of Mitigation Measures 4.C-1c and 4.C-1d, this impact would be less than significant.

Significance After Mitigation: Less Than Significant.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, New Mitigation Measure Identified.

Cumulative Impacts

Impact 4.C-8: Development within the EDZ area would generate construction noise that, in combination with construction noise associated with other buildout in the City of Pleasanton, would have cumulative noise effects at noise-sensitive uses (Less Than Significant).

Construction activities associated with other development projects in the City of Pleasanton may occur simultaneously with construction of new uses within the EDZ area. However, substantial construction-related noise and vibration would affect only areas in close proximity to each of the individual construction sites. It is unlikely that construction noise or vibration from these other construction sites would jointly affect the same noise-sensitive receptors. Therefore, the contribution of existing and future developmental projects within the City of Pleasanton would not be in close enough proximity to the proposed EDZ area to result in a cumulative construction noise impact at noise-sensitive receptors and this impact is less than significant.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measure Identified.

Impact 4.C-9: Development within the EDZ area, in combination with other foreseen projects in the city would produce a cumulative increase in traffic noise exposure (Less Than Significant).

Traffic noise levels were predicted in terms of the L_{dn} at a representative distance of 100 feet from the center of the roadways for the cumulative (2035) and cumulative (2035) plus project conditions using the FHWA Model. These predictions used the same modeling methodology presented above. Results of this analysis are summarized in **Table 4.C-6**.

The development of the EDZ area would add traffic volumes to local roadways (see Section 4.D), particularly along Johnson Drive, which would result in increased traffic noise levels. As shown in Table 4.C-6, the proposed EDZ would not be a significant contributor to future cumulative traffic noise levels. Along Johnson Drive, development within the proposed EDZ would increase cumulative traffic noise levels by up to 2.9 dBA L_{dn}, which would not exceed the City's substantial noise increase threshold. All other local roadway segments analyzed near the EDZ

TABLE 4.C-6
SUMMARY OF TRAFFIC NOISE MODELING RESULTS – CUMULATIVE (2035) NOISE EXPOSURE (L_{DN}) AT 100 FEET FROM ROADWAY CENTERLINE

Roadway Segment	Adjacent to an Existing Residential Receptor (Yes or No)	Traffic Noise Level, dBA, L_{dn}[1]			Significant? (Yes or No)[2]
		Cumulative	Cumulative Plus Project	Incremental Increase	
		A	B	(B - A)	
1. Foothill Road, between I-580 and Stoneridge Drive	No	70.3	70.1	-0.2	No
2. Foothill Road, south of Stoneridge Drive	No	65.5	65.5	0.0	No
3. Stoneridge Drive, between Foothill Road and I-680	Yes	68.3	68.5	0.1	No
4. Stoneridge Drive, between I-680 and Denker Drive	Yes	68.4	68.6	0.2	No
5. Stoneridge Drive, between Denker Drive and Hopyard Road	Yes	67.9	68.1	0.2	No
6. Stoneridge Drive, between Hopyard Road and Hacienda Drive	Yes	67.9	68.1	0.2	No
7. Stoneridge Drive, east of Hacienda Drive	No	65.6	65.7	0.1	No
8. Johnson Drive, between Stoneridge Drive and Owens Drive (south)	No	57.6	57.6	0.0	No
9. Johnson Drive, between Owens Drive (south) and Owens drive (north)	No	60.3	60.9	0.6	No
10. Johnson Drive, between Owens Drive (north) and Commerce Drive	No	60.3	61.4	1.1	No
11. Johnson Drive, between Commerce Drive and Park & Ride	No	62.2	65.1	2.9	No
12. Johnson Drive, between Park & Ride and Stoneridge Drive	No	62.2	65.1	2.9	No
13. Hopyard Road, between I-580 and Owens Drive	No	69.2	69.2	0.0	No
14. Hopyard Road, between Owens Drive and Stoneridge Drive	No	68.6	68.6	0.0	No
15. Hopyard Road, between Stoneridge Drive and Las Positas Boulevard	Yes	68.3	68.4	0.1	No
16. Hopyard Road, south of Las Positas Boulevard	Yes	69.6	69.7	0.0	No

1 Noise levels 100 feet from roadway were determined using FHWA Traffic Noise Prediction Model (FHWA RD-77-108).
2 For commercial land uses a significant impact would occur if existing plus project traffic noise levels exceed 70 dBA L_{dn}. For residential uses a significant impact would occur if existing plus project traffic noise levels exceed 60 dBA L_{dn} for single-family homes and 65 dBA L_{dn} for multi-family homes, and where existing traffic noise levels exceed the City's established traffic noise standard, a significant impact would occur if the incremental increase in noise is greater than 5 dBA L_{dn} in a noise environment of 60 dBA L_{dn} or less, an increase of 3 dBA L_{dn} in a noise environment greater than 60 dBA and 65 dBA L_{dn}, or an increase of 1.5 dBA L_{dn} in a noise environment greater than 65 dBA L_{dn}.

area showed a traffic noise increase of less than 1 dBA L_{dn}. In addition, all existing residential land uses located adjacent to roadways that would be affected by the EDZ would not experience a substantial increase in traffic noise. Consequently, none of the roadway segments analyzed would result in a significant increase in traffic noise from the proposed EDZ versus the cumulative scenario; therefore traffic noise associated with the proposed EDZ would result in a less-than-significant impact.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measure Identified.

References – Noise

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4.D Transportation and Traffic

This section evaluates the impacts on transportation and traffic that would result from the proposed EDZ. To determine whether the proposed EDZ would result in any new impacts related to transportation and traffic, or increases in the severity of transportation and traffic impacts previously disclosed in the General Plan EIR and 2012 SEIR, this analysis considers the transportation and traffic impacts that would result from the proposed EDZ, and compares these impacts to those identified in the two previous EIRs, and applicable mitigation measures in those EIRs. This section describes transportation and circulation conditions in the city and assesses the proposed EDZ in terms of whether it would (1) conflict with adopted policies or programs supporting alternative transportation (e.g., pedestrian, bicycles, and public transit travel modes), (2) cause an increase in traffic that is substantial in relation to background traffic load and capacity (i.e., increase congestion and delay at intersections), (3) exceed level of service standards established by the City of Pleasanton, (4) substantially increase traffic safety hazards, or (5) result in inadequate emergency access. Both short-term and long-term effects are analyzed to determine their significance under CEQA. For impacts that are determined to be significant, mitigation measures have been identified to avoid or reduce those impacts, unless mitigation measures already adopted as part of the General Plan EIR or 2012 SEIR would reduce those impacts to a less-than-significant level.

This section summarizes and discusses impacts relating to traffic and circulation as reported in the traffic analysis prepared by Fehr & Peers Transportation Consultants for the proposed EDZ. The traffic analysis is included in its entirety in **Appendix G**.

Setting

In the Circulation Element of the City's General Plan, Table 3-1 lists, and Figure 3-2 shows, the locations of all signalized and future signalized intersections in the city. In addition to the interchanges, access to and from the City's transportation network can be gained from arterials providing a system with multiple and distributed access points.

As required by the Alameda County Congestion Management Agency's guidelines for the Congestion Management Program (CMP), an analysis of freeway and arterial segment levels of service was prepared and presented in the General Plan. The CMP designated the 40 freeway and arterial segments presented in Table 3.2-1 of the 2009 General Plan EIR as part of the CMP network.

Regional Roadways in EDZ Area

Two interstate freeways serve the EDZ area.

Interstate 580 (I-580) is a multilane freeway that runs in an east-west direction from Interstate 5 near Tracy to beyond a convergence point with Interstate 80 (I-80) in Emeryville. A high-occupancy vehicle (HOV) lane exists in the eastbound direction from Hacienda Drive to the base of the Altamont to the east of Livermore.

Interstate 680 (I-680) is a multilane freeway that runs in a north-south direction from I-80 near Fairfield to Interstate 280 in San Jose. The I-580/I-680 interchange is located in northwestern Pleasanton (see Figure 3-1 in the General Plan Circulation Element).

Arterial Roadways in EDZ Area

Stoneridge Drive is designated as an arterial roadway in the General Plan, and is generally a four-lane to six-lane facility with a landscaped median. Stoneridge Drive provides access to I-680 via an interchange and has a posted speed limit of 45 mph through the intersections studied for the EDZ area. No on-street parking is permitted on this street.

Foothill Road is designated as an arterial roadway in the General Plan, and ranges from a three- to five- lane facility with a planted median. Foothill Road provides access to I-580 via an interchange and has a posted speed limit of 45 mph through the intersections studied for the EDZ area. No on-street parking is permitted.

Hopyard Road is a southeast-northwest arterial that provides access to I-580 via an interchange. Hopyard Road has a posted speed limit that varies between 35 and 40 mph, and varies in width from between four and six travel lanes. No on-street parking is permitted.

West Las Positas Boulevard is a designated arterial roadway in the General Plan and ranges in width from a two-lane to six-lane facility. West Las Positas Boulevard has a posted speed limit of 40 mph through the intersections studied for the EDZ area. No on-street parking is permitted.

Johnson Drive is a designated arterial roadway in the General Plan, and is generally a two-lane facility with a dual left turn lane in the center for approximately 1,000 feet north of Stoneridge Drive. Through most of the area studied for the proposed EDZ, a single vehicular travel lane and bicycle lane is provided in each direction. Direct driveway access is provided from parcels to and from Johnson Drive. On-street parking is permitted in proximity to Commerce Drive on the west side of the roadway. Johnson Drive has a posted speed limit of 40 mph through the EDZ area. Field observations indicate that the on-street parking is well utilized for most of the day. There are no sidewalks along Johnson Drive with the exception of a short (approximately 1,200-foot) area of sidewalk extending north from Stoneridge Drive, along the south and west side of the street.

Local Roadway in EDZ Area

Commerce Drive is a designated local roadway in the General Plan that provides one vehicular travel lane in each direction, and connects to Johnson Drive and Commerce Circle. On-street parking is permitted on both Commerce Drive and Commerce Circle, with parking restricted to one side of Commerce Circle. Field observations indicate that the on-street parking is well utilized for most of the day.

Existing Traffic Conditions

Level of Service Analysis Methodologies

The operation of a local roadway network is commonly measured and described using a grading system called Level of Service (LOS). The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of vehicle traffic, ranging from LOS A (indicating free-flow traffic conditions with little or no delay experienced by motorists) to LOS F (indicating congested conditions where traffic flows exceed design capacity and result in long delays). This LOS grading system applies to both roadway segments and intersections. The City of Pleasanton has established the maintenance of LOS D or better as the generally acceptable service level standard for peak hour intersection operations for most intersections in the city. LOS standards are exempt for intersections located in the Downtown Area and at gateway intersections.[1] These intersections may have a service level worse than LOS D if no reasonable mitigation exists, or if the necessary mitigation conflicts with other City goals and policies.

At signalized intersections, traffic conditions are evaluated using the 2000 *Highway Capacity Manual* operations methodology (TRB, 2000). The operation analysis uses various intersection characteristics (e.g., traffic volumes, lane geometry, and signal phasing/timing) to estimate the average control delay experienced by motorists traveling through an intersection.[2] **Table 4.D-1** summarizes the relationship between control delay and LOS.

TABLE 4.D-1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Average Control Delay Per Vehicle (Seconds)	Description
A	≤ 10.0	Operations with very low delay occurring with favorable progression and/or short cycle length.
B	10.1 to 20.0	Operations with low delay occurring with good progression and/or short cycle lengths.
C	20.1 to 35.0	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.
D	35.1 to 55.0	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.
E	55.1 to 80.0	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.
F	> 80.0	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.

SOURCE: Transportation Research Board, Special Report 209, *Highway Capacity Manual*, updated 2000.

1 Gateway intersections are defined in the Circulation Element of the City's General Plan as "key arrival points into the city where street design, buildings, and landscaping are used to create an inviting entrance into Pleasanton," and are generally constrained by landscaping and narrower widths (City of Pleasanton, 2009).

2 Control delay, which is the portion of total delay attributed to traffic signal operation for signalized intersections, includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The use of control delay as the basis for defining LOS differs from earlier versions of the Highway Capacity Manual methodology, which used "stopped delay" (i.e., a portion of the total control delay) to define LOS.

Existing Traffic Volumes and Intersection Levels of Service

To determine impacts from the proposed EDZ, intersection operations at 17 study intersections were evaluated during weekday AM and PM peak traffic hours. Peak conditions on weekdays usually occur during the morning and evening commute hours from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM, respectively. Operating conditions during the Saturday peak period (1:00 to 4:00 PM) were also evaluated for a subset of intersections closest to the EDZ area, because the land uses assumed to be developed within the EDZ area would generate more traffic during the Saturday peak period than the peak weekday commute periods.

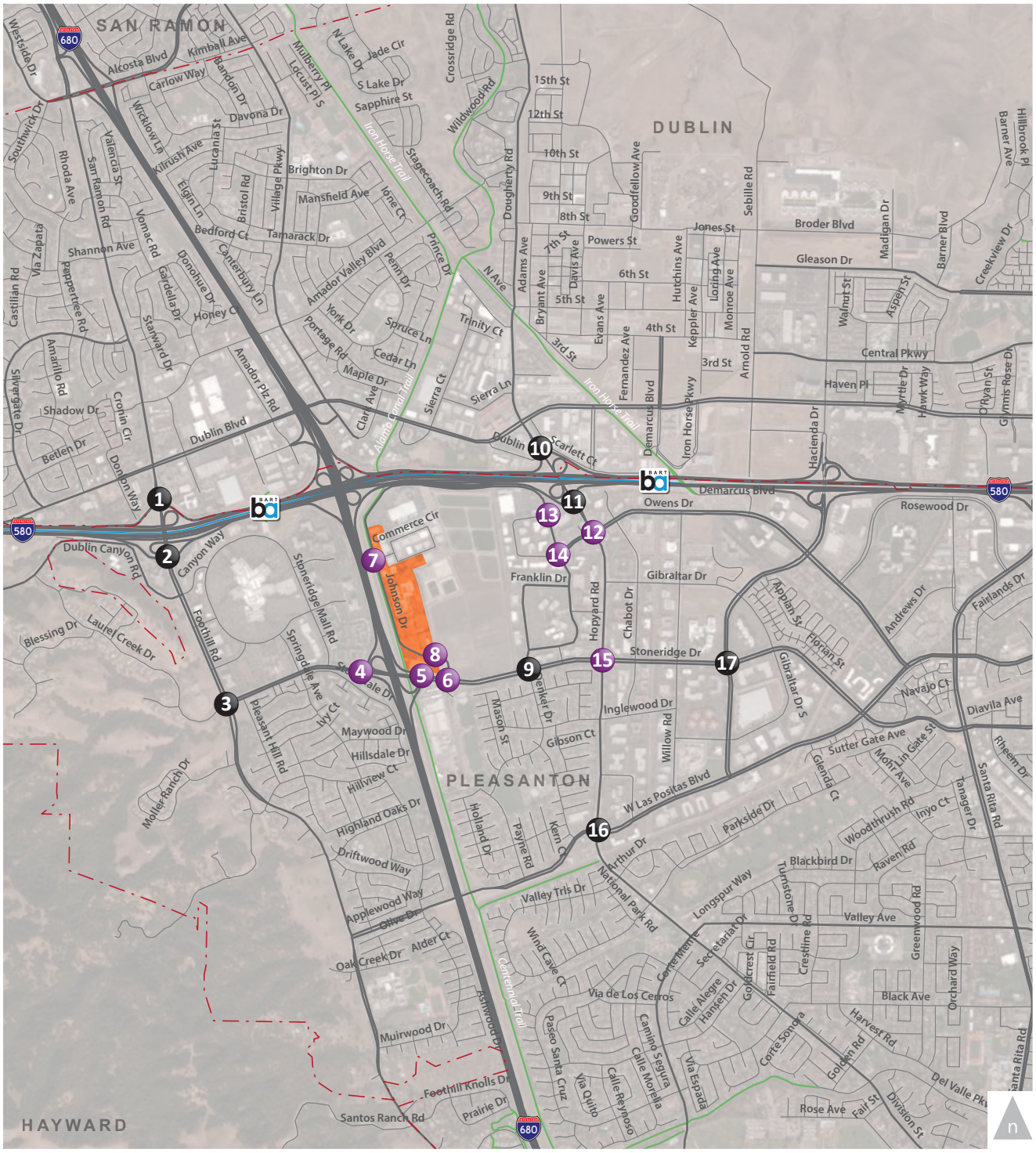
Turning movement counts were conducted at the study intersections on October 1, 2014, and included separate counts of trucks, pedestrians, and bicyclists. The locations of study intersections are presented in **Figure 4.D-1** and include:

1. **I-580 Westbound Ramps at San Ramon Road**
2. **I-580 Eastbound Ramps at Foothill Road**
3. Foothill Road at Stoneridge Drive
4. ***Stoneridge Drive at I-680 Southbound Ramps***
5. ***Stoneridge Drive at I-680 Northbound Ramps***
6. ***Stoneridge Drive at Johnson Drive***
7. *Commerce Drive at Johnson Drive*
8. *Park and Ride Lot at Johnson Drive*
9. Stoneridge Drive at Franklin Drive
10. **Dougherty Road at I-580 Westbound Ramps**
11. **Hopyard Road at I-580 Eastbound Ramps**
12. ***Hopyard Road at Owens Drive***
13. *Johnson Drive at Owens Drive (north)*
14. *Johnson Drive at Owens Drive (south)*
15. *Stoneridge Drive at Hopyard Road*
16. West Las Positas Boulevard at Hopyard Road
17. Stoneridge Drive at Hacienda Drive

Intersections shown in *italic* text above were evaluated under both weekday AM and PM peak-hour conditions and Saturday peak hour conditions, and intersections shown in **bold** text are identified as gateway intersections in the General Plan and are exempt from the LOS D standard if all feasible improvements have been implemented. The existing peak hour intersection volumes and lane configurations are shown on **Figure 4.D-2**. Study intersections were selected on the basis of a review of the location of the EDZ area and the amount of traffic that would be added to intersections in the vicinity.

Existing Intersection Levels of Service

Results of the existing conditions LOS analysis at the 17 study intersections during the AM and PM peak hours and Saturday peak hours, where applicable, are summarized in **Table 4.D-2**. As shown in the table, the study intersections operate at acceptable levels of service during both peak hours and Saturday hours, where applicable, under existing conditions. Field observations confirmed the calculated levels of service.



LEGEND

EDZ Area

Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

SOURCE: Fehr & Peers

Johnson Drive EDZ . 140421

Figure 4.D-1

Study Intersection Locations

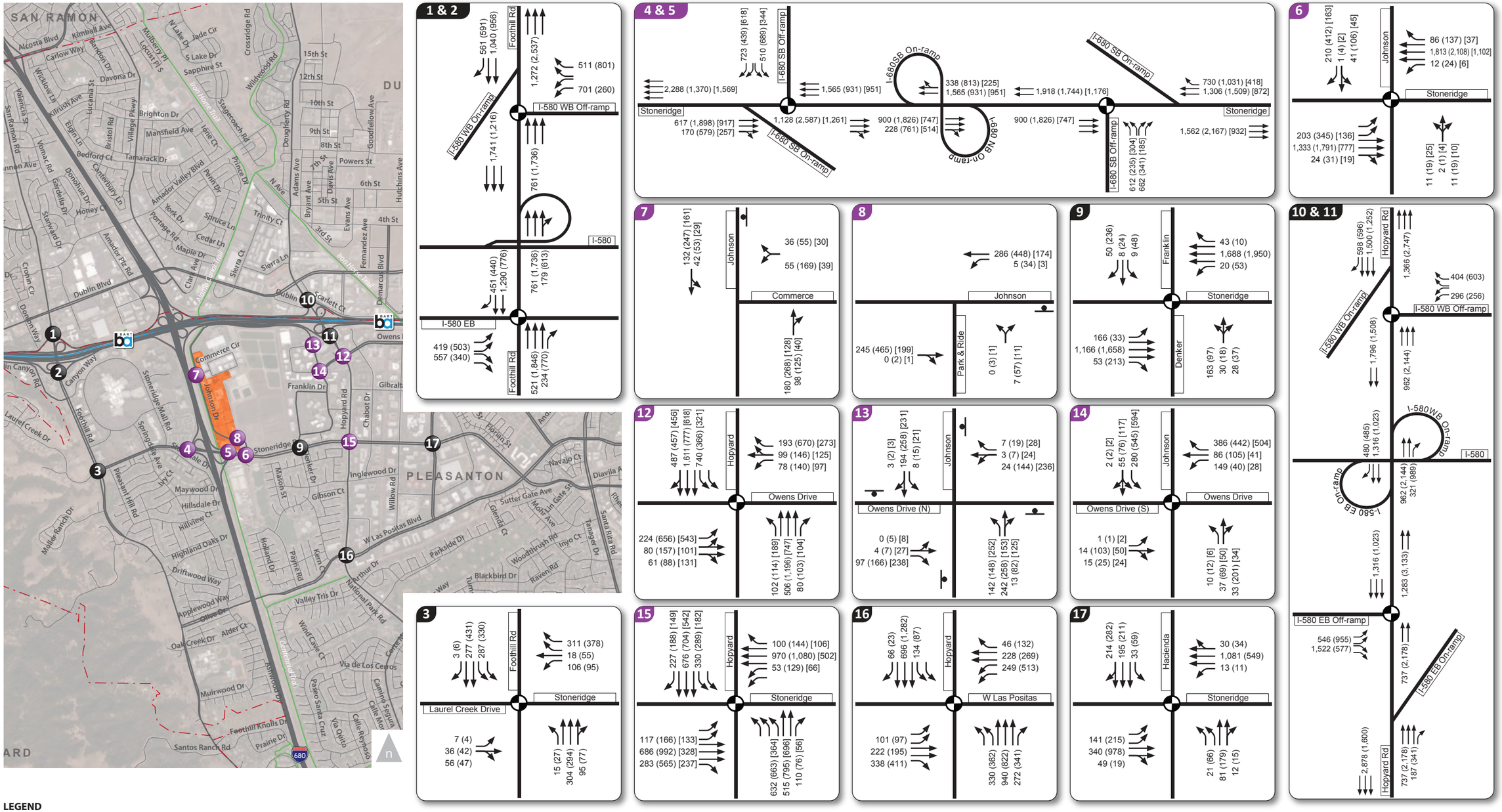
TABLE 4.D-2
EXISTING CONDITIONS PEAK HOUR INTERSECTION LEVELS OF SERVICE (LOS)[1]

No.	Intersection	Traffic Control	LOS Standard	Delay[3,4] (seconds)	LOS[4]
1	I-580 Westbound Ramps at San Ramon Road[2]	Signal	AM	8	A
			PM	15	B
2	I-580 Eastbound Ramps at Foothill Road[2]	Signal	AM	10	A
			PM	8	A
3	Foothill Road at Stoneridge Drive	Signal	AM	19	B
			PM	18	B
4	Stoneridge Drive at I-680 Southbound Ramps[2]	Signal	AM	18	B
			PM	11	B
			Sat	10	A
5	Stoneridge Drive at I-680 Northbound Ramps[2]	Signal	AM	16	B
			PM	13	B
			Sat	9	A
6	Stoneridge Drive at Johnson Drive[2]	Signal	AM	12	B
			PM	23	C
			Sat	11	B
7	Commerce Drive at Johnson Drive	SSSC	AM	3 (12)	A (B)
			PM	7 (28)	A (D)
			Sat	2 (11)	A (B)
8	Park and Ride Lot at Johnson Drive	SSSC	AM	1 (10)	A (A)
			PM	1 (12)	A (B)
			Sat	1 (10)	A (A)
9	Stoneridge Drive at Franklin Drive	Signal	AM	24	C
			PM	19	B
10	Dougherty Road at I-580 Westbound Ramps[2]	Signal	AM	9	A
			PM	13	B
11	Hopyard Road at I-580 Eastbound Ramps[2]	Signal	AM	17	B
			PM	15	B
12	Hopyard Road at Owens Drive[2]	Signal	AM	30	C
			PM	47	D
			Sat	36	D
13	Johnson Drive at Owens Drive (north)	AWSC	AM	10	A
			PM	13	B
			Sat	16	C
14	Johnson Drive at Owens Drive (south)	Signal	AM	13	B
			PM	18	B
			Sat	12	B
15	Stoneridge Drive at Hopyard Road	Signal	AM	30	C
			PM	32	C
			Sat	27	C
16	West Las Positas Boulevard at Hopyard Road	Signal	AM	21	C
			PM	25	C
17	Stoneridge Drive at Hacienda Drive	Signal	AM	23	C
			PM	27	C

SSSC = side-street stop controlled intersection; AWSC = all way stop control; Signal = signalized intersection.

1 Based on intersection turning movement volumes and intersection geometries provided to Fehr & Peers by City of Pleasanton.
2 Indicates gateway intersection, exempt from the LOS D standard.
3 Average intersection delay calculated for signalized intersections using the 2000 HCM method.
4 For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.

SOURCE: Appendix G (Fehr & Peers, 2015).



LEGEND

XX (YY) [ZZ]	AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes	Traffic Signal	Stop Sign	#	Study Intersections (Weekday AM + PM)	#	Study Intersections (Weekday AM + PM + Satuday Afternoon)		EDZ Area

SOURCE: Fehr & Peers

Johnson Drive EDZ . 140421

Figure 4.D-2

Existing Peak Hour Intersection Volumes and Lane Configurations

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Stoneridge Drive Interchange

Freeway mainline and ramp/merge and diverge operations at the Stoneridge Drive interchange were assessed for the existing and cumulative condition. For freeway mainline segments and ramp merging and diverging operations, LOS was calculated using the method described in the 2000 Highway Capacity Manual (TRB, 2000), which takes into account peak hour traffic volumes, free-flow speeds, percentage of heavy vehicles, and number of travel lanes. In addition, a simulation of PM peak hour operations along the Stoneridge Drive corridor between the I-680 southbound ramps and Franklin Drive was conducted using SimTraffic, a micro-simulation program that accounts for the effects of vehicle queue spillback, lane utilization as vehicles position themselves to enter the freeway, and the operation of trap lanes.

Metropolitan Transportation System (MTS) Roadway System

An assessment of impacts to the Metropolitan Transportation System (MTS), which includes freeways and roadways designated by the Alameda County Transportation Commission (Alameda CTC) that would result from the proposed EDZ is also included in this section. MTS routes have been declared "regionally significant" and the Metropolitan Transportation Commission (MTC) provides funding for these regionally important streets, roads, and highways through the adopted Regional Transportation Plan (RTP). The MTS freeways and roadways have been adopted into the Alameda County CMP network. The CMP network consists of all freeways, state highways, and principal arterials within Alameda County that are regulated and monitored by the Alameda CTC to evaluate transportation and land use implications and identify congestion management implications of proposed transportation projects.

The LOS standard for CMP facilities is LOS E, except where LOS F was the LOS when originally measured in the CMP in 1991 for specific routes. None of the study freeway and arterial segments were measured at LOS F in 1991; therefore, the LOS significance threshold of LOS E is applicable to both MTS and CMP routes within the study area (Alameda CTC, 2013). MTS freeway and arterial segments in Pleasanton were included in this analysis:

- I-580 (5 segments)
- I-680 (3 segments)
- Stoneridge Drive (8 segments)
- Hopyard Road (6 segments)
- Foothill Road (4 segments)

Operations of the MTS freeway and surface street segments were assessed based on volume-to-capacity (V/C) ratios. For freeway segments, a per-lane capacity of 2,000 vehicles per hour was used. For surface streets, a per-lane capacity of 800 vehicles per hour was used. These capacities do not reflect additional capacity provided at intersection through-turn pockets. For arterial roadways, a per-lane capacity of 900 vehicles per hour was used. Roadway segments with a V/C ratio greater than 1.00 are assigned LOS F.

Alternative Transportation Modes

Figure 3-12 in the General Plan Circulation Element shows existing public transit service in the City. Bay Area Rapid Transit (BART), Altamont Commuter Express (ACE) trains, Livermore Amador Valley Transit Authority (LAVTA) Bus Rapid Transit service and BART express bus service (including the County Connection in Contra Costa County between the Walnut Creek BART Station and the Pleasanton/Dublin BART station) provide the City with regional transit options. Local transit service in the City and the Tri-Valley generally consists of the LAVTA's "WHEELS." The City also actively promotes programs to encourage bicycle, pedestrian and carpool traffic.

Rail Service

Bay Area Rapid Transit. The BART line extends from San Francisco through Oakland to San Leandro and along I-580 to Castro Valley, Dublin, and Pleasanton. Stations on this BART route include two in Pleasanton – one adjacent to Stoneridge Mall, and one within the Hacienda Business Park. Part of BART's long-term strategic planning efforts includes extension of fixed-rail service to Livermore (BART, 2015).

Altamont Commuter Express Train. The ACE train provides regional rail service from Stockton to San Jose with Tri-Valley stops in both Livermore and Pleasanton. Measure B helps fund ACE service operations in Alameda County. The Pleasanton ACE Station is located along Pleasanton Avenue, between Angela Street and Bernal Avenue, and across the street from the Alameda County Fairgrounds.

Union Pacific Railroad. Rail service along the Union Pacific tracks is used for transporting freight as well as ACE Train service. Current freight rail usage of the track is about 12 trains per day.

MTC, Caltrans, and BART have all contributed to the *Bay Area Regional Rail Plan* (2007). This Plan examined future design of the regional rail system within the nine Bay Area counties. In addition, the Plan identified opportunities to expand existing facilities such as BART and ACE, as well as incorporate plans for a new high speed rail system into the existing regional rail network.

Bus/Other Transit Service

Livermore Amador Valley Transit (WHEELS). WHEELS provides public bus service for the Tri-Valley communities of Pleasanton, Dublin, and Livermore, and provides connections to other transit service providers. The buses serve neighborhoods, businesses, and schools as well as regional connections via BART and ACE. The area of the EDZ is currently served directly by Routes 3 and 70XV that connect with the nearby BART stations and destinations in Dublin and San Ramon. Bus stops for both routes are provided along Johnson Drive, including at the park and ride lot. Route 3 runs from the Dublin/Pleasanton BART station to the Stoneridge Mall and West Dublin/Pleasanton BART station. Route 3 makes four stops along Johnson Drive between Stoneridge Drive and Owens Drive, including a stop at the intersection of Johnson Drive and Commerce Drive, and a stop along the frontage of Parcel 6 (LAVTA 2014). Route 3 serves on

average about 50 passengers from the EDZ area on a typical weekday, and Route 70XV serves about 15 passengers from the EDZ study area on a typical weekday (Sheik 2015).

Paratransit. The City of Pleasanton currently maintains a Dial-A-Bus (paratransit) service for senior and disabled residents on weekdays, providing about 60 percent of the program's operating budget. The City Department of Parks and Community Services provides drivers who operate the bus service on a regular schedule during weekday hours and by appointment during evenings and weekends. WHEELS supplements this paratransit service with weekend and extended-hour weekday service.

Regional Transit. Several regional transit companies and private shuttles also serve the City. The County Connection in Contra Costa County (CCCTA) provides BART express bus service between the Walnut Creek BART Station and the Pleasanton/Dublin BART station. The San Joaquin Regional Transit District (RTD) provides bus service from the San Joaquin Valley to the Hacienda Business Park, with separate service to the BART station. The Modesto Area Express (MAX) provides bus service between Modesto and the Pleasanton/Dublin BART station, as well as between Modesto and the Lathrop/Manteca ACE train station. Several companies provide private shuttles to/from Pleasanton for their employees, while numerous taxi and rideshare companies operate in the area.

Pedestrian and Bicycle Facilities

In January 2010 the City adopted a Pedestrian and Bicycle Master Plan that complements and expands on existing City plans, including the General Plan and Community Trails Master Plan. See Figure 3-13 in the Circulation Element of the General Plan for existing and proposed pedestrian and bicycle trails and paths. The Pedestrian and Bicycle Master Plan identifies projects and funding priorities for both local and regional facilities along with establishing new standards for bicycle and pedestrian facilities, and will be incorporated into the Alameda Countywide Bicycle Plan and the Alameda Countywide Strategic Pedestrian Plan. Pleasanton currently has a network of bicycle paths serving many parts of the city. The City seeks to provide additional bicycle paths and lanes, where sufficient right-of-way and funding exists, at the time new roadways are constructed or improved.

The Alamo Canal Trail (Alamo Canal/Arroyo de la Laguna Trail) extends along the west side of Johnson Drive from I-580 to Parcel 9. This paved trail is separated from Johnson Drive by a chain link fence, and is a Class I bikeway and pedestrian facility (City of Pleasanton 2010). Class II bike lanes also extend along both sides of Johnson Drive, from approximately 500 feet north of Stoneridge Drive to Franklin Drive.

Transportation corridors also exist along the former Southern Pacific Railroad right-of-way, which extends from Concord to Pleasanton and from Fremont to Tracy. The City of Pleasanton has purchased a portion of this transportation corridor from Alameda County, extending from Bernal Avenue to Ray Street. Parking, landscaping, and a pedestrian and bike trail are planned for this portion of the corridor.

Regulatory Setting

This section identifies the policies related to the physical environment that pertain to the proposed EDZ's effects on traffic and transportation.

California Department of Transportation (Caltrans)

Caltrans has authority over the state highway system, including mainline facilities and interchanges. Caltrans must be involved in and approve the planning and design of all improvements involving state highway facilities. State highway facilities in the city include I-680, I-580, and State Route 84.

Regional Agencies

MTC and the Association of Bay Area Governments (ABAG) jointly develop land use projections that are critical inputs into travel demand models that are utilized in this SEIR analysis. The Alameda CTC oversees the CMP. The Alameda CTC also has jurisdiction over public transit funding in the county where bus service includes several local and intercity routes in the area.

Local Plans and Policies

City of Pleasanton General Plan

The Circulation Element of the Pleasanton General Plan establishes the following policies and programs for maintaining and managing the City's transportation network:

Goal 1: Develop a safe, convenient and uncongested circulation system.

Goal 2: Develop and manage a local and regional street and highway system which accommodates future growth while maintaining acceptable levels of service.

Policy 1: Complete the City's street and highway system in accordance with the General Plan Map, Figures 3-7 and 3-10, and Table 3-8.

Policy 2: Phase development and roadway improvements so that levels of service at adjacent major intersections do not exceed LOS D at major intersections outside Downtown and gateway intersections, except as noted below.[3]

Policy 3: Facilitate the free flow of vehicular traffic on major arterials.

Policy 5: At gateway intersections, facilitate the flow of traffic and access into and out of the City, consistent with maintaining visual character, landscaping, and pedestrian convenience.

Policy 6: Design and regulate city streets to minimize traffic-related impacts on adjacent land uses.

[3] Major intersections are those intersections of two or more arterials or one arterial and one collector street.

Policy 7: Adhere to City design standards for streets in new developments.

Policy 8: Maximize traffic safety for automobile, transit, bicycle users, and pedestrians.

Policy 9: Work with other local jurisdictions and regional agencies such as the Metropolitan Transportation Commission (MTC), Alameda County Congestion Management Agency (ACCMA), Alameda County Transportation Improvement Authority (ACTIA),[4] and Tri-Valley Transportation Council to plan and coordinate regional transportation improvements.

Goal 3: Protect residential neighborhood quality-of-life and community character from cut-through traffic, speeding, and nonresidential parking.

Policy 11: Manage arterial and collector traffic to minimize adverse impacts on neighborhoods.

Goal 4: Provide a multi-modal transportation system which creates alternatives to the single-occupancy automobile.

Policy 13: Phase transit improvements to meet the demand for existing and future development.

Policy 14: Encourage coordination and integration of Tri-Valley transit to create a seamless transportation system.

Policy 15: Reduce the total number of average daily traffic trips throughout the city.

Policy 16: Reduce the percentage of average daily traffic trips taken during peak hours.

Policy 17: Support the continued and expanded operation of the Livermore Amador Valley Transit Authority (LAVTA).

Policy 18: Encourage the extension of BART from Pleasanton to Livermore and beyond.

Policy 19: Support the continued and expanded service of the Altamont Commuter Express.

Policy 20: Support paratransit services to elderly and disabled residents of Pleasanton.

Policy 21: Support the use of alternative fuel vehicles.

Policy 22: Create and maintain a safe, convenient, and effective bicycle system which encourages increased bicycle use.

Policy 23: Create and maintain a safe and convenient pedestrian system which encourages walking as an alternative to driving.

[4] Note on this General Plan policy: the ACCMA and ACTIA merged into the Alameda CTC in July 2010.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

Two mitigation measures addressing transportation and traffic that would affect traffic in the EDZ study area were adopted as part of the General Plan EIR EDZ:

> **(General Plan EIR Mitigation Measure) TR-1.1** Owens Drive at Hopyard Road (#9) – Reconfigure Owens Drive at Hopyard Road to provide the following lanes: two northbound left, three northbound through, one northbound right; three southbound left, three southbound through, one southbound right (free); two eastbound left, two eastbound through, one eastbound right; two westbound left, two westbound through, one westbound right (free); change signal timings accordingly.
>
> **(General Plan EIR Mitigation Measure) TR-1.2** Stoneridge Drive at Johnson Drive (#17) – Re-stripe westbound right-turn lane to shared through/right lane and widen westbound departure to receive 4 through lanes.

The General Plan EIR did not identify any other mitigation measures, beyond implementation of policies in the General Plan, that were feasible or required to reduce identified transportation and traffic impacts to a less-than-significant level. The General Plan Circulation Element also included the following improvement measures, which would affect traffic in the EDZ study area (City of Pleasanton, 2009):

> **Hopyard Road at Owens Drive:** Un-split eastbound/westbound; narrow lane to reduce pedestrian clearance to 20 seconds.
>
> **Stoneridge Drive at I-680 northbound:** Modify signal to allow a northbound right/westbound through overlap period.

The 2012 SEIR identified one mitigation measure that was required to address significant transportation and traffic impacts associated with implementation of the Housing Element and Climate Action Plan; however, this mitigation measure applies to the potential residential rezoning sites, none of which are located in the proposed EDZ area, and is not applicable to impacts from the EDZ that require mitigation as discussed below.

Significance Criteria

Consistent with CEQA *Guidelines* Appendix G (Environmental Checklist), the proposed EDZ would have a significant impact if it would:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit, non-motorized travel, and relevant components of the circulation system (including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit);
- Conflict with an applicable congestion management program (CMP), including, but not limited to, level of service (LOS) standards and travel demand measures, or other standards

established by the county congestion management agency for designated roads or highways;

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in locations that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Specifically, and consistent with applicable policies, regulations, goals, and guidelines defined by the City, Alameda CTC, and Caltrans, the following criteria were used to identify significant off-site intersection and other impacts of the proposed EDZ. Off-site intersection and other impacts would be significant if the proposed EDZ would:

- Result in deterioration of a signalized intersection from LOS D (or better) to LOS E or LOS F (with the exception of gateway intersections, for which there is no LOS standard);
- Result in deterioration of a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following:
    1. EDZ traffic results in satisfaction at the peak hour volume traffic signal warrant;
    2. EDZ traffic increases minor movement delay by more than 30 seconds; or
    3. Where the peak hour volume signal warrant is met without EDZ traffic and delay cannot be measured, the proposed EDZ increases traffic by 10 or more vehicles per lane on the controlled approach.
- Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the County Congestion Management Agency for designated roads and highways:
    1. Exceed, either individually or cumulatively, an LOS standard established by the Alameda CTC for designated roads or highways; or
    2. For a roadway segment of the Metropolitan Transportation System (MTS) network, the proposed EDZ would cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C ratio to increase 0.03 or more for a roadway segment that would operate at LOS F without the EDZ.
- Result in a condition where a Caltrans facility (freeway mainline, ramp merge/diverge area) is projected to operate acceptably (i.e., LOS E or better) without the EDZ, and the EDZ is expected to cause the facility to operate at an unacceptable service level (i.e., LOS F);
- Result in a condition where a Caltrans facility is projected to operate unacceptably (i.e., LOS F) without the EDZ, and the EDZ is expected to increase delay or density (passenger cars per mile per lane); or, if density cannot be calculated, EDZ traffic increases overall traffic by more than 3 percent; or

- Result in a condition where queue lengths, with the addition of traffic generated by the EDZ, extend beyond available storage capacity, or when EDZ traffic adds to existing queues that already extend beyond available storage capacity.

Using the City's General Plan and Pedestrian and Bicycle Master Plan as guides, impacts related to pedestrian and bicycle traffic would be significant if the proposed EDZ would:

- Create a hazardous condition that currently does not exist for pedestrians and bicyclists, or otherwise interferes with pedestrian accessibility to the site and adjoining areas;
- Conflict with an existing or planned pedestrian or bicycle facility; or
- Conflict with policies related to bicycle and pedestrian activity adopted by the City of Pleasanton.

Impacts related to transit facilities and services would generally be significant if an element of the proposed EDZ conflicts with existing or planned transit services. The evaluation of transit facilities considers if:

- The proposed EDZ would create demand for public transit services above the capacity which is provided, or planned;
- The EDZ or EDZ-related mitigation disrupts existing transit services or facilities (including disruptions caused by driveways on transit streets and impacts to transit stops and shelters, and impacts to transit operations from traffic improvements proposed or resulting from the EDZ);
- The EDZ or EDZ-related mitigation conflicts with an existing or planned transit facility; or
- The EDZ or EDZ-related mitigation conflicts with transit policies adopted by the City of Pleasanton, Alameda CTC, WHEELS (LAVTA), or BART for their respective facilities in the study area.

Methodology and Future Traffic Modeling

Approach to Analysis

The transportation analysis was conducted in compliance with the City of Pleasanton guidelines for typical weekday and Saturday AM and PM peak commute hour conditions at the selected intersections in the vicinity of the EDZ area. Current conditions with and without the development of the EDZ area were used to judge direct impacts from development facilitated by the proposed EDZ. Cumulative traffic operating conditions, and the contribution of development facilitated by the proposed EDZ to those cumulative conditions, were analyzed on the basis of forecasts from approved, pending, and reasonably foreseeable projects. These scenarios are summarized below:

1. ***Existing Conditions*** – This scenario includes existing volumes obtained from traffic counts and the existing roadway system configuration.

2. ***Existing with Project Conditions*** – This scenario represents existing traffic volumes obtained from traffic counts, plus traffic estimated for the proposed EDZ. In this scenario, the roadway system is the same as the Existing Conditions scenario. Traffic associated with other near-term planned and approved projects and near-term roadway improvement projects were not included in the scenario.

3. ***Near-term without Project Conditions*** – This scenario reflects likely conditions over the next 5 to 10 years, and includes existing volumes plus traffic estimates for approved and pending development projects, such as the Workday project, Pleasanton Gateway project, CarrAmerica residential development, development at the East Pleasanton BART station, and/or traffic increases due to regional growth.

4. ***Near-term with Project Conditions*** – This scenario includes traffic volumes from the Near-term without Project Conditions scenario plus traffic estimated for the proposed EDZ.

5. ***Far-Term (Cumulative) without Project Conditions*** – This scenario includes projected traffic volumes and the projected roadway system using the City's Travel Demand Model, to describe a Cumulative (Future Year) condition which would take place over the next 20 to 25 years. The City's model presumes the completion of certain roadway improvement projects that are funded or approved and buildout of General Plan land uses.

6. ***Far-Term (Cumulative) with Project Conditions*** – This scenario includes traffic volumes from the Cumulative without Project Conditions scenario, plus traffic estimated for the proposed EDZ.

In addition, the Alameda CTC model traffic forecasts were applied in the MTS roadway segment analysis under cumulative conditions to analyze the impacts of the proposed EDZ on the regional roadway network in 2025 and 2040. This program analysis focuses on the MTS and CMP highway segments and transit corridors, but does not extend to intersections. The MTS roadway segment analysis was not conducted under existing conditions. The forecasts for the MTS system differ from the cumulative intersection forecasts presented above due to the following:

- The land use data sets used for the intersection forecasts and the MTS forecasts are different for areas outside Pleasanton (the City provided land use inputs for the analysis) and are consistent with ABAG population and employment projections.

- The MTS roadway analysis reports the outputs of the Alameda CTC model directly on a roadway segment level.

The results of the Alameda CTC model runs were applied to forecast the No Project conditions for 2025 and 2040. Project trips at buildout were distributed to the MTS roadway segments (freeways and surface streets) identified above using the project trips distribution presented in **Appendix G**. The distribution of project trips onto MTS segments are analyzed under Year 2025 plus project and Year 2040 plus project conditions.

Lastly, an estimate of the vehicle miles of travel (VMT) generated by development of the EDZ was prepared using three different accounting methods. The Alameda CTC has not yet set thresholds for average trip lengths, and thresholds of significance have not been established for VMT impacts.

The traffic impact analysis evaluated trip generation for the level of development assumed to be part of Phase I of the proposed EDZ, as well as for the level of development assumed for full buildout (which includes Phase I). Vehicle trip generation for the retail and office portions of the proposed EDZ were estimated using average trip generation rates from the Institute of Transportation Engineers (ITE)'s *Trip Generation Manual*, 9th Edition. Trip generation estimates for the club retail portion of the EDZ were developed using specific trip generation survey data from similar uses throughout the western United States.

Vehicle Miles of Travel

In response to Senate Bill 743, the Office of Planning and Research is updating the CEQA *Guidelines* to include new transportation-related evaluation metrics, including the review and assessment of VMT to determine impacts. New guidelines have not yet been adopted; however, in response to Senate Bill 743 and to the draft guidelines circulated in 2014, and in an effort to provide the public with additional information, a preliminary assessment of the VMT generated by the proposed EDZ was prepared, is presented in the traffic impact analysis in **Appendix G**, and is summarized here. Because no formal threshold or criteria has been established by the City or other agencies, impacts related to VMT are not evaluated here in terms of their CEQA significance, but instead are presented in order to add context to the analysis in this section; they are also used to inform the air quality impact analysis.

The traffic impact analysis evaluated whether traffic generated by the proposed EDZ would cause an increase in VMT per capita, as compared to the No Project scenario. Because the Alameda CTC has not yet set regional average trip lengths for various land uses, increases in traffic from the proposed EDZ were not evaluated in terms of whether they would result in an average project trip length greater than the regional average as defined by Alameda CTC.

To estimate VMT within the City of Pleasanton, both without and with the proposed EDZ, the Alameda CTC travel demand model and Household Survey Data were used. Land use and roadway network assumptions within the base year (2010) and future year (2040) models were reviewed, and employment estimates for the EDZ area were used as inputs to the forecasting to estimate the net change in employment with the EDZ.

Three analytical methods – origin-destination shared accounting, the boundary method, and origin-destination total accounting – were employed, and the results of each method were compared. The results for each accounting method were total VMT, and a summary of the average VMT per household and service population (residents and workers) for conditions without and with the proposed EDZ. The overall results include a calculation of the net change in VMT with the EDZ.

All three vehicle trip accounting methods indicate that increased trips from the development of the EDZ would cause an increase in VMT and VMT per capita. For the three methods used, total estimated increases in VMT per capita predicted to result from the EDZ ranged from 0.02 to 0.04, representing a very small increase. In addition, the results from using the total accounting

methodology also indicate that future VMT per capita would be less than the base year VMT per capita.

Planned Roadway Improvements

Several roadway improvements are planned, though not fully funded, in the EDZ study area, including the conversion of the westbound right-turn lane from Stoneridge Drive to Johnson Drive to a through-right shared lane and modification of the traffic signal at the Stoneridge Drive at northbound I-680 ramps. Existing and proposed projects will contribute to funding of these improvements, in proportion to each project's incremental contribution to an impact requiring these improvements as mitigation measures. Accordingly, in order to accurately capture the incremental impact and associated mitigation required as a result of the EDZ, no planned or funded roadway improvements are identified in this section under existing condition scenarios, and, where planned improvements would reduce an identified impact, these improvements are presented as mitigation measures.

Similarly, for the near-term without project scenario, planned roadway improvements in the study area are not assumed, but instead presented as mitigation measures where needed to mitigate impacts from development within the EDZ area. Near-term conditions reflect a 5- to 10-year time horizon, during which redevelopment within the EDZ area could begin. For this time period, signal timings are assumed to continue to be optimized at some of the signalized intersections, as the City regularly monitors signal operations to ensure optimal traffic flow through critical corridors. No improvements are assumed at any of the study intersections, except at the Stoneridge Drive at Johnson Drive intersection where north/south split phasing is assumed to take place to accommodate the projected increases in traffic; future signal/timing phasing at this intersection will be determined during the design phase of improvements identified to accommodate project traffic.

Cumulative without project conditions include transportation system improvements that are planned and funded, or conditioned on approved development, and traffic volume increases due to approved and pending developments plus regional growth. Cumulative conditions reflect a 20- to 25-year time horizon, during which the proposed EDZ area and surrounding area is likely to be built out. For the cumulative scenario, signal timings are assumed to be optimized as described above for the near-term without project conditions, and the signal timing at the Stoneridge at Johnson Drive intersection is assumed to be adjusted to north/south split phasing with the proposed EDZ; future signal/timing phasing at this intersection will be determined during the design phase of improvements identified to accommodate project traffic. No intersection improvements were assumed for this scenario at any of the study locations. Although some roadway improvements are planned in the study area that would take place within the cumulative timeframe, these improvements were presented as mitigation measures, again for the reason discussed above.

The intersection lane configurations under the three different types of conditions – existing condition, near-term without project, and cumulative without project – are presented in **Figures 4.D-2**, **4.D-3**, **and 4.D-4**.

Impacts Not Further Evaluated

Due to the nature of the proposed EDZ, there would be no impacts related to the following criteria; therefore, no impact discussion is provided for this topic for the reasons described below:

- ***Results in a change in air traffic patterns, including either an increase in traffic levels or a change in locations that result in substantial safety risks.*** The proposed EDZ would have no impact on air traffic patterns as it would not introduce new air traffic or interfere with existing air traffic; the nearest public airport is Livermore Municipal Airport, located approximately 4.8 miles east of the EDZ area. The proposed EDZ would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, which would result in substantial safety risks.

Impacts and Mitigation Measures

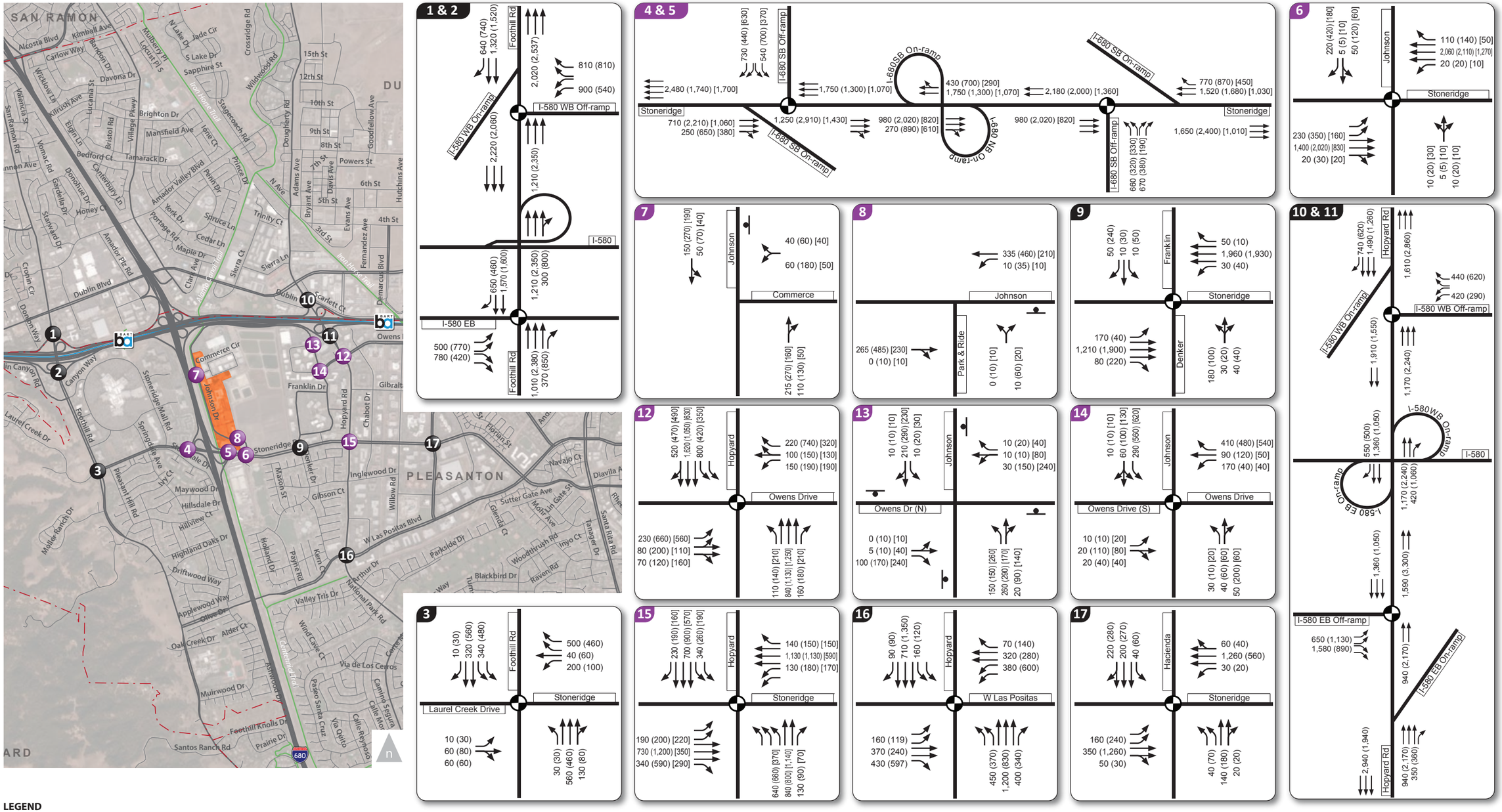
As appropriate for the impacts discussed below, the City of Pleasanton will require in conditions of approval for projects proposed to be developed within the EDZ area the collection of applicable local and regional traffic impact fees in addition to fair share contributions as needed, to fund mitigation measures.

Impact 4.D-1: Development facilitated by the proposed EDZ would affect levels of service at the local study intersections under <u>Existing plus Project</u> conditions. (Significant and Unavoidable for vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours)

Trip Generation

Trip generation estimates for Phase I and full project buildout are presented in **Table 4.D-3**. Phase I would generate an estimated 8,890 weekday daily trips (without including pass-by and diverted-link trips[5]), including 329 morning peak hour trips, and 500 evening peak hour trips. Saturday trip generation for Phase I is estimated to be 10,900 daily trips (without including pass-by and diverted-link trips), including 906 peak hour trips. Trips from existing uses within the EDZ area were assumed to remain on the roadway system for Phase I. In comparison to Phase I, full buildout would also result in additional vehicle traffic in the area, but estimates of trip generation from full buildout also consider the net difference in vehicle trip generation as existing uses within the EDZ area are replaced by other uses over the long term. Excluding vehicle trip generation from existing uses within the EDZ area, full buildout would generate an estimated 12,160 weekday daily trips (without including pass-by and diverted trips), including 293 morning peak hour, and 743 evening peak hour trips. Saturday trip generation for full buildout is estimated to be 15,630 daily trips (without including pass-by and diverted trips), including 1,310 peak hour trips.

5 "Pass-by" trips are traffic that would otherwise already be on adjacent roadways but the driver decides to stop at the retail location (to purchase something on the way home from work, for example), and "diverted-link" trips describes traffic on other nearby roadways, for which the driver decides to talk a short detour to stop at the site. Further discussion of how pass-by and diverted-link trips were estimated is discussed in **Appendix G**.



LEGEND

XX (YY) [ZZ] AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes

Traffic Signal

Stop Sign

Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

EDZ Area

SOURCE: Fehr & Peers, 2015

Johnson Drive EDZ . 140421

Figure 4.D-3

Near-Term Without Project AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

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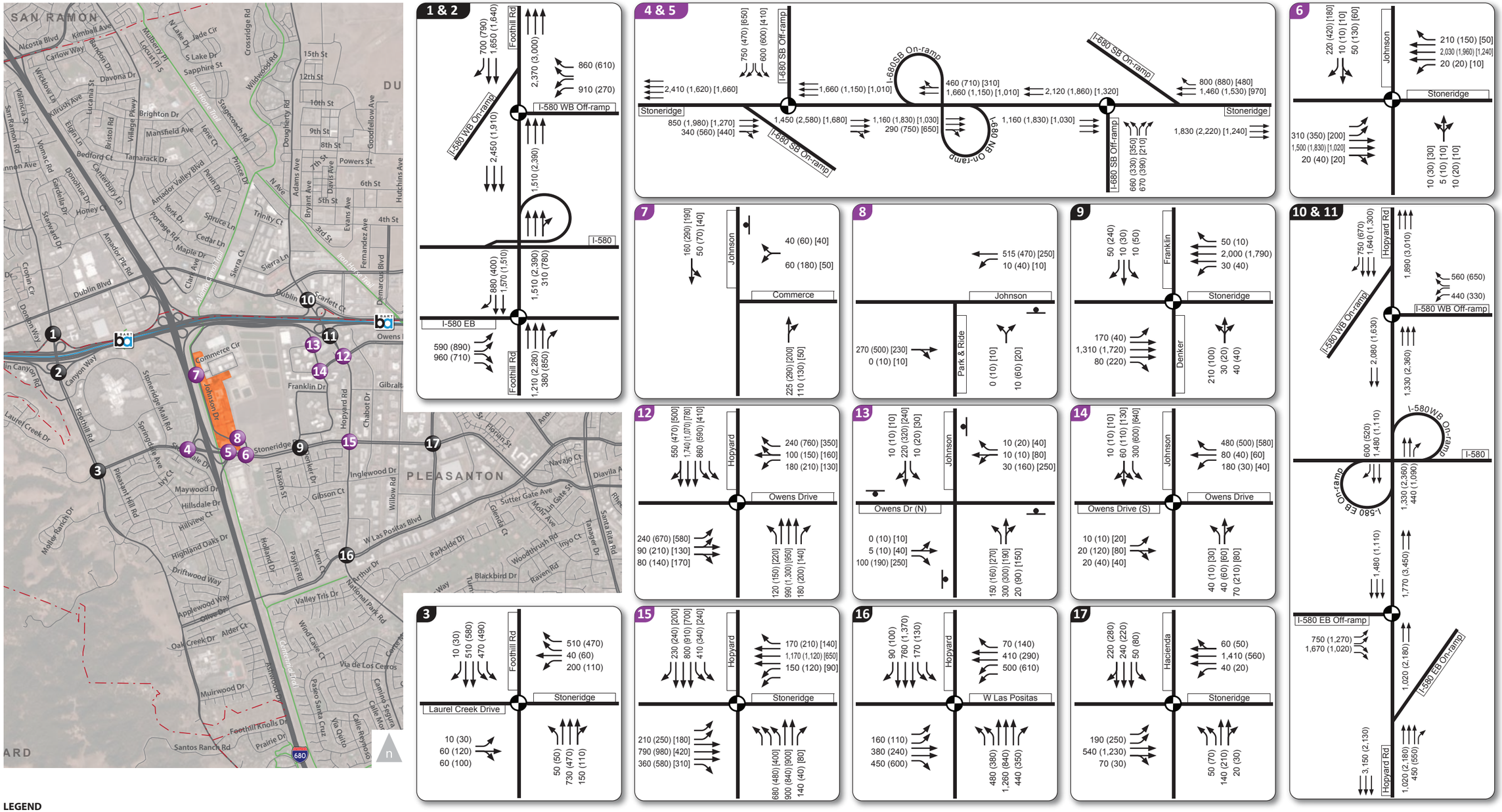

LEGEND

XX (YY) [ZZ] AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes

Traffic Signal

Stop Sign

Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

EDZ Area

SOURCE: Fehr & Peers, 2015

Johnson Drive EDZ . 140421

Figure 4.D-4

Cumulative Without Project AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

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TABLE 4.D-3
SUMMARY OF EXISTING, PHASE I AND FULL BUILDOUT TRIP GENERATION ESTIMATES

		Weekday			Saturday	
Use	**Size (square feet)**	**Daily**	**AM Peak Hour**	**PM Peak Hour**	**Daily**	**Peak Hour**
Existing Uses (to be Phased Out Over the Long Term)						
Church[1]	20,000	180	11	11	210	71
General Retail[2]	53,363	2,280	51	198	2,670	257
Office[3]	15,070	170	24	22	40	6
Light Industrial[4]	136,225	950	125	132	180	19
Vacant[5]	349,035	0	0	0	0	0
Existing External Vehicle Trips (A)		**3,580**	**211**	**363**	**3,100**	**353**
Phase I						
General Retail[2]	23,500	700	16	61	820	79
Club Retail with Fuel[6]	148,000	6,960	233	349	8,850	719
Hotel[7]	88,000	1,230	80	90	1,230	108
Total Phase I External Vehicle Trips[8]		**8,890**	**329**	**500**	**10,900**	**906**
Full Buildout						
General Retail[2]	246,440	7,360	166	576	8,610	832
Club Retail with Fuel[6]	148,000	6,960	233	349	8,850	719
Light Industrial[4]	27,550	190	25	27	40	108
Hotel[7]	88,000	1,230	80	90	1,230	2,709
Total Full Buildout External Vehicle Trips[8] (B)		**15,740**	**504**	**1,106**	**18,730**	**1,663**
Net New Vehicle Trips to the EDZ Area (B-A)		**12,160**	**293**	**743**	**15,630**	**1,310**

NOTES:

1 Based on *Trip Generation* (9th Edition) trip generation rates for land use 560, Church.
2 Based on *Trip Generation* (9th Edition) trip generation rate for land use 820, Shopping Center/General Retail. Does not include pass-by trips. Pass-by trip reduction for general retail use is 30 percent.
3 Based on *Trip Generation* (9th Edition) trip generation rate for land use 710, General Office.
4 Based on *Trip Generation* (9th Edition) trip generation rates for land use 110, General Light Industrial.
5 No trips are associated with existing buildings that are vacant and unoccupied.
6 Based on data provided by Kittelson & Associates, October 3, 2014 (provided in **Appendix H**). Does not include pass-by or diverted trips.
7 Based on *Trip Generation* (9th Edition) trip generation rate for land use 310, Hotel.
8 Total external vehicle trips do not include pass-by and diverted link trips.

SOURCE: **Appendix G** (Fehr & Peers, 2015).

Trip Distribution and Assignment

The distribution of trips that would be generated by the EDZ on local roadways was developed based on existing traffic patterns, location of complementary land uses (such as residences from which employees and customers may come from/depart to), and a spatial/zone analysis (select zone analysis) using the City of Pleasanton travel demand model. Trips were assigned to the roadway network based on the general directions of approach and departure, and routes to and from the EDZ area varied by their destination within the EDZ area – for example, a driver coming from I-580 could access the EDZ area from the Hopyard Road interchange, or could travel south on I-680 and access the EDZ area via the Stoneridge Drive interchange. For maps showing the resulting trip assignment and estimated intersection volumes and a further discussion of trip distribution and assignment, see **Appendix G**.

Existing plus Project Intersection Levels of Service

Traffic volumes that would be generated by the proposed EDZ were added to existing peak hour traffic volumes to estimate the Existing plus Project peak hour intersection turning movement volumes. Results of this analysis are shown in **Table 4.D-4**. The addition of traffic from the proposed EDZ is expected to slightly increase delay at some study intersections and result in greater increases to average delay at other intersections. The addition of traffic that would be generated by the proposed EDZ would degrade operations below LOS D at the following intersections:

7. Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement with Phase I, and LOS E with full buildout of the EDZ)

13. Johnson Drive at Owens Drive (North) (LOS E, Saturday peak hour with Phase I)

6. Stoneridge Drive at Johnson Drive (LOS E, weekday PM with full buildout of the EDZ)

All other study intersections would continue to operate at acceptable service levels.

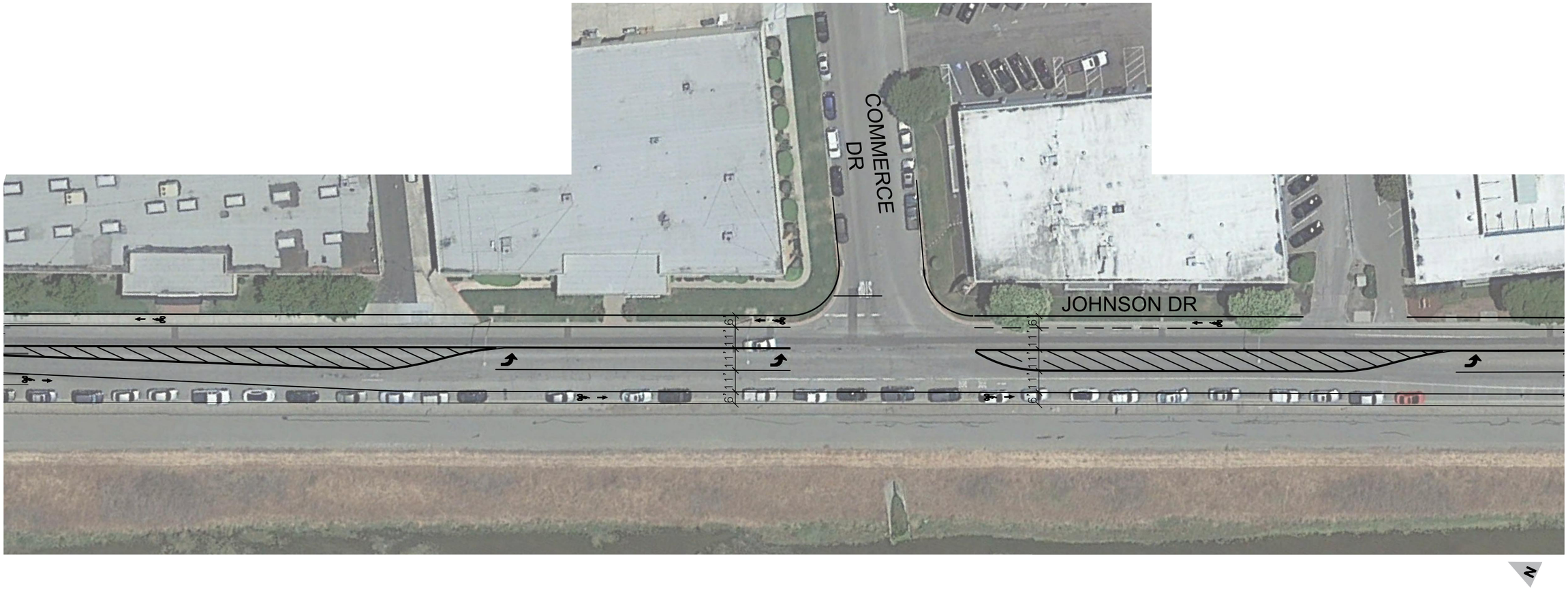
With the addition of traffic generated by development in the EDZ area, vehicle queues from the eastbound left-turn movement from Stoneridge Drive to Johnson Drive would periodically extend beyond the available storage, spilling back through the northbound off-ramp intersection. This spillback would result in vehicle queues periodically extending from the northbound and southbound off-ramps to the mainline; westbound queues on Stoneridge Drive would periodically extend to Franklin Drive, and southbound vehicle queues on Johnson Drive waiting to turn to Stoneridge Drive would extend up to more than a quarter-mile, potentially blocking access to driveways along the Johnson Drive corridor.

Specific significant impacts and associated mitigation measures are presented below.

Impact 4.D-1a: Commerce Drive at Johnson Drive Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the PM peak hour would worsen the side street movement at this intersection to LOS F; this condition would be further worsened with full EDZ buildout conditions. Additionally, peak hour volume traffic signal warrants would be met with the addition of traffic that would be anticipated under Phase I, thus causing the need for signalization. This would be a significant impact and mitigation is required.

> **Mitigation Measure 4.D-1a: Commerce Drive at Johnson Drive Intersection**. Install a traffic signal and construct a southbound left-turn lane to Commerce Drive at the Commerce Drive and Johnson Drive intersection.

Figure 4.D-5 shows the improvements that would be implemented as part of Mitigation Measure 4.D-1a at a conceptual level. The installation of a southbound left-turn lane on Johnson Drive at this intersection may require the widening of Johnson Drive, and the removal of on-street parking and landscaping along Johnson Drive to construct the left-turn pocket and maintain bicycle lanes. Impacts related to the removal of this parking are discussed below, under Parking Impacts.



SOURCE: Fehr & Peers

Johnson Drive EDZ . 140421

Figure 4.D-5
Mitigation Measure 4.D-1a Improvements, Conceptual Level

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TABLE 4.D-4
EXISTING CONDITIONS WITH PROJECT (EDZ), PEAK HOUR INTERSECTION LEVEL OF SERVICE

	Intersection	Control[1]	Peak Hour	Existing Without Project		Existing With Phase I		Full Buildout[4]	
				Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
1.	I-580 Westbound Ramps at San Ramon Road	Signal	AM	8	A	8	A	8	A
			PM	15	B	15	B	15	B
2.	I-580 Eastbound Ramps at Foothill Road	Signal	AM	10	A	11	B	11	B
			PM	8	A	8	A	9	A
3.	Foothill Road at Stoneridge Drive	Signal	AM	19	B	19	B	19	B
			PM	18	B	18	B	18	B
4.	Stoneridge Drive at I-680 Southbound Ramps	Signal	AM	18	B	18	B	18	B
			PM	11	B	12	B	13	B
			Sat	10	A	11	B	11	B
5.	Stoneridge Drive at I-680 Northbound Ramp	Signal	AM	16	B	16	B	16	B
			PM	13	B	15	B	15	B
			Sat	9	A	10	A	10	A
6.	Stoneridge Drive at Johnson Drive	Signal	AM	12	B	17	B	18	B
			PM	23	C	47	D	**68**	**E**
			Sat	11	B	28	C	35	C
7.	Commerce Drive at Johnson Drive	SSSC	AM	3 (12)	A (B)	4 (13)	A (B)	4 (13)	A (B)
			PM	7 (28)	A (D)	25 (**92**)	D (**F**)	**36 (135)**	**E (F)**
			Sat	2 (11)	A (B)	5 (14)	A (B)	6 (16)	A (C)
8.	Park and Ride Lot at Johnson Drive	SSSC	AM	1 (11)	A (A)	1 (11)	A (B)	1 (11)	A (B)
			PM	1 (12)	A (B)	1 (23)	A (C)	1 (32)	A (D)
			Sat	1 (10)	A (A)	1 (16)	A (C)	1 (24)	A (C)
9.	Stoneridge Drive at Franklin Drive	Signal	AM	24	C	28	C	28	C
			PM	19	B	18	B	19	B
10.	Dougherty Road at I-580 Westbound Ramps	Signal	AM	9	A	9	A	9	A
			PM	13	B	13	B	14	B
11.	Hopyard Road at I-580 Eastbound Ramps	Signal	AM	17	B	17	B	17	B
			PM	15	B	15	B	15	B
12.	Hopyard Road at Owens Drive	Signal	AM	30	C	31	C	31	C
			PM	47	D	50	D	51	D
			Sat	36	D	38	D	40	D
13.	Johnson Drive at Owens Drive (North)	AWSC	AM	10	A	11	B	11	B
			PM	13	B	21	C	23	C
			Sat	16	C	**41**	**E**	**43**	**E**
14.	Johnson Drive at Owens Drive (South)	Signal	AM	13	B	13	B	13	B
			PM	18	B	19	B	19	B
			Sat	12	B	13	B	13	B
15.	Stoneridge Drive at Hopyard Road	Signal	AM	30	C	28	C	28	C
			PM	32	C	33	C	34	C
			Sat	27	C	30	C	32	C
16.	West Las Positas Boulevard at Hopyard Road	Signal	AM	21	C	21	C	21	C
			PM	25	C	26	C	26	C
17.	Stoneridge Drive at Hacienda Drive	Signal	AM	23	C	23	C	23	C
			PM	27	C	27	C	27	C

NOTES:
1 SSSC = side-street stop controlled intersection; AWSC = all way stop control; Signal = signalized intersection.
2 Average intersection delay calculated for signalized intersections using the 2000 HCM method.
3 For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.
4 Intersection impact analysis conducted based on the trip generating buildout of the EDZ.

SOURCE: **Appendix G** (Fehr & Peers, 2015).

Physical expansion of the roadway would also require reducing the width of setbacks for buildings along Johnson Drive. Reduction in setback widths would generally be minor (3 to 6 feet), and would not result in an increased risk of traffic hazards from reduced sight distances, with the installation of a traffic signal at this location as required by Mitigation Measure 4.D-1a.

As shown in **Table 4.D-5**, with implementation of this mitigation measure, the intersection LOS would improve to an acceptable level during the PM peak hour, reducing the impact from traffic generated by Phase I of the EDZ to a less-than-significant level. This mitigation measure would also mitigate the impact under full buildout to a less-than-significant level.

TABLE 4.D-5
EXISTING WITH PROJECT (EDZ) WITH MITIGATION, PEAK HOUR INTERSECTION LEVEL OF SERVICE

	Intersection	Control	Peak Hour	Full Buildout		Existing With Phase I, With Mitigation		Full Buildout With Mitigation	
				Delay	LOS	Delay	LOS	Delay	LOS
6.	Stoneridge Drive at Johnson Drive	Signal	PM	**68**	**E**	28	C	32	C
7.	Commerce Drive at Johnson Drive	SSSC/ Signal	PM	25 **(92)**	D (F)	14	B	14	B
13.	Johnson Drive at Owens Drive (North)	AWSC/ Signal[1]	Sat	**43**	**E**	17	B	17	B

[1] All-way stop control analyzed for the Existing with Project scenario and the mitigated scenario used an optimized signalized intersection control.

SOURCE: **Appendix G** (Fehr & Peers, 2015).

Impact 4.D-1b: Johnson Drive at Owens Drive (North) Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the Saturday peak hour would degrade the service level at this intersection from LOS C to LOS E. Conditions would be slightly exacerbated with full EDZ buildout conditions (i.e., conditions would worsen but LOS would not be degraded from E to F). Additionally, peak hour volume traffic signal warrants would be met with the addition of traffic under Phase I, thus causing the need for signalization. This would be a significant impact and mitigation is required.

> **Mitigation Measure 4.D-1b: Johnson Drive at Owens Drive (North) Intersection.** Install a traffic signal at the Johnson Drive at Owens Drive (North) intersection.

As shown in Table 4.D-5, with the implementation of this mitigation measure, the intersection LOS would improve to an acceptable level during the Saturday peak hour, reducing the impact from traffic generated by Phase I of the EDZ, as well as full buildout, to a less-than-significant level.

Impact 4.D-1c: Johnson Drive at Stoneridge Drive Intersection. The addition of vehicle trips generated by full buildout of the EDZ during the PM peak hour would worsen conditions at this intersection from LOS D to LOS E. This impact would not occur under conditions caused by Phase I of the EDZ. This would be a significant impact. This intersection is a City-designated

gateway intersection and is exempt from the City's LOS D standard if no reasonable mitigation exists or if mitigation is contrary to other City goals. The following mitigation measure would reduce the impact to a less-than-significant level.

Mitigation Measure 4.D-1c: Johnson Drive at Stoneridge Drive Intersection. Implement the following improvements:

1. Construct a third eastbound left-turn lane from Stoneridge Drive to Johnson Drive in conjunction with an additional northbound receiving lane on Johnson Drive (north side of intersection).
2. Construct an additional southbound right-turn lane on Johnson Drive.
3. Rebuild Johnson Drive as a six lane facility with three or four southbound lanes and three northbound receiving lanes for a minimum of 700 feet north of Stoneridge Drive. This improvement would require widening of Johnson Drive north of Stoneridge Drive by up to 36 feet and widening of Johnson Drive south of Stoneridge Drive a commensurate amount to align travel movements through the intersection.

Figure 4.D-6 shows the improvements that would be implemented as part of Mitigation Measure 4.D-1c at a conceptual level. As shown in Table 4.D-5, these improvements would improve the intersection operation and reduce delay, improving the service level to LOS C at this intersection.

Impacts of Mitigation Measure 4.D-1c. Implementation of Mitigation Measure 4.D-1c would require widening of a portion of Stoneridge Drive, as well as widening of Johnson Drive north and south of Stoneridge Drive. Stoneridge Drive would likely be widened to the south. The City has indicated that Johnson Drive north and south of Stoneridge Drive would be widened to the east by up to 36 feet; this widening would require the acquisition of land and/or rights-of-way along parcels adjacent to the road owned by the Dublin San Ramon Services District or the City. Johnson Drive would also be widened to the west to accommodate a bike lane. Widening of Johnson Drive would result in a small change to the physical layout of the park and ride lot northwest of the Stoneridge Drive/Johnson Drive intersection, and up to three parking spaces would be affected or removed. Physical expansion of Stoneridge Drive and Johnson Drive would result in the removal of some landscaping, and the temporary removal of a walking path along the east side of Johnson Drive; this path would be replaced by a sidewalk. In addition, bike lanes along the north and south sides of Stoneridge Drive would be temporarily affected; impacts to bike facilities are discussed below under Traffic Safety Hazards and and Consistency with Adopted Policies, Plans or Programs Supporting Alternative Transportation.

Impacts associated with this mitigation measure would result from roadway construction activities, which would be temporary, and the removal of trees and other vegetation. Temporary roadway construction activities would generate increased dust and other air emissions, and noise, and would increase the risk of worker exposure to contaminated soil or groundwater. Roadway construction activities would also affect and temporarily disrupt traffic using Stoneridge Drive and Johnson Drive, as well as bicycle and pedestrian facilities. Access to the park and ride lot by users of the lot would also be temporarily affected and could be disrupted.

Impacts associated with increased levels of dust and other air emissions during construction are similar to those impacts discussed in Section 4.B, Air Quality, and the implementation of **Mitigation**

Measures 4.B-1 and **4.B-2** would reduce these impacts to a less-than-significant level. Impacts associated with increased noise levels during construction are similar to impacts discussed in Section 4.C, Noise; the implementation of **Mitigation Measures 4.C-1a** and **4C-1b** would reduce these impacts to a less-than-significant level. Impacts to trees and vegetation are similar to those described in Section 4.E, Other Topics (Biological Resources), and would be less than significant with the implementation of standard City policies and procedures, including the permitting of tree removal as appropriate, as well as **Mitigation Measure 4.E-1**. Implementation of **Mitigation Measure 4.E-5** (Soil and Groundwater Plan) would address potential exposure of workers to subsurface contamination during construction. As discussed below, the City requires that a Construction Traffic Management Plan be developed and implemented as part of a larger Construction Management Plan for each development project, which would address significant impacts associated with roadway encroachment and traffic disruption during project construction activities.

Impact 4.D-1d: Stoneridge Drive Queue Spillback. The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in two impacts related to vehicle queue spillback from Stoneridge Drive onto the freeway mainline and adjacent intersections. First, with the addition of vehicle trips from Phase I and full buildout of the EDZ, vehicle queue spillback from the I-680 northbound off-ramp and southbound off-ramp onto the freeway mainline would result in a hazardous condition due to the potential speed differential between moving vehicles on the freeway and queued vehicles on the off-ramp; this is a significant impact requiring mitigation. Second, the addition of traffic generated by the EDZ during Phase I and full buildout would result in vehicle queues extending beyond available storage for the eastbound left-turn movement from Stoneridge Drive to Johnson Drive, periodically impeding through traffic on Stoneridge Drive and resulting in southbound vehicle queues on Johnson Drive blocking access to driveways along the corridor; this is also a significant impact requiring mitigation.

The risk of hazards related to vehicle queue spillback onto the freeway mainline would be mitigated by the implementation of part 1 of **Mitigation Measure 4.D-1c** (construct a third eastbound left-turn lane from the Stoneridge Drive intersection to Johnson Drive in conjunction with the additional northbound receiving lane on Johnson Drive at the Stoneridge Drive intersection [north side of intersection]) and part 1 of **Mitigation Measure 4.D-1d**, below (modification of the traffic signal at the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase[6]). With the addition of vehicle trips from Phase I and full buildout of the EDZ and after implementation of part 1 of **Mitigation Measure 4.D-1c** and part 1 of **Mitigation Measure 4.D-1d**, vehicle queue spillback would still periodically impede through traffic on Stoneridge Drive and block access to driveways along Johnson Drive during PM peak hours.[7] Implementation of all parts of **Mitigation Measure 4.D-1c** and **Mitigation Measure 4.D-1d** would mitigate this impact, as shown in **Table 4.D-6**, which indicates that, with the implementation of these improvements, the percent demand served at Stoneridge Drive and Johnson Drive would be above the 95th percentile.

6 As discussed earlier in this section, this measure is identified in the Circulation Element of the General Plan as a planned improvement measure.

7 Morning peak hour volumes would be less than about 30 percent of evening volumes, and a preliminary queuing analysis did not reveal an impact during the morning peak hour.

SOURCE: Fehr & Peers

Johnson Drive EDZ . 140421

Figure 4.D-6
Mitigation Measures 4.D-1c and 4.D-1d Improvements, Conceptual Level

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Mitigation Measure 4.D-1d: Stoneridge Drive Queue Spillback (Stoneridge Drive and Johnson Drive Improvements). Implement the following improvements:

1. Modify the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase.
2. Construct a second southbound left-turn lane from Johnson Drive to Stoneridge Drive.
3. Extend the existing westbound right-turn pocket at the Johnson Drive and Stoneridge Drive intersection approximately 800 feet east by widening Stoneridge Drive and convert the resulting lane into a through-right-shared lane. Install lane markings in the curb lane and adjacent lane indicating I-680 Northbound Only to reduce lane changes between Johnson Drive and the northbound on-ramp.
4. Construct a second on-ramp lane to northbound I-680 from the westbound Stoneridge Drive approach. The two lane on-ramp should be merged to one lane prior to the freeway merge area. The lane drop will occur over a distance of at least 800 feet, and will require reconstruction and widening of the bridge at this on-ramp from one to two lanes, with the merge occurring after the bridge. (Note: This improvement is within Caltrans right-of-way and requires Caltrans design review and oversight.)

Figure 4.D-6 shows the improvements that would be implemented as part of Mitigation Measure 4.D-1d at a conceptual level.

With the implementation of part 1 of **Mitigation Measure 4.D-1c** and part 1 of **Mitigation Measure 4.D-1d**, the risk of hazards related to vehicle queue spillback onto the freeway mainline would be mitigated to a less-than-significant level. As described below, widening of the northbound on-ramp identified in Mitigation Measure 4.D-1d (part 4) is within Caltrans right-of-way and would require Caltrans design review and oversight, as well as review by the California Department of Fish and Wildlife (CDFW), the U.S. Army Corps of Engineers, and the Alameda County Flood Control and Water Conservation District (Zone 7 Water Agency). This process may take longer than the development of uses within the EDZ area, and is likely to take longer than the timeline envisioned for Phase I. Because the review and approval process for part 4 of Mitigation Measure 4.D-1d is not under the control of the City of Pleasanton, the impact related to vehicle queue spillback periodically impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours would be significant and unavoidable.

Impacts of Mitigation Measure 4.D-1d. Implementation of Mitigation Measure 4.D-1d would require widening of a portion of Stoneridge Drive, as well as widening of Johnson Drive north and south of Stoneridge Drive, similar to implementation of Mitigation Measure 4.D-1c. Impacts associated with this mitigation measure would be the same as those associated with the implementation of Mitigation Measure 4.D-1c, and would also include the removal of landscaping along the portion of Johnson Drive east of Stoneridge Drive that would be widened to implement part 3 of this mitigation measure. Impacts of this mitigation measure would be similarly mitigated by measures described in other sections of this SEIR.

TABLE 4.D-6
EXISTING WITH PROJECT (EDZ) CONDITIONS WITH MITIGATION PM PEAK HOUR
95TH PERCENTILE VEHICLE QUEUES

Intersection	Approach	Storage Capacity[1] (feet)	Existing (feet)	Existing with EDZ Phase I (feet)			Full Buildout (feet)		
				No Improvements	Initial Improvements[2]	Full Improvements[3]	No Improvements	Initial Improvements[2]	Full Improvements[3]
Stoneridge Drive at I-680 SB Off-Ramp	*Southbound*	*1,590*	*220*	***Spillback***	375	465	***Spillback***	455	505
Stoneridge Drive at I-680 NB Off-Ramp	*Northbound*	*1,390*	*205*	***Spillback***	585	315	***Spillback***	360	195
	Eastbound	570	175	**Spillback**	285	350	**Spillback**	270	315
Stoneridge Drive at Johnson Drive	Southbound[5]	-	305	1,415	1,370	930	1,390	1,410	820
	Eastbound	440	255	**Spillback**	310	425	**Spillback**	295	425
	Westbound	1,620	1,495	**Spillback**	**Spillback**	**Spillback**	**Spillback**	**Spillback**	**Spillback**
Stoneridge Drive at Franklin Drive	Westbound	1,325	580	**Spillback**	**Spillback**	1,260	**Spillback**	**Spillback**	1,300
Percent Demand Served at Stoneridge Drive at Johnson Drive[5]			100%	78%	88%	99%	77%	89%	98%

NOTES Italics indicates movements where queue spillback would be onto the freeway mainline, potentially affecting freeway operations. Spillback indicates vehicle queues extend to the adjacent intersection and affect the operations, resulting in worse service levels than shown in the LOS Table 4.D-4.

1 Storage capacity equals link distance, or the distance between stop signs, or stoplights, (i.e., generally between two intersections) or to a point at which the number of lanes changes.
2 Reflects conditions with construction of a third eastbound left-turn lane from Stoneridge Drive intersection to Johnson Drive and associated receiving lanes, (part 1 of Mitigation Measure 4.D-1c) and modification of the traffic signal at the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase (part 1 of Mitigation Measure 4.D-1d.
3 Reflects conditions with Mitigation Measure 4.D-1c and Mitigation Measure 4.D-1d. Some queues increase slightly from the partial improvement scenario due to changes in signal timing and vehicle arrival rates at intersections through the corridor as removing a bottleneck at one location can increase traffic arriving at adjacent intersections. As mitigation measures are implemented, signal timings and off-sets between coordinated intersections would need to be monitored and adjusted to minimize vehicle queues and delays through the area.
4 Impact related to driveway blockages (link distance is between Johnson Drive and Commerce Drive).
5 As calculated by SimTraffic, results reflect the percent of traffic that is able to travel through the intersection during the peak hour. Conditions when not all vehicles are served result in vehicle queues requiring several cycles to clear, potentially resulting in queue spillback to adjacent intersections.

SOURCE: Appendix G (Fehr & Peers, 2015).

Caltrans has indicated to the City that, in order to implement Mitigation Measure 4.D-1d by constructing a second on-ramp lane to northbound I-680 from the westbound Stoneridge Drive approach, the reconstruction and widening of the bridge approaching the merge would be required. To implement this improvement, the two concrete supports for this bridge extending into the banks of the Alamo Canal would be removed and re-built.

As discussed in Section 4.E, Other Topics (Biological Resources), significant impacts associated with this mitigation measure include impacts to the Alamo Canal, which is a potential jurisdictional water of the U.S. Impacts to the canal include the removal of wetland habitat during construction activities, impacts to water quality that would occur during construction if demolition or construction materials were to enter the canal, and temporary disruption of Zone 7 Water Agency's flood protection infrastructure. Impacts also include the temporary disruption of the Alamo Canal Trail pedestrian and bike path adjacent to the canal, and the disruption of vehicle traffic that would otherwise use this on-ramp to I-680.

Because the canal is a potential jurisdictional water of the U.S., work within the canal would require coordination with and permits from several resource agencies, including:

- The U.S. Army Corps of Engineers (Clean Water Act Section 404 permit);
- The CDFW (Section 1600 Streambed Alteration Agreement, for removal of or disturbance to riparian habitat or waters of the U.S.; and consultation under Section 2081 of the California Endangered Species Act);
- The San Francisco Bay Regional Water Quality Control Board (Clean Water Act Section 401 water quality certification); and
- Review and approval by Zone 7 Water Agency of plans to work within the canal.

Reconstruction of the bridge would also require coordination with Caltrans and a Caltrans encroachment permit.

As discussed in Section 4.E, Other Topics (Biological Resources), implementation of **Mitigation Measures 4.E-2**, **4.E-3**, and **4.E-4** would reduce impacts to wetlands and waters of the U.S. to a less-than significant level by requiring a wetland delineation be performed of the proposed bridge expansion and replacement site to identify any jurisdictional features, avoiding or minimizing temporary and/or permanent impacts to jurisdictional features within the Alamo Canal, and compensating for any temporary and/or permanent impacts to jurisdictional wetlands or other waters within the Alamo Canal that cannot be avoided. Implementation of standard Best Management Practices would minimize the impact of water quality degradation that would occur during bridge construction.

Other impacts associated with this mitigation measure affecting air quality, noise, hazards, biological resources, and traffic operations would be the same as those associated with the implementation of Mitigation Measure 4.D-1c, and would be similarly mitigated by measures described in other sections of this SEIR.

Significance After Mitigation: Significant and Unavoidable for **vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours**.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measures Identified.

Impact 4.D-2: Development facilitated by the proposed EDZ would affect levels of service at the local study intersections under Near-term plus Project conditions. (Significant and Unavoidable for vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours; Significant and Unavoidable for Johnson Drive and Park and Ride Lot Intersection)

Near-term plus Project Intersection Levels of Service

Levels of service calculations were conducted to evaluate intersection operations under Near-term conditions both without and with the EDZ. The LOS results are summarized in **Table 4.D-7**.

Vehicle queues for intersections on Stoneridge Drive between the southbound off-ramp and Franklin Drive were evaluated using SimTraffic, a micro-simulation software, to account for the effects of vehicle queue spillback, lane utilization as vehicles position themselves to enter the freeway, and the short spacing between intersections which affects driver behavior.

The results of the LOS analysis indicate that in the Near-term no project condition, all study intersections would operate at LOS D or better. The addition of traffic generated by development within the EDZ area is expected to slightly increase delay at some study intersections and result in greater changes to average delay at other intersections, with the delay changing at four intersections to an unacceptable operation.

The addition of traffic from the EDZ under Near-term conditions would degrade operations below LOS D at the following intersections:

7. Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement under Phase I conditions; LOS E intersection average under full buildout conditions)

13. Johnson Drive at Owens Drive (North) (LOS E, PM peak hour, LOS F Saturday peak hour under Phase I conditions)

6. Stoneridge Drive at Johnson Drive (LOS E, PM peak hour with full buildout)

8. Park and Ride Lot at Johnson Drive (LOS E, weekday PM peak hour for side-street movement under Phase I conditions, LOS F under full buildout conditions)

All other study intersections would continue to operate at acceptable service levels based on the City's LOS standard.

TABLE 4.D-7
NEAR-TERM CONDITIONS PEAK HOUR INTERSECTION LEVEL OF SERVICE

	Intersection	Control[1]	Peak Hour	Near-Term Without Project		Near-Term With Phase I		Near-Term With Buildout[4]	
				Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
1.	I-580 Westbound Ramps at San Ramon Road	Signal	AM	13	B	13	B	13	B
			PM	18	B	18	B	18	B
2.	I-580 Eastbound Ramps at Foothill Road	Signal	AM	17	B	17	B	17	B
			PM	12	B	12	B	12	B
3.	Foothill Road at Stoneridge Drive	Signal	AM	21	C	21	C	21	C
			PM	21	C	22	C	22	C
4.	Stoneridge Drive at I-680 Southbound Ramps	Signal	AM	12	B	12	B	12	B
			PM	13	B	16	B	16	B
			Sat	11	B	11	B	11	B
5.	Stoneridge Drive at I-680 Northbound Ramp	Signal	AM	17	B	18	B	18	B
			PM	12	B	21	C	21	C
			Sat	9	A	9	A	9	A
6.	Stoneridge Drive at Johnson Drive	Signal	AM	9	A	12	B	13	B
			PM	19	B	**58**	**E**	**74**	**E**
			Sat	11	B	23	C	30	C
7.	Commerce Drive at Johnson Drive	SSSC	AM	3 (13)	A (B)	4 (14)	A (B)	4 (14)	A (B)
			PM	8 (30)	A (D)	27 **(98)**	C **(F)**	**38 (141)**	**E (F)**
			Sat	3 (12)	A (B)	5 (15)	A (C)	6 (18)	A (C)
8.	Park and Ride Lot at Johnson Drive	SSSC	AM	1 (9)	A (A)	1 (11)	A (B)	1 (11)	A (B)
			PM	1 (14)	A (B)	**2 (41)**	A **(E)**	3 **(91)**	**A (F)**
			Sat	1 (10)	A (A)	1 (18)	A (C)	1 (26)	A (D)
9.	Stoneridge Drive at Franklin Drive	Signal	AM	30	C	31	C	31	C
			PM	21	C	27	C	27	C
10.	Dougherty Road at I-580 Westbound Ramps	Signal	AM	11	B	11	B	11	B
			PM	13	B	13	B	13	B
11.	Hopyard Road at I-580 Eastbound Ramps	Signal	AM	23	C	22	C	22	C
			PM	15	B	15	B	15	B
12.	Hopyard Road at Owens Drive	Signal	AM	32	C	33	C	33	C
			PM	44	D	52	D	53	D
			Sat	37	D	40	D	41	D
13.	Johnson Drive at Owens Drive (North)	AWSC	AM	10	A	11	B	11	B
			PM	16	B	**37**	**E**	**40**	**E**
			Sat	22	C	**64**	**F**	**66**	**F**
14.	Johnson Drive at Owens Drive (South)	Signal	AM	15	B	15	B	15	B
			PM	18	B	19	B	19	B
			Sat	15	B	15	B	15	B
15.	Stoneridge Drive at Hopyard Road	Signal	AM	27	C	27	C	27	C
			PM	38	D	38	D	38	D
			Sat	29	C	32	C	36	D
16.	West Las Positas Boulevard at Hopyard Road	Signal	AM	24	C	24	C	24	C
			PM	31	C	31	C	31	C
17.	Stoneridge Drive at Hacienda Drive	Signal	AM	26	C	26	C	26	C
			PM	25	C	25	C	25	C

1 SSSC = side-street stop controlled intersection; AWSC = all way stop control; Signal = signalized intersection.
2 Average intersection delay calculated for signalized intersections using the 2000 HCM method.
3 For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.
4 Intersection impact analysis conducted based on the trip generating potential buildout of the Johnson Drive

SOURCE: **Appendix G** (Fehr & Peers, 2015).

With the addition of traffic generated by Phase I development in the EDZ area, projected vehicle queues from the eastbound left-turn movement from Stoneridge Drive to Johnson Drive would extend beyond the available storage, spilling back through the northbound off-ramp intersection. This spillback would result in vehicle queues periodically extending from the northbound and southbound off-ramps to the mainline; westbound queues on Stoneridge Drive would periodically extend to Franklin Drive, and southbound vehicle queues on Johnson Drive waiting to turn to Stoneridge Drive would extend up to more than a quarter-mile, potentially blocking access to driveways along the Johnson Drive corridor. The percent of demand served at the Johnson Drive and Stoneridge Drive intersection would also decrease from 100 percent during the peak hour to 80 percent with the addition of Phase I traffic, further degrading with full buildout.

Specific significant impacts and associated mitigation measures are presented below.

Impact 4.D-2a: Commerce Drive at Johnson Drive Intersection. The addition of vehicle trips generated by Phase I of the EDZ and other near-term projects during the PM peak hour would worsen the side street movement at this intersection to LOS F, which would be further exacerbated under full buildout conditions. Additionally, peak hour volume traffic signal warrants would be met with the addition of vehicle trips generated by Phase I of the EDZ, causing the need for signalization. This would be a significant impact and mitigation is required.

Implementation of **Mitigation Measure 4.D-1a** as discussed above would reduce this impact to a less-than-significant level for both Phase I and full EDZ buildout.

Impact 4.D-2b: Johnson Drive at Owens Drive (North) Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the Saturday peak hour would worsen operations from LOS C to LOS E. Conditions would be exacerbated with full buildout of the EDZ. Additionally, peak hour volume traffic signal warrants would be met with the addition of traffic from the EDZ and other near-term projects, thus traffic generated by the EDZ would cause the need for signalization at this intersection. This would be a significant impact and mitigation is required.

Implementation of **Mitigation Measure 4.D-1b** would reduce this impact to a less-than-significant level, for both the Phase I and full buildout conditions.

Impact 4.D-2c: Johnson Drive at Stoneridge Drive Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the PM peak hour would worsen LOS D conditions to LOS E at this intersection. Full EDZ buildout would further worsen the LOS E conditions. This would be a significant impact. This intersection is a City-designated gateway intersection and is exempt from the City's LOS D standard if no reasonable mitigation exists or if mitigation is contrary to other City goals.

Implementation of **Mitigation Measure 4.D-1c** would result in LOS D conditions as shown in **Table 4.D-8**. The implementation of this mitigation measure would reduce the impact.

TABLE 4.D-8
NEAR-TERM WITH PROJECT (EDZ) WITH MITIGATION PEAK HOUR INTERSECTION LEVELS OF SERVICE

				Near-Term With Full Buildout		Near-Term With Phase I With Mitigation		Near-Term With Full Buildout With Mitigation	
	Intersection	**Control**	**Peak Hour**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
6.	Stoneridge Drive at Johnson Drive	Signal	PM	**74**	**E**	28	C	32	C
7.	Commerce Drive at Johnson Drive	SSSC/ Signal	PM	**38 (141)**	**E (F)**	14	B	15	B
13.	Johnson Drive at Owens Drive (North)	AWSC/ Signal[1]	PM	**40**	**E**	6	A	6	A
			Sat	**66**	**F**	19	B	21	C

[1] All-way stop control analyzed for the Near-Term with Project scenario and the mitigated scenario used an optimized signalized intersection control.

SOURCE: **Appendix G** (Fehr & Peers, 2015).

Impact 4.D-2d: Stoneridge Drive Queue Spillback. The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in two impacts related to vehicle queue spillback from Stoneridge Drive onto the freeway mainline and adjacent intersections. First, with the addition of vehicle trips from Phase I and full buildout of the EDZ, vehicle queue spillback from the I-680 northbound off-ramp and southbound off-ramp onto the freeway mainline would result in a hazardous condition due to the potential speed differential between moving vehicles on the freeway and queued vehicles on the off-ramp; this is a significant impact requiring mitigation. Second, the addition of traffic generated by the EDZ during Phase I and full buildout would result in vehicle queues extending beyond available storage for the eastbound left-turn movement from Stoneridge Drive to Johnson Drive, periodically impeding through traffic on Stoneridge Drive and resulting in southbound vehicle queues on Johnson Drive blocking access to driveways along the corridor; this is also a significant impact requiring mitigation.

The risk of hazards related to vehicle queue spillback onto the freeway mainline would be mitigated by the implementation of part 1 of **Mitigation Measure 4.D-1c** (construct a third eastbound left-turn lane from the Stoneridge Drive intersection to Johnson Drive in conjunction with the additional northbound receiving lane on Johnson Drive at the Stoneridge Drive intersection [north side of intersection]) and part 1 of **Mitigation Measure 4.D-1d**, below (modification of the traffic signal at the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase[8]). With the addition of vehicle trips from Phase I and full buildout of the EDZ and after implementation of part 1 of **Mitigation Measure 4.D-1c** and part 1 of **Mitigation Measure 4.D-1d**, vehicle queue spillback would still periodically impede through traffic on Stoneridge Drive and block access to driveways along Johnson Drive during PM peak hours.[9] Implementation of all parts of **Mitigation Measure 4.D-1c** and **Mitigation Measure 4.D-1d** would mitigate this impact, as shown in **Table 4.D-9**, which indicates that, with the implementation of these improvements, the percent demand served at Stoneridge Drive and Johnson Drive would be above the 93rd percentile.

With the implementation of part 1 of **Mitigation Measure 4.D-1c** and part 1 of **Mitigation Measure 4.D-1d**, the risk of hazards related to vehicle queue spillback onto the freeway mainline would be mitigated to a less-than-significant level. As described above, widening of the northbound on-ramp identified in Mitigation Measure 4.D-1d (part 4) is within Caltrans right-of-way and would require Caltrans design review and oversight, as well as review by the CDFW, the U.S. Army Corps of Engineers, and the Zone 7 Water Agency. This process may take longer than the development of uses within the EDZ area, and is likely to take longer than the timeline envisioned for Phase I. Because the review and approval process for part 4 of Mitigation Measure 4.D-1d is not under the control of the City of Pleasanton, the impact related to vehicle queue spillback periodically impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours would be significant and unavoidable.

8 As discussed earlier in this section, this measure is identified in the Circulation Element of the General Plan as a planned improvement measure.

9 Morning peak hour volumes would be less than about 30 percent of evening volumes, and a preliminary queuing analysis did not reveal an impact during the morning peak hour.

TABLE 4.D-9
NEAR-TERM WITH PROJECT (EDZ) WITH MITIGATION PM PEAK HOUR 95TH PERCENTILE VEHICLE QUEUES

Intersection	Approach	Link Distance (feet)	Near-Term Without EDZ (feet)	Near-Term with EDZ Phase I (feet)			Near-Term with EDZ Full Buildout (feet)		
				No Improvements	Initial Improvements[1]	Full Improvements[2]	No Improvements	Initial Improvements[1]	Full Improvements[2]
Stoneridge Drive at I-680 SB Off-Ramp	*Southbound*	1,590	265	***Spillback***	525	330	***Spillback***	530	600
Stoneridge Drive at I-680 NB On-Ramp	*Northbound*	*1.390*	205	***Spillback***	360	195	***Spillback***	365	415
	Eastbound	570	190	**Spillback**	270	315	**Spillback**	275	300
Stoneridge Drive at Johnson Drive	Southbound	-	305	1,345	1,320	690	1,375	1,280	925
	Eastbound	440	255	**Spillback**	290	335	**Spillback**	290	335
	Westbound	1,620	1,510	**Spillback**	**Spillback**	1,155	**Spillback**	**Spillback**	1,245
Stoneridge Drive at Franklin Drive	Westbound	1,325	580	**Spillback**	**Spillback**	865	**Spillback**	**Spillback**	1,195
Percent Demand Served at Stoneridge Drive at Johnson Drive[3]			100%	80%	87%	95%	79%	88%	93%

NOTES: Italics indicates movements where queue spillback would be to the freeway mainline, potentially affecting freeway operations. Spillback indicates vehicle queues extend to the adjacent intersection and affect the operations, resulting in worse service levels than shown in Table 4.D-4.

1 Reflects conditions with construction of a third eastbound left-turn lane from Stoneridge Drive intersection to Johnson Drive and associated receiving lanes, (part 1 of Mitigation Measure 4.D-1c) and modification of the traffic signal at the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase (part 1 of Mitigation Measure 4.D-1d).

2 Reflects conditions with the implementation of Mitigation Measure 4.D-1c and Mitigation Measure 4.D-1d. Some queues increase slightly from the partial improvement scenario due to changes in signal timing and vehicle arrival rates at intersections through the corridor as removing a bottleneck at one location can increase traffic arriving at adjacent intersections. As mitigation measures are implemented, signal timings and off-sets between coordinated intersections would need to be monitored and adjusted to minimize vehicle queues and delays through the area.

3 As calculated by SimTraffic, results reflect the percent of traffic that is able to travel through the intersection during the peak hour. Conditions when not all vehicles are served result in vehicle queues requiring several cycles, potentially resulting in queue spillback to adjacent intersections.

SOURCE: **Appendix G** (Fehr & Peers, 2015).

Impact 4.D-2e: Johnson Drive and Park and Ride Lot Intersection. The addition of vehicle trips generated by Phase I of the EDZ and other near-term projects during the PM peak hour would worsen the side street movement at this intersection to LOS E; under full buildout conditions, this condition would worsen to LOS F. This would be a significant impact and mitigation is required.

Peak hour signal warrants would not be met at this intersection, and moreover, installation of a traffic signal is not recommended at this location. The City of Pleasanton does not have plans to make physical improvements at this intersection. However, implementation of measures that would reduce vehicle queue spillback nearby on Johnson Drive at Stoneridge Drive would contribute to improved operations of this driveway, although the side-street would continue to operate at a deficient level during the weekday PM peak hour for vehicles waiting to turn left from the park and ride lot to Johnson Drive. Implementation of **Mitigation Measure 4.D-1c** would reduce this impact, but the impact would remain significant and unavoidable.

Significance After Mitigation: Significant and Unavoidable for **vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours**; Significant and Unavoidable for **Johnson Drive and Park and Ride Lot Intersection**.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measures Identified.

Cumulative Impacts

Impact 4.D-3: Development facilitated by the proposed EDZ would affect levels of service at the local study intersections under <u>Far-term (Cumulative) plus Project</u> conditions. (Significant and Unavoidable for vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours; Significant and Unavoidable for Johnson Drive and Park and Ride Lot Intersection)

LOS calculations were conducted to evaluate intersection operations under cumulative conditions both without and with the proposed EDZ. The LOS results are summarized in **Table 4.D-10**. Intersections on Stoneridge Drive between the southbound freeway off-ramp and Franklin Drive were evaluated using SimTraffic, a micro-simulation software, to account for the effects of vehicle queue spill-back, lane utilization as vehicles position themselves to enter the freeway, and the short spacing between intersections which affects driver behavior.

The results of the LOS calculations indicate that with planned development in the City and adjacent jurisdictions, in the cumulative condition, all study intersections would operate at LOS D or better. The addition of traffic that would be generated by development within the proposed EDZ area is expected to slightly increase delay at some study intersections and result in greater changes to average delay at other intersections. The addition of project traffic would degrade operations below LOS D at the following intersections:

TABLE 4.D-10
CUMULATIVE CONDITIONS PEAK HOUR INTERSECTION LEVELS OF SERVICE

	Intersection	Control[1]	Peak Hour	Cumulative Without Project		Cumulative With Phase I		Cumulative With Buildout[4]	
				Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
1.	I-580 Westbound Ramps at San Ramon Road	Signal	AM	13	B	16	B	16	B
			PM	18	B	13	B	13	B
2.	I-580 Eastbound Ramps at Foothill Road	Signal	AM	16	B	25	C	25	C
			PM	18	B	19	B	19	B
3.	Foothill Road at Stoneridge Drive	Signal	AM	25	C	26	C	26	C
			PM	22	C	23	C	24	C
4.	Stoneridge Drive at I-680 Southbound Ramps	Signal	AM	12	B	25	C	25	C
			PM	17	B	20	B	21	C
			Sat	11	B	11	B	11	B
5.	Stoneridge Drive at I-680 Northbound Ramp	Signal	AM	12	B	27	C	27	C
			PM	11	B	18	B	19	B
			Sat	10	A	10	A	10	A
6.	Stoneridge Drive at Johnson Drive	Signal	AM	11	B	32	C	33	C
			PM	20	B	52	D	**67**	**E**
			Sat	11	B	32	C	37	D
7.	Commerce Drive at Johnson Drive	SSSC	AM	3 (13)	A (B)	4 (14)	A (B)	4 (14)	A (B)
			PM	9 (34)	A (D)	31 **(118)**	D **(F)**	**43 (167)**	**E (F)**
			Sat	3 (12)	A (B)	5 (16)	A (C)	6 (20)	A (C)
8.	Park and Ride Lot at Johnson Drive	SSSC	AM	1 (10)	A (A)	1 (11)	A (B)	1 (11)	A (B)
			PM	1 (15)	A (B)	**2 (43)**	A **(E)**	3 **(100)**	**A (F)**
			Sat	1 (11)	A (B)	1 (18)	A (B)	1 (26)	A (D)
9.	Stoneridge Drive at Franklin Drive	Signal	AM	17	B	45	D	44	D
			PM	21	C	27	C	27	C
10.	Dougherty Road at I-580 Westbound Ramps	Signal	AM	11	B	11	B	11	B
			PM	17	B	17	B	17	B
11.	Hopyard Road at I-580 Eastbound Ramps	Signal	AM	30	C	30	C	30	C
			PM	20	B	20	B	20	B
12.	Hopyard Road at Owens Drive	Signal	AM	34	C	43	D	43	D
			PM	54	D	**61**	**E**	**63**	**E**
			Sat	35	C	45	D	45	D
13.	Johnson Drive at Owens Drive (North)	AWSC	AM	11	B	12	B	12	B
			PM	19	C	**47**	**E**	**51**	**F**
			Sat	25	C	**77**	**F**	**79**	**F**
14.	Johnson Drive at Owens Drive (South)	Signal	AM	15	B	15	B	15	B
			PM	18	B	18	B	18	B
			Sat	15	B	17	B	17	B
15.	Stoneridge Drive at Hopyard Road	Signal	AM	32	C	38	D	38	D
			PM	38	D	39	D	39	D
			Sat	30	C	33	C	36	D
16.	West Las Positas Boulevard at Hopyard Road	Signal	AM	26	C	38	D	38	D
			PM	32	C	33	C	32	C
17.	Stoneridge Drive at Hacienda Drive	Signal	AM	26	C	26	C	26	C
			PM	25	C	25	C	25	C

1 SSSC = side-street stop controlled intersection; AWSC = all way stop control; Signal = signalized intersection.
2 Average intersection delay calculated for signalized intersections using the *2000 HCM* method.
3 For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.
4 Intersection impact analysis conducted based on the trip generating buildout of the EDZ.

SOURCE: Appendix G (Fehr & Peers, 2015).

7. Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement with Phase I, further degrading with full buildout to overall LOS E)
13. Johnson Drive at Owens Drive (North) (LOS E, PM peak hour and LOS F, Saturday peak hour with Phase I, worsening with full buildout)
6. Stoneridge Drive at Johnson Drive (LOS E, PM peak hour with buildout)
8. Park and Ride Lot at Johnson Drive (LOS E, weekday PM peak hour for side-street movement with Phase I, degrading to LOS F with full buildout)
12. Hopyard Road at Owens Drive (LOS E, PM peak hour with Phase I, worsening with full buildout)

All other study intersections would continue to operate at acceptable service levels based on the LOS standard. With the addition of traffic generated by development in the EDZ area, projected vehicle queues from the eastbound left-turn movement from Stoneridge Drive to Johnson Drive would extend beyond the available storage, spilling back through the northbound off-ramp intersection. This spillback would result in vehicle queues periodically extending from the southbound and northbound off-ramps to the mainline; westbound queues on Stoneridge Drive would periodically extend to Franklin Drive, and southbound vehicle queues on Johnson Drive waiting to turn to Stoneridge Drive would extend up to more than a quarter-mile, potentially blocking access to driveways along the Johnson Drive Corridor.

Specific significant impacts and associated mitigation measures are presented below. Levels of service after implementation of mitigation measures are presented in **Table 4.D-11**.

TABLE 4.D-11
CUMULATIVE WITH EDZ WITH MITIGATION PEAK HOUR INTERSECTION LEVELS OF SERVICE

				Cumulative With EDZ Full Buildout		Cumulative With EDZ Phase I With Mitigation		Cumulative With Full EDZ Buildout With Mitigation	
	Intersection	Control	Peak Hour	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
7.	Commerce Drive at Johnson Drive	Signal	PM	**43 (167)**	**E (F)**	15	B	15	B
13.	Johnson Drive at Owens Drive (North)	Signal	PM	**51**	**F**	6	A	7	A
6.	Stoneridge Drive at Johnson Drive	Signal	PM	**67**	**E**	28	C	32	C
			Sat	**79**	**F**	21	C	21	C
12.	Hopyard Road at Owens Drive	Signal	PM	**63**	**E**	52	D	54	D

1 All-way stop control analyzed for the Existing with EDZ scenario and the mitigated scenario used an optimized signalized intersection control.

SOURCE: **Appendix G** (Fehr and Peers, 2015).

Impact 4.D-3a: Commerce Drive at Johnson Drive Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the PM peak hour would worsen the side street movement to LOS F at this intersection, which would be further exacerbated with full buildout

conditions. Additionally, peak hour volume traffic signal warrants would be met with the addition of traffic generated by Phase I of the EDZ, thus traffic generated by the EDZ would cause the need for signalization. This would be a significant impact and mitigation is required.

Implementation of **Mitigation Measure 4.D-1a** would reduce this impact to a less-than-significant level for both Phase I and full buildout conditions.

Impact 4.D-3b: Johnson Drive at Owens Drive (North) Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the Saturday peak hour would cause conditions to decline from LOS C to LOS E. Poor conditions would be exacerbated with full buildout of the EDZ. Additionally, peak hour volume traffic signal warrants would be met with the addition of traffic generated by the EDZ, thus traffic generated by the EDZ would cause the need for signalization. This would be a significant impact and mitigation is required.

Implementation of **Mitigation Measure 4.D-1b** would reduce this impact to a less-than-significant level for both Phase I and full buildout conditions.

Impact 4.D-3c: Johnson Drive at Stoneridge Drive Intersection. The addition of vehicle trips generated by full buildout of the EDZ during the PM peak hour would worsen LOS D conditions at this intersection to LOS E. This would be a significant impact. This intersection is a City-designated gateway intersection and is exempt from the City's LOS D standard if no reasonable mitigation exists or if mitigation is contrary to other City goals.

Implementation of **Mitigation Measure 4.D-1c** would result in LOS C conditions as shown in **Table 4.D-12**.

Impact 4.D-3d: Stoneridge Drive at Johnson Drive Queue Spillback. The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in two impacts related to vehicle queue spillback from Stoneridge Drive onto the freeway mainline and adjacent intersections. First, with the addition of vehicle trips from Phase I and full buildout of the EDZ, vehicle queue spillback from the I-680 northbound off-ramp and southbound off-ramp onto the freeway mainline would result in a hazardous condition due to the potential speed differential between moving vehicles on the freeway and queued vehicles on the off-ramp; this is a significant impact requiring mitigation. Second, the addition of traffic generated by the EDZ during Phase I and full buildout would result in vehicle queues extending beyond available storage for the eastbound left-turn movement from Stoneridge Drive to Johnson Drive, periodically impeding through traffic on Stoneridge Drive and resulting in southbound vehicle queues on Johnson Drive blocking access to driveways along the corridor; this is also a significant impact requiring mitigation.

The risk of hazards related to vehicle queue spillback onto the freeway mainline would be mitigated by the implementation of part 1 of **Mitigation Measure 4.D-1c** (construct a third eastbound left-turn lane from the Stoneridge Drive intersection to Johnson Drive in conjunction with the additional northbound receiving lane on Johnson Drive at the Stoneridge Drive intersection [north side of intersection]) and part 1 of **Mitigation Measure 4.D-1d**, above

(modification of the traffic signal at the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase[10]). With the addition of vehicle trips from Phase I and full buildout of the EDZ and after implementation of part 1 of Mitigation Measure 4.D-1c and part 1 of Mitigation Measure 4.D-1d, vehicle queue spillback would still periodically impede through traffic on Stoneridge Drive and block access to driveways along Johnson Drive during PM peak hours.[11] Implementation of all parts of **Mitigation Measure 4.D-1c** and **Mitigation Measure 4.D-1d** would mitigate this impact, as shown in **Table 4.D-9**, which indicates that, with the implementation of these improvements, the percent demand served at Stoneridge Drive and Johnson Drive would be above the 95th percentile.

With the implementation of part 1 of **Mitigation Measure 4.D-1c** and part 1 of **Mitigation Measure 4.D-1d**, the risk of hazards related to vehicle queue spillback onto the freeway mainline would be mitigated to a less-than-significant level. As described above, widening of the northbound on-ramp identified in Mitigation Measure 4.D-1d (part 4) is within Caltrans right-of-way and would require Caltrans design review and oversight, as well as review by the CDFW, the U.S. Army Corps of Engineers, and the Zone 7 Water Agency. This process may take longer than the development of uses within the EDZ area, and is likely to take longer than the timeline envisioned for Phase I. Because the review and approval process for part 4 of Mitigation Measure 4.D-1d is not under the control of the City of Pleasanton, the impact related to vehicle queue spillback periodically impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours would be significant and unavoidable.

Impact 4.D-3e: Park and Ride Lot at Johnson Drive Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the PM peak hour would worsen the side street movement to LOS E; with full buildout, conditions would decline to LOS F. This would be a significant impact and mitigation is required. Peak hour signal warrants would not be met at this intersection.

Implementation of **Mitigation Measure 4.D-1c** would reduce this impact, but the impact would remain significant and unavoidable for both Phase I and full buildout conditions.

Impact 4.D-3f: Hopyard Road at Owens Drive Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the PM peak hour would reduce LOS D conditions to LOS E. Full buildout of the EDZ would further worsen the LOS E conditions. This would be a significant impact and mitigation is required.

10 As discussed earlier in this section, this measure is identified in the Circulation Element of the General Plan as a planned improvement measure.

11 Morning peak hour volumes would be less than about 30 percent of evening volumes, and a preliminary queuing analysis did not reveal an impact during the morning peak hour.

TABLE 4.D-12
CUMULATIVE WITH PROJECT (EDZ) WITH MITIGATION PM PEAK HOUR 95TH PERCENTILE VEHICLE QUEUES

Intersection	Approach	Link Distance (feet)	Cumulative Without EDZ (feet)	Cumulative with EDZ Phase I (feet)			Cumulative with EDZ Full Buildout (feet)		
				No Improvements	Initial Improvements[1]	Full Improvements[2]	No Improvements	Initial Improvements[1]	Full Improvements[2]
Stoneridge Drive at I-680 SB Off-Ramp	*Southbound*	*1,590*	235	***Spillback***	260	305	***Spillback***	350	315
Stoneridge Drive at I-680 NB On-Ramp	*Northbound*	*1.390*	230	***Spillback***	530	435	***Spillback***	540	415
	Eastbound	570	190	**Spillback**	280	325	**Spillback**	290	360
Stoneridge Drive at Johnson Drive	Southbound	-	325	1,400	1,445	770	1,375	1,355	780
	Eastbound	440	275	**Spillback**	395	390	**Spillback**	355	410
	Westbound	1,620	1,520	**Spillback**	**Spillback**	1,510	**Spillback**	**Spillback**	1,310
Stoneridge Drive at Franklin Drive	Westbound	1,325	590	**Spillback**	**Spillback**	840	**Spillback**	**Spillback**	875
Percent Demand Served at Stoneridge Drive at Johnson Drive[3]			100%	79%	88%	98%	78%	89%	97%

NOTES: Italics indicates vehicle queues spillback to the freeway mainline, potentially affecting freeway operations. Spillback indicates vehicle queues extend to the adjacent intersection, affecting operations and resulting in worse service levels than shown in Table 14.

1 Reflects conditions with construction of a third eastbound left-turn lane from Stoneridge Drive intersection to Johnson Drive and associated receiving lanes, (part 1 of Mitigation Measure 4.D-1c) and modification of the traffic signal at the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase (part 1 of Mitigation Measure 4.D-1d).

2 Reflects conditions with Mitigation Measure 4.D-1c and Mitigation Measure 4.D-1d. Some queues increase slightly from the partial improvement scenario due to changes in signal timing and vehicle arrival rates at intersections through the corridor as removing a bottleneck at one location can increase traffic arriving at adjacent intersections. As mitigation measures are implemented, signal timings and off-sets between coordinated intersections would need to be monitored and adjusted to minimize vehicle queues and delays through the area.

3 As calculated by SimTraffic, results reflect the percent of traffic that is able to travel through the intersection during the peak hour. Conditions when not all vehicles are served result in vehicle queues requiring several cycles, potentially resulting in queue spillback to adjacent intersections.

Source: **Appendix G** (Fehr & Peers, 2015).

The General Plan identifies the following improvements for implementation at Hopyard Road at Owens Drive Intersection:

- Modify the northbound approach: 2 left turns, 3 through, 1 right turn
- Modify the southbound approach: 3 left turns, 3 through, 1 right turn
- Modify the eastbound approach: 2 left turn, 2 through, 1 right turn
- Modify the westbound approach 2 left turn, 1 through-right shared, 1 right turn
- Un-split eastbound/westbound signal operations

With the implementation of the last two of these improvements – the modification of the westbound approach (2 left turn, 1 through-right shared, and 1 right turn), and an un-split of eastbound/westbound signal operations) – the intersection LOS would improve to an acceptable level during the weekday PM peak hour, reducing the impact from the EDZ to a less-than-significant level.

Significance After Mitigation: Significant and Unavoidable for **vehicle queue spillback impeding through traffic on Stoneridge Drive and blocking access to driveways along Johnson Drive during PM peak hours**; Significant and Unavoidable for **Johnson Drive and Park and Ride Lot Intersection**.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measures Identified.

Freeway Operations

To determine impacts to freeway operations that would result from the proposed EDZ, existing freeway volumes for I-680 south of Stoneridge Drive were obtained from Caltrans. Ramp volumes were used to determine existing volumes north of Stoneridge Drive. Traffic that would be generated by the EDZ was then added to the existing freeway volumes to develop forecasts for Phase I and full buildout conditions.

Impact 4.D-4: Development facilitated by the proposed EDZ would affect levels of service on mainline freeway segments under <u>Existing plus Project</u> conditions. (Less Than Significant)

Freeway segment LOS was calculated based on existing and existing plus Phase I and full buildout project traffic volumes. Results are presented in **Table 4.D-13**, which indicates that I-680 between I-580 and Stoneridge Drive operates at LOS F during the AM peak hour (southbound) and LOS F in the PM peak hour (northbound). South of Stoneridge Drive, peak hour operations are LOS E or better. The addition of traffic that would be generated by Phase I and by full buildout of the EDZ would slightly worsen the operations of northbound and

TABLE 4.D-13
EXISTING CONDITIONS I-680 RAMP MAINLINE LEVELS

Intersection	Peak Hour	Existing Without EDZ			Existing With Phase I				Existing With Full Buildout			
		Volume	Density[1]	LOS	Volume	Density[1]	LOS	Percent Increase	Volume	Density[1]	LOS	Percent Increase
Northbound I-680 – North of Stoneridge Drive	AM	5,600	33	D	5,634	34	D	1%	5,641	34	D	1%
	PM	6,900	-	F	7,022	-	F	2%	7,062	-	F	2%
Southbound I-680 – North of Stoneridge Drive	AM	6,700	-	F	6,740	-	F	1%	6,741	-	F	1%
	PM	4,800	26	D	4,906	27	D	2%	4,957	28	D	3%
Northbound I-680 – South of Stoneridge Drive	AM	5,500	33	D	5,538	33	D	1%	5,536	33	D	1%
	PM	5,700	35	E	5,790	36	E	2%	5,832	37	E	2%
Southbound I-680 – South of Stoneridge Drive	AM	5,600	34	D	5,630	34	D	1%	5,636	35	D	1%
	PM	4,900	28	D	4,995	28	D	2%	5,027	29	D	3%

1 Density is presented in passenger cars per mile per lane (pc/mi/ln).

SOURCE: Appendix G (Fehr & Peers, 2015).

southbound I-680 traffic for most segments, but would not result in deficient operations nor increase the volume by more than 3 percent for a segment that operates at a deficient level prior to the addition of EDZ traffic. Therefore, the impact to mainline freeway segments is less than significant and no mitigation is required.

Mitigation: None required.

Comparison to 2009 General Plan EIR Findings: No New Impact, No New Mitigation Measure Identified.

Impact 4.D-5: Development facilitated by the proposed EDZ would affect levels of service for freeway ramps at merge/diverge areas within I-680 under Existing plus Project conditions. (Significant and Unavoidable)

Existing freeway ramp volumes, freeway mainline volumes, free-flow speeds, and merging/diverging lengths were used as inputs to calculate existing service levels for the freeway ramps at the merge/diverge areas with I-680. The ramp merging and diverging analysis results are presented in **Table 4.D-14**. The following segments currently operate at unacceptable levels (LOS F):

- Northbound I-680 on-ramp from the eastbound Stoneridge Drive merge (PM Peak Hour)
- Northbound I-680 on-ramp from the westbound Stoneridge Drive merge (PM Peak Hour)
- Southbound I-680 off-ramp at Stoneridge Drive diverge (AM Peak Hour)

TABLE 4.D-14
EXISTING AND EXISTING PLUS PROJECT CONDITIONS I-680 MERGE/ DIVERGE LEVELS OF SERVICE

Mainline Location	Peak Hour	Existing Without EDZ		Existing With EDZ Phase I		Full EDZ Buildout	
		Density[1]	LOS	Density[1]	LOS	Density[1]	LOS
Merge							
NB I-680 On-ramp from EB Stoneridge Drive	AM	32	D	32	D	32	D
	PM	-	F	-	F	-	F
NB I-680 On-ramp from WB Stoneridge Drive	AM	37	E	-	F	-	F
	PM	-	F	-	F	-	F
SB I-680 On-Ramp from EB Stoneridge Drive	AM	33	D	33	D	33	F
	PM	32	D	33	D	33	F
SB I-680 On–ramp from WB Stoneridge Drive	AM	34	D	35	E	36	E
	PM	35	E	36	E	37	E
Diverge							
NB I-680 Off-ramp to Stoneridge Drive	AM	28	D	28	D	28	D
	PM	27	C	29	D	28	D
SB I-680 Off-ramp to Stoneridge Drive	AM	-	F	-	F	-	F
	PM	8	A	9	A	10	A

1 Density is presented in passenger cars per mile per lane (pc/mi/ln).

SOURCE: Appendix G (Fehr & Peers, 2015).

The addition of traffic that would be generated by the EDZ under Phase I and full buildout would further degrade operations of already deficient segments; other merge/diverge areas would continue to operate at LOS E or better.

The addition of EDZ traffic would either result in or worsen LOS F conditions at the I-680 northbound and southbound ramp merge/diverge areas at Stoneridge Drive. This would be a significant impact and mitigation is required.

> **Mitigation Measure 4.D-2: I-680 Northbound and Southbound Ramp Merge/Diverge Areas at Stoneridge Drive.** Construct improvements, such as the second phase of I-680/I-580 interchange improvements, widening of State Route 84, and other planned roadway system modifications that would relieve freeway congestion in the study area.

Implementation of **Mitigation Measure 4.D-2** would reduce the magnitude of this impact. However, the timing of these improvements is unknown at this time because full funding has not been identified. This impact is therefore significant and unavoidable.

Significance After Mitigation: Significant and Unavoidable.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measure Identified.

Impact 4.D-6: Development facilitated by the proposed EDZ would affect levels of service on mainline freeway segments under <u>Far-term (Cumulative) plus Project</u> conditions. (Less Than Significant)

Levels of service were calculated to evaluate intersection operations under cumulative conditions both without and with the EDZ. The LOS results are summarized in **Table 4.D-15**.

Based on a review of General Plan forecasts, cumulative freeway mainline volumes for I-680 were estimated by applying a ten percent growth factor to the existing volumes. Traffic from buildout within the EDZ area was then added to estimate cumulative with Phase I and full buildout conditions.

The results indicate that I-680 north of Stoneridge Drive is expected to operate at unacceptable LOS F standards during the AM peak hour for the northbound direction and during the PM peak hour for the southbound direction without the addition of traffic from the EDZ, as presented in **Table 4.D-15**. The addition of EDZ traffic would further degrade operations of the I-680 mainline segments at Stoneridge Drive, but would not result in deficient operations nor increase the volume by more than 3 percent for a segment that operates at a deficient level prior to the addition of EDZ traffic. Therefore the mainline cumulative impact is less than significant.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, No New Mitigation Measure Identified.

TABLE 4.D-15
CUMULATIVE CONDITIONS I-680 RAMP MAINLINE LEVELS

		Cumulative Without EDZ			Cumulative With EDZ Phase I				Cumulative With EDZ Full Buildout			
Intersection	**Peak Hour**	**Volume**	**Density[1]**	**LOS**	**Volume**	**Density[1]**	**LOS**	**Percent Increase**	**Volume**	**Density[1]**	**LOS**	**Percent Increase**
Northbound I-680 – North of Stoneridge Drive	AM	6,160	41	E	6,194	41	E	1%	6,201	41	E	1%
	PM	7,590	-	F	7,712	-	F	2%	7,752	-	F	2%
Southbound I-680 – North of Stoneridge Drive	AM	7,370	-	F	7,412	-	F	1%	7,411	-	F	1%
	PM	5,280	30	D	5,386	31	D	2%	5,437	32	D	3%
Northbound I-680 – South of Stoneridge Drive	AM	6,050	40	E	6,088	41	E	1%	6,086	41	E	1%
	PM	6,270	44	E	6,360	-	F	1%	6,402	-	F	2%
Southbound I-680 – South of Stoneridge Drive	AM	6,160	42	E	6,190	42	E	1%	6,196	42	E	1%
	PM	5,390	32	D	5,485	33	D	2%	5,517	33	D	2%

[1] Density is presented in passenger cars per mile per lane (pc/mi/ln).

SOURCE: Appendix G (Fehr & Peers, 2015).

Impact 4.D-7: Development facilitated by the proposed EDZ would affect levels of service for freeway ramps at merge/diverge areas within I-680 under Far-term (Cumulative) plus Project conditions. (Significant and Unavoidable)

Cumulative (without EDZ) freeway ramp volumes, freeway mainline volumes, free-flow speeds, and merging/diverging lengths were used as inputs to calculate cumulative service levels for the freeway ramps at the merge/diverge areas with I-680. The ramp merging and diverging analysis results are presented in **Table 4.D-16**. With projected traffic growth through the I-680 corridor, additional merge/diverge areas are projected to operate at LOS F as compared to existing conditions. The addition of traffic generated by development of the EDZ would contribute to deficient operations at the both southbound on-ramps during PM peak hour, resulting in significant impacts.

The addition of traffic from development of the EDZ would either result in or worsen LOS F conditions in the both the existing and cumulative conditions at the I-680 northbound and southbound ramp merge/diverge areas at Stoneridge Drive. This would be a significant impact and mitigation is required.

TABLE 4.D-16
CUMULATIVE CONDITIONS I-680 MERGE/DIVERGE LEVELS OF SERVICE

Mainline Location	Peak Hour	Cumulative Without EDZ		Cumulative With EDZ Phase I		Cumulative With Full EDZ Buildout	
		Density[1]	LOS	Density[1]	LOS	Density[1]	LOS
Merge							
NB I-680 On-ramp from EB Stoneridge Drive	AM	-	F	-	F	-	F
	PM	-	F	-	F	-	F
NB I-680 On-ramp from WB Stoneridge Drive	AM	-	F	-	F	-	F
	PM	-	F	-	F	-	F
SB I-680 On-Ramp from EB Stoneridge Drive	AM	-	F	-	F	-	F
	PM	34	D	35	E	35	E
SB I-680 On–ramp from WB Stoneridge Drive	AM	-	F	-	F	-	F
	PM	37	E	38	E	-	F
Diverge							
NB I-680 Off-ramp to Stoneridge Drive	AM	30	D	31	D	31	D
	PM	30	D	31	D	32	D
SB I-680 Off-ramp to Stoneridge Drive	AM	-	F	-	F	-	F
	PM	11	B	11	B	11	B

[1] Density is presented in passenger cars per mile per lane (pc/mi/ln).

SOURCE: Appendix G (Fehr & Peers, 2015).

Implementation of **Mitigation Measure 4.D-2** would reduce the magnitude of this impact to a less-than-significant level; however, the timing of the improvements described in this mitigation measure is unknown at this time because full funding has not been identified. This impact is therefore significant and unavoidable.

Significance After Mitigation: Significant and Unavoidable.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measure Identified.

Alameda CTC Roadways

An additional analysis of regional roadways was conducted to comply with requirements of the Alameda CTC, which requires a specific analysis of impacts to MTS roadways identified in the CMP for development projects that would generate more than 100 PM peak hour trips. As shown in **Table 4.D-3**, the proposed EDZ would generate more than 100 PM peak hour trips. Therefore, this analysis considers the impact of the EDZ on freeways, major arterials, and other major roadways as designated by the Alameda CTC.

Impact 4.D-8: Development facilitated by the proposed EDZ would have an impact on Metropolitan Transportation System roadways identified in the Congestion Management Plan, including freeways, major arterials, and other major roadways as designated by the Alameda CTC. (Less Than Significant)

The following freeway and surface street segments in Pleasanton and Livermore were included in this analysis:

- Interstate 580 (5 segments)
- Interstate 680 (3 segments)
- Stoneridge Drive (8 segments)
- Hopyard Road (6 segments)
- Foothill Road (4 segments)

Traffic Forecasts

The Alameda Countywide Travel Demand Model was used to forecast 2025 and 2040 traffic volumes on the MTS roadway system. The forecasts for the MTS system differ from the intersection forecasts previously discussed in the following aspects:

- The land use data sets used for the intersection forecasts and the MTS forecasts are different for areas outside Pleasanton and are consistent with ABAG population and employment projections.
- The regional model may not include some minor streets through Pleasanton, potentially overstating traffic volumes on the roadways included in the model.

The results of the Alameda CTC model were used to forecast the No Project condition for 2025 and 2040.

Analysis Method

Operations of the MTS freeway and surface street segments were assessed based on volume-to-capacity (V/C) ratios. For freeway segments, a per-lane capacity of 2,000 vehicles per hour was used. For surface streets, a per-lane capacity of 800 vehicles per hour was used. These capacities do not reflect additional capacity provided at intersections through turn pockets. Roadway segments with a V/C ratio greater than 1.00 are assigned LOS F.

Analysis Results

The MTS PM peak hour roadway segment analysis under 2025 and 2040 conditions are provided in **Appendix G** (Table 21 for the 2025 condition and Table 22 for the 2040 condition). Results of the analysis indicate that the proposed EDZ would not result in deficient operations on any of the MTS roadway segments in either 2025 or 2040, and no project-specific mitigation is required beyond payment of local and regional transportation impact fees.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, No New Mitigation Measure Identified.

Traffic Safety Hazards

Impact 4.D-9: Development of the EDZ would increase traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways due to roadway design features, incompatible uses, or project-related vehicles trips. (Less Than Significant With Mitigation)

Development within the EDZ area would add new traffic to the existing circulation system. Each individual project developed within the EDZ area would contribute to the increase in traffic; however, incremental increases in traffic would not in and of themselves affect traffic safety on affected intersections and roadways, because all roadway improvements associated with development will be required to comply with all applicable roadway design standards. Additionally, the Circulation Element of the General Plan contains the following policies related to traffic safety which would require development to adhere to design standards and traffic safety protocols.

Policy 6: Design and regulate city streets to minimize traffic-related impacts on adjacent land uses.

Policy 7: Adhere to City design standards for streets in new developments.

Policy 8: Maximize traffic safety for automobile, transit, bicycle users, and pedestrians.

In addition, roadway design features will be evaluated for each individual development and would be subject to traffic engineering design standards. These standards regulate features such as right-of-way widths, the number of lanes necessary, curb to curb separation distances, and

facility-type classification and require roadway designs consistent with Caltrans' Highway Design Manual, the California Manual of Uniform Traffic Control Devices, the City Standard Specifications and Details, and other standards. The Highway Design Manual establishes uniform policies and procedures to carry out the highway design functions of Caltrans.

The EDZ Design Guidelines provide guidance to future developers of sites within the area, and will include guidance regarding pedestrian access and circulation, and bicycle access consistent with General Plan goals for maintaining and expanding pedestrian and bicycle access. Bicycle access to and around the EDZ area is provided by the Class I Alamo Canal and bicycle lanes on Johnson Drive. Per the EDZ Design Guidelines, bicycle lanes will be maintained on Johnson Drive, and buffered bicycle lanes would improve bicycle safety along the corridor. In addition, at new signalized intersections, bicycle detection will be incorporated into the final design of the intersection and traffic signals, if determined necessary by City Engineering staff after review of project plans.

All access to the EDZ area would occur from Johnson Drive, either from the south at Stoneridge Drive or from the north from Owens Drive at Hopyard Road. The total projected level of traffic that would be generated by redevelopment in the EDZ area, especially from trips to/from the club retail use assumed to be developed as part of Phase I in combination with existing traffic, would result in significant effects to the safety of vehicles and bicycles using this part of Johnson Drive, as the projected level of traffic exceeds the capacity of a two-lane roadway and increased turning movements to/from driveways would increase the risk of conflicts along the corridor. In addition, widening of Stoneridge Drive would result in significant impacts on the safety of bicycles and pedestrians. As detailed site plans with proposed driveway locations are not yet available to be evaluated in detail, an assessment of individual parcel access could not be conducted as part of the EIR evaluation, and this impact would be significant for full buildout of the EDZ. Implementation of **Mitigation Measures 4.D-3** and **4.D-4** would reduce this impact to a less-than-significant level.

> **Mitigation Measure 4.D-3: Johnson Drive Improvements.** The City will review design plans for club retail and other traffic-intensive uses that would be developed as part of Phase I and buildout of the EDZ to determine needed improvements to accommodate additional traffic on Johnson Drive. If at the conclusion of this review the City determines that additional improvements to Johnson Drive are required, one or more of the following improvements shall be implemented:
>
> 1. If a club retail use is proposed for Parcel 6, signalize one or more entrances at Parcel 6, and widen Johnson Drive at this location, to accommodate a southbound left-turn pocket and a northbound right-turn pocket.
> 2. Widen Johnson Drive to provide up to two vehicle travel lanes in each direction from Stoneridge Drive to the main entries of sites with traffic-intensive uses (such as club retail).
> 3. Implement other improvements as needed at major driveways (signal control, provision of left-turn or right-turn pockets) to provide additional capacity.

4. Final design of all improvements along Johnson Drive shall maintain or enhance existing bicycles, transit, and pedestrian facilities, and shall ensure bicycle and pedestrian facilities and access to the Alamo Canal Trail at the signalized crossing at Commerce Circle and any other signalized locations on Johnson Drive.

Mitigation Measure 4.D-4: Retention of Bicycle Lanes on Stoneridge Drive. Final design of all improvements along Stoneridge Drive shall maintain or enhance existing bicycles and pedestrian facilities.

Figures 4.D-5, 4.D-6, 4.D-7a and **4.D-7b** show the improvements that would be implemented as part of Mitigation Measure 4.D-3 and Mitigation Measure 4.D-4 at a conceptual level.

Each individual project that would be developed within the EDZ area would be reviewed by City staff for consistency with the City's Fire Code, Subdivision and other regulations in effect at the time, as well as the EDZ Design Guidelines. With implementation of Mitigation Measures 4.D-3 and 4.D-4, development within the EDZ area would cause a less than significant impact related to traffic safety hazards.

Impacts of Mitigation Measure 4.D-3. Implementation of Mitigation Measure 4.D-3 would likely require the widening of Johnson Drive, from the location of Parcel 6 (the site of the potential club retail use) to as far south as Stoneridge Drive. Because Johnson Drive is physically constrained to the west by the Alamo Canal and Centennial Trail, the roadway would be widened to the east and would likely require the acquisition of land and/or rights-of-way along privately owned parcels adjacent to the road, and the removal of on-street parking along Johnson Drive. Impacts related to the removal of this parking are discussed below, under Parking Impacts.

Other impacts associated with this mitigation measure would be associated with roadway construction activities, which would be temporary, and the removal of trees and other vegetation. Temporary roadway construction activities would generate increased dust and other air quality impacts, and noise, and would increase the risk of worker exposure to contaminated soil or groundwater. Roadway construction activities would also affect and could temporarily disrupt traffic using Johnson Drive.

Impacts associated with increased levels of dust and other air emissions during construction are similar to those impacts discussed in Section 4.B, Air Quality, and the implementation of **Mitigation Measures 4.B-1** and **4.B-2** would reduce these impacts to a less-than-significant level. Impacts associated with increased noise levels during construction are similar to those impacts discussed in Section 4.C, Noise; the implementation of **Mitigation Measures 4.C-1a** and **4C-1b** would reduce these impacts to a less-than-significant level. Impacts to trees and vegetation are similar to those described in Section 4.E, Other Topics (Biological Resources), and would be less than significant with the implementation of standard City policies and procedures, including the permitting of tree removal. Implementation of **Mitigation Measure 4.E-5** (Soil and Groundwater Plan) would address exposure of workers to subsurface contamination during construction. As discussed below, the City requires that a Construction Traffic Management Plan be developed and implemented as part of a larger Construction Management Plan for each

development project, which would address significant impacts associated with roadway encroachment during project construction activities.

Significance After Mitigation: Less Than Significant.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: New Impact, New Mitigation Measures Identified.

Emergency Vehicle Access

Impact 4.D-10: Development facilitated by the proposed EDZ would result in inadequate access for emergency vehicles. (Less Than Significant)

Several factors determine whether a project has sufficient access for emergency vehicles, including:

- Location of closest fire stations
- Number of access points (both public and emergency access only)
- Width of access points
- Width of internal roadways

The fire station closest to the EDZ area is located on Stoneridge Mall Road, north of Stoneridge Drive, west of I-680, approximately 0.75 mile from the southern portion of the EDZ area. If Johnson Drive was blocked, emergency vehicles could enter the EDZ area from Owens Drive, a travel distance of approximately 3 miles. Access to the EDZ area would occur from existing roadways that have been designed to provide sufficient width to accommodate turning movements of large emergency vehicles. No new roadways internal to the EDZ area are planned (other than standard drive aisles within parking lots). All parcels within the EDZ area will have independent access points.

Emergency vehicles traveling to parcels within the EDZ area could experience some minor delays with construction of new uses. With implementation of the mitigation measures described above, development facilitated by the proposed EDZ would not significantly alter or modify the circulation network in the EDZ area and thus would not otherwise adversely affect travel times of emergency vehicles; nor, with the implementation of the mitigation measures, would traffic congestion on local roads increase such that emergency access would be hindered. Further, the City's Fire Code and Subdivision regulations contain detailed standards and requirements relating to roadways and circulation internal to the EDZ area such as dead-end streets and emergency vehicle access, including requirements for restricting parking within entrances to project sites, maintaining clear areas if landscaped medians or other entry treatments are proposed, and providing at least two entrances to each major parcel or reciprocal access between neighboring parcels. As part of the City's standard protocols, Fire Department and other City staff will review

SOURCE: Fehr & Peers

Johnson Drive EDZ . 140421

Figure 4.D-7a
Mitigation Measure 4.D-3 Improvements, Conceptual Level

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SOURCE: Fehr & Peers

Johnson Drive EDZ . 140421

Figure 4.D-7b
Mitigation Measure 4.D-3 Improvements, Conceptual Level

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and evaluate the adequacy of emergency vehicle access for each individual development project proposed within the EDZ area in relation to these standards. Considering that each individual development project proposed will be required to be consistent with the City's Fire Code, Subdivision and other regulations in effect at the time of review, development facilitated by the proposed EDZ would cause a less-than-significant impact on emergency access.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact or Changes.

Consistency with Adopted Policies, Plans or Programs Supporting Alternative Transportation

Impact 4.D-11: Operation of uses within the proposed EDZ would be inconsistent with adopted polices, plans, and programs supporting alternative transportation. (Less Than Significant)

Sidewalks do not exist along most of Johnson Drive with the exception of a short (approximately 1,200-foot) extent of sidewalk along Johnson Drive extending north from Stoneridge Drive, along the south and west side of the street. The Alamo Canal pedestrian path runs parallel to Johnson Drive and other roadways within the study area include sidewalks. Development facilitated by the proposed EDZ would generate pedestrian demand; however, development within the EDZ area would not permanently eliminate existing or planned pedestrian facilities (e.g., sidewalks, crosswalks, pathways, and recreational trails such as the Alamo Canal Trail). As discussed above, traffic generation or access from development on sites within the EDZ area would result in physical changes to existing bicycle facilities; however, with the implementation of the EDZ Design Guidelines and **Mitigation Measures 4.D-3** and **4.D-4,** bicycle facilities would be otherwise maintained or expanded.

Transit service is currently provided by WHEELS along Johnson Drive on Route 3 and 70XV. Based on ridership information provided by LAVTA, there is currently excess capacity on transit routes that serve the EDZ area. It is expected that full buildout of the EDZ would generate between 100 and 200 transit trips on a daily basis and between 10 and 20 transit trips during peak hours, which would be accommodated by existing transit service. Development facilitated under the proposed EDZ would generate transit ridership. Additional passengers generated by growth in the EDZ area would likely be accommodated by the existing service and impacts to transit services would not be significant as current services have available capacity to accommodate future demand. Per the city Planning Division's standard procedures, City staff will ensure that larger projects proposed for development within the EDZ area consult with LAVTA regarding the final placement and design of transit stops within the EDZ area, and the appropriate transit amenities that should be provided to promote transit as a viable transportation option to the EDZ area, as needed. The proposed EDZ would not permanently eliminate or modify existing and planned transit corridors, routes, headways, or related facilities (e.g., bus shelters/stops). Route 3

serves, on average, approximately 50 passengers on a typical weekday. Route 70XV serves approximately 15 passengers within or in proximity to the EDZ area on a typical weekday.

The General Plan encourages the use of alternative transportation modes to maintain and enhance the City's neighborhoods and commercial districts. Development within the EDZ area would be required to comply with existing General Plan provisions that encourage the use of alternative modes of transportation. Development of the proposed EDZ would not eliminate or modify alternative transportation corridors or facilities. As a result, the proposed EDZ would not result in changes in policies or programs that support alternative transportation nor would development within the EDZ area impair access to such facilities.

Significance After Mitigation: Less Than Significant.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, New Mitigation Measures.

Parking Impacts

Impact 4.D-12: Development facilitated by the proposed EDZ would result in increased demand for motor vehicle parking, or remove existing parking areas. (Less Than Significant)

During construction of new uses within the EDZ area during Phase I and full buildout, if construction workers' vehicles cannot be accommodated within a specific project site, available parking along nearby roadways would be temporarily affected. Construction would also affect the operations of transit buses along affected roadways. As road improvements are constructed, existing parking areas along streets, including Johnson Drive, would be affected.

The City of Pleasanton requires that a Construction Traffic Management Plan be developed and implemented as part of a larger Construction Management Plan for each development project to address significant impacts during the project's construction. Elements of a Construction Traffic Management Plan may include, but are not limited to, developing detour/circulation plans to minimize traffic impacts during road/lane closures, identifying construction staging areas for worker vehicles and equipment, and limiting lane closures during peak time periods. The City's review and approval of individual Construction Traffic Management Plans would ensure that each project identify appropriate construction parking areas, so that parking along roadways would not be adversely affected.

In order to implement Mitigation Measure 4.D-1a (Commerce Drive at Johnson Drive Intersection), Mitigation Measure 4.D-1c, and Mitigation Measure 4.D-3, some on-street parking (the equivalent of up to 10 parking spaces) along Commerce Drive and Johnson Drive would be removed during Phase I; during full buildout, additional on-street parking along Johnson Drive could be removed. Other available on-street parking exists within the EDZ area in proximity to

businesses along Johnson Drive; this on-street parking would be used by drivers as an alternative to parking along Johnson Drive or Commerce Drive. Because a small number of parking spaces would be affected, and because alternative on-street parking exists within the EDZ area, any additional impacts related to the increased time required by drivers to find parking within the EDZ area after the removal of parking spaces along Johnson Drive and Commerce Drive – such as increased criteria air pollutant emissions, GHG emissions, noise, or traffic congestion – would be minor, are addressed in this and other sections of this SEIR, and would be similarly mitigated by measures described in these sections.

Parking for substantially new development proposed within the EDZ area would be required at the rates specified in the Design Guidelines and in Section 18.88.030 of the Municipal Code. As roadway improvements are constructed, the City will ensure, through the review of project designs and plans, that final design of all improvements along Johnson Drive and other roadways within the EDZ area shall maintain or enhance existing bicycles, transit, and pedestrian facilities, as required by **Mitigation Measure 4.D-3**.

Additionally, long-term and short-term bicycle parking will be provided for all commercial projects within the EDZ area. In addition, the City will encourage shared parking between uses that have complementary parking demands, provided sites are within a reasonable walking distance, to reduce the total number of parking spaces within the EDZ area.

With implementation of Mitigation Measure 4.D-3, this impact would be reduced to less-than-significant.

Significance After Mitigation: Less Than Significant.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact, New Mitigation Measure Identified.

Temporary Construction Impacts

Impact 4.D-13: Development facilitated by the proposed EDZ would generate temporary increases in traffic volume and temporary effects on transportation conditions during construction activities. (Less Than Significant)

During construction activities on sites within the EDZ area, temporary and intermittent transportation impacts would result from truck movements as well as construction worker vehicles traveling to and from the sites, or temporary closure of sidewalks and/or bicycle lanes. Construction-related traffic would temporarily increase traffic along affected roadways due to the short-term influx in construction worker vehicles, haul trucks, and the transport of materials. In addition, construction-related traffic may reduce capacities of roadways within the area of the EDZ because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles and due to potential lane closures during construction activities. Truck traffic

that occurs during peak commute hours (7:00 to 9:00 AM and 4:00 to 6:00 PM) may result in temporarily worse LOS and higher delays at study intersections during the construction period. Future construction activities could also affect the operations of transit buses along affected roadways.

As discussed above, the City requires that a Construction Traffic Management Plan be developed and implemented as part of a larger Construction Management Plan for each development project to address significant impacts during project construction activities. Elements of a Construction Traffic Management Plan may include, but are not limited to, ensuring that parking for construction workers be provided on construction sites, developing detour/circulation plans to minimize traffic impacts during road/lane closures, identifying appropriate truck routes, identifying construction staging areas for worker vehicles and equipment, limiting lane closures during peak time periods, restoring roads to pre-project conditions, notifying local police/emergency responders, and implementing appropriate roadway safety protocols (e.g., advanced warning and speed control signs). The City's review and approval of individual Construction Traffic Management Plans would ensure that this impact is less than significant; no mitigation measures are required.

Mitigation: None required.

Comparison to 2009 General Plan EIR and 2012 SEIR Findings: No New Impact or Changes.

Table 4.D-17 presents a summary of all mitigation measures described above, as well as secondary physical effects that would result from the mitigation measure.

TABLE 4.D-17
SUMMARY OF TRANSPORTATION AND TRAFFIC MITIGATION MEASURES

Impact	Mitigation Measure	Improvement	Secondary Physical Changes	Ph I	FB
Impact 4.D-1a: Commerce Drive at Johnson Drive Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the PM peak hour would worsen the side street movement at this intersection to LOS F; this condition would be further worsened with full EDZ buildout conditions.	**4.D-1a**	Install traffic signal	NA	**X**	**X**
		Construct SB left-turn lane to Commerce Drive	Reduced width of setbacks for Johnson Drive businesses	**X**	**X**
			Removal of some trees and landscaping	**X**	**X**
			Removal of parking on Johnson Drive (approximately 30 spaces)	**X**	**X**
Impact 4.D-1b: Johnson Drive at Owens Drive (North) Intersection. The addition of vehicle trips generated by Phase I of the EDZ during the Saturday peak hour would degrade the service level at this intersection from LOS C to LOS E. Conditions would be slightly exacerbated with full EDZ buildout conditions (i.e., conditions would worsen but LOS would not be degraded from E to F).	**4.D-1b**	Install traffic signal	NA	**X**	**X**
Impact 4.D-1c: Johnson Drive at Stoneridge Drive Intersection. The addition of vehicle trips generated by full buildout of the EDZ during the PM peak hour would worsen conditions at this intersection from LOS D to LOS E. This impact would not occur under conditions caused by Phase I of the EDZ.	**4.D-1c**	1. Third EB left-turn lane to Johnson Drive plus additional NB receiving lane on Johnson Drive	Stoneridge Drive widening: Removal of landscaping		**X**
			Stoneridge Drive widening: Reduced width of setbacks for Stoneridge Drive businesses		
			Acquisition of DSRSD lands along Johnson Drive (widening): Removal of landscaping, removal of walking path		**X**
		2. Additional SB right-turn lane on Johnson Drive.	Removal of landscaping		**X**
		3. Rebuild (widen) Johnson Drive as six lane facility (three SB lanes, three NB lanes) for a minimum of 700 feet	Change to physical layout of park and ride lot; removal of approximately three parking spaces		**X**

TABLE 4.D-17 (continued)
SUMMARY OF TRANSPORTATION AND TRAFFIC MITIGATION MEASURES

Impact	Mitigation Measure	Improvement	Secondary Physical Changes	Ph I	FB
Impact 4.D-1d: Stoneridge Drive Queue Spillback. The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in vehicle queue spillback from Stoneridge Drive onto adjacent intersections and the freeway mainline.	**4.D-1d**	1. Stoneridge Drive at NB I-680 off-ramp: Provide NB right-turn overlap phase.	NA	**X**	**X**
		2. Second SB left-turn lane from Johnson Drive to Stoneridge Drive	Similar to part 1. of Mitigation Measure 4.D-1c (Acquisition of DSRSD lands along Johnson Drive: Removal of landscaping, removal of walking path)	**X**	**X**
		3. Extend existing WB right-turn pocket onto Johnson Drive approximately 800 feet east (widen Stoneridge Drive, convert resulting lane into through-right-shared lane)	Acquisition of DSRSD lands along Stoneridge Drive east of Johnson Drive for widening: Removal of trees and landscaping	**X**	**X**
		4. Second on-ramp lane to NB I-680 from WB Stoneridge Drive approach (lanes will merge; lane drop would occur over a distance of at least 800 feet; bridge reconstruction and widening)	Removal of landscaping (north of ramp)	**X**	**X**
			Impacts to Alamo Canal (removal of wetlands)		
Impact 4.D-4: Development facilitated by the proposed EDZ would affect levels of service for freeway ramps at merge/diverge areas within I-680 under Existing plus Project conditions. The addition of traffic that would be generated by the EDZ under Phase I and full buildout would further degrade operations of already deficient segments	**4.D-2**	Freeway congestion-relieving improvements including: second phase of I-680/I-580 interchange improvements, widening of State Route 84, and other planned roadway system modifications.	Secondary physical changes of these planned improvements addressed in other environmental review documents	**X**	**X**
Impact 4.D-6: Increase in traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways. The projected level of traffic that would be generated by redevelopment in the EDZ area, especially from trips to/from the club retail use assumed to be developed as part of Phase I in combination with existing traffic, would result in significant effects to the safety of vehicles and bicycles using this part of Johnson Drive, as the projected level of traffic exceeds the capacity of a two-lane	**4.D-3**	Signalize one or more entrances at Parcel 6	NA	**X**	**X**
		Widen Johnson Drive at Parcel 6, to accommodate a SB left-turn pocket and NB right-turn pocket	Reduced width of setbacks for Johnson Drive businesses	**X**	**X**
			Removal of some trees and landscaping		
			Removal of parking on Johnson Drive		
		Widen Johnson Drive to provide up to two	Reduced width of setbacks for Johnson Drive	**X**	**X**

TABLE 4.D-17 (continued)
SUMMARY OF TRANSPORTATION AND TRAFFIC MITIGATION MEASURES

Impact	Mitigation Measure	Improvement	Secondary Physical Changes	Ph I	FB
roadway and increased turning movements to/from driveways would increase the risk of conflicts along the corridor.		vehicle travel lanes in each direction from Stoneridge Drive to the main entries of Parcel 6	businesses		
			Removal of some trees and landscaping		
			Removal of parking on Johnson Drive		
		Implement other improvements as needed at major driveways (signal control, provision of left-turn or right-turn pockets) to provide additional capacity	NA	**X**	**X**
		Maintain or enhance existing bicycles, transit, and pedestrian facilities along Johnson Drive	NA	**X**	**X**
		Ensure bicycle and pedestrian facilities and access to the Alamo Canal Trail at the signalized crossing at Commerce Circle and any other signalized locations on Johnson Drive and Stoneridge Drive	NA	**X**	**X**
	4.D-4	Final design of all improvements along Stoneridge Drive shall maintain or enhance existing bicycles and pedestrian facilities.	NA	**X**	**X**

Ph I = Phase I; FB = Full Buildout; NA = Not applicable; DSRSD = Dublin-San Ramon Services District

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4.E Other Topics

This section discusses the potential effects of environmental topics that were determined to have less-than-significant impacts, or significant but mitigable (to less-than-significant) impacts, and therefore, those topics (or specific criteria within those topics) were not analyzed further in this SEIR. The discussions in this chapter focus on the analysis of impacts and pertinent changes in the existing conditions since adoption of the General Plan EIR and 2012 SEIR. To determine whether the proposed EDZ would result in any new impacts, or increases in the severity of impacts previously disclosed in the General Plan EIR and 2012 SEIR, this analysis considers the potential impacts resulting from construction and operation of the proposed EDZ, and compares these impacts to those identified in the two previous EIRs, and the applicability of mitigation measures in those EIRs. **Table 2-1**, Summary Table of Impacts, Mitigation Measures, and Residual Effects, in this SEIR presents the complete list of previously analyzed topics (with full impact statement, and if applicable, mitigation measure). Impacts related to two topics – Agricultural and Forestry Resources and Mineral Resources – are not discussed in detail in this section, because it was determined during the SEIR scoping phase that there would be no impacts associated with these topics. These two topics are discussed in Chapter 6 of this SEIR.

Biological Resources

Existing Setting

The General Plan EIR and 2012 SEIR include overviews of biological resources in the city. The following discussion focuses on information relevant to the proposed EDZ area's sensitivity for biological resources, and presents the results of specific surveys and assessments.

The area of the proposed EDZ is located in a densely developed urban setting with major thoroughfares located to the north, west, and south. To the east of the EDZ area is the Dublin San Ramon Services District Biosolids Facility, which consists of several treated wastewater pools and fields for processing residual solids. An active agricultural field is also present to the southeast.

As with most urbanized environments, landscape features, such as abandoned buildings, trees with hollows, palm trees, parklands, open space, and abandoned buildings within the EDZ area could serve as foraging, nesting and roosting habitat for common and special-status birds and bats.

Wetlands and Other Waters: Regulatory Setting

Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The federal government defines and regulates wetlands and other waters in Section 404 of the Clean Water Act as "areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support (and do support, under normal circumstances) a

prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b] and 40 CFR 230.3).

Under normal circumstances, the federal definition of wetlands requires the presence of three identification parameters: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to other waters of the United States. Other waters of the U.S. include unvegetated waters of streams, lakes and ponds.

The Porter-Cologne Water Quality Control Act (Section 13260 of the California Water Code) requires "a person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state" to file a report of discharge (an application for waste discharge requirements). Under the Porter-Cologne Water Quality Control Act definition, the term "waters of the state" is defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." Although all waters of the United States that are within the borders of California are also waters of the state, the converse is not true—in California, waters of the United States represent a subset of waters of the state. Therefore, the State of California through each of nine Regional Water Quality Control Boards retains authority to regulate discharges of waste into any waters of the state, regardless of whether the U.S. Army Corps of Engineers (USACE) has concurrent jurisdiction under Clean Water Act Section 404.

Biological Reconnaissance Survey

In support of the current analysis, an ESA biologist conducted a reconnaissance-level field survey of the EDZ area on September 17, 2014, to characterize biological conditions, assess vegetation and wildlife habitats, identify the potential presence of federal or state jurisdictional wetlands and other waters, and identify the potential for special-status plant and wildlife species to occur onsite.[1] The proposed EDZ area is bounded by a fitness center and parking uses on the north; light industrial, wastewater treatment, agriculture, and Park and Ride uses to the east; Stoneridge Drive and the I-680 interchange to the south; and I-680 to the west. The Alamo Canal Trail pedestrian and bike path parallels the channelized Alamo Canal located between Johnson Drive and the I-680.

Vegetation within the EDZ area consists of landscaping trees, shrubs, and managed turf grass with the exception of an undeveloped lot in the southwest portion which supports non-native grassland vegetation. Tree species in the EDZ area include California redwood (*Sequoia sempervirens*), Peruvian pepper (*Schinus molle*), cherry plum (*Prunus cerasifera*), poplar (*Populus alba*), sycamore (*Platanus occidentalis*), southern magnolia (*Magnolia grandiflora*), olive (*Olea europaea*) and a variety of pine (*Pinus* spp.), fir (*Abies* spp.), and eucalyptus (*Eucalyptus* spp.). Prevalent shrub species included rose cultivars (*Rosa* spp.), oleander (*Nerium oleander*), privet (*Ligustrum* spp.), and arborvitae (*Thuja* spp.). Slender wild oat (*Avena barbata*)

[1] The term "special-status" species includes those species that are listed and receive specific protection defined in federal or state endangered species legislation, as well as species not formally listed as Threatened or Endangered, but designated as "Rare" or "Sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations, or local agencies such as counties, cities, and special districts. A principle source for this designation is the California "Special Animals List" (CDFW, 2014a).

was the dominant grassland species on the undeveloped lot along with cheese weed mallow (*Malva parviflora*) and field bindweed (*Convolvulus arvensis*).

Wetlands and Other Waters in the Vicinity of the EDZ

Potentially jurisdictional wetlands and other waters of the United States and waters of the state occur within the Alamo Canal, a trapezoidal flood control channel managed by the Alameda County Flood Control and Water Conservation District Zone 7 (Zone 7) and located to the west of the EDZ area between Johnson Drive and I-680. Water was observed in the channel during ESA's reconnaissance survey and a review of historical aerial imagery indicates water is likely present in the channel year-round (Google Earth, 2015). Vegetation on the banks mostly comprised non-native grassland species; however, lower elevations within the channel could support obligate[2] and facultative[3] wetland indicator plant species (USACE, 2014). Further investigation of the Alamo Canal would confirm the presence of jurisdictional features. No other potential federal or state-jurisdictional features were identified within the EDZ area.

Special-Status Species in the EDZ Area

The 2012 SEIR identified eight special-status plant and 18 special-status wildlife species in the Pleasanton area. An updated review of relevant databases found 12 special-status plant species and 24 special-status wildlife species reported to occur in the vicinity of the proposed EDZ area based on data in the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW, 2014a), California Native Plant Society (CNPS) Electronic Inventory (2014), and special-status species information from the U.S. Fish and Wildlife Service (USFWS) (USFWS, 2014) documented in the Dublin and Livermore U.S. Geological Service 7.5minute quadrangles. Several of these species require specialized habitat not found within the EDZ area, including all special-status fish and fairy shrimp species, and therefore were eliminated from the following discussion. Impacts on special-status plants and animals are evaluated based on their documented occurrence in the surrounding vicinity, and the plausible likelihood of compromising habitat loss or disturbance to species that would occur during construction and operation of the proposed EDZ.

Based on the above factors, **Table 4.E-1** identifies those special-status plant and wildlife species that occur regionally, their supporting vegetation communities or habitats, and their likelihood to occur within the EDZ area.

A single undeveloped parcel is present within the southwest portion of the proposed EDZ area which comprises non-native grassland species; the remainder of the EDZ area is largely developed with buildings, paved areas including parking lots, and landscaping. Specialized vegetation communities which could support special-status plant species documented in the region are not found at the EDZ area.

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2 Obligate plant species always occur in standing water or saturated soils.

3 Facultative plant species are tolerant of both wet and dry conditions, are equally likely to occur in wetlands or non-wetlands.

TABLE 4.E-1
SPECIAL-STATUS SPECIES REPORTED OR WITH POTENTIAL TO OCCUR WITHIN THE PROPOSED EDZ AREA

Common Name Scientific Name	Listing Status USFWS/ CDFW/CRPR	Habitat	Potential to Occur[a]
FEDERAL OR STATE SPECIES LISTED OR PROPOSED FOR LISTING			
Plants			
Palmate-bracted salty bird's beak *Chloropyron palmatum*	FE/SE	Chenopod scrub, valley and foothill grassland. Usually found on Pescadero silty clay which is alkaline, with *Distichlis, Frankenia,* etc.	**Absent.** No suitable habitat present. Site lacks alkaline soils.
Amphibians			
California tiger salamander *Ambystoma californiense*	FT/ST	Annual grasslands and valley foothill oak habitats for aestivation; vernal pools, seasonal wetlands, and stock ponds for breeding habitat.	**Absent.** Suitable habitat is not found onsite. Nearby CNDDB occurrences located approximately 4.5 miles from the site are concentrated in open space northeast of the I-580 and southeast of the EDZ area near the Shadow Cliffs Regional Recreation Area.
California red-legged frog *Rana draytonii*	FT/CSC	Slow-flowing portions of perennial streams, ephemeral streams, and hillside seeps that maintain pool environments.	**Low.** Suitable habitat is not found onsite. Individuals could use the Alamo Canal channel west of Johnson Drive though no occurrences have been documented in this highly urban channel during more than 10 years of surveys (Pittman, pers. comm). Nearby CNDDB occurrences have been recorded in the Pleasanton Ridge and Dublin Hills Regional Parks, west of the I-680, and in the open space northeast of the I-580.
Reptiles			
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT/ST	Scrub and chaparral habitats in Alameda and Contra Costa counties but may occur in grasslands, open woodlands, rocky slopes, and streams.	**Absent.** Suitable habitat is not found onsite. Remaining grassland on undeveloped lot is isolated by surrounding urban development.
Mammals			
San Joaquin kit fox *Vulpes macrotis mutica*	FE/ST	Species inhabits suitable grassland, scrubland, alkali meadows and playas, and agricultural landscapes in the San Joaquin Valley and in surrounding foothills.	**Absent.** Suitable habitat is not found onsite. Remaining grassland on undeveloped lot is isolated by surrounding urban development
FEDERAL SPECIES OF CONCERN OR STATE SPECIES OF SPECIAL CONCERN			
Plants			
Heartscale *Atriplex cordulata* var. *tener*	–/–/1B.2	Chenopod scrub, valley and foothill grasslands. Alkaline flats and scalds in the Central Valley. Prefers sandy soils.	**Absent.** No suitable habitat present.
Brittlescale *Atriplex depressa*	–/–/1B.2	Chenopod scrub, meadows, playas, valley and foothill grassland, vernal pools. Usually in alkali scalds or alkali clay in meadows or annual grassland; rarely associated with riparian, marshes, or vernal pools.	**Absent.** No suitable habitat present. Site lacks alkaline soils.
San Joaquin spearscale *Atriplex joaquiniana*	–/–/1B.2	Chenopod scrub; meadows and seeps; playas; valley and foothill grasslands (alkaline soils).	**Absent.** No suitable habitat present. Site lacks alkaline soils.

TABLE 4.E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR WITH POTENTIAL TO OCCUR WITHIN THE PROPOSED EDZ AREA

Common Name Scientific Name	Listing Status USFWS/ CDFW/CRPR	Habitat	Potential to Occur[a]
FEDERAL SPECIES OF CONCERN OR STATE SPECIES OF SPECIAL CONCERN (cont.)			
Plants (cont.)			
Lesser saltscale *Atriplex minuscula*	–/–/1B.2	Chenopod scrub, playas, valley and foothill grassland. In alkali sink and grassland in sandy, alkaline soils.	**Absent.** No suitable habitat present. Site lacks alkaline soils.
Congdon's tarplant *Centromadia parryi* var. *congdonii*	–/–/1B.2	Valley and foothill grasslands (alkaline soils)	**Low.** Two CNDDB occurrences documented within one mile to the northeast and southwest of the site. Site lacks alkaline soils.
Diablo helianthella *Helianthella castanea*	–/–/1B.2	Occurs in broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland and valley and foothill grassland.	**Low.** No suitable habitat present.
Hairless popcorn-flower *Plagiobothrys glaber*	–/–/1A	Meadows and seeps, marshes and swamps	**Low.** No suitable habitat present. One CNDDB occurrence documented northeast of the site.
Oregon polemonium *Polemonium carneum*	-/-/2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest.	**Low.** No suitable habitat present. One CNDDB occurrence documented approximately five miles to the southwest of the site.
Saline clover *Trifolium hydrophilium*	–/–/1B.2	Occurs in marshes and swamps, mesic (moist) grasslands in alkaline soil substrates, and vernal pools.	**Absent.** No suitable habitat present. Site lacks alkaline soils.
ANIMALS			
Amphibians			
Foothill yellow-legged frog *Rana boylii*	-/CSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	**Absent.** Suitable habitat is not found onsite or in the vicinity.
Reptiles			
Western pond turtle *Actinemys marmorata*	-/CSC	Permanent or nearly permanent water in a wide variety of aquatic habitats. Requires basking sites. Nests in sandy soils near aquatic features.	**Low.** Marginal habitat present in the Alamo Canal channel. Individuals known to occur in drainages throughout the Pleasanton area and may move through the adjacent channel though generally prefers larger water bodies with basking sites.
Birds			
Cooper's hawk *Accipiter cooperii*	-/WL	(Nesting) woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian deciduous trees and in live oaks.	**Moderate.** May occur over the site on a transient basis. Mature trees could provide suitable nesting habitat though foraging opportunities are limited in the urban environment of the site vicinity.
Tricolored blackbird *Agelaius tricolor*	-/CSC	Nests in cattail, tule, blackberry thickets, or thistle patches adjacent to freshwater sources.	**Low.** May occur over the site or in the adjacent Alamo Canal channel on a transient basis. Suitable breeding habitat occurs within Chain of Lakes approximately 4 miles to the southeast.

TABLE 4.E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR WITH POTENTIAL TO OCCUR WITHIN THE PROPOSED EDZ AREA

Common Name Scientific Name	Listing Status USFWS/ CDFW/CRPR	Habitat	Potential to Occur[a]
FEDERAL SPECIES OF CONCERN OR STATE SPECIES OF SPECIAL CONCERN (cont.)			
Birds (cont.)			
Golden eagle *Aquila chrysaetos*	-/CFP	Rolling foothills with open grasslands, scattered trees, and cliff-walled canyons.	**Low.** Suitable nesting and foraging habitat is not present in the site vicinity. May occur over the site on a transient basis. Individuals prefer less developed environment.
Great blue heron *Ardea herodias*	-/*	Colonial nester (rookeries) near freshwater marshes and swamps.	**Low.** Suitable foraging habitat is present within the adjacent Alamo Canal channel. Unlikely to breed onsite. Closest documented rookery is located at Shadow Cliffs Park, approximately six miles to the southeast.
Western burrowing owl *Athene cunicularia hypugea*	BCC/CSC	Found in grassland and ruderal habitats, sometimes in urban areas. Dependent on burrowing animals, e.g. ground squirrels, for nests.	**Low.** No suitable habitat present. Undeveloped parcel of the site with non-native grassland does not contain ground squirrel burrows which could be utilized by burrowing owl.
Ferruginous hawk *Buteo regalis*	BCC/WL	Found in open country, primarily prairies and plains, often seen on the ground. Appears in California in fall and winter during non-breeding season.	**Low.** May occur over the site on a transient basis. Individuals prefer less developed environment.
Northern harrier *Circus cyaneus*	-/CSC	Breed and forage in a variety of open habitats, including marshes, wet meadows, grasslands, croplands, and along streams. Nest on the ground, within patches of dense, tall vegetation in undisturbed areas.	**Low.** No suitable habitat present. Individuals prefer less developed environment.
White-tailed kite *Elanus leucurus*	-/CFP	Nests in small trees and medium-sized shrubs adjacent to grassland foraging habitat.	**Low.** May occur over the site on a transient basis. Suitable nesting and foraging habitat is of marginal quality within the site. Individuals prefer less developed environment.
California horned lark *Eremophila alpestris actia*	-/WL	Open grassland and pasture habitat and nests on the ground.	**Low.** Suitable habitat is not found onsite. Area is largely developed and does not support open space preferred by individuals of this species.
Loggerhead shrike *Lanius ludovicianus*	BCC/CSC	Woodlands, savanna and riparian woodlands, scrub, and washes. Prefers open country for hunting.	**Low.** Suitable habitat is not found onsite. Area is largely developed and does not support open space preferred by individuals of this species.
Mammals			
Pallid bat *Antrozous pallidus*	-/CSC	Rocky, mountainous areas and near water. Also more open, sparsely vegetated grasslands. Nightime roosts in buildings, caves, and cliff overhangs.	**Moderate.** One CNDDB occurrence documented within 0.5 miles of the site where several individuals emerged from a bridge at dusk. May roost in unoccupied buildings of the site and forage over nearby open space and adjacent creek channel.

TABLE 4.E-1 (Continued)
SPECIAL-STATUS SPECIES REPORTED OR WITH POTENTIAL TO OCCUR WITHIN THE PROPOSED EDZ AREA

Common Name Scientific Name	Listing Status USFWS/ CDFW/CRPR	Habitat	Potential to Occur[a]
FEDERAL SPECIES OF CONCERN OR STATE SPECIES OF SPECIAL CONCERN (cont.)			
Mammals (cont.)			
Hoary bat *Lasiurus cinereus*	-/*,WBWG-M	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths.	**Moderate.** Mature trees of the site provide suitable roosting habitat and open lawns and undeveloped grassland site offer foraging opportunity.
Yuma myotis *Myotis yumanensis*	-/*,WBWG-L-M	Optimal habitats are open forests and woodlands with water sources to feed over. Roosts in buildings, trees, mines, caves, bridges, and rock crevices. Maternity colonies active May through July.	**Moderate.** One CNDDB occurrence documented within 0.5 miles of the site where several individuals emerged from a bridge at dusk. May roost in unoccupied buildings of the site and forage over nearby open space and adjacent creek channel.
American badger *Taxidea taxus*	-/CSC	Occurs primarily in grasslands, oak savannas, and mountain meadows; prey base consists of a wide variety of animals primarily rodents.	**Low.** Suitable habitat is not found onsite. Grassland of undeveloped parcel is isolated among existing urban development.

STATUS CODES:

Federal Categories (USFWS)
FE = Listed as endangered by the federal government
FT = Listed as threatened by the federal government
FPE = Proposed for listing as endangered
FPT = Proposed for listing as threatened
FC = Candidate for federal listing
DL = Delisted
BCC = Bird of Conservation Concern

State Categories (CDFW)
CE = Listed as endangered by the State of California
CT = Listed as threatened by the State of California
CSC = California Species of Special Concern
CR = Listed as rare by the State of California
FP = Fully Protected
WL = Watch List
*Special animal – listed on CDFW's Special Animals List

Western Bat Working Group (WBWG):
WBWG-H = High priority; Species that are imperiled or at a high risk of imperilment.
WBWG-M = Medium priority; Species that warrant a closer evaluation due to potential imperilment.
WBWG-LM = Low to Medium priority

California Rare Plant Rank (CRPR)
Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere.
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A = Plants presumed extirpated in California, but more common elsewhere.
Rank 2B = Plants rare, threatened, or endangered in California, but more common elsewhere.
Rank 3 = Plants about which we need more information – a review list
Rank 4 = Plants of limited distribution – a watch list

An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered in California.

NOTES:

[a] High Potential = Species is expected to occur and habitat meets special requirements.
Moderate Potential = Habitat is only marginally suitable or is suitable but not within species geographic range.
Low Potential or Absent = Habitat does not meet species requirements as currently understood in the scientific community. Site is outside species geographic range.

SOURCES: CNDDB, 2014; CNPS, 2014; CDFW, 2014a; CDFW, 2014b; USFWS, 2014 (Dublin and Livermore USGS 7.5-minute quadrangles).

Habitat which could support special-status wildlife is also marginal and limited to mature trees and landscaping among the existing buildings, the non-native grassland located in the undeveloped parcel, and the Alamo Canal channel located west of the proposed EDZ area. The undeveloped parcel is isolated among surrounding development which includes buildings to the north and east and Johnson Drive to the south and west. No small mammal burrows were observed in the parcel and grassland appears to be managed throughout the year. The adjacent Alamo Canal channel provides some vegetative cover and facilitates wildlife movement through the surrounding dense urban development, though special-status amphibians are not documented to use the channel, nor are they anticipated to, due to the lack of desirable habitat within a mile and a half of the proposed EDZ area which might be accessed by way of this movement corridor. Species likely to use this corridor include grey fox (*Urocyon cinereoargenteus*), black-tail deer (*Odocoileus hemionus columbianus*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and bullfrog (*Lithobates catesbeianus*).

As shown in Table 4.E-1, special-status wildlife species identified as having a moderate potential to occur in or near the proposed EDZ area and may be subject to impacts from the proposed EDZ include: Cooper's hawk (*Accipiter cooperi*), pallid bat (*Antrozous pallidus*), hoary bat (*Lasiurus cinereus*), and Yuma myotis (*Myotis yumanensis*).

Cooper's hawk

Cooper's hawk ranges over most of North America and may be seen throughout California, most commonly as a winter migrant. Nesting pairs have declined throughout the lower-elevation, more populated parts of the state. Cooper's hawk generally forage in open woodlands and wooded margins and nest in tall trees, often in riparian areas. This species is known to nest locally in Bay Area urban neighborhoods. This species may occasionally forage and nest in larger trees in the proposed EDZ area. Cooper's hawk is on the CDFW watchlist and is protected under California Fish and Game Code, Section 3503.5.

Pallid bat

The pallid bat, a California Species of Special Concern, is common in arid regions with rocky outcroppings, particularly near water. This species usually roosts in small colonies of 20 or more individuals in rock crevices and buildings, but occasionally roosts in caves, mines, rock piles and tree cavities. Individuals of this species chiefly feed on large prey that is taken on the ground or, perhaps less frequently, in flight within a few meters of the ground or from the surfaces of vegetation. Prey items included insects such as scorpions, crickets, and grasshoppers, as well as lizards and rodents. A CNDDB occurrence of this species is documented within 0.5 miles of the proposed EDZ area, east of the intersection of Foothill Road and Gold Creek, where seven adult males exited from a bridge roost in 2003 (CDFW, 2014a). Unoccupied buildings within the proposed EDZ area may host this species.

Hoary bat

The hoary bat is considered a moderate priority species by the Western Bat Working Group. This bat species is the most widespread North American bat and may be found at any location in

California. The hoary bat generally roosts in dense foliage of medium to large trees with preferred sites hidden from above, with few branches below, and that have ground cover of low reflectivity. The medium to large trees within and surrounding the proposed EDZ area may provide suitable roost habitat for this species.

Yuma myotis

The Yuma myotis is considered a low to moderate priority species by the Western Bat Working Group. This bat species is found throughout most of California at lower elevations and in a variety of habitats. It is one of the most human-tolerant bat species that survives in relatively urbanized environments. The Yuma myotis has day roosts in buildings, trees, mines, caves, bridges, and rock crevices. Night roosts are usually associated with buildings, bridges or other man-made structures. Foraging occurs directly over the surface of open water and above vegetation for primarily emergent aquatic insects. A CNDDB occurrence of this species is documented within 0.5 miles of the proposed EDZ area, east of the intersection of Foothill Road and Gold Creek, where five adult males exited from a bridge roost in 2003 (CDFW, 2014a). Unoccupied buildings within the proposed EDZ area may host this species.

Breeding Birds

Trees and buildings in and around the proposed EDZ area provide suitable habitats for a variety of breeding birds. Birds may nest in trees, bushes, grasses, and in ruderal vegetation, under bridges, or on roofs in the vicinity of the proposed EDZ area and forage throughout. Most native, breeding birds are protected under Section 3503 of the California Department of Fish and Game Code (CDFG Code), and raptors are protected under Section 3503.5 of the Code. In addition, both Section 3513 of the CDFG Code and the Federal Migratory Bird Treaty Act (16 U.S. Code, Sec. 703 Supp. I, 1989) prohibit the killing, possession, or trading of migratory birds. Finally, Section 3800 of the CDFG Code prohibits the taking of non-game birds, which are defined as birds occurring naturally in California that are neither game birds nor fully protected species.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing biological resources were adopted as part of the General Plan EIR. Although some mitigation measures addressing biological resources were adopted as part of the 2012 SEIR, most of these measures specifically address only the sites identified for residential rezoning, all of which are outside the proposed EDZ area. A modified version of one measure, Mitigation Measure 4.C-1a, from the 2012 SEIR is applicable to the proposed EDZ, as discussed below.

Impact Discussion 4.E-1: With mitigation, the proposed EDZ would not:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species (Less Than Significant With Mitigation);

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community (Less Than Significant);

c) Have a substantial adverse effect on federally protected wetlands (Less Than Significant With Mitigation);

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites (Less Than Significant);

e) Conflict with any local policies or ordinances protecting biological resources (Less Than Significant); or

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan (Less Than Significant).

The removal of any trees or other vegetation associated with development of the proposed EDZ could result in direct losses of bird nesting habitat, active nests, eggs, and/or nestlings. The demolition of unused or underutilized buildings or other structures could also impact special-status birds and bats through loss of habitat or by direct mortality. Such impacts on special-status birds and bats would be significant. These impacts would be avoided or mitigated to less-than-significant levels through the implementation of **Modified Mitigation Measure 4.C-1a** from the 2012 SEIR (which includes additional language as shown in underline text), and new **Mitigation Measure 4.E-1**.

> **(2012 SEIR) Modified Mitigation Measure 4.C-1a: Pre-construction Breeding Bird Surveys.** The City shall ensure that prior to development of all potential sites for rezoning (Sites 1-4, 6-11, 13, 14, and 16-21) and each phase of project activities that have the potential to result in impacts on breeding birds <u>(e.g., tree removal or demolition of buildings or bridges)</u>, the project applicant shall take the following steps to avoid direct losses of nests, eggs, and nestlings and indirect impacts to avian breeding success:
>
> - If grading or construction activities occur only during the non-breeding season, between August 31 and February 1, no surveys will be required.
> - Pruning and removal of trees and other landscaped vegetation, including grading of grasslands, should occur whenever feasible, outside the breeding season (February 1 through August 31).
> - During the breeding bird season (February 1 through August 31) a qualified biologist will survey project sites for nesting raptors and passerine birds not more than 14 days prior to any ground-disturbing activity or vegetation removal. Surveys will include all line-of-sight trees within 500 feet (for raptors) and all vegetation within 250 feet for all other species.
> - Based on the results of the surveys, avoidance procedures will be adopted, if necessary, on a case-by-case basis. These may include construction buffer areas (up to several hundred feet in the case of raptors) or seasonal avoidance.

- Bird nests initiated during construction are presumed to be unaffected by project activities, and no buffer would be necessary except to avoid direct destruction of a nest or mortality of nestlings.

- If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required <u>if work is initiated within 14 days of the survey</u>. Trees and shrubs that have been determined to be unoccupied by nesting or other special-status birds may be pruned or removed <u>within 14 days of the pre-construction survey. Should activities be delayed beyond 14 days, pre-construction surveys shall be repeated prior to the start of work.</u>

Mitigation Measure 4.E-1: Pre-Construction Bat Surveys. Conditions of approval for building and grading permits issued for demolition and construction on sites within the EDZ area shall include a requirement for pre-construction special-status bat surveys when large trees constituting suitable habitat for roosting bats (e.g. trees with cavities or trees with bark that could be used for roosting such as eucalyptus and redwood) are to be removed or underutilized or vacant buildings are to be demolished.

- Surveys shall be conducted by a qualified biologist prior to any tree removal or building demolition. Removal of trees and structures shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15; outside of bat maternity roosting season (approximately April 15 – August 31) and outside of months of winter torpor (approximately October 15 – February 28), to the extent feasible.

- If removal of trees and structures during the periods when bats are active is not feasible and active bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the site where tree and structure removal is planned, a no disturbance buffer of 100 feet shall be established around these roost sites until they are determined to be no longer active by the qualified biologist. A 100-foot no disturbance buffer is a typical protective buffer distance; however, buffer width may be modified by the qualified biologist depending on existing screening around the roost site (such as dense vegetation or a building) as well as the type of construction activity which would occur around the roost site.

- The qualified biologist shall be present during tree and structure removal if potential bat roosting habitat or active bat roosts are present. Trees and structures with active roosts shall be removed only when no rain is occurring or is forecast to occur for 3 days and when daytime temperatures are at least 50°F.

- Removal of trees with potential bat roosting habitat or active bat roost sites shall follow a two-step removal process:

    1. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using chainsaws.

    2. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using chainsaws or other equipment (e.g. excavator or backhoe).

- Removal of structures containing or suspected to contain potential bat roosting habitat or active bat roosts shall be dismantled under the supervision of the qualified

biologist in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost.

Transportation and Traffic Mitigation Measure 4.D-1d, Stoneridge Drive Queue Spillback, requires the construction of a second on-ramp lane to northbound I-680 from the westbound Stoneridge Drive approach (located at the southwest corner of the EDZ) which would require the reconstruction and widening of the bridge over the Alamo Canal approaching the merge. The two concrete supports for this bridge that extend into the banks of the Alamo Canal would be removed and re-built to accommodate the expanded bridge. Construction activity associated with expanding the bridge would cause temporary and/or permanent impacts to potentially jurisdictional features including wetlands and other waters that occur within the Alamo Canal, which would be a significant impact. The implementation of new **Mitigation Measures 4.E-2**, **4.E-3**, and **4.E-4** would reduce these impacts to a less-than significant level by requiring that a wetland delineation be performed of the proposed bridge expansion and replacement site to identify any jurisdictional features, the avoidance or minimization of temporary and/or permanent impacts to jurisdictional features within the Alamo Canal, and compensation for any temporary and/or permanent impacts to jurisdictional wetlands or other waters within the Alamo Canal that cannot be avoided.

Mitigation Measure 4.E-2: Wetland Delineation. In coordination with the City, a qualified wetland ecologist shall conduct a wetland delineation of the proposed bridge expansion and replacement site to identify potential waters of the United States (U.S.) (including wetlands) or waters of the state which may be present. If no waters of the U.S. or waters of the state are identified onsite, no further action is required. Should waters of the U.S. or waters of the state be determined present within the site, features shall be mapped and documented in a report for submission to the appropriate jurisdictional agencies retaining authority over the identified features.

Mitigation Measure 4.E-3: Wetland Avoidance and Protection. Access roads, work areas, and infrastructure shall be sited to avoid and minimize direct and indirect impacts to wetlands and waters. Where work will occur within and/or adjacent to federal and state jurisdictional wetlands and waters, protection measures shall be applied to minimize the footprint of overall impacts and protect these features. These measures shall include the following:

- A protective barrier (such as silt fencing) shall be erected around the work area (s) to minimize disturbance to wetland or water features and isolate wetland or water features from construction activities to reduce the potential for incidental fill, erosion, or other disturbance beyond what is necessary for bridge expansion and replacement;

- Signage shall be installed on the fencing to identify sensitive habitat areas and restrict construction activities;

- No equipment mobilization, grading, clearing, or storage of equipment or machinery, or similar activity shall occur at the site until a representative of the City has inspected and approved the wetland protection fencing; and

- The City shall ensure that the temporary fencing is continuously maintained until all construction activities are completed.

A fencing material meeting the requirements of both water quality protection and wildlife exclusion shall be used.

Mitigation Measure 4.E-4: Compensation for Impacts to Wetlands and Other Waters. Where jurisdictional wetlands and other waters cannot be avoided, to offset temporary and permanent impacts that would occur as a result of the bridge expansion and replacement, restoration and compensatory mitigation shall be provided through the following mechanisms:

- Prior to construction, the City or Caltrans shall obtain relevant permits and authorizations from the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and the San Francisco Bay Regional Water Quality Control Board (RWQCB);

- Consistent with the terms and conditions of these permits and authorizations, the City or Caltrans shall compensate for the unavoidable loss of wetlands and other waters at a minimum of a 1:1 ratio; and

- Compensation may be provided by one or more of the following methods: 1) on-site creation or habitat restoration, 2) off-site habitat creation, restoration and/or enhancement, or 3) payment to an approved wetland mitigation bank.

Mitigation bank credits, if available, shall be obtained prior to the start of construction. On-site or off-site creation/restoration/enhancement plans must be prepared by a qualified biologist prior to construction and approved by the permitting agencies. Implementation of creation/restoration/enhancement activities by the permittee shall occur prior to impacts, whenever possible, to avoid temporal loss. On- or off-site creation/restoration/enhancement sites shall be monitored by the City for at least five (5) years to ensure their success.

Impacts on the habitat of special-status wildlife species potentially present within the proposed EDZ area would be avoided or mitigated to less-than-significant levels with the implementation of 2012 SEIR **Modified Mitigation Measures 4.C-1** and new **Mitigation Measure 4.E-1**. Impacts on potential federal and/or state jurisdictional features would be avoided or mitigated to less-than-significant levels with the implementation of new **Mitigation Measures 4.E-2, 4.E-3, and 4.E-4**. In addition, any new development projects shall adhere to the following goals, policies and implementation programs within the General Plan aimed at protecting the movement of wildlife within corridors: Conservation and Open Space Element Goal 2, Policy 1, Program 1.12; Policy 2, Program 2.1 and 2.2; Policy 3; Goal 5, Program 6.2, 6.3 and 6.7; and Water Element Goal 2, Policy 2.

Development of the proposed EDZ could occur in locations where heritage trees would be adversely affected, through damage to root zones or tree canopy, or outright removal. Chapter 17.16 of the Pleasanton Municipal Code outlines the City's Tree Preservation Ordinance, which defines and protects heritage trees, considered important resources by the City. It is the City's policy to preserve heritage trees, whenever possible. However, when circumstances do not allow for retention, the City requires permits to remove trees that are within

its jurisdiction. The City's Municipal Code requires mitigation for the removal of trees as a result of new development, including replacement with new trees and payment to the City's Urban Forestry Fund. In addition, removal of or construction around trees that are protected by the heritage tree ordinance requires permission and inspection by the Director of Public Works and Utilities or the Director's designated representative.

The City's Tree Preservation Ordinance provides adequate protection for heritage trees in the City of Pleasanton, and required compliance with the ordinance would avoid significant impacts to these trees that would result from new development facilitated by the proposed EDZ. Impacts would be less than significant, and mitigation would not be required.

Significance after Mitigation: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, New Mitigation Measures Identified.

Cultural Resources

Cultural resources include historic architectural resources, archaeological resources, and human remains. Paleontological resources include fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. This section provides an assessment of impacts on cultural and paleontological resources that might be present in the vicinity of the proposed EDZ.

Existing Setting

The General Plan EIR includes a broad overview of cultural resources in the city, based on a records search prepared by the Northwest Information Center (NWIC) at Sonoma State University, and information provided by the City of Pleasanton. The 2012 SEIR reviewed sites that were proposed for rezoning as part of the Housing Element for sensitivity for cultural resources. The following discussion focuses on information relevant to the proposed EDZ area's sensitivity for cultural resources.

Previous Cultural Resources Studies

ESA completed a records search at the NWIC of the California Historical Resources Information System on August 8, 2014 (File No. 14-0181). The review included the EDZ area and properties within a radius of 0.5 miles. Previous surveys, studies, and site records were accessed. Records were also reviewed in the Historic Property Data File for Alameda County, which contains information on places of recognized historical significance including those evaluated for listing in the National Register of Historic Places, the California Register of Historical Resources, the California Inventory of Historical Resources, California Historical Landmarks, and California Points of Historical Interest. The purpose of the records search was to (1) determine whether known cultural resources have been recorded within the vicinity of the EDZ area; (2) assess the

likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

The records search indicated that 15 cultural resources studies have been conducted in or immediately adjacent to the EDZ area (**Table 4.E-2**). None of these studies have identified any significant cultural resources in the vicinity of the proposed EDZ.

Two studies completed immediately north of the EDZ area for the Alamo Creek Trunk Sewer Relocation Project (S-31643) and the Alamo Canal Trail Project (S-39228) indicated that, while the general area was sensitive for prehistoric archaeological resources because of its proximity to Alamo Creek, the channelization of the creek banks had largely destroyed their prehistoric context, and disturbances from the construction of the I-580 and I-680 freeways had further contributed to the substantial lessening of the archaeological sensitivity of the general area.

ESA submitted a sacred lands search request to the Native American Heritage Commission (NAHC) on September 5, 2014. A response was received on September 16, 2014, and is included in **Appendix A**, confirming that a records search of NAHC's sacred lands file did not indicate the presence of Native American cultural resources in the area of the EDZ or in the vicinity. A list of Native American individuals/organizations that might have additional information or concerns was provided by the NAHC. ESA sent all contact persons on the list a letter on September 24, 2014. As of the date of this report, the City has not received responses to these letters.

Field Survey

An ESA Registered Professional Archaeologist conducted a field survey of the proposed EDZ area on August 25, 2014. The majority of the proposed EDZ area is paved and/or built upon with no surface visibility. All areas that exhibited some degree of ground visibility, including landscaped areas, roadway edges, and the undeveloped Parcel 9, were walked on-foot in very narrow (less than 5 meter wide) transects to inspect as much of the ground surface as possible. Parcel 9 exhibited all artificially deposited fill with dark gray soil and gravel inclusions. Heavy grasses and wood chips limited surface visibility to approximately 10 percent. Vegetation was periodically scraped back to reveal the ground surface. No cultural materials or other indicators of past human use and occupation were identified during the survey effort.

Conclusions

Historic Built Environment

No significant historical resources, including buildings, structures, or objects, have been identified within a radius of 0.5 miles of the area of the proposed EDZ. The area was undeveloped open space used for agricultural purposes until as recently as 1970. By 1941 Alamo Creek was channelized, and by 1966 the channel was relocated to the west and to its current configuration after construction of the I-580/I-680 freeway interchange. Historic topographic maps (USGS, 1955 and 1969) show a windmill located in the area of the proposed EDZ; this

TABLE 4.E-2
CULTURAL RESOURCES STUDIES IN THE VICINITY OF THE PROPOSED EDZ

Study Number	Title	Author	Date	Findings
S-727	An Archaeological Reconnaissance of Two New Proposed Waste Water Pipeline Routes, Livermore-Amador Valley Water Management Agency, Alameda County	Holman and Chavez	1977	Negative
S-914	An Archaeological Reconnaissance of the Proposed Pipeline Routing Changes Along the Dublin Canyon to the San Lorenzo Portion of the Livermore-Amador Valley Waste Treatment Project, Alameda County	Holman and Chavez	1976	Negative in vicinity of proposed EDZ
S-8892	Highway 580 Interchange Improvements, Archaeological Inspection	Holman	1985	Negative
S-10762	Archaeological Survey Report, Proposed Reconstruction of the I-580/I-680 Interchange	Kelly	1989	Negative
S-11161	Cultural Resources BART Dublin/Pleasanton Extension Project	Baker, Shoup, and Bloomfield	1989	Negative in vicinity of proposed EDZ
S-19834	Cultural Resources Component for the Proposed LAVWMA Export Pipeline Expansion Project in Alameda County	Clark	1997	Negative in vicinity of proposed EDZ
S-22501	Historic Property Survey Report and Finding of No Historic Properties Effects for the I-680 Sunol Grade Northbound HOV Lane Project in the Cities of Pleasanton and Fremont and Unincorporated Alameda County, and in the City of Milpitas, Santa Clara County	Gmoser, Krase, Hurley, and Kostura	1999	Negative in vicinity of proposed EDZ
S-32780	Cultural Resources Assessment Report, LAVWMA Export Pipeline and Facilities Study, Alameda County	Self	1999	Negative in vicinity of proposed EDZ
S-32251	Historic Property Survey Report for the I-680 Sunol Grade Northbound HOV Lane Project in the Cities of Pleasanton and Fremont and Unincorporated Alameda County, and in the City of Milpitas, Santa Clara County	Caltrans	2002	Negative in vicinity of proposed EDZ
S-31189	Historic Architecture Survey Report for the I-680 Sunol Grade Northbound HOV Lane Project in the Cities of Pleasanton and Fremont and Unincorporated Alameda County, and in the City of Milpitas, Santa Clara County	Langford	2002	Negative in vicinity of proposed EDZ
S-33814	Finding of Effect, No Historic Properties Affected for the I-680 Sunol Grade Northbound HOV Lane Project in the Cities of Pleasanton and Fremont and Unincorporated Alameda County, and in the City of Milpitas, Santa Clara County	Langford	2004	Negative in vicinity of proposed EDZ
S-31643	Archaeological Assessment of the Proposed Alamo Creek Trunk Sewer Relocation Project, Dublin, Alameda County	Strother, Allan, and Self	2006	Negative – Archaeological monitoring recommended
S-35826	Historic Property Survey Report for the I-580 Westbound High Occupancy Vehicle Lane Project, Greenville Road to San Ramon/Foothill Roads, Alameda County	Byrd	2008	Negative
S-39228	Historic Property Survey Report and Archaeological Survey Report, Alamo Canal Trail Project, Caltrans District 4, Alameda County	Grant	2011	Negative
S-42468	Historic Property Survey Report for Freeway Performance Initiative Project	Green	2011	Negative in vicinity of proposed EDZ

Negative = No cultural resources found.

SOURCE: NWIC, 2014

windmill is no longer present. By the mid-1970s, Parcels 1–6 had been developed with light industrial warehouses and offices. Parcels 7–11 were developed in the 1980s with light industrial uses, except for Parcel 9, which remains undeveloped.

Due to their recent dates of construction, none of the buildings in the area of the EDZ meet the minimum age threshold (45 years or older) for consideration as a historical resource. As such, there are no historical resources in the area and no further consideration of the built environment is necessary for the proposed EDZ.

Archaeological Resources

No prehistoric archaeological resources have been recorded within the area of the proposed EDZ, or within a radius of 0.5 miles. The nearest prehistoric sites (CA-ALA-43 and CA-ALA-413) were recorded over one mile to the west and east, respectively, of the proposed EDZ area. The EDZ area is located in Holocene-aged alluvial deposits, a geologic formation that has a high potential for buried archaeological resources. Previous disturbance from the channelization of Alamo Creek, construction of the I-680 and I-580 freeways, and existing development throughout the area of the proposed EDZ indicates that any sensitivity for buried prehistoric archaeological resources in the area has been significantly reduced.

Based on a review of historic maps and aerial photographs, as well as observance of extensive disturbance from channelization of Alamo Creek, construction of the I-680 and I-580 freeways, and existing development throughout the area of the proposed EDZ, the area has a low sensitivity for historic-period archaeological resources.

Paleontological Resources

Geologic formations that are considered to have higher sensitivity for paleontological resources are those that have yielded significant vertebrate or invertebrate fossil remains. This includes, but is not limited to, units that contain significant paleontological resources anywhere within their geographic extent. The EDZ area is underlain by Holocene-age alluvial deposits. Holocene-age alluvium consists of loose deposits of sand, silt, and gravel. Known fossils from the Holocene in the greater Bay Area are sparse and represent common taxa. The University of California Museum of Paleontology database does not contain any examples of Holocene-age fossils from Alameda County. Holocene units in California are typically considered to have low sensitivity for paleontological resources.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

The General Plan EIR does not include mitigation measures that would be applicable to impacts from the proposed EDZ. One mitigation measure addressing cultural resources adopted as part of the 2012 SEIR (Mitigation Measure 4.D-3) would be applicable to the proposed EDZ, as discussed below.

Impact Discussion 4.E-2: With mitigation, the proposed EDZ would not:

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 (Less Than Significant);

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 (Less Than Significant With Mitigation);

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (Less Than Significant With Mitigation); or

d) Disturb any human remains, including those interred outside of formal cemeteries (Less Than Significant With Mitigation).

While no previously recorded cultural resources exist within the area of the proposed EDZ and the prehistoric and historic-period archaeological sensitivity of the area is considered low, it is possible that unidentified buried archaeological materials would be uncovered during ground disturbing activities. Damage to or destruction of significant archaeological resources is a significant impact. In the event archaeological materials are encountered during ground disturbing activities, the following new mitigation measure would reduce impacts to less than significant.

> **Mitigation Measure 4.E-5: Archeological Resources.** If prehistoric or historic-period archaeological resources are encountered during ground disturbing activities for a project under construction within the EDZ, the construction contractor shall halt all activities within 50 feet of the discovery, and the construction contractor shall notify the City. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. The project developer shall ensure that a Secretary of the Interior-qualified archaeologist will inspect the findings within 24 hours of discovery. If the archaeologist determines that construction activities could damage a historical resource or a unique archaeological resource (as defined pursuant to the CEQA Guidelines), mitigation will be implemented in accordance with Public Resources Code (PRC) Section 21083.2 and Section 15126.4 of the CEQA Guidelines, with a preference for preservation in place. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance is not feasible, a qualified archaeologist will prepare and implement a detailed treatment plan in consultation with the City. Treatment of unique archaeological resources shall follow the applicable requirements of PRC Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by project construction. The treatment plan will include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.

Although it is unlikely that paleontological resources would be encountered within the EDZ area, fossil discoveries can be made even in areas of low sensitivity. Damage to paleontological resources is a significant impact. In the event a paleontological resource is encountered during construction activities, implementation of the following mitigation measure from the 2012 SEIR would reduce impacts to less than significant.

> **(2012 SEIR) Mitigation Measure 4.D-3:** In the event that paleontological resources are encountered during the course of development, all construction activity must temporarily cease in the affected area(s) until the uncovered fossils are properly assessed by a qualified paleontologist and subsequent recommendations for appropriate documentation and conservation are evaluated by the Lead Agency. Excavation or disturbance may continue in other areas of the site that are not reasonably suspected to overlie adjacent or additional paleontological resources.

Based on the records search and known site distribution, no human remains are known to exist within the area of the proposed EDZ. While unlikely, the potential exists for ground disturbing activities to result in the disturbance of human remains, which would be a significant impact. The following new mitigation measure would reduce impacts to less than significant.

> **Mitigation Measure 4.E-6: Human Remains.** In the event that human remains are discovered during ground disturbing activities for a project under construction within the EDZ, the construction contractor shall stop work immediately. No disposition of such human remains shall take place, other than in accordance with the procedures and requirements set forth in California Health and Safety Code Section 7050.5 and Public Resources Section 5097.98. Per these code provisions, the project developer shall ensure appropriate notification of the County Coroner and the Native American Heritage Commission, who in turn must notify the persons believed to be most likely descended from the deceased Native American for appropriate disposition of the remains.

Significance after Mitigation: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, New Mitigation Measures Identified.

Geology and Soils

Existing Setting

The General Plan EIR includes a broad overview of regional geologic and seismic characteristics within the city, including local faulting, soils, and potential effects related to seismic hazards. The 2012 SEIR further describes existing geologic conditions in the city, including geologic and seismic hazards; the applicable regulatory framework regarding geology, soils, and seismicity; and the potential geologic, soils, and seismic impacts of development in accordance with the proposed General Plan Amendment and rezonings. The following discussion focuses on information relevant to the proposed EDZ's potential to cause impacts related to geology and soils.

Pleasanton is located in a seismically active region with one of the major active faults, the Calaveras, passing through the city. The fault is situated near the western portion of the city, east of and parallel to I-680, less than a mile from the area of the proposed EDZ. The EDZ area is relatively flat, and is not located in close proximity to hills or landslide hazard areas. As shown in the 2012 SEIR, the proposed EDZ is located in an area susceptible to liquefaction hazards.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing geology and soils were adopted as part of the General Plan EIR or 2012 SEIR.

Impact Discussion 4.E-4: The proposed EDZ would not:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

- **i) Rupture of a known earthquake fault,**
- **ii) Strong seismic ground shaking,**
- **iii) Seismic-related ground failure, including liquefaction, or**
- **iv) Landslides (Less Than Significant);**

b) Result in substantial soil erosion or the loss of topsoil (Less Than Significant);

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed EDZ (Less Than Significant); or

d) Be located on expansive soil (Less Than Significant).

Impacts from exposures of people and structures to surface rupture on a known earthquake fault, or from seismic groundshaking, would be reduced to less-than-significant levels through consistency with existing local and State requirements. These regulations include the California Building Code, the Earthquake Hazards Reduction Act, the Alquist-Priolo Earthquake Fault Zoning Act, and policies and programs in the Public Safety Element of the General Plan, such as Program 5.1, which requires site-specific soils studies for all new development that address seismic shaking, lateral spreading, differential settlement, lurch cracking, liquefaction, erosion, and expansive soils.

Because the EDZ area is not located in close proximity to hills or landslide hazard areas, projects developed within the EDZ area would not expose people or structures to landslides or mudflows. As part of the construction permitting process, the City requires geotechnical tests and reports at specific construction sites to identify the suitability of soils. This requirement reduces impacts from settlement and/or subsidence of land, lateral spreading, or expansive soils, and ensures impacts related to geology and soils from development proposed within the area of the EDZ would be addressed appropriately, and that development would not expose people or structures to substantial adverse effects. Individual development projects within the EDZ would also be

required to adhere to the National Pollution Discharge Elimination System (NPDES) General Construction Permit which contains requirements for erosion control of exposed soils.

Significance: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measures Identified.

Greenhouse Gas Emissions

Existing Setting

The General Plan EIR includes an evaluation of potential changes in global climate associated with an increase in greenhouse gas (GHG) emissions and the potential for emissions generated by development under the proposed General Plan to cumulatively contribute to global climate change. The 2012 SEIR includes a discussion of global climate change, existing regulations pertaining to global climate change, and potential GHG emissions resulting from the proposed Housing Element; Climate Action Plan (CAP); General Plan as it was adopted in 2009, amended in 2010, and proposed to be amended pursuant to the Settlement Agreement;[4] and rezoning of 17 sites for residential development. The following discussion focuses on a review of the proposed EDZ area's consistency with the adopted CAP.

Construction and operation of development within the EDZ would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during operation. Overall, the following activities that would occur pursuant to the development of the EDZ would contribute to the generation of GHG emissions:

- **Motor Vehicle Use.** Transportation associated with development within the EDZ would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

- **Gas, Electric and Water Use.** Natural gas use results in the emissions of two GHGs: methane (the major component of natural gas) and carbon dioxide from the combustion of natural gas. Methane is released prior to initiation of combustion of the natural gas (as before a flame on a stove is sparked), and from the small amount of methane that is uncombusted in a natural gas flame. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel.

- **Removal of Vegetation.** The net removal of vegetation for construction results in a loss of the carbon sequestration in plants.

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4 The Settlement Agreement was the result of a complaint filed in 2009 by the State Attorney General with the City, objecting to several aspects of the City's adopted Housing Element, and alleging the EIR for the 2009 General Plan was flawed in its analysis of climate change and GHGs. One of the requirements of the Settlement Agreement was the City's preparation of its CAP.

- **Construction Activities.** Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide, methane and nitrous oxide. Furthermore, methane is emitted during the fueling of heavy equipment.

AB 32 and Scoping Plan

In 2006, the California legislature passed Assembly Bill 32 (AB 32), also known as the Global Warming Solutions Act. AB 32 requires the California Air Resources Board (CARB) to design and implement emission limits, along with feasible and cost-effective regulations and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020.

Pursuant to AB 32, the CARB adopted a Scoping Plan in December 2008 (updated in 2014), outlining measures to meet the 2020 GHG reduction target. The Scoping Plan presents a projection of GHG emissions that would occur in 2020 under a "business-as-usual" (BAU) scenario, and compares this scenario to the AB 32 emissions goal for 2020. The BAU scenario is a projection of GHG emissions in 2020 if the State does not take any measures to reduce GHG emissions pursuant to AB 32 – including measures like the Assembly Bill 1493 measures for reducing passenger vehicle emissions (Pavley Clean Car Standards), the Low Carbon Fuel Standards (LCFS), and the renewable portfolio standards – and does not include reductions from the Scoping Plan emissions reduction measures. To achieve 1990 emissions levels, a 21.7 percent reduction from the state's projected BAU emissions in 2020 is required.

Pleasanton Climate Action Plan

The Pleasanton CAP includes a citywide GHG emissions inventory. This citywide GHG emissions inventory reflects all the energy used and waste produced within the Pleasanton city limits. As shown in **Table 4.E-3**, energy consumers in Pleasanton emitted approximately 770,844 million metric tons of CO_2e in 2005 from all major sources, more than half of which were from transportation sources.

As described in the CAP, the City has a target to reduce emissions levels 15 percent below the 2005 baseline by the year 2020, which equates to 655,218 MT CO_2e per year for community emissions. This value represents 115,626 MT CO_2e below the baseline, and 306,331 MT CO_2e below the projected 2020 business-as-usual emissions scenario (a reduction of approximately 32 percent).

Several high-impact state-wide measures included in the State's AB 32 Scoping Plan are expected to provide significant emissions reduction benefits for the City, including the LCFS, the Pavley Clean Car Standards, and the Renewable Portfolio Standard. Two additional state-wide measures in the AB 32 Scoping Plan are expected to reduce emissions from passenger vehicles and heavy/medium-duty trucks because of efficiencies gains realized by manufacturers.

TABLE 4.E-3
PLEASANTON COMMUNITY-WIDE GHG EMISSIONS BY SECTOR (CO_2E MT) 2005

GHG Emissions Source	Metric Tons of Carbon Dioxide Equivalent (CO_2e)	Percent of Total
Transportation (on-road)	401,550	52.1%
Transportation (off-road)	25,410	3.3%
Commercial/Industrial Electricity	105,107	13.6%
Commercial/Industrial Natural Gas	46,753	6.1%
Residential Natural Gas	66,684	8.7%
Residential Electricity	46,881	6.1%
Solid Waste Disposal	38,826	5.0%
Water and Wastewater Systems	34,264	4.4%
Municipal Operations	5,370	0.7%
Total	**770,844**	**100%**

NOTES:

CO_2e = carbon dioxide equivalent, which measures the global warming potential of each greenhouse gas. The impact of a greenhouse gas is expressed in terms of the amount of CO_2 that would cause the same amount of warming.

MT = million metric tons

SOURCE: City of Pleasanton, 2012

After crediting emissions reductions of 194,017 MT CO_2e from the expected impact of state-wide measures included in the AB 32 Scoping Plan, and the projected impact of rising fuel prices on driving behavior, as described in the CAP, Pleasanton's projected city-wide GHG emissions would be 93,585 MT CO_2e per year above the AB 32 target by 2020. As summarized in **Table 4.E-4** below, implementation of the measures set forth in the CAP are expected to reduce city-wide emissions by 101,649 MT CO_2e per year by 2020. This would reduce city-wide emissions approximately 8,064 MT CO_2e beyond the AB 32 target.

Thus, as the result of implementing the CAP, the City would achieve consistency with the provisions of AB 32 as interpreted by the BAAQMD by meeting the community-wide emissions reduction target of 15 percent below the City's 2005 baseline by the year 2020. The CAP relies on reductions from sectors such as energy conservation, and reductions associated with changes in personal behavior. The City will monitor progress toward achieving the 2020 emissions reduction target with regular updates of the community-wide inventory, and review of programs described in the CAP.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing GHGs were adopted as part of the General Plan EIR or 2012 SEIR.

TABLE 4.E-4
PROJECTED EMISSIONS REDUCTIONS FROM PLEASANTON CLIMATE ACTION PLAN STRATEGIES

	Strategy	Annual GHG Reduction Potential (MT CO_2e)
SW2	Increase recycling, organics diversion, and waste reduction associated with the entire community	29,605
EC2	Leverage outside programs to increase energy efficiency	17,394
EC4	Develop programs to increase energy efficiency	9,342
EC3	Establish and promote financing and financial incentive programs to support energy efficiency	7,416
LU1	Support infill and higher density development	6,898
TDM2	Promote alternatives to work and school commutes	6,558
LU2	Support mixed-use infill and new development near local-serving commercial areas	5,845
EC1	Use city codes, ordinances, and permitting to enhance green building and energy efficiency	3,773
TDM1	Use parking pricing/policy to discourage SOV travel	3,174
ER1	Implement local ordinances and permitting processes to support renewable energy	2,389
TR1	Improve transit system and ridership	2,377
LU3	Improve transportation efficiency through design improvements	2,202
ER2	Develop programs to promote on-site renewable energy to the community	1,519
NM1	Create and maintain a safe, convenient, and effective system for pedestrians and bicyclists	1,280
EG1	Promote green building and energy efficient development for government operations and city infrastructure	1,194
VE2	Develop a city fleet replacement program	312
WA1	Conserve community water through building and landscape design and improvements	272
WA3	Increase or establish use of reclaimed/grey water systems	98
WA2	Conserve municipal operations water	1
	Total	**101,649**

NOTE: This table is from the Table 3-2 of the CAP. See Chapter 3 of the CAP for a full and detailed description of each of these strategies, and Appendix F for detailed information on methods and assumptions used to quantify emissions reductions. See Appendix G for Baseline and Future Year VMT Estimates, and VMT reduction associated with CAP implementation.

Impact Discussion 4.E-3: The proposed EDZ would not:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (Less Than Significant); or

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases (Less Than Significant).

The proposed EDZ would allow for the redevelopment of the Johnson Drive area, which currently supports commercial, office, and light industrial uses, with club retail, hotel, recreational, and small- and large-format retail establishments. Like the existing parcels in the area, the proposed EDZ would generate GHGs from the electricity and natural gas used to operate proposed buildings, the transportation of employees and customers to and from the EDZ area, the conveyance and treatment of potable water, and solid waste disposal. The development of new buildings would support the energy and water efficiency goals in the CAP, as all new

buildings would be required to meet the energy and water efficiency standards of the California Building Code (Title 24), as updated in 2013, as well as other city ordinances and codes that promote energy and water efficiency. Development under the EDZ would support the land use goals of the CAP to promote infill development and higher density development. The GHGs generated by transportation to and from the EDZ area would be reduced over time as the State continues to implement the LCFS and Pavley Clean Car Standards, and other measures in the AB 32 Scoping Plan. Development of the proposed EDZ would, however, result in an increase in trips that would cause a slight increase in city-wide VMT as well as VMT per capita, as discussed in Section 4.D, Transportation and Traffic. Despite this minor increase in VMT and VMT per capita, the proposed EDZ is generally consistent with the CAP, which is consistent with the provisions of AB 32.

In order to further evaluate consistency with the CAP and AB 32, operational emissions under a BAU scenario (year 2020 emissions without reductions from implementation of current State programs, and using historical energy data, to represent emissions under a 2005 scenario) were compared to "project scenario" emissions (year 2020 emissions that factor in emission reductions from implementation of State programs). **Appendix F** presents the results of GHG modeling calculations. As shown in **Table 4.E-5**, the proposed EDZ represents a 22 percent reduction over BAU emissions, which would be greater than the CAP goal of 15 percent below the 2005 baseline, and would also be greater than the 21.7 reduction specified by the latest guidance from the State regarding the Scoping Plan, indicating that the proposed EDZ would be consistent with both the CAP and AB 32.

The proposed EDZ would therefore not generate excessive GHG emissions that would result in a significant impact.

TABLE 4.E-5
PROPOSED EDZ OPERATIONAL AND CONSTRUCTION GHG EMISSIONS, BAU AND PROJECT SCENARIO (YEAR 2020)

Emission Source	Annual CO_2e Emissions (MT CO_2e per year)	
	Year 2005[1]	Year 2020[2]
Transportation (Mobile)	24,100	18,800
Area Source	0.01	0.01
Energy (Electricity and Natural Gas)	2,040	1,400
Water and Wastewater	130	110
Solid Waste	460	460
Total Operational Project GHG Emissions Without Construction Emissions	**26,700**	**20,800**
Project Reduction from 2005 CAP Baseline	**22%**	
City of Pleasanton CAP Reduction Goal	15%	
AB 32 (Scoping Plan) Reduction Goal	21.7%	
Significant Impact?	**No**	

NOTES: MT CO_2e = metric tons of carbon dioxide equivalent. Based on output data from both CalEEMod and the BGM Greenhouse Gas Calculator. Input data were defaults. See Appendix F for model outputs and additional assumptions.

1 Does not include emissions reductions from Pavley standards or LCFS; does include historical energy use factors
2 Include emissions reductions from Pavley standards or LCFS; does include historical energy use factors

Significance: Less than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measures Identified.

Hazards and Hazardous Materials

Existing Setting

The General Plan EIR and 2012 SEIR include overviews of the types of hazardous materials that may have been historically used or are used within the city, as well as the potential for the buildout of the General Plan, Housing Element, and CAP to create health and safety impacts through increased use of hazardous materials and generation of hazardous waste. The following discussion focuses on information relevant to the proposed EDZ's potential to cause impacts related to hazards and hazardous materials.

On Parcel 6, the former Clorox facility is an active cleanup site overseen by the San Francisco Bay Regional Water Quality Control Board (RWQCB). This site has undergone substantial subsurface investigation, revealing the presence of the solvent trichloroethylene (TCE) in shallow groundwater, as well as benzene, chloroform, and naphthalene in soil vapor and "sub-slab" (below building foundation) samples (Geotracker, 2015; RWQCB, 2014). In addition to potentially adversely affecting indoor air, the subsurface contamination could adversely affect beneficial uses of surface water and groundwater, including municipal and domestic supply, agricultural supply, industrial service and process water supply, groundwater recharge, freshwater replenishment, and wildlife habitat. The contamination of soil and groundwater resulted from former uses on this site, including manufacturing and lab testing. Extensive excavation to remove contaminated soil took place at the site in 2014 and 2015, and the property owner is continuing to characterize, monitor, and remediate contamination, under the oversight of the RWQCB and in compliance with a cleanup order.

The EDZ area is also located within 1,000 feet of the Dublin-San Ramon Services District biosolids ponds cleanup site, which is currently undergoing assessment (Geotracker, 2015).

Schools are recognized in the CEQA *Guidelines* as having particular potential to act as sensitive receptors to hazards and releases of hazardous materials. The Love & Care Preschool is located within the area of the proposed EDZ and within 0.25 miles of Parcel 6; no other schools are located within 0.25 miles of the proposed EDZ area.

The EDZ area is not located within an airport land use plan or within two miles of a public airport or public use airport or private airstrip.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing hazards and hazardous materials were adopted as part of the General Plan EIR. No mitigation measures addressing hazards and hazardous materials adopted as part of the 2012 SEIR would be applicable to the proposed EDZ.

Impact Discussion 4.E-5: With mitigation, the proposed EDZ would not:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials (Less Than Significant);

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (Less Than Significant With Mitigation);

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (Less Than Significant With Mitigation);

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment (Less Than Significant With Mitigation);

e) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Less Than Significant); or

f) Expose people or structures to a significant risk of loss, injury or death involving wildland fires (Less Than Significant).

Development within the area of the proposed EDZ would include the demolition of buildings that could contain asbestos, lead-based paint, PCBs, or other hazardous building materials, and demolition could expose construction workers to harmful contaminants. All hazardous materials that could be used within the area of the proposed EDZ would be subject to existing storage, handling, and disposal regulations that limit exposure to workers and the public.

The Love & Care Preschool is located within 0.25 miles of the former Clorox facility, an active cleanup site overseen by the RWQCB. Completion of remediation activities at the former Clorox facility site may extend over a period of a year or more. Remediation goals are and will be based on potential pathways of exposure and concentrations of contaminants of concern. Because of the distance between the preschool and the cleanup site, remediation may occur without affecting occupants of the preschool; however, implementation of **Mitigation Measure 4.E-5** and **Mitigation Measure 4.E-6** is required in order to ensure that this impact is reduced to a less-than-significant level, and to ensure that impacts related to future development within the EDZ area in general are less than significant.

> **Mitigation Measure 4.E-7: Soil and Groundwater Plan.** For proposed development on all sites within the EDZ undergoing or requiring remediation of contaminated soil or

groundwater, and prior to issuance of a building or grading permit, the project developer shall demonstrate that its construction specifications include implementation of a Soil and Groundwater Plan (SGP) prepared by a qualified environmental specialist (geologist or engineer) and reviewed and approved by the agency or agencies with oversight over cleanup (San Francisco Regional Water Quality Control Board [RWQCB] and/or State Department of Toxic Substances Control [DTSC]). The SGP shall describe requirements for excavation, stockpiling, and transport of soil and disturbance of groundwater. The SGP shall also include a contingency plan to respond to the discovery of previously unknown contamination. In addition, all construction activities shall require written approval by either RWQCB or DTSC prior to commencement. The SGP shall be present on site at all times as ensured by the construction lead, and readily available to site workers and City staff as needed.

Mitigation Measure 4.E-8: Soil Vapor Barriers. For proposed development on all sites within the EDZ undergoing or requiring remediation of contaminated soil or groundwater, where residual contamination includes volatile components (such as the chlorinated solvent TCE), and prior to issuance of a building or grading permit, the project developer shall demonstrate to the City either that the building plans include vapor barriers reviewed and approved by San Francisco Regional Water Quality Control Board (RWQCB) or State Department of Toxic Substances Control (DTSC) to be installed beneath foundations for the prevention of soil vapor intrusion, or that RWQCB or DTSC has determined that installation of vapor barriers is not necessary.

With implementation of Public Safety Element Policy 17 (Ensure that hazardous materials are not released as a result of construction activities and that any existing hazardous materials and potential contamination are remediated prior to development) and new Mitigation Measures 4.E-7 and 4.E-8, impacts would be reduced to less than significant.

As discussed in Section 4.D, Transportation and Traffic, construction and operation of the proposed EDZ would not result in inadequate access for emergency vehicles, and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The proposed EDZ area is not located within a Very High Fire Hazard Severity Zone as mapped for local responsibility areas by the California Department of Forestry and Fire Protection (CALFIRE; CALFIRE, 2008); as a result, and with the implementation of policies and measures from the Public Safety Element, compliance with the Pleasanton Building Code, and other requirements of the Livermore-Pleasanton Fire Department, risks from wildland fires would be less than significant.

Significance After Mitigation: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, New Mitigation Measures Identified.

Hydrology and Water Quality

Existing Setting

The General Plan EIR and 2012 SEIR include reviews of existing hydrology and water quality conditions in the city. The following discussion focuses on information relevant to the proposed EDZ's potential to cause impacts related to hydrology and water quality. The proposed EDZ area is located within the jurisdiction of the Zone 7 water district, which provides water and flood control to the Livermore-Amador Valley.

The proposed EDZ area is located adjacent to the Alamo Canal, a major trapezoidal flood control channel with flooding potential (City of Pleasanton n.d.). The Alamo Canal carries flows from South San Ramon Creek and Alamo Creek into the Arroyo de la Laguna, and runs for approximately three miles from the I-680/I-580 interchange. Parts of the proposed EDZ, including part of Parcel 6, are located within an area mapped by FEMA as within a 100-year flood zone.

The proposed EDZ area is not located in an area subject to hazards related to seiches, tsunami, or mudflows, as discussed in the 2012 SEIR. In addition, the proposed EDZ does not include housing, and would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing hydrology and water quality were adopted as part of the General Plan EIR or 2012 SEIR.

Impact Discussion 4.E-6: The proposed EDZ would not:

a) Violate any water quality standards or waste discharge requirements (Less Than Significant);

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge (Less Than Significant);

c) Substantially alter the existing drainage pattern of the area (Less Than Significant);

d) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (Less Than Significant);

e) Otherwise substantially degrade water quality (Less Than Significant);

f) Place within a 100-year flood hazard area structures which would impede or redirect flood flows (Less Than Significant); or

g) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam (Less Than Significant).

The proposed EDZ area is currently developed with commercial, office, and other uses, and a large area of paved parking lots. As such, the area consists of mostly impervious materials which direct stormwater runoff towards drains and conveyance pipes in Johnson Drive that release runoff into the Alamo Canal. Development of some properties, including Parcel 6, is anticipated to include bioswales within paved parking areas that would detain stormwater on-site, thereby reducing the quantity and improving the overall quality of runoff.

Pursuant to the Alameda County Clean Water Program NPDES requirements, project developers of sites within the EDZ would be required to ensure no net increase in stormwater rates after construction through preparation of a hydromodification plan. Such projects would implement appropriate methods of onsite stormwater runoff control, including: drainage lines that can rapidly percolate water (such as rock lined ditches or vegetated swales), minimizing impervious surfaces (using pervious pavement and drought tolerant landscaping), and proper waste management practices. Developers of sites within the proposed EDZ would also implement one or more Stormwater Pollution Prevention Plans (SWPPPs) to reduce runoff during project construction that would require all future development to incorporate BMPs to control sedimentation, erosion, and hazardous materials contamination of runoff during construction, and would ensure that runoff from specific project sites is protective of the beneficial uses of receiving waters and does not worsen existing water quality impairments. Therefore, the proposed EDZ would not result in a significant change in the quantity or quality of stomwater runoff and would not result in on- or off-site erosion, or degradation of water quality.

As discussed above, project developers would be required to demonstrate a zero net increase in stormwater runoff through the installation of drainage lines that rapidly percolate water and by minimizing impervious surfaces, which would help to maintain existing groundwater infiltration levels. Operation of uses within the EDZ area would not extract local groundwater, and groundwater would not be extracted within the EDZ area for use during construction (some groundwater may, however, be extracted for remediation purposes, if required by agencies with oversight for cleanup of soil and groundwater within the EDZ area). To prevent groundwater overdraft, the City has planned for future growth by supporting Zone 7's capital improvement projects to secure more water for the City.

Parts of the proposed EDZ, including part of Parcel 6, are located within an area mapped by FEMA as within a 100-year flood zone. Development of projects on sites within the EDZ would be required to be consistent with all City and federal requirements regarding development within a FEMA flood hazard area, as applicable. In addition, under Zone 7's Stream Management Master Plan update, flood retention facilities throughout the Tri-Valley area, including Pleasanton, will be updated and maintained to protect residents against the 100- and 500-year floods. Compliance with the Pleasanton Municipal Code and review of project plans by City Engineering staff will ensure that hazards related to flooding would be addressed through project design measures, including grading, raising the grade of the site, and ensuring that adequately-sized storm drains to connect to the City's existing underground network of storm drains are installed.

As discussed in the General Plan EIR, most of the City falls within the 5- to 40-minute inundation area in the event of a Del Valle Dam failure, but it is unlikely that the Del Valle Dam will fail and result in an inundation scenario. With regulatory oversight by the California Department of Water Resources, Division of Safety of Dams, and local regulations requiring new developments to meet flood protection standards, impacts from flooding as a result of the failure of a levee or a dam would be less than significant, as discussed in the General Plan EIR and 2012 SEIR.

Significance: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measures Identified.

Land Use and Planning

Existing Setting

The General Plan EIR includes a detailed review of the City's land use patterns, and both the General Plan EIR and the 2012 SEIR include in-depth discussions of General Plan goals, policies, and programs. The following discussion focuses on information relevant to the proposed EDZ's potential to cause impacts related to land use and planning.

The proposed EDZ area consists of 11 parcels located at 7106-7315 Johnson Drive and 7080 Commerce Circle. The area comprises approximately 40 acres and currently contains a mixture of land uses, including light industrial, office, commercial, retail, and institutional uses. The area is bounded by a fitness center and parking uses on the north; light industrial, wastewater treatment, and Park and Ride uses to the east; Stoneridge Drive and the I-680 interchange to the south; and I-680 to the west.

The proposed EDZ would include re-zoning of parcels within the EDZ area to Planned Unit Development-Commercial (PUD-C) to allow a mix of uses that could include club retail, hotel, recreational, and small- and large-format retail establishments, as shown in **Table 3-1** of the Project Description, and would represent a net increase of 285,302 square feet of building space over existing conditions.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing land use and planning were adopted as part of the General Plan EIR or 2012 SEIR.

Impact Discussion 4.E-7: The proposed EDZ would not:

a) Physically divide an established community (Less Than Significant);

b) Conflict with any applicable land use plan, policy, or regulation (Less Than Significant); or

c) Conflict with any applicable habitat conservation plan or natural community conservation plan (Less Than Significant).

The proposed EDZ area is not within or located near an established neighborhood or community; therefore, construction and operation of the EDZ would not divide an established community. The proposed EDZ would result in a change to local land use policy in that it would require a General Plan amendment and rezoning, and adoption of development standards. The General Plan amendment and rezoning would not result in an inconsistency in land use between the proposed EDZ and surrounding uses. The EDZ would not conflict with any adopted land use plans or policies that have jurisdiction over the area; rather, the creation of an economic development zone that encompasses the area would facilitate the implementation of goals and policies in the Economic and Fiscal Element of the General Plan and Goal 6 of the City's Economic Development Strategic Plan (2007) to integrate economic development and land use. No habitat conservation or natural community conservation plans govern the area of the proposed EDZ; therefore, the EDZ would not conflict with any habitat conservation or natural community conservation plan.

Significance: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measures Identified.

Population and Housing

Existing Setting

The General Plan EIR and 2012 SEIR described existing and projected population, housing, and employment in the City of Pleasanton. The following discussion focuses on information relevant to the proposed EDZ's potential to affect population and housing.

As discussed in Chapter 3, Project Description, employment projections for the proposed EDZ based on anticipated uses indicate a net increase of approximately 273 workers within the short term (buildout period for Phase I), and a total net increase of 780 workers over the long term (full buildout). As discussed in the 2012 SEIR, as of 2005, approximately 21 percent of those who worked in Pleasanton also lived in Pleasanton, another 29 percent lived elsewhere in the Tri-Valley, and the remaining 50 percent commuted to Pleasanton from the greater outlying area. As of March 2015, the unemployment rate in the City of Pleasanton was 4.2 percent (EDD, 2015). The City has a labor force of approximately 37,100 people, of which 35,500 are employed and 1,500 are unemployed (EDD, 2015). The unemployment rate in Alameda County as of March

2015 is approximately 4.8 percent, with a labor force of approximately 811,200 people, of which 772,600 are employed and 38,500 are unemployed (EDD, 2015). Assuming approximately 21 percent of the new workers in the EDZ area were to live in Pleasanton consistent with trends, approximately 164 workers within the EDZ would live in the city.

No housing is present in the area of the proposed EDZ, and therefore the EDZ would not displace substantial numbers of existing housing, or displace substantial numbers of people, necessitating the construction of replacement housing elsewhere. As a result, this topic is not discussed further in the impact analysis section below.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing population and housing were adopted as part of the General Plan EIR or 2012 SEIR.

Impact Discussion 4.E-8: The proposed EDZ would not induce substantial population growth in an area, either directly or indirectly (Less Than Significant).

The proposed EDZ does not include any new housing; therefore, the EDZ would not directly induce substantial population growth. Establishment of the EDZ would introduce new jobs within the area, which are not specialized and could be filled by residents living in Pleasanton, or by other workers commuting to Pleasanton from other parts of the Tri-Valley and Alameda County, in numbers likely to be consistent with the ratio of employees currently traveling to Pleasanton to work. If new workers in the EDZ area did move to the area to live closer to their jobs (a conservative assumption), any resulting new population growth would be due to individual employees making individual decisions on where to relocate. Assuming at least half of all new employees (about 390 workers) moved to Pleasanton over the course of several years, this would represent about half of a percent of the projected population of the City in 2025 (78,800 people). This population growth that could be induced as a consequence of new employees within the EDZ moving to the area would not be substantial, and is likely to be absorbed by existing and planned housing stock without creating a substantial demand for housing and housing-related services.

In addition, as discussed in Chapter 6, Other Statutory Sections, the proposed EDZ does not include any infrastructure development that could indirectly induce substantial population growth.

In summary, the proposed EDZ would not induce substantial population growth and any impact would be less than significant.

Significance: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measures Identified.

Public Services and Utilities Systems

Existing Setting

The General Plan EIR and 2012 SEIR include overviews of public services and utilities providers in the city, along with related statistics such as response times for emergency calls. The following discussion relies on information presented in the previous EIRs, and focuses on information relevant to the proposed EDZ's potential to cause impacts related to public services and utilities systems.

Public Services

Fire protection in Pleasanton is provided by the Livermore-Pleasanton Fire Department. The proposed EDZ area is located less than a mile from Station #2, located at 6300 Stoneridge Mall Road. The average response time to non-emergency calls to the City of Pleasanton's Police Department in 2005 was 22 minutes and 11 seconds per call. For emergency calls, the response time was 5 minutes and 12 seconds.

The Pleasanton Unified School District operates nine elementary schools, three public middle schools, and four high schools, two of which are specialty schools.

Water Supply

The City of Pleasanton receives approximately 75 to 80 percent of its water from the Zone 7 water district. The City also has a groundwater entitlement for 3,500 acre-feet annually, which is approximately 22 percent of the City's total water demand, according to the City's 2010 Urban Water Management Plan (City of Pleasanton 2011).

In 2011, Zone 7 reduced the range for increase in annual water demand to between 1.7 percent and 2.2 percent for years 2011 to 2015. Additionally, the total demand between 2016 and 2020 has been reduced by 3,000 acre feet per year due to conservation efforts. On January 29, 2014, Zone 7's Board of Directors declared a local drought emergency, and directed its customers to reduce their water use by 25 percent. Water retailers serving Pleasanton are required to achieve conservation consistent with "Stage 2 Actions" under Zone 7's Urban Water Management Plan, including reducing outdoor water use by 50 to 60 percent.

Wastewater

The City of Pleasanton manages wastewater through a facility that involves a collection system and treatment plant before disposal. The City provides sewage collection facilities throughout Pleasanton, and the Dublin-San Ramon Services District provides sewage treatment services for the City. The Livermore-Amador Valley Water Management Agency, a joint powers agency between Pleasanton, Livermore and the Dublin-San Ramon Services District, provides export

and disposal services for the treated wastewater. The San Francisco Bay Regional Water Quality Control Board issues permits for the discharge of this wastewater into San Francisco Bay.

The treatment facility operated by the Dublin-San Ramon Services District has an average dry-weather wastewater-flow capacity of 17 millions of gallons per day (mgd) and a wet weather wastewater flow capacity of 60 mgd (DSRSD, 2015). The City is currently entitled to 8.5 mgd, of the dry weather flow capacity. The City's average annual wastewater flow is approximately 6.0 mgd.

Solid Waste

The City has a franchise agreement with Pleasanton Garbage Service (PSG) through 2019. This agreement gives PSG rights to collect and transport solid waste in the city. PSG maintains a contract for disposal with Browning Ferris Industries, a landfill operator for the Vasco Road Landfill in Livermore. As of July 2014, the Vasco Road Landfill had a total capacity of 32,970,000 cubic yards, of which 25,010,900 cubic yards had been filled, and is expected to have capacity through 2022 (CalRecycle, 2015). In 2005, Pleasanton generated 240,900 tons of solid waste; the waste diversion rate, or the percentage of waste that is diverted away from the landfill due to recycling efforts, was approximately 50 percent. As a part of the City's goals for waste reduction as discussed in its Source Reduction and Recycling Plan, it is expected City solid waste diversion rates will increase in future years (i.e., up to 75 percent by 2025).

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing public services and utilities were adopted as part of the General Plan EIR or 2012 SEIR.

Impact Discussion 4.E-9: With mitigation, the proposed EDZ would not:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, or other public facilities (Less Than Significant);

b) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (Less Than Significant);

c) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities (Less Than Significant);

d) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities (Less Than Significant);

e) Lack sufficient water supplies to serve the proposed EDZ from existing entitlements and resources, or are new or expanded entitlements needed (Less Than Significant With Mitigation);

f) Result in a determination by the wastewater treatment provider which serves or may serve the proposed EDZ area that it does not have adequate capacity to serve the EDZ's projected demand in addition to the provider's existing commitments (Less Than Significant);

g) Be served by a landfill without sufficient permitted capacity to accommodate the EDZ's solid waste disposal needs (Less Than Significant); or

h) Not be in compliance with federal, state, and local statutes and regulations related to solid waste (Less Than Significant).

The proposed EDZ does not propose any new residential units; as such, it would not result in a significant increase in population that would need to be served by public services, including fire and police protection, and public education. Although, as discussed above under Population and Housing, up to 390 workers in the EDZ area could move to Pleasanton to live closer to their jobs (a conservative assumption), the proposed EDZ does not include the construction of new residential units, and these new city residents would be accommodated within the growth described for the total General Plan buildout in the General Plan EIR. The proposed EDZ would result in a net increase in building area, which would incrementally increase the demand for public services; however, this increase would be minor.

The EDZ area is currently served by water, sanitary sewer, stormwater, and other infrastructure. Development enabled by the EDZ may require some upgrades to existing infrastructure, to accommodate future development; these upgrades are anticipated to take place within the existing footprint of sites within the EDZ, and/or would be minor enough not to result in significant impacts associated with ground disturbance that are not already considered in this SEIR analysis. The City has adequate sanitary sewer treatment capacity to serve the EDZ area. The Vasco Road Landfill would have capacity to receive both construction waste (estimated at up to 10,800 cubic yards [cy] for the EDZ area, per USEPA, 2003 and City of Oakland, n.d., assuming 50 percent of all construction waste is diverted/recycled) and operational waste (estimated at up to 2,900 cy per year, per IWMB, 2006) from the proposed EDZ. City of Pleasanton Municipal Code Section 9.21 will require the submittal of Waste Management Plans to the City prior to the issuance of building or demolition permits for any project planned within the EDZ; this requirement will help the City ensure that planned projects will meet solid waste diversion rates that are consistent with the City's Source Reduction and Recycling Plan.

Proposed development of a certain size requires the preparation of a Water Supply Assessment (WSA) consistent with Senate Bill 610. The preparation of a WSA would be triggered if a proposed development was a shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space, or a proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space (DWR, 2003). A WSA was prepared for the 2012 Housing Element update.

The proposed EDZ would represent a net increase of approximately 285,302 square feet of retail, commercial, and other uses, and a total net increase of approximately 780 workers, which would not trigger the requirement for a WSA.

All cities in the Bay Area have adopted policies and procedures to address ongoing drought conditions. As the drought continues, the City will also continue to implement measures and programs, such as its recycled water program and stricter water conservation measures, to improve water reliability. For example, the City could require developers of projects within the EDZ area to include water conservation fixtures and other measures. Developers of projects within the EDZ area would also be required comply with the California Green Building Standards Code and Model Water Efficient Landscape Ordinance requirements.

For all projects that would be developed within the EDZ area, the City would apply a standard condition of project approval at the development level requiring recycled water infrastructure to be installed and connected when and if recycled water infrastructure becomes available. To further ensure that adequate water supplies are available to the proposed EDZ, the City will implement the following mitigation measure:

> **Mitigation Measure 4.E-9:** For any project proposed for development within the EDZ, prior to the recordation of a Final Map, the issuance of a grading permit, the issuance of a building permit, or utility extension approval, whichever is sooner, the project developer shall submit written verification from the Alameda County Flood Control and Water Conservation District Zone 7 (Zone 7) or the City's Utility Planning Division that water is available for the project. This approval does not guarantee the availability of sufficient water capacity to serve the project.

With implementation of Mitigation Measure 4.E-9, impacts to public services and utilities would be less than significant.

Significance: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, New Mitigation Measures Identified.

Recreation

Existing Setting

The Tri-Valley Area, which includes Pleasanton and its surrounding cities, contains approximately 56,000 acres of regional open space and watershed lands. The City of Pleasanton's park system consists of 26 neighborhood parks, totaling approximately 133 acres, and 14 community parks, totaling approximately 209 acres. Several larger open space areas also total over 800 acres of undeveloped land. Approximately 24 miles of trails are provided within Pleasanton. The City also owns and operates several recreational facilities.

The national standard for parks per capita is five acres per 1,000 people, which the City has also adopted as their minimum standard for provision of neighborhood and community parks. As discussed in the 2012 SEIR, the City's provision of neighborhood and community parks is

consistent with this standard, providing approximately five acres of park space per 1,000 people. In addition, the City plans to build approximately 131 acres of new community parks in Pleasanton by 2025, which would allow the City to offer 5.9 acres of neighborhood and community parks per capita at buildout of the General Plan Housing Element. The 2012 SEIR determined that impacts to recreation would be less than significant.

Impacts and Mitigation Measures

Previously Adopted Features and Mitigation Measures

No mitigation measures addressing recreation adopted as part of the General Plan EIR or 2012 SEIR would be applicable to the proposed EDZ.

Impact Discussion 4.E-10: The proposed EDZ would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment (Less Than Significant).

Although, as discussed above under Population and Housing, up to 390 workers in the EDZ area could move to Pleasanton to live closer to their jobs (a conservative assumption), the proposed EDZ does not include the construction of new residential units, and these new city residents would be accommodated within the growth described for the total General Plan buildout in the General Plan EIR (i.e., the new workers in the EDZ area that are likely to live in Pleasanton are included within the total General Plan buildout population estimate). The EDZ would therefore not directly increase the use of recreation facilities. Use of recreation facilities by construction workers within the EDZ area would be temporary and would not be expected to result in substantially more intense use of these facilities. Daily use of recreation facilities, including the Alamo Canal Trail and nearby Val Vista Community Park, by workers within uses established within the EDZ would likewise not substantially increase the use of these facilities. New recreation facilities associated with the EDZ could include private gyms and other indoor recreational spaces, not public outdoor facilities, and impacts associated with such indoor facilities have been addressed throughout this SEIR as part of the analysis of impacts from overall new building space that would be associated with the proposed EDZ. This impact would be less than significant.

Significance: Less Than Significant.

Comparison to General Plan EIR and 2012 SEIR Findings: No New Impact, No New Mitigation Measures Identified.

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CHAPTER 5
Alternatives to the EDZ

The purpose of this chapter is to describe and evaluate alternatives to the proposed EDZ. Pursuant to the provisions of CEQA, the alternatives presented and evaluated in this chapter would reduce or eliminate at least one significant environmental effect that would result from construction and operation of the proposed EDZ as identified in Chapter 4.

A. CEQA Requirements

The California Environmental Quality Act (CEQA) requires an evaluation of the comparative effects of a range of reasonable alternatives to a project that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project (CEQA *Guidelines* Section 15126.6[a]). An EIR is to consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The discussion of alternatives is to focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede, to some degree, the attainment of the project objectives, or would be more costly (CEQA *Guidelines* Section 15126.6[b]).

Pursuant to CEQA, this chapter presents a meaningful comparative analysis of the proposed EDZ and the alternatives (CEQA *Guidelines* Section 15126.6[d]); identifies and discusses any alternatives that were considered by the City, as lead agency, but that the City rejected for detailed analysis in this EIR (CEQA *Guidelines* Section 15126.6[c]); and provides comparative evaluation of the proposed EDZ to a No Project Alternative (CEQA *Guidelines* Section 15126.6[e]).

B. Factors in the Selection of Alternatives

The nature and scope of the reasonable range of alternatives to be discussed is governed by the "rule of reason." The CEQA *Guidelines* recommend that an EIR should briefly describe the rationale for selecting the alternatives to be discussed (Section 15126.6[c]). This alternatives analysis considers the following factors:

- The extent to which the alternative would accomplish most of the basic goals and objectives of the proposed EDZ;
- The extent to which the alternative would avoid or lessen the identified significant environmental effects of the proposed EDZ;

- The feasibility of the alternative, taking into account site suitability, availability of infrastructure, general plan consistency, and consistency with other applicable plans and regulatory limitations;
- The extent to which an alternative contributes to a "reasonable range" of alternatives necessary to permit a reasoned choice; and
- The requirement of the CEQA *Guidelines* to consider a "No-Project" alternative and to identify an "environmentally superior" alternative in addition to the no-project alternative (Section 15126.6[e]).

In considering alternatives to be evaluated, seven alternatives were reviewed.

Objectives of the Proposed EDZ

As stated in the first factor bulleted above, the selection of alternatives shall consider the basic goals and objectives of the proposed EDZ. As previously presented in Chapter 3, Project Description, the objectives of the proposed EDZ are to:

1. Provide a consistent framework for the City's review and approval of new uses and projects in the EDZ area, encouraging investment in and adding value to these properties;
2. Maximize the benefits of the location of the EDZ area as an infill site located along transportation corridors and near transit by encouraging the development of both locally and regionally accessible uses in the EDZ area; and
3. Encourage the development of a diverse mix of uses in the City that would promote long-term economic growth by generating substantial new revenues for the City.

The EDZ is the first economic development zone proposed by the City and is anticipated to be a model for future zones.

Significant and Unavoidable Impacts Identified

As stated in the second factor bulleted above, the selection of alternatives shall consider the ability for each alternative to avoid or lessen significant environmental effects identified with the proposed EDZ. Because certain impacts identified in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, can be reduced in severity to a less-than-significant level through implementation of identified mitigation measures, the focus in the evaluation of alternatives is on impacts that cannot be mitigated; that is, significant and unavoidable effects.

Development facilitated by the proposed EDZ would result in the following significant and unavoidable impacts, as identified throughout Chapter 4:

Significant and Unavoidable Air Quality Impacts:

Impact 4.B-2: The EDZ would generate **operational emissions** that would result in a considerable net increase of **criteria pollutants and precursors (NOx and PM10) for which the air basin is in nonattainment under an ambient air quality standard.** Although Mitigation Measure 4.B-3 would reduce total criteria pollutants that would be generated (primarily from mobile vehicular emissions), the reduction is anticipated to be minor relative to overall emissions and would not reduce emissions to less-than-significant levels.

Impact 4.B-3: Operation of uses within the proposed EDZ area would **conflict with or obstruct implementation of the applicable air quality plan.** Because the EDZ would cause operational emissions that would result in a considerable net increase of NOx and PM10, even with implementation of Mitigation Measure 4.B-3, the proposed EDZ would still conflict with or obstruct implementation of BAAQMD's 2010 Clean Air Plan, and this impact would be significant and unavoidable.

Impact 4.B-6: The EDZ would generate operational emissions that would result in **cumulative criteria air pollutant (NOx and PM10) air quality impacts**, when combined with past, present and other reasonably foreseeable development in the vicinity.

Significant and Unavoidable Transportation and Traffic Impacts:

Impact 4.D-1: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Existing plus Project conditions**. Specifically, the addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in vehicle queue spillback.

Impact 4.D-2: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Near-term plus Project conditions.** The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in vehicle queue spillback, and an impact at the intersection of Johnson Drive and the park and ride lot.

Impact 4.D-3: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Far-term (Cumulative) plus Project conditions.** The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in vehicle queue spillback, and an impact at the intersection of Johnson Drive and the park and ride lot.

Impact 4.D-5: Development facilitated by the proposed EDZ would affect **levels of service for freeway ramps at merge/diverge areas within I-680** under **Existing plus Project conditions.**

Impact 4.D-7: Development facilitated by the proposed EDZ would affect **levels of service for freeway ramps at merge/diverge areas within I-680** under **Far-term (Cumulative) plus Project conditions.**

Applicability of General Plan EIR Alternatives

Three alternatives were analyzed for the General Plan EIR, each of which considered a different approach to residential development. Alternative 1, the No Project Alternative, assumed buildout of the existing 1996 General Plan, under which the buildout population would be about 72,945, as compared to 78,200 under the now-adopted General Plan. Alternative 2, the Dispersed Growth Alternative, would result in a mix of lower-density and higher-density housing, with new housing located in East Pleasanton, near Hacienda, adjacent to the West Pleasanton/Dublin BART Station, and at other scattered locations around the perimeter of the city. Alternative 3, the Concentrated Residential/Mixed Use Alternative, assumes a mixed use focus, in Hacienda and adjacent to the West Pleasanton/Dublin BART Station.

The EDZ area is not currently occupied by residential land uses, nor does the EDZ propose any specific residential land uses in the future. Therefore, the alternatives considered in the General Plan EIR would not avoid or lessen the identified significant and unavoidable environmental effects of the proposed EDZ, and are not applicable to the proposed EDZ.

Applicability of Housing Element and Climate Action Plan SEIR Alternatives

Five alternatives were analyzed for the Housing Element and Climate Action Plan, and associated General Plan Amendment and Rezoning SEIR. The No Project Alternative assumed the continued implementation of the 2003 Housing Element and the General Plan as it was adopted in 2009, and amended in 2010, without a climate action plan. Alternative 1, Large Properties, would result in the development of a total of 2,232 housing units (as compared to 3,285 units under the proposed Housing Element) through rezoning 8 of the 17 potential sites, specifically the sites that could accommodate larger developments. Alternative 2, Transit Oriented, would result in the development of a total of 2,324 housing units, and would focus on sites in proximity to transit for rezoning to residential use. Alternative 3, Excludes East Pleasanton, would result in the development of a total of 2,200 housing units excludes properties which have been included in the plan area for the East Pleasanton Specific Plan, as well as several smaller sites. Alternative 4, Increased Density, would result in the development of a total of 3,900 housing units with increased density on all the potential sites for rezoning, in the event that the City wishes to consider a higher density on one or more of the sites.

The EDZ area is not currently occupied by residential land uses, nor does the EDZ include any specific residential land uses in the future. Therefore, the project alternatives proposed for the Housing Element and Climate Action Plan General Plan Amendment and Rezoning SEIR would not avoid or lessen the identified significant and unavoidable environmental effects of the proposed EDZ, and are not applicable to the proposed EDZ.

C. Alternatives Eliminated from Further Consideration

CEQA *Guidelines* Section 15126.6(c) requires an EIR to identify and briefly discuss any alternatives that were considered by the lead agency and rejected from further evaluation. In identifying alternatives to the proposed EDZ, primary consideration was given to alternatives that would reduce significant, unavoidable impacts while still meeting most of the project objectives. Alternatives that would have the same or greater impacts as the proposed EDZ, that would not meet most of the objectives of the EDZ, or that were infeasible were rejected from further consideration.

Several alternatives were evaluated along with the proposed EDZ for relative impacts related to transportation and traffic. The results of the transportation and traffic analysis indicated that two alternatives would result in greater impacts to traffic during at least one of the two peak hours daily (AM and PM), resulting in their elimination from further consideration as described below.

Headquarters Office, Hotel and New Retail

A "Headquarters Office, Hotel and New Retail" alternative was drafted for the EDZ area, and reviewed as a potential alternative that would meet the objectives of the EDZ by developing a mix of uses, including a large amount of office uses, that would generate revenue for the City. The adoption of an EDZ is part of this alternative; however, the overall mix of uses differs from the proposed EDZ in that this alternative does not include an anticipated club retail use, and does include office uses. Under this alternative, the area of the proposed EDZ would be developed with approximately 701,059 square feet of new uses, including:

- 273,291 square feet of general retail;
- 339,768 square feet of office; and
- 88,000 square feet of hotel

This alternative represents a greater amount of building square footage than assumed buildout under adoption of the proposed EDZ; however, office uses under this alternative would be developed in multi-story buildings, and could be accommodated on a similar area of land as club retail uses.

The Headquarters Office, Hotel and New Retail alternative would meet most or all of the objectives of the EDZ: it would result in the adoption of a consistent framework for the City's review and approval of new uses in the area, and the headquarters office use would promote the development of locally and regionally accessible uses. This alternative could also generate a potentially substantial amount of revenue for the City, through the development of a diverse mix of uses, although this alternative prioritizes the development of a large amount of office space within the EDZ area, and would generate lower annual revenues for the City than other alternatives (see Appendix C).

While this alternative would be feasible, it would generate a higher volume of traffic trips to the EDZ area during both the AM and the PM peak hours than the proposed EDZ, and would not lessen the significant traffic impacts of the proposed EDZ. In addition, this alternative would generate daily vehicle trips to an extent that would result in significant operational air quality impacts,

similar to the proposed EDZ. Because this alternative does not avoid or lessen any of the significant impacts that would result from the proposed EDZ, it was not carried forward for detailed analysis.

Existing Zoning (Office Uses)

An "Existing Zoning" alternative was drafted for the EDZ area (note that this alternative differs from the No Project alternative evaluated below in that it includes a greater area of building development). The adoption of an EDZ is part of this alternative; however, this alternative differs from the proposed EDZ in that it includes office uses only, and does not assume any development of club retail, general retail, or hotel uses. Under this alternative, the area of the proposed EDZ would be developed with approximately 711,465 square feet of office uses. This alternative represents a greater amount of building square footage than assumed buildout under adoption of the proposed EDZ; however, office uses under this alternative would be developed in multi-story buildings, and could be accommodated on a similar area of land as club retail uses.

The Existing Zoning alternative would not meet most of the objectives of the EDZ: while it would result in the adoption of a consistent framework for the City's review and approval of new uses in the area, the development of an indeterminate mix of office uses would not promote the establishment of locally and regionally accessible uses. In addition, while this alternative could also generate a potentially substantial amount of revenue for the City, it would develop only a large amount of office space within the EDZ area and not a diverse mix of uses, and would generate lower annual revenues for the City than other alternatives (see Appendix C).

While this alternative would be feasible and would generate an amount of daily traffic trips that would be lower than the proposed EDZ, it would generate daily vehicle trips during the AM peak hour that would be greater than the proposed EDZ, would generate a volume of traffic trips to the EDZ area that would further degrade operations of freeway ramps at merge/diverge areas that are already operating at unacceptable levels, and would not lessen other significant traffic impacts of the proposed EDZ. This alternative would, however, avoid one of the significant impacts that would result from the proposed EDZ: namely, operational air emissions of PM10 would be less than significant under this alternative. However, because this alternative does not accomplish most of the objectives of the proposed EDZ, it was not carried forward for detailed analysis.

Alternative Location

The economic development zone program advances the City's goal of remaining competitive in attracting and retaining businesses, and building on existing strengths while also adapting to changing market conditions (City of Pleasanton, 2014). Proactively identifying EDZ sites that can be developed in the near term is a key component of achieving this goal. In determining the best location for the first EDZ, the City worked to identify sites that could be at least partially developed in the near term, especially those that are unified under one primary landowner; as well as sites located near a major transportation corridor that could attract regional users, especially those with greater potential for visibility from the corridor. The City did not initially identify any

sites other than the Johnson Drive area that met these criteria;[1] therefore, an alternative to the Johnson Drive EDZ that would be located on another site was determined to be infeasible at this time. Accordingly, no Alternative Location (off-site alternative) has been carried forward for detailed analysis.

No Development Alternative

Pursuant to CEQA *Guidelines* Section 15126.6(e), one of the alternatives analyzed must be the No Project Alternative. The No Project analysis must discuss existing conditions in the project area, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved and development continued to occur in accordance with existing plans and consistent with available infrastructure and community services (CEQA *Guidelines* Section 15126.6 [e][2]). According to the CEQA *Guidelines* Section 15126.6 (e)(3)(A):

> *When the project is the revision of an existing land use or regulatory plan . . . the "no project" alternative will be the continuation of the existing plan . . . into the future. Typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed.*

The No Project Alternative assumes that the proposed EDZ, and development anticipated under the EDZ, does not take place. Here, the "existing plan" would be the existing General Plan as it was adopted in 2009 and amended in 2012 with the Climate Action Plan and updated Housing Element.

For the purposes of this SEIR, the City reviewed both an alternative that assumes that no EDZ would be adopted, but that some development would take place within the area of the proposed EDZ consistent with the existing General Plan (carried forward for analysis and described below under the No Project alternative), and an alternative that assumes no development would occur within the area of the EDZ.

Under a No Development scenario, development within the EDZ would be frozen at baseline conditions: existing uses within the area of the proposed EDZ would remain, and no new uses would be established. The No Development alternative would not meet any of the objectives of the EDZ: it would not result in the adoption of a consistent framework for the City's review and approval of new uses in the area, it would not promote the establishment of locally and regionally accessible uses, and it would not promote long-term economic growth because it would not stimulate or facilitate a mix of uses that would add substantial value to the properties within the EDZ area.

This alternative would be feasible, and was the only alternative reviewed that would avoid all significant and unavoidable traffic impacts of the proposed EDZ, including the further degradation of operations of freeway ramps at merge/diverge areas that are operating at unacceptable levels. This alternative would also avoid significant impacts from operational air emissions of PM10 and NOx that would result from the proposed EDZ. However, this alternative

[1] Although no suitable alternative sites were identified during the planning process for the currently proposed EDZ, suitable sites for economic development zones that include a similarly geographically-united set of properties could become available in the future, at which time the proposed EDZ, if adopted, may be used as a model.

does not accomplish any of the objectives of the proposed EDZ, and was not carried forward for detailed analysis.

Table 5-1 presents a comparison of alternatives eliminated from further consideration.

TABLE 5-1
DESCRIPTION OF ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

New Land Use	Alternative Location	Headquarters Office, Hotel, and New Retail	Existing Zoning (Office Uses)	No Development
General Retail (SF)	246,440	273,291		NA
Club Retail (SF)	148,000			NA
Office (SF)		339,768	711,465	NA
Industrial	27,550			NA
Hotel	88,000	88,000		NA
Total Gross New Building Space	**509,990**	**701,058**	**711,465**	**NA**
Meets most basic objectives?	**NA**	**Yes**	**No**	**No**
Feasible?	**No**	**Yes**	**Yes**	**Yes**
Substantially avoids or lessens SU Impact?[1]	**NA**	**No**	**Yes**	**Yes**

NOTES: SF = square feet SU = Significant and Unavoidable

[1] At least one SU impact, but not necessarily all SU impacts, would be eliminated under this alternative.

SOURCES: Appendix C (Brion & Associates 2015); Appendix G (Fehr & Peers 2015)

D. Description of Alternatives Selected for Analysis

The significant impacts of the proposed EDZ are related to the retail and commercial development needed to meet the identified objectives. Thus, alternatives to the EDZ, except the required No Project Alternative, are various means of increasing economic development. The City has identified the following reasonable range of alternatives to be addressed in this SEIR. Under all of the alternatives presented below, some existing buildings would be demolished.

Alternative 1: No Project Alternative

The No Project alternative assumes EDZ adoption would not occur within the location of the proposed EDZ. This alternative assumes that the same types of uses that exist in the Johnson Drive area would continue to operate, and also assumes that new development in the area would be similar to existing uses, with more office and commercial/retail uses developed in the area within the next 10 years, especially on Parcels 6, 9, and 10, and with some new uses replacing existing uses. Under this alternative, it is assumed that partial development of Parcels 6, 9, and 10 with office and retail uses would take take place within the same buildout period for these parcels as described for the proposed EDZ.

Under the No Project alternative, the area of the proposed EDZ would be developed with some general retail uses but mostly office uses, with approximately 383,000 square feet of new building area, including:

- 338,000 square feet of office uses; and
- 45,000 square feet of general retail uses.

No club retail or hotel uses are assumed under this alternative.

The No Project alternative would not meet most of the objectives of the proposed EDZ: under this alternative, the City would not adopt a consistent framework for the City's review and approval of new uses in the EDZ area. This alternative could, with the establishment of new office space, promote the development of locally and regionally accessible uses; however, this alternative would not promote long-term economic growth because it would not facilitate the development of a diverse mix of uses within the area of the proposed EDZ that would add substantial value to the properties and would not generate substantial new revenues for the City.

Although it would not meet all of the objectives of the proposed EDZ, the No Project alternative would be feasible, and would avoid significant air quality impacts of the proposed EDZ: namely, operational air emissions of both PM10 and NOx would be less than significant under this alternative. This alternative would also generate fewer total traffic trips than the proposed EDZ, which would result in fewer or lower impacts to LOS at adjacent intersections; however, the volume of traffic trips to the EDZ area that would be generated by this alternative would likely result in impacts related to spillback, and further degrade operations of freeway ramps at merge/diverge areas that are already operating at unacceptable levels. Because CEQA requires evaluation of the No Project alternative, this alternative was carried forward for analysis.

Alternative 2: Reduced Retail

The Reduced Retail alternative would include some of the same uses as the proposed EDZ, including general retail and a hotel use, but would not include club retail uses. Under this alternative, the EDZ would be adopted, and Parcels 6, 9, and 10 would be developed in an initial phase that would take place within the same buildout period for these parcels as described for the proposed EDZ. Under this alternative, existing uses on other parcels within the EDZ area would continue to operate.

Under the Reduced Retail alternative, the area of the proposed EDZ would be developed with approximately 259,500 square feet of new building area, including:

- 171,500 square feet of general retail uses; and
- 88,000 square feet of hotel uses.

Under this alternative, it is assumed that development of the hotel uses would take place first and development of general retail uses would take place over a longer timeframe.

The Reduced Retail alternative would meet most of the objectives of the EDZ: it would result in the adoption of a consistent framework for the City's review and approval of new uses in the EDZ area, and would promote the development of locally and regionally accessible uses. This alternative, however, may not promote long-term economic growth, because it would not be likely to facilitate development of a mix or total volume of uses within the area of the proposed

EDZ that would generate substantial new revenues for the City, especially in comparison to other alternatives and the proposed EDZ.

The Reduced Retail alternative would be feasible, and would avoid a significant air quality impact of the proposed EDZ: under this alternative, annual operational air emissions of PM10 would be less than 15 tons per year and therefore would be less than significant. Annual operational air emissions of NOx for this alternative would also be less than those generated under the proposed EDZ, although emissions would not be less than the BAAQMD significance threshold of less than 10 tons per year. This alternative would also generate fewer total traffic trips than the proposed EDZ, which could result in fewer or lower impacts to LOS at adjacent intersections; however, the volume of traffic trips to the EDZ area that would be generated by this alternative would further degrade operations of freeway ramps at merge/diverge areas that are already operating at unacceptable levels, and this alternative would likely result in impacts related to spillback. Because the Reduced Retail alternative would avoid a significant impact of the proposed EDZ, this alternative was carried forward for analysis.

Alternative 3: Partial Buildout (Phase I Only)

The Partial Buildout alternative assumes that the EDZ would be adopted, and that only the uses anticipated for Phase I of the EDZ would be developed, and no other development would take place within the EDZ (existing uses on other parcels within the EDZ area would continue to operate). This alternative includes a club retail use, a hotel use, and some general retail uses, with approximately 259,500 square feet of new building area, including:

- 148,000 square feet of club retail;
- 23,500 square feet of general retail; and
- 88,000 square feet of hotel.

The Partial Buildout alternative would meet all of the objectives of the EDZ in part or in full: it would result in the adoption of a consistent framework for the City's review and approval of new uses in the EDZ area, and would promote the development of locally and regionally accessible uses. In addition, this alternative would promote long-term economic growth to at least some degree, albeit not as robustly as full buildout of the EDZ would, because it would result in the development of a mix and volume of uses within the area of the proposed EDZ that could generate substantial new revenues for the City.

Similar to the Reduced Retail alternative, the Partial Buildout alternative would be feasible, and would avoid a significant air quality impact of the proposed EDZ: under this alternative, annual operational emissions of PM10 would be less than 15 tons per year and therefore would be less than significant. Annual operational air emissions of NOx for this alternative would also be less than those generated under the proposed EDZ, although emissions would not be less than the BAAQMD significance threshold of less than 10 tons per year. This alternative would also generate fewer total traffic trips than the proposed EDZ, which could result in fewer or lower impacts to LOS at adjacent intersections; however, the volume of traffic trips to the EDZ area that would be generated by this alternative would further degrade operations of freeway ramps at

merge/diverge areas that are already operating at unacceptable levels, and this alternative would likely result in impacts related to spillback. Because the Partial Buildout alternative would avoid a significant impact of the proposed EDZ, this alternative was carried forward for analysis.

Table 5-2 presents a comparison of alternatives (and a summary of the proposed EDZ at full buildout) carried forward for consideration and evaluation.

TABLE 5-2
DESCRIPTION OF PROPOSED EDZ AND ALTERNATIVES SELECTED FOR EVALUATION

Land Use	Proposed EDZ (Full Buildout)	Alternative 1: No Project	Alternative 2: Reduced Retail	Alternative 3: Partial Buildout
New General Retail (SF)	246,440	45,000	171,500	23,500
Club Retail (SF)	148,000			148,000
Office (SF)		338,000		
Industrial (SF)	27,550			
Hotel (SF)	88,000		88,000	88,000
Total Gross New Building Space (SF)		**383,000**	**259,500**	**259,500**
Total Gross Building Space (SF)		**438,700**	**484,188**	**484,188**
Meets most basic objectives?	**Yes**	**No**	**Yes**	**Yes**
Feasible?	**Yes**	**Yes**	**Yes**	**Yes**
Substantially avoids or lessens SU Impact?[1]	**NA**	**Yes**	**Yes**	**Yes**

NOTES: SF = square feet SU = Significant and Unavoidable

[1] At least one SU impact, but not necessarily all SU impacts, would be eliminated under this alternative.

SOURCE: Brion & Associates 2015; Fehr & Peers 2015

E. Comparative Analysis of the Alternatives

This section presents a discussion of the comparative environmental effects of each alternative compared to the effects of the proposed EDZ.

As permitted by CEQA, the significant effects of the alternatives are discussed in less detail than are the effects of the proposed EDZ (CEQA *Guidelines* Section 15126.6[d]). Unless otherwise indicated, the impacts associated with the proposed EDZ and each alternative are for year 2025, the anticipated conditions for full buildout of the EDZ. All impacts are described after implementation of any applicable mitigation measures identified in Chapter 4.

Comparison of Significant and Unavoidable Impacts Identified for the Proposed EDZ with Alternatives

Alternative 1: No Project

The No Project alternative would result in development consistent with the City's existing General Plan. Although the General Plan would not rezone any of the EDZ area, it would allow sites to be developed under their existing land use designations.

Under the No Project alternative, it is assumed that sites would be redeveloped under General Plan buildout, with mostly office and some general retail uses as shown in Table 5-2. Development under this alternative is anticipated to take place over a longer period than development that would take place under the proposed EDZ because adoption of the economic development zone would stimulate economic investment in this area to an extent that is not expected to occur under the No Project alternative; however, partial development of Parcels 6, 9, and 10 with office and general retail uses is anticipated to take place within the same buildout period for these parcels under the EDZ.

Air Quality

Under this alternative, operational emissions of PM10 would be below the BAAQMD threshold of 15 tons per year, and operational emissions of NOx would be below the BAAQMD threshold of 10 tons per year. As such, the No Project Alternative would result in the avoidance of all significant and unavoidable air quality impacts of the proposed EDZ.

Transportation and Traffic

This alternative would generate fewer total traffic trips than the proposed EDZ, which could result in fewer or lower impacts to LOS at adjacent intersections; however, the volume of traffic trips to the EDZ area that would be generated by this alternative would likely result in impacts related to spillback similar to the proposed EDZ, and these significant and unavoidable traffic impacts of the proposed EDZ are not likely to be reduced to less-than-significant levels under this alternative. Existing freeway ramps at merge/diverge areas within I-680 operate below acceptable levels of service (LOS F). Under the No Project Alternative, additional operational trips would be added to these areas; therefore, the No Project Alternative would not avoid or substantially lessen the significant and unavoidable impacts of the proposed EDZ related to levels of service for freeway ramps at merge/diverge areas.

Alternative 2: Reduced Retail

The Reduced Retail alternative would include the rezoning of the EDZ area, and would result in the development of general retail and hotel uses that would be more intensive than uses that would be developed under the No Project alternative.

Under the Reduced Retail alternative, it is assumed that sites would be redeveloped with generally less intensive general retail uses than would likely be developed under the proposed EDZ (as shown in Table 5-2). This alternative also assumes that hotel uses would be developed within the same buildout period as Phase I of the EDZ, and that development of the general retail uses would occur more gradually over a 10-year buildout period.

Air Quality

Under this alternative, operational emissions of PM10 would be below the BAAQMD threshold of 15 tons per year. As such, the Reduced Retail alternative would result in the avoidance of this significant and unavoidable air quality impact of the proposed EDZ. Operational emissions of NOx, however, would still exceed the BAAQMD threshold of 10 tons per year under this alternative.

Transportation and Traffic

This alternative would generate fewer total traffic trips than the proposed EDZ, which could result in fewer or lower impacts to LOS at adjacent intersections; however, the volume of traffic trips to the EDZ area that would be generated by this alternative would likely result in impacts related to spillback similar to the proposed EDZ, and these significant and unavoidable traffic impacts of the proposed EDZ are not likely to be reduced to less-than-significant levels under this alternative. Existing freeway ramps at merge/diverge areas within I-680 operate below acceptable levels of service (LOS F). Under the Reduced Retail alternative, additional operational trips would be added to these areas; therefore, the Reduced Retail alternative would not avoid or substantially lessen the significant and unavoidable impacts of the proposed EDZ related to levels of service for freeway ramps at merge/diverge areas.

Alternative 3: Partial Buildout

The Partial Buildout alternative would include the rezoning of the EDZ area, and would result in the development of club retail, general retail and hotel uses that would be both more diverse and more intensive than uses that would be developed under the No Project or Reduced Retail alternatives. Under the Partial Buildout alternative, it is assumed that only Parcels 6, 9, and 10 would be redeveloped consistent with the assumptions for Phase I buildout of the EDZ.

Air Quality

With the development of these uses, operational emissions of PM10 would be below the BAAQMD threshold of 15 tons per year. As such, the Partial Buildout alternative would result in the avoidance of this significant and unavoidable air quality impact of the proposed EDZ. Operational emissions of NOx, however, would still exceed the BAAQMD threshold of 10 tons per year under this alternative.

Transportation and Traffic

This alternative would generate fewer total traffic trips than the proposed EDZ, which could result in fewer or lower impacts to LOS at adjacent intersections; however, the volume of traffic trips to the EDZ area that would be generated by this alternative would likely result in impacts related to spillback similar to the proposed EDZ, and these significant and unavoidable traffic impacts of the proposed EDZ are not likely to be reduced to less-than-significant levels under this alternative. Existing freeway ramps at merge/diverge areas within I-680 operate below acceptable levels of service (LOS F). Under the Partial Buildout alternative, additional operational trips

would be added to these areas; therefore, the Partial Buildout alternative would not avoid or substantially lessen the significant and unavoidable impacts of the proposed EDZ related to levels of service for freeway ramps at merge/diverge areas.

Overall Comparison of Proposed EDZ with Alternatives

The analysis of the alternatives is summarized and compared in two tables: **Table 5-3** provides a summary of impact levels within all environmental topic areas and **Table 5-4** summarizes the ability of each alternative to meet the objectives of the proposed EDZ. The tables provide a ready means for the reader to review and compare the alternatives with each other, and with the EDZ as proposed.

Table 5-4 indicates that the No Project alternative would not have the ability to meet any objectives of the proposed EDZ. The Reduced Retail alternative would have the ability to meet most of the objectives of the proposed EDZ, and the Partial Buildout alternative would meet all of the objectives of the proposed EDZ in part or in full.

F. Environmentally Superior Alternative

The CEQA *Guidelines* (Section 15126.6 [e] [2]) indicate that an EIR is required to identify the Environmentally Superior Alternative from the range of alternatives evaluated in the EIR. If the No Project alternative is identified as the Environmentally Superior Alternative, the EIR shall also identify an Environmentally Superior Alternative among the other alternatives. The Environmentally Superior Alternative is the alternative that would result in the fewest and/or least severe (lowest level) environmental impacts.

As shown by the comparison of alternatives and the proposed EDZ in Table 5-3, the No Project alternative would have the lowest level of environmental impacts, because all significant and unavoidable air quality impacts would be avoided under this alternative. Disregarding the No Project alternative, the Reduced Retail and Partial Buildout alternatives are very similar in terms of types and level of impacts. The Reduced Retail alternative would be the slightly environmentally superior alternative, because it represents a somewhat lower level of PM10 emissions than the Partial Buildout alternative (a difference of approximately 3 tons per year) and a lower number of traffic trips that would be generated (a difference of approximately 1,970 weekday daily trips). However, unlike the Partial Buildout alternative, the Reduced Retail alternative would not meet all the objectives of the EDZ.

TABLE 5-3
ALTERNATIVES IMPACT SUMMARY AND COMPARISON

Impact	Alternative 1: No Project	Alternative 2: Reduced Retail	Alternative 3: Partial Buildout	Proposed EDZ (Full Buildout)
Air Quality: Operational PM10 Emissions	Less than Significant with Mitigation ⇩	Less than Significant with Mitigation ⇩	Less than Significant with Mitigation ⇩	Significant and Unavoidable
Air Quality: Operational NOx Emissions	Less than Significant with Mitigation ⇩	Significant and Unavoidable ⇩	Significant and Unavoidable ⇩	Significant and Unavoidable
Transportation and Traffic	Significant and Unavoidable ⇩	Significant and Unavoidable ⇩	Significant and Unavoidable ⇩	Significant and Unavoidable
Aesthetics	Less than Significant	Less than Significant	Less than Significant	Less than Significant
Biological Resources	Less than Significant with Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation
Cultural Resources	Less than Significant with Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation
Geology and Soils	Less than Significant	Less than Significant	Less than Significant	Less than Significant
Greenhouse Gases	Less than Significant	Less than Significant	Less than Significant	Less than Significant
Hazards and Hazardous Materials	Less than Significant with Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation
Hydrology and Water Quality	Less than Significant	Less than Significant	Less than Significant	Less than Significant
Land Use and Planning	Less than Significant	Less than Significant	Less than Significant	Less than Significant
Noise	Less than Significant with Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation
Population and Housing	Less than Significant	Less than Significant	Less than Significant	Less than Significant
Public Services and Utilities	Less than Significant	Less than Significant	Less than Significant	Less than Significant
Recreation	Less than Significant	Less than Significant	Less than Significant	Less than Significant

NOTES: ⇧/⇩ - The impact is more/less severe than compared to the proposed EDZ.

The color gradients in the table are a visual representation of the significance findings with the lightest or absence of color representing the least amount of impact, and the darkest shade representing a severe impact.

SOURCE: Environmental Science Associates

TABLE 5-4
ABILITY OF ALTERNATIVES TO SATISFY EDZ OBJECTIVES

EDZ Objective	Alternative 1: No Project	Alternative 2: Reduced Retail	Alternative 3: Partial Buildout
1. Provide a consistent framework for the City's review and approval of new uses and projects in the EDZ area, encouraging investment in and adding value to these properties.	Does not meet objective	**Meets objective**	**Meets objective**
2. Maximize the benefits of the location of the EDZ area as an infill site located along transportation corridors and near transit by encouraging the development of both locally and regionally accessible uses in the EDZ area.	Does not meet objective	**Meets objective**	**Meets objective**
3. Encourage the development of a diverse mix of uses in the City that would promote long-term economic growth by generating substantial new revenues for the City.	Does not meet objective	Does not meet objective	**Partially meets objective**

References – Alternatives to the EDZ

Brion & Associates, 2015. *Memorandum: Draft Summary – Johnson Drive EDZ Fiscal Impact Analysis, City of Pleasanton; B&A #2502*. To Dan Rosenbraum and Sierra Culbertson, Nearon Enterprises. February 5, 2015.

City of Pleasanton, 2014. *City Council Agenda Report: Establishment of an Economic Development Zone Program and Initiation of a Pilot Economic Development Zone*. April 15, 2014.

CHAPTER 6
Other Statutory Sections

Consistent with the CEQA *Guidelines* Section 15126.2, this section summarizes the growth-inducing effects, significant irreversible environmental changes, significant unavoidable environmental effects, and effects found to be less than significant associated with construction and operation of the proposed EDZ. Cumulative impacts are separately discussed in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures.

A. Growth-Inducing Effects

The CEQA *Guidelines* require that an EIR evaluate the growth-inducing impacts of a proposed action (Section 15126.2(d)). A growth-inducing impact is defined by the CEQA *Guidelines* as:

> *[T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth .... It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.*

A project can have direct and/or indirect growth-inducement potential. Direct growth inducement would result if a project involved construction of new housing. A project can have indirect growth-inducement potential if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises) that would encourage development of new housing for employees, or if it would involve a substantial construction effort creating short-term employment opportunities. Similarly, under CEQA, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. Infrastructure projects could also indirectly stimulate growth by enhancing access to properties, or increasing their desirability for development.

Increases in population could tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. The CEQA *Guidelines* also require analysis of the characteristics of projects that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

The timing, magnitude, and location of land development and population growth are based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and non-residential uses, land availability and cost, the availability and quality of transportation facilities and public services, proximity to employment

centers, the supply and cost of housing, and regulatory policies or conditions. Since a general plan defines the location, type and intensity of growth, it is the primary means of regulating development and growth in California.

Growth from the Proposed EDZ

The proposed EDZ does not propose to alter or develop any residential uses on-site, with the exception of the potential development of a minor amount of senior housing; therefore, the proposed EDZ would not directly induce substantial population growth. The proposed EDZ would change the General Plan designation and zoning of existing land to expand the City's supply of club retail, hotel, recreational, and small- and large-format retail uses, which could indirectly induce growth by creating new jobs. Phase I development is anticipated to add 273 new jobs to the existing 369 jobs onsite for a total of 642 employees. Full buildout of the EDZ is anticipated to add another 876 jobs for a total of 1,149 jobs and a net increase of 780 jobs.

As discussed in Section 4.E, Other Topics (Population and Housing), population growth that could be induced as a consequence of new EDZ employees moving to the City would not be substantial; therefore, the proposed EDZ is not likely to induce substantial indirect population growth within the City of Pleasanton.

Growth Effects Associated with Infrastructure Improvements

Development facilitated by the proposed EDZ could indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. The city's infrastructure and public services are largely provided by other public and private service providers (e.g., Alameda County Flood Control and Water Conservation District's Zone 7 for water supply and Pacific Gas & Electric for gas service and electrical service), which utilize master plans for guiding facility and service expansions that are subject to environmental review under CEQA.

The EDZ area is currently served by water, sanitary sewer, stormwater, and other roadway and utility infrastructure. There are no expansions of existing utility systems to the EDZ area planned to accommodate development of the proposed EDZ. It is possible that these systems may need to be upgraded to accommodate development; however, such improvements would be specific to the EDZ and would not be of the scale to induce substantial population growth.

The proposed EDZ could result in the significant widening of Johnson Drive as well as changes to Commerce Drive and Stoneridge Drive, and other traffic and transportation improvements in the vicinity of the EDZ area and in the infrastructure of the I-680 freeway. Improvements to Johnson Drive, Commerce Drive, and Stoneridge Drive would take place within an already developed area in order to accommodate existing development and planned growth, and would not be likely to stimulate substantial further growth in this area, beyond potential infill development of sites in the vicinity. Improvements to the infrastructure of I-680 have a higher potential to stimulate further growth within the City; however, these improvements would also be undertaken in large part to accommodate planned projects within an already developed area of the City.

The proposed EDZ would be used to implement the program of business retention and expansion described in the General Plan Economic and Fiscal Element. Although the proposed EDZ may encourage (or induce) other development in the surrounding area, the collective impacts of any such growth have been considered in the 2009 General Plan EIR or the 2012 SEIR, and/or have been assessed in this SEIR's consideration of cumulative impacts.

Environmental Effects of Growth

As described above, the proposed EDZ could indirectly induce population growth in the city by allowing for development that would support new jobs on-site, and through infrastructure improvements. As a result, the proposed EDZ is considered to be somewhat growth-inducing. The environmental effects of growth within the City of Pleasanton are summarized below, and in the analysis of each environmental topic included in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures of this SEIR:

Aesthetics: Additional commercial development which would alter views and increase light and glare.

Air Quality: Increases in air pollutant emissions that would conflict with air quality attainment efforts under state and federal Clean Air Acts and increase risk of exposure to toxic air contaminants.

Biological Resources: Increased development in areas with sensitive species or habitat.

Geology and Soils: Increased development in an area prone to seismic hazards and other issues related to geology and soils.

Greenhouse Gas Emissions: Increases in the release of greenhouse gas emissions through transportation and residential heating/cooling.

Hazards and Hazardous Materials: Increases in development areas which would expose hazardous materials through soils or demolition debris.

Hydrology and Water Quality: Increased development reducing permeable surface and increasing runoff.

Noise: Increased transportation noise levels from increased traffic volumes and increased noise levels from construction of new buildings.

Populating and Housing: Indirect increases in population and housing stock.

Public Services and Utilities: Increased demand for public services and utilities, including an increased water demand.

Recreation: Increased demand for and use of parks and recreational areas.

Traffic and Transportation: Increased traffic volumes on the region's highways and regional roadways resulting in deficient levels of service of operation.

With the exception of significant and unavoidable impacts related to air quality and traffic as described below, the effects of the proposed EDZ related to growth would not be substantial and adverse.

B. Significant Irreversible Changes

An EIR must identify any significant irreversible environmental changes that would result from construction or operation of a proposed development project. These may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses. CEQA dictates that irretrievable commitments of resources should be evaluated to assure that such current consumption is justified (CEQA *Guidelines* Section 15126.2(c)). The CEQA *Guidelines* identify three distinct categories of significant irreversible changes: (1) changes in land use that would commit future generations; (2) irreversible changes from environmental actions; and (3) consumption of non-renewable resources.

Adoption of the proposed EDZ is expected to result in the conversion of vacant, undeveloped and/or underutilized properties to a variety of land uses. Subsequent development within the EDZ involves a long-term commitment to these uses. It is unlikely that circumstances would arise that would justify the return of the land to its previous condition. Because the development facilitated by the proposed EDZ would occur within an urban area surrounded by similar or compatible uses, any changes within the EDZ area resulting from the conversion of undeveloped and/or underutilized properties would not be significant.

Accidents, such as the release of hazardous materials, may trigger irreversible environmental damage. Construction of new buildings in the EDZ area would involve use of paints, solvents, oil and grease, and petroleum hydrocarbons that are typically used during construction. Following construction completion, hazardous materials exposure from the EDZ area would generally be limited to minor amounts of household hazardous materials, including paints, solvents, cleaners, metals, fuels, oils, and pesticides. In most circumstances, the potential risks posed by hazardous materials use and storage are primarily local and, therefore, limited to the immediate vicinity of such use. Moreover, the transport, use, and disposal of even household hazardous chemicals are heavily regulated. Compliance with existing federal, State, and local laws and regulations that are administered and enforced by the City would reduce risks associated with the routine use, storage, and transportation of hazardous materials in connection with construction activities to acceptable levels. After construction, the proposed EDZ would not emit hazardous materials and/or be expected to pose an unacceptable risk of accidental release of hazardous substances. Consequently, adherence to existing federal, State, and local regulations, the General Plan and the Municipal Code would reduce impacts to less-than-significant levels.

Some of the parcels within the EDZ are vacant or underutilized parcels. Some parcels include parking lots, underutilized buildings, or some similar use and may contain improvements/structures. Any development under the proposed EDZ which includes the demolition of existing buildings containing Hazardous Building Materials such as asbestos, lead-based paint and/or PCBs could expose construction workers to harmful contaminants. Improper handling of contaminated soil

and/or groundwater could result in inadvertent release into the environment, which would have an adverse impact. However, compliance with existing regulations, including, but not limited to the General Plan and the Municipal Code, would ensure that no significant irreversible changes from accidental releases would occur.

Development of the EDZ would irretrievably commit building materials and energy to the construction and maintenance of buildings and infrastructure. Renewable, nonrenewable, and limited resources that would likely be consumed as part of the development of the proposed EDZ would include, but are not limited to, oil, gasoline, lumber, sand and gravel, asphalt, water, steel, and similar materials. In addition, such development would result in an increased demand on utilities and public services (see Section 4.E, Other Topics). Projects and sites developed within the proposed EDZ area would incorporate energy-conserving features, as required by the Uniform Building Code and California Energy Code Title 24.

C. Cumulative Impacts

The approach used in this SEIR for cumulative impact analysis is described in the introduction to Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. The analysis of each environmental topic included in Chapter 4 evaluates possible cumulative impacts considering regional development in combination with the buildout of the proposed EDZ.

As noted below, under D., Significant and Unavoidable Environmental Impacts, construction and operation of the proposed EDZ in combination with development in the surrounding area would result in significant and unavoidable impacts under cumulative conditions related to air quality and transportation and traffic.

D. Significant and Unavoidable Environmental Impacts

In accordance with CEQA *Guidelines* sections 15064 and 15065, an EIR must identify impacts that would not be eliminated or reduced to an insignificant level by mitigation measures included as part of the proposed project, or by other mitigation measures that would be implemented.

Development facilitated by the EDZ would result in the following significant and unavoidable impacts that cannot be mitigated to a less-than-significant level:

Significant and Unavoidable Air Quality Impacts:

Impact 4.B-2: The EDZ would generate **operational emissions** that would result in a considerable net increase of **criteria pollutants and precursors (NOx and PM10) for which the air basin is in nonattainment under an ambient air quality standard.** Although Mitigation Measure 4.B-3 would reduce total criteria pollutants that would be generated (primarily from mobile vehicular emissions), the reduction is anticipated to be minor relative to overall emissions and would not reduce emissions to less-than-significant levels.

Impact 4.B-3: Operation of uses within the proposed EDZ area would **conflict with or obstruct implementation of the applicable air quality plan.** Because the EDZ would cause operational emissions that would result in a considerable net increase of NOx and PM10, even with implementation of Mitigation Measure 4.B-3, the proposed EDZ would still conflict with or obstruct implementation of BAAQMD's 2010 Clean Air Plan, and this impact would be significant and unavoidable.

Impact 4.B-6: The EDZ would generate operational emissions that would result in **cumulative criteria air pollutant (NOx and PM10) air quality impacts**, when combined with past, present and other reasonably foreseeable development in the vicinity.

Significant and Unavoidable Transportation and Traffic Impacts:

Impact 4.D-1: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Existing plus Project conditions**. Specifically, the addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in vehicle queue spillback.

Impact 4.D-2: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Near-term plus Project conditions.** The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in impacts related to vehicle queue spillback, and an impact at the intersection of Johnson Drive and the park and ride lot.

Impact 4.D-3: Development facilitated by the proposed EDZ would affect **levels of service at the local study intersections** under **Far-term (Cumulative) plus Project conditions.** The addition of vehicle trips generated by Phase I and full buildout of the EDZ would result in impacts related to vehicle queue spillback, and an impact at the intersection of Johnson Drive and the park and ride lot.

Impact 4.D-5: Development facilitated by the proposed EDZ would affect **levels of service for freeway ramps at merge/diverge areas within I-680** under **Existing plus Project conditions.**

Impact 4.D-7: Development facilitated by the proposed EDZ would affect **levels of service for freeway ramps at merge/diverge areas within I-680** under **Far-term (Cumulative) plus Project conditions.**

E. Effects Found Not To Be Significant

As required by CEQA, this SEIR focuses on expected significant environmental effects (CEQA *Guidelines* Section 15143). In accordance with Section 15128 of the CEQA *Guidelines*, an EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the SEIR.

A Notice of Preparation (NOP) was circulated on August 27, 2014 to request comments from the public and agencies about the scope of this SEIR. Written comments received on the NOP were considered in the preparation of the final scope for this document and in the evaluation of the proposed EDZ. An Initial Study was not prepared.

Because this SEIR did not include the preparation of an Initial Study, all environmental topics in the CEQA Environmental Checklist (Appendix G of the CEQA *Guidelines*), except for the two exceptions listed below, have been fully analyzed in this document (Chapter 4).

The following two topics were excluded from detailed discussion in Chapter 4 of this SEIR because it was determined during the SEIR scoping phase that there would be no impacts associated with these topics.

Agricultural and Forestry Resources

The majority of developed land in the City of Pleasanton, including the EDZ area, is designated by the California Department of Conservation's Important Farmland in California Map as urban and built-up land (Department of Conservation, 2010). Property surrounding the EDZ area is also designated as urban and built-up land, or "other land" (not important farmland). Therefore, the proposed EDZ would not directly or indirectly convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; would not conflict with existing zoning for agricultural use, or a Williamson Act contract; and would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use. The proposed EDZ would have no impact on agricultural resources.

Likewise, the EDZ would not cause rezoning of forest land, timberland, or timberland-zoned Timberland Production. Development facilitated by the proposed EDZ would not result in the loss of forest land or convert forest land to non-forest use.

Mineral Resources

The California Geological Survey has classified lands within the San Francisco Bay Region into Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act (SMARA) of 1974.

Much of the City, including the EDZ area, is in the MRZ-1 category with no significant mineral deposits. Therefore, development facilitated by the proposed EDZ would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; and would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. The proposed EDZ would have no impact on mineral resources.

References – Other Statutory Sections

California Department of Conservation, Farmland Mapping and Monitoring Program, 2010. *Alameda County Important Farmland Map, 2010*, ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ala10.pdf. Accessed May 1, 2015.

California Environmental Quality Act (CEQA) Statutes and Guidelines, 2014. Public Resources Code 21000-21177) and California Code of Federal Regulations, Title 14, Division 6, Chapter 3, Section 15000-15387.

CHAPTER 7
EIR Authors, Persons, and Organizations Contacted

A. EIR Authors

Lead Agency

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Geology and Soils:	Eric Schniewind
Greenhouse Gases:	Matt Morales
Hazards:	Eric Schniewind
Hydrology & Water Quality:	Eric Schniewind
Land Use and Planning:	Vanessa Thompson
Noise Section:	Matt Morales
Population and Housing:	Vanessa Thompson
Public Services and Utilities:	Vanessa Thompson
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B. Persons and Organizations Consulted

Lists of other people and organizations consulted are provided in the references at the end of each section.

Appendices

A. NOP and Responses to NOP
B. Uses Permitted or Conditionally Permitted in the Johnson Drive EDZ
C. Johnson Drive EDZ Land Use Study and Fiscal Impact Analysis
D. Draft EDZ Design Guidelines
E. Summary of Impacts and Mitigation Measures from the General Plan EIR and 2012 EIR
F. Air Quality and GHG Analysis Results
G. Johnson Drive EDZ Transportation Impact Analysis (Fehr & Peers, 2015)
H. Trip Generation Estimate Supporting Documentation (Kittelson & Associates, Inc., 2014)

Appendix A

NOP and Responses to NOP

NOTICE OF PREPARATION

TO: Responsible and Trustee Agencies and Other Interested Parties

FROM: City of Pleasanton
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SUBJECT: Notice of Preparation of Draft Supplemental Environmental Impact Report (SEIR) for the Johnson Drive Economic Development Zone (EDZ)

The City of Pleasanton (City) will be the lead agency in the preparation of an SEIR for the proposed EDZ (project). The EDZ area currently contains underutilized light industrial, retail, office, and institutional uses, and the City desires to encourage redevelopment of the EDZ area with a mix of land uses in order to promote the long-term economic sustainability of the EDZ area and to advance the City's land use and economic objectives. The project is the first EDZ proposed by the City and is anticipated to be a model for future zones.

The City has determined that the proposed project may have a significant effect on the environment and is requesting comments on the scope and content of the Draft SEIR. This notice is being sent to Responsible Agencies (agencies that have a role in approving or carrying out a project), Trustee Agencies (agencies with jurisdiction over natural resources), and other interested parties. The project location and description, and list of environmental issues that will be addressed in the Draft SEIR are included in this notice.

The SEIR will be a supplement to the *Proposed Pleasanton General Plan 2005-2025 Environmental Impact Report (EIR)* and the *City of Pleasanton Housing Element and Climate Action Plan General Plan SEIR.* The SEIR for the EDZ will focus on four key environmental issue areas: Aesthetics, Air Quality, Noise, and Transportation. The City, as lead agency, may prepare a supplement to EIR(s) if only minor additions or changes would be necessary to make the previous EIR(s) adequately apply to the project in the changed situation. The SEIR need only present the information necessary to make the previous EIR(s) adequate for the project as revised.

PROJECT LOCATION: The project site consists of 11 parcels located at 7106-7315 Johnson Drive and 7080 Commerce Circle in the City. The site comprises approximately 40 acres and currently contains a mixture of land uses, including light industrial, office, retail, and institutional uses. The site is bounded by a fitness center and parking uses on the north; light industrial, wastewater treatment, and Park and Ride

uses to the east; Stoneridge Drive and the I-680 interchange to the south; and I-680 to the west. Figure 1 shows the location of the site. The site currently contains 573,723 square feet of building space.

PROJECT DESCRIPTION: The proposed project is intended to encourage the development of new land uses in close proximity to the major transportation node around the I-680/I-580 interchange. The proposed project does not include specific building footprints or designs. Instead, it entails the implementation of rules, regulations, and guidelines to allow for future development of the site. With implementation of the project, the site could potentially be developed or redeveloped to include up to 681,624 square feet of small-and large-format retail establishments, club retail, hotel, office, and other uses, depending on the ultimate build-out of potential uses approved within the project (a net increase of up to 107,901 square feet compared to existing conditions). Existing uses on the site would be permitted to operate until redevelopment activities occur on those specific sites. In addition, development on the site pursuant to the proposed project would require changes to transportation and utility infrastructure in the area.

The following approvals would be required to implement the proposed project:

- *General Plan Amendment*. The General Plan designation of the site would be amended from Business Park to Retail, Highway, and Service Commercial, Business and Professional Offices.

- *Rezoning*. The site would be rezoned from General Industrial (I-G-40), Planned Unit Development-General and Light Industrial (PUD-G&LI), and Planned Unit Development-Industrial/Commercial-Office (PUD-I/C-O) to Planned Unit Development-Commercial (PUD-C).

- *Planned Unit Development*. A Planned Unit Development would be processed approving both permitted and conditionally permitted uses and the project area development standards.

- *Development Agreement*. If requested by a property owner with the project area, a Development Agreement would be executed between the City and property owners.

PROBABLE ENVIRONMENTAL EFECTS OF THE PROJECT: Aesthetics, Air Quality, Noise, and Transportation will be fully analyzed in the SEIR, with the remainder of the environmental topics to be discussed in lesser detail, relying largely on information in the *Proposed Pleasanton General Plan 2005-2025 EIR* and the *City of Pleasanton Housing Element and Climate Action Plan General Plan SEIR*. Mitigation measures from the prior EIRs will be reviewed for applicability to the proposed project. However, new mitigation measures will be identified as warranted.

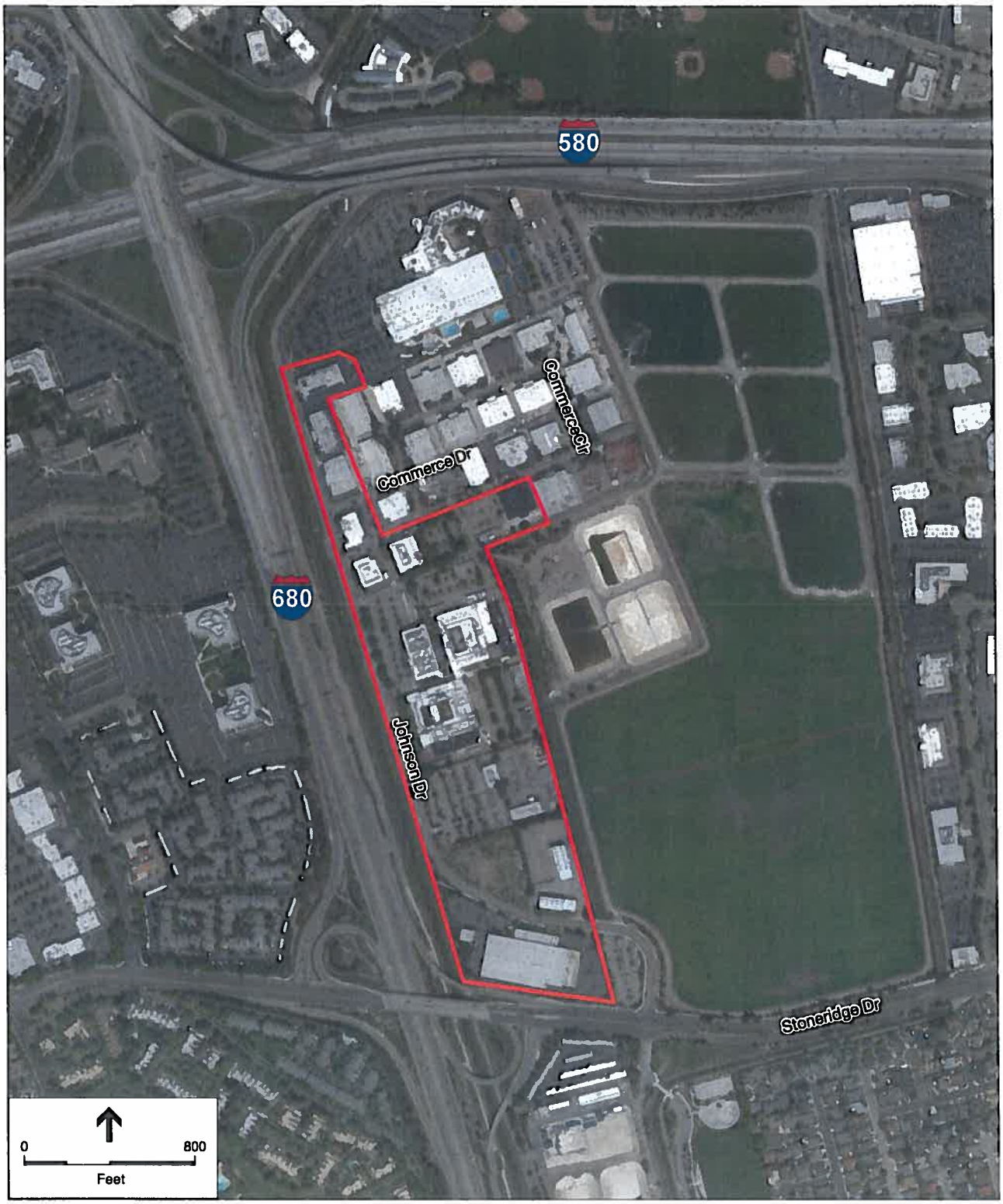
COMMENT PERIOD: Due to the time limits mandated by State law, your comments on the scope of the SEIR must be received no later than 5:00 p.m. on September 25, 2014. Please send all comments to Eric Luchini, Associate Planner, at the mailing or email address indicated at the top of this letter. Please specify "Johnson Drive Economic Development Zone SEIR" in the subject line.

August 25, 2014

Brian Dolan, Director,
Community Development Department

Attachments:

Figure 1: Project Location Map



140421

SOURCE: Google Maps

Johnson Drive Economic Development Zone
Project Location Map

DEPARTMENT OF TRANSPORTATION
DISTRICT 4
P.O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-6053
FAX (510) 286-5559
TTY 711
www.dot.ca.gov

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PLANNING DIVISION

Serious Drought.
Help save water!

September 18, 2014

ALAGEN260
SCH#2014082081

Mr. Eric Luchini
City of Pleasanton
Community Development Department
200 Old Bernal Avenue
Pleasanton, CA 94566-0802

Dear Mr. Luchini:

Johnson Drive Economic Development Zone – Notice of Preparation of Draft Supplemental Environmental Impact Report

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above project. The following comments are based on the Notice of Preparation (NOP). As the lead agency, the City of Pleasanton is responsible for all project mitigation, including any needed improvements to State highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. This information should also be presented in the Mitigation Monitoring and Reporting Plan of the environmental document.

Traffic Impact Study
During construction or starting "opening day," this project may generate traffic at volumes sufficient to impact the operations of nearby State highway facilities, and it may be necessary to prepare a Traffic Impact Study (TIS). If it is found that a TIS is not required, please provide a verifiable explanation for this finding. The following criteria are among those that may be used to determine whether a TIS is warranted:

1. The project will generate over 100 peak hour trips assigned to a State highway facility.

2. The project will generate between 50 and 100 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing noticeable delay; approaching unstable traffic flow (level of service (LOS) "C" or "D") conditions.

3. The project will generate between one to 49 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing significant delay; unstable or forced traffic flow (LOS "E" or "F") conditions.

We recommend using the Caltrans *Guide for the Preparation of Traffic Impact Studies* for determining which scenarios and methodologies to use in the analysis. It is available at the following website address: http://dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf.

Encroachment Permit

Please be advised that any work or traffic control that encroaches onto the State Right of Way (ROW) requires an encroachment permit that is issued by Caltrans. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address below. David Salladay, District Office Chief, Office of Permits, California Department of Transportation, District 4, P.O. Box 23660, Oakland, CA 94623-0660. Traffic-related mitigation measures should be incorporated into the construction plans prior to the encroachment permit process. See the following website for more information: http://www.dot.ca.gov/hq/traffops/developserv/permits.

Should you have any questions regarding this letter, please contact Luis Melendez of my staff at (510) 286-5606 or luis_melendez@dot.ca.gov .

Sincerely,

ERIK ALM, AICP
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

Edmond G. Brown, Jr., *Governor*

September 2, 2014

RECEIVED
SEP 03 2014
CITY OF PLEASANTON
PLANNING DIVISION

Eric Luchini
City of Pleasanton
P. O. Box 520
Pleasanton, CA 94566-0802

RE: SCH# 2014082081 Johnson Drive Economic Development Zone, Alameda County.

Dear Mr. Luchini:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5-minute quadrangle name, township, range, and section required**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) Guidelines §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered cultural items that are not burial associated, which are addressed in Public Resources Code (PRC) §5097.98, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, PRC §5097.98, and CEQA Guidelines §15064.5(e), address the process to be followed in the event of an accidental discovery of any human remains and associated grave goods in a location other than a dedicated cemetery.

Sincerely,

Gayle Totton
Associate Government Program Analyst

CC: State Clearinghouse

Native American Contacts
Alameda County, California
August 28, 2014

Jakki Kehl
720 North 2nd Street
Patterson , CA 95363
(209) 892-1060

Ohlone/Costanoan

Amah MutsunTribal Band of Mission San Juan
Irene Zwierlein, Chairperson
789 Canada Road
Woodside , CA 94062
amahmutsuntribal@gmail.
(650) 400-4806 Cell
(650) 332-1526 Fax

Ohlone/Costanoan

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
240 E. 1st Street
Pomona , CA 91766
rumsen@aol.com
(909) 524-8041 Cell
(909) 629-6081

Ohlone/Costanoan

Don Hankins
P.O. Box 627
Forest Ranch, CA 959421
(530) 343-3489 Voice/fax
(530) 592-7469

Miwok

Katherine Erolinda Perez
P.O. Box 717
Linden , CA 95236
canutes@verizon.net
(209) 887-3415

Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
P.O. Box 360791
Milpitas , CA 95036
muwekma@muwekma.org
(408) 205-9714
(510) 581-5194

Ohlone / Costanoan

Trina Marine Ruano Family
Ramona Garibay, Representative
30940 Watkins Street
Union City , CA 94587
soaprootmo@comcast.net
(510) 972-0645

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152
Fremont , CA 94539
chochenyo@AOL.com
(510) 882-0527 Cell
(510) 687-9393 Fax

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list s only applicable for contacting locative Americans with regard to cultural resources for the proposed Johnson Drive Economic Development Zone Project; located in the city of Pleasanton, county of Alameda, California.

Native American Contacts
Alameda County, California
August 28, 2014

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 Ohlone/Costanoan
Hollister , CA 95024
ams@indiancanyon.org
(831) 637-4238

Linda G. Yamane
1585 Mira Mar Ave Ohlone/Costanaon
Seaside , CA 93955
rumsien123@yahoo.com
(831) 394-5915

Amah MutsunTribal Band of Mission San Juan Bautista
Michelle Zimmer
789 Canada Road Ohlone/Costanoan
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 851-7747 Home
(650) 332-1526 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list s only applicable for contacting locative Americans with regard to cultural resources for the proposed Johnson Drive Economic Development Zone Project; located in the city of Pleasanton, county of Alameda, California.

Appendix B

Uses Permitted or Conditionally Permitted in the Johnson Drive EDZ

Uses Permitted or Conditionally Permitted in the Johnson Drive EDZ

Uses	Allowed Uses
Accessory uses and structures located on the same site as a permitted use and the following accessory structures and uses located on the same site with a permitted use or with a conditional use which has been granted a use permit in accord with the provisions of Chapter 18.124:	
Appliance sales and repair, provided repair services shall be incidental to retail sales	P
Art galleries and artists' supplies stores	P
Assisted Living Facilities	C
Bars and brew pubs, as defined in PMC Chapter 18.08	C
Bicycle shops	P
Bookstores and rental libraries	P
Candy stores	P
Churches and similar religious and meeting facilities in existing structures	C
Clothing and costume rental establishment	P
Clothing, shoe, and accessory stores	P
Commercial radio and television aerials, antennas, and transmission towers with design review approval specified under PMC Chapter 18.20, having a minimum distance of 200 feet from the property lines of all of the following:	C
Existing or approved residences or agricultural zoning districts or in planned unit developments with a residential or agricultural zoning designation;	
Existing or approved uses established prior to the adoption of this Planned Unit Development	
Undeveloped residential or agricultural zoning districts or undeveloped planned unit developments with a residential or agricultural zoning designation and without an approved development plan, unless designated as a public and institutional land use in the general plan;	
Existing or approved public schools, private schools, and childcare centers, not including schools which only provide tutorial services;	
Neighborhood parks, community parks, or regional parks, as designated in the general plan; and	
Existing or approved senior care/assisted living facilities, including nursing homes.	
All commercial radio and television aerials, antennas, and transmissions towers shall be located so as to minimize their visibility and, unless determined by the zoning administrator to be significantly hidden from view, designed to ensure that they will not appear as an aerial, antenna, and/or transmission tower. All such facilities determined by the zoning administrator to be visible from residential land uses, the I-580 and/or I-680 rights-of-way, or other sensitive land uses such as	

Uses	Allowed Uses
parks, schools, or major streets, shall incorporate appropriate stealth techniques to camouflage, disguise, and/or blend them into the surrounding environment, and shall be in scale and architecturally integrated with their surroundings in such as manner as to be visually unobtrusive. All applications for commercial radio and/or television aerials, antennas, and transmission towers shall include engineering analyses completed to the satisfaction of the zoning administrator. Said analyses shall be peer-reviewed by an outside consultant.	
If mounted on structures or on architectural details of a building, these facilities shall be treated to match the existing architectural features and colors found on the building's architecture through design, color, texture, or other measures deemed to be necessary by the zoning administrator.	
Roof-mounted aerials and antennas shall be located in an area of the roof where the visual impact in minimized. Roof-mounted and ground-mounted aerials, antennas, and transmission towers shall not be allowed in the direct sightline(s) or sensitive view corridors, or where they would adversely affect scenic vistas, unless the facilities incorporate the appropriate, creative techniques to camouflage, disguise, and/or blend them into the surrounding environment, as determined to be necessary by the zoning administrator.	
All commercial radio and television aerials, antennas, and transmission towers shall conform to the applicable requirements of Cal-OSHA and/or the FCC before commencement of and during operation. Evidence of conformance shall be provided to the zoning administrator before final inspection of the facility by the chief building official.	
If the zoning administrator finds that an approved aerial, antenna, or transmission tower is not in compliance with this title, that conditions have not been fulfilled, or that there is a compelling public safety and welfare necessity, the zoning administrator shall notify the owner/operator of the aerial/antenna/transmission tower in writing of the concern, and state the actions necessary to cure. After 30 days from the date of notification, if compliance with this title is not achieved, the conditions of approval have not been fulfilled, or there is still compelling public safety and welfare necessity, the zoning administrator shall refer the use to the planning commission for review. Such reviews shall occur at a noticed public hearing where the owner/operator of the aerial/antenna/transmission tower may present relevant evidence. If, upon such review, the planning commission finds that any of the above have occurred, the planning commission may modify or revoke all	

Uses	Allowed Uses
approvals and/or permits	
Copying and related duplicating services and printing/publishing services using only computers, copy machines, etc., not including lithographing, engraving, or such similar reproduction services	P
Delicatessen stores	P
Department stores	P
Department store tire, battery and accessory shops	P
Drugstores and prescription pharmacies	P
Dry goods stores	P
Financial Services (in-line only, no freestanding)	C
Financial Services (ancillary to approved uses such as ATM's)	P
Florists	P
Food market including supermarkets, convenience markets, and specialty stores	P
Garden centers, including plant nurseries	P
General office uses (including computer centers)	P
Gift shops	P
Gymnasiums and health clubs with less than 50,000 square feet.	C
Hardware stores	P
Hobby shops	P
Hotels and motels	C
Ice cream sales	P
Incidental services for employees on a site occupied by a permitted use	P
Interior decorating shops	P
Jewelry stores	P
Laboratories, commercial, testing, research, experimental or other, including pilot plants	C
Laundries and dry cleaners where service is provided	C
Leather goods and luggage stores	P
Massage establishments where four or more massage technicians provide massage services at any one time. Massage establishments within gymnasiums and health clubs shall meet the requirements of Chapter 6.24	C
Massage establishments where three or fewer massage technicians provide massage services at any one time. Massage establishments within gymnasiums and health clubs shall meet the requirements of Chapter 6.24	P
Meeting halls	C
Membership warehouse club including gas, tire, and carwash service	P
Microbreweries (as a form of restaurant)	P
Music stores	P
Newsstands	P
Office buildings	P
Offices, including, but not limited to medical, business, professional,	P

Uses	Allowed Uses
and administrative offices	
Paint, glass and wallpaper shops	P
Pet and bird stores	P
Photographic studios	P
Photographic supply stores	P
Picture framing shops	P
Plant shops	P
Recreation and sport facilities, indoor, which cannot meet the recreation and sport facility criteria as written in the use category below	C
Recreation and sport facilities, indoor, with more than 20 users in the facility at any one time, and with no massage services or with massage services of three or fewer massage technicians at any one time. Massage establishments within recreation and sports facilities shall meet the requirements of Chapter 6.24	P
Restaurants and soda fountains not including drive-thrus or drive-ins, except drive-thru coffee uses	P
Schools and colleges, including trade, business, music and art schools, but not including general purpose or nursery schools	C
Shoe stores	P
Specialty stores selling those items normally sold in department stores	P
Sporting goods stores, no firearm sales	P
Sporting goods stores with firearm sales	C
Theaters and auditoriums	P
Toy stores	P
Tutoring with no more than 20 students at the facility at any one time are permitted uses subject to the following conditions:	P
1. The facility shall adhere to all occupancy, ADA, California Building Code, and exiting requirements	
2. The zoning administrator finds that adequate parking is available for the said use	
The standard city noise ordinance applies	
Watch and clock repair shops	P

P = Permitted uses within the Johnson Drive EDZ
C = Conditionally permitted uses within the Johnson Drive EDZ

Appendix C

Johnson Drive EDZ Land Use Study and Fiscal Impact Analysis

BRION & ASSOCIATES

MEMORANDUM

To: [redacted]

From: Joanne Brion, Brion & Associates

Subject: Draft Summary – Johnson Drive EDZ Fiscal Impact Analysis, City of Pleasanton; B&A #2502

Date: February 5, 2015

[redacted] has retained Brion & Associates to evaluate a potential project in Pleasanton, California, near the intersection of I-580 and I-680, along Johnson Drive. The City is considering designating this area, which totals about 40 acres, as an Economic Development Zone (EDZ). The parcels in question are undeveloped or underdeveloped and not generating their full economic potential for either the City or the private sector. [redacted] owns approximately half of the area (20.9 acres) and is interested in having a Fiscal Impact Analysis (FIA) prepared for the following site project scenarios:

1) Existing Development – No Change
2) All new development – New Club Retail, Hotel, & Retail
2a) Partial buildout – New Club Retail, Retail and Hotel with Existing Development
3) All new development - HQ Office with Hotel and All New Retail
4) [redacted] parcels only – New Club Retail, Retail and Hotel
5) Existing Zoning – All Office

The City is undertaking an Environmental Assessment of the proposed rezoning and General Plan Amendment for the area as part of a new Specific Plan. The City may choose to consider utilizing Governor Brown's newly adopted legislation for Enhanced Infrastructure Financing Districts (EIFDs) (SB 628). The legislation, approved in September 2014, includes authorization for cities and counties to create EIFDs to utilize incremental property-tax revenue and other revenue sources to support infrastructure costs related to a defined geographical area.

2641 Barndance Lane • Santa Rosa, CA 95407 • tel 707.494.6648 • joanne@brionassociates.com

This FIA was prepared using a spreadsheet model that was recently prepared by Brion & Associates for the Workday project in Pleasanton that was reviewed by the City's Finance Department. We also shared the model results with the City's Finance Department Staff, received comments, and updated the data, which has been incorporated into the analysis. The analysis is presented at full Buildout of each scenario on a static basis. All results are presented in constant 2015 dollars. ABAG demographic data from "Projections 2013" have been used as baseline information for the City. **Appendix A** presents the full set of model tables and results. The following represents the major findings and results from the FIA.

Conclusions

- **Existing Development** on the 40-acre site along Johnson Drive provides little net fiscal benefit to the city currently, due to age of the buildings and the nature of the development, i.e., that is mostly commercial services, institutional and utility uses, and vacant space.

- **Existing Zoning** with all office uses would not generate a significant increase in net new revenues to the City, primarily because such uses do not generate sales tax revenues.

- The **New Club Retail** use envisioned would generate significant net new revenues for the City, upwards of about $1 million per year. The other retail estimated in other scenarios would require more market research to establish whether there is viable demand for this amount of new general retail on the site.

- A **New Limited-Service Hotel** with about 150 rooms would generate significant revenue for the City. It is assumed that there is sufficient demand for this hotel in this market from business and resident demand segments.

- Many of the existing uses on the site are unlikely to move for a variety of reasons, including lack of alternatives and affordable sites in the area. These include AT&T, Fed-Ex, a limo and transport business, and the church use. Thus, Scenarios 2a and/or 4, which includes the currently undeveloped or recently demolished parcels only, is the most likely and viable in the short term of all the scenarios analyzed.

Summary of Findings

1. ***Existing Development (Scenario 1) consists of approximately 573,700 sqft of development on 40 acres, and there are 369 employees at the site. Existing Development has a net fiscal benefit of $84,800 annually to the City of Pleasanton and generates $481,500 in annual property tax revenue benefitting the City and County.***

Table S-1 is a summary description of the six different development scenarios, showing the breakdown of Existing Development and alternate scenarios. Existing Development totals approximately 573,700 sqft of development including retail, commercial service, office, industrial, and institutional/religious uses. The estimate of current employment was provided by the City's Finance Department. As shown in **Table S-2**, Existing Development currently generates $184,300 in General Fund revenues and costs the City of Pleasanton approximately $99,500, with an annual net fiscal balance of $84,800. Property tax revenues total $481,500, of which $102,800 goes to the City of Pleasanton, $78,400 goes to Alameda County, and the remainder goes to local school districts, county agencies, and other funds. Existing Development would not generate any new impact fees for the City.

2. ***Scenario 2 is a complete redevelopment of the 40-acre site and includes new Club Retail, new general retail, a new hotel, and one existing industrial building uses. Scenario 2 will have approximately 876 employees across all uses and has an annual net fiscal balance of $2.6 million. Scenario 2 will also generate $2.0 million annually in property taxes and $3.0 million in impact fees.***

As shown in **Table S-1**, Scenario 2 consists of a redevelopment of the current 40-acre site. The new development includes a new Club Retail, hotel, new retail, and one existing industrial uses, totaling almost 510,000 sqft. There will be 876 employees associated with the new development. The new development will generate $2.9 million in annual General Fund revenues and cost the City $236,300 for a net fiscal benefit of $2.6 million, a 3,000% increase over Existing Development. Scenario 2 will generate over $2.0 million in property taxes annually, with $430,800 going to the City. Scenario 2 will also generate $3.0 million in impact fees for the City (see **Tables S-2** and **S-3**).

3. ***A variation of Scenario 2, Scenario 2a includes a combination of existing uses and redevelopment of the three parcels currently vacant or finalizing demolition of former industrial and office buildings. Under Scenario 2a, there would be 642 employees at the site and a total of over 484,100 sqft of development. This Scenario would have a net fiscal benefit to the City of almost $1.8 million, generate $1.2 million in property taxes, and $626,200 in one-time impact fees to the City.***

Scenario 2a assumes that several of the current parcels and uses remain as is under Existing Development, including the current 38,900 sqft of retail. This scenario includes the addition of a Club Retail store, an additional 23,500 sqft of general retail, and a new hotel. It also shows a decrease in overall industrial space of about 349,000 sqft as compared to Existing Development. Scenario 2a would consist of 642 employees overall and almost 484,200 sqft of total development (see **Table S-1**). The net fiscal benefit to the City would be $1.8 million, with the project generating $1.9 million in General Fund revenues and costing the City $173,200.

Property tax revenues would total $1.2 million (see **Table S-2**). One-time impact fees for Scenario 2a total approximately $626,200, based on the parcels being redeveloped (see **Table S-3**). No impact fees will be assessed for parcels that are not redeveloped.

4. ***Scenario 3 is a total redevelopment of the site with office headquarters, retail, and hotel uses. There would be 1,845 employees associated with this Scenario. This scenario has an annual net fiscal benefit to the City of almost $1.8 million.***

Scenario 3 is an alternative that excludes big-box retail and includes only office space in the form of company headquarters; retail, and hotel uses. Approximately 339,800 sqft of office development, 88,000 sqft of hotel uses, and 273,300 sqft of retail make up Scenario 3 and it is expected to have 1,845 employees overall (see **Table S-1**). This scenario would generate $2.3 million in General Fund revenues annually and cost the City approximately $497,600, for a net fiscal benefit of $1.8 million. Scenario 3 would generate $3.2 million in annual property taxes of which $690,100 goes to the City (see **Table S-2**). It would also generate $4.4 million in one-time impact fees to the City (see **Table S-3**).

5. ***Scenario 4 analyzes the redevelopment of only three parcels which total 20.9 acres. This scenario includes Club Retail, 23,500 sqft of retail, and 88,000 sqft of hotel development. Based on this scenario, employment for these parcels totals 273. The net fiscal benefit to the City is $1.7 million. Property tax revenues total $925,500 and one-time impact fees are estimated at $626,200.***

Scenario 4 analyzes parcels 6, 9, and 10 and totals 259,500 sqft of development. This scenario includes Club Retail, some retail, and a hotel. Other adjacent parcels are not considered in this analysis at all (see **Table S-1**). This scenario would generate $1.8 million in revenues to the City's General Fund and cost the City $73,600 annually, for a net annual fiscal benefit of $1.7 million. Property tax revenues from these parcels are estimated at $925,500 annually with $197,600 going to the City of Pleasanton (see **Table S-2**). The one-time impact fees that would be generated total $626,200 (see **Table S-3**).

6. ***Scenario 5 is based on Existing Zoning for the site and is developed as only office uses, with no retail or hotel. Office space would total almost 711,500 sqft across all parcels and have an estimated 2,372 employees. The annual net fiscal benefit of this alternative is $338,500 and property tax revenues are estimated at $3.5 million annually. One-time impact fees to the City are estimated at $5.2 million.***

Scenario 5 assumes all parcels being redeveloped as office uses, with 711,500 sqft of office space (see **Table S-1**). This scenario would generate annual General Fund revenues to the City of $978,100 and cost the City $639,600 for a net fiscal benefit of$338,500, significantly less

than any other scenario except for Existing Development, due to no generation of sales tax. The annual property tax revenue is high, at $3.5 million annually and $744,900 of that going to the City of Pleasanton (see **Table S-2**). One-time impact fee revenues for Scenario 5 are estimated at $5.2 million (see **Table S-3**).

7. ***Annual property tax revenues are highest for Scenarios 5 and 3, based on the higher assessed value of office space. However, Scenario 5 does not generate any sales tax so its net fiscal benefit to the City is the lowest. Alternatively, Scenario 4 shows the lowest property tax revenues but it only analyzes three parcels so it cannot be compared to the other scenarios which include other parcels (see Table S-2).***

Property taxes are calculated at 1.0% of assessed value of each parcel, plus any additional parcel taxes. For the parcels on this site, the total property tax is calculated at 1.154% based on these additional parcel taxes. The 1.0% property tax is split between Alameda County, the City of Pleasanton, Pleasanton Unified School District, Other Schools, Other Departments and Agencies, and Supplemental Property Taxes. The County gets the largest amount of the property tax breakdown, at 36.2% followed by the City of Pleasanton at 29.7% (see Table A-1). Based on the higher assessed value after redevelopment, Scenarios 5 and 3 generate the highest annual property tax revenues, followed by Scenarios 2, 2a, 4, and 1 (Existing Development).

8. ***One-time impact fees are calculated in Table S-3. As shown, Scenario 5, which is all office development, generates the highest one-time impact fees for the City at $5.2 million. Scenarios 2a and 4 both generate $626,200 in one-time impact fees because only a few of the parcels are redeveloped and subject to impact fees.***

One-time impact fees include the Public Facilities Fee, Lower Income Housing Fee, Traffic Impact Fees, GIS Mapping Fee, Storm Drainage Fee, and School Impact Fee. Only parcels which are redeveloped are subject to impact fees. Therefore, no impact fees are estimated for Existing Development. Scenarios 2, 3, and 5 have the highest impact fees because they are assuming that all parcels are redeveloped. Alternatively, Scenarios 2a and 4 include redevelopment of a few parcels and only those parcels are subject to fees, so the one-time impact fees are lower than the other alternatives.

Table S-1
Summary of Project Description by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Land Use	Unit of Measure	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
Employees	jobs	369	876	642	1,845	273	2,372
Daytime Population (1)		185	438	321	923	137	1,186
Site Size	acres	40.0	40.0	40.0	40.0	20.9	40.0
Existing Retail	sqft	38,903	-	38,903	-	-	-
New General Retail	sqft	-	246,440	23,500	273,290	23,500	-
Club Retail	sqft	-	148,000	148,000	-	148,000	-
Commercial Service	sqft	123,165	-	123,165	-	-	-
Office	sqft	15,070	-	15,070	339,768	-	711,465
Industrial	sqft	376,585	27,550	27,550	-	-	-
Hotel	sqft	-	88,000	88,000	88,000	88,000	-
Institutional/Religious	sqft	20,000	-	20,000	-	-	-
Total gross new building space	sqft	**573,723**	**509,990**	**484,188**	**701,058**	**259,500**	**711,465**

(1) Includes 100% of population and 50% of employment.
Sources: [redacted] Brion & Associates.

Table S-2
Summary of Annual General Fund Fiscal Benefits and Property Tax by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Revenue and Benefit Category	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
			(rounded to nearest $100)			
Annual General Fund Balance						
Total General Fund Revenues	$184,300	$2,864,400	$1,938,000	$2,271,800	$1,786,500	$978,100
Total General Fund Expenditures	$99,500	$236,300	$173,200	$497,600	$73,600	$639,600
Net Fiscal Balance	**$84,800**	**$2,628,100**	**$1,764,800**	**$1,774,200**	**$1,712,900**	**$338,500**
Net Revenues as % of Total	**46%**	**92%**	**91%**	**78%**	**96%**	**35%**
% Over Existing Development		**3099%**	**2081%**	**2092%**	**2020%**	**399%**
Property Tax Revenues						
General County Tax	$78,400	$328,500	$199,900	$526,200	$150,600	$568,000
City of Pleasanton	$102,800	$430,800	$262,200	$690,100	$197,600	$744,900
Pleasanton Unified School District	$99,700	$418,000	$254,300	$669,500	$191,700	$722,700
Other Schools	$10,900	$45,800	$27,900	$73,400	$21,000	$79,200
Other County Depts./Agencies	$5,200	$21,800	$13,300	$34,900	$10,000	$37,700
All Other Districts	$25,800	$108,100	$65,800	$173,100	$49,600	$186,900
ERAF	$94,400	$395,800	$240,900	$634,000	$181,500	$684,300
Supplemental Property Taxes	$64,300	$269,300	$163,900	$431,400	$123,500	$465,700
Total Property Tax Revenue	**$481,500**	**$2,018,100**	**$1,228,200**	**$3,232,600**	**$925,500**	**$3,489,400**

Sources: City of Pleasanton; Brion & Associates.

Table S-3
Summary of Net New City Impact Fees
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Impact Fee	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
			(rounded to nearest $100)		
Impact Fees					
Public Facilities Fee	$79,600	$45,300	$145,100	$45,300	$241,000
Lower Income Housing Fe	$435,500	$262,600	$466,300	$262,600	$437,700
Traffic Impact Fees	$1,933,900	$194,100	$3,214,300	$194,100	$3,132,200
GIS Mapping Fee	$3,500	$1,800	$3,500	$1,800	$3,500
Storm Drainage	$503,900	$79,400	$503,900	$79,400	$1,306,100
School Impact Fee	$71,300	$43,000	$76,400	$43,000	$71,700
Total Impact Fees	**$3,027,700**	**$626,200**	**$4,409,500**	**$626,200**	**$5,192,200**

Note: for GIS and Storm Drainage Fees, amounts represent full amount due; credits may be available as well for these two fees.
Excludes water and sewer connections fees, which need to be estimated by City and or special districts serving the site.
Sources: [redacted] City of Pleasanton; Pleasanton Unified School District; Brion & Associates.

APPENDIX A
FISCAL MODEL TABLES

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Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

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Source: Brion & Associates.

Table 1
Project Description by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Item	Assumptions Rate	Assumptions Unit	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
Total Site Acreage			40.0	40.0	40.0	40.0	20.9	40.0
Impervious surface (acres)	75%		30.0	30.0	30.0	30.0	15.7	30.0
Gross New Square footage								
Existing Retail		sq ft	38,903	-	38,903	-	-	-
New General Retail		sq ft	-	246,440	23,500	273,290	23,500	-
Club Retail		sq ft	-	148,000	148,000	-	148,000	-
Commercial Service		sq ft	123,165	-	123,165	-	-	-
Office		sq ft	15,070	-	15,070	339,768	-	711,465
Industrial		sq ft	376,585	27,550	27,550	-	-	-
Hotel		sq ft	-	88,000	88,000	88,000	88,000	-
Institutional/Religious		sq ft	20,000	-	20,000	-	-	-
Total gross new building space		sq ft	**573,723**	**509,990**	**484,188**	**701,058**	**259,500**	**711,465**
Employment Factors and Estimates	(1)							
Existing Retail	400	sqft/job	26	-	26	-	-	-
New General Retail	400	sqft/job	-	616	59	683	59	-
Club Retail	800	sqft/job	-	185	185	-	185	-
Commercial Service	500	sqft/job	320	-	320	-	-	-
Office	300	sqft/job	-	-	-	1,133	-	2,372
Industrial	600	sqft/job	-	46	-	-	-	-
Hotel	3,000	sqft/job	-	29	29	29	29	-
Institutional/Religious	1,500	sqft/job	23	-	23	-	-	-
Total employees			**369**	**876**	**642**	**1,845**	**273**	**2,372**
Daytime service population								
100% of residents + 50% of employe	(2)	50%	**185**	**438**	**321**	**923**	**137**	**1,186**

(1) For existing employment, the City provided estimates of existing employment.
(2) This is a measure used in fiscal impact models to establish a single measurement unit for service demand for residents and employees. Employees generate demand for services at roughly 50% the rate that residents do.
Sources: [redacted] Brion & Associates.

Table 1a
New Development Scenarios by Parcel and Land Use
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Scenario 2: Club Retail (Costco), Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Model Land Use	Building Sqft	FAR
1	1.47	64,033	Church/Institutional	Retail	19,210	30%
2	0.93	40,511	Patio world/Retail	Retail	12,153	30%
3	0.92	40,075	Commercial/Retail	Retail	12,023	30%
4	0.94	40,946	Black Tie Limo	Retail	12,284	30%
5	0.94	40,946	Office	Retail	17,903	44%
6	15.6	679,536	Vacant Industrial	Club Retail	148,000	22%
6b	0.93	40,511	Office	Industrial	27,550	68%
7	1.95	84,942	AT&T Parking Lot	Retail	25,483	30%
8	3.6	156,816	AT&T Facility	Retail	47,045	30%
9	2.43	105,851	Vacant	Hotel	88,000	83%
10	2.84	123,710	Industrial	Retail	23,500	19%
11	5.88	256,133	FedEx Distribution	Retail	76,840	30%
TOTAL	**38.43**	**1,674,011**			**509,990**	

Scenario 2a: Club Retail (Costco), Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Model Land Use	Building Sqft	FAR
1	1.47	64,033	Church/Institutional	No Change	20,000	30%
2	0.93	40,511	Patio world/Retail	No Change	18,995	30%
3	0.92	40,075	Commercial/Retail	No Change	19,908	30%
4	0.94	40,946	Black Tie Limo (Serv. Comm.)	No Change	14,460	30%
5	0.94	40,946	Office	No Change	15,070	44%
6	15.6	747,054	Vacant Industrial	Club Retail	148,000	20%
6b	0.93	40,511	Office	Industrial	27,550	66%
7	1.95	84,942	AT&T Parking Lot	No Change	-	30%
8	3.6	156,816	AT&T Facility	No Change	15,132	30%
9	2.43	105,851	Vacant	Hotel	88,000	83%
10	2.84	123,710	Industrial	Retail	23,500	30%
11	5.88	256,133	FedEx Distribution	No Change	93,573	30%
TOTAL	**39.98**	**1,741,529**			**484,188**	

Scenario 3: 50% FAR HQ Office, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Model Land Use	Building Sqft	FAR
1	1.47	64,033	Church/Institutional	Retail	19,210	30%
2	0.93	40,511	Patio world/Retail	Retail	12,153	30%
3	0.92	40,075	Commercial/Retail	Retail	12,023	30%
4	0.94	40,946	Black Tie Limo	Retail	12,284	30%
5	0.94	40,946	Office	Retail	17,903	44%
6	15.6	679,536	Vacant Industrial	Office	339,768	50%
6b	0.93	40,511	Office	Retail	26,850	66%
7	1.95	84,942	AT&T Parking Lot	Retail	25,483	30%
8	3.6	156,816	AT&T Facility	Retail	47,045	30%
9	2.43	105,851	Vacant	Hotel	88,000	83%
10	2.84	123,710	Industrial	Retail	23,500	19%
11	5.88	256,133	FedEx Distribution	Retail	76,840	30%
TOTAL	**38.43**	**1,674,011**			**701,058**	

Scenario 4 [redacted] Project

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Model Land Use	Building Sqft	FAR
6	15.6	679,536	Vacant Industrial	Club Retail	148,000	22%
9	2.43	105,851	Vacant	Hotel	88,000	83%
10	2.84	123,710	Industrial	Retail	23,500	19%
TOTAL	**20.87**	**909,097**			**259,500**	

Scenario 5: Existing Zoning Redevelopment (allows Office - assume 35% FAR except Main Campus 50% FAR)

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Model Land Use	Building Sqft	FAR
1	1.47	64,033	Church/Institutional	Office	22,412	35%
2	0.93	40,511	Patio world/Retail	Office	14,179	35%
3	0.92	40,075	Commercial/Retail	Office	14,026	35%
4	0.94	40,946	Black Tie Limo	Office	14,331	35%
5	0.94	40,946	Office	Office	20,887	51%
6	15.6	679,536	Vacant Industrial	Office	339,768	50%
6b	0.93	40,511	Office	Office	31,254	77%
7	1.95	84,942	AT&T Parking Lot	Office	29,730	35%
8	3.6	156,816	AT&T Facility	Office	54,886	35%
9	2.43	105,851	Vacant	Office	37,048	35%
10	2.84	123,710	Industrial	Office	43,299	35%
11	5.88	256,133	FedEx Distribution	Office	89,646	35%
TOTAL	**38.43**	**1,674,011**			**711,465**	

Sources: [redacted] Brion & Associates.

Table 2
Pleasanton Demographics in 2015
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Demographic	Notes	Rate	2015 Estimate
Population	(1)		73,500
Households	(1)		26,400
Persons per Household	derived		2.78
Employment	(1)		58,520
Daytime Service Population	(1)	50%	102,760

(1) Population, household and employment data projected based on ABAG Projections 2013 for the City of Pleasanton.
(2) Includes 100% of population and 50% of employment. This is a measure used in fiscal impact models to establish a single measurement unit for service demand for residents and employees. Employees generate demand for services at roughly 1/2 the rate that residents do.

Sources: ABAG; Brion & Associates.

Table 3
Existing and Estimated New Assessed Values by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Item	Average Market Value	Unit	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
Existing Assessed Value (1)	see Table A-4		$41,728,787		$26,220,163			
New Assessed Value								
New General Retail	$400	per sqf	$0	$98,576,032	$9,400,000	$109,315,994	$9,400,000	$0
Club Retail	$300	per sqf	$0	$44,400,000	$44,400,000	$0	$44,400,000	$0
Office	$425	per sqf	$0	$0		$144,401,400	$0	$302,372,829
Industrial	$200	per sqf	$0	$5,510,000		$0	$0	$0
Hotel	$300	per sqf	$0	$26,400,000	$26,400,000	$26,400,000	$26,400,000	$0
New Development Assessed Value			$0	$174,886,032	$80,200,000	$280,117,394	$80,200,000	$302,372,829
Total Assessed Value			**$41,728,787**	**$174,886,032**	**$106,420,163**	**$280,117,394**	**$80,200,000**	**$302,372,829**

Sources: [redacted] Brion & Associates.

Table 4
Annual General Fund Revenues by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Revenue Item	FY 2014/15 Adopted Budget (1)	Forecast Method/ Reference		Per Daytime Pop. Factor	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
Property Taxes	$50,463,540	see Table A-1			$102,802	$430,845	$262,174	$690,090	$197,579	$744,918
VLF - Property Tax Swap (2)		see Table A-2			$11,665	$48,890	$29,750	$78,308	$22,420	$84,529
Sales Tax	$20,300,000	see Table A-3			$56,379	$1,942,184	$1,212,094	$1,025,709	$1,145,983	$62,546
Fees for Current Services	$966,600	offsets costs								
Other Taxes	$1,185,000	per daytime population		$7.98 (2)	$1,472	$3,497	$2,562	$7,362	$1,090	$9,462
Business Licenses	$3,100,000	per daytime population		$26.62	$4,911	$11,662	$8,545	$24,554	$3,634	$31,560
Transient Occupancy Tax	$3,850,000	See Table A-5	(3)		$0	$410,625	$410,625	$410,625	$410,625	$0
Grants and Subventions	$505,000	offsets costs								
Interfund Revenue	$2,369,582	per daytime population		$12.72 (4)	$2,346	$5,572	$4,083	$11,732	$1,736	$15,079
Interest Income and Rent	$245,000	per daytime population		$2.38	$440	$1,045	$765	$2,200	$326	$2,827
Recreation Revenue	$3,657,900	offsets costs								
Building Permits	$2,252,135	offsets costs								
Franchise Fees	$2,307,000	per daytime population		$22.45	$4,142	$9,837	$7,208	$20,712	$3,065	$26,621
Plan Check Fees	$1,710,500	offsets costs								
Fines and Forfeitures	$519,600	offsets police costs								
Miscellaneous Reimburseme	$572,430	not impacted over time	(5)							
Public Works Fees	$104,100	offsets costs								
Planning Fees	$144,515	offsets costs								
Miscellaneous Revenue	$46,609	per daytime population		$0.30 (6)	$55	$131	$96	$275	$41	$353
Licenses and Misc. Permits	$54,720	per daytime population		$0.21 (7)	$39	$92	$67	$193	$29	$248
Library Revenue	$88,800	offsets costs								
Contribution and Donations	$22,750	offsets costs								
Total General Fund Revenue	**$94,465,781**				**$184,251**	**$2,864,379**	**$1,937,968**	**$2,271,759**	**$1,786,528**	**$978,145**

(1) The City has a bi-annual budget. Adopted numbers for FY 2014/15 are used in this analysis.
(2) Excludes $365,000 of other taxes that are used for police costs;
(3) Assumes a limited service (i.e., Hampton Inn). 150 rooms-4 stories.
(4) Excludes $1,062,815 of interfund transfers that are used to offset GF costs.
(5) Excludes $532,730 of misc reimbursements that are applied to GF costs.
(6) Excludes $16,000 of property sale revenue.
(7) Excludes $11,220 of license fees and $16,500 of other permits fees applied towards police costs; and $5,500 of other permits for fire costs.

Sources: City of Pleasanton Operating Budget 2013/14 FY and 2014/15 FY; Brion & Associates.

Table 5
Annual General Fund Expenditures Factors
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Expenditure		FY 2014-15 Adopted City Expenditures	Offsetting Revenues	Net Departmental Costs	Fixed Cost Percent	Net Variable Costs (3)	Cost Allocation		Employment Related Departmental Costs
							Employment Uses	Residential Uses	
General Government	(1)	$12,671,766	$261,454	$12,410,312	50%	$6,205,156	25%	75%	$1,551,289
Community Development	(2)	$11,649,089	$5,127,793	$6,521,296	15%	$5,543,102	25%	75%	$1,385,775
Operations Services		$15,626,140	$445,753	$15,180,387	20%	$12,144,310	20%	80%	$2,428,862
Community Services		$7,309,852	$3,677,450	$3,632,402	10%	$3,269,162	25%	75%	$817,290
Library		$4,432,078	$88,800	$4,343,278	10%	$3,908,950	25%	75%	$977,238
Police		$25,294,682	$1,091,920	$24,202,762	10%	$21,782,486	25%	75%	$5,445,621
Fire		$15,303,308	$1,186,130	$14,117,178	10%	$12,705,460	25%	75%	$3,176,365
Total General Fund		**$92,286,915**	**$11,879,300**	**$80,407,615**		**$65,558,625**			**$15,782,441**

(1) Includes general government, administration, finance, city council, law and city manager departments.

(2) Includes community development, economic development and housing department expenditures.

(3) Represents the portion of each department's costs that does not vary with growth; this rate varies depending on the nature of the service provided.

Sources: City of Pleasanton Operating Budget 2013/14 FY and 2014/15 FY; Brion & Associates.

Table 5a
Annual General Fund Expenditures from Scenarios
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Expenditure	City Cost Per Employee	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
General Government	$26.51	$9,782	$23,231	$17,021	$48,912	$7,239	$62,867
Community Development	$23.68	$8,738	$20,752	$15,205	$43,693	$6,467	$56,159
Operations Services	$41.50	$15,315	$36,373	$26,650	$76,581	$11,334	$98,431
Community Services	$13.97	$5,153	$12,239	$8,967	$25,769	$3,814	$33,121
Library	$16.70	$6,162	$14,634	$10,722	$30,812	$4,560	$39,603
Police	$93.06	$34,338	$81,549	$59,750	$171,699	$25,412	$220,686
Fire	$54.28	$20,029	$47,567	$34,851	$100,150	$14,822	$128,724
Total General Fund	**$269.69**	**$99,517**	**$236,346**	**$173,165**	**$497,616**	**$73,649**	**$639,591**

Sources: City of Pleasanton Operating Budget 2013/14 FY and 2014/15 FY; Brion & Associates.

Table 6
Summary of General Fund Revenues and Costs by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

General Fund Category	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
General Fund Revenues						
Property Taxes	$102,802	$430,845	$262,174	$690,090	$197,579	$744,918
VLF - Property Tax Swap	$11,665	$48,890	$29,750	$78,308	$22,420	$84,529
Sales Tax	$56,379	$1,942,184	$1,212,094	$1,025,709	$1,145,983	$62,546
Fees for Current Services	$0	$0	$0	$0	$0	$0
Other Taxes	$1,472	$3,497	$2,562	$7,362	$1,090	$9,462
Business Licenses	$4,911	$11,662	$8,545	$24,554	$3,634	$31,560
Transient Occupancy Tax	$0	$410,625	$410,625	$410,625	$410,625	$0
Grants and Subventions	$0	$0	$0	$0	$0	$0
Interfund Revenue	$2,346	$5,572	$4,083	$11,732	$1,736	$15,079
Interest Income and Rent	$440	$1,045	$765	$2,200	$326	$2,827
Recreation Revenue	$0	$0	$0	$0	$0	$0
Building Permits	$0	$0	$0	$0	$0	$0
Franchise Fees	$4,142	$9,837	$7,208	$20,712	$3,065	$26,621
Plan Check Fees	$0	$0	$0	$0	$0	$0
Fines and Forfeitures	$0	$0	$0	$0	$0	$0
Miscellaneous Reimbursements	$0	$0	$0	$0	$0	$0
Public Works Fees	$0	$0	$0	$0	$0	$0
Planning Fees	$0	$0	$0	$0	$0	$0
Miscellaneous Revenue	$55	$131	$96	$275	$41	$353
Licenses and Misc. Permits	$39	$92	$67	$193	$29	$248
Library Revenue	$0	$0	$0	$0	$0	$0
Contribution and Donations	$0	$0	$0	$0	$0	$0
Total GF Revenues	**$184,251**	**$2,864,379**	**$1,937,968**	**$2,271,759**	**$1,786,528**	**$978,145**
General Fund Expenditures						
General Government	$9,782	$23,231	$17,021	$48,912	$7,239	$62,867
Community Development	$8,738	$20,752	$15,205	$43,693	$6,467	$56,159
Operations Services	$15,315	$36,373	$26,650	$76,581	$11,334	$98,431
Community Services	$5,153	$12,239	$8,967	$25,769	$3,814	$33,121
Library	$6,162	$14,634	$10,722	$30,812	$4,560	$39,603
Police	$34,338	$81,549	$59,750	$171,699	$25,412	$220,686
Fire	$20,029	$47,567	$34,851	$100,150	$14,822	$128,724
Total GF Expenditures	**$99,517**	**$236,346**	**$173,165**	**$497,616**	**$73,649**	**$639,591**
Net Fiscal Balance	**$84,734**	**$2,628,033**	**$1,764,803**	**$1,774,143**	**$1,712,879**	**$338,553**
Balance as Percent of Revenues	**46%**	**92%**	**91%**	**78%**	**96%**	**35%**
% Over Existing Development		**$2,543,299**	**$1,680,069**	**$1,689,409**	**$1,628,145**	**$253,819**

Note: See Table A-3 for detail on sales tax by source.
Source: Brion & Associates

Table 6a
Summary of Breakdown of General Fund Revenues and Costs by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

General Fund Category	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
General Fund Revenues						
Property Taxes	55.8%	15.0%	13.5%	30.4%	11.1%	76.2%
VLF - Property Tax Swap	6.3%	1.7%	1.5%	3.4%	1.3%	8.6%
Sales Tax	30.6%	67.8%	62.5%	45.2%	64.1%	6.4%
Fees for Current Services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Taxes	0.8%	0.1%	0.1%	0.3%	0.1%	1.0%
Business Licenses	2.7%	0.4%	0.4%	1.1%	0.2%	3.2%
Transient Occupancy Tax	0.0%	14.3%	21.2%	18.1%	23.0%	0.0%
Grants and Subventions	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interfund Revenue	1.3%	0.2%	0.2%	0.5%	0.1%	1.5%
Interest Income and Rent	0.2%	0.0%	0.0%	0.1%	0.0%	0.3%
Recreation Revenue	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Building Permits	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Franchise Fees	2.2%	0.3%	0.4%	0.9%	0.2%	2.7%
Plan Check Fees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines and Forfeitures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Reimburseme	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Public Works Fees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Planning Fees	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Revenue	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Licenses and Misc. Permits	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Library Revenue	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Contribution and Donations	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total GF Revenues	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
General Fund Expenditures						
General Government	9.8%	9.8%	9.8%	9.8%	9.8%	9.8%
Community Development	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%
Operations Services	15.4%	15.4%	15.4%	15.4%	15.4%	15.4%
Community Services	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%
Library	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%
Police	34.5%	34.5%	34.5%	34.5%	34.5%	34.5%
Fire	20.1%	20.1%	20.1%	20.1%	20.1%	20.1%
Total GF Expenditures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Brion & Associates

Table 7
Construction Costs and Temporary Construction Employment by New Development Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Item	Unit Cost	Unit of Measure	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
Construction cost estimate							
New General Retail	$265	per bldg sqft	$65,306,621	$6,227,500	$72,421,846	$6,227,500	$0
Club Retail	$200	per bldg sqft	$29,600,000	$29,600,000	$0	$29,600,000	$0
Office	$300	per bldg sqft	$0	$0	$101,930,400	$0	$213,439,644
Industrial	$200	per bldg sqft	$5,510,000	$0	$0	$0	$0
Hotel	$200	per bldg sqft	$17,600,000	$17,600,000	$17,600,000	$17,600,000	$0
Total			**$118,016,621**	**$53,427,500**	**$191,952,246**	**$53,427,500**	**$213,439,644**
Construction jobs							
Labor cost	50%	of const. cos	$59,008,311	$26,713,750	$95,976,123	$26,713,750	$106,719,822
Average construction worker cos (1)	$77,931						
Employment job years			**757**	**343**	**1,232**	**343**	**1,369**

(1) Source: California Employment Development Department, Labor Market Information, Occupational Employment (2014 - 1st Quarter).
See www.labormarketinfo.edd.ca.gov/LMID/OES_Employment_and_Wages.html.
Includes 25% mark up for benefits.

Sources: California EDD; [redacted] Brion & Associates.

Table 8
Summary of Impact Fee Revenues - Net New by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

	Fee Category	Reference	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
1	**Public Facilities Fee (1)**	see Table A-6	$79,583	$45,337	$145,071	$45,337	$240,999
2	**Lower Income Housing Fee**	see Table A-7	$435,461	$262,605	$466,265	$262,605	$437,663
3	**Traffic Impact Fees**	see Table A-8	$1,933,906	$194,095	$3,214,337	$194,095	$3,132,185
4	**GIS Mapping Fee (2)**	$0.002 per sqft	$3,483	$1,818	$3,483	$1,818	$3,483
5	**Storm Drainage ($1 per sqft** of impervious surface)	$1.00 (2)	$503,939	$79,388	$503,939	$79,388	$1,306,147
6	**School Impact Fee**	see Table A-9	$71,312	$43,005	$76,357	$43,005	$71,673
	Total Fees, with Schools		**$3,027,684**	**$626,248**	**$4,409,452**	**$626,248**	**$5,192,149**

Note: Excludes water and sewer connections fees, which need to be estimated by City and or special districts serving the site.

These are only estimates of potential impact fees; city staff will determine the final amounts, and any available credits.

(1) These public facility fee rates are for projects that are not located in the North Pleasanton Fire Refunding District. We understand this project is not in the NPFRD.

(2) May be eligible for credits. Parcels 6 and 10 are not expected to have any Storm Drainage fees under any scenario. For Scenario 2a, the fee will only be assessed on Parcel 9.

(3) City of Pleasanton Traffic Impact Fee and Tri-Valley Transportation Committee Fee are combined here and calculated by the applicant. These estimates are net new impact fees (total fees minus fee credits for existing development).

(4) Total Fee for Pleasanton is $0.47 per square foot of commercial development, as of December 13, 2011. http://pleasantonusd.net/wp-content/uploads/2012/09/DeveloperFeesMatrix_Update121311.pdf

Sources: [redacted] City of Pleasanton; Pleasanton Unified School District; Brion & Associates.

Table A-1
Property Tax Revenues by Agency and Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Item	Total TAF (1)	ERAF Rate (2)	Tax Rate Area: 19-006 (1) ERAF Shift	Net TAFs (2)	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
Assessed Value (3)					$41,728,787	$174,886,032	$106,420,163	$280,117,394	$80,200,000	$302,372,829
1% Annual Property Tax Revenue (4)	**1.0%**				**$417,288**	**$1,748,860**	**$1,064,202**	**$2,801,174**	**$802,000**	**$3,023,728**
Distribution of 1% Property Tax										
COUNTY GENERAL	36.20%	48.11%	17.42%	18.78%	$78,384	$328,510	$199,902	$526,179	$150,650	$567,984
CHABOT - LAS POSITAS COMMUNITY COLLEGI	2.62%	0.00%	0.00%	2.62%	$10,933	$45,819	$27,881	$73,389	$21,012	$79,220
PLEASANTON USD	23.90%	0.00%	0.00%	23.90%	$99,733	$417,981	$254,346	$669,486	$191,680	$722,677
COUNTY SUPT. EDUCATION T.M.R., EC 1887	0.11%	0.00%	0.00%	0.11%	$449	$1,884	$1,146	$3,017	$864	$3,257
COUNTY SUPT. EDUCATION PHYS. HDCP. PUP	0.40%	0.00%	0.00%	0.40%	$1,674	$7,014	$4,268	$11,234	$3,217	$12,127
COUNTY SUPT. T.M.R. & P.H. CAPITAL	0.01%	0.00%	0.00%	0.01%	$37	$156	$95	$250	$72	$270
COUNTY SUPT. T.M.R. & P.H. TUITION	0.05%	0.00%	0.00%	0.05%	$226	$948	$577	$1,518	$435	$1,639
COUNTY SUPT. EDUCATION INSTIT. PUPILS	0.17%	0.00%	0.00%	0.17%	$718	$3,008	$1,830	$4,818	$1,379	$5,200
COUNTY SUPT. JUVENILE HALL EDUCATION	0.04%	0.00%	0.00%	0.04%	$148	$622	$379	$997	$285	$1,076
COUNTY SUPT. SERVICE	0.11%	0.00%	0.00%	0.11%	$446	$1,870	$1,138	$2,995	$857	$3,233
COUNTY SUPT. CAPITAL	0.08%	0.00%	0.00%	0.08%	$344	$1,440	$876	$2,306	$660	$2,490
COUNTY SUPT. DEVELOP. CENTER-HDCP. PUP	0.10%	0.00%	0.00%	0.10%	$417	$1,749	$1,064	$2,801	$802	$3,024
COUNTY SUPT. AUDIO-VISUAL CAPITAL	0.02%	0.00%	0.00%	0.02%	$89	$375	$228	$600	$172	$648
ALAMEDA CO. F.C. & W.C.	0.22%	38.68%	0.08%	0.13%	$555	$2,327	$1,416	$3,727	$1,067	$4,023
FLOOD ZONE 7	2.19%	0.00%	0.00%	2.19%	$9,118	$38,213	$23,253	$61,206	$17,524	$66,069
BAY AREA AIR QUALITY MANAGEMENT	0.22%	0.00%	0.00%	0.22%	$906	$3,797	$2,311	$6,082	$1,741	$6,565
ALAMEDA CO. MOSQUITO ABATEMENT	0.14%	36.90%	0.05%	0.09%	$381	$1,597	$972	$2,558	$732	$2,761
SF-BART	0.64%	0.00%	0.00%	0.64%	$2,661	$11,152	$6,786	$17,862	$5,114	$19,281
EAST BAY REGIONAL PARK	3.05%	0.00%	0.00%	3.05%	$12,724	$53,326	$32,449	$85,412	$24,454	$92,199
ALAMEDA CO. RESOURCE CONSER.	0.03%	15.96%	0.00%	0.02%	$101	$422	$257	$675	$193	$729
CITY OF PLEASANTON	**29.71%**	**17.08%**	**5.07%**	**24.64%**	**$102,802**	**$430,845**	**$262,174**	**$690,090**	**$197,579**	**$744,918**
ERAF				22.63%	$94,442	$395,807	$240,853	$633,970	$181,511	$684,339
Total 1% Property Taxes	**100%**		**22.63%**	**100.00%**	**$417,288**	**$1,748,860**	**$1,064,202**	**$2,801,174**	**$802,000**	**$3,023,728**
Other Parcel Taxes (4)										
SCHOOL UNIFIED	0.092%			0.092%	$38,224	$160,196	$97,481	$256,588	$73,463	$276,974
SCHOOL COMMUNITY COLLEGE	0.021%			0.021%	$8,930	$37,426	$22,774	$59,945	$17,163	$64,708
FLOOD ZONE 7 STATE WTR	0.026%			0.026%	$10,724	$44,946	$27,350	$71,990	$20,611	$77,710
BAY AREA RAPID TRANSIT	0.008%			0.008%	$3,130	$13,116	$7,982	$21,009	$6,015	$22,678
EAST BAY REGIONAL PARK	0.008%			0.008%	$3,255	$13,641	$8,301	$21,849	$6,256	$23,585
Total Other Annual Parcel Taxes	**0.1540%**			**0.1540%**	**$64,262**	**$269,324**	**$163,887**	**$431,381**	**$123,508**	**$465,654**
Total Property Tax Revenues	**1.1540%**			**1.1540%**	**$481,550**	**$2,018,185**	**$1,228,089**	**$3,232,555**	**$925,508**	**$3,489,382**

(1) The Tax Rate Area is 19-006 for all parcels and the Tax Allocation Factors (TAFs) are from the Alameda Auditor-Controller Agency website. http://www.acgov.org/auditor/tax/districts.htm. Viewed December 2014.
(2) Education Revenue Augmentation Fund or ERAF shifts local property taxes to local school districts, based on legislation from the early 1990s.
(3) See Table 3 for estimated market values of each site.
(4) There are several supplemental taxes levied on the sites for local bonds that support schools, and park and recreation and open space projects. These revenues are restricted and not available for general purposes and are thus not estimated.
Sources: City of Pleasanton; Alameda County; Brion & Associates.

Table A-2
Vehicle In-Lieu Fees Property Tax Swap by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Item	Assumption	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
Assessed Value							
Existing Assessed Value		$41,728,787	$0	$26,220,163	$0	$0	$0
New Assessed Value		$0	$174,886,032	$80,200,000	$280,117,394	$80,200,000	$302,372,829
Total Assessed Value		$41,728,787	$174,886,032	$106,420,163	$280,117,394	$80,200,000	$302,372,829
City's Current Assessed Value (1)	$17,528,004,671	$17,528,004,671	$17,528,004,671	$17,528,004,671	$17,528,004,671	$17,528,004,671	$17,528,004,671
Percent or Percent Increase in AV		0.24%	1.00%	0.61%	1.60%	0.46%	1.73%
Current VLF Swap Revenue FY 2014-15	$4,900,000						
VLF Property Tax Swap Revenue		$11,665	$48,890	$29,750	$78,308	$22,420	$84,529

(1) See City of Pleasanton Operating Budget 2013/14 FY and 2014/15 FY, page E-3 or 342 of PDF and page 28 of PDF. Since 2005-2006, VLF is now shared with cities based on a new system that relates to the overall increase in assessed value in the City. The City will receive an increase in VLFs equal to the percent increase in overall Citywide Assessed Value, including secured and unsecured property.

Sources: City of Pleasanton Operating Budget 2013/14 FY and 2014/15FY; Brion & Associates.

Table A-3
Estimated City Annual Sales Tax Revenue from Project Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Land Use	Assumption	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
City Share of Sales Tax (% of Gross Sa	**1.0%**						
RETAIL SPENDING FROM EMPLOYEES							
Estimated Total Employment		(1)	876	642	1,845	273	2,372
Average Daily Expenditures	$29.30 (2)						
Annual Workdays	240						
Total Retail Expenditures			$6,163,342	$4,515,751	$12,976,657	$1,920,586	$16,679,045
Percent and Amount Spent in Pleasar	75%		$4,622,507	$3,386,813	$9,732,493	$1,440,440	$12,509,284
Amount Spent at Existing and New Re	50%		($2,311,253)	($1,693,407)	($4,866,246)	($720,220)	($6,254,642)
Net Employee Taxable Sales			$2,311,253	$1,693,407	$4,866,246	$720,220	$6,254,642
Sales Tax Revenue from Employees	1.0%		**$23,113**	**$16,934**	**$48,662**	**$7,202**	**$62,546**
City Employee Sales Tax Revenues		**$0**	**$23,113**	**$16,934**	**$48,662**	**$7,202**	**$62,546**
SALES TAX FROM RETAIL BUSINESSES							
Retail Taxable Sales per Sqft & Bldg Sqft							
Existing Retail	$145	38,903	-	38,903	-	-	-
New General Retail	$350	-	246,440	23,500	273,290	23,500	-
Club Retail	$700 (3)	-	148,000	148,000	-	148,000	-
Estimated Taxable Sales							
Existing Retail		$5,637,900	$0	$5,637,900	$0	$0	na
New General Retail		$0	$86,254,028	$8,225,000	$95,651,495	$8,225,000	na
Club Retail		$0	$103,600,000	$103,600,000	$0	$103,600,000	na
Estimated Sales Tax							na
Existing Retail	**1.0%**	$56,379	$0	$56,379	$0	$0	$0
New General Retail	**1.0%**	$0	$862,540	$82,250	$956,515	$82,250	$0
Club Retail	**1.0%**	$0	$1,036,000	$1,036,000	$0	$1,036,000	$0
SALES TAX FROM VISITORS							
Annual Visitors (see Table A-5)		-	41,063	41,063	41,063	41,063	$0
Average Expenditure per Room Night	$50	$0	$2,053,125	$2,053,125	$2,053,125	$2,053,125	$0
City Sales Tax from Visitors	**1.0%**	**$0**	**$20,531**	**$20,531**	**$20,531**	**$20,531**	**$0**
TOTAL SALES TAX FROM ALL SOURCES		**$56,379**	**$1,942,184**	**$1,212,094**	**$1,025,709**	**$1,145,983**	**$62,546**

(1) For existing sales tax we are using a figure from the City's Department of Finance for calendar year 2014 and not estimating sales tax from employees.
(2) Based the average daily expenditures per employee from Office-Worker Retail Spending in a Digital Age 2012, ICSC Research (see Table A-3a). This includes sales tax generated at the on-site cafeteria.
(3) The club retail is expected to have gross sales of about $300 million per year at this location by year 5; 50% of this is taxable while the remainder is non-taxable such as food and prescriptions.

Sources: City of Pleasanton; Brion & Associates.

Table A-3a
Mean Weekly Expenditures by Geography
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Types of Spending	Including Those Who Spent Nothing			
	Total National	Urban	Suburban	Rural/Small Town
TOTAL	**$195.22**	**$165.93**	**$226.66**	**$142.62**
TOTAL less Transportation and Online Purchases	129.18	115.60	**146.52**	90.55
Transportation and Online Purchases	**66.03**	**50.33**	**80.14**	**52.06**
Transportation	35.92	36.37	37.67	28.77
Online Purchases Made at the Office (personal)	30.11	13.96	42.47	23.29
Full-Service Restaurants and Fast Food	**26.71**	**26.29**	**28.86**	**16.87**
Full-Service Restaurants	12.97	13.45	13.06	8.62
Fast Food/Deli/Lunch Eateries	13.75	12.85	15.80	8.26
Goods and Services	**102.47**	**89.31**	**117.66**	**73.68**
Department Stores	7.56	6.52	9.03	4.48
Discount Stores	10.63	8.19	11.33	13.38
Drug Stores	6.87	6.13	7.60	5.97
Grocery Stores	19.79	15.98	21.58	22.26
Clothing Stores	3.80	3.25	4.43	2.85
Shoe Stores	2.82	2.43	3.40	1.30
Sporting Goods Stores	2.73	2.16	3.49	1.24
Electronics/Phone/Computer Stores	6.88	4.86	8.93	3.97
Jewelry Stores	3.36	3.92	3.75	0.94
Office Supplies/Stationery/Novelty Gifts and Cards	6.90	7.37	7.41	3.94
Warehouse Clubs	9.71	7.80	12.32	4.86
Other Goods (florist, non-food vendors, etc.)	3.61	3.95	3.75	0.77
Personal Care Shops	6.03	7.83	5.76	3.46
Personal Services	3.92	3.16	4.97	1.93
Other Services (not elsewhere classified)	3.48	2.30	4.90	0.67
Entertainment (sporting events, live theater, concerts, movies)	4.35	3.45	5.01	1.67

Source: *Office-Worker Retail Spending in a Digital Age* , 2012, ICSC Research
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Table A-4
2014 Assessed Value of Property Parcels and Existing Employees
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Plan #	Parcel No.		Address	Acres	TRA	Improvements	Land	Total	Existing Employment
1	941-1311-35-2	(1)	7106 Johnson Drive	1.47	19-006	$0	$0	$0	23
2	941-1311-1		7116 Johnson Drive	0.93	19-006	$1,348,746	$865,506	$2,214,252	5
3	941-1311-2		7132 Johnson Drive	0.92	19-006	$3,026,684	$1,170,498	$4,197,182	21
4	941-1311-21		7080 Commerce Circle	0.94	19-006	$1,446,096	$723,048	$2,169,144	134
5	941-1311-22		7164 Johnson Drive	1.37	19-006	$2,812,712	$1,004,540	$3,817,252	
6	941-1311-19	(2)	7200 Johnson Drive (1)	15.6	19-006	$4,269,295	$8,036,320	$12,305,615	
6B	941-1311-16		7035 Commerce Circle	2.05	19-006	$1,808,172	$602,724	$2,410,896	
7	941-1300-18	(3)	Johnson Drive	1.95	19-006	$0	$0	$0	
8	941-1300-17	(3)	7240 Johnson Drive	3.6	19-006	$0	$0	$0	115
9	941-1300-15		Johnson Drive	2.43	19-006	$396,730	$194,475	$591,205	
10	941-1300-14		7280 Johnson Drive	2.84	19-006	$602,724	$2,009,080	$2,611,804	
11	941-1300-19		7275 Johnson Drive	5.88	19-006	$7,294,168	$4,117,269	$11,411,437	71
	Total			**39.98**		**$23,005,327**	**$18,723,460**	**$41,728,787**	**369**

(1) This parcel is a religious institution and exempt from property taxes, according to the City's Finance Department.
(2) 7200, 7202, 7206, 7208 Johnson Drive. Acreage is approximately 17.15 acres total.
From the Alameda County Assessor's Office website. http://www.acgov.org/ms/prop/index.aspx. Viewed December 2014.
(3) These two parcels are a public utility and exempt from property taxes.
Sources: Alameda County Assessor's Office; Brion & Associates.

Table A-5
Estimated Transient Occupancy Tax from Hotel Use by Scenario
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Land Use	Rate	Scenario 1: Existing Development	Scenario 2: New Club Retail, Hotel & Retail	Scenario 2a: Partial Buildout with Club Retail	Scenario 3: HQ Office, Hotel & New Retail	Scenario 4: Parcels 6, 9 and 10 Only	Scenario 5: Existing Zoning All Office
City's Current TOT Rate	8% (1)						
New Hotel Rooms		0	150	150	150	150	0
Average Occupancy	75%	-	41,063	41,063	41,063	41,063	-
Average Room Rate	$125	$0	$5,132,813	$5,132,813	$5,132,813	$5,132,813	$0
Estimated New TOT Revenue		**$0**	**$410,625**	**$410,625**	**$410,625**	**$410,625**	**$0**

(1) See http://www.cityofpleasantonca.gov/civicax/filebank/blobdload.aspx?BlobID=23074
Sources: [redacted] City of Pleasanton; Brion & Associates.

Table A-6
Public Facilities Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Public Facilities Fee:	Retail	Office	Industrial	Hotel	Ser. Comm.	Inst. Religious
Fee per Sqft	$0.59	$0.89	$0.72	$0.43	$0.60	$0.54

EDZ Retail FAR	30%

Scenario 2 -- Club Retail, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Public Facilities Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Public Facilities New Fees	Public Facilities Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$10,800	Retail	30%	19,210	(790)	$11,334	$534
2	0.93	40,511	Patioworld/Retail	18,995	47%	$11,207	Retail	30%	12,153	(6,842)	$7,170	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$11,746	Retail	30%	12,023	(7,885)	$7,093	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$8,676	Retail	30%	12,284	(2,176)	$7,248	$0
5	1.37	59,677	Office	15,070	25%	$13,412	Retail	30%	17,903	2,833	$10,563	$0
6	15.6	679,536	Vacant Industrial	329,035	48%	$236,905	Club Retail	30%	148,000	(181,035)	$87,320	$0
6b	2.05	89,500	Industrial	27,550	31%	$19,836	Industrial	30%	26,850	(700)	$19,332	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Retail	30%	25,483	25,483	$15,035	$15,035
8	3.6	156,816	AT&T Facility	15,132	10%	$9,079	Retail	30%	47,045	31,913	$27,756	$18,677
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$37,840	$37,840
10	2.84	123,710	Industrial	20,000	16%	$14,400	Retail	30%	37,113	17,113	$21,897	$7,497
11	5.88	256,133	FedEx Distribution	93,573	37%	$56,144	Retail	30%	76,840	(16,733)	$45,336	$0
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$392,205**		**30%**	**522,903**	**(50,820)**	**$297,923**	**$79,583**

Scenario 2a -- Partial Develoment with Costco

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Public Facilities Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Public Facilities New Fees	Public Facilities Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$10,800	Church/Institutional	30%	20,000	-	$10,800	$0
2	0.93	40,511	Patioworld/Retail	18,995	47%	$11,207	Retail	30%	18,995	-	$11,207	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$11,746	Retail	30%	19,908	-	$11,746	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$8,676	Service Commercial	30%	14,460	-	$8,676	$0
5	1.37	59,677	Office	15,070	25%	$13,412	Office	30%	15,070	-	$13,412	$0
6	15.6	679,536	Vacant Industrial	329,035	48%	$236,905	Club Retail	30%	148,000	(181,035)	$87,320	$0
6b	2.05	89,500	Industrial	27,550	31%	$19,836	Industrial	30%	27,550	-	$19,836	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Parking Lot	30%	-	-	$0	$0
8	3.6	156,816	AT&T Facility	15,132	10%	$9,079	Service Commercial	30%	15,132	-	$9,079	$0
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$37,840	$37,840
10	2.84	123,710	Industrial	20,000	16%	$14,400	Retail	30%	37,113	17,113	$21,897	$7,497
11	5.88	256,133	FedEx Distribution	93,573	37%	$56,144	Service Commercial	30%	93,573	-	$56,144	$0
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$392,205**		**29%**	**497,801**	**(75,922)**	**$287,957**	**$45,337**

Table A-6
Public Facilities Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Public Facilities Fee:	Retail	Office	Industrial	Hotel	Ser. Comm.	Inst. Religious
Fee per Sqft	$0.59	$0.89	$0.72	$0.43	$0.60	$0.54

EDZ Retail FAR 30%

Scenario 3 -- 50% FAR HQ Office, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Public Facilities Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Public Facilities New Fees	Public Facilities Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$10,800	Retail	30%	19,210	(790)	$11,334	$534
2	0.93	40,511	Patioworld/Retail	18,995	47%	$11,207	Retail	30%	12,153	(6,842)	$7,170	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$11,746	Retail	30%	12,023	(7,885)	$7,093	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$8,676	Retail	30%	12,284	(2,176)	$7,248	$0
5	1.37	59,677	Office	15,070	25%	$13,412	Retail	30%	17,903	2,833	$10,563	$0
6	15.6	679,536	Vacant Industrial	329,035	48%	$236,905	Office	50%	339,768	10,733	$302,394	$65,488
6b	2.05	89,500	Industrial	27,550	31%	$19,836	Retail	30%	26,850	(700)	$15,841	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Retail	30%	25,483	25,483	$15,035	$15,035
8	3.6	156,816	AT&T Facility	15,132	10%	$9,079	Retail	30%	47,045	31,913	$27,756	$18,677
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$37,840	$37,840
10	2.84	123,710	Industrial	20,000	16%	$14,400	Retail	30%	37,113	17,113	$21,897	$7,497
11	5.88	256,133	FedEx Distribution	93,573	37%	$56,144	Retail	30%	76,840	(16,733)	$45,336	$0
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$392,205**		**41%**	**714,671**	**140,948**	**$509,506**	**$145,071**

Scenario 4--[redacted] Project

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Public Facilities Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Public Facilities New Fees	Public Facilities Net Fees
6	15.6	679,536	Vacant Industrial	329,035	48%	$236,905	Retail	30%	148,000	(181,035)	$87,320	$0
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$37,840	$37,840
10	2.84	123,710	Industrial	20,000	16%	$14,400	Retail	30%	37,113	17,113	$21,897	$7,497
TOTAL	**20.87**	**909,097**		**349,035**	**38%**	**$251,305**		**30%**	**273,113**	**(75,922)**	**$147,057**	**$45,337**

Table A-6
Public Facilities Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Public Facilities Fee:	Retail	Office	Industrial	Hotel	Ser. Comm.	Inst. Religious
Fee per Sqft	$0.59	$0.89	$0.72	$0.43	$0.60	$0.54

EDZ Retail FAR	30%

Scenario 5-- Existing Zoning Redevelopment (allows Office - assume 35% FAR except Main Campus 50% FAR)

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Public Facilities Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Public Facilities New Fees	Public Facilities Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$10,800	Office	35%	22,412	2,412	$19,946	$9,146
2	0.93	40,511	Patioworld/Retail	18,995	47%	$11,207	Office	35%	14,179	(4,816)	$12,619	$1,412
3	0.92	40,075	Commercial/Retail	19,908	50%	$11,746	Office	35%	14,026	(5,882)	$12,483	$738
4	0.94	40,946	Black Tie Limo	14,460	35%	$8,676	Office	35%	14,331	(129)	$12,755	$4,079
5	1.37	59,677	Office	15,070	25%	$13,412	Office	35%	20,887	5,817	$18,589	$5,177
6	15.6	679,536	Vacant Industrial	329,035	48%	$236,905	Office	50%	339,768	10,733	$302,394	$65,488
6b	2.05	89,298	Industrial	27,550	31%	$19,836	Office	35%	31,254	3,704	$27,816	$7,980
7	1.95	84,942	Parking Lot	-	N/A	$0	Office	35%	29,730	29,730	$26,459	$26,459
8	3.6	156,816	AT&T Facility	15,132	10%	$9,079	Office	35%	54,886	39,754	$48,848	$39,769
9	2.43	105,851	Vacant		N/A	$0	Office	35%	37,048	37,048	$32,973	$32,973
10	2.84	123,710	Industrial	20,000	16%	$14,400	Office	35%	43,299	23,299	$38,536	$24,136
11	5.88	256,133	FedEx Distribution	93,573	37%	$56,144	Office	35%	89,646	(3,927)	$79,785	$23,642
TOTAL	**39.98**	**1,741,529**		**573,723**	**33%**	**$392,205**		**41%**	**711,465**	**137,742**	**$633,204**	**$240,999**

Sources: [redacted] Brion & Associates.

Table A-7
Low Income Housing Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Low Income Hou	**All Non. Res. Projects**		
Fee per Sqft	**$2.87**	**EDZ Retail FAR**	**30%**

Scenario 2 -- Club Retail, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$57,400	Retail	30%	19,210	(790)	$55,133	$0
2	0.93	40,511	Patioworld/Retail	18,995	47%	$54,516	Retail	30%	12,153	(6,842)	$34,880	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$57,136	Retail	30%	12,023	(7,885)	$34,505	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$41,500	Retail	30%	12,284	(2,176)	$35,255	$0
5	1.37	59,677	Office	15,070	25%	$43,251	Retail	30%	17,903	2,833	$51,382	$8,131
6	15.6	679,536	Vacant Industrial	329,035	48%	$944,330	Club Retail	30%	148,000	(181,035)	$424,760	$0
6b	2.05	89,500	Industrial	27,550	31%	$79,069	Industrial	30%	26,850	(700)	$77,059	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Retail	30%	25,483	25,483	$73,135	$73,135
8	3.6	156,816	AT&T Facility	15,132	10%	$43,429	Retail	30%	47,045	31,913	$135,019	$91,590
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$252,560	$252,560
10	2.84	123,710	Industrial	20,000	16%	$57,400	Retail	30%	23,500	3,500	$67,445	$10,045
11	5.88	256,133	FedEx Distribution	93,573	37%	$268,555	Retail	30%	76,840	(16,733)	$220,530	$0
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$1,646,585**		**29%**	**509,290**	**(64,433)**	**$1,461,662**	**$435,461**

Scenario 2a -- Partial Develoment with Costco

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$57,400	Church/Institutional	30%	20,000	-	$57,400	$0
2	0.93	40,511	Patioworld/Retail	18,995	47%	$54,516	Retail	30%	18,995	-	$54,516	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$57,136	Retail	30%	19,908	-	$57,136	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$41,500	Service Commercial	30%	14,460	-	$41,500	$0
5	1.37	59,677	Office	15,070	25%	$43,251	Office	30%	15,070	-	$43,251	$0
6	15.6	679,536	Vacant Industrial	329,035	48%	$944,330	Club Retail	30%	148,000	(181,035)	$424,760	$0
6b	2.05	89,500	Industrial	27,550	31%	$79,069	Industrial	30%	27,550	-	$79,069	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Parking Lot	30%	-	-	$0	$0
8	3.6	156,816	AT&T Facility	15,132	10%	$43,429	Service Commercial	30%	15,132	-	$43,429	$0
9	2.43	105,851	Vacant	-	N/A	$0	Hotel	N/A	88,000	88,000	$252,560	$252,560
10	2.84	123,710	Industrial	20,000	16%	$57,400	Retail	30%	23,500	17,113	$67,445	$10,045
11	5.88	256,133	FedEx Distribution	93,573	37%	$268,555	Service Commercial	30%	93,573	-	$268,555	$0
TOTAL	**39.98**	**1,741,730**	**0**	**573,723**	**33%**	**$1,646,585**	**0**	**29%**	**497,801**	**(75,922)**	**$1,389,620**	**$262,605**

Table A-7
Low Income Housing Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Low Income Hou	**All Non. Res. Projects**		
Fee per Sqft	**$2.87**	**EDZ Retail FAR**	**30%**

Scenario 3 -- 50% FAR HQ Office, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$57,400	Retail	30%	19,210	(790)	$55,133	$0
2	0.93	40,511	Patioworld/Retail	18,995	47%	$54,516	Retail	30%	12,153	(6,842)	$34,880	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$57,136	Retail	30%	12,023	(7,885)	$34,505	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$41,500	Retail	30%	12,284	(2,176)	$35,255	$0
5	1.37	59,677	Office	15,070	25%	$43,251	Retail	30%	17,903	2,833	$51,382	$8,131
6	15.6	679,536	Vacant Industrial	329,035	48%	$944,330	Office	50%	339,768	10,733	$975,134	$30,804
6b	2.05	89,500	Industrial	27,550	31%	$79,069	Retail	30%	26,850	(700)	$77,059	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Retail	30%	25,483	25,483	$73,135	$73,135
8	3.6	156,816	AT&T Facility	15,132	10%	$43,429	Retail	30%	47,045	31,913	$135,019	$91,590
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$252,560	$252,560
10	2.84	123,710	Industrial	20,000	16%	$57,400	Retail	30%	23,500	3,500	$67,445	$10,045
11	5.88	256,133	FedEx Distribution	93,573	37%	$268,555	Retail	30%	76,840	(16,733)	$220,530	$0
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$1,646,585**		**40%**	**701,058**	**127,335**	**$2,012,036**	**$466,265**

Scenario 4--[redacted] Project

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
6	15.6	679,536	Vacant Industrial	329,035	48%	$944,330	Retail	30%	148,000	(181,035)	$424,760	$0
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$252,560	$252,560
10	2.84	123,710	Industrial	20,000	16%	$57,400	Retail	30%	23,500	3,500	$67,445	$10,045
TOTAL	**20.87**	**909,097**		**349,035**	**38%**	**$1,001,730**		**29%**	**259,500**	**(89,535)**	**$744,765**	**$262,605**

Table A-7
Low Income Housing Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Low Income Hou: All Non. Res. Projects

Fee per Sqft	**$2.87**	**EDZ Retail FAR**	**30%**

Scenario 5-- Existing Zoning Redevelopment (allows Office - assume 35% FAR except Main Campus 50% FAR)

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$57,400	Office	35%	22,412	2,412	$64,321	$6,921
2	0.93	40,511	Patioworld/Retail	18,995	47%	$54,516	Office	35%	14,179	(4,816)	$40,693	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$57,136	Office	35%	14,026	(5,882)	$40,256	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$41,500	Office	35%	14,331	(129)	$41,131	$0
5	1.37	59,677	Office	15,070	25%	$43,251	Office	35%	20,887	5,817	$59,946	$16,695
6	15.6	679,536	Vacant Industrial	329,035	48%	$944,330	Office	50%	339,768	10,733	$975,134	$30,804
6b	2.05	89,298	Industrial	27,550	31%	$79,069	Office	35%	31,254	3,704	$89,700	$10,631
7	1.95	84,942	Parking Lot	-	N/A	$0	Office	35%	29,730	29,730	$85,324	$85,324
8	3.6	156,816	AT&T Facility	15,132	10%	$43,429	Office	35%	54,886	39,754	$157,522	$114,093
9	2.43	105,851	Vacant		N/A	$0	Office	35%	37,048	37,048	$106,327	$106,327
10	2.84	123,710	Industrial	20,000	16%	$57,400	Office	35%	43,299	23,299	$124,267	$66,867
11	5.88	256,133	FedEx Distribution	93,573	37%	$268,555	Office	35%	89,646	(3,927)	$257,285	$0
TOTAL	**39.98**	**1,741,529**		**573,723**	**33%**	**$1,646,585**		**41%**	**711,465**	**137,742**	**$2,041,906**	**$437,663**

Sources: [redacted] Brion & Associates.

Table A-8
Programming Model and TIF Fee Analysis by Scenario - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

TIF Fees	Retail	Office	Industrial
City of Pleasanton	$13.15	$6.26	$4.70
TVTC	$1.62	$4.37	$2.95
Total Fees per Sqft	**$14.77**	**$10.63**	**$7.65**

EDZ Retail FAR	30%

Scenario 2 -- Club Retail, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	TIF & TVTC Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	TIF & TVTC New Fees	TIF & TVTC Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$153,000	Retail	30%	19,210	(790)	$283,731	$130,731
2	0.93	40,511	Patioworld/Retail	18,995	47%	$145,312	Retail	30%	12,153	(6,842)	$179,503	$34,192
3	0.92	40,075	Commercial/Retail	19,908	50%	$152,296	Retail	30%	12,023	(7,885)	$177,573	$25,277
4	0.94	40,946	Black Tie Limo	14,460	35%	$110,619	Retail	30%	12,284	(2,176)	$181,433	$70,814
5	1.37	59,677	Office	15,070	25%	$160,194	Retail	30%	17,903	2,833	$264,430	$104,236
6	15.6	679,536	Vacant Industrial	329,035	48%	$2,517,118	Club Retail	30%	148,000	(181,035)	$2,185,960	$0
6b	2.05	89,500	Industrial	27,550	31%	$210,758	Industrial	30%	26,850	(700)	$205,402	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Retail	30%	25,483	25,483	$376,378	$376,378
8	3.6	156,816	AT&T Facility	15,132	10%	$115,760	Retail	30%	47,045	31,913	$694,852	$579,092
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$0	$0
10	2.84	123,710	Industrial	20,000	16%	$153,000	Retail	30%	23,500	3,500	$347,095	$194,095
11	5.88	256,133	FedEx Distribution	93,573	37%	$715,833	Retail	30%	76,840	(16,733)	$1,134,924	$419,091
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$4,433,890**		**29%**	**509,290**	**(64,433)**	**$6,031,282**	**$1,933,906**

Scenario 2a -- Partial Develoment with Costco

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	TIF & TVTC Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	TIF & TVTC New Fees	TIF & TVTC Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$153,000	Church/Institutional	30%	20,000	-	$153,000	$0
2	0.93	40,511	Patioworld/Retail	18,995	47%	$145,312	Retail	30%	18,995	-	$280,556	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$152,296	Retail	30%	19,908	-	$294,041	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$110,619	Service Commercial	30%	14,460	-	$110,619	$0
5	1.37	59,677	Office	15,070	25%	$160,194	Office	30%	15,070	-	$160,194	$0
6	15.6	679,536	Vacant Industrial	329,035	48%	$2,517,118	Club Retail	30%	148,000	(181,035)	$2,185,960	$0
6b	2.05	89,500	Industrial	27,550	31%	$210,758	Industrial	30%	27,550	-	$210,758	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Parking Lot	30%	-	-	$0	$0
8	3.6	156,816	AT&T Facility	15,132	10%	$115,760	Service Commercial	30%	15,132	-	$115,760	$0
9	2.43	105,851	Vacant	-	N/A	$0	Hotel	N/A	88,000	88,000	$0	$0
10	2.84	123,710	Industrial	20,000	16%	$153,000	Retail	30%	23,500	17,113	$347,095	$194,095
11	5.88	256,133	FedEx Distribution	93,573	37%	$715,833	Service Commercial	30%	93,573	-	$715,833	$0
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$4,433,890**	**0**	**29%**	**497,801**	**(75,922)**	**$4,573,816**	**$194,095**

Table A-8
Programming Model and TIF Fee Analysis by Scenario - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

TIF Fees	Retail	Office	Industrial
City of Pleasanton	$13.15	$6.26	$4.70
TVTC	$1.62	$4.37	$2.95
Total Fees per Sqft	**$14.77**	**$10.63**	**$7.65**

EDZ Retail FAR	30%

Scenario 3 -- 50% FAR HQ Office, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	TIF & TVTC Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	TIF & TVTC New Fees	TIF & TVTC Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$153,000	Retail	30%	19,210	(790)	$283,731	$130,731
2	0.93	40,511	Patioworld/Retail	18,995	47%	$145,312	Retail	30%	12,153	(6,842)	$179,503	$34,192
3	0.92	40,075	Commercial/Retail	19,908	50%	$152,296	Retail	30%	12,023	(7,885)	$177,573	$25,277
4	0.94	40,946	Black Tie Limo	14,460	35%	$110,619	Retail	30%	12,284	(2,176)	$181,433	$70,814
5	1.37	59,677	Office	15,070	25%	$160,194	Retail	30%	17,903	2,833	$264,430	$104,236
6	15.6	679,536	Vacant Industrial	329,035	48%	$2,517,118	Office	50%	339,768	10,733	$3,611,734	$1,094,616
6b	2.05	89,500	Industrial	27,550	31%	$210,758	Retail	30%	26,850	(700)	$396,573	$185,816
7	1.95	84,942	Parking Lot	-	N/A	$0	Retail	30%	25,483	25,483	$376,378	$376,378
8	3.6	156,816	AT&T Facility	15,132	10%	$115,760	Retail	30%	47,045	31,913	$694,852	$579,092
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$0	$0
10	2.84	123,710	Industrial	20,000	16%	$153,000	Retail	30%	23,500	3,500	$347,095	$194,095
11	5.88	256,133	FedEx Distribution	93,573	37%	$715,833	Retail	30%	76,840	(16,733)	$1,134,924	$419,091
TOTAL	**39.98**	**1,741,730**		**573,723**	33%	**$4,433,890**		**40%**	**701,058**	**127,335**	**$7,648,227**	**$3,214,337**

Scenario 4-[redacted] Project

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	TIF & TVTC Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	TIF & TVTC New Fees	TIF & TVTC Net Fees
6	15.6	679,536	Vacant Industrial	329,035	48%	$2,517,118	Retail	30%	148,000	(181,035)	$2,185,960	$0
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$0	$0
10	2.84	123,710	Industrial	20,000	16%	$153,000	Retail	30%	23,500	3,500	$347,095	$194,095
TOTAL	**20.87**	**909,097**		**349,035**	38%	**$2,670,118**		**29%**	**259,500**	**(89,535)**	**$2,533,055**	**$194,095**

Table A-8
Programming Model and TIF Fee Analysis by Scenario - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

TIF Fees	Retail	Office	Industrial
City of Pleasanton	$13.15	$6.26	$4.70
TVTC	$1.62	$4.37	$2.95
Total Fees per Sqft	**$14.77**	**$10.63**	**$7.65**

EDZ Retail FAR	30%

Scenario 5-- Existing Zoning Redevelopment (allows Office - assume 35% FAR except Main Campus 50% FAR)

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	TIF & TVTC Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	TIF & TVTC New Fees	TIF & TVTC Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$153,000	Office	35%	22,412	2,412	$238,236	$85,236
2	0.93	40,511	Patioworld/Retail	18,995	47%	$145,312	Office	35%	14,179	(4,816)	$150,720	$5,409
3	0.92	40,075	Commercial/Retail	19,908	50%	$152,296	Office	35%	14,026	(5,882)	$149,100	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$110,619	Office	35%	14,331	(129)	$152,341	$41,722
5	1.37	59,677	Office	15,070	25%	$160,194	Office	35%	20,887	5,817	$222,029	$61,835
6	15.6	679,536	Vacant Industrial	329,035	48%	$2,517,118	Office	50%	339,768	10,733	$3,611,734	$1,094,616
6b	2.05	89,298	Industrial	27,550	31%	$210,758	Office	35%	31,254	3,704	$332,233	$121,476
7	1.95	84,942	Parking Lot	-	N/A	$0	Office	35%	29,730	29,730	$316,027	$316,027
8	3.6	156,816	AT&T Facility	15,132	10%	$115,760	Office	35%	54,886	39,754	$583,434	$467,674
9	2.43	105,851	Vacant		N/A	$0	Office	35%	37,048	37,048	$393,818	$393,818
10	2.84	123,710	Industrial	20,000	16%	$153,000	Office	35%	43,299	23,299	$460,265	$307,265
11	5.88	256,133	FedEx Distribution	93,573	37%	$715,833	Office	35%	89,646	(3,927)	$952,942	$237,109
TOTAL	**39.98**	**1,741,529**		**573,723**	33%	**$4,433,890**		**41%**	**711,465**	**137,742**	**$7,562,878**	**$3,132,185**

Sources: [redacted] Brion & Associates.

Table A-9
School Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Low Income Hous All Non. Res. Projects

Fee per Sqft	**$0.47**	**EDZ Retail FAR**	**30%**

Scenario 2 -- Club Retail, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$9,400	Retail	30%	19,210	(790)	$9,029	$0
2	0.93	40,511	Patioworld/Retail	18,995	47%	$8,928	Retail	30%	12,153	(6,842)	$5,712	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$9,357	Retail	30%	12,023	(7,885)	$5,651	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$6,796	Retail	30%	12,284	(2,176)	$5,773	$0
5	1.37	59,677	Office	15,070	25%	$7,083	Retail	30%	17,903	2,833	$8,414	$1,332
6	15.6	679,536	Vacant Industrial	329,035	48%	$154,646	Club Retail	30%	148,000	(181,035)	$69,560	$0
6b	2.05	89,500	Industrial	27,550	31%	$12,949	Industrial	30%	26,850	(700)	$12,619	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Retail	30%	25,483	25,483	$11,977	$11,977
8	3.6	156,816	AT&T Facility	15,132	10%	$7,112	Retail	30%	47,045	31,913	$22,111	$14,999
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$41,360	$41,360
10	2.84	123,710	Industrial	20,000	16%	$9,400	Retail	30%	23,500	3,500	$11,045	$1,645
11	5.88	256,133	FedEx Distribution	93,573	37%	$43,979	Retail	30%	76,840	(16,733)	$36,115	$0
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$269,650**		**29%**	**509,290**	**(64,433)**	**$239,366**	**$71,312**

Scenario 2a -- Partial Develoment with Costco

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$9,400	Church/Institutional	30%	20,000	-	$9,400	$0
2	0.93	40,511	Patioworld/Retail	18,995	47%	$8,928	Retail	30%	18,995	-	$8,928	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$9,357	Retail	30%	19,908	-	$9,357	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$6,796	Service Commercial	30%	14,460	-	$6,796	$0
5	1.37	59,677	Office	15,070	25%	$7,083	Office	30%	15,070	-	$7,083	$0
6	15.6	679,536	Vacant Industrial	329,035	48%	$154,646	Club Retail	30%	148,000	(181,035)	$69,560	$0
6b	2.05	89,500	Industrial	27,550	31%	$12,949	Industrial	30%	27,550	-	$12,949	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Parking Lot	30%	-	-	$0	$0
8	3.6	156,816	AT&T Facility	15,132	10%	$7,112	Service Commercial	30%	15,132	-	$7,112	$0
9	2.43	105,851	Vacant	-	N/A	$0	Hotel	N/A	88,000	88,000	$41,360	$41,360
10	2.84	123,710	Industrial	20,000	16%	$9,400	Retail	30%	23,500	17,113	$11,045	$1,645
11	5.88	256,133	FedEx Distribution	93,573	37%	$43,979	Service Commercial	30%	93,573	-	$43,979	$0
TOTAL	**39.98**	**1,741,730**	**0**	**573,723**	**33%**	**$269,650**	**0**	**29%**	**497,801**	**(75,922)**	**$227,568**	**$43,005**

Table A-9
School Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Low Income Hous All Non. Res. Projects

Fee per Sqft	**$0.47**	**EDZ Retail FAR**	**30%**

Scenario 3 -- 50% FAR HQ Office, Hotel and Supporting Retail

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$9,400	Retail	30%	19,210	(790)	$9,029	$0
2	0.93	40,511	Patioworld/Retail	18,995	47%	$8,928	Retail	30%	12,153	(6,842)	$5,712	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$9,357	Retail	30%	12,023	(7,885)	$5,651	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$6,796	Retail	30%	12,284	(2,176)	$5,773	$0
5	1.37	59,677	Office	15,070	25%	$7,083	Retail	30%	17,903	2,833	$8,414	$1,332
6	15.6	679,536	Vacant Industrial	329,035	48%	$154,646	Office	50%	339,768	10,733	$159,691	$5,045
6b	2.05	89,500	Industrial	27,550	31%	$12,949	Retail	30%	26,850	(700)	$12,619	$0
7	1.95	84,942	Parking Lot	-	N/A	$0	Retail	30%	25,483	25,483	$11,977	$11,977
8	3.6	156,816	AT&T Facility	15,132	10%	$7,112	Retail	30%	47,045	31,913	$22,111	$14,999
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$41,360	$41,360
10	2.84	123,710	Industrial	20,000	16%	$9,400	Retail	30%	23,500	3,500	$11,045	$1,645
11	5.88	256,133	FedEx Distribution	93,573	37%	$43,979	Retail	30%	76,840	(16,733)	$36,115	$0
TOTAL	**39.98**	**1,741,730**		**573,723**	**33%**	**$269,650**		**40%**	**701,058**	**127,335**	**$329,497**	**$76,357**

Scenario 4-[redacted] Project

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
6	15.6	679,536	Vacant Industrial	329,035	48%	$154,646	Retail	30%	148,000	(181,035)	$69,560	$0
9	2.43	105,851	Vacant		N/A	$0	Hotel	N/A	88,000	88,000	$41,360	$41,360
10	2.84	123,710	Industrial	20,000	16%	$9,400	Retail	30%	23,500	3,500	$11,045	$1,645
TOTAL	**20.87**	**909,097**		**349,035**	**38%**	**$164,046**		**29%**	**259,500**	**(89,535)**	**$121,965**	**$43,005**

Table A-9
School Fees by Scenario and Parcel - Net New Fees Due
Johnson Drive EDZ Fiscal Impact Analysis, Pleasanton, CA

Low Income Hous All Non. Res. Projects

Fee per Sqft	**$0.47**	**EDZ Retail FAR**	**30%**

Scenario 5-- Existing Zoning Redevelopment (allows Office - assume 35% FAR except Main Campus 50% FAR)

Parcel	Parcel Size (AC)	Parcel Size (SF)	Existing Use	Existing Size (SF)	Current FAR	Low Income Housing Fee Credit	Proposed Use	EDZ FAR	Proposed Size	Delta (SF)	Low Income Housing New Fees	Low Income Housing Net Fees
1	1.47	64,033	Church/Institutional	20,000	31%	$9,400	Office	35%	22,412	2,412	$10,533	$1,133
2	0.93	40,511	Patioworld/Retail	18,995	47%	$8,928	Office	35%	14,179	(4,816)	$6,664	$0
3	0.92	40,075	Commercial/Retail	19,908	50%	$9,357	Office	35%	14,026	(5,882)	$6,592	$0
4	0.94	40,946	Black Tie Limo	14,460	35%	$6,796	Office	35%	14,331	(129)	$6,736	$0
5	1.37	59,677	Office	15,070	25%	$7,083	Office	35%	20,887	5,817	$9,817	$2,734
6	15.6	679,536	Vacant Industrial	329,035	48%	$154,646	Office	50%	339,768	10,733	$159,691	$5,045
6b	2.05	89,298	Industrial	27,550	31%	$12,949	Office	35%	31,254	3,704	$14,690	$1,741
7	1.95	84,942	Parking Lot	-	N/A	$0	Office	35%	29,730	29,730	$13,973	$13,973
8	3.6	156,816	AT&T Facility	15,132	10%	$7,112	Office	35%	54,886	39,754	$25,796	$18,684
9	2.43	105,851	Vacant		N/A	$0	Office	35%	37,048	37,048	$17,412	$17,412
10	2.84	123,710	Industrial	20,000	16%	$9,400	Office	35%	43,299	23,299	$20,350	$10,950
11	5.88	256,133	FedEx Distribution	93,573	37%	$43,979	Office	35%	89,646	(3,927)	$42,134	$0
TOTAL	**39.98**	**1,741,529**		**573,723**	**33%**	**$269,650**		**41%**	**711,465**	**137,742**	**$334,389**	**$71,673**

Sources: [redacted] Brion & Associates.

Appendix D

Draft EDZ Design Guidelines

Johnson Drive Economic Development Zone
DRAFT Development Standards and Design Guidelines
June 2015

Please note these are DRAFT and will be subject to amendments upon discussion with stakeholders

Zoning

PUD-C

Site Development Standards

ZONING DISTRICT	MINIMUM YARDS			MAX. FLOOR AREA RATIO	MAX. HEIGHT	CLASS I ACCESSORY STRUCTURES		
	Front	One Side/ Both Sides	Rear			Max. Height	Min. Side Yard	Min. Rear Yard
PUD-C	35 feet	10 feet/20 feet	15 feet	30%	Office – 80 feet Hotel – 65 feet Retail – 40 feet	40 feet	10 feet	25 feet

Purpose and Vision

The purpose of these guidelines is to provide urban design guidance at the planning application stage in order to assess, promote and achieve appropriate development for all uses including large format retail stores, hotels, and other commercial uses within the Economic Development Zone. The specific site context and conditions will also be reviewed in conjunction with these Design Guidelines. Through the implementation of these Design Guidelines, the vision for the Economic Development Zone includes:

- Creating a redevelopment area that provides business opportunities and employment.
- Ensuring development consistency throughout the project area.
- Encouraging visual continuity of the architecture in terms of mass, scale, materials, and color relative to adjacent development.
- Achieving interesting, high-quality architectural design for all development, including large-format retail buildings.

- Enhancing landscaping, public open space, and environmental performance.

- Creating comfortable and attractive pedestrian environments (e.g., visual interest at the street level, comfortable open space areas, attractive pedestrian connections from parking areas to buildings).

- Promoting development patterns that allow for future intensification.

Site Design and Spatial Characteristics

- When appropriate, site and building planning may be undertaken in a manner that allows phased development of the site over time.

- When multiple structures are planned as part of a single ownership or project, they should be designed in a unified architectural and spatial manner for the site.

- The siting and orientation of each building shall be considered as it relates to its specific parcel (buildings are encouraged, but are not necessarily required as determined by the Director of Community Development, to be sited toward the street frontages of project area parcels to the greatest extent possible), its effect on adjacent parcels, and, as it occurs, the massing of adjacent buildings.

- To the greatest extent possible and based on the type of use, appropriate building scale shall be used to maintain a comfortable pedestrian environment.

- Building entries should be located so that they are easily identifiable.

- Each project should provide a well-defined entry sequence for pedestrian and vehicular uses from the street to the building.

- Pedestrian pathways should be in conformance with current Americans with Disabilities Act (ADA) standards.

- The placement of shopping cart corrals should consider the pedestrian path of travel from the parking field to the corral, and from the corral to the front of the subject stores.

- Open space within each building site is encouraged. Uses within setbacks are limited to berms (front setback areas along Johnson Drive shall include a 35-foot wide bermed landscape area for the full site frontage), driveway crossings (shared driveways shall be encouraged between project area parcels), landscaping, public and private utilities, drainage and slopes, sidewalks, irrigation, and permitted signs.

Vehicular Access and Circulation

- A fundamental development objective for all sites is the safe and efficient movement of vehicles and pedestrians. Vehicular access to any site must be carefully designed in relationship to vertical and horizontal curves, sight distances, median cuts, other driveways, and other common traffic engineering criteria so that efficient, smooth flow of traffic is encouraged.

- Sites should be designed to minimize conflicts between automobiles and pedestrians and create a clearly organized system of entrances, driveways, and parking lots, while still providing adequate and convenient parking spaces. These requirements should minimize paved areas and curb cuts. Parking lots and driveways should be designed to avoid conflict with vehicular traffic in the street.

Pedestrian/Bicycle Access and Circulation

- Site and building design must accommodate pedestrian circulation onsite from parking areas to plazas, open space, pedestrian pathways, and to adjoining buildings. Existing and proposed pedestrian and/or bicycle circulation systems and easements must be integrated into site design. Pedestrian systems should be physically separated from vehicular circulation as much as possible. Minimizing the areas where the two systems cross or are physically adjacent reduces traffic hazards and makes the pedestrian system more efficient, pleasant, and visually attractive.

- Intersections where pedestrian routes cross vehicular circulation are critical areas and should be clearly marked for visual identification by both motorists and pedestrians. Sidewalks shall be located along all perimeter streets and designed to meet City standards. At least one sidewalk connection between the building and the perimeter street is required. Large parking areas must have sidewalk connections to the building entries or ground plaza areas.

- Pedestrian pathways should be designated from transit stops on Johnson Drive to primary site pedestrian circulation.

- At intersections where new traffic signals may be installed, pedestrian actuation should be provided.

- Both recreational and commuter bicycle accessibility to and within the project area is required.

- Should Johnson Drive be widened to accommodate vehicle traffic, bicycle lanes should be maintained on the roadway, and given the increase in traffic volumes, provision of buffered bicycle lanes should be considered. At new signalized intersections on Class II bicycle routes, bicycle detection should be incorporated into the final design of the intersection and traffic signals.

Grading, Excavation, and Drainage

- The design objectives for parcel grading are to create smooth slope transitions between adjacent parcels and proposed improvements, eliminate abrupt or unnatural landforms, and promote positive surface drainage. Proposed grading schemes will be examined during the individual design review process on a project by project basis.

- Off-site grading shall not be permitted. Each site must meet existing grade conditions at property and/or lease lines.

- Concentrated drainage across walkways and other pedestrian areas is not permitted. Drainage across driveway entries is to be avoided.
- Integrate storm water treatment features into on-site open space.

Utility, Solar, Electrical, and Mechanical Equipment

- All ground, building, or roof-mounted electric, gas, mechanical units, and similar devices must be properly located to avoid unsightliness or potential safety problems, and must be properly screened. Such equipment should be located and screened in a manner compatible with the design of the building and site improvements.

- No heating, air conditioning, electrical, or other equipment may be installed on the roof of any building or structure unless screened with materials compatible with the predominant exterior building material. All ground equipment should be located a minimum of 25 feet from all public streets, 5 feet from any sidewalk, and shall be screened and fenced accordingly.

- No transformer, electric, gas, meter of any type, or other apparatus shall be located on any power pole or hung on the outside of any building, except where specially approved by the City. The screening of all exterior mounted equipment should be compatible with the exterior building materials.

- Utility layouts and connection points are part of the design review process. All permanent utility lines shall be installed underground. No overhead wiring is permitted.

- Passive heating and cooling design features (e.g., shading devices to reduce sun exposure) and building design that can accommodate solar collectors and other alternative energy systems are required.

Services, Delivery, Trash, and Outdoor Equipment or Storage Areas

- Loading and service dock areas should be located to the rear or sides of a building, away from the main building entrance, or related high visibility areas. Preferably, service, loading, emergency generator, and trash areas should be enclosed within the building.

External facilities must be enclosed and screened with landscaping to minimize views from adjoining streets, buildings, or open space, and designed and constructed with the same design theme and of the same materials as the adjoining building. Such facilities may not be placed adjacent to or facing adjoining streets.

- Any adverse visual impacts on any other site shall be mitigated by the use of screening and/or landscaping to the extent necessary and appropriate to reduce those impacts to the satisfaction of the Director of Community Development.

- Each project must accommodate loading and servicing activity. All loading and service areas shall be clearly signed and conform to City standards. Loading areas shall be designed to accommodate backing and maneuvering onsite, not from a public street, and when occupied shall not prohibit onsite vehicular circulation..
- Trash enclosures and/or other waste storage facilities may be allowed, with City approval of both the design and location, provided that such facilities are screened from view and protected from wind by architectural or landscape features. All trash enclosures and waste containers must be covered and out of sight at all times from public streets, bikeways, pedestrian pathways, and transit corridors. All trash enclosures and waste storage facilities shall be designed to meet City standards.

- Pedestrian trash and recycling receptacles shall be placed in strategic locations for effective litter control. Where possible, they should be grouped with other site furnishings and placed adjacent to pedestrian pathways. All trash and recycling receptacles shall be located on paved surfaces in locations where they do not conflict with landscape maintenance.

- No materials, supplies, equipment, service vehicles, finished or semi-finished products, raw materials, or articles of similar nature may be stored or permitted to remain outside of buildings or be visible from adjacent properties or adjoining streets.

Parking

- All private driveways, parking areas, and loading areas will be paved in accordance with City standards. Parking areas must be paved with asphalt, concrete, masonry pavers, or similar material approved by the City. Surface parking areas shall not be permitted closer than 10 feet from side or an average of 15 feet (5-foot minimum) from rear property lines. Where parking areas will be contiguous and accessible to parking on adjacent lot(s), the parking may extend to the property line if part of a unified project. Visual screening must be provided for parking areas that can be viewed from adjacent development sites or from off-site public spaces such as streets, plazas, and walkways. All parking area layouts for the project area shall comply with City parking development standards.

- Parking areas should be designed to:
  • Provide safe and convenient movement of motor vehicles
  • Limit vehicular/pedestrian conflicts
  • Limit paved areas

• Provide for screening of paved areas
• Soften the visual impact of parking areas by providing interior planting

- Where opportunities exist for shared parking between users with staggered peak parking demands, owners and developers shall make every possible effort to take advantage of this opportunity to reduce the total number of parking spaces within each site or parcel. Where shared parking is intended, the analysis of parking criteria shall be submitted to the City as part of the design review process.

- Compact car parking requirements shall conform to City requirements. Up to 40 percent of the required off-street parking spaces may be compact.

- Parking structures are allowed but must be architecturally compatible with proposed buildings and the material finish must be the same as, or architecturally complimentary to, the exterior of buildings on the site. Placement of parking structures along site frontages is discouraged.

- Accessible parking spaces and location shall conform to the latest Americans with Disabilities Act (ADA) requirements in addition to the City's accessible parking space requirements. In case of conflict, the more restrictive provisions shall govern.

- Each project shall provide motorcycle parking to the satisfaction of the Director of Community Development. Motorcycle parking should be consolidated and segregated from automobile parking and must have concrete pavement surfaces to support motorcycle kickstands. Motorcycle stalls should be a minimum of 4 feet by 8 feet and clearly marked.

- Bicycle parking is required for each project to the satisfaction of the Director of Community Development. Appropriate bike rack hardware shall be provided for each stall and approved by the City prior to installation. Bicycle parking shall be located near building entries.

- Alternative vehicle parking is required for each project to the satisfaction of the Director of Community Development. Alternative vehicle parking shall be designed to meet City standards.

- Dimensional requirements for parking spaces and maneuvering areas shall be in conformance with City standards. A 90-degree parking angle is encouraged for ease of circulation. Parking areas located behind buildings are encouraged, but not necessarily required. Parking areas shall incorporate internal landscaped islands, pedestrian pathways, perimeter landscape islands, and screening. The design of the site shall discourage large expanses of parking uninterrupted by landscaping or buildings. Painted lines must designate all parking spaces.

Site Furnishings

- Site furnishings encompass a wide variety of individual elements, including lamp posts, pedestrian trash and recycling receptacles, and benches. Site furnishings shall be constructed of materials that are durable and easy to maintain and blend or complement the exterior colors of the surrounding buildings. Site furnishing shall be reviewed by the City as part of the design review process on a project by project basis.

Artwork

- Public art (refers to works of art in any media that have been planned and executed, both in size and materials, with the specific intention of being sited or staged in the public domain, usually outside and accessible to all), outdoor sculptures, and special architectural and landscape features are encouraged in the development of individual sites and parcels. Such pieces and features help establish strong visual identities for individual facilities and greatly enhance the special character of the project area in general. Artwork shall be approved by the City prior to installation.

Vending Machines

- All vending machines must be placed completely inside buildings.

Architecture

Visual Interest of Façade

Facades with a high level of visual interest from both auto and pedestrian viewpoints are encouraged. The exterior character of all buildings should enhance pedestrian activity in their immediate vicinities.

- To the greatest extent possible, create visual interest through the use of horizontal and vertical articulation, including plane changes, varying roof/parapet heights, recessed entries and windows, score lines, awnings, and varied materials, textures, and colors.
- Design walkways that encourage pedestrian use. Avoid locating walkways where users will be subjected to harsh glare from building materials or subjected to harsh environmental conditions.
- Design ground floor exteriors of buildings to be “pedestrian-friendly.” Specific criteria include the following:
  - Decorative wall surfaces and landscape materials between sidewalks and buildings are encouraged.
  - Muted, modular materials, such as brick and stone, are particularly desirable.
  - Windows that reveal indoor amenities and activities are encouraged.
  - To the greatest extent possible, large expanses of blank walls or mirror glass shall be prohibited.
  - Covered walks or arcades are encouraged.
- Each building should have a discernible base, a clear pattern of openings and/or surface features, a well-defined entry, and a clearly defined top roofline element.

- All buildings shall include a minimum of three primary exterior materials.

Noise Mitigation

Buildings along Johnson Drive should be designed to minimize the effect of road noise on buildings and plazas.

- Consider buffering major outdoor areas, such as balconies, terraces, and plazas, with design elements such as earth berms and evergreen plantings.
- Use wall materials with significant sound transmission ratings.
- Sound walls adjacent to the street are prohibited.

Massing, Scale, Form, and Details

Buildings should relate to the area and each other in their massing and forms. Larger masses should be located at the centers of building compositions, with smaller forms stepping outwards and down.

- Consider breaking very large buildings into modules or sub-parts to reduce perceived scale.

Building Profile

Design buildings to step back and step down to help break up mass. Use landscape materials to reinforce tiered building forms. “Stepped down approaches” are especially appropriate for breaking up larger structures in excess of 100,000 square feet or those over two stories in height.

- Express the position of each floor in the external skin design, using the following techniques:
  - Terracing, articulated structural elements, or changing building materials.
  - Belt courses, or other horizontal trim bands, of contrasting colors and/or materials.

Pedestrian Scale

Buildings should appear to be designed at a pedestrian scale. In general, this means using familiar forms and elements that can be interpreted in human dimensions.

- On buildings over 50,000 square feet and more than two stories high, do not use wall planes more than 24 feet high without incorporating meaningful techniques to break up the perceived building mass.
- Express facade components in ways that help establish building scale. Encourage compositions that emphasize floor lines or express rhythms and patterns of windows, columns, and other architectural features.

Entrances

Primary pedestrian entrances should be easily identifiable and attractive to pedestrians.

- Design main entrances to be clearly identifiable as seen from primary driveways and drop-offs.
  - Entrances should be designed as contrasting areas on a building’s façade.
- Use building entranceways as transitions from buildings to the ground plane. Specific criteria include:
  - Walls, terraces, grading, and plant materials should be incorporated.

− Terraces or porticos can be used to define and extend entrances.

- Design secondary entrances to connect to pedestrian circulation systems. These entrances should be visible from parking areas. They may also be more subdued.

Color and Materials Palette

Visual continuity in major building materials is desired throughout the project area.

- Use wall materials that are muted in color and have texture. Specific criteria include the following:
  − Natural matte textures and earth tone colors are encouraged. Textured, colored concrete may also be considered.
  − The use of fine textured materials, such as brick, cast stone, tile, and textured block are encouraged. Horizontally textured concrete, stucco and dark metal panels or glass spandrel panels may be suitable if used at a scale visually related to pedestrians.
  − Wood is not appropriate as a primary building material.
- Reserve the use of strongly contrasting materials and colors for accents, such as building entrances, railings, stairs, etc. Avoid an excessive variety of façade materials.
- If glass is proposed at pedestrian levels, use clear or lightly tinted low-e glass (glazing), particularly at pedestrian levels where transparency between indoor and outdoor spaces is desirable.
- Select building materials that will age with grace. Avoid light colored materials that may streak, fade, stain, generate glare, or detract from the natural setting.
- Glass with reflective, metallic coatings that increase glare is discouraged.
- Site-cast concrete should provide effective articulation.
- Large expanses of stucco visible from public areas are discouraged.

Human Scale Materials

Building materials manufactured in units measurable in human proportions should be used whenever possible. Materials such as brick, tile, concrete masonry units, and modular stone help people interpret the size of a building. Perceiving the scale of a building is important in terms of a pedestrian's ability to relate comfortably to it. Avoid over-scaling materials.

- Use building materials that are familiar in their dimensions and can be repeated in understandable modules.
- Combine building materials in modules that can be visually measured. Consider the following specific criteria:
  − Cast or scored concrete that gives a sense of proportion may be appropriate, as well as conventional modular materials, such as brick or stone. Avoid large, featureless surfaces.
  − Large, uninterrupted surface areas should have a change in articulation through the use of pattern, texture, material, openings, or change in plane.

Colors

Building colors should blend in with the natural surroundings.

- Study the landscape for cues. A predominance of earth tone colors that relate to the surrounding area, such as light, neutral tans, and browns is encouraged.

- Use darker colors at the base of walls and lighter colors for the tops of walls.
- Use darker colors or earth tones (neutral browns, darker buffs, tans, ochres) for expanses of walls, with brighter accents or white for trim.
- Use neutral roof colors between light and dark, avoiding white or reflective materials unless located behind a parapet. Cool roof materials are encouraged.

Landscape

To the greatest extent possible, water conservation measures shall be incorporated into the design. All landscaping plans shall comply with the State Model Water Efficient Landscape Ordinance and Bay Friendly Guidelines. All landscaping plans and materials require City approval as part of the design review process on a project by project basis.

Visual Buffers
Visual buffers should be created along property lines and where utility, service, garbage and/or loading areas are sited to provide thorough screening. The plant material should be a combination of evergreen trees and large-growing shrubs. One tree shall be planted at 15 feet on center along property lines. A minimum of 50 percent of the screening material shall be evergreen trees. Exceptions may be approved by the Director of Community Development.

Landscape Setbacks
A 35-foot wide bermed landscape setback is required on all parcels within the project area along Johnson Drive. The minimum height of the berm shall be determined by the Director of Community Development. Uses permitted within landscape setbacks are berms, driveways crossings, landscaping, public and private utilities, drainage and slopes, sidewalks, trails, irrigation, and permitted signs. Provide a minimum five-foot wide planting strip along building walls visible from the public right of way. This area may be reduced where there are pedestrian plazas or storefront uses.

Plant Palette
The plant palette shall predominantly feature species native to California that are drought tolerant and can withstand recycled water.

Parcel Entry Drives
The landscape emphasis at the entry drives is to be based on intended use. Visitor and primary entrances are to receive the greatest emphasis with respect to landscape treatment. The plant material selection should provide a variety of seasonal interest, texture and color.

Parking Area Requirements
- Landscape islands are to be provided internal to parking areas and as endcaps to all parking rows.
- Parking lot trees, minimum 24-inch box size shall be required at a minimum ratio of one tree for every six parking spaces

- Shrubs selected for parking lot screening for parking lots, including spaces and maneuvering drives, shall be a minimum size of 15-gallon size at planting.

Lighting

All lighting shall be complementary to the site layout and building architecture, and shall be designed to avoid glare on surrounding parcels and uses. All lighting plans shall comply with City standards and applicants shall submit a lighting location site plan, fixture details and specifications, and a photometric plan. All lighting plans and materials require City approval as part of the design review process on a project by project basis.

Signage

As appropriate, a master sign program shall be developed for each individual development site/project within the project area. All signage shall be complementary to the site layout and building architecture. All master sign programs or individual signage plans, including freeway pylon signs, and materials require City approval as part of a sign design review process on a project by project basis. Corporate branding and colors specific to the tenant are permitted.

Exceptions

Exceptions to these Design Guidelines may be granted by the decision making body if it can be determined that the proposed project design meets the overall objectives of the PUD-C District and these Design Guidelines.

Appendix E

Summary of Impacts and Mitigation Measures from the General Plan EIR and 2012 EIR

TABLE E-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Land Use and Planning		
Impact LU-1: The proposed General Plan would not physically divide an established community.	None required.	Less than Significant
Impact LU-2: The proposed General Plan may result in land use conflicts and incompatibility between existing and proposed land use. However, existing regulations, procedures, and the proposed General Plan would reduce these effects to less than significant.	None required.	
Impact LU-3: The potential annexation of land by the City as part of the proposed General Plan would not conflict with County and LAFCo policies adopted for the purposes of avoiding or mitigating an environmental effect.	None required.	
Impact LU-4: Implementation of the proposed General Plan may result in land use conflicts and incompatibility between existing agricultural uses and proposed non-agricultural land use. However, existing regulations and proposed General Plan goals, policies and programs would reduce these effects to less-than-significant levels.	None required.	
Impact LU-5: The proposed General Plan would conflict with lands under existing Williamson Act contracts.	None required.	
Impact LU-6: Implementation of the proposed General Plan would permanently convert up to five acres of Prime Farmland (as defined by LAFCo), two acres of Unique Farmland, and 39 acres of Farmland of Statewide Importance, as identified by the CA Farmland Mapping and Monitoring Program, to non-agricultural uses.	None required.	
Transportation		
Impact TR-1: Increased motor vehicle traffic due to implementation of proposed General Plan buildout would cause an increase in traffic at study intersections that would be substantial in relation to the existing traffic load and capacity of the street system.	**Mitigation Measure TR-1.1:** Owens Drive at Hopyard Road (#9) – Reconfigure Owens Drive at Hopyard Road to provide the following lanes: two northbound left, three northbound through, one northbound right; three southbound left, three southbound through, one southbound right (free); two eastbound left, two eastbound through, one eastbound right; two westbound left, two westbound through, one westbound right (free); change signal timings accordingly. **Mitigation Measure TR-1.2:** Stanley Boulevard at El Charro Road (#14) – Redesign the future intersection to widen the southbound approach to provide two left-turn and two right-turn lanes, and the westbound approach to provide a second through lane. **Mitigation Measure TR-1.3:** Stoneridge Drive at El Charro Road (#15) – Redesign the future intersection to provide a southbound free right-turn lane.	LTS

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Transportation (cont.)		
	Mitigation Measure TR-1.4: Stoneridge Drive at Johnson Drive (#17) – Re-stripe westbound right-turn lane to shared through/right lane and widen westbound departure to receive 4	
Impact TR-2: Development due to implementation of proposed General Plan buildout would add traffic to roadway and highway segments that already exceed volume-to-capacity standards established by the Alameda County Congestion Management Agency. These increases would be allowable under the Alameda County Congestion Management Agency thresholds of significance for volume.	None required.	
Impact TR-3: Development due to implementation of the proposed General Plan buildout would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks.	None required.	
Impact TR-4: Development due to implementation of the proposed General Plan buildout would not substantially increase hazards due to a design feature or incompatible uses, nor would the development due to its implementation result in inadequate emergency access.	None required.	
Impact TR-5: Development due to implementation of the proposed General Plan buildout could result in increased demand for motor vehicle parking.	None required.	
Impact TR-6: Development due to implementation of the proposed General Plan buildout would not conflict with adopted policies, plans, or programs supporting alternative transportation and would not disrupt existing transit service. Implementation of the proposed General Plan would increase transit accessibility and amenities.	None required.	
Impact TR-7: Development due to implementation of proposed General Plan buildout could adversely affect bicycle facilities.	None required.	
Impact TR-8: Development due to implementation of proposed General Plan buildout could result in an impact on pedestrian facilities.	None required.	

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Population, Employment, and Housing		
Impact POP-1: Implementation of buildout of the proposed General Plan would result in direct population and housing unit growth in the Planning Area and in indirect growth due to road and infrastructure changes. However, population and housing unit growth would be limited by the City's housing cap of 29,000 units. Furthermore, the goals, policies, and programs included in the proposed General Plan would reduce the impacts to less-than-significant levels.	None required.	
Public Services		
ImpactPS-1: Development associated with buildout of the proposed General Plan would result in increased demand for services from the Livermore-Pleasanton Fire Department. Provision of new fire protection services could require the construction of new fire protection facilities, the construction of which would result in a less-than-significant impact.	None required.	
Impact PS-2: Development near the Urban Growth Boundary associated with buildout of the proposed General Plan would not increase risk from wildland fires due to new development's proximity to open space areas composed of chaparral or grasslands.	None required.	
Impact PS-3: Development associated with buildout of the proposed General Plan would result in increased demand for policing services from the Pleasanton Police Department. Provision of new police protection services could require the construction of new police facilities, the construction of which would result in a less-than-significant impact.	None required.	
Impact PS-4: New development would generate additional school enrollment within the Pleasanton Unified School District. This could necessitate the construction of new school facilities, the construction of which would have a less-than-significant impact.	None required.	
Impact PS-5: New development would not increase the use of existing neighborhood, community, and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated.	None required.	
Impact PS-6: Buildout under the proposed General Plan may include recreational facilities or require the construction of recreational facilities that could have an adverse physical effect on the environment.	None required.	

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Utilities		
Impact UT-1: New or expanded water entitlements may be needed to serve the Planning Area in connection with the buildout of the proposed General Plan. Through buildout, the Planning Area is likely to have sufficient, reliable, water supplies from existing entitlements and resources. Through 2015, the Planning Area has sufficient sustainable water supplies. After 2015, the Planning Area may have sufficient sustainable water supplies, depending on a number of factors, in particular, if the past water sustainability factors used by Zone 7 on its imported water supplies are brought back to pre-2008 levels to meet demand through buildout under the proposed General Plan.	None required.	
Impact UT-2: The Dublin-San Ramon Services District and the Livermore-Amador Valley Water Management Agency have adequate capacity to serve projected demand from the development allowed under the proposed General Plan, resulting in a less-than-significant impact.	None required.	
Impact UT-3: The Dublin-San Ramon Services District and Livermore-Amador Valley Water Management Agency would meet the wastewater treatment and disposal requirements of the San Francisco Bay Regional Water Quality Control Board as a result of implementing the proposed General Plan buildout.	None required.	
Impact UT-4: Development due to buildout of the proposed General Plan would be served by a landfill with sufficient permitted capacity to accommodate Pleasanton's solid waste disposal needs.	None required.	
Impact UT-5: Development due to buildout of the proposed General Plan would be served by a landfill with sufficient permitted capacity to accommodate Pleasanton's solid waste disposal needs.	None required.	
Impact UT-6: The proposed General Plan would not encourage the wasteful or inefficient use of energy.	None required.	
Impact UT-7: Implementation of buildout of the proposed General Plan would require new water storage and supply facilities and distribution pipes, wastewater facilities, and energy production and transmission infrastructure, the construction of which would result in less-than-significant environmental effects.	None required.	

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Hydrology and Water Quality		
Impact HY-1: Development due to buildout of the proposed General Plan could have potential construction and post-construction impacts on water quality and create additional sources of polluted runoff. However, at the programmatic level, existing regulations and standards are sufficiently protective of water quality and beneficial uses; neither water quality standards nor waste discharge requirements would be violated.	None required.	
Impact HY-2: Development under the proposed General Plan would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge.	None required.	
Impact HY-3: The proposed General Plan would alter runoff characteristics in the Planning Area that could lead to more on-site and off-site erosion.	None required.	
Impact HY-4: The proposed General Plan would alter the Planning Area runoff characteristics that could exceed the capacity of existing stormwater drainage systems and result in off-site flooding, a potentially significant impact.	None required.	
Impact HY-5: Implementation of the proposed General Plan may result in construction of residences and structures within a FEMA 100-year flood hazard area that would be subject to Municipal Code Chapter 17.08 and the Public Safety Element of the General Plan.	None required.	
Impact HY-6: Implementation of the proposed General Plan buildout could expose people and structures to a severe but extremely unlikely risk of loss, injury, or death involving flooding as the result of a levee or dam failure.	None required.	
Impact HY-7: Implementation of proposed General Plan buildout would require the construction of additional stormwater detention features, the construction of which would not be expected to cause a significant environmental effect.	None required.	
Impact HY-8: Development due to implementation of the proposed General Plan would continue to allow on-site sewage systems in the Main Basin groundwater basin area. On-site sewage systems can contribute to ground and surface water quality degradation that could contribute to a violation of water quality standards, a potentially significant impact. However, existing Pleasanton Municipal Code regulations and standards would ensure that potential development due to implementation of the proposed General Plan would not result in degradation of water quality by septic systems.	None required.	

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Geology		
ImpactGEO-1: Buildout due to implementation of the proposed General Plan would not expose people or structures to rupture of a known earthquake fault.	None required.	
Impact GEO-2: Buildout due to implementation of the proposed General Plan would not expose people or structures to strong seismic groundshaking or seismic-related ground failure.	None required.	Less than Significant
Impact GEO-3: Buildout of the proposed General Plan would not expose people or structures to landslides or mudflows.	None required.	
Impact GEO-4: Buildout due to implementation of the proposed General Plan would not be subject to risk from settlement and/or subsidence of land, lateral spreading, or expansive soils, creating substantial risks to life or property.	None required.	
Impact GEO-5: Buildout due to implementation of the proposed General Plan would not result in substantial soil erosion.	None required.	
Impact GEO-6: Buildout due to implementation of the proposed General Plan Update would not result in the loss of availability of a regionally valued mineral resource.	None required.	
Biological Resources		
Impact BIO-1: Development due to implementation of the proposed General Plan could create a potential health hazard, or involve the use, production or disposal of materials that pose a potential hazard to plant or animal populations in the affected area.	None required.	
Impact BIO-2: Development due to implementation of the proposed General Plan could adversely affect special status plant species due to the substantial degradation of the quality of the environment or reduction of population or habitat below self-sustaining levels.	None required.	
Impact BIO-3: Development due to implementation of the proposed General Plan could result in degradation of the quality of the environment or reduction of habitat or population of special status birds below self-sustaining levels, through the loss of both nesting and foraging habitat.	None required.	
Impact BIO-4: Development due to implementation of the proposed General Plan could result in degradation of the quality of the environment or reduction of habitat or population of special status birds below self-sustaining levels, through the loss of both nesting and foraging habitat.	None required.	

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)		
Impact BIO-5: Development due to implementation of the proposed General Plan could result in degradation of the quality of the environment or reduction of habitat or population of special status amphibians and reptiles below self-sustaining levels.	None required.	
Impact BIO-6: Development due to implementation of the proposed General Plan could result in degradation of the quality of the environment or reduction of habitat or population of special status mammals below self-sustaining levels.	None required.	
Impact BIO-7: Implementation of the Proposed General Plan could result reduction of aquatic habitat or populations below self-sustaining levels of special status fish.	None required.	
Impact BIO-8: Implementation of the proposed General Plan could result in the loss or modification of riparian habitat, resulting in a substantial adverse effect.	None required.	
Impact BIO-9: Implementation of the Proposed General Plan could result in an adverse effect on State or federally protected wetlands and/or waters of the United States through direct removal, filling, or hydrological interruption.	None required.	
Impact BIO-10: Development due to implementation of the proposed General Plan could result in the loss of California Department of Fish and Game defined sensitive natural communities such as Sycamore Alluvial Woodland.	None required.	
Impact BIO-11: Development due to implementation of the proposed General Plan could lead to removal of mature trees.	None required.	
Impact BIO-12: Development due to implementation of the proposed General Plan could interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	None required.	
Impact BIO-13: Implementation of buildout of the proposed General Plan, combined with other buildout assumed in the Tri-Valley area, could result in a regional loss of special status plant or wildlife species or their habitat.	None required.	
Impact BIO-14: Implementation of buildout of the proposed General Plan, combined with buildout assumed in the Tri-Valley Planning Area, could contribute to the cumulative loss of sensitive natural communities including wetlands and riparian habitat in the region.	None required.	

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Noise		
Impact NO1: Development due to implementation of proposed General Plan could result in an increase in exterior noise levels, although these noise levels would be within the Noise and Land-Use Compatibility Guidelines of the City and the increase would be allowable based on community response.	None required.	
Impact NO-2: Development due to implementation of the proposed General Plan would not increase residential or other sensitive receptor interior noise levels above Ldn 45 dB.	None required.	
Impact NO-3: Development due to implementation of the proposed General Plan would subject existing and/or planned residential and commercial areas to construction noise and groundborne vibration. Construction-related noise levels would meet the standards of Pleasanton's Noise Ordinance.	None required.	
Air Quality and Climate Change		
Impact AQ-1: Development due to buildout of the proposed General Plan buildout would result in an increase in population lower than that estimated in the newest air quality plan (2005 Ozone Strategy) and an increase in vehicle miles traveled. This would lead to increases in air pollutants due to cumulative development in the Planning Area that could conflict with implementation of the current air quality plan.	Limiting population based on the housing cap while allowing and encouraging business development would be a cumulative effect of building out the Planning Area that is intrinsic to both the existing and proposed General Plans. Thus no mitigation measures are available to lower this cumulative impact to a less-than-significant level.	Significant and Unavoidable
Impact AQ-2: Development due to implementation of the proposed General Plan would not result in carbon monoxide concentrations that exceed (violate) the 1-hour State ambient air quality standard of 20.0 parts per million (ppm), the 8-hour state ambient standard of 9.0 ppm, or the federal standards, which are not as stringent.	None required.	
Impact AQ-3: Development due to implementation of the proposed General Plan would result in shortterm air quality emissions as a result of construction activities.	None required.	
Impact AQ-4: Development due to implementation of the proposed General Plan buildout would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.	None required.	
Impact AQ-5: Development due to implementation of the proposed General Plan could result in toxic air contaminant (TAC) emissions that could create a risk for new sensitive receptors.	None required.	

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Air Quality and Climate Change (cont.)		
Impact AQ-6: Development due to implementation of proposed General Plan buildout would generate greenhouse gases), which would contribute to the cumulative impact of global climate change. However, the proposed General Plan's contribution to regional greenhouse gas emissions would not be considerable.	None required.	
Impact AQ-7: Development due to implementation of the proposed General Plan would not result in the creation of odors affecting a substantial number of people.	None required.	
Visual Resources		
Impact VR-1: Development due to implementation of the proposed General Plan would not have substantial adverse impacts on scenic vistas and visual natural resources within the Planning Area.	None required.	
Impact VR-2: Development associated with implementation of the proposed General Plan would not substantially alter the existing visual character or quality and urban design within the Planning Area.	None required.	
Impact VR-3: New development due to implementation of the proposed General Plan would create new sources of daytime glare, and could change nighttime lighting and illumination levels in the City.	None required.	
Cultural Resources		
Impact CR-1: Development associated with implementation of buildout of the proposed General Plan would not lead to potential damage or loss of known historic, archaeological, or paleontological resources, because of the goals, policies, and programs included in the proposed General Plan.	None required.	
Impact CR-2: Development associated with buildout of the proposed General Plan could damage unknown historic, prehistoric, or archaeological resources in the Planning Area.	None required.	
Hazards and Hazardous Materials		
Impact HAZ-1: Construction and operation due to implementation of the proposed General Plan would not create a potentially significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	None required.	

TABLE E-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN EIR

Impacts	Mitigation Measures	Significance after Mitigation
Hazards and Hazardous Materials (cont.)		
Impact HAZ -2: Activities related to implementation of the proposed General Plan could accidentally release hazardous materials into the environment, creating a potentially significant hazard to the public or the environment.	None required.	
Impact HAZ -3: Buildout of development due to implementation of the proposed General Plan could result in hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	None required.	
Impact HAZ-4: Development that would be expected with buildout of the proposed General Plan could be located on one or more sites included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, resulting in a hazard to the public or the environment.	None required.	
Impact HAZ-5: Implementation of the proposed General Plan would not effect the operations at the Livermore Municipal Airport or present a safety hazard to people residing or working in the Planning Area.	None required.	
Impact HAZ-6: Buildout of the proposed General Plan would not result in a safety hazard for people residing or working in the vicinity of a private airstrip.	None required.	
Impact HAZ-7: Buildout of the proposed General Plan would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	None required.	
Impact HAZ-8: Implementation due to buildout of the proposed General Plan would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including wildlands adjacent to urbanized areas or residences intermixed with wildlands.	None required.	
Impact HAZ-9: Implementation of the proposed General Plan, combined with buildout assumed in the Tri-Valley area, could result in regional water pollution.	None required.	

Source: Pleasanton General Plan EIR, 2009

TABLE E-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Aesthetics		
Impact 4.A-1: Development facilitated by the General Plan Amendment and rezonings could have a potentially adverse effect on a scenic vista. (Significant)	**Housing Element** **Mitigation Measure 4.A-1:** The City shall require that site plans for the proposed Site 7 residential development to incorporate view corridors through the site which maintain views of the ridgelines to the west from Valley Avenue. **Climate Action Plan** None required.	Less than Significant
Impact 4.A-2: Development facilitated by the General Plan Amendment and rezonings could potentially damage scenic resources, including, but not limited to, trees, rocks, outcroppings, and historic buildings within a state scenic highway. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.A-3: Development facilitated by the General Plan Amendment and rezonings could potentially degrade the existing visual character or quality of Planning Area. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.A-4: Development facilitated by the General Plan Amendment and rezonings could potentially create a new source of substantial light or glare which would adversely affect day or nighttime views in the Planning Area. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Air Quality		
Impact 4.B-1: Implementation of the General Plan Amendment and rezonings would result in increased long-term emissions of criteria pollutants associated with construction activities that could contribute substantially to an air quality violation. (Significant)	**Housing Element** **Mitigation Measure 4.B-1a:** Prior to the issuance of a grading or building permit, whichever is sooner, the project applicant for a potential site for rezoning shall submit an air quality construction plan detailing the proposed air quality construction measures related to the project such as construction phasing, construction equipment, and dust control	Less than Significant

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
	measures, and such plan shall be approved by the Director of Community Development. Air quality construction measures shall include Basic Construction Mitigation Measures (BAAQMD, May 2011) and, where construction-related emissions would exceed the applicable thresholds, Additional Construction Mitigation Measures (BAAQMD, May 2011) shall be instituted. The air quality construction plan shall be included on all grading, utility, building, landscaping, and improvement plans during all phases of construction.	
Air Quality (cont.)		
Impact 4.B-1 (cont.)	**Climate Action Plan** None required.	
Impact 4.B-2: Development facilitated by the General Plan Amendment and rezonings could fundamentally conflict with the Bay Area 2010 Clean Air Plan because the projected rate of increase in vehicle miles traveled (VMT) or vehicle trips is not greater than the projected rate of increase in population. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	Less than Significant
Impact 4.B-3: Development facilitated by the General Plan Amendment and rezonings would not fundamentally conflict with the Clean Air Plan because the plans demonstrate reasonable efforts to implement control measures contained in the Clean Air Plan. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	Less than Significant
Impact 4.B-4: Development facilitated by the General Plan Amendment and rezonings could potentially include residential or mixed-use developments that could expose sensitive receptors to substantial health risk from diesel particulate matter (DPM) and other TACs from mobile and stationary sources. (Significant)	**Housing Element** **Mitigation Measure 4.B-4:** Reduce Exposure to TACs. On project sites where screening thresholds are exceeded, the following measures shall be implemented for development on all the potential sites for rezoning to reduce exposure to TACs and improve indoor and outdoor air quality: Indoor Air Quality - In accordance with the recommendations of BAAQMD, appropriate measures shall be incorporated into building design in order to reduce the potential health risk due to exposure to TACs to achieve an acceptable interior air quality level for sensitive receptors. The appropriate measures shall include one of the following methods: • Project applicants shall retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with the BAAQMD requirements to determine the exposure of project residents/occupants/users to air pollutants prior to issuance of a demolition, grading, or building permit. The HRA shall be submitted to the Community Development Department for review and approval. The applicant shall implement the approved HRA recommendations, if any. • Project applicants shall implement all of the following features that have been found to reduce the air quality risk to	Less than Significant

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
	sensitive receptors and shall be included in the project construction plans. These features shall be submitted to the Community Development Department for review and approval prior to the issuance of a demolition, grading, or building permit and shall be maintained on an ongoing basis during operation of the projects. • Redesign the site layout to locate sensitive receptors as far as possible from any freeways, major roadways, or other sources of air pollution (e.g., loading docks, parking lots). • Incorporate tiered plantings of trees (redwood, deodar cedar, live oak, and/or oleander) to the maximum extent feasible between the sources of pollution and the sensitive receptors.	
Air Quality (cont.)		
Impact 4.B-4 (cont.)	• Install, operate and maintain in good working order a central heating and ventilation (HV) system or other air take system in the building, or in each individual residential unit, that meets or exceeds an efficiency standard of MERV 13. The HV system shall include the following features: Installation of a high efficiency filter and/or carbon filter to filter particulates and other chemical matter from entering the building. Either HEPA filters or ASHRAE 85% supply filters shall be used. • Retain a qualified HV consultant or HERS rater during the design phase of the project to locate the HV system based on exposure modeling from the pollutant sources. • Install indoor air quality monitoring units in buildings. • Project applicants shall maintain, repair and/or replace HV systems on an ongoing and as needed basis or shall prepare an operation and maintenance manual for the HV systems and the filters. The manual shall include the operating instructions and the maintenance and replacement schedule. This manual shall be included in the CC&Rs for residential projects and distributed to the building maintenance staff. In addition, the applicant shall prepare a separate homeowners manual. The manual shall contain the operating instructions and the maintenance and replacement schedule for the HV system and the filters. Outdoor Air Quality - To the maximum extent practicable, individual and common exterior open space, including playgrounds, patios, and decks, shall either be shielded from the source of air pollution by buildings or otherwise buffered to further reduce air pollution for project occupants.	
	Climate Action Plan None required.	
Impact 4.B-5: Development facilitated by the proposed General Plan Amendment and rezonings could potentially include residential developments that expose occupants to sources of substantial odors affecting a substantial number of people. (Significant)	**Mitigation Measure 4.B-5:** If odor complaints associated with the solid waste transfer station operations are received from future residences of the potential sites for rezoning (Sites 6, 8, 11, and 14), the City shall work with the transfer station owner(s) and operator(s) to ensure that odors are minimized appropriately.	Less than Significant
	Climate Action Plan	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
	None required.	
Impact 4.B-6: Development proposed as part of the General Plan Amendment and rezonings, when combined with other foreseeable development in the vicinity, could potentially be inconsistent with the growth assumptions of the *Bay Area 2010 Clean Air Plan* resulting in a cumulative air quality impact. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	Less than Significant

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Biological Resources		

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Impact 4.C-1: Development facilitated by the General Plan Amendment and rezonings could potentially have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFG, or the USFWS. (Significant)	**Housing Element** **Mitigation Measure 4.C-1a: Pre-construction Breeding Bird Surveys.** The City shall ensure that prior to development of all potential sites for rezoning (Sites 1-4, 6-11, 13, 14, and 16-21) and each phase of project activities that have the potential to result in impacts on breeding birds, the project applicant shall take the following steps to avoid direct losses of nests, eggs, and nestlings and indirect impacts to avian breeding success: • If grading or construction activities occur only during the non-breeding season, between August 31 and February 1, no surveys will be required. • Pruning and removal of trees and other vegetation, including grading of grasslands, should occur whenever feasible, outside the breeding season (February 1 through August 31). • During the breeding bird season (February 1 through August 31) a qualified biologist will survey activity sites for nesting raptors and passerine birds not more than 14 days prior to any ground-disturbing activity or vegetation removal. Surveys will include all line-of-sight trees within 500 feet (for raptors) and all vegetation (including bare ground) within 250 feet for all other species. • Based on the results of the surveys, avoidance procedures will be adopted, if necessary, on a case-by-case basis. These may include construction buffer areas (up to several hundred feet in the case of raptors) or seasonal avoidance. • Bird nests initiated during construction are presumed to be unaffected, and no buffer would necessary except to avoid direct destruction of a nest or mortality of nestlings. • If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees and shrubs that have been determined to be unoccupied by nesting or other special-status birds may be pruned or removed. **Mitigation Measure 4.C-1b: Pre-Construction Bat Surveys.** Conditions of approval for building and grading permits issued for demolition and construction on Sites 6, 8, 9, 10, 13, 20, and 21 shall include a requirement for pre-construction special-status bat surveys when large trees are to be removed or underutilized or vacant buildings are to be demolished. If active day or night roosts are found, the bat biologist shall take actions to make such roosts unsuitable habitat prior to tree removal or building demolition. A no-disturbance buffer of 100 feet shall be created around active bat roosts being used for maternity or hibernation purposes. Bat roosts initiated during construction are presumed to be unaffected, and no buffer would necessary. **Mitigation Measure 4.C-1c: Burrowing Owl Surveys.** Conditions of approval for building and grading permits at Site 18 (Downtown SF site) and Site 20 (Sunol Blvd. and Sycamore Road)shall require the Project Applicant to implement the following measures prior to construction initiation. • A qualified biologist[1] shall conduct a combined Phase I and Phase II burrowing owl habitat assessment and burrow survey according to accepted guidelines developed by the Burrowing Owl Consortium and accepted by CDFG. If suitable habitat, i.e. grasslands with short cover and burrows of a size usable by owls and/or owl sign, is	Less than Significant

[1] A qualified biologist shall have at least a bachelor's degree in a field related to wildlife ecology and shall be familiar with life history and habitats of target species for any pre-construction surveys.

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Biological Resources		

Impact 4.C-1 (cont.)	not present at a site then the qualified biologist shall prepare a written report to be submitted to CDFG stating the reasons why the site is not considered to be burrowing owl habitat and no further surveys or mitigation are necessary.
	• If the Phase I and II surveys find that suitable habitat and burrows are present at a site the qualified biologist will conduct Phase III surveys to determine presence or absence of burrowing owls. A minimum of four surveys will be conducted during the breeding season (April 15 to July 15). If owls are not observed then a minimum of four surveys will be conducted during the wintering season. If owls are not observed during either Phase III survey then no further mitigation is generally required, although CDFG may require pre-construction surveys. In either case a Phase IV survey report shall be prepared and submitted to CDFG.
	• If required, pre-construction surveys for burrowing owl shall be conducted as follows:
	  ○ A qualified biologist shall conduct a pre-construction survey for burrowing owl if construction occurs during the breeding season (February 1 through August 31). Surveyors shall walk transects no more than 100 feet apart to attain 100 percent visual coverage of all grassland habitats within the project site. Where possible, agricultural or grassland habitats within 300 feet of the project site shall also be surveyed. If owls are not detected during this survey, project work can move forward as proposed.
	  ○ If owls are detected during this survey, no project activities shall occur within 250 feet of occupied burrows until the breeding season is over, unless owls have not begun laying eggs or juveniles are capable of independent survival.
	  ○ If project activities will occur during the non-breeding season (September 1 through January 31), a second pre-construction survey shall be conducted for burrowing owl to document wintering owls that have migrated to the project site, as well as breeding owls that may have left the project site. If owls are not detected during this survey, project work can move forward as proposed.
	  ○ If occupied burrows are detected during this survey and can be avoided, project activities shall not occur within 160 feet of occupied burrows.
	  ○ If occupied burrows cannot be avoided, one-way doors shall be installed to passively relocate burrowing owls away from active work areas. Two natural burrows or one artificial burrow shall be provided in adjacent grassland habitat for each one-way door installed in an active burrow. One-way doors shall remain in place for 48 hours. The project site shall be monitored daily for up to one week to ensure owls have moved to replacement burrows.
	  ○ Once unoccupied, burrows shall be excavated by hand and backfilled to prevent owl occupation. When feasible, other unoccupied burrows in ground disturbance area should also be excavated by hand and backfilled. Depending on the California red-legged frog and California tiger salamander Habitat Assessment results the project site may require a pre-construction survey for these species as well before burrows can be collapsed.
	Mitigation Measure 4.C-1d: Compensatory mitigation for annual grassland habitat providing potentially suitable habitat for burrowing owl. Annual grasslands at the Site 18 may provide foraging, nesting, or wintering habitat for burrowing owl. If burrowing owls are found to be absent through the surveys prescribed above, then	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
	consistent with standard CDFG mitigations standards and ratios, annual grassland habitat at Sites 18 and Site 20 shall be compensated for at a ratio of 1:1. If burrowing owl are found to be occupying Site 18 or 20, then	
Biological Resources		
Impact 4.C-1 (cont.)	compensatory mitigation shall be required at a ratio of 3:1, acres replaced to acres lost. The project applicant may fulfill this obligation by purchasing annual grassland property suitable for, or occupied by, burrowing owl. Such land shall be protected in perpetuity through an endowed conservation easement. Alternatively, the project applicant may purchase credits in an approved mitigation bank for burrowing owl. **Climate Action Plan** None required.	
Impact 4.C-2: Development facilitated by the General Plan Amendment and rezonings could potentially adversely affect wetlands, streams, or riparian habitat. (Significant)	**Housing Element** **Mitigation Measure 4.C-2:** Consistent with the Alameda County Watercourse Protection Ordinance, no new grading or development at Sites 6, 8, 9, 10, 13, 20, or 21 shall be allowed within 20 feet of the edge of riparian vegetation or top of bank, whichever is further from the creek centerline, as delineated by a qualified, City-approved biologist. **Climate Action Plan** None required.	Less than Significant
Impact 4.C-3: Development facilitated by the General Plan Amendment and rezonings could potentially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Significant)	**Housing Element** Implement Mitigation Measures 4.C-1a through 4.C-1d and 4.C-2c. **Climate Action Plan** None required.	Less than Significant
Impact 4.C-4: Development facilitated by the General Plan Amendment and rezonings could potentially conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.C-5: Development facilitated by the General Plan Amendment and rezonings could potentially conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Impact 4.C-6: Development facilitated by the General Plan Amendment and rezonings, in combination with past, present, and reasonably foreseeable future projects in the site vicinity, could potentially have a cumulatively considerable impact on biological resources. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Cultural Resources		
Impact 4.D-1: Development facilitated by the General Plan Amendment and rezonings has the potential to adversely change the significance of historical resources. (Significant and Unavoidable)	**Housing Element** **Mitigation Measure 4.D-1a:** Prior to demolition, the project applicant shall have a historic resource evaluation conducted for the ice house and farmhouse on Site 6 and for the residence on Site 21. If it is determined that this structure is historic, Mitigation Measure 4.D-1b will be required. If the structure is not found to be historic, demolition of the structure will be considered a less than significant impact. **Mitigation Measure 4.D-1b:** If the historic resources evaluation determines that Site 6 contains a historic resource, prior to demolition, the structure shall be documented according to Historic American Building Survey (HABS) standards. These standards include large format black and white photographs, an historical narrative describing the architectural and historical characteristics of the building, and measured drawings (or reproduced existing drawings if available). The HABS documentation shall be archived at the City of Pleasanton Planning Department and the City of Pleasanton Public Library. **Climate Action Plan** None required.	Significant and Unavoidable
Impact 4.D-2: Development facilitated by the General Plan Amendment and rezonings has the potential to adversely affect archaeological resources. (Significant)	**Housing Element** **Mitigation Measure 4.D-2**: Prior to the issuance of grading permits for development on the potential sites for rezoning that have not been previously developed or have only experienced minimal disturbance, including Sites 6, 7, 8, and 18, the applicant shall submit to the City an archaeological mitigation program that has been prepared by a licensed archaeologist with input from a Native American Representative. The applicant shall implement the requirements and measures of this program, which will include, but not be limited to: • Submission of periodic status reports to the City of Pleasanton and the NAHC. • Submission of a final report, matching the format of the final report submitted for CA-Ala-613/H, dated March 2005, to the City and the NAHC. • A qualified archaeologist and the Native American Representative designated by the NAHC will be present on site during the grading and trenching for the foundations, utility services, or other on-site excavation, in order to determine if any bone, shell, or artifacts are uncovered. If human remains are uncovered, the applicant will implement Mitigation Measure 4.D-4, below. **Climate Action Plan**	Less than Significant

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
	None required.	
Impact 4.D-3: Development facilitated by the General Plan Amendment and rezonings may directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Significant)	**Housing Element** **Mitigation Measure 4.D-3:** In the event that paleontological resources are encountered during the course of development, all construction activity must temporarily cease in the affected area(s) until the uncovered fossils are properly assessed by a qualified paleontologist and subsequent recommendations for appropriate documentation and conservation are evaluated by the Lead Agency. Excavation or disturbance may continue in other areas of the site that are not reasonably suspected to overlie adjacent or additional paleontological resources. **Climate Action Plan** None required.	Less than Significant
Cultural Resources (cont.)		
Impact 4.D-4: Development facilitated by the General Plan Amendment and rezonings has the potential to disturb human remains, including those interred outside of formal cemeteries. (Significant)	**Housing Element** **Mitigation Measure 4.D-4:** In the event that human remains are discovered during grading and construction of development facilities by the Housing Element, work shall stop immediately. There shall be no disposition of such human remains, other than in accordance with the procedures and requirements set forth in California Health and Safety Code Section 7050.5 and Public Resources Section 5097.98. These code provisions require notification of the County Coroner and the Native American Heritage Commission, who in turn must notify the persons believed to be most likely descended from the deceased Native American for appropriate disposition of the remains. **Climate Action Plan** None required.	Less than Significant
Impact 4.D-5: Development facilitated by the General Plan Amendment and rezonings, in combination with past, present, existing, approved, pending, and reasonably foreseeable future development that would adversely affect historical resources on or adjacent to cumulative project sites, could form a significant cumulative impact to historical resources. (Significant)	**Housing Element** Implement Mitigation Measure 4.D-1a. **Climate Action Plan** None required.	Less than Significant
Greenhouse Gas Emissions		
Impact 4.E-1: Development facilitated by the proposed Housing Element; Climate Action Plan; General Plan as it was adopted in 2009, amended in 2010, and proposed to be amended pursuant to the settlement agreement; and rezoning of sites for residential development could	**Housing Element** None required.	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
potentially produce greenhouse gas emissions that could exceed applicable quantitative thresholds. (Less than Significant)	**Climate Action Plan** None required.	
Impact 4.E-2: The proposed Housing Element; Climate Action Plan; General Plan as it was adopted in 2009, amended in 2010, and proposed to be amended pursuant to the settlement agreement; and rezoning of sites for residential development sufficient to meet Pleasanton's share of the regional housing need could potentially conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Geology		
Impact 4.F-1: Development facilitated by the General Plan Amendment and rezonings would expose people or structures to rupture of a known earthquake fault. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.F-2: Development facilitated by the General Plan Amendment and rezonings could potentially expose people or structures to adverse effects of strong seismic groundshaking or seismic-related ground failure. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.F-3: Development facilitated by the General Plan Amendment and rezonings could potentially expose people or structures to landslides or mudflows. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.F-4: Development facilitated by the General Plan Amendment and rezonings could potentially be subject to risk from settlement and/or subsidence of	**Housing Element** None required.	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
land, lateral spreading, or expansive soils, creating substantial risks to life or property. (Less than Significant)	**Climate Action Plan** None required.	
Impact 4.F-5: Development facilitated by the General Plan Amendment and rezonings could potentially result in substantial soil erosion. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.F-6: Development facilitated by the General Plan Amendment and rezonings in combination with past, present, and future development in the surrounding region could potentially result in cumulative impacts to geologic and seismic hazards. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Hazards and Hazardous Materials		
Impact 4.G-1: Development facilitated by the General Plan Amendment and rezonings could create a potentially significant hazard to the public through routine transport, use, or disposal of hazardous materials. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.G-2: Development facilitated by the General Plan Amendment and rezonings could accidentally release hazardous materials into the environment, creating a potentially significant hazard to the public or environment. (Significant)	**Housing Element** **Mitigation Measure 4.G-2:** The City shall ensure that each project applicant retain a qualified environmental consulting firm to prepare a Phase I environmental site assessment in accordance with ASTM E1527-05 which would ensure that the City is aware of any hazardous materials on the site and can require the right course of action. The Phase I shall determine the presence of recognized environmental conditions and provide recommendations for further investigation, if applicable. Prior to receiving a building or grading permit, project applicant shall provide documentation from overseeing agency (e.g., ACEH or RWQCB) that sites with identified contamination have been remediated to levels where no threat to human health or the environment remains for the proposed uses. **Climate Action Plan** None required.	Less than Significant

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Impact 4.G-3: Development facilitated by the General Plan Amendment and rezonings could potentially result in hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.G-4: Development facilitated by the General Plan Amendment and rezonings could potentially be located on one or more sites that are included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5, resulting in a hazard to the public or the environment. (Significant)	**Housing Element** Implement Mitigation Measure 4.G-2. **Climate Action Plan** None required.	Less than Significant
Impact 4.G-5: Development facilitated by the General Plan Amendment and rezonings could potentially be affect the operations at the Livermore Municipal Airport or present a safety hazard to people residing or working in the vicinity. (Significant)	**Housing Element** **Mitigation Measure HAZ-4.G-5:** a. Prior to PUD approval for Sites 11 (Kiewit), 14 (Legacy Partners), 6 (Irby-Kaplan-Zia), 8 (Auf de Maur/Richenback), 10 (CarrAmerica), 16 (Vintage Hills Shopping Center), 17 (Axis Community Health), and 21 (4202 Stanley): 1) the project applicant shall submit information to the Director of Community Development demonstrating compliance with the ALUPP, as applicable, including its height guidance; and 2) the Director of Community Development shall forward this information and the proposed PUD development plans to the ALUC for review.	Less than Significant
Hazards and Hazardous Materials		
Impact 4.G-5 (cont.)	b. Prior to any use permit approval for Sites 11 (Kiewit), and 14 (Legacy Partners): the project applicant shall submit information to the Director of Community Development demonstrating compliance with the ALUPP, as applicable; and 2) the Director of Community Development shall forward this information and the proposed use permit to the ALUC for review. c. The following condition shall be included in any PUD development approval for all the potential sites for rezoning: Prior to the issuance of a grading permit or building permit, whichever is sooner, the project applicant shall submit verification from the FAA, or other verification to the satisfaction of the City Engineer or Chief Building Official, of compliance with the FAA Part 77 (Form 7460 review) review for construction on the project site. **Climate Action Plan** None required.	
Impact 4.G-6: Development facilitated by the General Plan Amendment and rezonings could potentially result	**Housing Element**	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
in a safety hazard for people residing or working in the vicinity of a private airstrip. (No Impact)	None required.	
	Climate Action Plan	
	None required.	
Impact 4.G-7: Development facilitated by the General Plan Amendment and rezonings could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.G-8: Development facilitated by the General Plan Amendment and rezonings could potentially expose people or structures to a significant risk of loss, injury or death involving wildland fires, including wildlands adjacent to urbanized areas or residences intermixed with wildlands. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.G-9: Development facilitated by the General Plan Amendment and rezonings, combined with other past, present, existing, approved, pending, and reasonably foreseeable future projects in the vicinity, and could potentially result in cumulative hazards or hazardous materials impacts. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Hydrology and Water Quality		
Impact 4.H-1: Development facilitated by the General Plan Amendments could have potential impacts on water quality, flooding, and could create additional sources of polluted runoff. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.H-2: Development facilitated by the General Plan Amendments could potentially deplete groundwater	**Housing Element**	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
supplies or interfere with groundwater recharge. (Less than Significant)	None required.	
	Climate Action Plan	
	None required.	
Impact 4.H-3: Development facilitated by the General Plan Amendment and rezoning could potentially alter runoff characteristics on sites proposed for residential development which could lead to onsite and off-site erosion or flooding. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.H-4: Development facilitated by the General Plan Amendment and rezonings could potentially result in construction of residences within a FEMA 500-year flood hazard area. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.H-5: Development facilitated by the General Plan Amendment and rezonings could potentially expose people and structures to flooding as a result of a levee or dam failure. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.H-6: Development facilitated by the General Plan Amendment and rezonings, in conjunction with past, present and future projects, could potentially have a cumulative adverse impact with respect to hydrology and water quality. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Land Use and Planning		
Impact 4.I-1: Development facilitated by the General Plan Amendment and rezonings could potentially	**Housing Element**	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
physically divide an established community. (Less than Significant)	None required.	
	Climate Action Plan None required.	
Impact 4.I-2: Development facilitated by the General Plan Amendment and rezonings could potentially conflict with applicable land use plans and policies. (Less than Significant)	**Housing Element** None required.	
	Climate Action Plan None required.	
Impact 4.I-3: Development facilitated by the General Plan Amendment and rezonings could potentially conflict with adopted habitat conservation plans. (Less than Significant)	**Housing Element** None required.	
	Climate Action Plan None required.	
Impact 4.I-4: Development facilitated by the General Plan Amendment and rezonings, combined with other past, present, existing, approved, pending, and reasonably foreseeable future plans or projects in the area, could potentially result in a significant adverse cumulative land use impact. (Less than Significant)	**Housing Element** None required.	
	Climate Action Plan None required.	
Noise		
Impact 4.J-1: Development facilitated by the General Plan Amendment and rezonings could potentially increase construction noise levels at sensitive receptors located near construction sites. (Significant)	**Housing Element** **Mitigation Measure 4.J-1:** In addition to requiring that all project developers comply with the applicable construction noise exposure criteria established within the City's Municipal Code 9.04.100, the City shall require developers on the potential sites for rezoning to implement construction best management practices to reduce construction noise, including: a. Locate stationary construction equipment as far from adjacent occupied buildings as possible. b. Select routes for movement of construction-related vehicles and equipment so that noise-sensitive areas, including residences, and outdoor recreation areas, are avoided as much as possible. Include these routes in materials submitted to the City of Pleasanton for approval prior to the issuance of building permits.	Less than Significant

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
	c. All site improvements and construction activities shall be limited to the hours of 8:00 a.m. to 5:00 p.m., Monday through Saturday. In addition, no construction shall be allowed on State and federal holidays. If complaints are received regarding	
Noise (cont.)		
Impact 4.J-1 (cont.)	the Saturday construction hours, the Community Development Director may modify or revoke the Saturday construction hours. The Community Development Director may allow earlier "start-times" for specific construction activities (e.g., concrete-foundation/floor pouring), if it can be demonstrated to the satisfaction of the Community Development Director that the construction and construction traffic noise will not affect nearby residents. d. All construction equipment must meet DMV noise standards and shall be equipped with muffling devices. e. Designate a noise disturbance coordinator who will be responsible for responding to complaints about noise during construction. The telephone number of the noise disturbance coordinator shall be conspicuously posted at the construction site and shall be provided to the City of Pleasanton. Copies of the construction schedule shall also be posted at nearby noise-sensitive areas.	
	Climate Action Plan None required.	
Impact 4.J-2: Construction associated with development facilitated by the General Plan Amendment and rezonings could potentially generate ground-borne vibration at neighboring sensitive uses. (Significant)	**Housing Element** **Mitigation Measure 4.J-2:** The City shall require developers on the potential sites for rezoning to conduct a vibration study which will estimate vibration levels at neighboring sensitive uses, and if required, provide mitigation efforts needed to satisfy the applicable construction vibration level limit established in Table 4.J-4. It is expected that vibration mitigation for all project sites will be reasonable and feasible.	Less than Significant
	Climate Action Plan None required.	
Impact 4.J-3: Development facilitated by the General Plan Amendment and rezonings could potentially locate residential uses near an existing rail line. Future residents could potentially be exposed to excessive exterior and interior noise exposure from train noise events. (Significant)	**Housing Element** **Mitigation Measure 4.J-3:** The City shall require project applicants (Sites 8, 11, 14, 18, and 21) to conduct site-specific acoustical assessments to determine train-related noise exposure, impact, and mitigation. Recommendations in the acoustical assessment shall be sufficient to satisfy the applicable City of Pleasanton 70 dB Ldn and 50/55 dB Lmax exterior and interior noise exposure criteria, respectively, using appropriate housing site design and building construction improvements.	Less than Significant
	Climate Action Plan None required.	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Impact 4.J-4: Development facilitated by the General Plan Amendment and rezonings could potentially locate residential uses near an existing rail line. Future residents would be exposed to substantial vibration from train pass-by events. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Noise (cont.)		
Impact 4.J-5: Development facilitated by the General Plan Amendment and rezonings could potentially generate additional traffic on local area roadways and associated increases in traffic noise exposure relative to existing conditions. (Significant)	**Housing Element** **Mitigation Measure 4.J-5a:** Prior to prior to PUD approval a potential site for rezoning would add traffic noise in exceed of 55dBA described in Table 4.J-6, the project applicant shall conduct an off-site noise study to determine the project contribution to off-site roadway noise and contribute its fair-share to mitigate the established noise impact. **Mitigation Measure 4.J-5b:** Any residential or office buildings shall be built to California's interior-noise insulation standard so that interior traffic noise exposure does not exceed 45 dB Ldn. Before building permits are issued, the project applicant shall be required to submit an acoustical analysis demonstrating that the buildings have been designed to limit interior traffic noise exposure to a level of 45 dB Ldn/CNEL or less. **Mitigation Measure 4.J-5c:** Any locations of outdoor activity for sensitive uses associated with the project site shall be designed so that the noise exposure from traffic does not exceed 65 dB Ldn at these activity areas. This shall be done thru site orientation (i.e., location of activity areas away from roadways or shielded by project buildings) or with the inclusion of appropriate noise barriers. Before building permits are issued, the project applicant shall be required to submit an acoustical analysis demonstrating that outdoor activity spaces associated with sensitive uses do not exceed 65 dB Ldn within these spaces. **Climate Action Plan** None required.	
Impact 4.J-6: Development facilitated by the General Plan Amendment and rezonings could potentially be affected by existing, stationary (non-transportation) noise sources that would exceed the applicable City of Pleasanton Municipal Code criteria. (Significant)	**Housing Element** **Mitigation Measure 4.J-6a:** For all of the potential sites for rezoning the City shall require site-specific acoustical assessments to determine noise exposure, impact, and mitigation regarding non-transportation sources. Noise exposure shall be mitigated to satisfy the applicable City Code criterion using appropriate housing site design. **Mitigation Measure 4.J-6b:** For Site 14 the City shall require a site-specific acoustical assessment to determine noise from quarrying noise sources. Recommendations in the acoustical assessment shall be sufficient to satisfy the applicable City of Pleasanton 70 dB Ldn and 50/55 dB Lmax exterior and interior noise exposure criteria, respectively. **Mitigation Measure 4.J-6c:** For all of the potential sites for rezoning, the City shall require a noise disclosures and noise complaint procedures for new residents at the project site. The requirement shall include a) a disclosure of	Less than Significant

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
	potential noise sources in the project vicinity; b) establish procedures and a contact phone number for a site manager the residents can call to address any noise complaints. **Climate Action Plan** None required.	
Impact 4.J-7: Development facilitated by the General Plan Amendment and rezonings could potentially be exposed to aircraft noise associated with the closest airport which would exceed the applicable noise exposure criteria. (Significant)	**Housing Element** **Mitigation Measure 4.J-7:** For residential developments at Sites 9, 10, 11, 13, and 14 near the extended centerline of Runway 25R (Livermore Municipal Airport) or the left-hand pattern of Runway 25L, the City shall require a site-specific acoustical assessments to determine noise exposure, impact, and mitigation regarding aircraft single events. The assessments shall include the collection of aircraft single-event noise level data for no less than 48-hours on or	Less than Significant
Noise (cont.)		
Impact 4.J-7 (cont.)	in the vicinity of the given housing areas. If needed, aircraft-related single-event noise exposure may be mitigated to satisfy the applicable City of Pleasanton Code criteria of 50 dB Lmax (bedrooms) and 55 dB Lmax (other habitable rooms) using acoustically rated construction materials/systems. **Climate Action Plan** None required.	
Impact 4.J-8: Development facilitated by the General Plan Amendment and rezonings could potentially generate construction activity at sites zoned for residential development, in combination with cumulative buildout in the City of Pleasanton could have cumulative noise effects at noise-sensitive uses. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.J-9: Development facilitated by the General Plan Amendment and rezonings, in combination with other foreseen projects in the city could potentially produce a significant cumulative increase in traffic noise exposure under the project scenario. (Significant)	**Housing Element** **Mitigation Measure 4.J-9:** Prior to prior to PUD approval a potential site for rezoning would add traffic noise in exceed of 55dBA described in Table 4.J-7, the project applicant shall conduct an off-site noise study to determine the project contribution to off-site roadway noise and contribute its fair-share to mitigate the established noise impact. **Climate Action Plan** None required.	Less than Significant
Impact 4.J-10: Development facilitated by the General Plan Amendment and rezonings could potentially locate	**Mitigation Measure:** Implement Mitigation Measures 4.J-5b and 4.J-5c.	Less than Significant

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
residential uses or mixed-use buildings near an existing highway, arterial, or collector roadway, exposing future residents to excessive exterior and interior traffic noise exposure. (Significant)		
Population and Housing		
Impact 4.K-1: Development facilitated by the General Plan Amendment and rezonings could directly induce substantial population growth in the City. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Population and Housing (cont.)		
Impact 4.K-2: Development facilitated by the General Plan Amendment and rezonings could potentially displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.K-3: Development facilitated by the General Plan Amendment and rezonings could potentially displace substantial numbers of people, necessitating the construction of replacement housing elsewhere. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.K-4: Development facilitated by the General Plan Amendment and rezonings, along with potential development in the surrounding region could potentially introduce additional population to the region, and would result in unanticipated population, housing, or employment growth, or the displacement of existing residents or housing units on a regional level. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Public Services and Utilities		
Impact 4.L-1: Development facilitated by the General Plan Amendment and rezonings could potentially result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for public services such as fire protection, police protection, schools, parks and other facilities. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.L-2: Development facilitated by the General Plan Amendment and rezonings could potentially require new or expanded water supply resources or entitlements. (Less than Significant)	**Housing Element** **Mitigation Measure 4.L-2:** Prior to the recordation of a Final Map, the issuance of a grading permit, the issuance of a building permit, or utility extension approval to the site, whichever is sooner, the applicant shall submit written verification from Zone 7 Water Agency or the City of Pleasanton's Utility Planning Division that water is available for the project. To	Less than Significant
Public Services and Utilities (cont.)		
Impact 4.L-2 (cont.)	receive the verification, the applicant may need to offset the project's water demand. This approval does not guarantee the availability of sufficient water capacity to serve the project. **Climate Action Plan** None required.	
Impact 4.L-3: Development facilitated by the General Plan Amendment and rezonings could potentially result in the need for construction of wastewater treatment facilities or exceed capacity available by the wastewater treatment provider which serves or may serve the residential development sites identified in the General Plan's Amendment and the rezonings. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.L-4: Development facilitated by the General Plan Amendment and rezonings could potentially be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs, or conflict with statues and regulations related to solid waste. (Less than Significant)	**Housing Element** None required. **Climate Action Plan**	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
	None required.	
Impact 4.L-5: Development facilitated by the General Plan Amendment and rezonings, in combination with other past, present, existing, approved, pending, and reasonably foreseeable future projects within and around Pleasanton, could potentially result in an increased demand for utilities services. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Recreation		
Impact 4.M-1: Development facilitated by the General Plan Amendment and rezonings could potentially increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Recreation (cont.)		
Impact 4.M-2: Development facilitated by the General Plan Amendment or rezonings could potentially include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Impact 4.M-3: Development facilitated by the General Plan Amendment or rezonings, in combination with other past, present, existing, approved, pending, and reasonably foreseeable future projects within and around Pleasanton, could potentially result in an increased demand for recreational facilities. (Less than Significant)	**Housing Element** None required. **Climate Action Plan** None required.	
Transportation and Traffic		
Impact 4.N-1: Development facilitated by the General Plan Amendment and rezonings could potentially affect	**Housing Element**	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
levels of service at the local study intersections under Existing plus Project conditions. (Less than Significant)	None required.	
	Climate Action Plan	
	None required.	
Impact 4.N-2: The residential development proposed in the General Plan Amendment and rezonings could potentially increase traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways due to roadway design features, incompatible uses, or project-related vehicles trips. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.N-3: Development facilitated by the General Plan Amendment and rezonings could potentially generate services calls from emergency vehicles. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Transportation and Traffic (cont.)		
Impact 4.N-4: Implementation of the General Plan Amendment and rezonings could potentially be inconsistent with adopted polices, plans, and programs supporting alternative transportation. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.N-5: Development facilitated by the General Plan Amendment and rezonings could potentially generate temporary increases in traffic volume and temporary effects on transportation conditions. (Less than Significant)	**Housing Element**	
	None required.	
	Climate Action Plan	
	None required.	
Impact 4.N-6: Development facilitated by the General	**Housing Element**	

TABLE E-2 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FROM THE GENERAL PLAN HOUSING ELEMENT AND CLIMATE ACTION PLAN SEIR

Impacts	Mitigation Measures and General Conditions of Approval	Significance after Mitigation
Plan Amendment and rezonings could potentially affect levels of service at the local study intersections under Cumulative plus Project conditions. (Less than Significant)	None required. **Climate Action Plan** None required.	
Impact 4.N-7: Development facilitated by the General Plan Amendment and rezonings could potentially add traffic to the regional roadway network to the point at which they would operate unacceptably under Cumulative plus Project conditions. (Significant and Unavoidable)	**Housing Element** **Mitigation Measure 4.N-7:** The City shall require developers on the potential sites for rezoning to contribute fair-share funds through the payment of the City of Pleasanton and Tri-Valley Regional traffic impact fees to help fund future improvements to local and regional roadways. **Climate Action Plan** None required.	Significant and Unavoidable

Appendix F

Air Quality and GHG Analysis Results

Johnson Drive EDZ

Estimated Construction Emissions: Annual

Wdzfè 2015

Construction Land Use Assumptions for Johnson Drive

Start Date	Fall 2015	1-Sep-15				
Duration		12	months			
					Acres	
Land Uses	Costco+Fuel	148	ksf	per Traffic Trip Gen (15.68 acres total)	8.8	total area minus parking
	Costco Parking	763	spaces	per Costco drawing	6.9	per CalEEMod
	Hotel	150	rooms	per Traffic Trip Gen (2.71 total acres)	1.2	total area minus parking
		88.4	ksf	per site plan		
	Hotel Parking	163	spaces		1.5	per CalEEMod
	Retail	23.5	ksf	per applicant info (2.56 acres total)	1.8	total area minus parking
	Retail Parking	90	spaces	per Option 3 of site plan	0.8	per CalEEMod
					21	total acres
Demolition	Buildings	59,035.00	sf	1.368	acres	
		20,000.00	sf	0.5	acre	
	Paved area	1.08	acres			
		2.34	acres			
	Tonnage:	3,635.61	tons	Building debris based on CalEEMod assumption of 0.046 tons/sf		
		2,760.99	tons	Paved Area debris: Assuming 5 inches asphalt thickness and 2,400 lbs/cy debris		
		6,396.60	tons total debris			

Construction Days

Default			Project - 12 months assumed	260	active days
Phase	Days	Proportion	Adjusted Days		
Demo	20	4.21%	11		
Site Prep	10	2.11%	5		
Grading	35	7.37%	19		
Building	370	77.89%	203		
Paving	20	4.21%	11		
Coatings	20	4.21%	11		
Total	475		260	Total	

Average Annual Daily Criteria Pollutant Emissions Johnson Drive Construction

Unmitigated Construction			tons	
Year	ROG	Nox	PM10 exh	PM2.5 exh
2015-2016	2.1527	5.6617	0.2907	0.2717

Unmitigated Construction			average lbs/day	
Year	ROG	Nox	PM10 exh	PM2.5 exh
2015-2016	16.6	43.6	2.2	2.1

Construction Duratior 260 days

Johnson Drive Construction - Worse Case Scenario

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	763.00	Space	6.87	305,200.00	0
Parking Lot	163.00	Space	1.47	65,200.00	0
Parking Lot	90.00	Space	0.81	36,000.00	0
Hotel	150.00	Room	1.24	88,400.00	0
Discount Club	148.00	1000sqft	8.81	148,000.00	0
Strip Mall	23.50	1000sqft	1.75	23,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Adusted default acreages and hotel square footage per site drawings and project description info for project

Construction Phase - Adjusted default durations to match proposed schedule

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition - Total of 79,035 sf buildings to be demolished = 3,636 tons of debris (per CalEEMod 0.046 ton/sf) + 2,761 tons existing asphalt debris assumed

Grading -

Architectural Coating -

Vehicle Trips - Modeling worse-case construction only for this run, build-out operations separately

Consumer Products - Modeling worse-case construction only for this run, build-out operations separately

Area Coating - Modeling worse-case construction only for this run, build-out operations separately

Landscape Equipment - Modeling worse-case construction only for this run, build-out operations separately

Energy Use - Modeling worse-case construction only for this run, build-out operations separately

Water And Wastewater - Modeling worse-case construction only for this run, build-out operations separately

Solid Waste - Modeling worse-case construction only for this run, build-out operations separately

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	370.00	203.00

tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	35.00	19.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	10.00	5.00
tblEnergyUse	LightingElect	5.64	0.00
tblEnergyUse	LightingElect	2.72	0.00
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	5.64	0.00
tblEnergyUse	NT24E	2.68	0.00
tblEnergyUse	NT24E	3.22	0.00
tblEnergyUse	NT24E	2.68	0.00
tblEnergyUse	NT24NG	4.75	0.00
tblEnergyUse	T24E	3.37	0.00
tblEnergyUse	T24E	2.50	0.00
tblEnergyUse	T24E	3.37	0.00
tblEnergyUse	T24NG	2.49	0.00
tblEnergyUse	T24NG	41.63	0.00
tblEnergyUse	T24NG	2.49	0.00
tblLandUse	LandUseSquareFeet	217,800.00	88,400.00
tblLandUse	LotAcreage	5.00	1.24
tblLandUse	LotAcreage	3.40	8.81
tblLandUse	LotAcreage	0.54	1.75
tblProjectCharacteristics	OperationalYear	2014	2017
tblSolidWaste	SolidWasteGenerationRate	636.50	0.00
tblSolidWaste	SolidWasteGenerationRate	82.13	0.00
tblSolidWaste	SolidWasteGenerationRate	24.68	0.00
tblVehicleTrips	ST_TR	53.75	0.00
tblVehicleTrips	ST_TR	8.19	0.00

tblVehicleTrips	ST_TR	42.04	0.00
tblVehicleTrips	SU_TR	33.67	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	20.43	0.00
tblVehicleTrips	WD_TR	41.80	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	44.32	0.00
tblWater	IndoorWaterUseRate	10,962,733.18	0.00
tblWater	IndoorWaterUseRate	3,805,015.50	0.00
tblWater	IndoorWaterUseRate	1,740,704.25	0.00
tblWater	OutdoorWaterUseRate	6,719,094.53	0.00
tblWater	OutdoorWaterUseRate	422,779.50	0.00
tblWater	OutdoorWaterUseRate	1,066,883.25	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2781	2.4472	2.2610	3.3400e-003	0.2862	0.1212	0.4073	0.0938	0.1128	0.2066	0.0000	298.5509	298.5509	0.0458	0.0000	299.5123
2016	1.8746	3.2145	3.7483	6.2900e-003	0.2353	0.1696	0.4049	0.0637	0.1590	0.2227	0.0000	538.6757	538.6757	0.0595	0.0000	539.9258
Total	**2.1527**	**5.6617**	**6.0093**	**9.6300e-003**	**0.5214**	**0.2907**	**0.8122**	**0.1575**	**0.2717**	**0.4292**	**0.0000**	**837.2265**	**837.2265**	**0.1053**	**0.0000**	**839.4381**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2781	2.4472	2.2610	3.3400e-003	0.2862	0.1212	0.4073	0.0938	0.1128	0.2066	0.0000	298.5507	298.5507	0.0458	0.0000	299.5121
2016	1.8746	3.2145	3.7483	6.2900e-003	0.2353	0.1696	0.4049	0.0637	0.1590	0.2227	0.0000	538.6754	538.6754	0.0595	0.0000	539.9256
Total	**2.1527**	**5.6617**	**6.0093**	**9.6300e-003**	**0.5214**	**0.2907**	**0.8122**	**0.1575**	**0.2717**	**0.4292**	**0.0000**	**837.2261**	**837.2261**	**0.1053**	**0.0000**	**839.4377**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2015	9/15/2015	5	11	
2	Site Preparation	Site Preparation	9/16/2015	9/22/2015	5	5	
3	Grading	Grading	9/23/2015	10/19/2015	5	19	
4	Building Construction	Building Construction	10/20/2015	7/28/2016	5	203	
5	Paving	Paving	7/29/2016	8/12/2016	5	11	
6	Architectural Coating	Architectural Coating	8/13/2016	8/29/2016	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 47.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 408,138; Non-Residential Outdoor: 136,046 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	632.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	263.00	109.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	53.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0684	0.0000	0.0684	0.0104	0.0000	0.0104	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0248	0.2660	0.1984	2.2000e-004		0.0135	0.0135		0.0126	0.0126	0.0000	20.5927	20.5927	5.5800e-003	0.0000	20.7099
Total	**0.0248**	**0.2660**	**0.1984**	**2.2000e-004**	**0.0684**	**0.0135**	**0.0819**	**0.0104**	**0.0126**	**0.0229**	**0.0000**	**20.5927**	**20.5927**	**5.5800e-003**	**0.0000**	**20.7099**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.1200e-003	0.1102	0.0839	2.4000e-004	5.3300e-003	1.6500e-003	6.9800e-003	1.4700e-003	1.5200e-003	2.9800e-003	0.0000	22.0707	22.0707	1.9000e-004	0.0000	22.0746
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	5.2000e-004	5.0600e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.6000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.7054	0.7054	4.0000e-005	0.0000	0.7063
Total	**8.4700e-003**	**0.1107**	**0.0890**	**2.5000e-004**	**6.0800e-003**	**1.6600e-003**	**7.7400e-003**	**1.6700e-003**	**1.5300e-003**	**3.1900e-003**	**0.0000**	**22.7761**	**22.7761**	**2.3000e-004**	**0.0000**	**22.7809**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0684	0.0000	0.0684	0.0104	0.0000	0.0104	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0248	0.2660	0.1984	2.2000e-004		0.0135	0.0135		0.0126	0.0126	0.0000	20.5927	20.5927	5.5800e-003	0.0000	20.7099
Total	**0.0248**	**0.2660**	**0.1984**	**2.2000e-004**	**0.0684**	**0.0135**	**0.0819**	**0.0104**	**0.0126**	**0.0229**	**0.0000**	**20.5927**	**20.5927**	**5.5800e-003**	**0.0000**	**20.7099**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.1200e-003	0.1102	0.0839	2.4000e-004	5.3300e-003	1.6500e-003	6.9800e-003	1.4700e-003	1.5200e-003	2.9800e-003	0.0000	22.0707	22.0707	1.9000e-004	0.0000	22.0746
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	5.2000e-004	5.0600e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.6000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.7054	0.7054	4.0000e-005	0.0000	0.7063
Total	**8.4700e-003**	**0.1107**	**0.0890**	**2.5000e-004**	**6.0800e-003**	**1.6600e-003**	**7.7400e-003**	**1.6700e-003**	**1.5300e-003**	**3.1900e-003**	**0.0000**	**22.7761**	**22.7761**	**2.3000e-004**	**0.0000**	**22.7809**

3.3 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0132	0.1422	0.1066	1.0000e-004		7.7200e-003	7.7200e-003		7.1000e-003	7.1000e-003	0.0000	9.3253	9.3253	2.7800e-003	0.0000	9.3837
Total	**0.0132**	**0.1422**	**0.1066**	**1.0000e-004**	**0.0452**	**7.7200e-003**	**0.0529**	**0.0248**	**7.1000e-003**	**0.0319**	**0.0000**	**9.3253**	**9.3253**	**2.7800e-003**	**0.0000**	**9.3837**

3.3 Site Preparation - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	2.8000e-004	2.7600e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3848	0.3848	2.0000e-005	0.0000	0.3852
Total	**1.9000e-004**	**2.8000e-004**	**2.7600e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3848**	**0.3848**	**2.0000e-005**	**0.0000**	**0.3852**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0132	0.1422	0.1066	1.0000e-004		7.7200e-003	7.7200e-003		7.1000e-003	7.1000e-003	0.0000	9.3253	9.3253	2.7800e-003	0.0000	9.3837
Total	**0.0132**	**0.1422**	**0.1066**	**1.0000e-004**	**0.0452**	**7.7200e-003**	**0.0529**	**0.0248**	**7.1000e-003**	**0.0319**	**0.0000**	**9.3253**	**9.3253**	**2.7800e-003**	**0.0000**	**9.3837**

3.3 Site Preparation - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	2.8000e-004	2.7600e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3848	0.3848	2.0000e-005	0.0000	0.3852
Total	**1.9000e-004**	**2.8000e-004**	**2.7600e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3848**	**0.3848**	**2.0000e-005**	**0.0000**	**0.3852**

3.4 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0824	0.0000	0.0824	0.0342	0.0000	0.0342	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0644	0.7509	0.4830	5.9000e-004		0.0361	0.0361		0.0332	0.0332	0.0000	55.9001	55.9001	0.0167	0.0000	56.2506
Total	**0.0644**	**0.7509**	**0.4830**	**5.9000e-004**	**0.0824**	**0.0361**	**0.1185**	**0.0342**	**0.0332**	**0.0674**	**0.0000**	**55.9001**	**55.9001**	**0.0167**	**0.0000**	**56.2506**

3.4 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	1.2000e-003	0.0117	2.0000e-005	1.7200e-003	2.0000e-005	1.7400e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.6245	1.6245	1.0000e-004	0.0000	1.6266
Total	**8.2000e-004**	**1.2000e-003**	**0.0117**	**2.0000e-005**	**1.7200e-003**	**2.0000e-005**	**1.7400e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.6245**	**1.6245**	**1.0000e-004**	**0.0000**	**1.6266**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0824	0.0000	0.0824	0.0342	0.0000	0.0342	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0644	0.7509	0.4830	5.9000e-004		0.0361	0.0361		0.0332	0.0332	0.0000	55.9000	55.9000	0.0167	0.0000	56.2505
Total	**0.0644**	**0.7509**	**0.4830**	**5.9000e-004**	**0.0824**	**0.0361**	**0.1185**	**0.0342**	**0.0332**	**0.0674**	**0.0000**	**55.9000**	**55.9000**	**0.0167**	**0.0000**	**56.2505**

3.4 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	1.2000e-003	0.0117	2.0000e-005	1.7200e-003	2.0000e-005	1.7400e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.6245	1.6245	1.0000e-004	0.0000	1.6266
Total	**8.2000e-004**	**1.2000e-003**	**0.0117**	**2.0000e-005**	**1.7200e-003**	**2.0000e-005**	**1.7400e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.6245**	**1.6245**	**1.0000e-004**	**0.0000**	**1.6266**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0970	0.7958	0.4967	7.1000e-004		0.0561	0.0561		0.0528	0.0528	0.0000	64.6585	64.6585	0.0162	0.0000	64.9992
Total	**0.0970**	**0.7958**	**0.4967**	**7.1000e-004**		**0.0561**	**0.0561**		**0.0528**	**0.0528**	**0.0000**	**64.6585**	**64.6585**	**0.0162**	**0.0000**	**64.9992**

3.5 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0394	0.3360	0.4456	6.9000e-004	0.0187	5.4900e-003	0.0242	5.3600e-003	5.0500e-003	0.0104	0.0000	63.6993	63.6993	5.8000e-004	0.0000	63.7115
Worker	0.0299	0.0441	0.4273	7.6000e-004	0.0633	5.8000e-004	0.0638	0.0168	5.3000e-004	0.0174	0.0000	59.5896	59.5896	3.5800e-003	0.0000	59.6648
Total	**0.0693**	**0.3801**	**0.8729**	**1.4500e-003**	**0.0819**	**6.0700e-003**	**0.0880**	**0.0222**	**5.5800e-003**	**0.0278**	**0.0000**	**123.2889**	**123.2889**	**4.1600e-003**	**0.0000**	**123.3762**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0970	0.7958	0.4967	7.1000e-004		0.0561	0.0561		0.0528	0.0528	0.0000	64.6584	64.6584	0.0162	0.0000	64.9991
Total	**0.0970**	**0.7958**	**0.4967**	**7.1000e-004**		**0.0561**	**0.0561**		**0.0528**	**0.0528**	**0.0000**	**64.6584**	**64.6584**	**0.0162**	**0.0000**	**64.9991**

3.5 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0394	0.3360	0.4456	6.9000e-004	0.0187	5.4900e-003	0.0242	5.3600e-003	5.0500e-003	0.0104	0.0000	63.6993	63.6993	5.8000e-004	0.0000	63.7115
Worker	0.0299	0.0441	0.4273	7.6000e-004	0.0633	5.8000e-004	0.0638	0.0168	5.3000e-004	0.0174	0.0000	59.5896	59.5896	3.5800e-003	0.0000	59.6648
Total	**0.0693**	**0.3801**	**0.8729**	**1.4500e-003**	**0.0819**	**6.0700e-003**	**0.0880**	**0.0222**	**5.5800e-003**	**0.0278**	**0.0000**	**123.2889**	**123.2889**	**4.1600e-003**	**0.0000**	**123.3762**

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2555	2.1380	1.3880	2.0100e-003		0.1476	0.1476		0.1386	0.1386	0.0000	181.6152	181.6152	0.0450	0.0000	182.5611
Total	**0.2555**	**2.1380**	**1.3880**	**2.0100e-003**		**0.1476**	**0.1476**		**0.1386**	**0.1386**	**0.0000**	**181.6152**	**181.6152**	**0.0450**	**0.0000**	**182.5611**

3.5 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0979	0.8266	1.1707	1.9600e-003	0.0529	0.0124	0.0653	0.0152	0.0114	0.0266	0.0000	178.1540	178.1540	1.4400e-003	0.0000	178.1843
Worker	0.0755	0.1116	1.0774	2.1400e-003	0.1790	1.5300e-003	0.1806	0.0476	1.4000e-003	0.0490	0.0000	162.8567	162.8567	9.2200e-003	0.0000	163.0503
Total	**0.1734**	**0.9382**	**2.2481**	**4.1000e-003**	**0.2319**	**0.0140**	**0.2459**	**0.0628**	**0.0128**	**0.0757**	**0.0000**	**341.0107**	**341.0107**	**0.0107**	**0.0000**	**341.2346**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2555	2.1380	1.3880	2.0100e-003		0.1476	0.1476		0.1386	0.1386	0.0000	181.6150	181.6150	0.0450	0.0000	182.5609
Total	**0.2555**	**2.1380**	**1.3880**	**2.0100e-003**		**0.1476**	**0.1476**		**0.1386**	**0.1386**	**0.0000**	**181.6150**	**181.6150**	**0.0450**	**0.0000**	**182.5609**

3.5 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0979	0.8266	1.1707	1.9600e-003	0.0529	0.0124	0.0653	0.0152	0.0114	0.0266	0.0000	178.1540	178.1540	1.4400e-003	0.0000	178.1843
Worker	0.0755	0.1116	1.0774	2.1400e-003	0.1790	1.5300e-003	0.1806	0.0476	1.4000e-003	0.0490	0.0000	162.8567	162.8567	9.2200e-003	0.0000	163.0503
Total	**0.1734**	**0.9382**	**2.2481**	**4.1000e-003**	**0.2319**	**0.0140**	**0.2459**	**0.0628**	**0.0128**	**0.0757**	**0.0000**	**341.0107**	**341.0107**	**0.0107**	**0.0000**	**341.2346**

3.6 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0115	0.1231	0.0815	1.2000e-004		6.9400e-003	6.9400e-003		6.3800e-003	6.3800e-003	0.0000	11.5576	11.5576	3.4900e-003	0.0000	11.6308
Paving	0.0120					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0235**	**0.1231**	**0.0815**	**1.2000e-004**		**6.9400e-003**	**6.9400e-003**		**6.3800e-003**	**6.3800e-003**	**0.0000**	**11.5576**	**11.5576**	**3.4900e-003**	**0.0000**	**11.6308**

3.6 Paving - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	4.7000e-004	4.5100e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.6000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6812	0.6812	4.0000e-005	0.0000	0.6820
Total	**3.2000e-004**	**4.7000e-004**	**4.5100e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.6000e-004**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.6812**	**0.6812**	**4.0000e-005**	**0.0000**	**0.6820**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0115	0.1231	0.0815	1.2000e-004		6.9400e-003	6.9400e-003		6.3800e-003	6.3800e-003	0.0000	11.5576	11.5576	3.4900e-003	0.0000	11.6308
Paving	0.0120					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0235**	**0.1231**	**0.0815**	**1.2000e-004**		**6.9400e-003**	**6.9400e-003**		**6.3800e-003**	**6.3800e-003**	**0.0000**	**11.5576**	**11.5576**	**3.4900e-003**	**0.0000**	**11.6308**

3.6 Paving - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	4.7000e-004	4.5100e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.6000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6812	0.6812	4.0000e-005	0.0000	0.6820
Total	**3.2000e-004**	**4.7000e-004**	**4.5100e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.6000e-004**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**0.0000**	**0.6812**	**0.6812**	**4.0000e-005**	**0.0000**	**0.6820**

3.7 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4188					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0300e-003	0.0131	0.0104	2.0000e-005		1.0800e-003	1.0800e-003		1.0800e-003	1.0800e-003	0.0000	1.4043	1.4043	1.7000e-004	0.0000	1.4078
Total	**1.4208**	**0.0131**	**0.0104**	**2.0000e-005**		**1.0800e-003**	**1.0800e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**1.4043**	**1.4043**	**1.7000e-004**	**0.0000**	**1.4078**

3.7 Architectural Coating - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1200e-003	1.6500e-003	0.0159	3.0000e-005	2.6500e-003	2.0000e-005	2.6700e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.4067	2.4067	1.4000e-004	0.0000	2.4096
Total	**1.1200e-003**	**1.6500e-003**	**0.0159**	**3.0000e-005**	**2.6500e-003**	**2.0000e-005**	**2.6700e-003**	**7.0000e-004**	**2.0000e-005**	**7.2000e-004**	**0.0000**	**2.4067**	**2.4067**	**1.4000e-004**	**0.0000**	**2.4096**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4188					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0300e-003	0.0131	0.0104	2.0000e-005		1.0800e-003	1.0800e-003		1.0800e-003	1.0800e-003	0.0000	1.4043	1.4043	1.7000e-004	0.0000	1.4078
Total	**1.4208**	**0.0131**	**0.0104**	**2.0000e-005**		**1.0800e-003**	**1.0800e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**1.4043**	**1.4043**	**1.7000e-004**	**0.0000**	**1.4078**

3.7 Architectural Coating - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1200e-003	1.6500e-003	0.0159	3.0000e-005	2.6500e-003	2.0000e-005	2.6700e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.4067	2.4067	1.4000e-004	0.0000	2.4096
Total	**1.1200e-003**	**1.6500e-003**	**0.0159**	**3.0000e-005**	**2.6500e-003**	**2.0000e-005**	**2.6700e-003**	**7.0000e-004**	**2.0000e-005**	**7.2000e-004**	**0.0000**	**2.4067**	**2.4067**	**1.4000e-004**	**0.0000**	**2.4096**

Johnson Drive EDZ

Estimated Existing Operations Emissions: Annual

Wdzfè 2015

Johnson Drive Existing Operations

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Place of Worship	20.00	1000sqft	0.46	20,000.00	0
Strip Mall	53.36	1000sqft	1.23	53,363.00	0
General Office Building	15.07	1000sqft	0.35	15,070.00	0
General Light Industry	136.23	1000sqft	3.13	136,225.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2015
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Matched square footage details in traffic report

Construction Phase - Operations only model run

Off-road Equipment - Operations only model run

Off-road Equipment -

Demolition -

Grading -

Architectural Coating - Operations only model run

Vehicle Trips - Adjusted trip generation to match daily trip gen in traffic study

Consumer Products -

Area Coating -

Landscape Equipment -

Energy Use -

Water And Wastewater -

Solid Waste -

Construction Off-road Equipment Mitigation -

Trips and VMT - Operations only model run

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	112,329.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	336,987.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00

tblVehicleTrips	DV_TP	25.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	64.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	2.37	1.45
tblVehicleTrips	ST_TR	1.32	1.22
tblVehicleTrips	ST_TR	10.37	1.40
tblVehicleTrips	ST_TR	42.04	10.83
tblVehicleTrips	SU_TR	0.98	1.45
tblVehicleTrips	SU_TR	0.68	1.22
tblVehicleTrips	SU_TR	36.63	1.40
tblVehicleTrips	SU_TR	20.43	10.83
tblVehicleTrips	WD_TR	11.01	6.17
tblVehicleTrips	WD_TR	6.97	6.42
tblVehicleTrips	WD_TR	9.11	1.20
tblVehicleTrips	WD_TR	44.32	9.25

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9948	2.0000e-005	2.1400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.0100e-003	4.0100e-003	1.0000e-005	0.0000	4.2600e-003
Energy	0.0252	0.2291	0.1925	1.3700e-003		0.0174	0.0174		0.0174	0.0174	0.0000	927.7255	927.7255	0.0355	0.0109	931.8548
Mobile	1.0825	3.6084	12.3360	0.0216	1.4307	0.0504	1.4811	0.3845	0.0463	0.4308	0.0000	1,783.2495	1,783.2495	0.0770	0.0000	1,784.8658
Waste						0.0000	0.0000		0.0000	0.0000	71.6477	0.0000	71.6477	4.2343	0.0000	160.5671
Water						0.0000	0.0000		0.0000	0.0000	12.2960	66.1439	78.4399	1.2659	0.0304	114.4600
Total	**2.1025**	**3.8376**	**12.5307**	**0.0230**	**1.4307**	**0.0678**	**1.4985**	**0.3845**	**0.0637**	**0.4482**	**83.9437**	**2,777.1229**	**2,861.0666**	**5.6126**	**0.0414**	**2,991.7519**

Johnson Drive EDZ

Estimated Existing Operations Emissions: Annual

April 2015

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0825	3.6084	12.3360	0.0216	1.4307	0.0504	1.4811	0.3845	0.0463	0.4308	0.0000	1,783.2495	1,783.2495	0.0770	0.0000	1,784.8658
Unmitigated	1.0825	3.6084	12.3360	0.0216	1.4307	0.0504	1.4811	0.3845	0.0463	0.4308	0.0000	1,783.2495	1,783.2495	0.0770	0.0000	1,784.8658

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	92.98	21.85	21.85	212,270	212,270
General Light Industry	874.56	166.19	166.19	2,103,681	2,103,681
Place of Worship	24.00	28.00	28.00	66,810	66,810
Strip Mall	493.61	577.92	577.92	1,444,444	1,444,444
Total	1,485.15	793.97	793.97	3,827,206	3,827,206

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	100	0	0
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	100	0	0
Place of Worship	9.50	7.30	7.30	0.00	95.00	5.00	100	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.542514	0.061786	0.168567	0.113536	0.031282	0.004678	0.018833	0.046150	0.001755	0.003711	0.005553	0.000209	0.001426

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	678.2761	678.2761	0.0307	6.3500e-003	680.8872
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	678.2761	678.2761	0.0307	6.3500e-003	680.8872
NaturalGas Mitigated	0.0252	0.2291	0.1925	1.3700e-003		0.0174	0.0174		0.0174	0.0174	0.0000	249.4495	249.4495	4.7800e-003	4.5700e-003	250.9676
NaturalGas Unmitigated	0.0252	0.2291	0.1925	1.3700e-003		0.0174	0.0174		0.0174	0.0174	0.0000	249.4495	249.4495	4.7800e-003	4.5700e-003	250.9676

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	3.73393e+006	0.0201	0.1830	0.1538	1.1000e-003		0.0139	0.0139		0.0139	0.0139	0.0000	199.2566	199.2566	3.8200e-003	3.6500e-003	200.4692
General Office Building	259505	1.4000e-003	0.0127	0.0107	8.0000e-005		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004	0.0000	13.8482	13.8482	2.7000e-004	2.5000e-004	13.9325
Place of Worship	548200	2.9600e-003	0.0269	0.0226	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	29.2540	29.2540	5.6000e-004	5.4000e-004	29.4321
Strip Mall	132874	7.2000e-004	6.5100e-003	5.4700e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.0907	7.0907	1.4000e-004	1.3000e-004	7.1338
Total		**0.0252**	**0.2291**	**0.1925**	**1.3800e-003**		**0.0174**	**0.0174**		**0.0174**	**0.0174**	**0.0000**	**249.4495**	**249.4495**	**4.7900e-003**	**4.5700e-003**	**250.9676**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	259505	1.4000e-003	0.0127	0.0107	8.0000e-005		9.7000e-004	9.7000e-004		9.7000e-004	9.7000e-004	0.0000	13.8482	13.8482	2.7000e-004	2.5000e-004	13.9325
Place of Worship	548200	2.9600e-003	0.0269	0.0226	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	29.2540	29.2540	5.6000e-004	5.4000e-004	29.4321
Strip Mall	132874	7.2000e-004	6.5100e-003	5.4700e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.0907	7.0907	1.4000e-004	1.3000e-004	7.1338
General Light Industry	3.73393e+006	0.0201	0.1830	0.1538	1.1000e-003		0.0139	0.0139		0.0139	0.0139	0.0000	199.2566	199.2566	3.8200e-003	3.6500e-003	200.4692
Total		**0.0252**	**0.2291**	**0.1925**	**1.3800e-003**		**0.0174**	**0.0174**		**0.0174**	**0.0174**	**0.0000**	**249.4495**	**249.4495**	**4.7900e-003**	**4.5700e-003**	**250.9676**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.23011e+006	357.8536	0.0162	3.3500e-003	359.2312
General Office Building	297030	86.4094	3.9100e-003	8.1000e-004	86.7420
Place of Worship	180600	52.5386	2.3800e-003	4.9000e-004	52.7409
Strip Mall	623813	181.4745	8.2100e-003	1.7000e-003	182.1731
Total		**678.2761**	**0.0307**	**6.3500e-003**	**680.8872**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.23011e+006	357.8536	0.0162	3.3500e-003	359.2312
General Office Building	297030	86.4094	3.9100e-003	8.1000e-004	86.7420
Place of Worship	180600	52.5386	2.3800e-003	4.9000e-004	52.7409
Strip Mall	623813	181.4745	8.2100e-003	1.7000e-003	182.1731
Total		**678.2761**	**0.0307**	**6.3500e-003**	**680.8872**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9948	2.0000e-005	2.1400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.0100e-003	4.0100e-003	1.0000e-005	0.0000	4.2600e-003
Unmitigated	0.9948	2.0000e-005	2.1400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.0100e-003	4.0100e-003	1.0000e-005	0.0000	4.2600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1172					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8774					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1000e-004	2.0000e-005	2.1400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.0100e-003	4.0100e-003	1.0000e-005	0.0000	4.2600e-003
Total	**0.9948**	**2.0000e-005**	**2.1400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.0100e-003**	**4.0100e-003**	**1.0000e-005**	**0.0000**	**4.2600e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1172					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8774					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1000e-004	2.0000e-005	2.1400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.0100e-003	4.0100e-003	1.0000e-005	0.0000	4.2600e-003
Total	**0.9948**	**2.0000e-005**	**2.1400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.0100e-003**	**4.0100e-003**	**1.0000e-005**	**0.0000**	**4.2600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	78.4399	1.2657	0.0304	114.4404
Unmitigated	78.4399	1.2659	0.0304	114.4600

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	31.5009 / 0	59.5800	1.0287	0.0247	88.8399
General Office Building	2.67845 / 1.64163	6.7374	0.0875	2.1200e-003	9.2318
Place of Worship	0.625778 / 0.978781	2.1802	0.0205	5.0000e-004	2.7653
Strip Mall	3.95251 / 2.42251	9.9423	0.1292	3.1200e-003	13.6231
Total		**78.4399**	**1.2659**	**0.0304**	**114.4600**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	31.5009 / 0	59.5800	1.0285	0.0247	88.8240
General Office Building	2.67845 / 1.64163	6.7374	0.0875	2.1100e-003	9.2304
Place of Worship	0.625778 / 0.978781	2.1802	0.0205	5.0000e-004	2.7650
Strip Mall	3.95251 / 2.42251	9.9423	0.1292	3.1200e-003	13.6211
Total		**78.4399**	**1.2657**	**0.0304**	**114.4404**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	71.6477	4.2343	0.0000	160.5671
Mitigated	71.6477	4.2343	0.0000	160.5671

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	168.91	34.2872	2.0263	0.0000	76.8398
General Office Building	14.02	2.8459	0.1682	0.0000	6.3779
Place of Worship	114	23.1410	1.3676	0.0000	51.8604
Strip Mall	56.03	11.3736	0.6722	0.0000	25.4889
Total		**71.6477**	**4.2343**	**0.0000**	**160.5671**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	168.91	34.2872	2.0263	0.0000	76.8398
General Office Building	14.02	2.8459	0.1682	0.0000	6.3779
Place of Worship	114	23.1410	1.3676	0.0000	51.8604
Strip Mall	56.03	11.3736	0.6722	0.0000	25.4889
Total		**71.6477**	**4.2343**	**0.0000**	**160.5671**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Johnson Drive EDZ

Estimated Existing Operations Emissions: Winter

April 2015

Johnson Drive Existing Operations

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Place of Worship	20.00	1000sqft	0.46	20,000.00	0
Strip Mall	53.36	1000sqft	1.23	53,363.00	0
General Office Building	15.07	1000sqft	0.35	15,070.00	0
General Light Industry	136.23	1000sqft	3.13	136,225.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2015
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Matched square footage details in traffic report

Construction Phase - Operations only model run

Off-road Equipment - Operations only model run

Off-road Equipment -

Demolition -

Grading -

Architectural Coating - Operations only model run

Vehicle Trips - Adjusted trip generation to match daily trip gen in traffic study

Consumer Products -

Area Coating -

Landscape Equipment -

Energy Use -

Water And Wastewater -

Solid Waste -

Construction Off-road Equipment Mitigation -

Trips and VMT - Operations only model run

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	112,329.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	336,987.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00

tblVehicleTrips	DV_TP	25.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	64.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	2.37	1.45
tblVehicleTrips	ST_TR	1.32	1.22
tblVehicleTrips	ST_TR	10.37	1.40
tblVehicleTrips	ST_TR	42.04	10.83
tblVehicleTrips	SU_TR	0.98	1.45
tblVehicleTrips	SU_TR	0.68	1.22
tblVehicleTrips	SU_TR	36.63	1.40
tblVehicleTrips	SU_TR	20.43	10.83
tblVehicleTrips	WD_TR	11.01	6.17
tblVehicleTrips	WD_TR	6.97	6.42
tblVehicleTrips	WD_TR	9.11	1.20
tblVehicleTrips	WD_TR	44.32	9.25

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.4519	2.3000e-004	0.0237	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0492	0.0492	1.4000e-004		0.0522
Energy	0.1381	1.2556	1.0547	7.5300e-003		0.0954	0.0954		0.0954	0.0954		1,506.6903	1,506.6903	0.0289	0.0276	1,515.8597
Mobile	7.8663	25.1856	91.6215	0.1449	10.0126	0.3415	10.3541	2.6820	0.3136	2.9956		13,184.1410	13,184.1410	0.5727		13,196.1680
Total	**13.4563**	**26.4414**	**92.6999**	**0.1524**	**10.0126**	**0.4370**	**10.4496**	**2.6820**	**0.4091**	**3.0911**		**14,690.8805**	**14,690.8805**	**0.6017**	**0.0276**	**14,712.0799**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.4519	2.3000e-004	0.0237	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0492	0.0492	1.4000e-004		0.0522
Energy	0.1381	1.2556	1.0547	7.5300e-003		0.0954	0.0954		0.0954	0.0954		1,506.6903	1,506.6903	0.0289	0.0276	1,515.8597
Mobile	7.8663	25.1856	91.6215	0.1449	10.0126	0.3415	10.3541	2.6820	0.3136	2.9956		13,184.1410	13,184.1410	0.5727		13,196.1680
Total	**13.4563**	**26.4414**	**92.6999**	**0.1524**	**10.0126**	**0.4370**	**10.4496**	**2.6820**	**0.4091**	**3.0911**		**14,690.8805**	**14,690.8805**	**0.6017**	**0.0276**	**14,712.0799**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.8663	25.1856	91.6215	0.1449	10.0126	0.3415	10.3541	2.6820	0.3136	2.9956		13,184.1410	13,184.1410	0.5727		13,196.1680
Unmitigated	7.8663	25.1856	91.6215	0.1449	10.0126	0.3415	10.3541	2.6820	0.3136	2.9956		13,184.1410	13,184.1410	0.5727		13,196.1680

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	92.98	21.85	21.85	212,270	212,270
General Light Industry	874.56	166.19	166.19	2,103,681	2,103,681
Place of Worship	24.00	28.00	28.00	66,810	66,810
Strip Mall	493.61	577.92	577.92	1,444,444	1,444,444
Total	1,485.15	793.97	793.97	3,827,206	3,827,206

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	100	0	0
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	100	0	0
Place of Worship	9.50	7.30	7.30	0.00	95.00	5.00	100	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.542514	0.061786	0.168567	0.113536	0.031282	0.004678	0.018833	0.046150	0.001755	0.003711	0.005553	0.000209	0.001426

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1381	1.2556	1.0547	7.5300e-003		0.0954	0.0954		0.0954	0.0954		1,506.6903	1,506.6903	0.0289	0.0276	1,515.8597
NaturalGas Unmitigated	0.1381	1.2556	1.0547	7.5300e-003		0.0954	0.0954		0.0954	0.0954		1,506.6903	1,506.6903	0.0289	0.0276	1,515.8597

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	710.974	7.6700e-003	0.0697	0.0586	4.2000e-004		5.3000e-003	5.3000e-003		5.3000e-003	5.3000e-003		83.6440	83.6440	1.6000e-003	1.5300e-003	84.1530
Place of Worship	1501.92	0.0162	0.1473	0.1237	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.6962	176.6962	3.3900e-003	3.2400e-003	177.7716
Strip Mall	364.038	3.9300e-003	0.0357	0.0300	2.1000e-004		2.7100e-003	2.7100e-003		2.7100e-003	2.7100e-003		42.8280	42.8280	8.2000e-004	7.9000e-004	43.0886
General Light Industry	10229.9	0.1103	1.0029	0.8425	6.0200e-003		0.0762	0.0762		0.0762	0.0762		1,203.5221	1,203.5221	0.0231	0.0221	1,210.8465
Total		**0.1381**	**1.2556**	**1.0547**	**7.5300e-003**		**0.0954**	**0.0954**		**0.0954**	**0.0954**		**1,506.6903**	**1,506.6903**	**0.0289**	**0.0276**	**1,515.8597**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	0.710974	7.6700e-003	0.0697	0.0586	4.2000e-004		5.3000e-003	5.3000e-003		5.3000e-003	5.3000e-003		83.6440	83.6440	1.6000e-003	1.5300e-003	84.1530
Place of Worship	1.50192	0.0162	0.1473	0.1237	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.6962	176.6962	3.3900e-003	3.2400e-003	177.7716
Strip Mall	0.364038	3.9300e-003	0.0357	0.0300	2.1000e-004		2.7100e-003	2.7100e-003		2.7100e-003	2.7100e-003		42.8280	42.8280	8.2000e-004	7.9000e-004	43.0886
General Light Industry	10.2299	0.1103	1.0029	0.8425	6.0200e-003		0.0762	0.0762		0.0762	0.0762		1,203.5221	1,203.5221	0.0231	0.0221	1,210.8465
Total		**0.1381**	**1.2556**	**1.0547**	**7.5300e-003**		**0.0954**	**0.0954**		**0.0954**	**0.0954**		**1,506.6903**	**1,506.6903**	**0.0289**	**0.0276**	**1,515.8597**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.4519	2.3000e-004	0.0237	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0492	0.0492	1.4000e-004		0.0522
Unmitigated	5.4519	2.3000e-004	0.0237	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0492	0.0492	1.4000e-004		0.0522

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6419					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.8077					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.3500e-003	2.3000e-004	0.0237	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0492	0.0492	1.4000e-004		0.0522
Total	**5.4519**	**2.3000e-004**	**0.0237**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0492**	**0.0492**	**1.4000e-004**		**0.0522**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6419					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.8077					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.3500e-003	2.3000e-004	0.0237	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0492	0.0492	1.4000e-004		0.0522
Total	**5.4519**	**2.3000e-004**	**0.0237**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0492**	**0.0492**	**1.4000e-004**		**0.0522**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Johnson Drive Operations

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	27.55	1000sqft	0.63	27,550.00	0
Hotel	150.00	Room	1.24	88,000.00	0
Discount Club	148.00	1000sqft	8.81	148,000.00	0
Strip Mall	246.44	1000sqft	5.66	246,440.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Matched square footage details in project description

Construction Phase - Operations only model run

Off-road Equipment - Operations only model run

Off-road Equipment -

Demolition -

Grading -

Architectural Coating - Operations only model run

Vehicle Trips - Adjusted trip generation to match daily trip gen in traffic study

Consumer Products -

Area Coating -

Landscape Equipment -

Energy Use - Updated Title 24 electricity and natural gas energy intensity to match 2013 Title 24 standards (25% reduction versus 2008 standards)

Water And Wastewater -

Solid Waste -

Construction Off-road Equipment Mitigation -

Trips and VMT - Operations only model run

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	254,995.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	764,985.00	0.00
tblEnergyUse	T24E	3.37	2.53
tblEnergyUse	T24E	1.81	1.36
tblEnergyUse	T24E	2.50	1.88
tblEnergyUse	T24E	3.37	2.53
tblEnergyUse	T24NG	2.49	1.87

tblEnergyUse	T24NG	20.74	15.56
tblEnergyUse	T24NG	41.63	31.22
tblEnergyUse	T24NG	2.49	1.87
tblLandUse	LandUseSquareFeet	217,800.00	88,000.00
tblLandUse	LotAcreage	5.00	1.24
tblLandUse	LotAcreage	3.40	8.81
tblProjectCharacteristics	OperationalYear	2014	2025
tblTripsAndVMT	WorkerTripNumber	35.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	58.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	53.75	59.80
tblVehicleTrips	ST_TR	1.32	1.45
tblVehicleTrips	ST_TR	8.19	8.20
tblVehicleTrips	ST_TR	42.04	34.94
tblVehicleTrips	SU_TR	33.67	59.80
tblVehicleTrips	SU_TR	0.68	1.45
tblVehicleTrips	SU_TR	5.95	8.20
tblVehicleTrips	SU_TR	20.43	34.94

tblVehicleTrips	WD_TR	41.80	47.03
tblVehicleTrips	WD_TR	6.97	6.90
tblVehicleTrips	WD_TR	8.17	8.20
tblVehicleTrips	WD_TR	44.32	29.87

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.3763	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Energy	0.1334	1.2128	1.0188	7.2800e-003		0.0922	0.0922		0.0922	0.0922		1,455.4067	1,455.4067	0.0279	0.0267	1,464.2641
Mobile	50.5775	127.6305	590.7799	1.6561	112.6800	2.6398	115.3198	30.1909	2.4341	32.6249		124,682.9923	124,682.9923	3.5971		124,758.5307
Total	**63.0872**	**128.8439**	**591.8569**	**1.6633**	**112.6800**	**2.7322**	**115.4122**	**30.1909**	**2.5264**	**32.7173**		**126,138.5241**	**126,138.5241**	**3.6253**	**0.0267**	**126,222.9268**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.3763	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Energy	0.1334	1.2128	1.0188	7.2800e-003		0.0922	0.0922		0.0922	0.0922		1,455.4067	1,455.4067	0.0279	0.0267	1,464.2641
Mobile	50.5775	127.6305	590.7799	1.6561	112.6800	2.6398	115.3198	30.1909	2.4341	32.6249		124,682.9923	124,682.9923	3.5971		124,758.5307
Total	**63.0872**	**128.8439**	**591.8569**	**1.6633**	**112.6800**	**2.7322**	**115.4122**	**30.1909**	**2.5264**	**32.7173**		**126,138.5241**	**126,138.5241**	**3.6253**	**0.0267**	**126,222.9268**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	50.5775	127.6305	590.7799	1.6561	112.6800	2.6398	115.3198	30.1909	2.4341	32.6249		124,682.9923	124,682.9923	3.5971		124,758.5307
Unmitigated	50.5775	127.6305	590.7799	1.6561	112.6800	2.6398	115.3198	30.1909	2.4341	32.6249		124,682.9923	124,682.9923	3.5971		124,758.5307

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Discount Club	6,960.44	8,850.40	8850.40	20,933,198	20,933,198
General Light Industry	190.10	39.95	39.95	460,674	460,674
Hotel	1,230.00	1,230.00	1230.00	3,459,443	3,459,443
Strip Mall	7,361.16	8,610.61	8610.61	21,534,660	21,534,660
Total	15,741.70	18,730.96	18,730.96	46,387,975	46,387,975

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Discount Club	9.50	7.30	7.30	16.70	64.30	19.00	100	0	0
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	100	0	0
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	100	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.540056	0.061957	0.166386	0.109317	0.030556	0.004563	0.019776	0.054742	0.001819	0.003581	0.005670	0.000186	0.001392

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1334	1.2128	1.0188	7.2800e-003		0.0922	0.0922		0.0922	0.0922		1,455.4067	1,455.4067	0.0279	0.0267	1,464.2641
NaturalGas Unmitigated	0.1334	1.2128	1.0188	7.2800e-003		0.0922	0.0922		0.0922	0.0922		1,455.4067	1,455.4067	0.0279	0.0267	1,464.2641

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Discount Club	758.247	8.1800e-003	0.0743	0.0624	4.5000e-004		5.6500e-003	5.6500e-003		5.6500e-003	5.6500e-003		89.2055	89.2055	1.7100e-003	1.6400e-003	89.7484
General Light Industry	1677.91	0.0181	0.1645	0.1382	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.4010	197.4010	3.7800e-003	3.6200e-003	198.6023
Hotel	8672.22	0.0935	0.8502	0.7142	5.1000e-003		0.0646	0.0646		0.0646	0.0646		1,020.2611	1,020.2611	0.0196	0.0187	1,026.4702
Strip Mall	1262.58	0.0136	0.1238	0.1040	7.4000e-004		9.4100e-003	9.4100e-003		9.4100e-003	9.4100e-003		148.5392	148.5392	2.8500e-003	2.7200e-003	149.4432
Total		**0.1334**	**1.2128**	**1.0188**	**7.2800e-003**		**0.0922**	**0.0922**		**0.0922**	**0.0922**		**1,455.4067**	**1,455.4067**	**0.0279**	**0.0267**	**1,464.2641**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1.67791	0.0181	0.1645	0.1382	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.4010	197.4010	3.7800e-003	3.6200e-003	198.6023
Hotel	8.67222	0.0935	0.8502	0.7142	5.1000e-003		0.0646	0.0646		0.0646	0.0646		1,020.2611	1,020.2611	0.0196	0.0187	1,026.4702
Strip Mall	1.26258	0.0136	0.1238	0.1040	7.4000e-004		9.4100e-003	9.4100e-003		9.4100e-003	9.4100e-003		148.5392	148.5392	2.8500e-003	2.7200e-003	149.4432
Discount Club	0.758247	8.1800e-003	0.0743	0.0624	4.5000e-004		5.6500e-003	5.6500e-003		5.6500e-003	5.6500e-003		89.2055	89.2055	1.7100e-003	1.6400e-003	89.7484
Total		**0.1334**	**1.2128**	**1.0188**	**7.2800e-003**		**0.0922**	**0.0922**		**0.0922**	**0.0922**		**1,455.4067**	**1,455.4067**	**0.0279**	**0.0267**	**1,464.2641**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.3763	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Unmitigated	12.3763	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.4571					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.9138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.3600e-003	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Total	**12.3763**	**5.3000e-004**	**0.0583**	**0.0000**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**		**0.1252**	**0.1252**	**3.3000e-004**		**0.1320**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.4571					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.9138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.3600e-003	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Total	**12.3763**	**5.3000e-004**	**0.0583**	**0.0000**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**		**0.1252**	**0.1252**	**3.3000e-004**		**0.1320**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Johnson Drive EDZ

Estimated EDZ Operations Emissions: Annual

April 2015

Johnson Drive Operations

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	27.55	1000sqft	0.63	27,550.00	0
Hotel	150.00	Room	1.24	88,000.00	0
Discount Club	148.00	1000sqft	8.81	148,000.00	0
Strip Mall	246.44	1000sqft	5.66	246,440.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Matched square footage details in project description

Construction Phase - Operations only model run

Off-road Equipment - Operations only model run

Off-road Equipment -

Demolition -

Grading -

Architectural Coating - Operations only model run

Vehicle Trips - Adjusted trip generation to match daily trip gen in traffic study

Consumer Products -

Area Coating -

Landscape Equipment -

Energy Use - Updated Title 24 electricity and natural gas energy intensity to match 2013 Title 24 standards (25% reduction versus 2008 standards)

Water And Wastewater -

Solid Waste -

Construction Off-road Equipment Mitigation -

Trips and VMT - Operations only model run

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	254,995.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	764,985.00	0.00
tblEnergyUse	T24E	3.37	2.53
tblEnergyUse	T24E	1.81	1.36
tblEnergyUse	T24E	2.50	1.88
tblEnergyUse	T24E	3.37	2.53
tblEnergyUse	T24NG	2.49	1.87

tblEnergyUse	T24NG	20.74	15.56
tblEnergyUse	T24NG	41.63	31.22
tblEnergyUse	T24NG	2.49	1.87
tblLandUse	LandUseSquareFeet	217,800.00	88,000.00
tblLandUse	LotAcreage	5.00	1.24
tblLandUse	LotAcreage	3.40	8.81
tblProjectCharacteristics	OperationalYear	2014	2025
tblTripsAndVMT	WorkerTripNumber	35.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	58.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	53.75	59.80
tblVehicleTrips	ST_TR	1.32	1.45
tblVehicleTrips	ST_TR	8.19	8.20
tblVehicleTrips	ST_TR	42.04	34.94
tblVehicleTrips	SU_TR	33.67	59.80
tblVehicleTrips	SU_TR	0.68	1.45
tblVehicleTrips	SU_TR	5.95	8.20
tblVehicleTrips	SU_TR	20.43	34.94

tblVehicleTrips	WD_TR	41.80	47.03
tblVehicleTrips	WD_TR	6.97	6.90
tblVehicleTrips	WD_TR	8.17	8.20
tblVehicleTrips	WD_TR	44.32	29.87

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.2582	5.0000e-005	5.2400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0102	0.0102	3.0000e-005	0.0000	0.0108
Energy	0.0244	0.2213	0.1859	1.3300e-003		0.0168	0.0168		0.0168	0.0168	0.0000	1,754.9241	1,754.9241	0.0731	0.0186	1,762.2189
Mobile	7.6088	19.6920	84.3834	0.2661	17.3625	0.4208	17.7833	4.6669	0.3880	5.0549	0.0000	18,179.7847	18,179.7847	0.5205	0.0000	18,190.7154
Waste						0.0000	0.0000		0.0000	0.0000	205.3355	0.0000	205.3355	12.1350	0.0000	460.1701
Water						0.0000	0.0000		0.0000	0.0000	12.4976	80.6731	93.1707	1.2873	0.0311	129.8332
Total	**9.8914**	**19.9133**	**84.5745**	**0.2674**	**17.3625**	**0.4376**	**17.8002**	**4.6669**	**0.4048**	**5.0717**	**217.8331**	**20,015.3921**	**20,233.2252**	**14.0159**	**0.0496**	**20,542.9484**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.2582	5.0000e-005	5.2400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0102	0.0102	3.0000e-005	0.0000	0.0108
Energy	0.0244	0.2213	0.1859	1.3300e-003		0.0168	0.0168		0.0168	0.0168	0.0000	1,754.9241	1,754.9241	0.0731	0.0186	1,762.2189
Mobile	7.6088	19.6920	84.3834	0.2661	17.3625	0.4208	17.7833	4.6669	0.3880	5.0549	0.0000	18,179.7847	18,179.7847	0.5205	0.0000	18,190.7154
Waste						0.0000	0.0000		0.0000	0.0000	205.3355	0.0000	205.3355	12.1350	0.0000	460.1701
Water						0.0000	0.0000		0.0000	0.0000	12.4976	80.6731	93.1707	1.2870	0.0310	129.8133
Total	**9.8914**	**19.9133**	**84.5745**	**0.2674**	**17.3625**	**0.4376**	**17.8002**	**4.6669**	**0.4048**	**5.0717**	**217.8331**	**20,015.3921**	**20,233.2252**	**14.0156**	**0.0496**	**20,542.9285**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.6088	19.6920	84.3834	0.2661	17.3625	0.4208	17.7833	4.6669	0.3880	5.0549	0.0000	18,179.7847	18,179.7847	0.5205	0.0000	18,190.7154
Unmitigated	7.6088	19.6920	84.3834	0.2661	17.3625	0.4208	17.7833	4.6669	0.3880	5.0549	0.0000	18,179.7847	18,179.7847	0.5205	0.0000	18,190.7154

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Discount Club	6,960.44	8,850.40	8850.40	20,933,198	20,933,198
General Light Industry	190.10	39.95	39.95	460,674	460,674
Hotel	1,230.00	1,230.00	1230.00	3,459,443	3,459,443
Strip Mall	7,361.16	8,610.61	8610.61	21,534,660	21,534,660
Total	15,741.70	18,730.96	18,730.96	46,387,975	46,387,975

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Discount Club	9.50	7.30	7.30	16.70	64.30	19.00	100	0	0
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	100	0	0
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	100	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.540056	0.061957	0.166386	0.109317	0.030556	0.004563	0.019776	0.054742	0.001819	0.003581	0.005670	0.000186	0.001392

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,513.9652	1,513.9652	0.0685	0.0142	1,519.7935
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,513.9652	1,513.9652	0.0685	0.0142	1,519.7935
NaturalGas Mitigated	0.0244	0.2213	0.1859	1.3300e-003		0.0168	0.0168		0.0168	0.0168	0.0000	240.9589	240.9589	4.6200e-003	4.4200e-003	242.4253
NaturalGas Unmitigated	0.0244	0.2213	0.1859	1.3300e-003		0.0168	0.0168		0.0168	0.0168	0.0000	240.9589	240.9589	4.6200e-003	4.4200e-003	242.4253

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	612437	3.3000e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	32.6819	32.6819	6.3000e-004	6.0000e-004	32.8808
Hotel	3.16536e+006	0.0171	0.1552	0.1303	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	168.9157	168.9157	3.2400e-003	3.1000e-003	169.9437
Strip Mall	460843	2.4800e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	24.5923	24.5923	4.7000e-004	4.5000e-004	24.7420
Discount Club	276760	1.4900e-003	0.0136	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003	0.0000	14.7690	14.7690	2.8000e-004	2.7000e-004	14.8589
Total		**0.0243**	**0.2213**	**0.1859**	**1.3300e-003**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0.0000**	**240.9589**	**240.9589**	**4.6200e-003**	**4.4200e-003**	**242.4253**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	612437	3.3000e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	32.6819	32.6819	6.3000e-004	6.0000e-004	32.8808
Hotel	3.16536e+006	0.0171	0.1552	0.1303	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	168.9157	168.9157	3.2400e-003	3.1000e-003	169.9437
Strip Mall	460843	2.4800e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	24.5923	24.5923	4.7000e-004	4.5000e-004	24.7420
Discount Club	276760	1.4900e-003	0.0136	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003	0.0000	14.7690	14.7690	2.8000e-004	2.7000e-004	14.8589
Total		**0.0243**	**0.2213**	**0.1859**	**1.3300e-003**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0.0000**	**240.9589**	**240.9589**	**4.6200e-003**	**4.4200e-003**	**242.4253**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	1.6058e+006	467.1456	0.0211	4.3700e-003	468.9440
General Light Industry	236379	68.7654	3.1100e-003	6.4000e-004	69.0301
Hotel	688160	200.1936	9.0500e-003	1.8700e-003	200.9643
Strip Mall	2.67387e+006	777.8606	0.0352	7.2800e-003	780.8551
Total		**1,513.9652**	**0.0685**	**0.0142**	**1,519.7935**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	1.6058e+006	467.1456	0.0211	4.3700e-003	468.9440
General Light Industry	236379	68.7654	3.1100e-003	6.4000e-004	69.0301
Hotel	688160	200.1936	9.0500e-003	1.8700e-003	200.9643
Strip Mall	2.67387e+006	777.8606	0.0352	7.2800e-003	780.8551
Total		**1,513.9652**	**0.0685**	**0.0142**	**1,519.7935**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.2582	5.0000e-005	5.2400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0102	0.0102	3.0000e-005	0.0000	0.0108
Unmitigated	2.2582	5.0000e-005	5.2400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0102	0.0102	3.0000e-005	0.0000	0.0108

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2659					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9918					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.8000e-004	5.0000e-005	5.2400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0102	0.0102	3.0000e-005	0.0000	0.0108
Total	**2.2582**	**5.0000e-005**	**5.2400e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0102**	**0.0102**	**3.0000e-005**	**0.0000**	**0.0108**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2659					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9918					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.8000e-004	5.0000e-005	5.2400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0102	0.0102	3.0000e-005	0.0000	0.0108
Total	**2.2582**	**5.0000e-005**	**5.2400e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0102**	**0.0102**	**3.0000e-005**	**0.0000**	**0.0108**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	93.1707	1.2870	0.0310	129.8133
Unmitigated	93.1707	1.2873	0.0311	129.8332

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	10.9627 / 6.71909	27.5760	0.3583	8.6600e-003	37.7852
General Light Industry	6.37094 / 0	12.0498	0.2081	5.0000e-003	17.9676
Hotel	3.80502 / 0.422779	7.6272	0.1243	2.9900e-003	11.1632
Strip Mall	18.2544 / 11.1882	45.9177	0.5966	0.0144	62.9174
Total		**93.1707**	**1.2873**	**0.0311**	**129.8332**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	10.9627 / 6.71909	27.5760	0.3583	8.6500e-003	37.7796
General Light Industry	6.37094 / 0	12.0498	0.2080	4.9900e-003	17.9643
Hotel	3.80502 / 0.422779	7.6272	0.1243	2.9800e-003	11.1612
Strip Mall	18.2544 / 11.1882	45.9177	0.5965	0.0144	62.9081
Total		**93.1707**	**1.2870**	**0.0310**	**129.8133**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	205.3355	12.1350	0.0000	460.1701
Mitigated	205.3355	12.1350	0.0000	460.1701

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	636.5	129.2038	7.6357	0.0000	289.5539
General Light Industry	34.16	6.9342	0.4098	0.0000	15.5399
Hotel	82.13	16.6717	0.9853	0.0000	37.3622
Strip Mall	258.76	52.5259	3.1042	0.0000	117.7140
Total		**205.3355**	**12.1350**	**0.0000**	**460.1701**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	636.5	129.2038	7.6357	0.0000	289.5539
General Light Industry	34.16	6.9342	0.4098	0.0000	15.5399
Hotel	82.13	16.6717	0.9853	0.0000	37.3622
Strip Mall	258.76	52.5259	3.1042	0.0000	117.7140
Total		**205.3355**	**12.1350**	**0.0000**	**460.1701**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Johnson Drive EDZ

Estimated EDZ Operations Emissions: Winter

April 2015

Johnson Drive Operations

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	27.55	1000sqft	0.63	27,550.00	0
Hotel	150.00	Room	1.24	88,000.00	0
Discount Club	148.00	1000sqft	8.81	148,000.00	0
Strip Mall	246.44	1000sqft	5.66	246,440.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Matched square footage details in project description

Construction Phase - Operations only model run

Off-road Equipment - Operations only model run

Off-road Equipment -

Demolition -

Grading -

Architectural Coating - Operations only model run

Vehicle Trips - Adjusted trip generation to match daily trip gen in traffic study

Consumer Products -

Area Coating -

Landscape Equipment -

Energy Use - Updated Title 24 electricity and natural gas energy intensity to match 2013 Title 24 standards (25% reduction versus 2008 standards)

Water And Wastewater -

Solid Waste -

Construction Off-road Equipment Mitigation -

Trips and VMT - Operations only model run

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	254,995.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	764,985.00	0.00
tblEnergyUse	T24E	3.37	2.53
tblEnergyUse	T24E	1.81	1.36
tblEnergyUse	T24E	2.50	1.88
tblEnergyUse	T24E	3.37	2.53
tblEnergyUse	T24NG	2.49	1.87

tblEnergyUse	T24NG	20.74	15.56
tblEnergyUse	T24NG	41.63	31.22
tblEnergyUse	T24NG	2.49	1.87
tblLandUse	LandUseSquareFeet	217,800.00	88,000.00
tblLandUse	LotAcreage	5.00	1.24
tblLandUse	LotAcreage	3.40	8.81
tblProjectCharacteristics	OperationalYear	2014	2025
tblTripsAndVMT	WorkerTripNumber	35.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	58.00	100.00
tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	53.75	59.80
tblVehicleTrips	ST_TR	1.32	1.45
tblVehicleTrips	ST_TR	8.19	8.20
tblVehicleTrips	ST_TR	42.04	34.94
tblVehicleTrips	SU_TR	33.67	59.80
tblVehicleTrips	SU_TR	0.68	1.45
tblVehicleTrips	SU_TR	5.95	8.20
tblVehicleTrips	SU_TR	20.43	34.94

tblVehicleTrips	WD_TR	41.80	47.03
tblVehicleTrips	WD_TR	6.97	6.90
tblVehicleTrips	WD_TR	8.17	8.20
tblVehicleTrips	WD_TR	44.32	29.87

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.3763	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Energy	0.1334	1.2128	1.0188	7.2800e-003		0.0922	0.0922		0.0922	0.0922		1,455.4067	1,455.4067	0.0279	0.0267	1,464.2641
Mobile	50.5775	127.6305	590.7799	1.6561	112.6800	2.6398	115.3198	30.1909	2.4341	32.6249		124,682.9923	124,682.9923	3.5971		124,758.5307
Total	**63.0872**	**128.8439**	**591.8569**	**1.6633**	**112.6800**	**2.7322**	**115.4122**	**30.1909**	**2.5264**	**32.7173**		**126,138.5241**	**126,138.5241**	**3.6253**	**0.0267**	**126,222.9268**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.3763	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Energy	0.1334	1.2128	1.0188	7.2800e-003		0.0922	0.0922		0.0922	0.0922		1,455.4067	1,455.4067	0.0279	0.0267	1,464.2641
Mobile	50.5775	127.6305	590.7799	1.6561	112.6800	2.6398	115.3198	30.1909	2.4341	32.6249		124,682.9923	124,682.9923	3.5971		124,758.5307
Total	**63.0872**	**128.8439**	**591.8569**	**1.6633**	**112.6800**	**2.7322**	**115.4122**	**30.1909**	**2.5264**	**32.7173**		**126,138.5241**	**126,138.5241**	**3.6253**	**0.0267**	**126,222.9268**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	50.5775	127.6305	590.7799	1.6561	112.6800	2.6398	115.3198	30.1909	2.4341	32.6249		124,682.9923	124,682.9923	3.5971		124,758.5307
Unmitigated	50.5775	127.6305	590.7799	1.6561	112.6800	2.6398	115.3198	30.1909	2.4341	32.6249		124,682.9923	124,682.9923	3.5971		124,758.5307

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Discount Club	6,960.44	8,850.40	8850.40	20,933,198	20,933,198
General Light Industry	190.10	39.95	39.95	460,674	460,674
Hotel	1,230.00	1,230.00	1230.00	3,459,443	3,459,443
Strip Mall	7,361.16	8,610.61	8610.61	21,534,660	21,534,660
Total	15,741.70	18,730.96	18,730.96	46,387,975	46,387,975

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Discount Club	9.50	7.30	7.30	16.70	64.30	19.00	100	0	0
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	100	0	0
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	100	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.540056	0.061957	0.166386	0.109317	0.030556	0.004563	0.019776	0.054742	0.001819	0.003581	0.005670	0.000186	0.001392

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1334	1.2128	1.0188	7.2800e-003		0.0922	0.0922		0.0922	0.0922		1,455.4067	1,455.4067	0.0279	0.0267	1,464.2641
NaturalGas Unmitigated	0.1334	1.2128	1.0188	7.2800e-003		0.0922	0.0922		0.0922	0.0922		1,455.4067	1,455.4067	0.0279	0.0267	1,464.2641

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Discount Club	758.247	8.1800e-003	0.0743	0.0624	4.5000e-004		5.6500e-003	5.6500e-003		5.6500e-003	5.6500e-003		89.2055	89.2055	1.7100e-003	1.6400e-003	89.7484
General Light Industry	1677.91	0.0181	0.1645	0.1382	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.4010	197.4010	3.7800e-003	3.6200e-003	198.6023
Hotel	8672.22	0.0935	0.8502	0.7142	5.1000e-003		0.0646	0.0646		0.0646	0.0646		1,020.2611	1,020.2611	0.0196	0.0187	1,026.4702
Strip Mall	1262.58	0.0136	0.1238	0.1040	7.4000e-004		9.4100e-003	9.4100e-003		9.4100e-003	9.4100e-003		148.5392	148.5392	2.8500e-003	2.7200e-003	149.4432
Total		**0.1334**	**1.2128**	**1.0188**	**7.2800e-003**		**0.0922**	**0.0922**		**0.0922**	**0.0922**		**1,455.4067**	**1,455.4067**	**0.0279**	**0.0267**	**1,464.2641**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1.67791	0.0181	0.1645	0.1382	9.9000e-004		0.0125	0.0125		0.0125	0.0125		197.4010	197.4010	3.7800e-003	3.6200e-003	198.6023
Hotel	8.67222	0.0935	0.8502	0.7142	5.1000e-003		0.0646	0.0646		0.0646	0.0646		1,020.2611	1,020.2611	0.0196	0.0187	1,026.4702
Strip Mall	1.26258	0.0136	0.1238	0.1040	7.4000e-004		9.4100e-003	9.4100e-003		9.4100e-003	9.4100e-003		148.5392	148.5392	2.8500e-003	2.7200e-003	149.4432
Discount Club	0.758247	8.1800e-003	0.0743	0.0624	4.5000e-004		5.6500e-003	5.6500e-003		5.6500e-003	5.6500e-003		89.2055	89.2055	1.7100e-003	1.6400e-003	89.7484
Total		**0.1334**	**1.2128**	**1.0188**	**7.2800e-003**		**0.0922**	**0.0922**		**0.0922**	**0.0922**		**1,455.4067**	**1,455.4067**	**0.0279**	**0.0267**	**1,464.2641**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.3763	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Unmitigated	12.3763	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.4571					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.9138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.3600e-003	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Total	**12.3763**	**5.3000e-004**	**0.0583**	**0.0000**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**		**0.1252**	**0.1252**	**3.3000e-004**		**0.1320**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.4571					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.9138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.3600e-003	5.3000e-004	0.0583	0.0000		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004		0.1252	0.1252	3.3000e-004		0.1320
Total	**12.3763**	**5.3000e-004**	**0.0583**	**0.0000**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**		**0.1252**	**0.1252**	**3.3000e-004**		**0.1320**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Appendix G

Johnson Drive EDZ Transportation Impact Analysis (Fehr & Peers, 2015)

Johnson Drive Economic Development Zone Transportation Assessment Administrative Draft

Prepared for:
City of Pleasanton

May 2015

WC14-3173

FEHR PEERS

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EXECUTIVE SUMMARY

The report presents the analysis and findings of the Transportation Impact Assessment (TIA) for the proposed Johnson Drive Economic Development Zone (EDZ or project) in Pleasanton, a city in Alameda County.

PROJECT DESCRIPTION AND ANALYSIS PARAMETERS

The proposed project consists of zoning changes within the EDZ, an approximately 40-acre area comprised of 12 parcels in the City of Pleasanton near the Interstate 680 (I-680) and Interstate 580 (I-580) interchange. The EDZ currently contains a mix of light industrial, retail, office, and institutional uses, in addition to vacant parcels. Current zoning allows for general industrial, light industrial, and commercial/office type uses. To encourage redevelopment in the EDZ area, the project would rezone 12 parcels, permitting a wider variety of land uses to promote the long-term economic sustainability of the EDZ area. Under project conditions, the allowed uses in the area would expand and an increased floor-area-ratio would be permitted, allowing for a potential increase in building square footage for the site. Although no development is currently proposed for the site, it was assumed that under project conditions for the purposes of the transportation analysis that a variety of uses could be constructed, including:

- 245,440 square feet of retail
- 88,000 square foot hotel (150 rooms)
- 148,000 square feet of club retail
- 20 fueling position gas station
- 27,550 square feet of light industrial

Project impacts on the study area roadway facilities were determined by measuring the effect Project traffic would have on 17 intersections in the vicinity of the site during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods, and on 9 intersections during the Saturday afternoon peak period. Conditions were evaluated under Existing, Near-term and Cumulative conditions, both without and with the project. A phased project analysis was conducted as the project could be constructed in phases.

An assessment of freeway operations and a roadway segment analysis for routes of regional significance was also conducted.

FINDINGS AND RECOMMENDATIONS

OFF-SITE INTERSECTION FINDINGS

EXISTING CONDITIONS

Results of the existing conditions assessment indicate that the study intersections in the vicinity of the site operate at acceptable service levels during the morning and evening peak hours. The addition of project traffic is expected to slightly increase delay at some study intersections and result in greater changes to average delay at other intersections. The addition of project traffic would degrade operations below LOS D at the following intersections:

- Johnson Drive at Stoneridge Drive (LOS E, weekday PM with EDZ Buildout)
- Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement with Phase 1, worsening intersection average to LOS E with full buildout)
- Johnson Drive at Owens Drive (North) (LOS E, Saturday peak hour with Phase 1)

With the addition of traffic generated by development in the EDZ, projected vehicle queues from the eastbound left-turn movement from Stoneridge Drive to Johnson Drive would extend beyond the available storage, spilling back through the northbound off-ramp intersection. This spillback could result in vehicle queues periodically extending from the northbound and southbound off-ramps to the mainline; westbound queues on Stoneridge Drive could periodically extend to Franklin Drive, and southbound vehicle queues on Johnson Drive waiting to turn to Stoneridge Drive could extend more than a quarter-mile, potentially blocking access to driveways along the Johnson Drive Corridor. Phased mitigation measures were identified.

NEAR-TERM CONDITIONS

The results of the LOS calculations indicate that with planned development in Pleasanton and adjacent jurisdictions in the near-term condition, all study intersections would operate at LOS D or better. The addition of project traffic is expected to slightly increase delay at some study intersections and result in greater changes to average delay at other intersections. The addition of project traffic would degrade operations below LOS D at the following intersections:

- Stoneridge Drive at Johnson Drive (LOS E, PM peak hour with Phase 1)
- Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement with Phase 1)

- Park and Ride Lot at Johnson Drive (LOS E, weekday PM peak hour for side-street movement with phase 1, LOS F with buildout)
- Owens Drive (North) at Johnson Drive (LOS E, PM peak hour, LOS F Saturday peak hour with phase 1)

Queuing effects would be similar to existing conditions. Phased mitigation measures were identified.

CUMULATIVE CONDITIONS

The results of the LOS calculations indicate that with planned development in Pleasanton and adjacent jurisdictions through the cumulative condition, all study intersections would operate at LOS D or better. The addition of project traffic is expected to slightly increase delay at some study intersections and result in greater changes to average delay at other intersections. The addition of project traffic would degrade operations below LOS D at the following intersections:

- Stoneridge Drive at Johnson Drive (LOS E, PM peak hour with buildout)
- Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement with Phase 1, further degrading with buildout)
- Park and Ride Lot at Johnson Drive (LOS E, weekday PM peak hour for side-street movement with Phase 1, degrading to LOS F with buildout)
- Owens Drive (North) at Johnson Drive (LOS E, PM peak hour and LOS F, Saturday peak hour with Phase 1, worsening with buildout)
- Hopyard Road at Owens Drive (LOS E, PM peak hour with Phase 1, worsening with buildout)

Queuing effects would be similar to existing conditions. Phased mitigation measures were identified.

OFF-SITE REGIONAL ROADWAY FINDINGS

The I-680 freeway segments near Stoneridge Drive were evaluated under existing and cumulative conditions without and with the project, including an assessment of ramp merge/diverge operations. The addition of project traffic would either result in or worsen LOS F conditions in the both the existing and cumulative conditions at the I-680 northbound and southbound ramp merge/diverge areas at Stoneridge Drive, resulting in a significant impact. Although the project applicant would pay applicable regional and local transportation impact fees that would be used to construct regional roadway improvements, such as the second phase of I-680/I-580 interchange improvements, widening of State Route 84 through Pigeon Pass, and other planned roadway system modifications that would relieve freeway congestion in the study

area, the construction timing of these improvements is unknown as full funding has not been identified. Therefore, the freeway impacts would remain significant and unavoidable.

A separate analysis of regional roadways is required to comply with requirements of the Alameda County Transportation Commission (Alameda CTC). The Alameda CTC requires the analysis of project impacts to Metropolitan Transportation System (MTS) roadways identified in the congestion management plan (CMP) for development projects that would generate more than 100 PM peak hour trips. Results of the analysis indicate that the proposed project would not result in deficient operations on any of the MTS roadway segments in either 2025 or 2040, and no project specific mitigation is required beyond payment of local and regional transportation impact fees.

VEHICLE MILES OF TRAVEL

An estimate of the vehicle miles of travel generated by redevelopment of the EDZ was prepared using three different accounting methods. All three vehicle trip accounting methods indicate that the project would contribute to increased vehicle miles of travel and VMT per capita. However, future VMT per capita would be less than the base year VMT per capita when using the shared accounting methodology. As the Alameda CTC has not yet set thresholds for average trip lengths, and the project is expected to contribute to increased VMT per household and per capita, the VMT impact of the proposed EDZ project is potentially significant.

1.0 INTRODUCTION

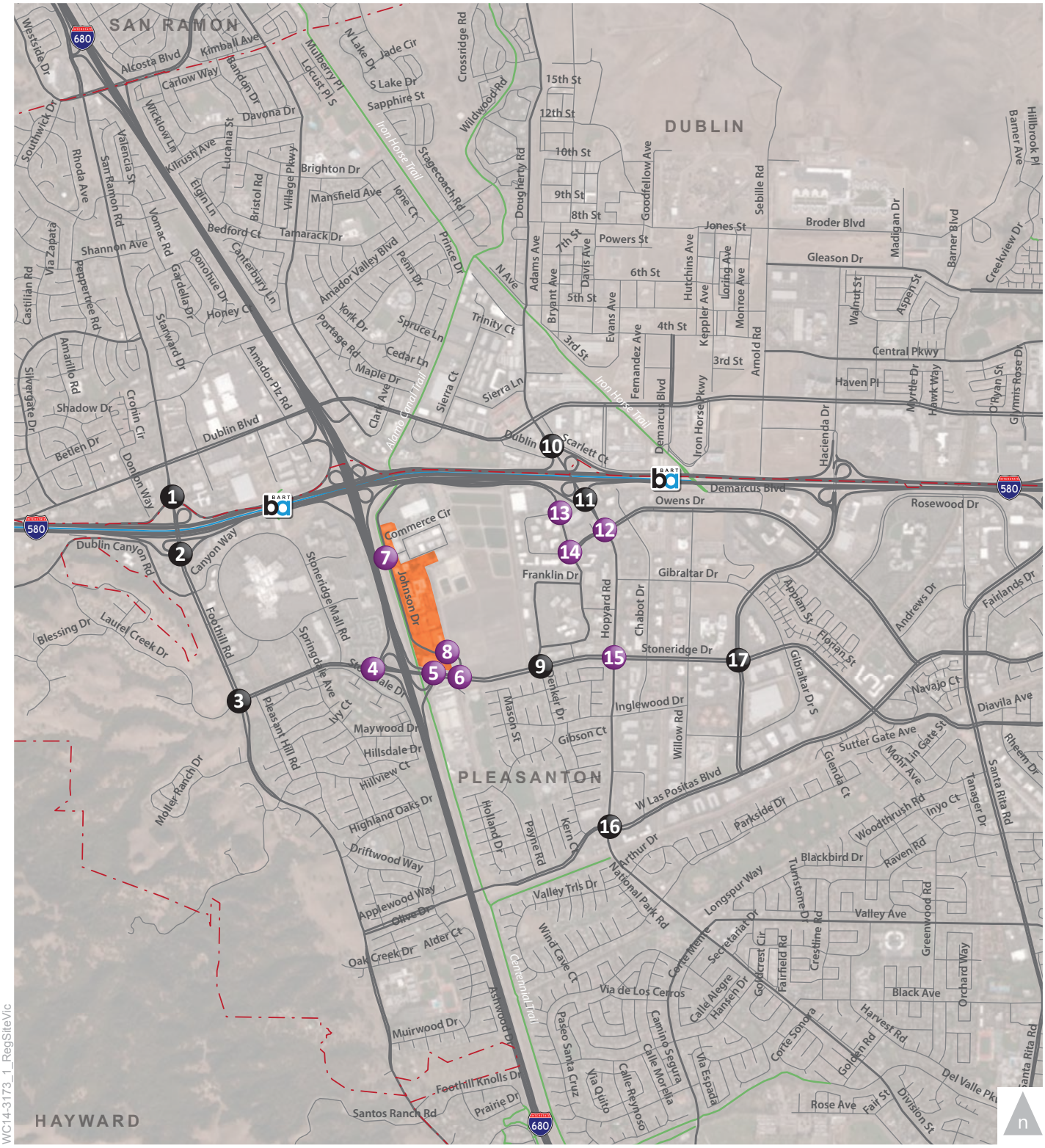
The report presents the analysis and findings of the Transportation Impact Assessment (TIA) for the proposed Johnson Drive Economic Development Zone (EDZ or project) in Pleasanton, a city in Alameda County. This chapter discusses the TIA purpose, analysis methods, criteria used to identify significant impacts, and report organization.

TIA PURPOSE

The TIA's purpose is to evaluate the transportation impacts of the proposed zoning changes in the EDZ study area. The EDZ is an approximately 40-acre area comprised of 12 parcels in the City of Pleasanton near the Interstate 680 (I-680) and Interstate 580 (I-580) interchange, as shown on **Figure 1**. Access to the EDZ is primarily from Johnson Drive, connecting to Stoneridge Drive, with a secondary route from Hopyard Road at Owens Drive.

The EDZ currently contains a mix of light industrial, retail, office, and institutional uses, in addition to vacant parcels. Current zoning allows for general industrial, light industrial, and commercial/office type uses which currently occupy approximately 573,723 square feet of building space, a portion of which is being demolished. To encourage redevelopment in the EDZ area, the project would rezone 12 parcels in the area shown on **Figure 2**, permitting a wider variety of land uses to promote the long-term economic growth in the EDZ area. Under project conditions, the allowed uses in the area would expand and an increased floor-area-ratio would be permitted, allowing for a potential increase in building square footage for the site. Although no development is currently proposed for the site, it was assumed that under project conditions for the purposes of the transportation analysis that a variety of uses would be constructed, as described in more detail in Chapter 3.

This study addresses the project's impacts on the roadway system under existing, near-term, and cumulative scenarios and discusses potential impacts to the adjacent bicycle, pedestrian, and transit network. As no specific development is currently proposed, site planning considerations are discussed to inform the EDZ design guidelines. Future development proposals for the site would be subject to City review for consistency with the EDZ zoning and design guidelines, and additional analysis may be required. A phased assessment was conducted as the area would likely be redeveloped over a number of years.



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LEGEND

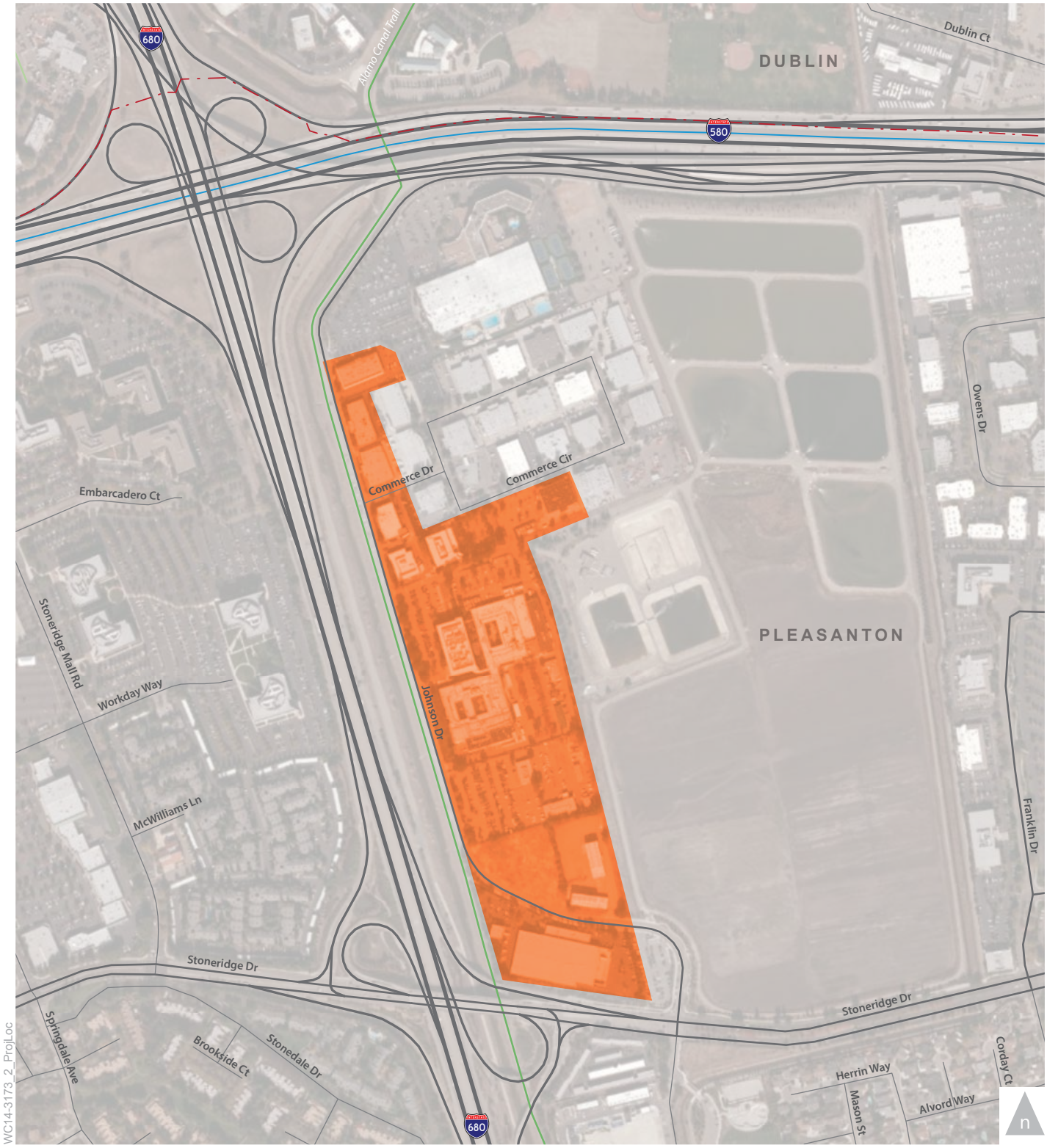
Project Site

Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

Figure 1

Project Site Vicinity and Study Intersection Locations



LEGEND

Project Site

Figure 2

Project Location

REPORT ORGANIZATION

This report is divided into ten chapters as described below:

- ***Chapter 1 – Introduction*** discusses the purpose and organization of this report.
- ***Chapter 2 – Existing Conditions*** describes the transportation system in the project vicinity, including the surrounding roadway network, peak period intersection turning movement volumes, existing bicycle, pedestrian, and transit facilities, and intersection operations.
- ***Chapter 3 – Project Characteristics*** presents the project description, trip generation, distribution, and assignment.
- ***Chapter 4 – Existing with Project Traffic Conditions*** addresses the existing condition with the project, and discusses vehicular impacts.
- ***Chapter 5 – Near-Term Traffic Conditions*** addresses the near-term conditions, both without and with the project, and discusses vehicular impacts.
- ***Chapter 6 – Cumulative Traffic Conditions*** addresses the future conditions, both without and with the project, and discusses vehicular impacts.
- ***Chapter 7 – Freeway Assessment*** evaluates the operations of I-680 north and south of Stoneridge Drive and evaluates ramp merge and diverge operations.
- ***Chapter 8 – Alameda County Transportation Commission Metropolitan Transportation System (MTS) Roadway Analysis*** presents the impacts of the Project on the MTS roadway system.
- ***Chapter 9 – Other Considerations*** discusses site access, circulation and parking considerations for consideration in the development of the final design guidelines for the EDZ. An assessment of project alternatives is also provided.
- ***Chapter 10 – Vehicle Miles of Travel*** presents the results of the VMT assessment conducted for the site under both existing and future conditions.

STUDY LOCATIONS AND ANALYSIS SCENARIOS

Project impacts on the study area roadway facilities were identified by measuring the effect project traffic would have on intersections in the site vicinity during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods when commute traffic is typically the highest. An assessment of Saturday peak period (1:00 to 4:00 PM) conditions was conducted for a subset of intersections closest to the EDZ as the allowable land uses could generate the more traffic during the Saturday peak period than the peak weekday commute periods. The study intersections were selected in consultation with City staff based on

a review of the project location and the amount of traffic that could be added to the intersections in the vicinity of the site. These intersections are shown on Figure 1 and listed below: The intersections listed below were analyzed for weekday AM and PM peak hour conditions. Intersections shown in italics were also evaluated under Saturday peak hour conditions.

1. I-580 Westbound Ramps at San Ramon Road
2. I-580 Eastbound Ramps at Foothill Road
3. Foothill Road at Stoneridge Drive
4. *Stoneridge Drive at I-680 Southbound Ramps*
5. *Stoneridge Drive at I-680 Northbound Ramps*
6. *Stoneridge Drive at Johnson Drive*
7. *Commerce Drive at Johnson Drive*
8. *Park and Ride Lot at Johnson Drive*
9. Stoneridge Drive at Franklin Drive
10. Dougherty Road at I-580 Westbound Ramps
11. Hopyard Road at I-580 Eastbound Ramps
12. *Hopyard Road at Owens Drive*
13. *Johnson Drive at Owens Drive (north)*
14. *Johnson Drive at Owens Drive (south)*
15. *Stoneridge Drive at Hopyard Road*
16. West Las Positas Boulevard at Hopyard Road
17. Stoneridge Drive at Hacienda Drive

Freeway mainline and ramp/merge diverge operations at the Stoneridge Drive interchange were also assessed for the existing and cumulative condition. Roadway segment analysis of the Alameda County Transportation Commission (Alameda CTC) Metropolitan Transportation System (MTS) designated facilities was also conducted.

SCENARIOS

Operations of the intersections above were evaluated for the following scenarios using the Transportation Research Board's (TRB) 2000 *Highway Capacity Manual* methodology using Synchro analysis software.

- ***Existing Conditions*** – Existing volumes obtained from traffic counts and the existing roadway system configuration.

- ***Existing with Project*** – Existing volumes obtained from traffic counts plus traffic estimated for the project. The roadway system is the same as the Existing Conditions scenario.
- ***Near-term without Project Conditions*** – Existing volumes plus traffic estimates for approved and pending developments, such as Workday, Pleasanton Gateway, CarrAmerica residential project and development at the East Pleasanton BART station, and/or traffic increases due to regional growth. This scenario reflects likely conditions over the next 5 to 10 years.
- ***Near-Term with Project*** – Traffic volumes from the Near-term without Project Conditions scenario plus traffic estimated for the Project.
- ***Far-Term (Cumulative) Without Project Conditions*** – Projected traffic volumes and the projected roadway system using the City of Pleasanton Travel Demand Model. The traffic forecasts include Approved and Pending projects from the Near-Term without Project Conditions, in addition to build out of land uses consistent with the General Plan and adopted Housing Element.
- ***Far-Term (Cumulative) Project Conditions*** – Traffic volumes from the Cumulative without scenario plus traffic estimated for the Project.

ANALYSIS METHODS

The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., free flow conditions) to LOS F (over capacity conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F. The City of Pleasanton generally strives to maintain LOS D or better for peak hour intersection operations.

A number of intersections, referred to as Gateway and Exempted Downtown intersections, may be allowed to degrade below the level-of service D standard if no reasonable mitigation exists or if the necessary mitigation is contrary to other goals and policies of the City. For example, physical improvements at Downtown intersections to provide additional capacity for vehicles could degrade the pedestrian realm. For Gateway intersections, additional vehicle capacity could encourage additional vehicle traffic that should remain on the regional transportation system and could also degrade the pedestrian experience and visual character of the intersection.

Gateway intersections analyzed in this report include the following intersections:

- I-580 Westbound Ramps at San Ramon Road

- I-580 Eastbound Ramps at Foothill Road
- Stoneridge Drive at I-680 Southbound Ramps
- Stoneridge Drive at I-680 Northbound Ramps
- Stoneridge Drive at Johnson Drive
- Dougherty Road at I-580 Westbound Ramps
- Hopyard Road at I-580 Eastbound Ramps
- Hopyard Road at Owens Drive

Different methods are used to assess signalized and unsignalized (stop-controlled) intersections.

Signalized Intersections

Operations of signalized intersections were evaluated using the method from Chapter 16 of the Transportation Research Board's 2000 *Highway Capacity Manual,* which uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. **Table 1** summarizes the relationship between average delay per vehicle and LOS for signalized intersections. This method evaluates each intersection in isolation and the effects of vehicle queue spillback are not considered in the analysis results.

Unsignalized Intersections

Operations at unsignalized intersections were evaluated using the method from Chapter 17 of the 2000 *Highway Capacity Manual*. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the major street, and the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections.

TABLE 1
SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity (V/C) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: 2000 *Highway Capacity Manual*.

Freeway Mainline Analysis

For the freeway mainline segments, LOS was calculated using the method described in Chapter 23 of the 2000 *HCM*. This method takes into consideration peak hour traffic volumes, free-flow speeds, percentage of heavy vehicles, and number of travel lanes. These factors are used to determine the vehicle density, measured in passenger cars per mile per lane. **Table 3** summarizes the relationship between vehicle density and LOS for mainline freeway segments.

Freeway Interchange Merge/Diverge

Freeway ramp merging and diverging operations were analyzed using the methods described in Chapter 25 of the 2000 *HCM*. This method correlates the LOS ratings to projected (computed) vehicle densities (passenger cars per mile per lane). **Table 4** summarizes the relationship between vehicular density and LOS for freeway ramps.

TABLE 2
UNSIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Delay in Seconds
A	Little or no delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: 2000 *Highway Capacity Manual*.

TABLE 3
FREEWAY MAINLINE LOS CRITERIA

Level of Service	Description	Density Range (pc/mi/ln)[1]
A	Free-flow operations in which vehicles are relatively unimpeded in their ability to maneuver within the traffic stream. Effects of incidents are easily absorbed.	0 to 11
B	Relative free-flow operations in which vehicle maneuvers within the traffic stream are slightly restricted. Effects of minor incidents are easily absorbed.	> 11 to 18
C	Travel is still at relative free-flow speeds, but freedom to maneuver within the traffic stream is noticeably restricted. Minor incidents may be absorbed, but local deterioration in service will be substantial. Queues begin to form behind significant blockages.	> 18 to 26
D	Speeds begin to decline slightly and flows and densities begin to increase more quickly. Freedom to maneuver is noticeably limited. Minor incidents can be expected to create queuing as the traffic stream has little space to absorb disruptions.	> 26 to 35
E	Operation at capacity. Vehicles are closely spaced with little room to maneuver. Any disruption in the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce a serious disruption in traffic flow and extensive queuing.	> 35 to 45
F	Breakdown in vehicle flow.	> 45

Note: [1]pc/mi/ln = passenger cars per mile per lane, Source: *Highway Capacity Manual* (Transportation Research Board, 2000).

TABLE 4
FREEWAY RAMP MERGE/DIVERGE LOS CRITERIA

LOS	Density[1]
A	≤ 10
B	10.1 to 20.0
C	20.1 to 28.0
D	28.1 to 35.0
E	> 35.1
F	Demand Exceeds Capacity

Note: [1]Density is presented in passenger cars per mile per lane (pc/mi/ln).
Source: *Highway Capacity Manual* (Transportation Research Board, 2000).

Preliminary analysis of the weekday PM peak hour condition indicated over-capacity conditions through the Stoneridge Drive interchange area, with vehicle queues extending through adjacent intersections. When these conditions occur, isolated intersection analysis may understate the actual traffic conditions and micro-simulation is recommended to better quantify potential vehicle queue spillback through the corridor. For this project, a simulation of PM peak hour operations along the Stoneridge Drive corridor between the I-680 southbound ramps and Franklin Drive was conducted using SimTraffic, a micro-simulation software that accounts for the effects of vehicle queue spillback, lane utilization as vehicles position themselves to enter the freeway, and the operation of trap lanes. The model was calibrated to existing weekday PM peak hour operations, and was used to evaluate queuing without and with the project for the analysis scenarios.

SIGNIFICANCE CRITERIA

The determination of significance for project impacts is based on applicable policies, regulations, goals, and guidelines defined by the City of Pleasanton, Alameda CTC and Caltrans. Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities (Guide for the Preparation of Traffic Studies, Caltrans, December 2002), however, Caltrans recognizes that achieving LOS C/LOS D may not always be feasible. Consistent with the Alameda County Congestion Management Agency level of service policy for roadways in the Tri-Valley area, a standard of LOS E or better on a peak

hour basis was used as the planning objective for the evaluation potential mainline freeway impacts of this development.

The impacts of the project were evaluated by comparing the results of the level of service calculations under Existing with Project, Near-term with Project, and Cumulative with Project conditions to the results under Existing, Near-term without Project, and Cumulative without Project conditions, respectively. The detailed impact criteria for this study are presented below.

ROADWAY OPERATIONS

The following criteria were used to identify significant off-site intersection impacts of the proposed project. Off-site intersection impacts could be considered if the Project would results in any of the following:

- Deterioration of a signalized intersection from LOS D (or better) to LOS E or LOS F[1]
- At an intersection projected to operate at LOS E or F prior to the addition of project traffic, the Project adds 10 or more trips
- Deterioration of a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following:
    1. Project traffic results in satisfaction at the peak hour volume traffic signal warrant;
    2. Project traffic increases minor movement delay by more than 30 seconds; or
    3. Where the peak hour volume signal warrant is met without Project traffic and delay cannot be measured, Project increases traffic by 10 or more vehicles per lane on the controlled approach.
- The Project would conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the County Congestion Management Agency for designated roads and highways:
    1. Exceed, either individually or cumulatively, an LOS standard established by the Alameda County Transportation Commission (Alameda CTC) for designated roads or highways; or
    2. For a roadway segment of the Metropolitan Transportation System (MTS) network, the project would cause (a) the LOS to degrade from LOS E or better to LOS F or (b) the V/C

[1] There is no level of service standard for Gateway and Downtown intersections.

ratio to increase 0.03 or more for a roadway segment that would operate at LOS F without the project.

- If a Caltrans facility (freeway mainline, ramp merge/diverge area) is projected to operate acceptably (i.e., LOS E or better) without project and the project is expected to cause the facility to operate at an unacceptable service level (i.e., LOS F), the impact is considered significant.
- If a Caltrans facility is projected to operate unacceptably (i.e., LOS F) without project and the project is expected to increase delay or density, the impact is considered significant. If density cannot be calculated, project traffic increases overall traffic by more than 3 percent.

PEDESTRIAN AND BICYCLE IMPACT CRITERIA

The *City of Pleasanton 2005-2025 General Plan* and *City of Pleasanton Pedestrian and Bicycle Master Plan, 2009,* describes related policies necessary to ensure that pedestrian and bicycle facilities are safe and effective for City residents. Using these plans as a guide, significant impacts to these facilities would occur when a project or an element of the project:

- Creates a hazardous condition that currently does not exist for pedestrians and bicyclists, or otherwise interferes with pedestrian accessibility to the site and adjoining areas; or
- Conflicts with an existing or planned pedestrian or bicycle facility; or
- Conflicts with policies related to bicycle and pedestrian activity adopted by the City of Pleasanton.

TRANSIT IMPACT CRITERIA

Generally, a project causes a significant impact to transit facilities and services if an element of it conflicts with existing or planned transit services. The evaluation of transit facilities shall consider if:

- A project creates demand for public transit services above the capacity which is provided, or planned;
- A project or project-related mitigation disrupts existing transit services or facilities;2
- A project or project-related mitigation conflicts with an existing or planned transit facility; or
- A project or project-related mitigation conflicts with transit policies adopted by the City of Pleasanton, Alameda CTC, Wheels (LAVTA), or BART for their respective facilities in the study area.

[2] This includes disruptions caused by proposed-project driveways on transit streets and impacts to transit stops/shelters; and impacts to transit operations from traffic improvements proposed or resulting from a project.

2.0 EXISTING CONDITIONS

This chapter describes the existing transportation conditions in the study area, including the roadway network and transit, pedestrian, and bicycle facilities in the vicinity of the Project site.

ROADWAY SYSTEM

The Project area is located southeast of the Interstate 680 (I-680) and Interstate 580 (I-580) interchange. Access to the EDZ is primarily from Johnson Drive, connecting to Stoneridge Drive, with a secondary route from Hopyard Road at Owens Drive. Regional vehicular access to the Project site is provided from Interstate 680 and Interstate 580. Local access is provided by Stoneridge Drive, Foothill Road, Hopyard Road, West Las Positas Boulevard, and Johnson Drive. These roadways are described below.

I-680 is a north/south designated scenic highway that connects San Jose to I-80 near Fairfield. This facility forms the western boundary of the project site and is accessible to the project via the Stoneridge Drive Interchange located to the south of the project site. It is a six lane freeway at Stoneridge Drive, and connects with Interstate 580 directly north of the Stoneridge Drive interchange. I-680 is designated as a Truck Route in the *City of Pleasanton 2005-2025 General Plan*.

I-580 extends in an east/west direction, from San Rafael in the west to Tracy in the east. In the vicinity of Pleasanton, I-580 forms the northern city boundary with four to five lanes in each direction. A high-occupancy vehicle (HOV) lane exists in the eastbound direction from Hacienda Drive to the base of the Altamont to the east of Livermore. I-580 is accessible to the project via the Hopyard Road/Dougherty Road interchange directly to the northeast of the project site. I-580 is designated as a Truck Route in the *City of Pleasanton 2005-2025 General Plan*.

Stoneridge Drive is designated as an arterial roadway in the *City of Pleasanton 2005-2025 General Plan*. It is generally a four lane to six lane facility with a landscaped median. Stoneridge Drive has a 45 mph posted speed limit through the study area. No on-street parking is permitted on this facility.

Foothill Road is designated as an arterial roadway in the *City of Pleasanton 2005-2025 General Plan*. It ranges from a three to five lane facility and has a planted median. Foothill Road has a posted speed limit of 45 mph near the study intersections. No on-street parking is permitted on this facility.

Hopyard Road is a southeast-northwest arterial which begins at Del Valle Parkway in the southeast and continues as Dougherty Valley Road north of I-580. Hopyard Road varies in width from between four and

six travel lanes, and the speed limit varies between 35 and 40 mph. No on-street parking is permitted on this facility.

West Las Positas Boulevard is a designated arterial roadway in the *City of Pleasanton 2005-2025 General Plan*. It ranges in width from a two lane to six lane facility. West Las Positas Boulevard has a posted speed limit of 40 mph through the study intersections. No on-street parking is permitted on this facility.

Johnson Drive is a designated arterial roadway in the *City of Pleasanton 2005-2025 General Plan*. It is generally a two lane facility with a dual left turn lane in the center for approximately 1,000 feet north of Stoneridge Drive. Through most of the study area, a single vehicular travel lane and bicycle lane is provided in each direction. Direct driveway access is provided from parcels to/from Johnson Drive. On-street parking is permitted in proximity to Commerce Drive on the west side of the roadway. Johnson Drive has a posted speed limit of 40 mph through the Project area. Field observations indicate that the on-street parking is well utilized for most of the day.

Commerce Drive is a designated local roadway in the *City of Pleasanton 2005-2025 General Plan* that provides one vehicular travel lane in each direction. It connects to Commerce Circle and provides direct access to land uses. On-street parking is permitted on both Commerce Drive and Commerce Circle, with parking restricted to one side of Commerce Circle. Field observations indicate that the on-street parking is well utilized for most of the day.

EXISTING PEDESTRIAN AND BICYCLE FACILITIES

PEDESTRIAN FACILITIES

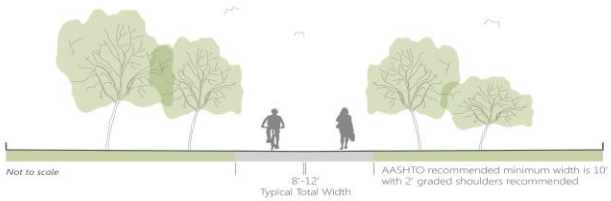
Pedestrian facilities include sidewalks, pathways, crosswalks, and pedestrian signals. Sidewalks are provided along the southwest side of Johnson Drive from the Stoneridge Drive intersection to just beyond the existing FedEx distribution center, where it connects to the Alamo Canal Trail (a multi-use path) to the west of the study area that parallels I-680. Additional pedestrian access from the Alamo Canal Trail to the EDZ is possible from a pedestrian cut-thru northwest of the study area. There is no sidewalk or pedestrian facility along Johnson Drive between the FedEx Distribution Center and Commerce Drive. Most of the surrounding streets that connect with the study area, as described above, provide sidewalks.

BICYCLE FACILITIES

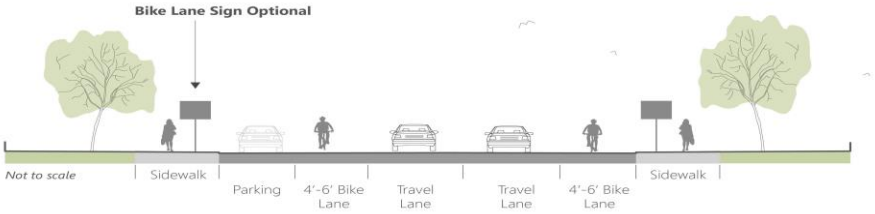
Bicycle facilities in Pleasanton include the following general types. The graphics following the description of each type of bicycle facility are the minimum American Association of State Highway and

Transportation Officials (AASHTO) standards for each type of bike facility to provide a general depiction of each type of bicycle facility. Within the City of Pleasanton, these standards provide a framework for future implementation but depending on the circumstances and where feasible, the City of Pleasanton has chosen to go above and beyond AASHTO standards.

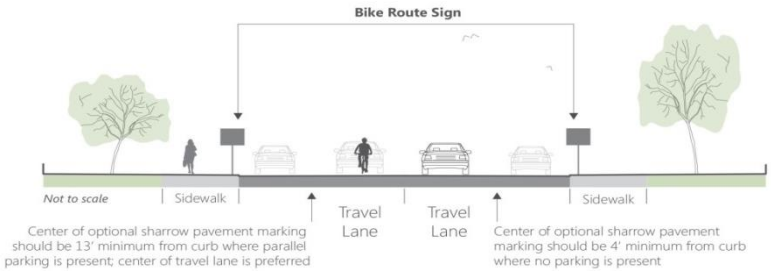
- Bike paths (Class I) – Paved trails that are separated from roadways. There are also several unpaved off-street trails within Pleasanton. These facilities are typically shared with pedestrians, although bicycles must yield to pedestrians. Vehicle cross-flow is minimized.



- Bike lanes (Class II) provide restricted right-of-way and are designated for the use of bicycles with a striped lane on a street. Bicycle lanes are generally five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.



- Bike routes (Class III) provide for a right-of-way designated by signs or pavement markings (sharrows) for shared use with pedestrians or motor vehicles. Sharrows are a type of pavement marking (bike and arrow stencil) placed to guide bicyclists to the best place to ride on the road, avoid car doors, and remind drivers to share the road with cyclists.



- Side Paths – An off-street facility located adjacent to a roadway that is shared with pedestrians. These paths may be paved or unpaved.

There are currently Class II bicycle lanes along Johnson Drive throughout the Project vicinity. Class II bicycle lanes are also located along Stoneridge Drive just south of the Project site. The Class I Alamo Canal Trail is located parallel to Johnson Drive and provides connects to other nearby trails including the regional Iron Horse Trail to the north of the study area.

EXISTING TRANSIT SERVICE

Transit service in the area is provided by Wheels, Pleasanton Paratransit, The County Connection, Bay Area Rapid Transit (BART), and Altamont Commuter Express (ACE).

Wheels provides fixed-route and paratransit service throughout the Cities of Dublin, Pleasanton, and Livermore, and provides connections to other transit service providers. Wheels buses connect major destinations within the Cities of Dublin, Pleasanton and Livermore, including Downtown areas, employment centers and destinations such as the Hacienda Business Park, Bernal Corporate Park, Stoneridge Mall, and transit hubs, including BART and ACE stations. Wheels bus schedules are also coordinated with ACE and BART trains during peak commute hours. The Project Area is currently served directly by Routes 3 and 70XV that connect with the nearby BART stations and destinations in Dublin and San Ramon. Bus stops are provided along Johnson Drive, including at the park and ride lot. Transit amenities are provided along the corridor, including shelters. Based on information provided by LAVTA, Route 3 serves on average approximately 50 passengers on a typical weekday. Route 70XV serves about 15 passengers from the study area on a typical weekday.

Pleasanton Paratransit provides scheduled door-to-door shared ride services for residents of Pleasanton and Sunol who are age 70 and over, and for disabled residents between the ages of 18 and 69. Transportation is provided between 8:00 AM and 5:30 PM, Monday through Friday, with service also provided on Saturdays. Rides must be requested at least two days in advance.

The Central Contra Costa Transit Authority (CCCTA, ***County Connection***) provides transit service connecting destinations in Contra Costa County to the Tri-Valley area, including service from the East Pleasanton BART station to the San Ramon Transit Center and Bishop Ranch Business Park. There is also a route that connects the Walnut Creek BART station to the Downtown Pleasanton ACE station.

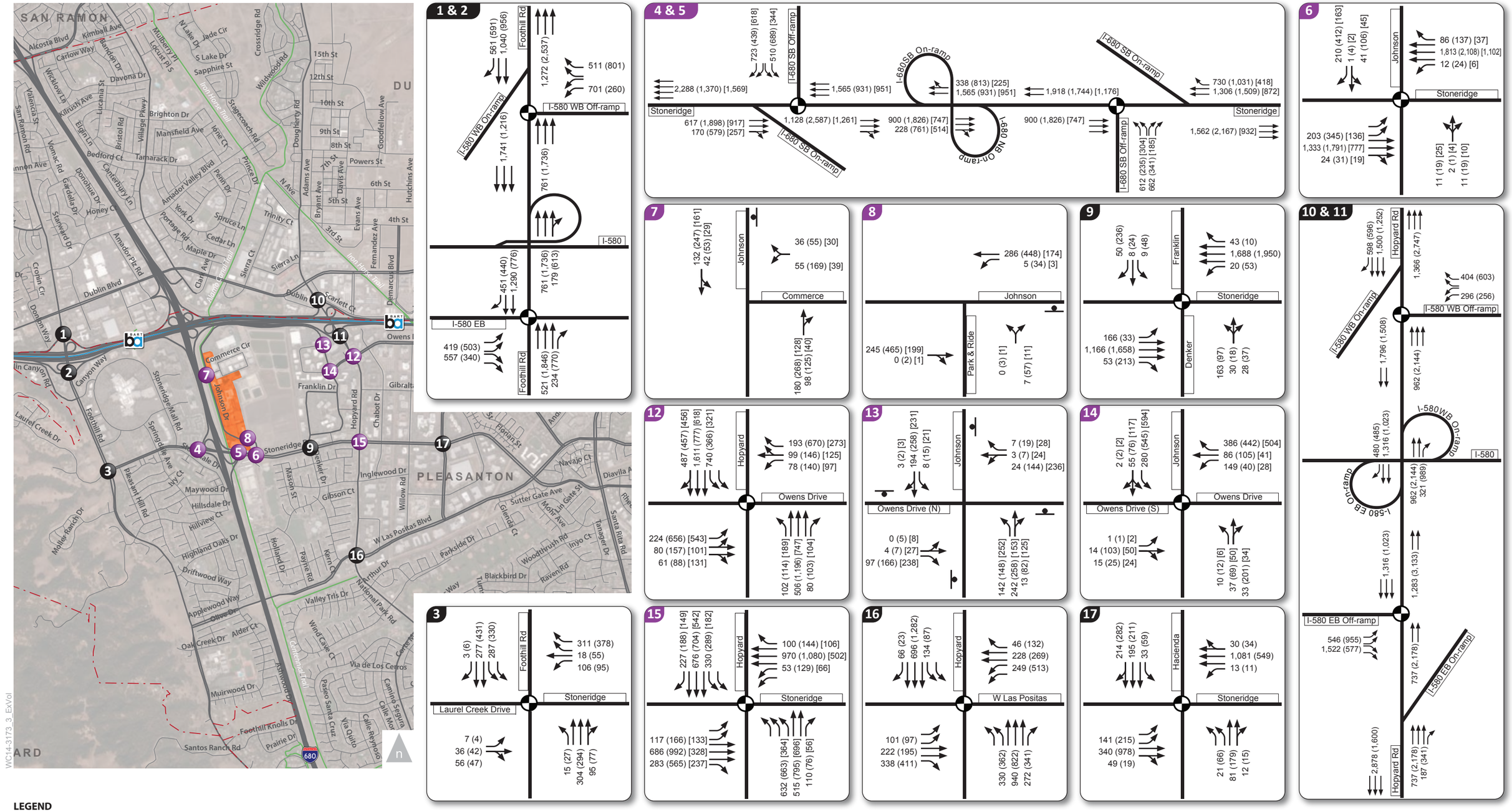
Bay Area Rapid Transit (BART) provides regional transportation connections to much of the Bay Area and the Dublin/Pleasanton line provides direct access to San Francisco, with several stops in Oakland

where connections may be made to other lines. The closest BART station is the Dublin/Pleasanton Station located less than a mile northeast of the Project area. The West Dublin/Pleasanton BART station is also located approximately one mile from the Project site. BART train frequency ranges between 15-20 minutes from approximately 5:00 AM to 12:00 AM. Based on 2013 data from BART, approximately 6,800 passengers per day enter/exit the BART system at the East Dublin/Pleasanton station, and approximately 3,200 passengers enter/exit the BART system at the West Dublin/Pleasanton BART Station.

The ***Altamont Commuter Express*** (ACE) operates weekday train service between Stockton and San Jose with a stop in Downtown Pleasanton. During the morning commute period only westbound service from the Central Valley to San Jose is provided, while only eastbound service is provided in the afternoon/evening commute period. There are four morning trains through Pleasanton between 5:33 AM and 8:18 AM, and four evening trains between 4:28 PM and 7:31 PM. Travel time from Stockton to Pleasanton is approximately one hour and fifteen minutes, while travel time from Pleasanton to San Jose is approximately one hour. The Pleasanton ACE station is located approximately three miles south of the study area on Pleasanton Avenue at Bernal Avenue. Wheels provides shuttle services between the ACE stations and major employment/residential areas in Pleasanton and Livermore. ACE trains carry approximately 4,000 passengers on a typical weekday, with approximately 600 passengers boarding the ACE system at the downtown Pleasanton Station on a typical weekday.

EXISTING TRAFFIC COUNTS

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at the study intersections on October 1st, 2014, including separate counts of trucks, pedestrians and bicyclists. For the study intersections, the single hour with the highest traffic volumes during the count periods was identified. The AM peak hour in the study area is generally from 8:00 to 9:00 AM and the PM peak hour is generally from 4:45 to 5:45 PM. Saturday peak period counts (1:00 to 4:00 PM) were also conducted at selected intersections on October 4th, 2014. The Saturday peak hour in the study area for the selected intersections is generally from 1:00 to 2:00 PM. The peak hour volumes are presented on **Figure 3** along with the existing lane configuration and traffic control. Existing peak hour bicycle and pedestrian activity is shown on **Figure 4**. Truck percentages through the study intersections ranged from less than 1 percent of the total traffic to approximately 4 percent. At most intersections, heavy trucks were between 1 and 2 percent of the total traffic volume. Traffic count worksheets are provided in **Appendix A**.



LEGEND

XX (YY) [ZZ]	AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes
	Traffic Signal
	Stop Sign
#	Study Intersections (Weekday AM + PM)
#	Study Intersections (Weekday AM + PM + Satuday Afternoon)
	Project Site

Figure 3

Existing AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

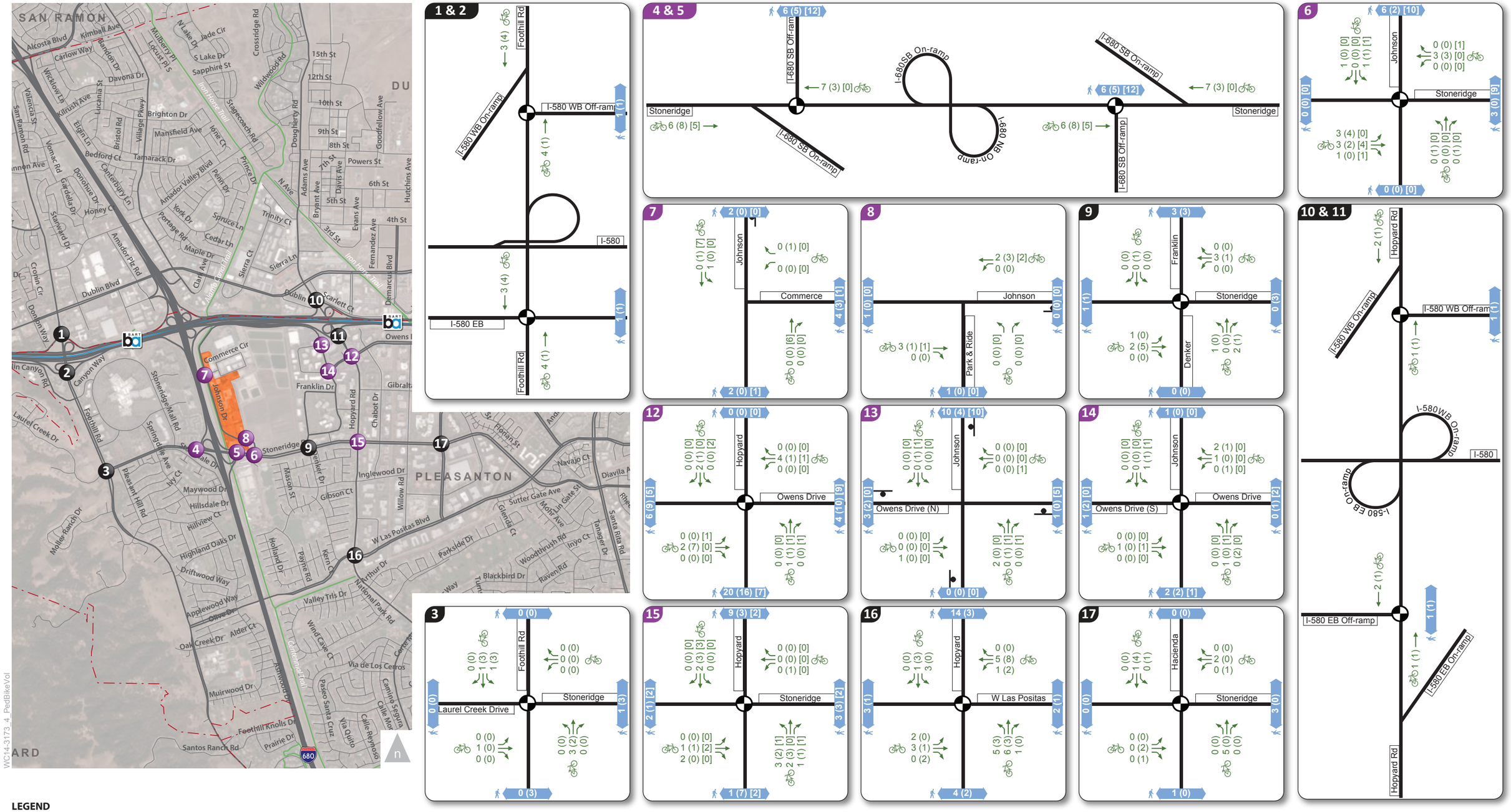


Figure 4

Existing Conditions Peak Hour Bicycle and Pedestrian Volumes

EXISTING OPERATIONS

INTERSECTION LEVEL OF SERVICE

Existing operations were evaluated using the method described in Chapter 1 for the weekday AM, weekday PM, and Saturday peak hours at the study intersections, as summarized in **Table 5**. The analysis was based on the volumes, lane configurations and traffic control shown previously on **Figure 3**. Observed peak hour factors[3] were used at all intersections for the existing analysis. Truck, pedestrian and bicycle activity was factored into the analysis.

As shown, study intersections generally operate at acceptable service levels in accordance with benchmarks set by the City of Pleasanton. During the AM peak hour, all intersections directly adjacent to the site operate at LOS C or better. During the PM peak hour, all intersections directly adjacent to the Project site operated at LOS D or better. Detailed intersection LOS calculation worksheets are presented in **Appendix B**.

Field observations confirmed the calculated levels of service along with the extent of existing vehicle queues which were used to calibrate the PM peak period SimTraffic model. Vehicle queues are generally contained within the existing vehicle storage.

TABLE 5
EXISTING CONDITIONS
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Existing Conditions	
			Delay[2,3]	LOS[3]
1. I-580 Westbound Ramps at San Ramon Road	Signal	AM PM	8 15	A B
2. I-580 Eastbound Ramps at Foothill Road	Signal	AM PM	10 8	A A
3. Foothill Road at Stoneridge Drive	Signal	AM PM	19 18	B B

[3] The relationship between the peak 15-minute flow rate and the full hourly volume is given by the peak-hour factor (PHF) as shown in the following equation: PHF=Hourly volume/(4* volume during the peak 15 minutes of flow). The analysis of level of service is based on peak rates of flow occurring within the peak hour because substantial short-term fluctuations typically occur during an hour.

TABLE 5
EXISTING CONDITIONS
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Existing Conditions	
			Delay[2,3]	LOS[3]
4. Stoneridge Drive at I-680 Southbound Ramps	Signal	AM PM Sat	18 11 10	B B A
5. Stoneridge Drive at I-680 Northbound Ramps	Signal	AM PM Sat	16 13 9	B B A
6. Stoneridge Drive at Johnson Drive	Signal	AM PM Sat	12 23 11	B C B
7. Commerce Drive at Johnson Drive	SSSC	AM PM Sat	3 (12) 7 (28) 2 (11)	A (B) A (D) A (B)
8. Park and Ride Lot at Johnson Drive	SSSC	AM PM Sat	1 (10) 1 (12) 1 (10)	A (A) A (B) A (A)
9. Stoneridge Drive at Franklin Drive	Signal	AM PM	24 19	C B
10. Dougherty Road at I-580 Westbound Ramps	Signal	AM PM	9 13	A B
11. Hopyard Road at I-580 Eastbound Ramps	Signal	AM PM	17 15	B B
12. Hopyard Road at Owens Drive	Signal	AM PM Sat	30 47 36	C D D
13. Johnson Drive at Owens Drive (North)	AWSC	AM PM Sat	10 13 16	A B C
14. Johnson Drive at Owens Drive (South)	Signal	AM PM Sat	13 18 12	B B B
15. Stoneridge Drive at Hopyard Road	Signal	AM PM Sat	30 32 27	C C C

TABLE 5
EXISTING CONDITIONS
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Existing Conditions	
			Delay[2,3]	LOS[3]
16. West Las Positas Boulevard at Hopyard Road	Signal	AM PM	21 25	C C
17. Stoneridge Drive at Hacienda Drive	Signal	AM PM	23 27	C C

Notes:
1. SSSC = side-street stop controlled intersection; AWSC = all way stop control; Signal = signalized intersection.
2. Average intersection delay calculated for signalized intersections using the *2000 HCM* method.
3. For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.

Source: Fehr & Peers, 2015.

SIGNAL WARRANTS

Peak hour traffic signal warrants were reviewed at the unsignalized study intersections. Peak hour warrants[4] are not satisfied at the unsignalized intersections based on existing traffic volumes.

[4] Unsignalized intersection warrant analysis is intended to examine the general correlation between existing conditions and the need to install new traffic signals. Existing peak-hour volumes are compared against a subset of the standard traffic signal warrants recommended in the Manual on Uniform Traffic Control Devices (MUTCD) and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible State or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

3.0 PROJECT CHARACTERISTICS

This chapter provides an overview of the proposed Project components and addresses the proposed Project trip generation, distribution, and assignment characteristics, allowing for an evaluation of Project impacts on the surrounding roadway network. The amount of traffic associated with the Project was estimated using a three-step process:

1. **Trip Generation** – The *amount* of vehicle traffic entering at exiting the EDZ site was estimated.
2. **Trip Distribution** – The *direction* trips would use to approach and depart the area was projected.
3. **Trip Assignment** – Trips were then *assigned* to specific roadway segments and intersection turning movements.

PROJECT DESCRIPTION

The EDZ is an approximately 40-acre area comprised of 12 parcels. Access to the EDZ is primarily from Johnson Drive, connecting to Stoneridge Drive, with a secondary route from Hopyard Road at Owens Drive. The EDZ currently contains a mix of light industrial, retail, office, and institutional uses, in addition to vacant parcels. Current zoning allows for general industrial, light industrial, and commercial/office type uses which currently occupy approximately 573,723 square feet of building space, including the following existing uses that could be removed:

- 20,000 square foot church
- 53,363 square feet of retail
- 15,070 square feet of office
- 136,255 square feet of light industrial
- 349,035 square feet of vacant buildings (demolition pending)

To encourage redevelopment in the EDZ area, the project would rezone 12 parcels in the area shown on Figure 2, permitting a wider variety of land uses to promote the long-term economic sustainability of the EDZ area. Under project conditions, the allowed uses in the area would expand and an increased floor-area-ratio would be permitted, allowing for a potential increase in building square footage for the site. Although no development is currently proposed for the site, it was assumed that under project conditions for the purposes of the transportation analysis that a variety of uses could be constructed, including:

- 245,440 square feet of retail
- 88,000 square foot hotel (150 rooms)
- 148,000 square feet of club retail
- 20 fueling position gas station
- 27,550 square feet of light industrial

It is likely that development within the EDZ would occur in phases. For the purposes of this assessment, development on vacant parcels was assumed to occur first, which could include development of:

- 23,500 square feet of retail
- 88,000 square foot hotel (150 rooms)
- 148,000 square feet of club retail
- 20 fueling position gas station

Subsequent phases would demolish existing uses and construct the remaining uses, which could include additional retail square footage and light industrial uses.

The EDZ includes design guidelines intended to guide future development. The design guidelines would provide direction on site access and circulation for all modes, building height and setbacks, landscaping, parking supply, open spaces, building types and architectural features. Additional details are provided in Chapter 9.

PROJECT TRIP GENERATION

Vehicle trip generation for the retail and office potions of the project were estimated using average trip generation rates from the Institute of Transportation Engineers (ITE) publication *Trip Generation Manual,* 9th Edition. Trip generation estimates for the club retail portion of the project were developed using trip generation survey data from similar uses throughout the western United States. The resulting trip generation is presented in **Table 6** for Phase 1 development and in **Table 7** for project buildout. Phase 1 is expected to generate approximately 12,940 weekday daily trips, including 460 morning peak hour, and 1,240 evening peak hour trips. Saturday trip generation is expected to be approximately 13,460 daily trips, including 1,630 peak hour trips. With the Phase 1 development, vehicle trips from existing uses within the EDZ were assumed to remain on the roadway system. Full buildout would result in additional vehicle traffic in the area, but also considers the net-difference in vehicle trip generation with the removal of existing uses within the EDZ. Estimated driveway volumes at buildout are 19,060 weekday daily trips

including 490 morning peak hour and 1,730 evening peak hour trips. On a Saturday, estimated driveway volumes are 21,530 daily trips and 2,360 peak hour trips.

At retail establishments such as the proposed project, driveway traffic comprises: (1) new traffic generated by the project, (2) traffic that would otherwise already be on the adjacent roadways but the driver decides to stop at the site (e.g., to purchase an item on their way home from work), and (3) traffic on other nearby roadways, but the driver decides to take a short detour to stop at the site. The trips in Item 2 are referred to as "pass-by" trips and the trips in Item 3 are referred to as "diverted-link" trips.

Information contained in the ITE *Trip Generation Handbook* and surveys of similar uses was used to estimate pass-by and diverted-link trips. For shopping centers, the average pass-by rate is 34 percent, and the average diverted linked trip rate is 16 percent. In other words, at a typical shopping center, approximately, 50 percent of the traffic entering and exiting the site is already on the surrounding roadway system. For this assessment, it was assumed that pass-by/diverted trips for the general retail portion of the project would comprise 30 percent of the trip generation.

Based on survey data for club retail uses, approximately 35 percent of trips are pass-by and 32 percent of trips are diverted linked trips on a typical weekday. On a Saturday, approximately 29 percent of trips are pass-by and 20 percent of trips are diverted linked trips. No reduction for diverted trips was assumed for the weekday morning peak hour.

The traffic volumes on the adjacent street, Johnson Drive, are not high enough to justify the use of a pass-by discount (approximately 600 vehicles during the weekday PM peak hour, and less at other times of day). However, as the project site is located close to I-680, I-580, Stoneridge Drive, and Hopyard Road, which carry significant amounts of traffic, it is likely that a large proportion of project traffic would be comprised of vehicles already on this regional roadway facility that may stop by the project area on an already planned trip. Of the pass-by/diverted trips, it was assumed that:

- 20 percent would be from Interstate 580
- 30 percent would be from Interstate 680
- 10 percent would be from Hopyard Road
- 40 percent would be from Stoneridge Drive

These trips were assumed to divert out of their original travel path to access the area. For example, a trip that diverts from Interstate 680 traveling northbound was assumed to exit the freeway at Stoneridge Drive, turn right to Stoneridge Drive, and then left to Johnson Drive to access their destination within the EDZ. When the vehicle departs the area, it is assumed to travel south on Johnson Drive, turn right to

Stoneridge Drive, then turn right to enter I-680, continuing on the original northbound trip. For the purposes of the traffic assessment, these trips are considered new trips for the trip portion that diverts from the primary route, but they are not considered a new trip to the overall roadway system.

After application of the pass-by and diverted trip factors, Phase 1 would generate approximately 8,890 daily trips, including 330 morning peak hour and 500 evening peak hour trips. On a Saturday, Phase 1 development would generate 10,900 daily trips and 910 peak hour trips. At EDZ buildout, additional trips would be generated for a total of 12,160 daily trips, including 300 morning peak hour (a slight reduction from phase 1 considering the morning trip generation of existing uses in the EDZ that would be removed with buildout) and 750 evening peak hour trips. On a Saturday, buildout development would generate 15,630 daily trips and 1,310 peak hour trips.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Based on the location of the Project area, existing traffic patterns, location of complementary land uses, such as residences from which employees and customers may come from/depart to, and a select zone analysis using the City of Pleasanton travel demand model, trip distribution percentages were developed as depicted on **Figure 5.**

Project trips were assigned to the roadway network based on the general directions of approach and departure shown on Figure 5, but the route that people take to the site could vary by their destination within area. For example, a driver originating in the east on Interstate 580 (I-580) could access the site from the Hopyard Road interchange, or could travel south on I-680 and access the site via the Stoneridge Drive interchange. The resulting project trip assignment and project-related intersection volumes are shown on **Figure 6** for Phase 1 and **Figure 7** at project buildout. The project trip assignment shown on Figures 6 and 7 account for pass-by and diverted trips.

TABLE 6
PHASE 1 (SCENARIO 2A) TRIP GENERATION ESTIMATES

Use	Size	Weekday							Saturday			
		Daily	AM Peak Hour			PM Peak Hour			Daily	Peak Hour		
			In	Out	Total	In	Out	Total		In	Out	Total
Redevelopment of Vacant Parcels Only												
Retail[1]	23,500 square feet	1,000	14	9	23	42	45	87	1,170	59	54	113
Club Retail with Fuel[2]	148,000 square feet	10,710	195	158	353	512	546	1,058	11,060	717	692	1,409
Hotel (150 Rooms)[3]	88,000 square feet	1,230	47	33	80	46	44	90	1,230	60	48	108
	Total Driveway Volumes	12,940	256	200	456	600	635	1,235	13,460	836	794	1,630
Less Trip Reductions												
	Pass-by Trips Retail[4]	-300	-4	-3	-7	-13	-13	-26	-350	-18	-16	-34
	Pass-by Trips Club Retail with Fuel Station[2]	-3,750	-66	-54	-120	-179	-191	-370	-2,210	-208	-201	-409
	Diverted-Trips Club Retail with Fuel Station[2]	--	--	--	--	-164	-175	-339	--	-143	-138	-281
	External Vehicle Trips	8,890	186	143	329	244	256	500	10,900	467	439	906

Notes:
1. Based on *Trip Generation* (9th Edition) trip generation rate for land use 820, Shopping Center/General Retail.
2. Based on data provided by Kittleson & Associates, October 3, 2014.
3. Based on *Trip Generation* (9th Edition) trip generation rate for land use 310, Hotel.
4. Pass-by trip reduction for general retail use is 30 percent.

Source: Fehr & Peers, April 2015

TABLE 7
BUILDOUT (SCENARIO 2) TRIP GENERATION ESTIMATES

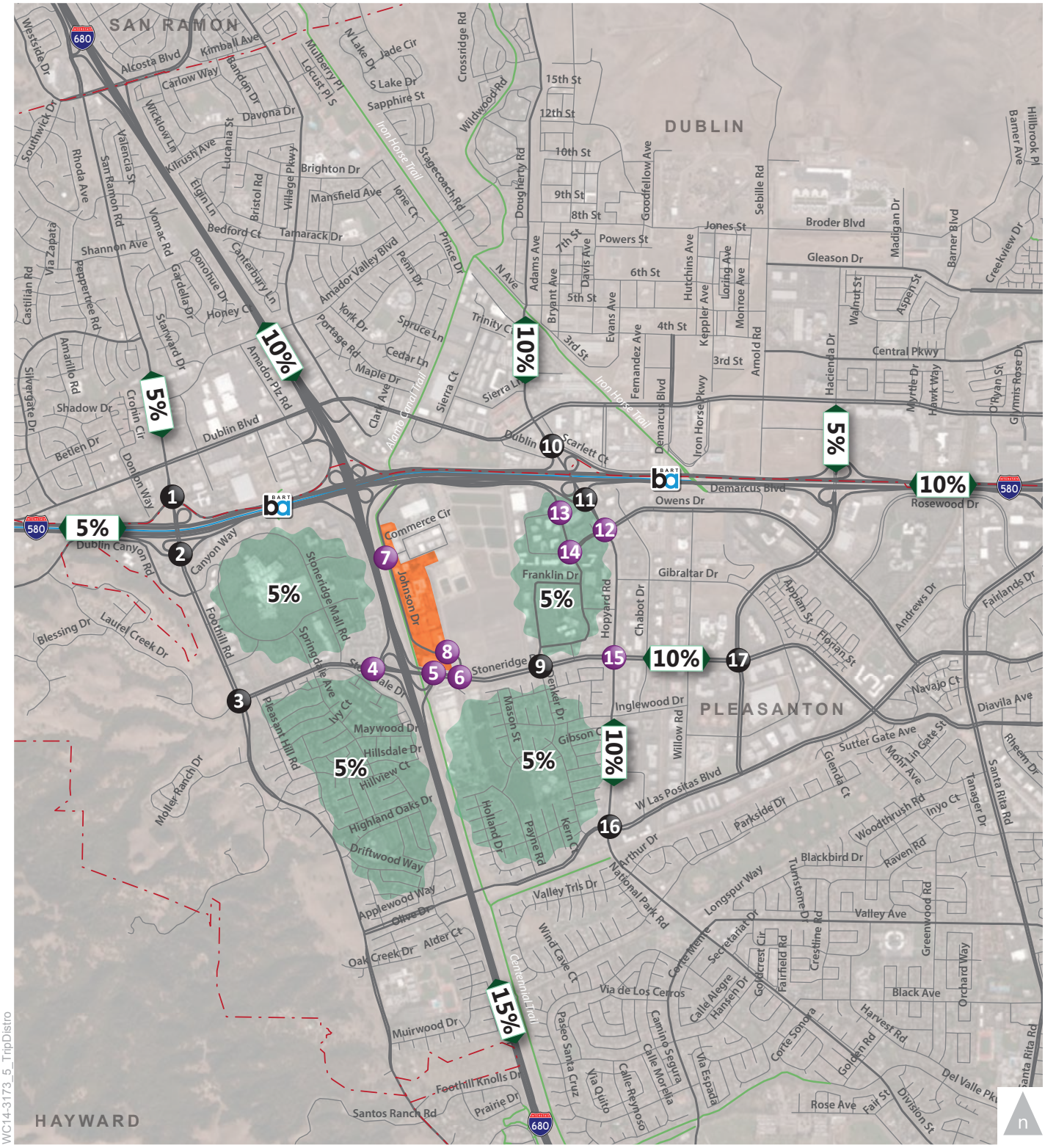
Use	Size	Weekday							Saturday			
		Daily	AM Peak Hour			PM Peak Hour			Daily	Peak Hour		
			In	Out	Total	In	Out	Total		In	Out	Total
Existing Uses to be Removed												
Church[1]	20,000 square feet	180	7	4	11	5	6	11	210	50	21	71
Retail[2]	53,363 square feet	2,280	32	19	51	95	103	198	2,670	134	123	257
Office[3]	15,070 square feet	170	21	3	24	4	18	22	40	3	3	6
Light Industrial[4]	136,225 square feet	950	110	15	125	16	116	132	180	9	10	19
Vacant	349,035 square feet	0	0	0	0	0	0	0	0	0	0	0
Existing External Vehicle Trips (A)		***3,580***	***170***	***41***	***211***	***120***	***243***	***363***	***3,100***	***196***	***157***	***353***
Allowable Uses under Proposed Rezoning												
Retail[2]	246,440 square feet	10,510	147	90	237	439	476	915	12,300	618	570	1,188
Club Retail with Fuel[5]	148,000 square feet	10,710	195	158	353	512	546	1,058	11,060	717	692	1,409
Light Industrial[4]	27,550 square feet	190	22	3	25	3	24	27	40	2	2	4
Hotel (150 Rooms)[6]	88,000 square feet	1,230	47	33	80	46	44	90	1,230	60	48	108
	Total Driveway Volumes	22,640	411	284	695	1,000	1,090	2,090	24,630	1,397	1,312	2,709
Less Trip Reductions												
	Pass-by Trips Retail[7]	-3,150	-44	-27	-71	-132	-143	-275	-3,690	-185	-171	-356
	Pass-by Trips Club Retail with Fuel Station[5]	-3,750	-66	-54	-120	-179	-191	-370	-2,210	-208	-201	-409

TABLE 7
BUILDOUT (SCENARIO 2) TRIP GENERATION ESTIMATES

Use	Size	Weekday							Saturday			
		Daily	AM Peak Hour			PM Peak Hour			Daily	Peak Hour		
			In	Out	Total	In	Out	Total		In	Out	Total
Diverted-Trips Club Retail with Fuel Station[5]		--	--	--	--	-164	-175	-339	--	-143	-138	-281
External Vehicle Trips (B)		15,740	301	203	504	525	581	1,106	18,730	861	802	1,663
Net New Vehicle Trips to EDZ Area = B – A		12,160	131	162	293	405	338	743	15,630	665	645	1,310

Notes:
1. Based on *Trip Generation* (9th Edition) trip generation rates for land use 560, Church.
2. Based on *Trip Generation* (9th Edition) trip generation rate for land use 820, Shopping Center/General Retail.
3. Based on *Trip Generation* (9th Edition) trip generation rate for land use 710, General Office.
4. Based on *Trip Generation* (9th Edition) trip generation rates for land use 110, General Light Industrial.
5. Based on data provided by Kittleson & Associates, October 3, 2014.
6. Based on *Trip Generation* (9th Edition) trip generation rate for land use 310, Hotel.
7. Pass-by trip reduction for general retail use is 30 percent.

Source: Fehr & Peers, April 2015



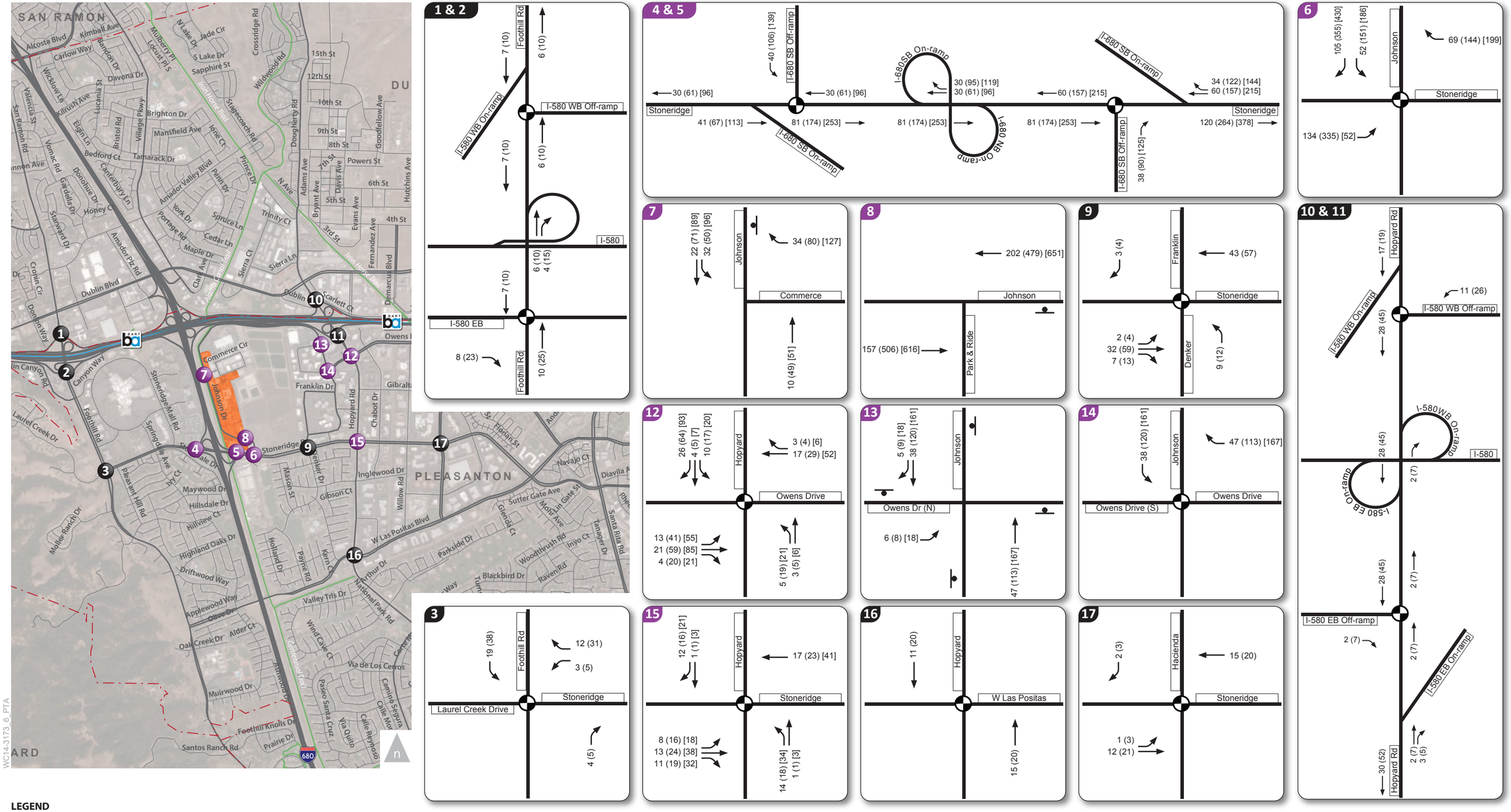
WC14-3173_5_TripDistro

LEGEND

- X% — Project Trip Distribution
- # — Study Intersections (Weekday AM + PM)
- # — Study Intersections (Weekday AM + PM + Satuday Afternoon)
- Project Site

Figure 5

Project Trip Distribution



WC14-3173_6_PTA

LEGEND

XX (YY) AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes

Note: **Includes pass-by trips.**

Traffic Signal

Stop Sign

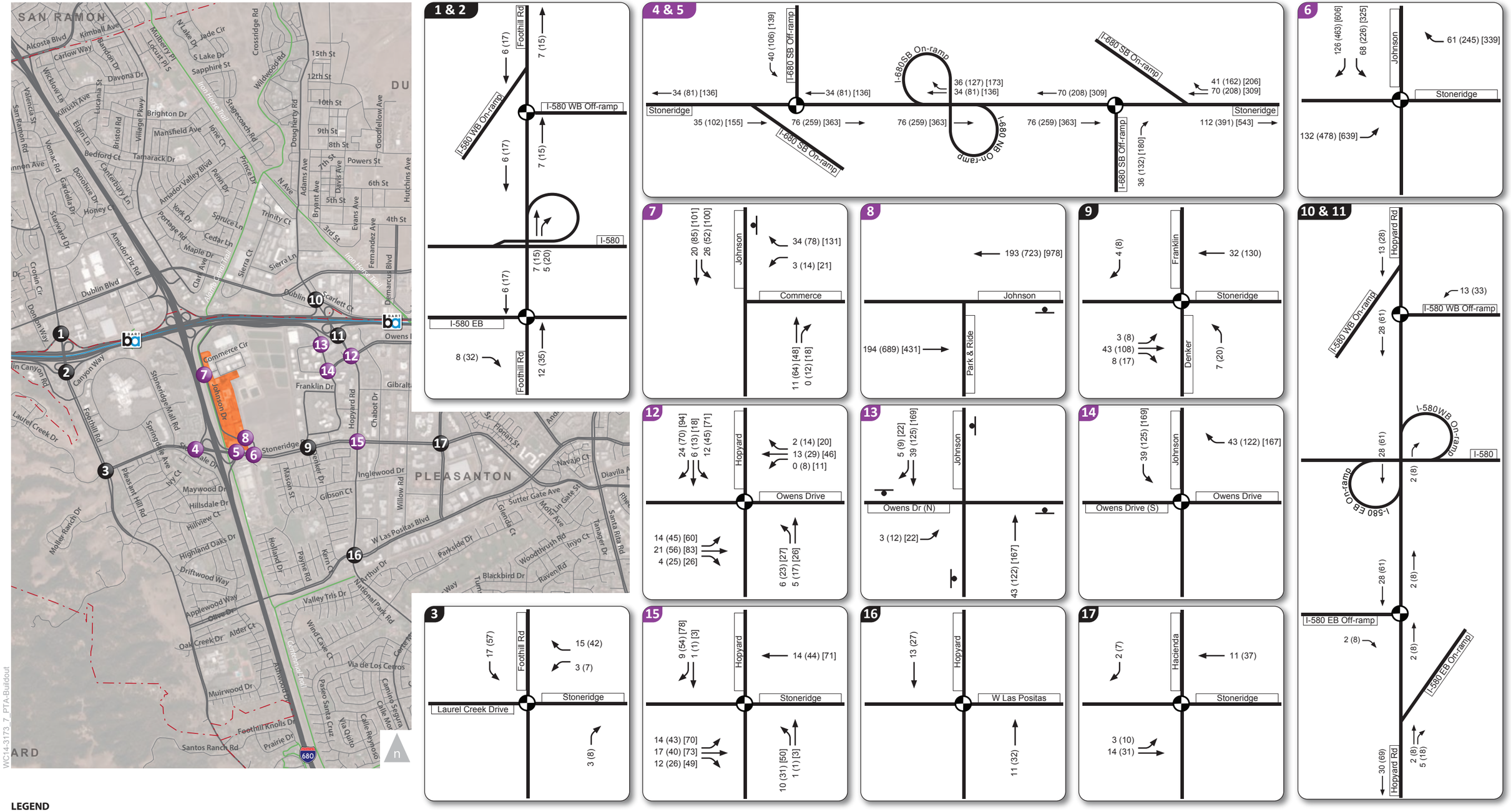
Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

Project Site

Figure 6

Project Trip Assignment – Phase 1



LEGEND

XX (YY) AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes

Note: **Includes pass-by trips.**

Traffic Signal

Stop Sign

Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

Project Site

WC14-3173_7_PTA-Buildout

Figure 7

Project Trip Assignment – Project Buildout

4.0 EXISTING WITH PROJECT CONDITIONS

This chapter evaluates potential off-site traffic impacts under Existing Plus Project conditions.

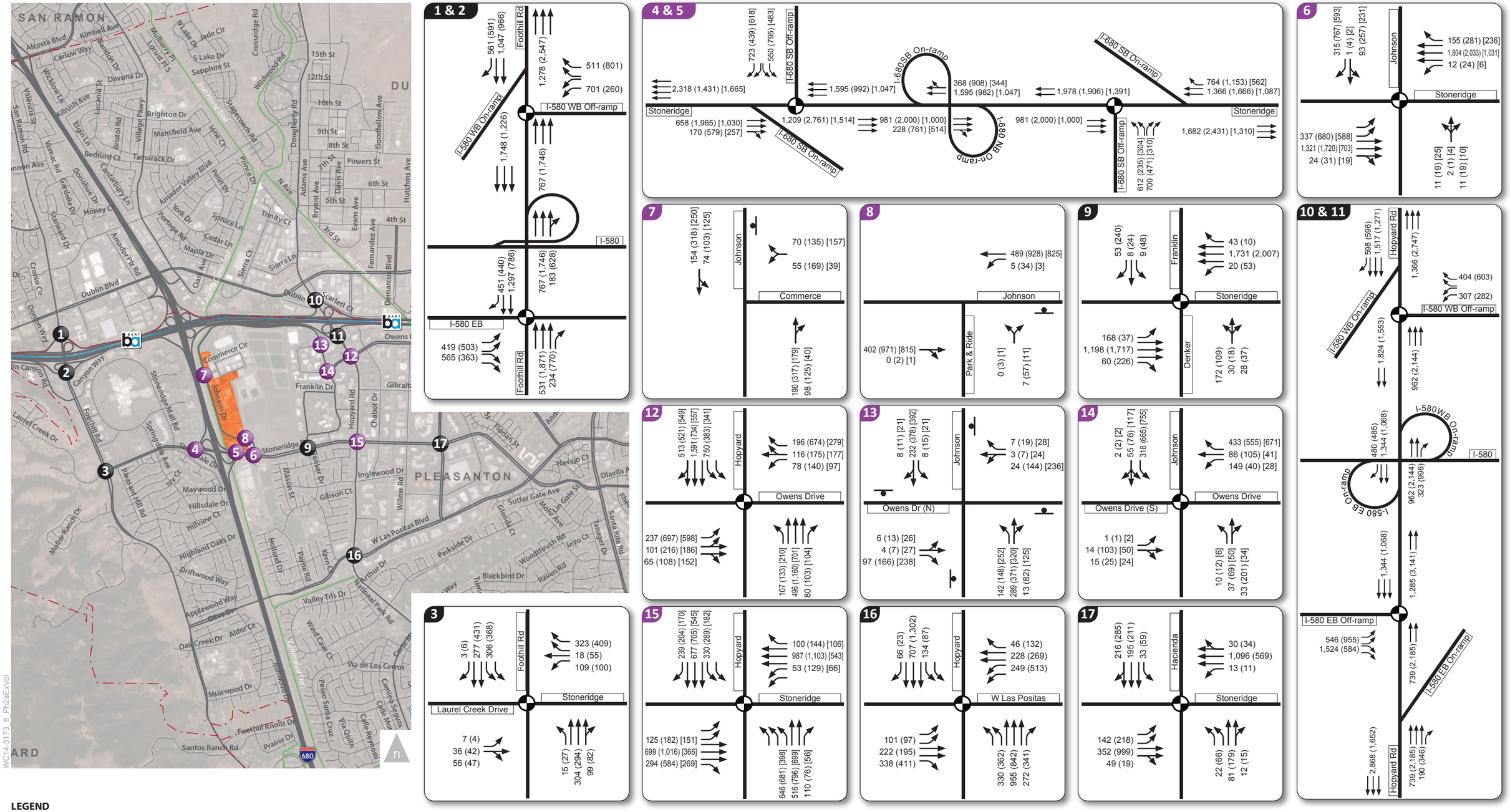
EXISTING WITH PROJECT TRAFFIC VOLUMES AND ROADWAY IMPROVEMENTS

The Project-only traffic volumes (Figure 6 and Figure 7) were added to the existing peak hour traffic volumes (**Figure 3**) to estimate the Existing with Project peak hour intersection turning movement volumes, as shown on **Figure 8** with Phase 1 and **Figure 9** for buildout. No roadway improvements were assumed for this scenario. Although some roadway improvements are planned in the area, including the conversion of the westbound right-turn lane from Stoneridge Drive to Jonson Drive to a through-right shared lane and modification of the traffic signal at the Stoneridge Drive at northbound I-680 ramps, these improvements were evaluated as potential mitigation.

ANALYSIS OF EXISTING WITH PROJECT CONDITIONS

INTERSECTION LEVELS OF SERVICE

Existing with Project Phase 1 and Buildout conditions were evaluated using the same methods described in Chapter 1. The Existing with Project analysis results are presented in Table 8, based on the traffic volumes and lane configurations presented on Figure 8 and Figure 9. Traffic signal timings, peak hour factors, and bicycle and pedestrian volumes at the intersection were assumed to remain the same, except at the Stoneridge Drive at Johnson Drive intersection where north/south split phasing was assumed to accommodate the projected increases in traffic; future signal/timing phasing at this intersection will be determined during the design phase of improvements identified to accommodate project traffic. Vehicle queues for intersections on Stoneridge Drive between the southbound I-680 off-ramp and Franklin Drive were evaluated using SimTraffic, a micro-simulation software, to account for the effects of vehicle queue spillback, lane utilization as vehicles position themselves to enter the freeway, and the short spacing between intersections which affects driver behavior. Table 8 also includes the operations results for the Existing without Project conditions for comparison purposes.

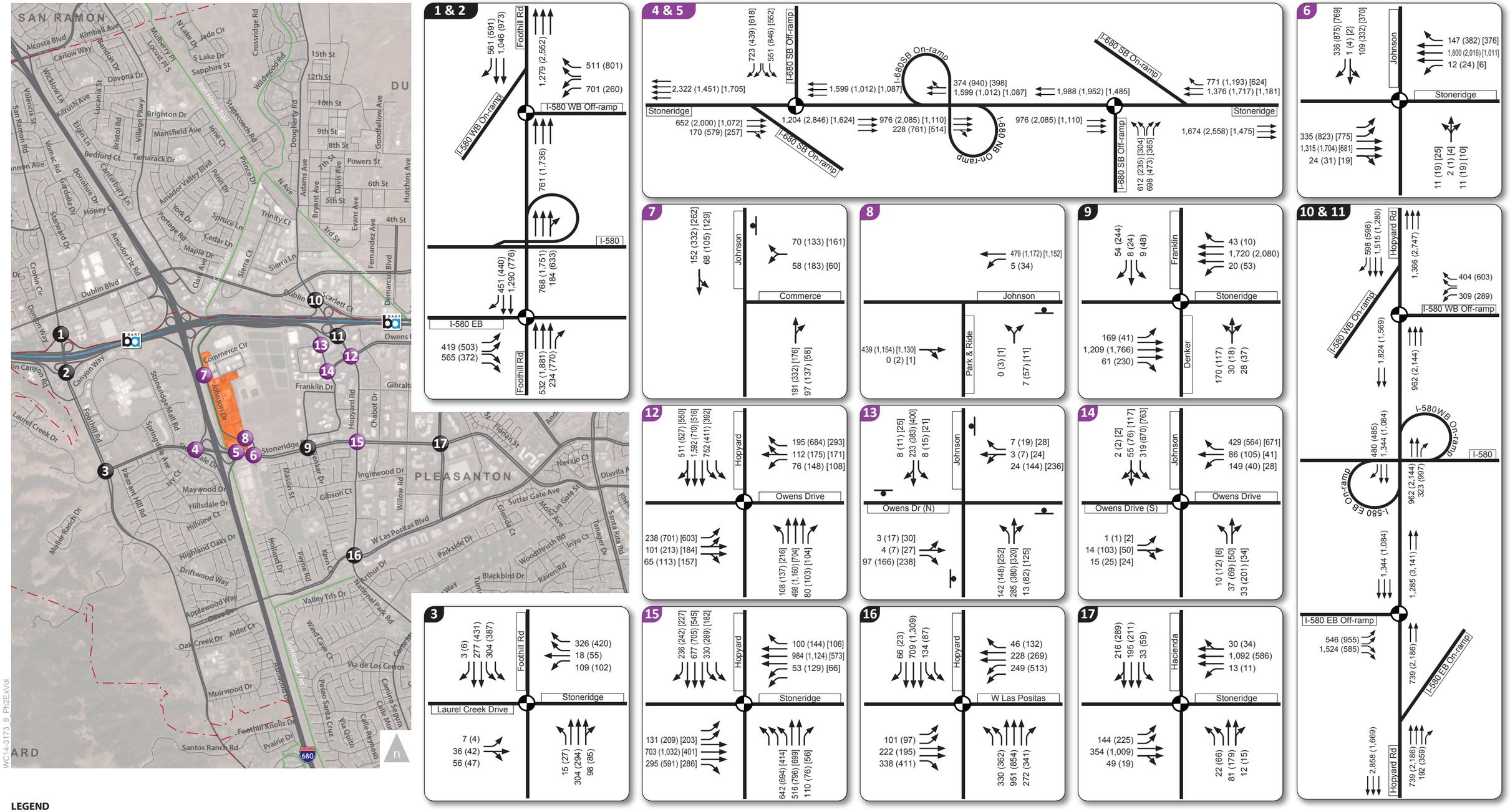


LEGEND

XX (YY) [ZZ]	AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes	Traffic Signal	Stop Sign	Study Intersections (Weekday AM + PM)	Study Intersections (Weekday AM + PM + Satuday Afternoon)	Project Site	

Figure 8

Existing with Phase 1 AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control



LEGEND

XX (YY) [ZZ]	AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes	Traffic Signal	Stop Sign	Study Intersections (Weekday AM + PM)	Study Intersections (Weekday AM + PM + Satuday Afternoon)	Project Site	

Figure 9

Existing with Project Buildout AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

TABLE 8
EXISTING CONDITIONS WITH PROJECT
PEAK HOUR LEVEL OF SERVICE

Intersection	Control[1]	Peak Hour	Existing Without Project		Existing With Phase 1		Existing With Buildout[4]	
			Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
1. I-580 Westbound Ramps at San Ramon Road	Signal	AM	8	A	8	A	8	A
		PM	15	B	15	B	15	B
2. I-580 Eastbound Ramps at Foothill Road	Signal	AM	10	A	11	B	11	B
		PM	8	A	8	A	9	A
3. Foothill Road at Stoneridge Drive	Signal	AM	19	B	19	B	19	B
		PM	18	B	18	B	18	B
4. Stoneridge Drive at I-680 Southbound Ramps	Signal	AM	18	B	18	B	18	B
		PM	11	B	12	B	13	B
		Sat	10	A	11	B	11	B
5. Stoneridge Drive at I-680 Northbound Ramp	Signal	AM	16	B	16	B	16	B
		PM	13	B	15	B	15	B
		Sat	9	A	10	A	10	A
6. Stoneridge Drive at Johnson Drive	Signal	AM	12	B	17	B	18	B
		PM	23	C	47	D	**68**	**E**
		Sat	11	B	28	C	35	C
7. Commerce Drive at Johnson Drive	SSSC	AM	3 (12)	A (B)	4 (13)	A (B)	4 (13)	A (B)
		PM	7 (28)	A (D)	25 **(92)**	D **(F)**	**36 (135)**	**E (F)**
		Sat	2 (11)	A (B)	5 (14)	A (B)	6 (16)	A (C)
8. Park and Ride Lot at Johnson Drive	SSSC	AM	1 (10)	A (A)	1 (11)	A (B)	1 (11)	A (B)
		PM	1 (12)	A (B)	1 (23)	A (C)	1 (32)	A (D)
		Sat	1 (10)	A (A)	1 (16)	A (C)	1 (24)	A (C)
9. Stoneridge Drive at Franklin Drive	Signal	AM	24	C	28	C	28	C
		PM	19	B	18	B	19	B
10. Dougherty Road at I-580 Westbound Ramps	Signal	AM	9	A	9	A	9	A
		PM	13	B	13	B	14	B
11. Hopyard Road at I-580 Eastbound Ramps	Signal	AM	17	B	17	B	17	B
		PM	15	B	15	B	15	B
12. Hopyard Road at Owens Drive	Signal	AM	30	C	31	C	31	C
		PM	47	D	50	D	51	D
		Sat	36	D	38	D	40	D

TABLE 8
EXISTING CONDITIONS WITH PROJECT
PEAK HOUR LEVEL OF SERVICE

Intersection	Control[1]	Peak Hour	Existing Without Project		Existing With Phase 1		Existing With Buildout[4]	
			Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
13. Johnson Drive at Owens Drive (North)	AWSC	AM	10	A	11	B	11	B
		PM	13	B	21	C	23	C
		Sat	16	C	**41**	**E**	**43**	**E**
14. Johnson Drive at Owens Drive (South)	Signal	AM	13	B	13	B	13	B
		PM	18	B	19	B	19	B
		Sat	12	B	13	B	13	B
15. Stoneridge Drive at Hopyard Road	Signal	AM	30	C	28	C	28	C
		PM	32	C	33	C	34	C
		Sat	27	C	30	C	32	C
16. West Las Positas Boulevard at Hopyard Road	Signal	AM	21	C	21	C	21	C
		PM	25	C	26	C	26	C
17. Stoneridge Drive at Hacienda Drive	Signal	AM	23	C	23	C	23	C
		PM	27	C	27	C	27	C

Notes:
1. SSSC = side-street stop controlled intersection; AWSC = all way stop control; Signal = signalized intersection.
2. Average intersection delay calculated for signalized intersections using the *2000 HCM* method.
3. For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.
4. Intersection impact analysis conducted based on the trip generating potential buildout of the Johnson Drive Economic Development Zone.

Source: Fehr & Peers, 2015.

The addition of project traffic is expected to slightly increase delay at some study intersections and result in greater changes to average delay at other intersections. The addition of project traffic would degrade operations below LOS D at the following intersections:

- Johnson Drive at Stoneridge Drive (LOS E, weekday PM with EDZ Buildout)
- Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement with Phase 1, worsening intersection average to LOS E with full buildout)
- Johnson Drive at Owens Drive (North) (LOS E, Saturday peak hour with Phase 1)

All other study intersections would continue to operate at acceptable service levels based on the level of service standard.

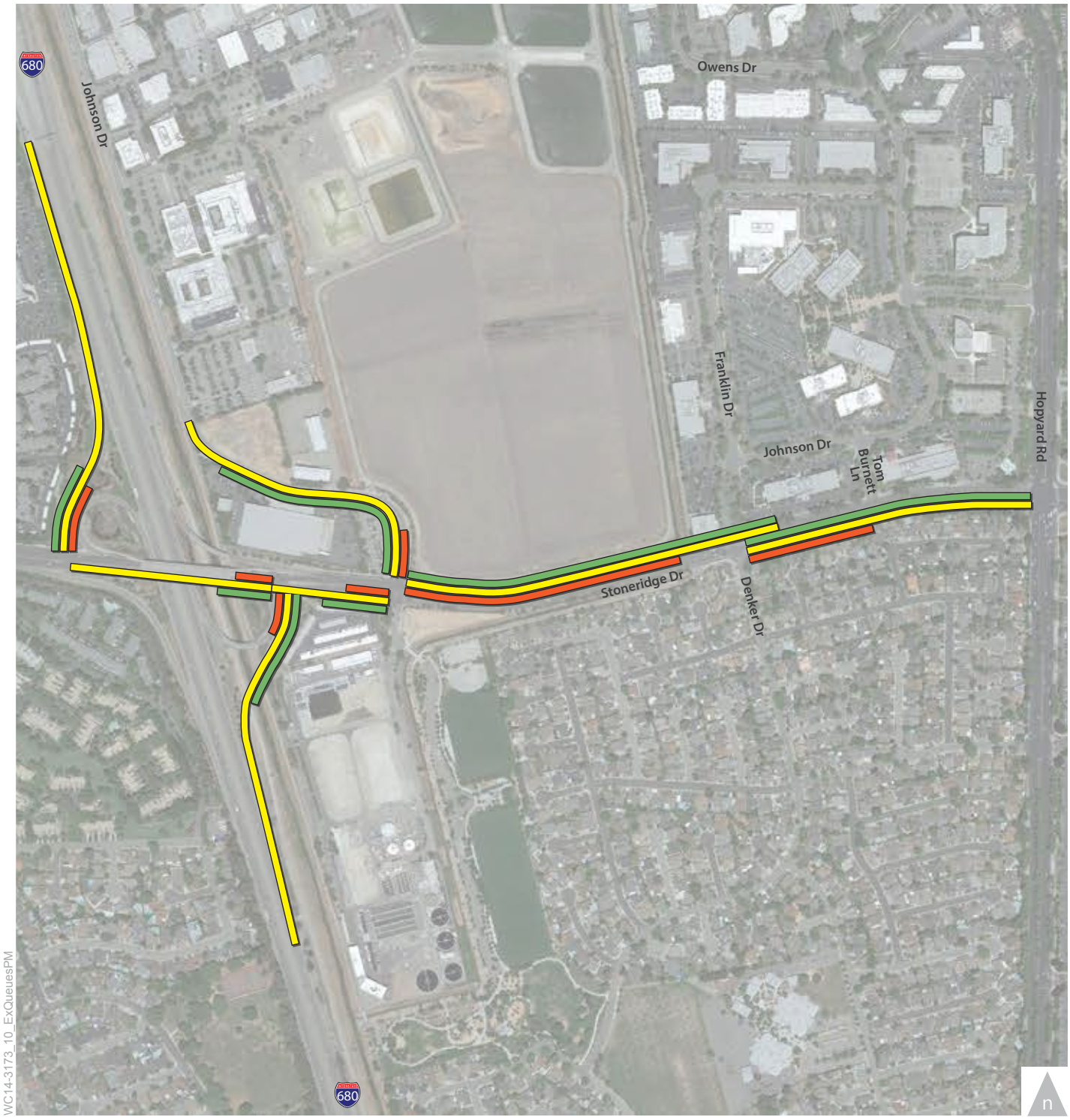
With the addition of traffic generated by development in the EDZ, projected vehicle queues from the eastbound left-turn movement from Stoneridge Drive to Johnson Drive would periodically extend beyond

the available storage, spilling back through the northbound off-ramp intersection. This spillback could result in vehicle queues periodically extending from the northbound and southbound off-ramps to the mainline; westbound queues on Stoneridge Drive could periodically extend to Franklin Drive, and southbound vehicle queues on Johnson Drive waiting to turn to Stoneridge Drive could extend more than a quarter-mile, potentially blocking access to driveways along the Johnson Drive Corridor. The extent of the 95th percentile vehicle queue spillback is graphically shown on **Figure 10** for Phase 1 and **Figure 11** for buildout. Results are also summarized in **Table 9.**

The results in Table 9 also present the percent of vehicle demand served at the Stoneridge Drive at Johnson Drive intersection. In the without project condition, all peak hour demand is able to travel through the intersection within the peak hour. Although some vehicles may need to wait more than one cycle length to travel through the intersection, queues typically clear within one cycle. With the addition of project traffic from Phase 1, approximately 78 percent of peak hour demand would be able to travel through the intersection within the peak hour, resulting in some vehicles waiting more than two cycle lengths to clear the intersection, vehicle queue build-up that does not quickly dissipate, and the potential for maximum vehicle queues to extend back to the freeway mainline, as discussed above. The addition of traffic with full buildout would further decrease the percent of vehicle demand served.

SIGNAL WARRANT ASSESSMENT

The peak hour volume and the delay warrant were used in this study as a supplemental analysis tool to assess operations at deficient unsignalized intersections in the Existing with Project conditions. Detailed signal warrant worksheets are provided in **Appendix C**, which show that the unsignalized intersections of Johnson Drive at Owens Drive (North) and Commerce Drive would meet signal warrants in the Existing with Project condition. Signal warrants would not be met at the Park and Ride lot intersection.

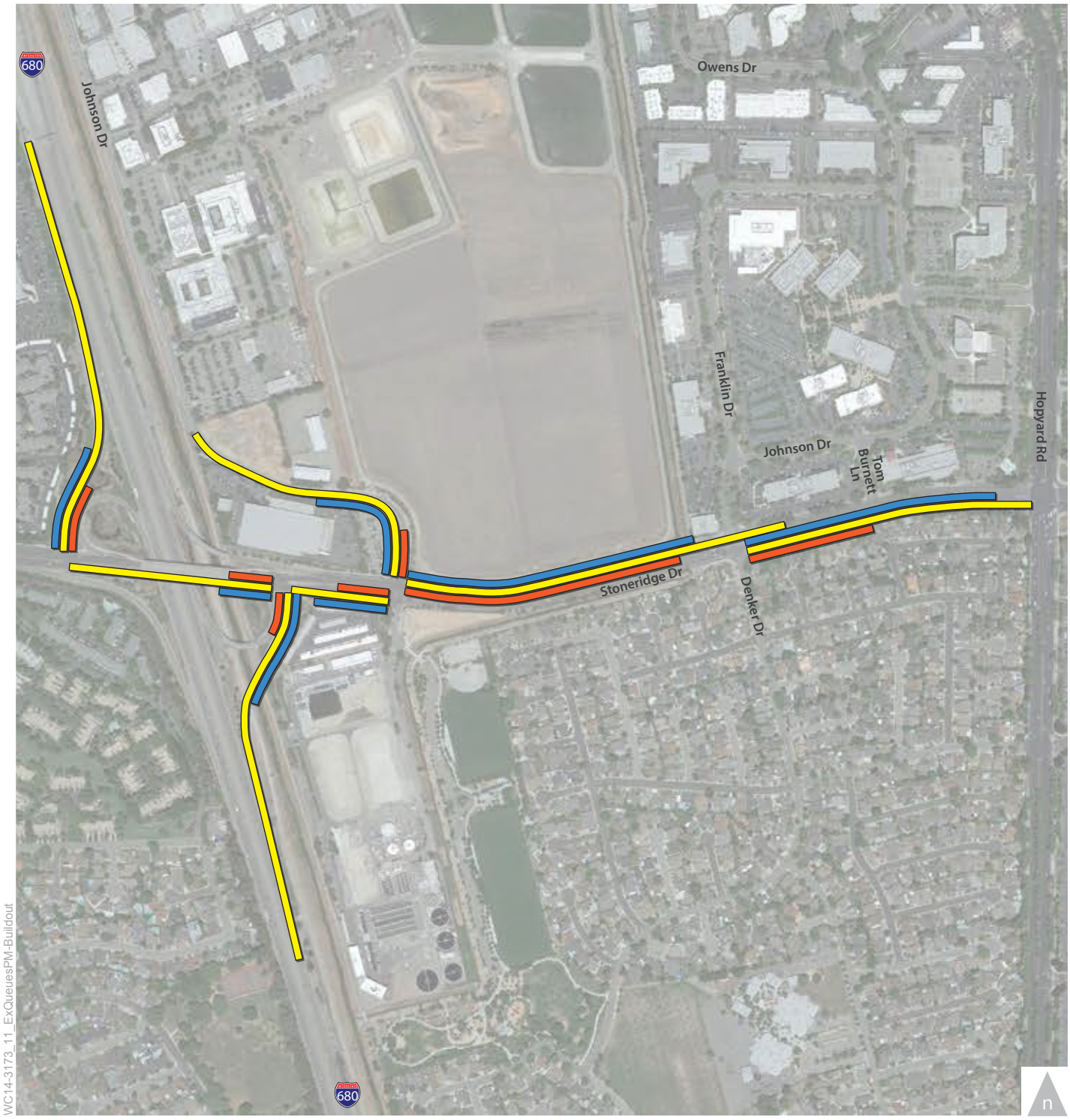


LEGEND

- Existing without Project PM Queue Length
- Existing with Project Phase I PM Unmitigated Queue Length
- Existing with Phase I PM Initial Improvements Queue Length

Figure 10

Existing without Project and Phase 1 Project PM Peak Hour 95th Percentile Queues



LEGEND

- Existing without Project PM Queue Length
- Existing with Project Buildout PM Unmitigated Queue Length
- Existing with Project Buildout PM Fully Mitigated Queue Length

Figure 11

Existing without Project and Full Buildout Project PM Peak Hour 95th Percentile Queues

EXISTING INTERSECTION IMPACTS AND MITIGATION MEASURES

This section evaluates the intersection LOS results presented in **Table 8** and compares the results with the criteria for significant impacts, and presents mitigation measures for identified impacts with updated LOS results in **Table 10**. As a condition of approval, the City of Pleasanton will collect applicable local and regional traffic impact fees in addition to fair share contributions for other improvements needed to mitigate significant impacts. This is consistent with the City policy to collect fees from projects that have a significant impact on local and regional facilities.

Impact TR-1: Johnson Drive at Commerce Drive Intersection

The addition of project-generated vehicle trips during the PM peak hour would worsen the side-street movement to LOS F with Phase 1, which would be further exacerbated with buildout conditions. Additionally, peak hour volume traffic signal warrants would be met with the addition of Project traffic with Phase 1, thus traffic generated by the Project would cause the need for signalization. This is a ***significant impact***.

Mitigation Measure TR-1: Johnson Drive at Commerce Drive Intersection

Install a traffic signal at this intersection and a southbound left-turn lane. As shown in Table 10, the intersection level of service would improve to an acceptable level during the Saturday peak hour, reducing the Project impact to a ***less-than-significant*** level. This mitigation measure would also fully mitigate the buildout impact. This improvement may require the removal of on-street parking to construct the left-turn pocket and maintain bicycle lanes on Johnson Drive.

Impact TR-2: Johnson Drive at Owens Drive (North) Intersection

The addition of project-generated vehicle trips with Phase 1 during the Saturday peak hour would worsen from LOS C to LOS E. Conditions would be exacerbated with EDZ buildout. Additionally, peak hour volume traffic signal warrants would be met with the addition of Project traffic, thus traffic generated by the Project would cause the need for signalization. This is a ***significant impact***.

Mitigation Measure TR-2: Johnson Drive at Owens Drive (North) Intersection

Install a traffic signal at this intersection. As shown in Table 10, the intersection level of service would improve to an acceptable level during the Saturday peak hour, reducing the Project impact

to a ***less-than-significant*** level. This mitigation measure would also fully mitigate the buildout impact.

Impact TR-3: Johnson Drive at Stoneridge Drive Intersection

The addition of project-generated vehicle trips with project buildout during the PM peak hour would worsen LOS D conditions to LOS E with project buildout. This intersection is a designated Gateway intersection and may be exempt from the City's level of service standard. However, poor operations at this intersection cause vehicle queue spillback at adjacent intersections, including vehicle queues from the ramp terminal intersections to spillback to the freeway mainline, creating a potential safety hazard. Therefore, this impact is considered ***significant.***

Mitigation TR-3: Stoneridge Drive at Johnson Drive

Construct a third eastbound left-turn lane from Stoneridge Drive intersection to Johnson Drive in conjunction with an additional northbound receiving lane on Johnson Drive at the Stoneridge Drive intersection (north side of intersection). Additionally, construct an additional southbound right-turn lane at the Johnson Drive and Stoneridge Drive intersection and rebuild Johnson Drive as six lane facility with three southbound lanes and three northbound receiving lanes for a minimum of 700 feet north of the Stoneridge Drive intersection. This improvement would require widening of Johnson Drive north of Stoneridge Drive up to 36-feet and widening of Johnson Drive south of Stoneridge Drive a commensurate amount to align travel movements through the intersection.

As shown in **Table 10**, these improvements would reduce delay, improving the LOS to C, reducing the impact to a ***less-than-significant*** level. Construction of these improvements could result in secondary impacts to pedestrians by increasing the pedestrian crossing distance of Stoneridge Drive and Johnson Drive, and could also require the removal of trees. Additional secondary impacts and associated mitigation measures are discussed in the project Environmental Impact Report.

Impact TR-4: Stoneridge Drive Queue Spillback

Vehicle queue spillback from Stoneridge Drive to adjacent intersections and the freeway mainline could result in worse level of service operations than presented in Table 8 with Phase 1 development. Queues would be further exacerbated with buildout. Vehicle queue spillback to the freeway mainline could also increase hazards and is considered a ***significant impact***.

TABLE 9
EXISTING WITH PROJECT WITH MITIGATION
PM PEAK HOUR 95TH PERCENTILE VEHICLE QUEUES

Intersection	Approach	Link Distance	Existing	Existing with Project Phase 1			Existing with Project Buildout		
				No Improvements	Initial Improvements[1]	Full Improvement[2]	No Improvements	Initial Improvements[1]	Full Improvement[2]
Stoneridge Dr at I-680 SB Off-Ramp	*Southbound*	*1,590*	220	**Spill-back**	375	465	**Spill-back**	455	505
Stoneridge Dr at I-680 NB On-Ramp	*Northbound*	*1,390*	205	**Spill-back**	585	315	**Spill-back**	360	195
	Eastbound	570	175	**Spill-back**	285	350	**Spill-back**	270	315
Stoneridge Dr at Johnson Dr	Southbound	-	305	1,415	1,370	930	1,390	1,410	820
	Eastbound	440	255	**Spill-back**	310	425	**Spill-back**	295	425
	Westbound	1,620	1,495	**Spill-back**	**Spill-back**	**Spill-back**	**Spill-back**	**Spill-back**	**Spill-back**
Stoneridge Dr at Franklin Dr	Westbound	1,325	580	**Spill-back**	**Spill-back**	1,260	**Spill-back**	**Spill-back**	**1,300**
Percent Demand Served at Stoneridge Dr at Johnson Dr[3]			100%	78%	88%	99%	77%	89%	98%

Notes: Italics indicates movements where queue spillback would be to the freeway mainline, potentially affecting freeway operations. Spillback indicates vehicle queues extend to the adjacent intersection and affect the operations, resulting in worse service levels than shown in the LOS Table 8.

1. Reflects conditions with construction of a third eastbound left-turn lane from Stoneridge Drive intersection to Johnson Drive

2. Reflects conditions with both TR-3 and TR-4. Some queues increase slightly from the partial improvement scenario due to changes in signal timing and vehicle arrival rates at intersections through the corridor as removing a bottleneck at one location can increase traffic arriving at adjacent intersections. As mitigation measures are implemented, signal timings and off-sets between coordinated intersections would need to be monitored and adjusted to minimize vehicle queues and delays through the area.

3. Results reflect the percent of traffic that is able to travel through the intersection during the peak hour. Conditions when not all vehicles are served result in vehicle queues requiring several cycles to clear, potentially resulting in queue spillback to adjacent intersections.

Source: Fehr and Peers, 2015.

Mitigation Measure TR-4: Stoneridge Drive Queue Spillback

Construct a third eastbound left-turn lane from Stoneridge Drive intersection to Johnson Drive in conjunction with an additional northbound receiving lane on Johnson Drive at the Stoneridge Drive intersection (north side of intersection) (portion of TR-3). Modify the Stoneridge Drive at Northbound I-680 off-ramp to provide a northbound right-turn overlap phase. Implementation of these measures would reduce the potential for vehicle queues to extend to the freeway mainline from Stoneridge Drive, reducing the queuing hazard impact to the ***less-than-significant*** level, as shown in Table 9.

However, there would still be vehicle queue spillback at several locations along the Stoneridge Drive corridor. To further reduce vehicle queues, the second southbound right-turn only lane from Johnson Drive to Stoneridge Drive (full TR-3) would be needed in conjunction with additional improvements, including:

- Construct a second southbound left-turn lane from Johnson Drive to Stoneridge Drive
- Extend the existing westbound right-turn pocket at the Johnson Drive and Stoneridge Drive Intersection approximately 800 feet east by widening Stoneridge Drive and convert the resulting lane into a thru-right-shared lane. Install lane markings in the curb lane and adjacent lane indicating I-680 Northbound Only to reduce lane changes between Johnson Drive and the northbound on-ramp.
- Construct a second on-ramp lane to northbound I-680 from the westbound Stoneridge Drive approach. The two lane on-ramp should be merged to one lane prior to the freeway merge area. The lane drop would need to occur over a distance of at least 800 feet, and would require reconstruction and widening of the bridge at this on-ramp from one to two lanes, with the merge occurring after the bridge.

As the improvements in TR-3 and TR-4 are implemented, signal timings/phasing and off-sets between coordinated intersections would need to be monitored and adjusted to minimize vehicle queues and delays through the area. Monitoring subsequent to the completion of the Phase 1 project and portions of TR-3 and TR-4 are constructed could also be conducted to better define the full set of improvements needed to minimize vehicle queue spillback. The effect of these additional improvements on vehicle queues is also shown on Figure 10 (Phase 1 with Initial Improvements) and Figure 11 (Buildout with Full Improvements).

The scope of work for the majority of elements identified within Mitigation Measures TR-3 and TR-4 occur within the existing right-of-way, or is under local control of the EDZ or the City of Pleasanton. However, the widening of the northbound on-ramp identified in TR-4 is within Caltrans right-of-way and would require Caltrans design review and oversight. This process may take longer than the construction timeline envisioned for this EDZ. Should the EDZ development occur prior to completion

of the northbound on ramp, vehicle queue spillback to the freeway mainline could be mitigated by other elements contained within TR-3 and TR-4 that do not include Caltrans facilities, as shown in Table 9 for the initial improvement scenario and Figure 10.

Additional secondary impacts of the mitigation measures of the ramp widening are discussed in the project Environmental Impact Report.

TABLE 10
EXISTING WITH PROJECT WITH MITIGATION
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	Peak Hour	Existing with Project Buildout		Existing Project Phase 1 with Mitigation		Existing with Project Buildout With Mitigation	
			Delay	LOS	Delay	LOS	Delay	LOS
6. Stoneridge Drive at Johnson Drive	Signal	PM	**68**	**E**	28	C	32	C
9. Johnson Drive at Commerce Circle	SSSC/ Signal	PM	25 **(92)**	D (F)	14	B	14	B
13. Johnson Drive at Owens Drive (North)	AWSC/ Signal[1]	Sat	**43**	**E**	17	B	17	B

1. All-way stop control analyzed for the Existing with Project scenario and the mitigated scenario used an optimized signalized intersection control.

Source: Fehr and Peers, 2015.

5.0 NEAR-TERM CONDITIONS

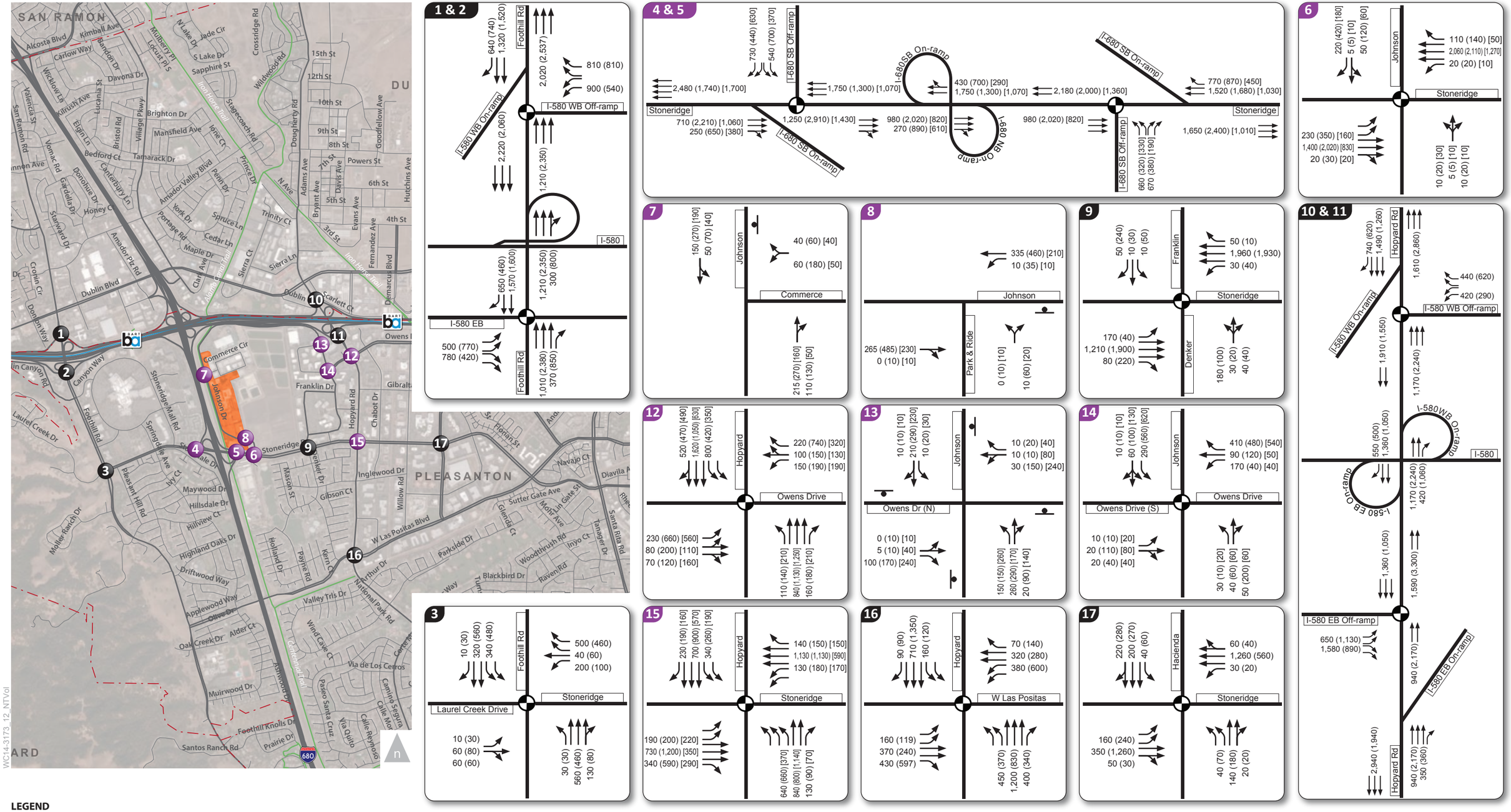
This chapter presents the results of the level of service calculations under near-term conditions without and with the project. Traffic volumes for Near-term without Project conditions comprise existing volumes plus traffic generated by approved but not yet constructed and occupied developments in the area. Near-term with Project conditions are defined as Near-term without Project conditions plus net new traffic generated by the proposed Project.

NEAR-TERM INTERSECTION VOLUMES

Traffic volumes for the Near-Term condition were obtained from City staff, representing existing traffic, plus traffic from approved developments in the City. These forecasts were developed using a computerized traffic model and represent likely traffic conditions in the area over the next five to ten years. These forecasts were modified to reflect the recently adopted Housing Element, as well as other recently approved Project projects that were not included in the original forecasts, including the Workday project. Near-Term without Project traffic volumes are shown on **Figure 12.** The project traffic volumes from Figure 6 and Figure 7 were added to the Near-term without Project traffic volumes to estimate the Near-term with Project traffic volumes, as shown on **Figure 13** for Phase 1 and **Figure 14** under buildout conditions.

NEAR-TERM ROADWAY IMPROVEMENTS

Near-Term without Project conditions include transportation system improvements that are planned and funded, or conditioned on approved development, and traffic volume increases due to approved and pending developments plus regional growth. Near-Term conditions reflect a 5 to 10 year time horizon, during which redevelopment within the EDZ could begin. Signal timings were optimized at some of the signalized intersections, as the City regularly monitor signal operations throughout the City to ensure optimal traffic flow through critical corridors. No improvements were assumed at any of the study intersections, except at the Stoneridge Drive at Johnson Drive intersection where north/south split phasing was assumed to accommodate the projected increases in traffic; future signal/timing phasing at this intersection will be determined during the design phase of improvements identified to accommodate project traffic. Although some roadway improvements are planned in the area, including the conversion of the westbound right-turn lane from Stoneridge Drive to Jonson Drive to a through-right shared lane and modification of the traffic signal at the Stoneridge Drive at northbound I-680 ramps, these improvements were evaluated as potential mitigation.



LEGEND

XX (YY) [ZZ] AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes

Traffic Signal

Stop Sign

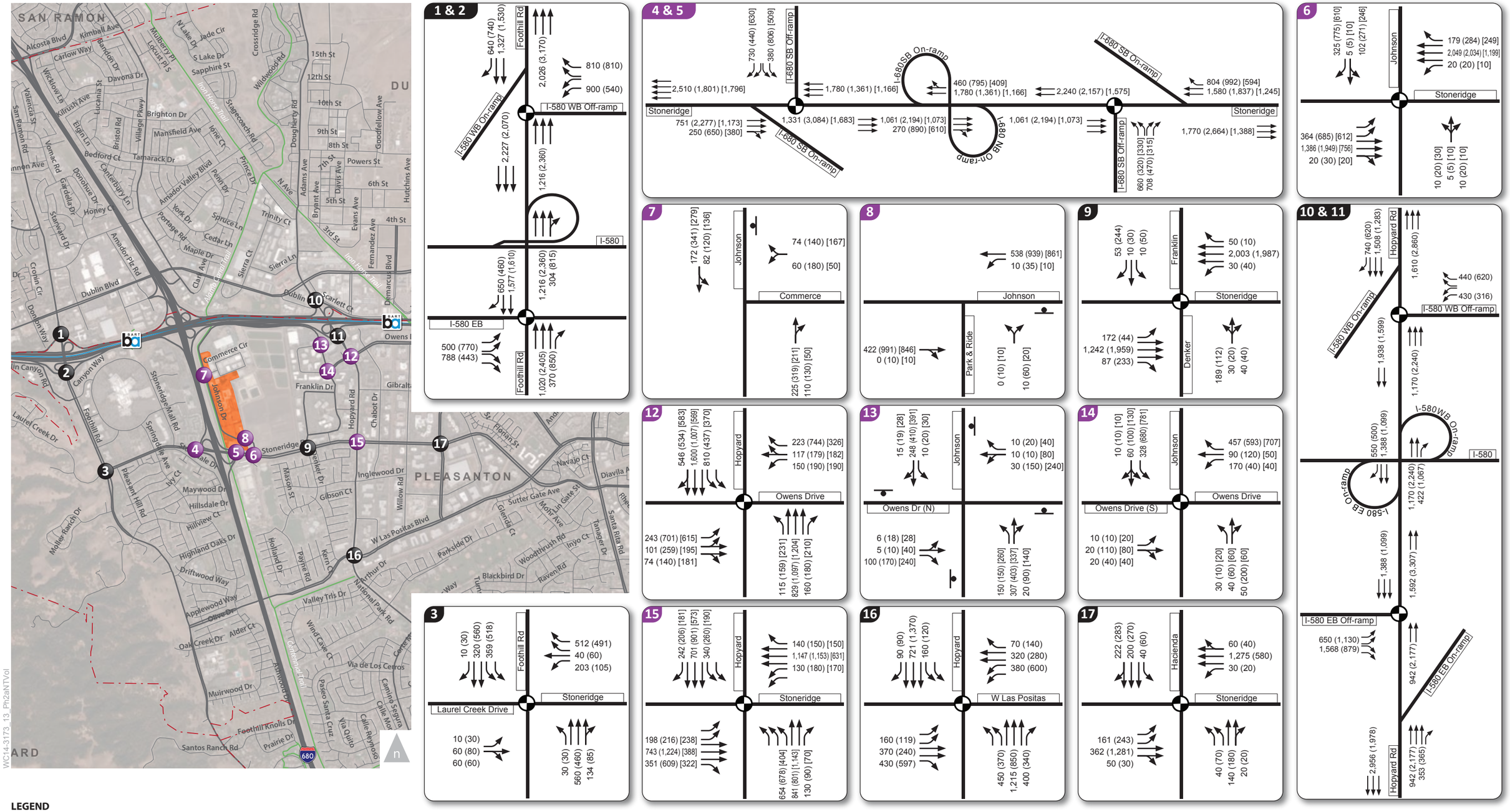
Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

Project Site

Figure 12

Near-Term without Project AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

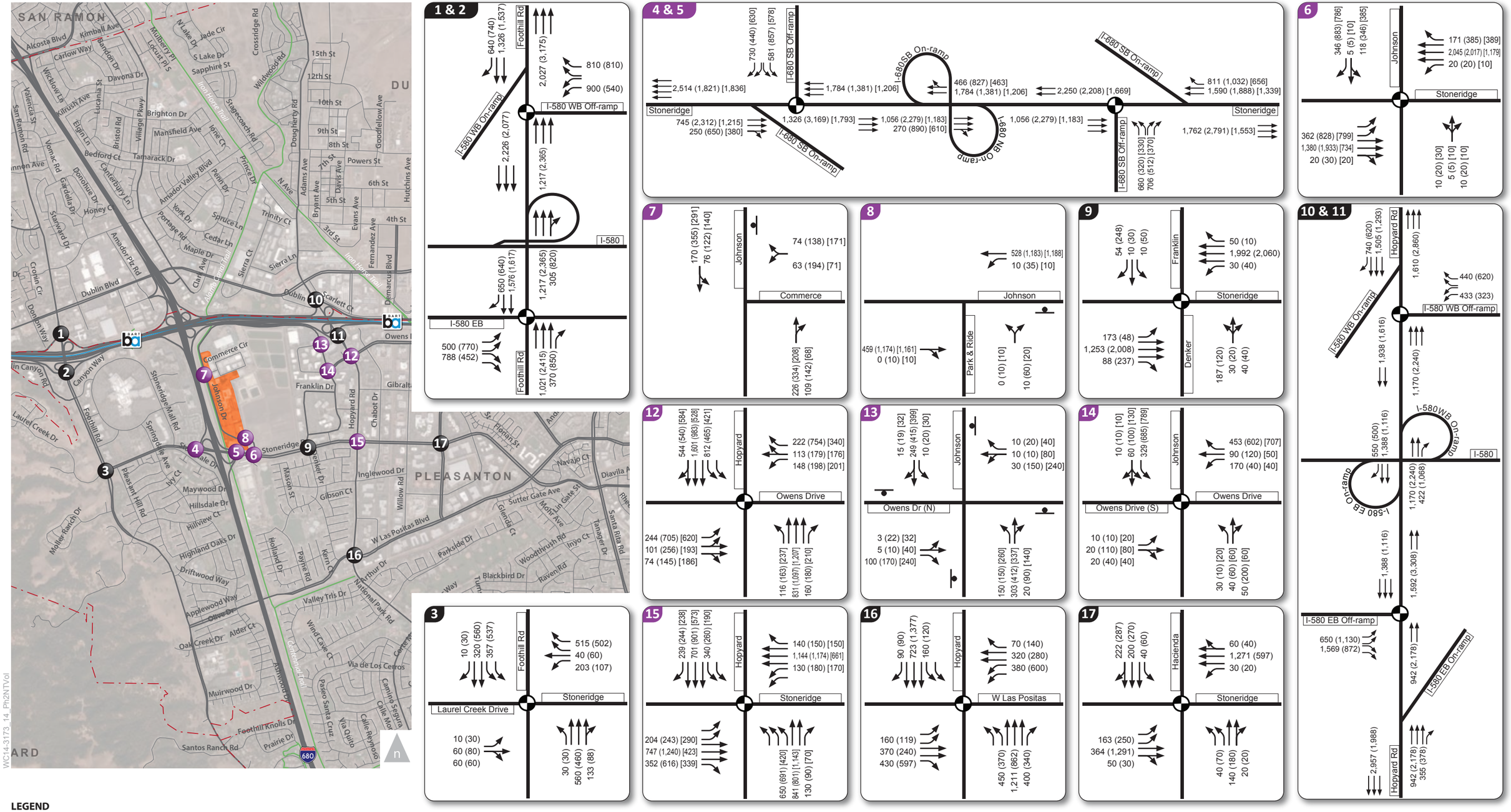


LEGEND

XX (YY) [ZZ]	AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes	Traffic Signal	Stop Sign	Study Intersections (Weekday AM + PM)	Study Intersections (Weekday AM + PM + Satuday Afternoon)	Project Site	

Figure 13

Near-Term with Phase 1 AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control



LEGEND

XX (YY) [ZZ] AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes

Traffic Signal

Stop Sign

Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

Project Site

Figure 14

Near-Term with Project Buildout AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

ANALYSIS OF NEAR-TERM CONDITIONS

INTERSECTION LEVELS OF SERVICE

Levels of service calculations were conducted to evaluate intersection operations under Near-term conditions both without and with the project. The LOS results are summarized in **Table 11.** The corresponding LOS calculation sheets are included in **Appendix B**. Vehicle queues for intersections on Stoneridge Drive between the southbound off-ramp and Franklin Drive were evaluated using SimTraffic, a micro-simulation software, to account for the effects of vehicle queue spillback, lane utilization as vehicles position themselves to enter the freeway, and the short spacing between intersections which affects driver behavior.

The results of the LOS calculations indicate that with planned development in Pleasanton and adjacent jurisdictions in the near-term condition, all study intersections would operate at LOS D or better. The addition of project traffic is expected to slightly increase delay at some study intersections and result in greater changes to average delay at other intersections. The addition of project traffic would degrade operations below LOS D at the following intersections:

- Stoneridge Drive at Johnson Drive (LOS E, PM peak hour with Phase 1)
- Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement with Phase 1, worsening to LOS E intersection average with buildout)
- Park and Ride Lot at Johnson Drive (LOS E, weekday PM peak hour for side-street movement with phase 1, LOS F with buildout)
- Owens Drive (North) at Johnson Drive (LOS E, PM peak hour, LOS F Saturday peak hour with phase 1)

All other study intersections would continue to operate at acceptable service levels based on the level of service standard.

With the addition of traffic generated by development in the EDZ with Phase 1, projected vehicle queues from the eastbound left-turn movement from Stoneridge Drive to Johnson Drive would extend beyond the available storage, spilling back through the northbound off-ramp intersection. This spillback could result in vehicle queues periodically extending from the northbound and southbound off-ramps to the mainline; westbound queues on Stoneridge Drive could periodically extend to Franklin Drive, and southbound vehicle queues on Johnson Drive waiting to turn to Stoneridge Drive could extend more than a quarter-mile, potentially blocking access to driveways along the Johnson Drive Corridor. The percent of

demand served at the Johnson Drive at Stoneridge Drive intersection would also decrease from 100 percent during the peak hour to 80 percent with the addition of Phase 1 traffic, further degrading with buildout.

SIGNAL WARRANT ASSESSMENT

The peak hour volume and the delay warrant were used in this study as a supplemental analysis tool to assess operations at deficient unsignalized intersections in the Near-term with Project conditions. Detailed signal warrant worksheets are provided in **Appendix C,** which show that the unsignalized intersection Johnson Drive and Owens Drive (North) would meet signal warrants in the Near-term with Project PM and Saturday condition with phase 1.

The Johnson Drive and Commerce Drive unsignalized intersection would also meet the signal warrants during the Near-term with Project phase 1.

The Johnson Drive at Park and Ride Lot intersection would not meet the signal warrants.

TABLE 11
NEAR-TERM CONDITIONS
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Near Without Project		Near-Term With Alternative 2a		Near-Term With Alternative 2[4]	
			Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
1. I-580 Westbound Ramps at San Ramon Road	Signal	AM PM	13 18	B B	13 18	B B	13 18	B B
2. I-580 Eastbound Ramps at Foothill Road	Signal	AM PM	17 12	B B	17 12	B B	17 12	B B
3. Foothill Road at Stoneridge Drive	Signal	AM PM	21 21	C C	21 22	C C	21 22	C C
4. Stoneridge Drive at I-680 Southbound Ramps	Signal	AM PM Sat	12 13 11	B B B	12 16 11	B B B	12 16 11	B B B
5. Stoneridge Drive at I-680 Northbound Ramps	Signal	AM PM Sat	17 12 9	B B A	18 21 9	B C A	18 21 9	B C A
6. Stoneridge Drive at Johnson Drive	Signal	AM PM Sat	9 19 11	A B B	12 **58** 23	B **E** C	13 **74** 30	B **E** C
7. Commerce Drive at Johnson Drive	SSSC	AM PM Sat	3 (13) 8 (30) 3 (12)	A (B) A (D) A (B)	4 (14) 27 **(98)** 5 (15)	A (B) C **(F)** A (C)	4 (14) **38 (141**) 6 (18)	A (B) **E (F)** A (C)
8. Park and Ride Lot at Johnson Drive	SSSC	AM PM Sat	1 (9) 1 (14) 1 (10)	A (A) A (B) A (A)	1 (11) 2 **(41)** 1 (18)	A (B) A **(E)** A (C)	1 (11) 3 **(91)** 1 (26)	A (B) A **(F)** A (D)
9. Stoneridge Drive at Franklin Drive	Signal	AM PM	30 21	C C	31 27	C C	31 27	C C
10. Dougherty Road at I-580 Westbound Ramps	Signal	AM PM	11 13	B B	11 13	B B	11 13	B B
11. Hopyard Road at I-580 Eastbound Ramps	Signal	AM PM	23 15	C B	22 15	C B	22 15	C B
12. Hopyard Road at Owens Drive	Signal	AM PM Sat	32 44 37	C D D	33 52 40	C D D	33 53 41	C D D

TABLE 11
NEAR-TERM CONDITIONS
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Near Without Project		Near-Term With Alternative 2a		Near-Term With Alternative 2[4]	
			Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
13. Johnson Drive at Owens Drive (North)	AWSC	AM	10	A	11	B	11	B
		PM	16	B	**37**	**E**	**40**	**E**
		Sat	22	C	**64**	**F**	**66**	**F**
14. Johnson Drive at Owens Drive (South)	Signal	AM	15	B	15	B	15	B
		PM	18	B	19	B	19	B
		Sat	15	B	15	B	15	B
15. Stoneridge Drive at Hopyard Road	Signal	AM	27	C	27	C	27	C
		PM	38	D	38	D	38	D
		Sat	29	C	32	C	36	D
16. West Las Positas Boulevard at Hopyard Road	Signal	AM	24	C	24	C	24	C
		PM	31	C	31	C	31	C
17. Stoneridge Drive at Hacienda Drive	Signal	AM	26	C	26	C	26	C
		PM	25	C	25	C	25	C

Notes:
1. SSSC = side-street stop controlled intersection; AWSC = all way stop control; Signal = signalized intersection.
2. Average intersection delay calculated for signalized intersections using the *2000 HCM* method.
3. For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.
4. Intersection impact analysis conducted based on the trip generating potential buildout of the Johnson Drive Economic Development Zone.

Source: Fehr & Peers, 2015.

NEAR-TERM INTERSECTION IMPACTS AND MITIGATION MEASURES

This section evaluates the intersection LOS results presented in Table 11 and compares the results with the criteria for significant impacts, and presents mitigation measures for identified impacts with updated LOS results presented in **Table 12**. As a condition of approval, the City of Pleasanton will collect applicable local and regional traffic impact fees in addition to fair share contributions for other improvements needed to mitigate significant impacts. This is consistent with the City policy to collect fees from projects that have a significant impact on local and regional facilities.

Impact TR-5: Johnson Drive at Stoneridge Drive Intersection

The addition of Phase 1 project-generated vehicle trips during the PM peak hour would worsen LOS D conditions to LOS E. Buildout would further worsen the LOS E conditions. This intersection

is a designated Gateway intersection and may be exempt from the City's level of service standard. However, poor operations at this intersection cause vehicle queue spillback at adjacent intersections, which in vehicle queues from the ramp terminal intersections to spillback to the freeway mainline, creating a potential safety hazard. Therefore, this impact is considered ***significant.***

Mitigation TR-5: Johnson Drive at Stoneridge Drive Intersection

Implement Mitigation TR-3. Implementation of this measure would result in LOS D conditions and shown in **Table 12**, and would reduce the potential for vehicle queue spillback to the mainline as shown in **Table 13**.

Impact TR-6: Johnson Drive at Commerce Drive Intersection

The addition of project-generated vehicle trips during the PM peak hour would worsen the side-street movement to LOS F with Phase 1, which would be further exacerbated with buildout conditions. Additionally, peak hour volume traffic signal warrants would be met with the addition of Project traffic with Phase 1, thus traffic generated by the Project would cause the need for signalization. This is a ***significant impact***.

Mitigation Measure TR-6: Johnson Drive at Commerce Drive Intersection

Implement Mitigation Measure TR-1. Implementation of this measure would reduce the impact to a ***less-than-significant*** level. This mitigation measure would also fully mitigate the buildout impact.

Impact TR-7: Johnson Drive and Park and Ride Lot Intersection

The addition of project-generated vehicle trips during the PM peak hour would worsen the side-street movement to LOS E with Phase 1 and LOS F with buildout. The City of Pleasanton does not have any plans to make physical improvements at this intersection. This is a ***significant impact***. Peak hour signal warrants would not be met at this intersection.

TABLE 12
NEAR-TERM WITH PROJECT WITH MITIGATION
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	Peak Hour	Near-Term with Project Buildout		Near-Term with Project Phase 1 with Mitigation		Near-Term with Project Buildout With Mitigation	
			Delay	LOS	Delay	LOS	Delay	LOS
6. Stoneridge Drive at Johnson Drive	Signal	PM	**74**	**E**	28	C	32	C
9. Johnson Drive at Commerce Circle	SSSC/ Signal	PM	**38 (141)**	**E (F)**	14	B	15	B
13. Johnson Drive at Owens Drive (North)	AWSC/ Signal[1]	PM Sat	**40** **66**	**E** **F**	6 19	A B	6 21	A C

1. All-way stop control analyzed for the Existing with Project scenario and the mitigated scenario used an optimized signalized intersection control.

Source: Fehr and Peers, 2015.

Mitigation Measure TR-7: Johnson Drive at Park and Ride Lot

Installation of a traffic signal is not recommended at this location. However, implementation of measures that reduce vehicle queue spillback on Johnson Drive would contribute to improved operations of this driveway, although the side-street would continue to operate at a deficient level during the weekday PM peak hour for vehicles waiting to turn left from the park and ride lot to Johnson Drive. As traffic signal warrants would not be satisfied, implementation of Mitigation Measure TR-3 would reduce the project impact to a ***less-than-significant*** level.

Impact TR-8: Johnson Drive at Owens Drive (North) Intersection

The addition of project-generated vehicle trips with Phase 1 during the Saturday peak hour would worsen operations from LOS C to LOS E. Conditions would be exacerbated with EDZ buildout. Additionally, peak hour volume traffic signal warrants would be met with the addition of Project traffic, thus traffic generated by the Project would cause the need for signalization. This is a ***significant impact***.

Mitigation Measure TR-8: Johnson Drive at Owens Drive (North) Intersection

Implement Mitigation Measure TR-2. Implementation of this measure would reduce the impact to a ***less-than-significant*** level. This mitigation measure would also fully mitigate the buildout impact.

Impact TR-9: Stoneridge Drive Queue Spillback

Vehicle queue spillback from Stoneridge Drive to adjacent intersections and the freeway mainline could result in worse level of service operations than presented in **Table 13** with Phase 1 development. Queues would be further exacerbated with buildout. Vehicle queue spillback to the freeway mainline could also increase hazards and is considered a ***significant impact***.

Mitigation TR-9: Stoneridge Drive at Johnson Drive

Implement Mitigation Measure TR- 3 and TR-4. Implementation of these measures would reduce the queuing impact to a ***less-than significant*** level.

TABLE 13
NEAR-TERM WITH PROJECT WITH MITIGATION
PM PEAK HOUR 95TH PERCENTILE VEHICLE QUEUES

Intersection	Approach	Link Distance	Near-Term Without Project	Near-Term with Project Phase 1			Near-Term with Project Buildout		
				No Improvements	Initial Improvements[1]	Full Improvement[2]	No Improvements	Initial Improvements[1]	Full Improvement[2]
Stoneridge Dr at I-680 SB Off-Ramp	*Southbound*	*1,590*	265	***Spill-back***	525	330	***Spill-back***	530	600
Stoneridge Dr at I-680 NB On-Ramp	*Northbound*	*1,390*	*205*	***Spill-back***	360	195	***Spill-back***	365	415
	Eastbound	570	190	**Spill-back**	270	315	**Spill-back**	275	300
Stoneridge Dr at Johnson Dr	Southbound	-	305	1,345	1,320	690	1,375	1,280	925
	Eastbound	440	255	**Spill-back**	290	335	**Spill-back**	290	335
	Westbound	1,620	1,510	**Spill-back**	**Spill-back**	1,155	**Spill-back**	**Spill-back**	1,245
Stoneridge Dr at Franklin Dr	Westbound	1,325	580	**Spill-back**	**Spill-back**	865	**Spill-back**	**Spill-back**	1,195
Percent Demand Served at Stoneridge Dr at Johnson Dr[3]			100%	80%	87%	95%	79%	88%	93%

Notes: Italics indicates vehicle queues spillback to the freeway mainline, potentially affecting freeway operations. Spillback indicates vehicle queues extend to the adjacent intersection and affect the operations, resulting in worse service levels than shown in the LOS Table 11.

1. Reflects conditions with construction of a third eastbound left-turn lane from Stoneridge Drive intersection to Johnson Drive

2. Reflects conditions with both TR-3 and TR-4. Some queues increase slightly from the partial improvement scenario due to changes in signal timing and vehicle arrival rates at intersections through the corridor as removing a bottleneck at one location can increase traffic arriving at adjacent intersections. As mitigation measures are implemented, signal timings and off-sets between coordinated intersections would need to be monitored and adjusted to minimize vehicle queues and delays through the area.

3. Results reflect the percent of traffic that is able to travel through the intersection during the peak hour. Conditions when not all vehicles are served result in vehicle queues requiring several cycles, potentially resulting in queue spillback to adjacent intersections.

Source: Fehr and Peers, 2015.

6.0 CUMULATIVE CONDITIONS

This chapter presents the results of the level of service calculations under cumulative conditions without and with the project.

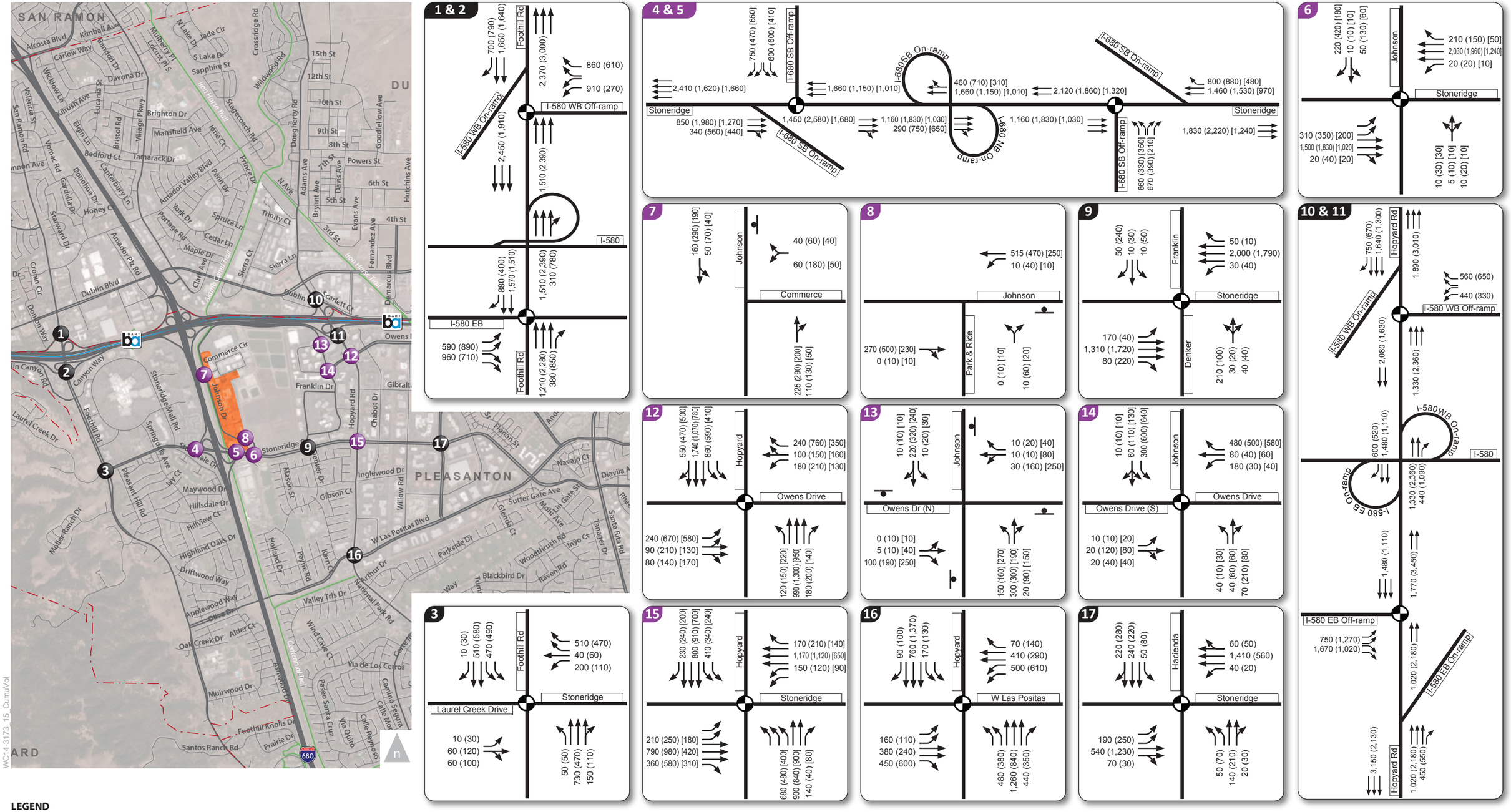
CUMULATIVE INTERSECTION VOLUMES

Preliminary traffic forecasts for the Cumulative scenario were obtained from City staff, representing existing traffic, plus traffic from approved and pending developments, as well as development that could occur under the current General Plan. These forecasts were developed using the City of Pleasanton computerized traffic model and represent likely traffic conditions in the area over the next 20 to 25 years. Adjustments were made to the forecasts to reflect additional information that became available since the development of the traffic model, including land use changes approved with the Housing Element and the proposed Workday project. The resulting forecasts are presented on **Figure 15**. The Project traffic volumes in Figure 6 and Figure 7 were added to the Cumulative without Project traffic volumes to estimate the Cumulative with Project traffic volumes, as shown on **Figure 16** for Phase 1 and **Figure 17** for Buildout.

CUMULATIVE ROADWAY IMPROVEMENTS

Cumulative without Project conditions include transportation system improvements that are planned and funded, or conditioned on approved development, and traffic volume increases due to approved and pending developments plus regional growth. Cumulative conditions reflect a 20 to 25 year time horizon, during which the project and surrounding area is likely to be built out. Signal timings were optimized at some of the signalized intersections, as the City regularly monitor signal operations throughout the City to ensure optimal traffic flow through critical corridors, and the signal timing at the Stoneridge at Johnson Drive intersection was adjusted to north/south spilt phasing with redevelopment in the EDZ; future signal/timing phasing at this intersection will be determined during the design phase of improvements identified to accommodate project traffic.

No improvements were assumed for this scenario at any of the study intersections. Although some roadway improvements are planned in the area, including the conversion of the westbound right-turn lane from Stoneridge Drive to Jonson Drive to a through-right shared lane and modification of the traffic signal at the Stoneridge Drive at northbound I-680 ramps, these improvements were evaluated as potential mitigation.



LEGEND

XX (YY) [ZZ] AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes

Traffic Signal

Stop Sign

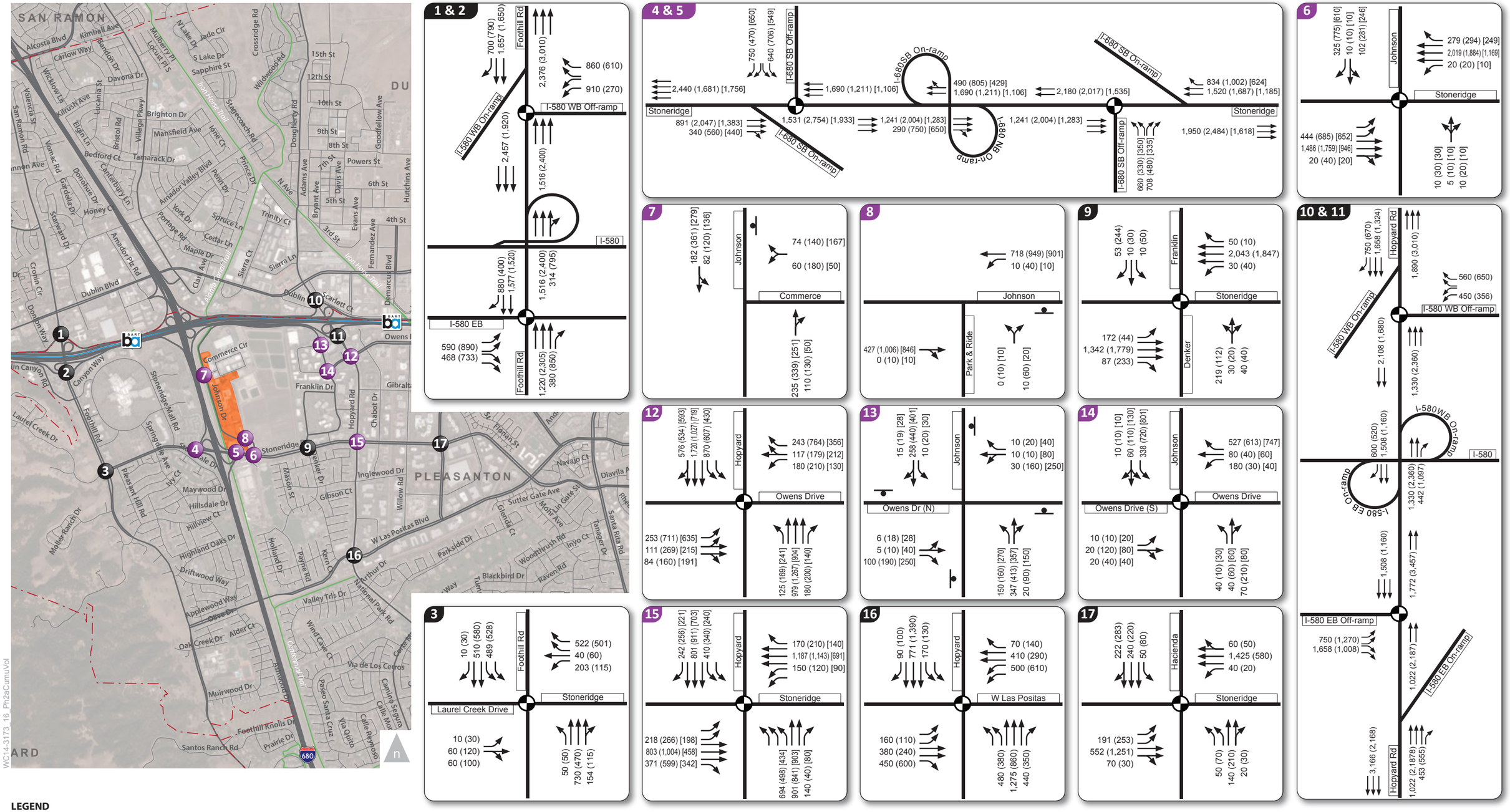
Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

Project Site

Figure 15

Cumulative without Project AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control



LEGEND

XX (YY) [ZZ] AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes

Traffic Signal

Stop Sign

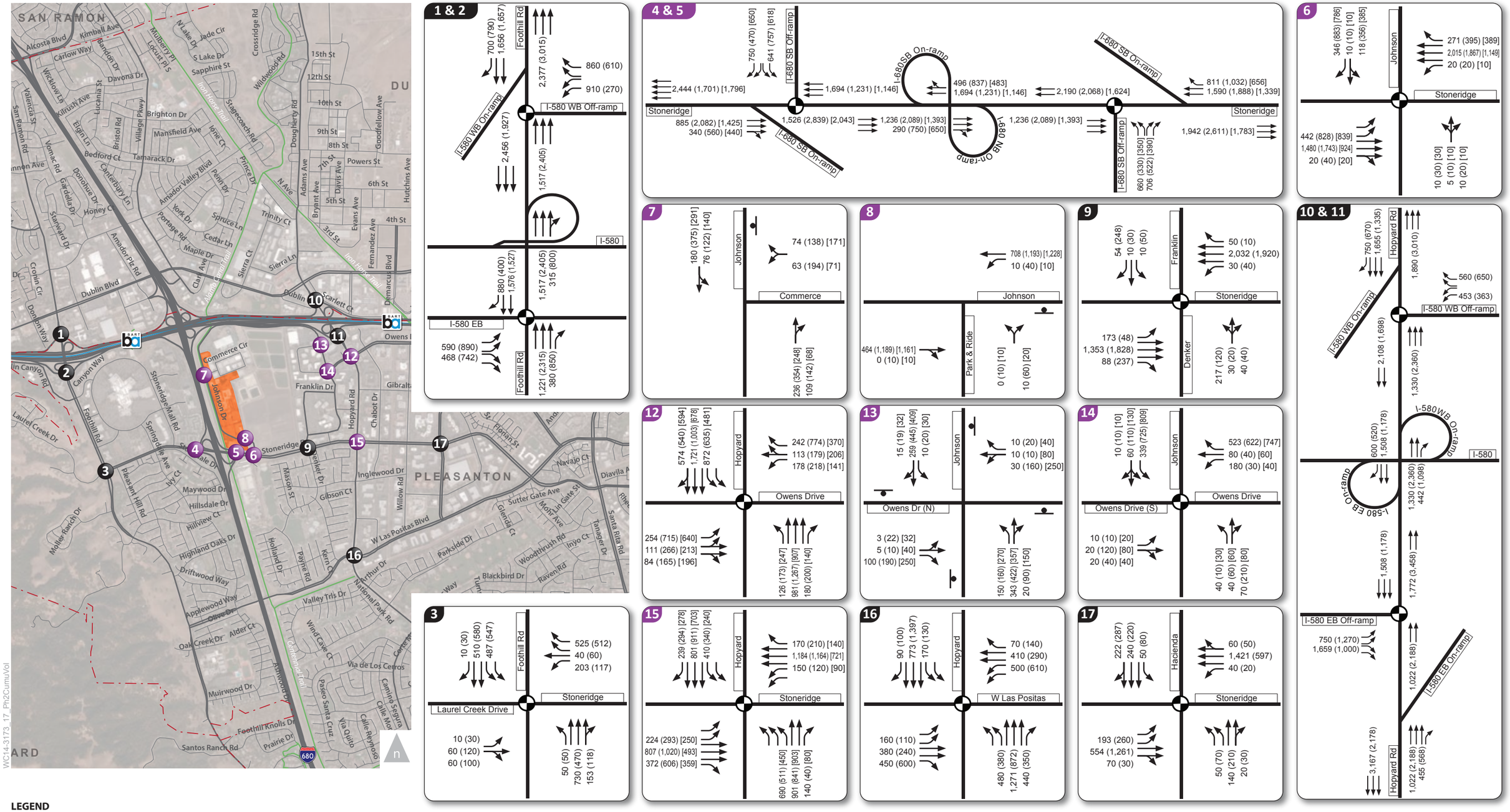
Study Intersections (Weekday AM + PM)

Study Intersections (Weekday AM + PM + Satuday Afternoon)

Project Site

Figure 16

Cumulative with Phase 1 AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control



LEGEND

XX (YY) [ZZ]	AM (PM) [Saturday Afternoon] Peak Hour Traffic Volumes	Traffic Signal	Stop Sign	Study Intersections (Weekday AM + PM)	Study Intersections (Weekday AM + PM + Satuday Afternoon)	Project Site

Figure 17

Cumulative with Project Buildout AM/PM/Saturday Afternoon Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

ANALYSIS OF CUMULATIVE CONDITIONS

INTERSECTION LEVELS OF SERVICE

Levels of Service calculations were conducted to evaluate intersection operations under Cumulative conditions both without and with the Project. The LOS results are summarized in **Table 14**. The corresponding LOS calculation sheets are included in **Appendix B**. For intersections on Stoneridge Drive between the southbound off-ramp and Franklin Drive were evaluated using SimTraffic, a micro-simulation software, to account for the effects of vehicle queue Spill-back, lane utilization as vehicles position themselves to enter the freeway, and the short spacing between intersections which affects driver behavior.

The results of the LOS calculations indicate that with planned development in Pleasanton and adjacent jurisdictions, in the cumulative condition, all study intersections would operate at LOS D or better. The addition of project traffic is expected to slightly increase delay at some study intersections and result in greater changes to average delay at other intersections. The addition of project traffic would degrade operations below LOS D at the following intersections:

- Stoneridge Drive at Johnson Drive (LOS E, PM peak hour with buildout)
- Commerce Drive at Johnson Drive (LOS F, weekday PM peak hour for side-street movement with Phase 1, further degrading with buildout to overall LOS E)
- Park and Ride Lot at Johnson Drive (LOS E, weekday PM peak hour for side-street movement with Phase 1, degrading to LOS F with buildout)
- Hopyard Road at Owens Drive (LOS E, PM peak hour with Phase 1, worsening with buildout)
- Owens Drive (North) at Johnson Drive (LOS E, PM peak hour and LOS F, Saturday peak hour with Phase 1, worsening with buildout)

All other study intersections would continue to operate at acceptable service levels based on the level of service standard. With the addition of traffic generated by development in the EDZ, projected vehicle queues from the eastbound left-turn movement from Stoneridge Drive to Johnson Drive would extend beyond the available storage, spilling back through the northbound off-ramp intersection. This spillback could result in vehicle queues periodically extending from the southbound and northbound off-ramps to the mainline; westbound queues on Stoneridge Drive could periodically extend to Franklin Drive, and southbound vehicle queues on Johnson Drive waiting to turn to Stoneridge Drive could extend more than a quarter-mile, potentially blocking access to driveways along the Johnson Drive Corridor.

TABLE 14
CUMULATIVE CONDITIONS
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Cumulative Without Project		Cumulative With Alternative 2a		Cumulative With Alternative 2[4]	
			Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
1. I-580 Westbound Ramps at San Ramon Road	Signal	AM PM	13 13	B B	16 13	B B	16 13	B B
2. I-580 Eastbound Ramps at Foothill Road	Signal	AM PM	16 18	B B	25 19	C B	25 19	C B
3. Foothill Road at Stoneridge Drive	Signal	AM PM	25 22	C C	26 23	C C	26 24	C C
4. Stoneridge Drive at I-680 Southbound Ramps	Signal	AM PM Sat	12 17 11	B B B	25 20 11	C B B	25 21 11	C C B
5. Stoneridge Drive at I-680 Northbound Ramps	Signal	AM PM Sat	12 11 10	B B A	27 18 10	C B A	27 19 10	C B A
6. Stoneridge Drive at Johnson Drive	Signal	AM PM Sat	11 20 11	B B B	32 52 32	C D C	33 **67** 37	C **E** D
7. Commerce Drive at Johnson Drive	SSSC	AM PM Sat	3 (13) 9 (34) 3 (12)	A (B) A (D) A (B)	4 (14) 31 (**118**) 5 (16)	A (B) D (F) A (C)	4 (14) **43** **(167)** 6 (20)	A (B) **E (F)** A (C)
8. Park and Ride Lot at Johnson Drive	SSSC	AM PM Sat	1 (10) 1 (15) 1 (11)	A (A) A (B) A (B)	1 (11) 2 (**43**) 1 (18)	A (B) A (**E**) A (B)	1 (11) 3 (**100**) 1 (26)	A (B) A **(F)** A (D)
9. Stoneridge Drive at Franklin Drive	Signal	AM PM	17 21	B C	45 27	D C	44 27	D C
10. Dougherty Road at I-580 Westbound Ramps	Signal	AM PM	11 17	B B	11 17	B B	11 17	B B
11. Hopyard Road at I-580 Eastbound Ramps	Signal	AM PM	30 20	C B	30 20	C B	30 20	C B
12. Hopyard Road at Owens Drive	Signal	AM PM Sat	34 54 35	C D C	43 **61** 45	D **E** D	43 **63** 45	D **E** D

TABLE 14
CUMULATIVE CONDITIONS
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Cumulative Without Project		Cumulative With Alternative 2a		Cumulative With Alternative 2[4]	
			Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]	Delay[2,3]	LOS[3]
13. Johnson Drive at Owens Drive (North)	AWSC	AM	11	B	12	B	12	B
		PM	19	C	**47**	**E**	**51**	**F**
		Sat	25	C	**77**	**F**	**79**	**F**
14. Johnson Drive at Owens Drive (South)	Signal	AM	15	B	15	B	15	B
		PM	18	B	18	B	18	B
		Sat	15	B	17	B	17	B
15. Stoneridge Drive at Hopyard Road	Signal	AM	32	C	38	D	38	D
		PM	38	D	39	D	39	D
		Sat	30	C	33	C	36	D
16. West Las Positas Boulevard at Hopyard Road	Signal	AM	26	C	38	D	38	D
		PM	32	C	33	C	32	C
17. Stoneridge Drive at Hacienda Drive	Signal	AM	26	C	26	C	26	C
		PM	25	C	25	C	25	C

Notes:
5. SSSC = side-street stop controlled intersection; AWSC = all way stop control; Signal = signalized intersection.
6. Average intersection delay calculated for signalized intersections using the *2000 HCM* method.
7. For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.
8. Intersection impact analysis conducted based on the trip generating potential buildout of the Johnson Drive Economic Development Zone.

Source: Fehr & Peers, 2015.

SIGNAL WARRANT ASSESSMENT

The peak hour volume and the delay warrant were used in this study as a supplemental analysis tool to assess operations at deficient unsignalized intersections in the cumulative conditions. Detailed signal warrant worksheets are provided in **Appendix C,** which show that the unsignalized intersections of Johnson Drive at Owens Drive (North) and Commerce Drive would meet signal warrants in the cumulative condition with the addition of project traffic. Signal warrants would not be met at the Park and Ride lot intersection.

CUMULATIVE INTERSECTION IMPACTS AND MITIGATION MEASURES

This section evaluates the intersection LOS results presented in Table 14 and compares the results with the criteria for significant impacts, and presents mitigation measures for identified impacts with updated

LOS results presented in **Table 15**. As a condition of approval, the City of Pleasanton will collect applicable local and regional traffic impact fees in addition to fair share contributions for other improvements needed to mitigate significant impacts. This is consistent with the City policy to collect fees from projects that have a significant impact on local and regional facilities.

Impact TR-10: Johnson Drive at Stoneridge Drive Intersection

The addition of project-generated vehicle trips at buildout during the PM peak hour would worsen LOS D conditions to LOS E. Buildout would further worsen the LOS E conditions. This intersection is a designated Gateway intersection and may be exempt from the City's level of service standard. However, poor operations at this intersection cause vehicle queue spillback at adjacent intersections, which in vehicle queues from the ramp terminal intersections to spillback to the freeway mainline, creating a potential safety hazard. Therefore, this impact is considered ***significant.***

Mitigation TR-10: Johnson Drive at Stoneridge Drive Intersection

Implement Mitigation TR-3. Implementation of this measure would result in LOS D conditions and shown in **Table 15**, and would reduce the potential for vehicle queue spillback to the mainline as shown in **Table 16,** reducing the queuing impact to a less-than-significant level.

Impact TR-11: Johnson Drive at Commerce Drive Intersection

The addition of project-generated vehicle trips during the PM peak hour would worsen the side-street movement to LOS F with Phase 1, which would be further exacerbated with buildout conditions. Additionally, peak hour volume traffic signal warrants would be met with the addition of Project traffic with Phase 1, thus traffic generated by the Project would cause the need for signalization. This is a ***significant impact***.

Mitigation Measure TR-11: Johnson Drive at Commerce Drive Intersection

Implement Mitigation Measure TR-1. Implementation of this measure would reduce the impact to a ***less-than-significant*** level. This mitigation measure would also fully mitigate the buildout impact.

Impact TR-12: Johnson Drive and Park and Ride Lot Intersection

The addition of project-generated vehicle trips during the PM peak hour would worsen the side-street movement to LOS E with Phase 12 and LOS F with buildout. The City of Pleasanton does

not have any plans to make physical improvements at this intersection. This is a ***significant impact***. Peak hour signal warrants would not be met at this intersection.

Mitigation Measure TR-12 Johnson Drive at Park and Ride Lot

Installation of a traffic signal is not recommended at this location. However, implementation of measures that reduce vehicle queue spillback on Johnson Drive would contribute to improved operations of this driveway, although the side-street would continue to operate at a deficient level during the weekday PM peak hour for vehicles waiting to turn left from the park and ride lot to Johnson Drive. As traffic signal warrants would not be satisfied, implementation of Mitigation Measure TR-3 would reduce the project impact to a ***less-than-significant*** level.

Impact TR-13: Johnson Drive at Owens Drive (North) Intersection

The addition of project-generated vehicle trips with Phase 1 during the Saturday peak hour would worsen from LOS C to LOS E. Conditions would be exacerbated with EDZ buildout. Additionally, peak hour volume traffic signal warrants would be met with the addition of Project traffic, thus traffic generated by the Project would cause the need for signalization. This is a ***significant impact***.

Mitigation Measure TR-13: Johnson Drive at Owens Drive (North) Intersection

Implement Mitigation Measure TR-2. Implementation of this measure would reduce the impact to a ***less-than-significant*** level. This mitigation measure would also fully mitigate the buildout impact.

Impact TR-14: Hopyard Road at Owens Drive Intersection

The addition of Phase 1 project-generated vehicle trips during the PM peak hour would worsen LOS D conditions to LOS E. Buildout would further worsen the LOS E conditions. This is considered a ***significant*** impact**.**

Mitigation Measure TR-15: Hopyard Road at Owens Drive Intersection

The *City of Pleasanton 2005-2025 General Plan* identifies the following improvement for implementation at Hopyard Road at Owens Drive Intersection:

- Modify the northbound approach: 2 left turns, 3 through, 1 right turn
- Modify the southbound approach: 3 left turns, 3 through, 1 right turn

- Modify the eastbound approach: 2 left turn, 2 through, 1 right turn
- Modify the westbound approach 2 left turn, 1 through-right shared, 1 right turn
- Un-split eastbound/westbound signal operations

However, only a portion of the improvement would be necessary to result in acceptable operations, including:

- Modify the eastbound approach: 2 left turn, 1 through, 1 through-right shared
- Un-split eastbound/westbound signal operations

As shown in Table 15, the intersection level of service would improve to an acceptable level during the weekday PM peak hour with a portion of the improvement, reducing the Project impact to a ***less-than-significant*** level.

TABLE 15
CUMULATIVE WITH PROJECT WITH MITIGATION
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	Peak Hour	Cumulative with Project Buildout		Cumulative with Project Phase 1 with Mitigation		Cumulative with Project Buildout With Mitigation	
			Delay	LOS	Delay	LOS	Delay	LOS
6. Stoneridge Drive at Johnson Drive	Signal	PM	**67**	**E**	28	C	32	C
9. Johnson Drive at Commerce Circle	SSSC/ Signal	PM	**43 (167)**	**E (F)**	15	B	15	B
13. Johnson Drive at Owens Drive (North)	AWSC/ Signal[1]	PM Sat	**51** **79**	**F** **F**	6 21	A C	7 21	A C
12. Hopyard Road at Owens Drive	Signal	PM	**63**	**E**	52	D	54	D

1. All-way stop control analyzed for the Existing with Project scenario and the mitigated scenario used an optimized signalized intersection control.

Source: Fehr and Peers, 2015.

Impact TR-16: Stoneridge Drive Queue Spillback

Phase 1 and buildout could result in vehicle queue spillback to the freeway mainline, increasing hazards, as well as resulting in worse service levels than presented in **Table 14** as some vehicles may need to wait multiple cycles to clear the intersection. This is considered a ***significant impact***.

Mitigation TR-16: Stoneridge Drive at Johnson Drive

Implement Mitigation Measure TR- 3 and TR-4. Implementation of these measures would reduce the queuing impact to a ***less-than significant*** level.

TABLE 16
CUMULATIVE WITH PROJECT WITH MITIGATION
PM PEAK HOUR 95TH PERCENTILE VEHICLE QUEUES

Intersection	Approach	Link Distance	Cumulative Without Project	Cumulative with Project Phase 1			Cumulative with Project Buildout		
				No Improvements	Initial Improvements[1]	Full Improvement[2]	No Improvements	Initial Improvements[1]	Full Improvement[2]
Stoneridge Dr at I-680 SB Off-Ramp	*Southbound*	*1,590*	*235*	**Spill-back**	260	305	**Spill-back**	350	315
Stoneridge Dr at I-680 NB On-Ramp	*Northbound*	*1,390*	*230*	**Spill-back**	530	435	**Spill-back**	540	415
	Eastbound	570	190	**Spill-back**	280	325	**Spill-back**	290	360
Stoneridge Dr at Johnson Dr	Southbound	-	325	1,400	1,445	770	1,365	1,355	780
	Eastbound	440	275	**Spill-back**	395	390	**Spill-back**	355	410
	Westbound	1,620	1,520	**Spill-back**	**Spill-back**	1,510	**Spill-back**	**Spill-back**	1,310
Stoneridge Dr at Franklin Dr	Westbound	1,325	590	**Spill-back**	**Spill-back**	840	**Spill-back**	**Spill-back**	875
Percent Demand Served at Stoneridge Dr at Johnson Dr[3]			100%	79%	88%	98%	78%	89%	97%

Notes: Italics indicates vehicle queues spillback to the freeway mainline, potentially affecting freeway operations. Spillback indicates vehicle queues extend to the adjacent intersection, affecting operations and resulting in worse service levels than shown in Table 14.

1. Reflects conditions with construction of a third eastbound left-turn lane from Stoneridge Drive intersection to Johnson Drive

2. Reflects conditions with both TR-3 and TR-4. Some queues increase slightly from the partial improvement scenario due to changes in signal timing and vehicle arrival rates at intersections through the corridor as removing a bottleneck at one location can increase traffic arriving at adjacent intersections. As mitigation measures are implemented, signal timings and off-sets between coordinated intersections would need to be monitored and adjusted to minimize vehicle queues and delays through the area.

3. Results reflect the percent of traffic that is able to travel through the intersection during the peak hour. Conditions when not all vehicles are served result in vehicle queues requiring several cycles, potentially resulting in queue spillback to adjacent intersections.

Source: Fehr and Peers, 2015.

7.0 FREEWAY OPERATIONS

This chapter summarizes the freeway analysis under Existing and Cumulative conditions for I-680 near Stoneridge Drive.

FREEWAY FORECASTS AND FREEWAY SYSTEM IMPROVEMENTS

Existing freeway volumes were obtained from Caltrans for I-680 south of Stoneridge Drive. Ramp volumes were used to determine existing volumes north of Stoneridge Drive. Project traffic was then added to the existing freeway volumes to develop the forecasts for the existing with Phase 1 and buildout conditions.

Based on a review of General Plan forecasts, cumulative freeway mainline volumes for I-680 were estimated by applying a ten percent growth factor to the existing volumes. Project traffic was then added to estimate Cumulative with Phase 1 and buildout conditions. A near-term freeway analysis was not conducted to be consistent with the General Plan freeway analysis. However, a separate analysis of the Congestion Management Agency (CMA) Metropolitan Transportation System (MTS), including I-680, is provided in the next chapter which evaluates an interim year. No freeway improvements were assumed in the analysis of existing or cumulative conditions.

EXISTING FREEWAY OPERATIONS

MAINLINE

Freeway segment levels of service were calculated based on existing and existing plus Phase 1 and buildout project traffic volumes. Results are presented in **Table 17** which indicates that I-680 between I-580 and Stoneridge Drive operates at LOS F during the AM peak hour (southbound) and LOS F in the PM peak hour (northbound). South of Stoneridge Drive, peak hour operations are LOS E or better. The addition of Project traffic from Phase 1 and at buildout would slightly worsen the operations of northbound and southbound I-680 traffic for most segments, but would not result in deficient operations nor increase the volume by more than 3 percent for a segment that operates at a deficient level prior to the addition of project traffic. Therefore the mainline project impact in the existing condition is considered less-than-significant. Detailed mainline LOS calculations are provided in **Appendix D**.

TABLE 17
EXISTING CONDITIONS I-680 RAMP MAINLINE LEVELS

Mainline Location	Peak Hour	Existing Without Project			Existing with Project Phase 1				Existing with Project Buildout			
		Volume	Density[1]	LOS	Volume	Density[1]	LOS	Percent Increase	Volume	Density[1]	LOS	Percent Increase
Northbound I-680 – North of Stoneridge Drive	AM	5,600	33	D	5,634	34	D	1%	5,641	34	D	1%
	PM	6,900	-	F	7,022	-	F	2%	7,062	-	F	2%
Southbound I-680 – North of Stoneridge Drive	AM	6,700	-	F	6,740	-	F	1%	6,741	-	F	1%
	PM	4,800	26	D	4,906	27	D	2%	4,957	28	D	3%
Northbound I-680 – South of Stoneridge Drive	AM	5,500	33	D	5,538	33	D	1%	5,536	33	D	1%
	PM	5,700	35	E	5,790	36	E	2%	5,832	37	E	2%
Southbound I-680 – South of Stoneridge Drive	AM	5,600	34	D	5,630	34	D	1%	5,636	35	D	1%
	PM	4,900	28	D	4,995	28	D	2%	5,027	29	D	3%

1. Density is presented in passenger cars per mile per lane (pc/mi/ln).

Source: Fehr and Peers, 2015.

RAMP MERGE/DIVERGE

Existing freeway ramp volumes, freeway mainline volumes, free-flow speeds, and merging/diverging lengths, were used as inputs to calculate existing service levels for the freeway ramps at the merge/ diverge areas with I-680. The ramp merging and diverging analysis results are presented in **Table 18**. The following segments currently operate at unacceptable levels (LOS F):

- Northbound I-680 on-ramp from the eastbound Stoneridge Drive merge (PM Peak Hour)
- Northbound I-680 on-ramp from the westbound Stoneridge Drive merge (PM Peak Hour)
- Southbound I-680 off-ramp at Stoneridge Drive diverge (AM Peak Hour)

The addition of Project traffic would further degrade operations of already deficient segments, resulting in a potentially significant impact, but other merge/diverge areas would continue to operate at LOS E or better. Freeway ramp LOS calculations are provided in Appendix D.

TABLE 18
EXISTING CONDITIONS I-680 MERGE/DIVERGE LEVELS OF SERVICE

Mainline Location	Peak Hour	Existing Without Project		Existing with Project Phase 1		Existing with Project Buildout	
		Density[1]	LOS	Density[1]	LOS	Density[1]	LOS
Merge							
NB I-680 On-ramp from EB Stoneridge Drive	AM	32	D	32	D	32	D
	PM	-	F	-	F	-	F
NB I-680 On-ramp from WB Stoneridge Drive	AM	37	E	-	F	-	F
	PM	-	F	-	F	-	F
SB I-680 On-Ramp from EB Stoneridge Drive	AM	33	D	33	D	33	D
	PM	32	D	33	D	33	D
SB I-680 On–ramp from WB Stoneridge Drive	AM	34	D	35	E	36	E
	PM	35	E	36	E	37	E
Diverge							
NB I-680 Off-ramp to Stoneridge Drive	AM	28	D	28	D	28	D
	PM	27	C	29	D	28	D
SB I-680 Off-ramp to Stoneridge Drive	AM	-	F	-	F	-	F
	PM	8	A	9	A	10	A

1. Density is presented in passenger cars per mile per lane (pc/mi/ln).

Source: Fehr and Peers, 2015.

CUMULATIVE FREEWAY OPERATIONS

MAINLINE

Freeway segment levels of service were calculated based on cumulative traffic volumes. The results indicate that I-680 north of Stoneridge Drive is expected to operate at unacceptable LOS F standards in during the AM peak hour for the northbound direction and during the PM peak hour for the southbound direction without the addition of project related traffic, as presented in **Table 19**.

The addition of Project traffic would further degrade operations of the I-680 mainline segments at Stoneridge Drive, but would not result in deficient operations nor increase the volume by more than 3 percent for a segment that operates at a deficient level prior to the addition of project traffic. Therefore the mainline project impact is considered ***less-than-significant***. Detailed mainline LOS calculations are provided in Appendix D.

TABLE 19
CUMULATIVE CONDITIONS I-680 RAMP MAINLINE LEVELS

Mainline Location	Peak Hour	Cumulative Without Project			Cumulative with Project Phase 1				Cumulative with Project Buildout			
		Volume	Density[1]	LOS	Volume	Density[1]	LOS	Percent Increase	Volume	Density[1]	LOS	Percent Increase
Northbound I-680 – North of Stoneridge Drive	AM	6,160	41	E	6,194	41	E	1%	6,201	41	E	1%
	PM	7,590	-	F	7,712	-	F	2%	7,752	-	F	2%
Southbound I-680 – North of Stoneridge Drive	AM	7,370	-	F	7,412	-	F	1%	7,411	-	F	1%
	PM	5,280	30	D	5,386	31	D	2%	5,437	32	D	3%
Northbound I-680 – South of Stoneridge Drive	AM	6,050	40	E	6,088	41	E	1%	6,086	41	E	1%
	PM	6,270	44	E	6,360	-	F	1%	6,402	-	F	2%
Southbound I-680 – South of Stoneridge Drive	AM	6,160	42	E	6,190	42	E	1%	6,196	42	E	1%
	PM	5,390	32	D	5,485	33	D	2%	5,517	33	D	2%

1. Density is presented in passenger cars per mile per lane (pc/mi/ln).

Source: Fehr and Peers, 2015.

FREEWAY RAMP MERGE/DIVERGE AREAS

Cumulative without Project freeway ramp volumes, freeway mainline volumes, free-flow speeds, and merging/diverging lengths, were used as inputs to calculate cumulative service levels for the freeway ramps at the merge/diverge areas with I-680. The ramp merging and diverging analysis results are presented in **Table 20**. With projected traffic growth through the I-680 corridor, additional merge/ diverge areas are projected to operate at LOS F as compared to existing conditions. The addition of Project traffic would contribute to deficient operations at the both southbound on-ramps during PM peak hour, resulting in potentially significant impacts. The freeway ramp LOS calculations are provided in Appendix D.

TABLE 20
CUMULATIVE CONDITIONS I-680 MERGE/DIVERGE LEVELS OF SERVICE

Mainline Location	Peak Hour	Cumulative Without Project		Cumulative w Project Phase 1		Cumulative with Project Buildout	
		Density[1]	LOS	Density[1]	LOS	Density[1]	LOS
Merge							
NB I-680 On-ramp from EB Stoneridge Drive	AM	-	F	-	F	-	F
	PM	-	F	-	F	-	F
NB I-680 On-ramp from WB Stoneridge Drive	AM	-	F	-	F	-	F
	PM	-	F	-	F	-	F
SB I-680 On-Ramp from EB Stoneridge Drive	AM	-	F	-	F	-	F
	PM	34	D	35	E	35	E
SB I-680 On–ramp from WB Stoneridge Drive	AM	-	F	-	F	-	F
	PM	37	E	38	E	-	F
Diverge							
NB I-680 Off-ramp to Stoneridge Drive	AM	30	D	31	D	31	D
	PM	30	D	31	D	32	D
SB I-680 Off-ramp to Stoneridge Drive	AM	-	F	-	F	-	F
	PM	11	B	11	B	11	B

1. Density is presented in passenger cars per mile per lane (pc/mi/ln).

Source: Fehr and Peers, 2015.

FREEWAY IMPACTS AND MITIGATION MEASURES

Impact TR-17: Freeway Ramp Merge/Diverge at Stoneridge Drive

The addition of project traffic would either result in or worsen LOS F conditions in the both the existing and cumulative conditions at the I-680 northbound and southbound ramp merge/diverge areas at Stoneridge Drive. This is a ***significant impact***.

> ***Mitigation TR-17:*** The project applicant would pay the applicable regional and local transportation impact fee that would be used to construct improvements, such as the second phase of I-680/I-580 interchange improvements, widening of State Route 84 through Pigeon Pass, and other planned roadway system modifications that would relieve freeway congestion in the study area. However, as the construction timing of these improvements is unknown as full funding has not been identified, this impact would remain ***significant and unavoidable***.

8.0 ALAMEDA COUNTY TRANSPORTATION COMMISSION ROADWAY ANALYSIS

A separate analysis of regional roadways is required to comply with requirements of the Alameda County Transportation Commission (Alameda CTC). The Alameda CTC requires the analysis of project impacts to Metropolitan Transportation System (MTS) roadways identified in the congestion management plan (CMP) for development projects that would generate more than 100 PM peak hour trips. As shown in **Table 7**, the proposed Project would generate more than 100 PM peak hour trips at buildout.

This chapter outlines the roadway analysis, which considers the impact of the Project on freeways, major arterials, and other major roadways as designated by Alameda CTC. Main items of discussion include the geographic scope of the Alameda CTC roadway analysis, the analysis method, and the results for 2025 and 2040. **Appendix E** presents the Alameda CTC calculation worksheets.

ALAMEDA CTC ROADWAY ANALYSIS STUDY AREA

Freeway and surface street segments in Pleasanton and Livermore were included in this analysis:

- Interstate 580 (5 segments)
- Interstate 680 (3 segments)
- Stoneridge Drive (8 segments)
- Hopyard Drive (6 segments)
- Foothill Road (4 segments)

TRAFFIC FORECASTS

Fehr & Peers used the Alameda Countywide Travel Demand Model to forecast 2025 and 2040 traffic volumes on the MTS roadway system. The forecasts for the MTS system differ from the intersection forecasts previously discussed in the following aspects:

- The land use data sets used for the intersection forecasts and the MTS forecasts are different for areas outside Pleasanton (The City of Pleasanton provided land use inputs for the City) and are consistent with Association of Bay Area Governments (ABAG) population and employment projections.

- Regional model may not include some minor streets through Pleasanton, potentially overstating traffic volumes on the roadways included in the model.
- The MTS roadway analysis reports the outputs of the Alameda CTC model directly on a roadway segment level.

The results of the Alameda CTC model were used to forecast the No Project condition for 2025 and 2040. Project trips for at buildout were distributed to the MTS roadway segments (including both freeways and surface streets) identified above using the project trip distribution presented in Chapter 3. The distribution of project trips onto the MTS segments results in the with Project volumes for 2025 and 2040.

ANALYSIS METHOD

Operations of the MTS freeway and surface street segments were assessed based on volume-to-capacity (V/C) ratios. For freeway segments, a per-lane capacity of 2,000 vehicles per hour was used. For surface streets, a per-lane capacity of 800 vehicles per hour was used. These capacities do not reflect additional capacity provided at intersections through turn pockets. Roadway segments with a V/C ratio greater than 1.0 are assigned LOS F.

SIGNIFICANCE CRITERIA

According to the significance criteria presented previously in Chapter 1, the addition of project traffic causes a significant impact on an MTS roadway segment if:

- The addition of project traffic causes a segment's operation to degrade to LOS F.
- The addition of project trips causes the V/C ratio to increase by more than 0.03 on a segment that already operates at LOS F without the project traffic.

ANALYSIS RESULTS

The MTS PM Peak Hour roadway segment analysis under 2025 and 2040 conditions are provided in **Table 21** for the 2025 condition and **Table 22** for the 2040 condition. Results of the analysis indicate that the proposed project would not result in deficient operations on any of the MTS roadway segments in either 2025 or 2040, and no project specific mitigation is required beyond payment of local and regional transportation impact fees.

TABLE 21
2025 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
Freeway Segments											
I-580 Eastbound											
Palo Verde Road	Foothill Road	4	8,458	8,526	1%	1.06	1.07	F	F	-	No
Foothill Road	I-680	5	7,656	7,691	0%	0.77	0.77	D	D	No	-
I-680	Hopyard Road	4	6,393	6,414	0%	0.80	0.80	D	D	No	-
Hopyard Road	Hacienda Drive	7	10,828	10,859	0%	0.77	0.78	D	D	No	-
Hacienda Drive	Tassajara Road	6	8,832	8,917	1%	0.74	0.74	C	C	No	-
I-580 Westbound											
Tassajara Road	Hacienda Drive	5	5,275	5,363	2%	0.53	0.54	B	B	No	-
Hacienda Drive	Hopyard Road	5	5,545	5,603	1%	0.55	0.56	B	B	No	-
Hopyard Road	I-680	5	5,793	5,819	0%	0.58	0.58	B	B	No	-
I-680	Foothill Road	5	5,765	5,812	1%	0.58	0.58	B	B	No	-
Foothill Road	Palo Verde Road	4	5,387	5,455	1%	0.67	0.68	C	C	No	-
I-680 Southbound											
Alcosta Boulevard	I-580	5	6,971	7,083	2%	0.70	0.71	C	C	No	-

TABLE 21
2025 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
I-580	Stoneridge Drive	4	4,685	4,842	3%	0.59	0.61	C	C	No	-
Stoneridge Drive	Bernal Ave	3	4,367	4,494	3%	0.73	0.75	C	C	No	-
I-680 Northbound											
Bernal Avenue	Stoneridge Drive	3	4,655	4,787	3%	0.78	0.80	D	D	No	-
Stoneridge Drive	I-580	4	5,190	5,352	3%	0.65	0.67	C	C	No	-
I-580	Alcosta Boulevard	4	5,603	5,713	2%	0.70	0.71	C	C	No	-
Arterials											
Foothill Road/San Ramon Road Southbound											
Amador Valley Boulevard	Dublin Boulevard	2	667	684	3%	0.42	0.43	B	B	No	-
Dublin Boulevard	I-580	3	2,842	2,859	1%	1.18	1.19	F	F	-	No
I-580	Stoneridge Drive	2	982	1,041	6%	0.61	0.65	C	C	No	-
Stoneridge Drive	West Las Positas Boulevard	1	507	514	1%	0.63	0.64	C	C	No	-
Foothill Road/San Ramon Road Northbound											
West Las Positas Boulevard	Stoneridge Drive	1	874	882	1%	1.09	1.10	F	F	-	No

TABLE 21
2025 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
Stoneridge Drive	I-580	3	565	607	7%	0.24	0.25	A	A	No	-
I-580	Dublin Boulevard	3	918	933	2%	0.38	0.39	B	B	No	-
Dublin Boulevard	Amador Valley Boulevard	3	2,106	2,121	1%	0.88	0.88	D	D	No	-
Stoneridge Drive Eastbound											
Foothill Road	Springdale Avenue	3	216	281	30%	0.09	0.12	A	A	No	-
Springdale Avenue	I-680	3	802	904	13%	0.33	0.38	A	B	No	-
I-680	Johnson Drive	3	1,186	1,664	40%	0.49	0.69	B	C	No	-
Johnson Drive	Franklin Drive	3	1,270	1,403	10%	0.53	0.58	B	B	No	-
Franklin Drive	Hopyard Road	3	1,001	1,227	23%	0.42	0.51	B	B	No	-
Hopyard Road	Hacienda Drive	2	417	457	10%	0.26	0.29	A	A	No	-
Hacienda Drive	West Las Positas Boulevard	3	265	296	12%	0.11	0.12	A	A	No	-
West Las Positas Boulevard	Santa Rita Road	3	310	327	5%	0.13	0.14	A	A	No	-
Stoneridge Drive Westbound											
Santa Rita Road	West Las Positas Boulevard	3	252	272	8%	0.11	0.11	A	A	No	-

TABLE 21
2025 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
West Las Positas Boulevard	Hacienda Drive	2	362	399	10%	0.23	0.25	A	A	No	-
Hacienda Drive	Hopyard Road	3	449	493	10%	0.19	0.21	A	A	No	-
Hopyard Road	Franklin Drive	3	1,003	1,133	13%	0.11	0.11	A	A	No	-
Franklin Drive	Johnson Drive	3	1,192	1,437	21%	0.23	0.25	A	A	No	-
Johnson Drive	I-680	3	1,353	1,816	34%	0.19	0.21	A	A	No	-
I-680	Springdale Avenue	3	930	1,011	9%	0.42	0.47	B	B	No	-
Springdale Avenue	Foothill Road	3	280	329	18%	0.50	0.60	B	C	No	-
Hopyard Road/Dougherty Road Southbound											
Amador Valley Boulevard	Dublin Boulevard	3	513	541	5%	0.21	0.23	A	A	No	-
Dublin Boulevard	I-580	3	2,718	2,750	1%	1.13	1.15	F	F	-	No
I-580	Owens Drive	3	1,022	1,119	9%	0.43	0.47	B	B	No	-
Owens Drive	Stoneridge Drive	3	822	901	10%	0.34	0.38	A	B	No	-
Stoneridge Drive	West Las Positas Boulevard	3	1,076	1,103	3%	0.45	0.46	B	B	No	-

TABLE 21
2025 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
West Las Positas Boulevard	Valley Avenue	3	995	1,022	3%	0.41	0.43	B	B	No	-
Hopyard Road/Dougherty Road Northbound											
Valley Avenue	West Las Positas Boulevard	3	1,715	1,747	2%	0.71	0.73	C	C	No	-
West Las Positas Boulevard	Stoneridge Drive	3	1,715	1,747	4%	0.71	0.73	C	C	No	-
Stoneridge Drive	Owens Drive	3	811	843	7%	0.34	0.35	A	B	No	-
Owens Drive	I-580	3	1,029	1,103	4%	0.43	0.46	B	B	No	-
I-580	Dublin Boulevard	4	1,885	1,962	2%	0.79	0.82	D	D	No	-
Dublin Boulevard	Amador Valley Boulevard	3	1,456	1,483	1%	0.45	0.46	B	B	No	-

Notes: ***Bold and italic*** text indicates a potentially significant impact.
Source: Fehr & Peers, April 2015.

TABLE 22
2040 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
Freeway Segments											
I-580 Eastbound											
Palo Verde Road	Foothill Road	4	9,172	9,240	1%	1.15	1.16	F	F	-	No
Foothill Road	I-680	5	8,258	8,293	0%	0.83	0.83	D	D	No	-
I-680	Hopyard Road	4	6,925	6,946	0%	0.87	0.87	D	D	No	-
Hopyard Road	Hacienda Drive	7	10,594	10,625	0%	0.76	0.76	D	D	No	-
Hacienda Drive	Tassajara Road	6	9,459	9,544	1%	0.79	0.80	D	D	No	-
I-580 Westbound											
Tassajara Road	Hacienda Drive	5	6,228	6,316	1%	0.62	0.63	C	C	No	-
Hacienda Drive	Hopyard Road	5	6,302	6,360	1%	0.63	0.64	C	C	No	-
Hopyard Road	I-680	5	5,990	6,016	0%	0.60	0.60	C	C	No	-
I-680	Foothill Road	5	6,084	6,131	1%	0.61	0.61	C	C	No	-
Foothill Road	Palo Verde Road	4	6,011	6,079	1%	0.75	0.76	C	D	No	-
I-680 Southbound											
Alcosta Boulevard	I-580	5	6,555	6,667	2%	0.66	0.67	C	C	No	-

TABLE 22
2040 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
I-580	Stoneridge Drive	4	4,574	4,731	3%	0.57	0.59	B	C	No	-
Stoneridge Drive	Bernal Ave	3	4,173	4,300	3%	0.70	0.72	C	C	No	-
I-680 Northbound											
Bernal Avenue	Stoneridge Drive	3	4,141	4,273	3%	0.69	0.71	C	C	No	-
Stoneridge Drive	I-580	4	4,626	4,788	4%	0.58	0.60	B	C	No	-
I-580	Alcosta Boulevard	4	5,830	5,940	2%	0.73	0.74	C	C	No	-
Arterials											
Foothill Road/San Ramon Road Southbound											
Amador Valley Boulevard	Dublin Boulevard	2	674	691	3%	0.42	0.43	B	B	No	-
Dublin Boulevard	I-580	3	3,283	3,300	1%	1.37	1.38	F	F	-	No
I-580	Stoneridge Drive	2	948	1,007	6%	0.59	0.63	C	C	No	-
Stoneridge Drive	West Las Positas Boulevard	1	567	574	1%	0.71	0.72	C	C	No	-
Foothill Road/San Ramon Road Northbound											
West Las Positas Boulevard	Stoneridge Drive	1	874	882	1%	1.09	1.10	F	F	-	No

TABLE 22
2040 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
Stoneridge Drive	I-580	3	672	714	6%	0.28	0.30	A	A	No	-
I-580	Dublin Boulevard	3	1,147	1,162	1%	0.48	0.48	B	B	No	-
Dublin Boulevard	Amador Valley Boulevard	3	2,147	2,162	1%	0.89	0.90	D	D	No	-
Stoneridge Drive Eastbound											
Foothill Road	Springdale Avenue	3	273	338	24%	0.11	0.14	A	A	No	-
Springdale Avenue	I-680	3	975	1,077	10%	0.41	0.45	B	B	No	-
I-680	Johnson Drive	3	1,576	2,054	30%	0.66	0.86	C	D	No	-
Johnson Drive	Franklin Drive	3	1,664	1,797	8%	0.69	0.75	C	C	No	-
Franklin Drive	Hopyard Road	3	1,403	1,629	16%	0.58	0.68	B	C	No	-
Hopyard Road	Hacienda Drive	2	662	702	6%	0.28	0.29	A	A	No	-
Hacienda Drive	West Las Positas Boulevard	3	325	356	10%	0.14	0.15	A	A	No	-
West Las Positas Boulevard	Santa Rita Road	3	513	530	3%	0.21	0.22	A	A	No	-
Stoneridge Drive Westbound											
Santa Rita Road	West Las Positas Boulevard	3	310	330	6%	0.13	0.14	A	A	No	-

TABLE 22
2040 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
West Las Positas Boulevard	Hacienda Drive	2	564	601	7%	0.35	0.38	B	B	No	-
Hacienda Drive	Hopyard Road	3	467	511	9%	0.19	0.21	A	A	No	-
Hopyard Road	Franklin Drive	3	1,189	1,319	11%	0.50	0.55	B	B	No	-
Franklin Drive	Johnson Drive	3	1,368	1,613	18%	0.57	0.67	B	C	No	-
Johnson Drive	I-680	3	1,523	1,986	30%	0.63	0.83	C	D	No	-
I-680	Springdale Avenue	3	1,173	1,254	7%	0.49	0.52	B	B	No	-
Springdale Avenue	Foothill Road	3	275	324	18%	0.11	0.14	A	A	No	-
Hopyard Road/Dougherty Road Southbound											
Amador Valley Boulevard	Dublin Boulevard	3	616	644	5%	0.26	0.27	A	A	No	-
Dublin Boulevard	I-580	3	3,266	3,298	1%	1.36	1.37	F	F	-	No
I-580	Owens Drive	3	1,204	1,301	8%	0.50	0.54	B	B	No	-
Owens Drive	Stoneridge Drive	3	845	924	9%	0.35	0.39	B	B	No	-
Stoneridge Drive	West Las Positas Boulevard	3	1,244	1,271	2%	0.52	0.53	B	B	No	-

TABLE 22
2040 PM PEAK HOUR CMP ROADWAY SEGMENT ANALYSIS

Link Location at Segment Limits		# Lanes	No Project Volume	with Project Volume at Buildout	Percent Increase	V/C Ratio– No Project	V/C Ratio – with Project	No Project LOS	with Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C
West Las Positas Boulevard	Valley Avenue	3	1,064	1,091	3%	0.44	0.45	B	B	No	-
Hopyard Road/Dougherty Road Northbound											
Valley Avenue	West Las Positas Boulevard	3	1,885	1,917	2%	0.79	0.80	D	D	No	-
West Las Positas Boulevard	Stoneridge Drive	3	860	892	4%	0.36	0.37	B	B	No	-
Stoneridge Drive	Owens Drive	3	1,086	1,160	7%	0.45	0.48	B	B	No	-
Owens Drive	I-580	3	2,237	2,314	3%	0.93	0.96	E	E	No	-
I-580	Dublin Boulevard	4	1,662	1,689	2%	0.52	0.53	B	B	No	-
Dublin Boulevard	Amador Valley Boulevard	3	2,335	2,359	1%	0.97	0.98	E	E	No	-

Notes: ***Bold and italic*** text indicates a potentially significant impact.
Source: Fehr & Peers, April 2015.

9.0 OTHER CONSIDERATIONS

As no detailed site plans have been developed, this chapter provides overall guidance for consideration as the EDZ design guidelines are finalized. A qualitative assessment of project alternatives is also provided.

VEHICULAR SITE ACCESS AND CIRCULATION

Development within the EDZ should provide safe and efficient movement for both vehicles and pedestrians. Vehicular access to parcels within the EDZ site must be designed in to consider vertical and horizontal curves, sight distances, median cuts, other driveways, and other common traffic engineering criteria as prescribed by the City of Pleasanton.

All access to the EDZ would occur from Johnson Drive, either from the south at Stoneridge Drive or from the north from Owens Drive at Hopyard Road. Based on the projected level of traffic that could be generated by redevelopment in the area, Johnson Drive may need to be widened to provide two vehicle travel lanes in each direction from Stoneridge Drive to the main entry of the Club Retail, and/or additional capacity provided at major driveways where signal control may be provided. Additional widening would be needed on Johnson Drive at Stoneridge Drive to accommodate turn movements to/from Stoneridge Drive. It is expected that the main entrance to the club retail would be signalized with a southbound left-turn pocket and a northbound right-turn pocket.

> ***Recommendation:*** As site plans are developed for proposed uses within the EDZ, they should consider the need for widening Johnson Drive to provide two travel lanes in each direction from Stoneridge Drive to the main entry of the Club Retail and/or additional capacity provided at major driveways where signal control may be provided. The final design should maintain or enhance the existing bicycle, transit and pedestrian facilities.

EMERGENCY VEHICLE ACCESS

Several factors determine whether a project has sufficient access for emergency vehicles, including:

1. Location of closest fire stations
2. Number of access points (both public and emergency access only)
3. Width of access points
4. Width of internal roadways

Each of these factors is discussed in further detail below.

The fire station closest to the site is located on Stoneridge Mall Road, north of Stoneridge Drive, west of I-680, approximately 3/4th of a mile the southern portion of the EDZ. If Johnson Drive was blocked, emergency vehicles could enter the EDZ from Owens Drive, a travel distance of approximately 3 miles. The Fire District should be consulted to demine if existing fire stations could provide the recommended service times with redevelopment in the area.

Access to the EDZ would occur from existing roadways that have been designed to provide sufficient width to accommodate turning movements of large emergency vehicles.

As roadways internal to EDZ area have not been developed, it is recommended that to ensure emergency vehicles have an unobstructed access throughout the site, parking should be restricted within the first 50 feet of the project entrances, and if landscaped medians or other entry treatments are proposed, a 20-foot clear area should be provided. At least two entrances should be provided to each major parcel or reciprocal access be provided between neighboring parcels.

PEDESTRIAN ACCESS AND CIRCULATION

The EDZ design guidelines provide guidance to future developers within the area. Sidewalks should be provided along Johnson Drive and pedestrian paths should be designated from transit stops on Johnson Drive to primary site pedestrian circulation. At least one sidewalk connection between the building and the perimeter street should be required. At intersections where new traffic signals may be installed, pedestrian actuation should be provided. Intersections where pedestrian routes cross vehicular circular are critical areas and should be clearly marked for visual identification by motorists and pedestrians.

Site and building design must accommodate pedestrian circulation on-site from parking areas to plazas, open space, pedestrian pathways, and to adjoining buildings. Existing and proposed pedestrian circulations systems and easements should be integrated into site design. Pedestrian systems should be physically separated from vehicular circulation as much as possible. Minimizing the areas where the two systems cross or are physically adjacent will reduce potential traffic hazards and make the pedestrian system more efficient, pleasant, and visually attractive. Large parking areas should feature sidewalk connections to the building entries. The placement of shopping cart corrals should also consider the pedestrian path of travel from the parking field to the corral, and from the corral to the front of the store.

BICYCLE ACCESS AND CIRCULATION

Bicycle access to and around the site is provided by the Class I Alamo Canal and bicycle lanes on Johnson Drive. Should Johnson Drive be widened to accommodate vehicle traffic, bicycle lanes should be maintained on the roadway, and given the increase in traffic volumes, provision of buffered bicycle lanes should be considered. At new signalized intersections on Class II bicycle routes in the EDZ, bicycle detection should be incorporated into the final design of the intersection and traffic signals.

Redevelopment within the EDZ should support both recreational and commuter bicycle accessibility. To accommodate this, development within the EDZ should incorporate both long-term and short-term bicycle parking for both employees and patrons to the satisfaction of the City of Pleasanton Director of Community Development.

TRANSIT ACCESS ADJACENT TO SITE

Transit service is currently provided along Johnson Drive on Route 3 and 70XV. Based on ridership information provided by LAVTA, there is currently excess capacity on transit routes that serve the study area (see Chapter 2). It is expected that the project could generate between 100 and 200 transit trips on a daily basis and between 10 and 20 transit trips during peak hours, which is expected to be accommodated by existing transit service.

> ***Recommendation:*** Future development within the EDZ should consult with LAVTA and City of Pleasanton staff regarding the final placement and design of transit stops within the EDZ, and the appropriate transit amenities that should be provided to encourage transit use to promote transit as a viable transportation option to the EDZ.

PARKING

Parking for development proposed within the Johnson Drive Economic Development zone would be required at the rates specified in the Design Guidelines and in Section 18.88.030 of the Municipal Code. Additionally, long-term and short-term bicycle parking shall be provided for all commercial projects within the EDZ. Shared parking between uses that have complementary parking demands should be encouraged within the zone, provided sites are within a reasonable walking distance, to reduce the total number of parking spaces within the EDZ.

If parking structures are proposed within the EDZ, they should not be placed along site frontages to preserve site aesthetics and site distances.

PROJECT ALTERNATIVES

Several land use alternatives are under consideration for the EDZ. This section provides a brief description each alternative including the approximate square footage by use. The expected net-new trip generation for each alternative was estimated and compared to the trip generating potential of the project analyzed in the prior chapters of this report. A qualitative assessment of the relative impact of each alternative was also conducted. The scenarios noted below refer to a study conducted by Brion & Associates, which is included for reference in **Appendix F**.

ALTERNATIVE ONE (SCENARIO THREE)

Alternative 1 would redevelop the EDZ with office, retail, and hotel uses, with approximately 701,059 square feet of new building area, including:

- 273,291 square feet of retail
- 339,768 square feet of office
- 88,000 square feet of hotel (150 rooms)

ALTERNATIVE TWO (SCENARIO FOUR)

Alternative Two would redevelop three parcels of the EDZ area with general retail and a hotel, including:

- 171,500 square feet of retail
- 88,000 square feet of hotel (150 rooms)

ALTERNATIVE THREE (SCENARIO FIVE)

Alternative three would redevelop the EDZ with all office uses, resulting in approximately 711,465 square feet office space.

PROJECT ALTERNATIVES TRIP GENERATION

The level of trip generation under each alternative was calculated based on the methods outlined in Chapter 3 and compared to the expected level of trip generation from the proposed project, both Phase 1 and Buildout, as presented in **Table 23**.

Project buildout analyzed previously in this report has the highest amount of daily trips on weekdays and Saturdays. However, due to the large amount of office uses proposed in Scenarios 3 and 5, they would generate higher levels of morning and evening peak hour traffic, but would generate less Saturday trips.

Based on the comparison of daily and peak hour trip generation, the impacts of Alternatives 1 and 3 would be greater than the proposed project and additional analysis would be required. The impacts of Alternative 2 are expected to be similar to but less than the Phase 1 project.

TABLE 23
PROJECT ALTERNATIVES TRIP GENERATION COMPARISON

Scenario	Weekday							Saturday			
	Daily	AM Peak Hour			PM Peak Hour			Daily	Peak Hour		
		In	Out	Total	In	Out	Total		In	Out	Total
Phase 1 (Scenario 2A)	8,890	186	143	329	244	256	500	10,900	467	439	906
Full Buildout (Scenario 2)	12,160	131	162	293	405	338	743	15,640	664	645	1,309
Alternative 1 (Scenario 3)	9,560	**458**	125	**583**	353	**590**	**942**	8,530	422	400	9,560
Alternative 2 (Scenario 4)	6,920	128	82	210	199	210	409	7,890	343	308	651
Alternative 3 (Scenario 5)	4,280	**808**	92	**900**	60	**636**	**696**	-1,330	-31	-16	-47

Source: Fehr & Peers, April 2015

10.0 VEHICLE MILES OF TRAVEL

In response to Senate Bill 743 (SB 743), the Office of Planning and Research (OPR) is updating California Environmental Quality Act (CEQA) guidelines to include new transportation-related evaluation metrics. Draft guidelines were developed in August 2014 and public comments were received on the draft guidelines through November 2014. New guidelines have not yet been adopted and the final guidelines may change based on the comments received. In response to the draft guidelines, this preliminary assessment of the vehicle miles of travel (VMT) generated by the proposed Johnson Drive Economic Development Zone project in the City of Pleasanton was prepared.

The following provides a brief project description, language of the draft CEQA guidelines related to VMT, and preliminary results of the VMT assessment for the JEDZ project. Potential thresholds of significance are also presented.

DRAFT CEQA GUIDELINES

The following text is from the Proposed New Section 15064.3 of the CEQA guidelines as presented in *Updating Transportation Impacts Analysis in the CEQA Guidelines, Preliminary Discussion Draft of Updates to the CEQA Guidelines Implementing Senate Bill 743 (Steinberg, 2013)*[5].

> **Proposed New Section 15064.3.** *Determining the Significance of Transportation Impacts; Alternatives and Mitigation Measures*
>
> *(a) Purpose.*
>
> *When analyzing a project's potential environmental impacts related to transportation, primary considerations include the amount and distance of automobile travel associated with the project. Other relevant considerations include the effects of the project on transit and non-motorized travel and the safety of all travelers. Indirect effects of project-related transportation, such as impacts to air quality and noise, may also be relevant, but may be analyzed together with stationary sources in other portions of the environmental document. A project's effect on automobile delay does not constitute a significant environmental impact.*

[5] *Updating Transportation Impacts Analysis in the CEQA Guidelines (Draft),* August 6, 2014, Governor's Office of Planning and Research. Full document can be found here:
http://www.opr.ca.gov/docs/Final_Preliminary_Discussion_Draft_of_Updates_Implementing_SB_743_080614.pdf

(b) Criteria for Analyzing Transportation Impacts.

Section 15064 contains general rules governing the analysis, and the determination of significance, of environmental effects. Specific considerations involving transportation impacts are described in this section. For the purposes of this section, "vehicle miles traveled" refers to distance of automobile travel associated with a project.

(1) Vehicle Miles Traveled and Land Use Projects. Generally, transportation impacts of a project can be best measured using vehicle miles traveled. A development project that is not exempt and that result in vehicle miles traveled greater than regional average for the land use type (e.g. residential, employment, commercial) may indicate a significant impact. For the purposes of this subdivision, regional average should be measured per capita, per employee, per trip, per person-trip or other appropriate measure. Also for the purposes of this subdivision, region refers to the metropolitan planning organization or regional transportation planning agency within which the project is located. Development projects that locate within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor generally may be considered to have a less than significant transportation impact. Similarly, development projects that result in net decreases in vehicle miles traveled, compared to existing conditions, may be considered to have a less than significant transportation impact. Land use plans that are either consistent with a sustainable communities strategy, or that achieve at least an equivalent reduction in vehicle miles traveled as projected to result from implementation of a sustainable communities strategy, generally may be considered to have a less than significant impact.

Text of Proposed Amendments to Appendix G

b) Cause vehicle miles traveled (per capita, per service population, or other appropriate measure) that exceeds the regional average for that land use?

SIGNIFICANCE CRITERIA

Based on the information provided in the draft update to the CEQA guidelines, a new significance threshold was developed for the purposes of evaluating the potential VMT impact of the EDZ project.

- The project results in increased VMT per capita, and/or results in an average project trip length greater than the regional average as defined by Alameda County Transportation Commission (Alameda CTC).

As the Alameda CTC has not yet set regional average trip lengths for various land uses, an impact could be assessed if the project results in increased VMT per capita as compared to the no project condition.

ANALYSIS METHODS

To estimate vehicle miles of travel within the City of Pleasanton, both without and with the project, Fehr & Peers used the Alameda CTC travel demand model and Household Survey Data. The first step in the process was to review the land use and roadway network assumptions within the base year and future year models, reflective of 2010 and 2040 conditions. These are the most current base year and future year models that are available.

The model is a representation of the transportation networks and land uses that comprise the Bay area region and contains approximately 2,700 travel analysis zones (TAZs) which represent the land uses within Alameda County and neighboring counties. Additional details regarding the model can be found on the Alameda CTC website[6]. Of the total TAZs, 134 represent the City of Pleasanton. The project site is represented by TAZ 1155, which also includes the land uses associated with neighboring development.

Employment estimates for the project area as developed by Brion & Associates were used as inputs to the forecasting to estimate the net change in employment with the project. Residential and employment totals for the City of Pleasanton and the project zone are shown in **Table 24** for the base year and **Table 25** for the future year. As shown in Table 24, the City of Pleasanton is represented in the model with 25,500 residential units, correlating to a population of approximately 70,700. The model also includes approximately 50,000 jobs in Pleasanton. By 2040, the population of Pleasanton is expected to grow to 89,100 people with 66,600 jobs.

MODELING APPROACH

To assess the VMT generated by the project, three methods were used. The City of Pleasanton is measured as a whole to understand the project's influence on overall city-wide travel behavior. As opposed to analyzing project trips, analyzing project VMT requires the context of understanding how the proposed project would interact with the outside world, as adding housing to a jobs-rich area could reduce average vehicle trip length on a per capita basis, while adding jobs to an area with limited residential population could increase average trip length.

[6] http://www.alamedactc.org/app_pages/view/8079

TABLE 24
ALAMEDA CTC TRAVEL DEMAND MODEL
BASE YEAR CITY OF PLEASANTON AND PROJECT SITE LAND USES

Model Data	Base Year (2010)							
	Residential				Employment			
	Single Family House-holds	Multi Family House-holds	Total House-holds	Pop-ulation	Retail	Service	Other	Total
City of Pleasanton Existing Totals (A)	19,459	5,982	25,441	70,270	7,863	26,846	15,761	50,470
TAZ 1155 Without Project (Project Zone) (B)	0	0	0	0	38	633	514	1,185
Project Totals (C)	0	0	0	0	775	-314	46	507
TAZ 1155 With Project (Project Zone)	0	0	0	0	813	319	560	1,692
City of Pleasanton Total With Project (A+C)	19,459	5,982	25,441	70,270	8,638	26,532	15,807	50,977

Source: Alameda CTC Model, City of Pleasanton based on ABAG P13 Model.

TABLE 25
ALAMEDA CTC TRAVEL DEMAND MODEL
FUTURE YEAR CITY OF PLEASANTON AND PROJECT SITE LAND USES

Model Data	Base Year (2040)							
	Residential				Employment			
	Single Family House-holds	Multi Family House-holds	Total House-holds	Pop-ulation	Retail	Service	Other	Total
City of Pleasanton Future Totals (A)	22,338	9,085	31,423	89,139	9,462	37,338	19,779	66,579
TAZ 1155 Without Project (Project Zone) (B)	0	0	0	0	46	755	548	1,349
Project Totals (C)	0	0	0	0	775	-314	46	507
TAZ 1155 With Project (Project Zone)	0	0	0	0	821	441	594	1,856
City of Pleasanton Total With Project (A+C)	22,338	9,085	31,423	89,139	10,237	37,024	19,825	67,086

Source: Alameda CTC Model, City of Pleasanton based on ABAG P13 Model.

The first method tracks all vehicular trips generated by the City of Pleasanton across the entire regional network and assigns a portion of the trip length for trips with an origin or destination outside Pleasanton to the total (Origin-Destination Method – Shared Accounting), the second captures only vehicle trips made within the City of Pleasanton boundaries, regardless of their origin or destination (boundary method), and the third is the sum of the length of all trips generated by the project (Origin-Destination Method – Total Accounting).

The resulting metrics for each accounting method are the total VMT, and a summary of the average VMT per household and service population (residents and workers) for without and with Project conditions. This allows for a calculation of the net-change in VMT with the project. All methodologies were implemented within the Alameda CTC travel demand model, where the number of trips on a roadway link are multiplied by the link distance and then summed according to the accounting methods described below.

ORIGIN-DESTINATION METHOD – SHARED ACCOUNTING

An origin-destination (OD) method tracks all vehicular trips generated by the City of Pleasanton (including the proposed Project) across the entire regional network. Four types of trips are isolated, which shares the responsibility of trips with other jurisdictions:

- Internal-Internal (II) trips: Include all trips that begin and end within the City of Pleasanton.
- Internal-External (IX) trips: Include one-half of all trips that begin in within city limits and end outside city limits. The City of Pleasanton assumes half the responsibility of these kinds of trips.
- External-Internal (XI) trips: Include one-half of all trips that begin outside city limits and end inside city limits. The City of Pleasanton assumes half the responsibility of these kinds of trips.
- External-External (XX) trips: Trips that begin and end outside the City of Pleasanton are not included. The City of Pleasanton assumes no responsibility for External-External trip type VMTs.

To estimate VMT per service population, trips are multiplied by the trip distance for all trip types to estimate VMT and then divided by the residential and working population of the City of Pleasanton.

The resulting metrics are a summary of the average VMT per service population for without and with Project conditions.

BOUNDARY METHOD

A boundary based estimate captures all the VMT on a roadway network within a specified geographic area such as the city limits. A limitation of this method is that it does not capture trips that extend beyond a jurisdictions boundary and includes through traffic on regional roadway facilities, such as I-580 and I-680. However, this information can use useful in estimating total greenhouse gas emissions within a specified geographic area.

ORIGIN-DESTINATION METHOD – TOTAL ACCOUNTING

The Origin-Destination Method – Total Accounting is similar to the shared accounting method except that the full trip length of trips outside the jurisdictional boundaries is captured, as opposed to only half of the entire trip. The model is used to trace each trip from its origin/destination and is more accurate than applying a regional average trip length to the vehicle trip generation. External-external trips are still not included in this accounting system.

ANALYSIS RESULTS

The base and future year Alameda CTC Models were executed for the without and with project scenarios. Results are shown in **Table 26** and **Table 27** for the Origin-Destination Method – Shared Accounting method, **Table 28** and **Table 29** for the Boundary Method and **Table 30** and **Table 31** for the Origin-Destination Method – Total Accounting for the base year and future year.

As shown in Table 26, based on the Shared Accounting method, the existing VMT per household in Pleasanton is approximately 69 miles, which captures trips made to and from a place of residence, and also includes other types of trips such as work, shopping, or social/recreational trips. On a per capita basis, including residents and workers, approximately 14.5 vehicle miles of travel per day are generated. The addition of project land uses would increase total VMT, and would incrementally increase VMT on a per household and per capita basis as it would add employment to an area that is already developed and generating trips. In the future, VMT per household in Pleasanton is expected to remain relatively consistent to approximately 69 miles per household but decrease to 13.9 miles per capita, as shown on Table 27. The project would result in a slight increase in VMT per household and VMT per capita in the future condition.

TABLE 26
BASE YEAR ORIGIN-DESTINATION METHOD – SHARED ACCOUNTING

Scenario	Households	Population	Employment	Daily VMT	VMT / HH	VMT per Capita (Pop + Emp)
Year 2010	25,441	70,270	50,470	1,747,200	68.68	14.47
Year 2010 with Project	25,441	70,270	50,977	1,759,800	69.17	14.51
Project Increment	*0*	*0*	*507*	*12,600*	*0.49*	*0.04*

Note: Annualized VMT is typically 354 times the daily VMT to account for less vehicle miles of travel on weekends, holidays and summer periods.

Source: Alameda CTC Model, City of Pleasanton based on ABAG P13 Model, Fehr & Peers, 2015.

TABLE 27
FUTURE YEAR ORIGIN-DESTINATION METHOD – SHARED ACCOUNTING

Scenario	Households	Population	Employment	Daily VMT	VMT / HH	VMT per Capita (Pop + Emp)
Year 2040	31,423	89,139	66,579	2,158,000	68.68	13.86
Year 2040 with Project	31,423	89,139	67,086	2,169,600	69.04	13.89
Project Increment	*0*	*0*	*507*	*11,600*	*0.36*	*0.03*

Source: Alameda CTC Model, City of Pleasanton based on ABAG P13 Model, Fehr & Peers, 2015.

As shown in Table 28, based on the Boundary method, the existing VMT on all roads within Pleasanton is approximately 1,630,000 miles, with VMT per household of approximately 64 miles. On a per capita basis, including residents and workers, approximately 13.5 vehicle miles of travel per day are generated. The addition of project land uses would increase total VMT within the City of Pleasanton boundaries by approximately 12,500 miles, with the remainder of the trip length occurring outside the City boundaries. The addition of project land uses would increase total VMT under this accounting method, and results in an incremental increase in VMT on a per household and per capita basis. In the future, VMT per household in Pleasanton is expected to remain increase to approximately 131 miles per household and will increase to 26.4 miles per capita, as shown on Table 29, but these values reflect an increase in through traffic on regional roadways through the City. The project would result in a slight increase in VMT per household and VMT per capita in the future condition.

TABLE 28
BASE YEAR BOUNDARY METHOD

Scenario	Households	Population	Employment	Daily VMT[3]	VMT / HH	VMT per Capita (Pop + Emp)
Year 2010	25,441	70,270	50,470	1,629,700	64.06	13.50
Year 2010 with Project	25,441	70,270	50,977	1,642,200	64.55	13.54
Project Increment	*0*	*0*	*507*	*12,500*	*0.49*	*0.04*

Source: Alameda CTC Model, City of Pleasanton based on ABAG P13 Model, Fehr & Peers, 2015.

TABLE 29
FUTURE YEAR BOUNDARY METHOD

Scenario	Households	Population	Employment	Daily VMT[3]	VMT / HH	VMT per Capita (Pop + Emp)
Year 2040	31,423	89,139	66,579	4,103,100	130.58	26.35
Year 2040 with Project	31,423	89,139	67,086	4,119,600	131.10	26.37
Project Increment	*0*	*0*	*507*	*16,500*	*0.52*	*0.02*

Source: Alameda CTC Model, City of Pleasanton based on ABAG P13 Model, Fehr & Peers, 2015.

As shown in Table 30, based on the total accounting method, land uses in Pleasanton generate approximately 3.3 million vehicle miles of travel per day, accounting for the entire trip length, with VMT per capita, including residents and workers, of approximately 27 miles of travel per day. The addition of project land uses would increase total VMT generated by City of Pleasanton land uses by approximately 18,000 miles. The project results in an increase in VMT per household and per capita. In the future, VMT per household in Pleasanton is expected to increase slightly to 131 miles per household, with a slight decrease in VMT per capita to 26.4 miles, as shown on Table 31. The project would result in a slight increase in VMT per household and VMT per capita in the future condition. However, the year 2040 with project scenario would result in less than existing VMT per capita levels.

TABLE 30
BASE YEAR
ORIGIN-DESTINATION METHOD – TOTAL ACCOUNTING

Scenario	Households	Population	Employment	Daily VMT[3]	VMT / HH	VMT per Capita (Pop + Emp)
Year 2010	25,441	70,270	50,470	3,303,500	129.85	27.36
Year 2010 with Project	25,441	70,270	50,977	3,321,500	130.56	27.39
Project Increment	*0*	*0*	*507*	*18,000*	*0.71*	*0.03*

Source: Alameda CTC Model, City of Pleasanton based on ABAG P13 Model, Fehr & Peers, 2015.

TABLE 31
FUTURE YEAR
ORIGIN-DESTINATION METHOD – TOTAL ACCOUNTING

Scenario	Households	Population	Employment	Daily VMT[3]	VMT / HH	VMT per Capita (Pop + Emp)
Year 2040	31,423	89,139	66,579	4,103,100	130.58	26.35
Year 2040 with Project	31,423	89,139	67,086	4,119,600	131.10	26.37
Project Increment	*0*	*0*	*507*	*16,500*	*0.52*	*0.02*

Source: Alameda CTC Model, City of Pleasanton based on ABAG P13 Model, Fehr & Peers, 2015.

VMT CONCLUSIONS

All three vehicle trip accounting methods indicate that the project would contribute to increased vehicle miles of travel and VMT per capita. However, future VMT per capita would be less than the base year VMT per capita when using the total accounting methodology. As the Alameda CTC has not yet set thresholds for average trip lengths, and the project is expected to contribute to increased VMT per household and per capita, we conclude that the VMT impact of the proposed EDZ project is ***potentially significant*** based on the proposed significance criteria.

APPENDIX A: TRAFFIC COUNTS

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-001 San Ramon Road-I-580 WB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	San Ramon Road Southbound					I-580 WB Ramps Westbound					San Ramon Road Northbound					I-580 WB On-Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	164	134	0	298	93	0	89	0	182	0	91	59	0	150	0	0	0	0	0	630	0
07:15	0	142	86	0	228	110	0	135	0	245	0	137	59	0	196	0	0	0	0	0	669	0
07:30	0	233	149	0	382	132	0	163	0	295	0	201	44	0	245	0	0	0	0	0	922	0
07:45	0	282	158	0	440	187	0	168	0	355	0	190	37	0	227	0	0	0	0	0	1022	0
Total	0	821	527	0	1348	522	0	555	0	1077	0	619	199	0	818	0	0	0	0	0	3243	0
08:00	0	253	155	0	408	157	0	110	0	267	0	189	42	0	231	0	0	0	0	0	906	0
08:15	0	223	129	0	352	170	0	131	0	301	0	177	44	0	221	0	0	0	0	0	874	0
08:30	0	282	119	0	401	187	0	102	0	289	0	194	56	0	250	0	0	0	0	0	940	0
08:45	0	240	121	0	361	163	0	144	0	307	0	192	44	0	236	0	0	0	0	0	904	0
Total	0	998	524	0	1522	677	0	487	0	1164	0	752	186	0	938	0	0	0	0	0	3624	0
16:00	0	227	140	0	367	86	0	149	0	235	0	315	134	0	449	0	0	0	0	0	1051	0
16:15	0	213	155	0	368	67	0	182	0	249	0	306	139	0	445	0	0	0	0	0	1062	0
16:30	0	200	144	0	344	56	0	166	0	222	0	363	143	0	506	0	0	0	0	0	1072	0
16:45	0	218	138	0	356	67	0	170	0	237	0	375	143	0	518	0	0	0	0	0	1111	0
Total	0	858	577	0	1435	276	0	667	0	943	0	1359	559	0	1918	0	0	0	0	0	4296	0
17:00	0	241	160	0	401	62	0	182	0	244	0	402	176	0	578	0	0	0	0	0	1223	0
17:15	0	252	148	0	400	58	0	192	0	250	0	493	162	0	655	0	0	0	0	0	1305	0
17:30	0	246	159	0	405	70	0	195	0	265	0	425	160	0	585	0	0	0	0	0	1255	0
17:45	0	217	124	0	341	70	0	232	0	302	0	416	115	0	531	0	0	0	0	0	1174	0
Total	0	956	591	0	1547	260	0	801	0	1061	0	1736	613	0	2349	0	0	0	0	0	4957	0
Grand Total	0	3633	2219	0	5852	1735	0	2510	0	4245	0	4466	1557	0	6023	0	0	0	0	0	16120	0
Apprch %	0.0%	62.1%	37.9%	0.0%		40.9%	0.0%	59.1%	0.0%		0.0%	74.1%	25.9%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.0%	22.5%	13.8%	0.0%	36.3%	10.8%	0.0%	15.6%	0.0%	26.3%	0.0%	27.7%	9.7%	0.0%	37.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-001 San Ramon Road-I-580 WB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	San Ramon Road Southbound					I-580 WB Ramps Westbound					San Ramon Road Northbound					I-580 WB On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	282	158	0	440	187	0	168	0	355	0	190	37	0	227	0	0	0	0	0	1022
08:00	0	253	155	0	408	157	0	110	0	267	0	189	42	0	231	0	0	0	0	0	906
08:15	0	223	129	0	352	170	0	131	0	301	0	177	44	0	221	0	0	0	0	0	874
08:30	0	282	119	0	401	187	0	102	0	289	0	194	56	0	250	0	0	0	0	0	940
Total Volume	0	1040	561	0	1601	701	0	511	0	1212	0	750	179	0	929	0	0	0	0	0	3742
% App Total	0.0%	65.0%	35.0%	0.0%		57.8%	0.0%	42.2%	0.0%		0.0%	80.7%	19.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.922	.888	.000	.910	.937	.000	.760	.000	.854	.000	.966	.799	.000	.929	.000	.000	.000	.000	.000	.915

PM PEAK HOUR	San Ramon Road Southbound					I-580 WB Ramps Westbound					San Ramon Road Northbound					I-580 WB On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	241	160	0	401	62	0	182	0	244	0	402	176	0	578	0	0	0	0	0	1223
17:15	0	252	148	0	400	58	0	192	0	250	0	493	162	0	655	0	0	0	0	0	1305
17:30	0	246	159	0	405	70	0	195	0	265	0	425	160	0	585	0	0	0	0	0	1255
17:45	0	217	124	0	341	70	0	232	0	302	0	416	115	0	531	0	0	0	0	0	1174
Total Volume	0	956	591	0	1547	260	0	801	0	1061	0	1736	613	0	2349	0	0	0	0	0	4957
% App Total	0.0%	61.8%	38.2%	0.0%		24.5%	0.0%	75.5%	0.0%		0.0%	73.9%	26.1%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.948	.923	.000	.955	.929	.000	.863	.000	.878	.000	.880	.871	.000	.897	.000	.000	.000	.000	.000	.950

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-002 Foothill Road-I-580 EB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Foothill Road Southbound					I-580 EB On-Ramp Westbound					Foothill Road Northbound					I-580 EB Ramps Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	181	77	0	258	0	0	0	0	0	0	93	23	0	116	58	0	81	0	139	513	0
07:15	0	200	61	0	261	0	0	0	0	0	0	119	24	0	143	82	0	108	0	190	594	0
07:30	0	259	117	0	376	0	0	0	0	0	0	132	42	0	174	95	0	106	0	201	751	0
07:45	0	337	117	0	454	0	0	0	0	0	0	120	55	0	175	126	0	130	0	256	885	0
Total	0	977	372	0	1349	0	0	0	0	0	0	464	144	0	608	361	0	425	0	786	2743	0
08:00	0	319	109	0	428	0	0	0	0	0	0	118	49	0	167	105	0	144	0	249	844	0
08:15	0	294	99	0	393	0	0	0	0	0	0	143	40	0	183	89	0	135	0	224	800	0
08:30	0	340	129	0	469	0	0	0	0	0	0	140	90	0	230	99	0	148	0	247	946	0
08:45	0	317	89	0	406	0	0	0	0	0	0	152	74	0	226	97	0	142	0	239	871	0
Total	0	1270	426	0	1696	0	0	0	0	0	0	553	253	0	806	390	0	569	0	959	3461	0
16:00	0	223	92	0	315	0	0	0	0	0	0	346	191	0	537	104	0	76	0	180	1032	0
16:15	0	184	101	0	285	0	0	0	0	0	0	317	191	0	508	106	0	75	0	181	974	0
16:30	0	180	86	0	266	0	0	0	0	0	0	394	211	0	605	125	0	74	0	199	1070	0
16:45	0	195	88	0	283	0	0	0	0	0	0	370	204	0	574	128	0	80	0	208	1065	0
Total	0	782	367	0	1149	0	0	0	0	0	0	1427	797	0	2224	463	0	305	0	768	4141	0
17:00	0	187	104	0	291	0	0	0	0	0	0	492	202	0	694	110	0	80	0	190	1175	0
17:15	0	193	133	0	326	0	0	0	0	0	0	507	172	0	679	128	0	89	0	217	1222	0
17:30	0	201	105	0	306	0	0	0	0	0	0	463	192	0	655	137	0	91	0	228	1189	0
17:45	0	205	89	0	294	0	0	0	0	0	0	368	159	0	527	147	0	85	0	232	1053	0
Total	0	786	431	0	1217	0	0	0	0	0	0	1830	725	0	2555	522	0	345	0	867	4639	0
Grand Total	0	3815	1596	0	5411	0	0	0	0	0	0	4274	1919	0	6193	1736	0	1644	0	3380	14984	0
Apprch %	0.0%	70.5%	29.5%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	69.0%	31.0%	0.0%		51.4%	0.0%	48.6%	0.0%			
Total %	0.0%	25.5%	10.7%	0.0%	36.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.5%	12.8%	0.0%	41.3%	11.6%	0.0%	11.0%	0.0%	22.6%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-002 Foothill Road-I-580 EB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Foothill Road Southbound					I-580 EB On-Ramp Westbound					Foothill Road Northbound					I-580 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	337	117	0	454	0	0	0	0	0	0	120	55	0	175	126	0	130	0	256	885
08:00	0	319	109	0	428	0	0	0	0	0	0	118	49	0	167	105	0	144	0	249	844
08:15	0	294	99	0	393	0	0	0	0	0	0	143	40	0	183	89	0	135	0	224	800
08:30	0	340	129	0	469	0	0	0	0	0	0	140	90	0	230	99	0	148	0	247	946
Total Volume	0	1290	454	0	1744	0	0	0	0	0	0	521	234	0	755	419	0	557	0	976	3475
% App Total	0.0%	74.0%	26.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	69.0%	31.0%	0.0%		42.9%	0.0%	57.1%	0.0%		
PHF	.000	.949	.880	.000	.930	.000	.000	.000	.000	.000	.000	.911	.650	.000	.821	.831	.000	.941	.000	.953	.918

PM PEAK HOUR	Foothill Road Southbound					I-580 EB On-Ramp Westbound					Foothill Road Northbound					I-580 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	195	88	0	283	0	0	0	0	0	0	370	204	0	574	128	0	80	0	208	1065
17:00	0	187	104	0	291	0	0	0	0	0	0	492	202	0	694	110	0	80	0	190	1175
17:15	0	193	133	0	326	0	0	0	0	0	0	507	172	0	679	128	0	89	0	217	1222
17:30	0	201	105	0	306	0	0	0	0	0	0	463	192	0	655	137	0	91	0	228	1189
Total Volume	0	776	430	0	1206	0	0	0	0	0	0	1832	770	0	2602	503	0	340	0	843	4651
% App Total	0.0%	64.3%	35.7%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	70.4%	29.6%	0.0%		59.7%	0.0%	40.3%	0.0%		
PHF	.000	.965	.808	.000	.925	.000	.000	.000	.000	.000	.000	.903	.944	.000	.937	.918	.000	.934	.000	.924	.952

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-003 Foothill Road-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Foothill Road Southbound					Stoneridge Drive Westbound					Foothill Road Northbound					Laurel Creek Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	30	66	2	0	98	50	1	56	0	107	2	47	7	0	56	2	4	2	0	8	269	0
07:15	31	78	1	0	110	29	0	57	0	86	4	64	9	1	78	1	1	4	0	6	280	1
07:30	59	88	0	0	147	41	3	66	0	110	0	67	14	1	82	0	6	4	0	10	349	1
07:45	76	89	0	0	165	24	3	68	1	96	3	47	26	0	76	1	6	9	1	17	354	2
Total	196	321	3	0	520	144	7	247	1	399	9	225	56	2	292	4	17	19	1	41	1252	4
08:00	76	78	2	0	156	18	4	70	0	92	0	66	12	0	78	0	7	7	0	14	340	0
08:15	65	56	1	0	122	25	0	68	0	93	0	61	24	0	85	0	14	10	0	24	324	0
08:30	71	89	0	0	160	38	7	87	0	132	4	81	25	0	110	3	11	26	0	40	442	0
08:45	75	54	0	0	129	25	7	86	0	118	11	96	34	0	141	4	4	13	0	21	409	0
Total	287	277	3	0	567	106	18	311	0	435	15	304	95	0	414	7	36	56	0	99	1515	0
16:00	69	96	4	0	169	22	10	76	0	108	7	65	21	0	93	2	14	17	0	33	403	0
16:15	68	87	2	0	157	24	7	80	0	111	5	46	18	0	69	4	12	5	0	21	358	0
16:30	80	99	8	0	187	21	7	95	0	123	3	71	16	0	90	2	9	10	0	21	421	0
16:45	68	96	2	0	166	18	8	78	0	104	6	63	18	0	87	2	13	8	0	23	380	0
Total	285	378	16	0	679	85	32	329	0	446	21	245	73	0	339	10	48	40	0	98	1562	0
17:00	83	103	2	0	188	25	12	117	1	155	7	69	20	0	96	2	9	15	0	26	465	1
17:15	110	106	2	0	218	14	22	105	0	141	10	68	16	0	94	0	14	13	0	27	480	0
17:30	69	126	0	0	195	36	13	78	1	128	4	94	23	0	121	0	6	11	0	17	461	1
17:45	67	94	0	0	161	18	8	78	1	105	5	71	18	0	94	2	7	9	0	18	378	1
Total	329	429	4	0	762	93	55	378	3	529	26	302	77	0	405	4	36	48	0	88	1784	3
Grand Total	1097	1405	26	0	2528	428	112	1265	4	1809	71	1076	301	2	1450	25	137	163	1	326	6113	7
Apprch %	43.4%	55.6%	1.0%	0.0%		23.7%	6.2%	69.9%	0.2%		4.9%	74.2%	20.8%	0.1%		7.7%	42.0%	50.0%	0.3%			
Total %	17.9%	23.0%	0.4%	0.0%	41.4%	7.0%	1.8%	20.7%	0.1%	29.6%	1.2%	17.6%	4.9%	0.0%	23.7%	0.4%	2.2%	2.7%	0.0%	5.3%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-003 Foothill Road-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Foothill Road Southbound					Stoneridge Drive Westbound					Foothill Road Northbound					Laurel Creek Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	76	78	2	0	156	18	4	70	0	92	0	66	12	0	78	0	7	7	0	14	340
08:15	65	56	1	0	122	25	0	68	0	93	0	61	24	0	85	0	14	10	0	24	324
08:30	71	89	0	0	160	38	7	87	0	132	4	81	25	0	110	3	11	26	0	40	442
08:45	75	54	0	0	129	25	7	86	0	118	11	96	34	0	141	4	4	13	0	21	409
Total Volume	287	277	3	0	567	106	18	311	0	435	15	304	95	0	414	7	36	56	0	99	1515
% App Total	50.6%	48.9%	0.5%	0.0%		24.4%	4.1%	71.5%	0.0%		3.6%	73.4%	22.9%	0.0%		7.1%	36.4%	56.6%	0.0%		
PHF	.944	.778	.375	.000	.886	.697	.643	.894	.000	.824	.341	.792	.699	.000	.734	.438	.643	.538	.000	.619	.857

PM PEAK HOUR	Foothill Road Southbound					Stoneridge Drive Westbound					Foothill Road Northbound					Laurel Creek Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	68	96	2	0	166	18	8	78	0	104	6	63	18	0	87	2	13	8	0	23	380
17:00	83	103	2	0	188	25	12	117	1	155	7	69	20	0	96	2	9	15	0	26	465
17:15	110	106	2	0	218	14	22	105	0	141	10	68	16	0	94	0	14	13	0	27	480
17:30	69	126	0	0	195	36	13	78	1	128	4	94	23	0	121	0	6	11	0	17	461
Total Volume	330	431	6	0	767	93	55	378	2	528	27	294	77	0	398	4	42	47	0	93	1786
% App Total	43.0%	56.2%	0.8%	0.0%		17.6%	10.4%	71.6%	0.4%		6.8%	73.9%	19.3%	0.0%		4.3%	45.2%	50.5%	0.0%		
PHF	.750	.855	.750	.000	.880	.646	.625	.808	.500	.852	.675	.782	.837	.000	.822	.500	.750	.783	.000	.861	.930

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-004 I-680 SB Ramps-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	72	0	94	0	166	0	166	63	0	229	0	0	0	0	0	0	78	31	0	109	504	0
07:15	73	0	90	0	163	0	164	83	0	247	0	0	0	0	0	0	82	25	0	107	517	0
07:30	128	0	138	0	266	0	257	82	0	339	0	0	0	0	0	0	138	37	0	175	780	0
07:45	119	0	132	0	251	0	367	69	0	436	0	0	0	0	0	0	163	34	0	197	884	0
Total	392	0	454	0	846	0	954	297	0	1251	0	0	0	0	0	0	461	127	0	588	2685	0
08:00	113	0	180	0	293	0	330	91	0	421	0	0	0	0	0	0	125	44	0	169	883	0
08:15	117	0	173	0	290	0	377	87	0	464	0	0	0	0	0	0	159	43	0	202	956	0
08:30	137	0	179	0	316	0	441	82	0	523	0	0	0	0	0	0	145	41	0	186	1025	0
08:45	143	0	191	0	334	0	417	78	0	495	0	0	0	0	0	0	188	42	0	230	1059	0
Total	510	0	723	0	1233	0	1565	338	0	1903	0	0	0	0	0	0	617	170	0	787	3923	0
16:00	150	0	100	0	250	0	215	149	0	364	0	0	0	0	0	0	342	115	0	457	1071	0
16:15	156	0	93	0	249	0	206	101	0	307	0	0	0	0	0	0	361	101	0	462	1018	0
16:30	139	0	114	0	253	0	197	147	0	344	0	0	0	0	0	0	383	106	0	489	1086	0
16:45	154	0	108	0	262	0	199	171	0	370	0	0	0	0	0	0	422	116	0	538	1170	0
Total	599	0	415	0	1014	0	817	568	0	1385	0	0	0	0	0	0	1508	438	0	1946	4345	0
17:00	210	0	102	0	312	0	232	218	0	450	0	0	0	0	0	0	521	181	0	702	1464	0
17:15	187	0	111	0	298	0	259	222	0	481	0	0	0	0	0	0	472	168	0	640	1419	0
17:30	138	0	118	0	256	0	241	199	0	440	0	0	0	0	0	0	483	114	0	597	1293	0
17:45	131	0	99	0	230	0	204	139	0	343	0	0	0	0	0	0	340	100	0	440	1013	0
Total	666	0	430	0	1096	0	936	778	0	1714	0	0	0	0	0	0	1816	563	0	2379	5189	0
Grand Total	2167	0	2022	0	4189	0	4272	1981	0	6253	0	0	0	0	0	0	4402	1298	0	5700	16142	0
Apprch %	51.7%	0.0%	48.3%	0.0%		0.0%	68.3%	31.7%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	77.2%	22.8%	0.0%			
Total %	13.4%	0.0%	12.5%	0.0%	26.0%	0.0%	26.5%	12.3%	0.0%	38.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.3%	8.0%	0.0%	35.3%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-004 I-680 SB Ramps-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	113	0	180	0	293	0	330	91	0	421	0	0	0	0	0	0	125	44	0	169	883
08:15	117	0	173	0	290	0	377	87	0	464	0	0	0	0	0	0	159	43	0	202	956
08:30	137	0	179	0	316	0	441	82	0	523	0	0	0	0	0	0	145	41	0	186	1025
08:45	143	0	191	0	334	0	417	78	0	495	0	0	0	0	0	0	188	42	0	230	1059
Total Volume	510	0	723	0	1233	0	1565	338	0	1903	0	0	0	0	0	0	617	170	0	787	3923
% App Total	41.4%	0.0%	58.6%	0.0%		0.0%	82.2%	17.8%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	78.4%	21.6%	0.0%		
PHF	.892	.000	.946	.000	.923	.000	.887	.929	.000	.910	.000	.000	.000	.000	.000	.000	.820	.966	.000	.855	.926

PM PEAK HOUR	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	154	0	108	0	262	0	199	171	0	370	0	0	0	0	0	0	422	116	0	538	1170
17:00	210	0	102	0	312	0	232	218	0	450	0	0	0	0	0	0	521	181	0	702	1464
17:15	187	0	111	0	298	0	259	222	0	481	0	0	0	0	0	0	472	168	0	640	1419
17:30	138	0	118	0	256	0	241	199	0	440	0	0	0	0	0	0	483	114	0	597	1293
Total Volume	689	0	439	0	1128	0	931	810	0	1741	0	0	0	0	0	0	1898	579	0	2477	5346
% App Total	61.1%	0.0%	38.9%	0.0%		0.0%	53.5%	46.5%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	76.6%	23.4%	0.0%		
PHF	.820	.000	.930	.000	.904	.000	.899	.912	.000	.905	.000	.000	.000	.000	.000	.000	.911	.800	.000	.882	.913

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-005 I-680 NB Ramps-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	0	0	0	0	175	148	0	323	49	0	91	0	140	0	112	37	0	149	612	0
07:15	0	0	0	0	0	0	202	214	0	416	54	0	101	0	155	0	123	34	0	157	728	0
07:30	0	0	0	0	0	0	235	210	0	445	93	0	107	0	200	0	208	50	0	258	903	0
07:45	0	0	0	0	0	0	322	221	0	543	125	0	164	0	289	0	223	57	0	280	1112	0
Total	0	0	0	0	0	0	934	793	0	1727	321	0	463	0	784	0	666	178	0	844	3355	0
08:00	0	0	0	0	0	0	282	201	0	483	133	0	138	0	271	0	201	42	0	243	997	0
08:15	0	0	0	0	0	0	331	204	0	535	142	0	159	0	301	0	214	61	0	275	1111	0
08:30	0	0	0	0	0	0	377	193	0	570	177	0	156	0	333	0	221	56	0	277	1180	0
08:45	0	0	0	0	0	0	316	133	0	449	160	0	185	0	345	0	264	69	0	333	1127	0
Total	0	0	0	0	0	0	1306	731	0	2037	612	0	638	0	1250	0	900	228	0	1128	4415	0
16:00	0	0	0	0	0	0	296	218	0	514	50	0	61	0	111	0	344	138	0	482	1107	0
16:15	0	0	0	0	0	0	270	221	0	491	53	0	81	0	134	0	380	145	0	525	1150	0
16:30	0	0	0	0	0	0	274	216	0	490	58	0	68	0	126	0	361	166	0	527	1143	0
16:45	0	0	0	0	0	0	338	253	0	591	47	0	94	0	141	0	413	167	0	580	1312	0
Total	0	0	0	0	0	0	1178	908	0	2086	208	0	304	0	512	0	1498	616	0	2114	4712	0
17:00	0	0	0	0	0	0	392	282	0	674	60	0	77	0	137	0	479	235	0	714	1525	0
17:15	0	0	1	0	1	0	407	278	0	685	65	0	78	0	143	0	519	167	0	686	1515	0
17:30	0	0	0	0	0	0	372	218	0	590	63	0	92	0	155	0	415	186	0	601	1346	0
17:45	0	0	0	0	0	0	285	214	0	499	53	0	91	0	144	0	357	126	0	483	1126	0
Total	0	0	1	0	1	0	1456	992	0	2448	241	0	338	0	579	0	1770	714	0	2484	5512	0
Grand Total	0	0	1	0	1	0	4874	3424	0	8298	1382	0	1743	0	3125	0	4834	1736	0	6570	17994	0
Apprch %	0.0%	0.0%	100.0%	0.0%		0.0%	58.7%	41.3%	0.0%		44.2%	0.0%	55.8%	0.0%		0.0%	73.6%	26.4%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.1%	19.0%	0.0%	46.1%	7.7%	0.0%	9.7%	0.0%	17.4%	0.0%	26.9%	9.6%	0.0%	36.5%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-005 I-680 NB Ramps-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	0	0	0	0	0	282	201	0	483	133	0	138	0	271	0	201	42	0	243	997
08:15	0	0	0	0	0	0	331	204	0	535	142	0	159	0	301	0	214	61	0	275	1111
08:30	0	0	0	0	0	0	377	193	0	570	177	0	156	0	333	0	221	56	0	277	1180
08:45	0	0	0	0	0	0	316	133	0	449	160	0	185	0	345	0	264	69	0	333	1127
Total Volume	0	0	0	0	0	0	1306	731	0	2037	612	0	638	0	1250	0	900	228	0	1128	4415
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	64.1%	35.9%	0.0%		49.0%	0.0%	51.0%	0.0%		0.0%	79.8%	20.2%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.866	.896	.000	.893	.864	.000	.862	.000	.906	.000	.852	.826	.000	.847	.935

PM PEAK HOUR	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	338	253	0	591	47	0	94	0	141	0	413	167	0	580	1312
17:00	0	0	0	0	0	0	392	282	0	674	60	0	77	0	137	0	479	235	0	714	1525
17:15	0	0	1	0	1	0	407	278	0	685	65	0	78	0	143	0	519	167	0	686	1515
17:30	0	0	0	0	0	0	372	218	0	590	63	0	92	0	155	0	415	186	0	601	1346
Total Volume	0	0	1	0	1	0	1509	1031	0	2540	235	0	341	0	576	0	1826	755	0	2581	5698
% App Total	0.0%	0.0%	100.0%	0.0%		0.0%	59.4%	40.6%	0.0%		40.8%	0.0%	59.2%	0.0%		0.0%	70.7%	29.3%	0.0%		
PHF	.000	.000	.250	.000	.250	.000	.927	.914	.000	.927	.904	.000	.907	.000	.929	.000	.880	.803	.000	.904	.934

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-006 Johnson Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	17	0	44	0	61	1	267	26	0	294	1	0	0	0	1	50	145	4	0	199	555	0
07:15	14	0	38	0	52	4	375	28	0	407	3	2	2	0	7	40	188	6	0	234	700	0
07:30	27	1	50	0	78	4	406	15	0	425	4	1	3	0	8	44	237	5	0	286	797	0
07:45	12	1	64	0	77	3	466	30	1	500	4	0	1	0	5	66	331	4	0	401	983	1
Total	70	2	196	0	268	12	1514	99	1	1626	12	3	6	0	21	200	901	19	0	1120	3035	1
08:00	9	1	71	0	81	2	426	25	0	453	4	1	2	0	7	34	313	1	0	348	889	0
08:15	11	0	54	0	65	4	453	16	0	473	3	0	3	0	6	51	334	6	0	391	935	0
08:30	12	0	47	0	59	3	544	17	1	565	4	0	5	0	9	49	306	12	0	367	1000	1
08:45	9	0	38	0	47	2	390	28	0	420	0	1	1	0	2	69	380	5	2	456	925	2
Total	41	1	210	0	252	11	1813	86	1	1911	11	2	11	0	24	203	1333	24	2	1562	3749	3
16:00	32	1	91	0	124	7	443	23	0	473	6	0	2	0	8	36	369	10	3	418	1023	3
16:15	16	0	74	0	90	4	379	28	0	411	14	1	5	0	20	93	351	9	0	453	974	0
16:30	24	0	70	0	94	5	413	22	2	442	17	1	7	0	25	62	354	6	0	422	983	2
16:45	22	0	80	0	102	2	475	36	0	513	3	0	3	0	6	89	415	3	1	508	1129	1
Total	94	1	315	0	410	18	1710	109	2	1839	40	2	17	0	59	280	1489	28	4	1801	4109	6
17:00	31	0	127	0	158	5	563	24	2	594	3	0	6	0	9	69	460	9	0	538	1299	2
17:15	21	2	105	0	128	4	559	48	0	611	8	1	2	0	11	112	483	8	0	603	1353	0
17:30	29	2	92	0	123	11	511	29	0	551	5	0	8	0	13	74	418	11	0	503	1190	0
17:45	23	1	71	0	95	3	417	19	0	439	5	1	15	0	21	84	366	7	0	457	1012	0
Total	104	5	395	0	504	23	2050	120	2	2195	21	2	31	0	54	339	1727	35	0	2101	4854	2
Grand Total	309	9	1116	0	1434	64	7087	414	6	7571	84	9	65	0	158	1022	5450	106	6	6584	15747	12
Apprch %	21.5%	0.6%	77.8%	0.0%		0.8%	93.6%	5.5%	0.1%		53.2%	5.7%	41.1%	0.0%		15.5%	82.8%	1.6%	0.1%			
Total %	2.0%	0.1%	7.1%	0.0%	9.1%	0.4%	45.0%	2.6%	0.0%	48.1%	0.5%	0.1%	0.4%	0.0%	1.0%	6.5%	34.6%	0.7%	0.0%	41.8%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-006 Johnson Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	12	1	64	0	77	3	466	30	1	500	4	0	1	0	5	66	331	4	0	401	983
08:00	9	1	71	0	81	2	426	25	0	453	4	1	2	0	7	34	313	1	0	348	889
08:15	11	0	54	0	65	4	453	16	0	473	3	0	3	0	6	51	334	6	0	391	935
08:30	12	0	47	0	59	3	544	17	1	565	4	0	5	0	9	49	306	12	0	367	1000
Total Volume	44	2	236	0	282	12	1889	88	2	1991	15	1	11	0	27	200	1284	23	0	1507	3807
% App Total	15.6%	0.7%	83.7%	0.0%		0.6%	94.9%	4.4%	0.1%		55.6%	3.7%	40.7%	0.0%		13.3%	85.2%	1.5%	0.0%		
PHF	.917	.500	.831	.000	.870	.750	.868	.733	.500	.881	.938	.250	.550	.000	.750	.758	.961	.479	.000	.940	.952

PM PEAK HOUR	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	22	0	80	0	102	2	475	36	0	513	3	0	3	0	6	89	415	3	1	508	1129
17:00	31	0	127	0	158	5	563	24	2	594	3	0	6	0	9	69	460	9	0	538	1299
17:15	21	2	105	0	128	4	559	48	0	611	8	1	2	0	11	112	483	8	0	603	1353
17:30	29	2	92	0	123	11	511	29	0	551	5	0	8	0	13	74	418	11	0	503	1190
Total Volume	103	4	404	0	511	22	2108	137	2	2269	19	1	19	0	39	344	1776	31	1	2152	4971
% App Total	20.2%	0.8%	79.1%	0.0%		1.0%	92.9%	6.0%	0.1%		48.7%	2.6%	48.7%	0.0%		16.0%	82.5%	1.4%	0.0%		
PHF	.831	.500	.795	.000	.809	.500	.936	.714	.250	.928	.594	.250	.594	.000	.750	.768	.919	.705	.250	.892	.919

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-007 Johnson Drive-Commerce Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	19	44	0	0	63	13	0	5	0	18	0	19	31	0	50	0	0	0	0	0	131	0
07:15	5	34	0	0	39	14	0	2	1	17	0	34	22	0	56	0	0	0	0	0	112	1
07:30	9	50	0	0	59	8	0	5	0	13	0	33	22	0	55	0	0	0	0	0	127	0
07:45	15	41	0	0	56	22	0	7	0	29	0	49	36	0	85	0	0	0	0	0	170	0
Total	48	169	0	0	217	57	0	19	1	77	0	135	111	0	246	0	0	0	0	0	540	1
08:00	14	36	0	0	50	9	0	12	0	21	0	36	21	0	57	0	0	0	0	0	128	0
08:15	5	30	0	0	35	11	0	9	0	20	0	38	21	0	59	0	0	0	0	0	114	0
08:30	8	25	0	0	33	13	0	8	0	21	0	57	20	0	77	0	0	0	0	0	131	0
08:45	9	32	0	0	41	14	0	8	0	22	0	56	36	0	92	0	0	0	0	0	155	0
Total	36	123	0	0	159	47	0	37	0	84	0	187	98	0	285	0	0	0	0	0	528	0
16:00	11	50	0	0	61	44	0	22	0	66	0	42	15	0	57	0	0	0	0	0	184	0
16:15	10	36	0	0	46	29	0	5	0	34	0	71	18	0	89	0	0	0	0	0	169	0
16:30	9	41	0	0	50	31	0	20	0	51	0	65	20	0	85	0	0	0	0	0	186	0
16:45	9	47	0	0	56	29	0	16	0	45	0	63	32	0	95	0	0	0	0	0	196	0
Total	39	174	0	0	213	133	0	63	0	196	0	241	85	0	326	0	0	0	0	0	735	0
17:00	13	84	0	0	97	52	0	11	0	63	0	67	29	0	96	0	0	0	0	0	256	0
17:15	21	56	0	0	77	48	0	20	0	68	0	80	41	0	121	0	0	0	0	0	266	0
17:30	10	60	0	0	70	40	0	8	0	48	0	58	23	0	81	0	0	0	0	0	199	0
17:45	20	42	0	0	62	25	0	12	0	37	0	65	21	0	86	0	0	0	0	0	185	0
Total	64	242	0	0	306	165	0	51	0	216	0	270	114	0	384	0	0	0	0	0	906	0
Grand Total	187	708	0	0	895	402	0	170	1	573	0	833	408	0	1241	0	0	0	0	0	2709	1
Apprch %	20.9%	79.1%	0.0%	0.0%		70.2%	0.0%	29.7%	0.2%		0.0%	67.1%	32.9%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	6.9%	26.1%	0.0%	0.0%	33.0%	14.8%	0.0%	6.3%	0.0%	21.2%	0.0%	30.7%	15.1%	0.0%	45.8%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-007 Johnson Drive-Commerce Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	15	41	0	0	56	22	0	7	0	29	0	49	36	0	85	0	0	0	0	0	170
08:00	14	36	0	0	50	9	0	12	0	21	0	36	21	0	57	0	0	0	0	0	128
08:15	5	30	0	0	35	11	0	9	0	20	0	38	21	0	59	0	0	0	0	0	114
08:30	8	25	0	0	33	13	0	8	0	21	0	57	20	0	77	0	0	0	0	0	131
Total Volume	42	132	0	0	174	55	0	36	0	91	0	180	98	0	278	0	0	0	0	0	543
% App Total	24.1%	75.9%	0.0%	0.0%		60.4%	0.0%	39.6%	0.0%		0.0%	64.7%	35.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.700	.805	.000	.000	.777	.625	.000	.750	.000	.784	.000	.789	.681	.000	.818	.000	.000	.000	.000	.000	.799

PM PEAK HOUR	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	9	47	0	0	56	29	0	16	0	45	0	63	32	0	95	0	0	0	0	0	196
17:00	13	84	0	0	97	52	0	11	0	63	0	67	29	0	96	0	0	0	0	0	256
17:15	21	56	0	0	77	48	0	20	0	68	0	80	41	0	121	0	0	0	0	0	266
17:30	10	60	0	0	70	40	0	8	0	48	0	58	23	0	81	0	0	0	0	0	199
Total Volume	53	247	0	0	300	169	0	55	0	224	0	268	125	0	393	0	0	0	0	0	917
% App Total	17.7%	82.3%	0.0%	0.0%		75.4%	0.0%	24.6%	0.0%		0.0%	68.2%	31.8%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.631	.735	.000	.000	.773	.813	.000	.688	.000	.824	.000	.838	.762	.000	.812	.000	.000	.000	.000	.000	.862

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-008 Johnson Drive-Park and Ride Lot.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	55	1	0	56	0	0	0	0	0	11	57	0	0	68	0	0	5	0	5	129	0
07:15	0	51	3	0	54	0	0	0	0	0	4	67	0	0	71	0	0	2	0	2	127	0
07:30	0	68	0	0	68	0	0	0	0	0	8	57	0	0	65	0	0	3	0	3	136	0
07:45	0	77	2	0	79	0	0	0	0	0	8	81	0	1	90	3	0	4	0	7	176	1
Total	0	251	6	0	257	0	0	0	0	0	31	262	0	1	294	3	0	14	0	17	568	1
08:00	0	71	0	0	71	0	0	0	0	0	3	61	0	0	64	0	0	5	0	5	140	0
08:15	0	70	0	0	70	0	0	0	0	0	0	65	0	0	65	0	0	0	0	0	135	0
08:30	0	57	0	0	57	0	0	0	0	0	1	77	0	0	78	0	0	0	0	0	135	0
08:45	0	45	0	0	45	0	0	0	0	0	1	87	0	0	88	0	0	2	0	2	135	0
Total	0	243	0	0	243	0	0	0	0	0	5	290	0	0	295	0	0	7	0	7	545	0
16:00	0	115	0	0	115	0	0	0	0	0	6	53	0	0	59	0	0	5	0	5	179	0
16:15	0	80	0	0	80	0	0	0	0	0	9	104	0	0	113	0	0	12	0	12	205	0
16:30	0	84	0	0	84	0	0	0	0	0	3	94	0	0	97	0	0	6	0	6	187	0
16:45	0	94	2	0	96	0	0	0	0	0	7	115	0	0	122	1	0	15	0	16	234	0
Total	0	373	2	0	375	0	0	0	0	0	25	366	0	0	391	1	0	38	0	39	805	0
17:00	0	155	0	0	155	0	0	0	0	0	2	93	0	1	96	0	0	3	0	3	254	1
17:15	0	112	0	0	112	0	0	0	0	0	11	149	0	0	160	2	0	17	0	19	291	0
17:30	0	104	0	0	104	0	0	0	0	0	14	92	0	0	106	0	0	22	0	22	232	0
17:45	0	78	0	0	78	0	0	0	0	0	5	97	0	0	102	1	0	11	0	12	192	0
Total	0	449	0	0	449	0	0	0	0	0	32	431	0	1	464	3	0	53	0	56	969	1
Grand Total	0	1316	8	0	1324	0	0	0	0	0	93	1349	0	2	1444	7	0	112	0	119	2887	2
Apprch %	0.0%	99.4%	0.6%	0.0%		0.0%	0.0%	0.0%	0.0%		6.4%	93.4%	0.0%	0.1%		5.9%	0.0%	94.1%	0.0%			
Total %	0.0%	45.6%	0.3%	0.0%	45.9%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	46.7%	0.0%	0.1%	50.0%	0.2%	0.0%	3.9%	0.0%	4.1%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-008 Johnson Drive-Park and Ride Lot.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	68	0	0	68	0	0	0	0	0	8	57	0	0	65	0	0	3	0	3	136
07:45	0	77	2	0	79	0	0	0	0	0	8	81	0	1	90	3	0	4	0	7	176
08:00	0	71	0	0	71	0	0	0	0	0	3	61	0	0	64	0	0	5	0	5	140
08:15	0	70	0	0	70	0	0	0	0	0	0	65	0	0	65	0	0	0	0	0	135
Total Volume	0	286	2	0	288	0	0	0	0	0	19	264	0	1	284	3	0	12	0	15	587
% App Total	0.0%	99.3%	0.7%	0.0%		0.0%	0.0%	0.0%	0.0%		6.7%	93.0%	0.0%	0.4%		20.0%	0.0%	80.0%	0.0%		
PHF	.000	.929	.250	.000	.911	.000	.000	.000	.000	.000	.594	.815	.000	.250	.789	.250	.000	.600	.000	.536	.834

PM PEAK HOUR	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	94	2	0	96	0	0	0	0	0	7	115	0	0	122	1	0	15	0	16	234
17:00	0	155	0	0	155	0	0	0	0	0	2	93	0	1	96	0	0	3	0	3	254
17:15	0	112	0	0	112	0	0	0	0	0	11	149	0	0	160	2	0	17	0	19	291
17:30	0	104	0	0	104	0	0	0	0	0	14	92	0	0	106	0	0	22	0	22	232
Total Volume	0	465	2	0	467	0	0	0	0	0	34	449	0	1	484	3	0	57	0	60	1011
% App Total	0.0%	99.6%	0.4%	0.0%		0.0%	0.0%	0.0%	0.0%		7.0%	92.8%	0.0%	0.2%		5.0%	0.0%	95.0%	0.0%		
PHF	.000	.750	.250	.000	.753	.000	.000	.000	.000	.000	.607	.753	.000	.250	.756	.375	.000	.648	.000	.682	.869

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-009 Franklin Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Franklin Drive Southbound					Stoneridge Drive Westbound					Denker Drive Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	2	5	0	7	4	263	7	0	274	34	7	5	0	46	18	133	8	0	159	486	0
07:15	0	0	4	0	4	1	336	7	0	344	52	9	6	0	67	20	168	11	1	200	615	1
07:30	0	1	7	0	8	2	345	13	1	361	55	3	13	0	71	26	231	9	0	266	706	1
07:45	2	3	10	0	15	1	462	18	0	481	41	6	6	0	53	37	289	8	0	334	883	0
Total	2	6	26	0	34	8	1406	45	1	1460	182	25	30	0	237	101	821	36	1	959	2690	2
08:00	0	2	10	0	12	4	367	12	2	385	49	8	4	0	61	37	287	8	0	332	790	2
08:15	1	2	19	0	22	3	460	11	1	475	45	7	7	0	59	33	284	15	1	333	889	2
08:30	5	4	12	0	21	5	462	12	2	481	34	7	7	0	48	39	272	16	2	329	879	4
08:45	3	0	9	0	12	2	399	8	1	410	35	8	10	0	53	52	323	14	2	391	866	3
Total	9	8	50	0	67	14	1688	43	6	1751	163	30	28	0	221	161	1166	53	5	1385	3424	11
16:00	9	6	53	0	68	1	387	3	2	393	23	1	8	0	32	12	366	37	0	415	908	2
16:15	12	4	41	0	57	7	335	4	4	350	32	0	14	0	46	6	299	41	1	347	800	5
16:30	11	3	56	0	70	1	382	1	3	387	21	2	9	0	32	14	365	42	1	422	911	4
16:45	13	6	61	0	80	11	435	4	2	452	25	4	8	0	37	8	374	38	0	420	989	2
Total	45	19	211	0	275	20	1539	12	11	1582	101	7	39	0	147	40	1404	158	2	1604	3608	13
17:00	10	10	71	0	91	6	534	2	5	547	15	3	8	0	26	7	444	67	2	520	1184	7
17:15	15	4	54	0	73	13	511	3	1	528	27	6	14	0	47	8	421	52	0	481	1129	1
17:30	10	4	50	0	64	11	470	1	4	486	30	5	7	0	42	8	419	56	0	483	1075	4
17:45	9	6	40	0	55	10	369	1	2	382	21	4	10	0	35	16	323	42	2	383	855	4
Total	44	24	215	0	283	40	1884	7	12	1943	93	18	39	0	150	39	1607	217	4	1867	4243	16
Grand Total	100	57	502	0	659	82	6517	107	30	6736	539	80	136	0	755	341	4998	464	12	5815	13965	42
Apprch %	15.2%	8.6%	76.2%	0.0%		1.2%	96.7%	1.6%	0.4%		71.4%	10.6%	18.0%	0.0%		5.9%	86.0%	8.0%	0.2%			
Total %	0.7%	0.4%	3.6%	0.0%	4.7%	0.6%	46.7%	0.8%	0.2%	48.2%	3.9%	0.6%	1.0%	0.0%	5.4%	2.4%	35.8%	3.3%	0.1%	41.6%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-009 Franklin Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Franklin Drive Southbound					Stoneridge Drive Westbound					Denker Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	2	3	10	0	15	1	462	18	0	481	41	6	6	0	53	37	289	8	0	334	883
08:00	0	2	10	0	12	4	367	12	2	385	49	8	4	0	61	37	287	8	0	332	790
08:15	1	2	19	0	22	3	460	11	1	475	45	7	7	0	59	33	284	15	1	333	889
08:30	5	4	12	0	21	5	462	12	2	481	34	7	7	0	48	39	272	16	2	329	879
Total Volume	8	11	51	0	70	13	1751	53	5	1822	169	28	24	0	221	146	1132	47	3	1328	3441
% App Total	11.4%	15.7%	72.9%	0.0%		0.7%	96.1%	2.9%	0.3%		76.5%	12.7%	10.9%	0.0%		11.0%	85.2%	3.5%	0.2%		
PHF	.400	.688	.671	.000	.795	.650	.948	.736	.625	.947	.862	.875	.857	.000	.906	.936	.979	.734	.375	.994	.968

PM PEAK HOUR	Franklin Drive Southbound					Stoneridge Drive Westbound					Denker Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	13	6	61	0	80	11	435	4	2	452	25	4	8	0	37	8	374	38	0	420	989
17:00	10	10	71	0	91	6	534	2	5	547	15	3	8	0	26	7	444	67	2	520	1184
17:15	15	4	54	0	73	13	511	3	1	528	27	6	14	0	47	8	421	52	0	481	1129
17:30	10	4	50	0	64	11	470	1	4	486	30	5	7	0	42	8	419	56	0	483	1075
Total Volume	48	24	236	0	308	41	1950	10	12	2013	97	18	37	0	152	31	1658	213	2	1904	4377
% App Total	15.6%	7.8%	76.6%	0.0%		2.0%	96.9%	0.5%	0.6%		63.8%	11.8%	24.3%	0.0%		1.6%	87.1%	11.2%	0.1%		
PHF	.800	.600	.831	.000	.846	.788	.913	.625	.600	.920	.808	.750	.661	.000	.809	.969	.934	.795	.250	.915	.924

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-010 Dougherty Road-I-580 WB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Dougherty Road Southbound					I-580 WB Ramps Westbound					Dougherty Road Northbound					I-580 WB On-Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	170	138	0	308	45	0	111	0	156	0	221	80	0	301	0	0	0	0	0	765	0
07:15	0	236	159	0	395	63	0	111	0	174	0	259	79	0	338	0	0	0	0	0	907	0
07:30	0	331	138	0	469	41	0	149	0	190	0	263	64	0	327	0	0	0	0	0	986	0
07:45	0	357	151	0	508	67	0	125	0	192	0	260	70	0	330	0	0	0	0	0	1030	0
Total	0	1094	586	0	1680	216	0	496	0	712	0	1003	293	0	1296	0	0	0	0	0	3688	0
08:00	0	362	142	0	504	71	0	93	0	164	0	249	78	0	327	0	0	0	0	0	995	0
08:15	0	374	155	0	529	68	0	101	0	169	0	205	67	0	272	0	0	0	0	0	970	0
08:30	0	392	152	0	544	61	0	93	0	154	0	228	89	0	317	0	0	0	0	0	1015	0
08:45	0	372	149	0	521	71	0	117	0	188	0	280	87	0	367	0	0	0	0	0	1076	0
Total	0	1500	598	0	2098	271	0	404	0	675	0	962	321	0	1283	0	0	0	0	0	4056	0
16:00	0	267	150	0	417	53	0	105	0	158	0	399	217	0	616	0	0	0	0	0	1191	0
16:15	0	322	141	0	463	68	0	125	0	193	0	394	189	0	583	0	0	0	0	0	1239	0
16:30	0	286	145	0	431	61	0	112	0	173	0	460	232	0	692	0	0	0	0	0	1296	0
16:45	0	266	127	0	393	66	0	114	0	180	0	516	196	0	712	0	0	0	0	0	1285	0
Total	0	1141	563	0	1704	248	0	456	0	704	0	1769	834	0	2603	0	0	0	0	0	5011	0
17:00	0	344	181	0	525	64	0	108	0	172	0	495	282	0	777	0	0	0	0	0	1474	0
17:15	0	291	157	0	448	71	0	178	0	249	0	537	273	0	810	0	0	0	0	0	1507	0
17:30	0	317	120	0	437	63	0	160	0	223	0	571	222	0	793	0	0	0	0	0	1453	0
17:45	0	300	138	0	438	58	0	157	0	215	0	541	215	0	756	0	0	0	0	0	1409	0
Total	0	1252	596	0	1848	256	0	603	0	859	0	2144	992	0	3136	0	0	0	0	0	5843	0
Grand Total	0	4987	2343	0	7330	991	0	1959	0	2950	0	5878	2440	0	8318	0	0	0	0	0	18598	0
Apprch %	0.0%	68.0%	32.0%	0.0%		33.6%	0.0%	66.4%	0.0%		0.0%	70.7%	29.3%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.0%	26.8%	12.6%	0.0%	39.4%	5.3%	0.0%	10.5%	0.0%	15.9%	0.0%	31.6%	13.1%	0.0%	44.7%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-010 Dougherty Road-I-580 WB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Dougherty Road Southbound					I-580 WB Ramps Westbound					Dougherty Road Northbound					I-580 WB On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	362	142	0	504	71	0	93	0	164	0	249	78	0	327	0	0	0	0	0	995
08:15	0	374	155	0	529	68	0	101	0	169	0	205	67	0	272	0	0	0	0	0	970
08:30	0	392	152	0	544	61	0	93	0	154	0	228	89	0	317	0	0	0	0	0	1015
08:45	0	372	149	0	521	71	0	117	0	188	0	280	87	0	367	0	0	0	0	0	1076
Total Volume	0	1500	598	0	2098	271	0	404	0	675	0	962	321	0	1283	0	0	0	0	0	4056
% App Total	0.0%	71.5%	28.5%	0.0%		40.1%	0.0%	59.9%	0.0%		0.0%	75.0%	25.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.957	.965	.000	.964	.954	.000	.863	.000	.898	.000	.859	.902	.000	.874	.000	.000	.000	.000	.000	.942

PM PEAK HOUR	Dougherty Road Southbound					I-580 WB Ramps Westbound					Dougherty Road Northbound					I-580 WB On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	344	181	0	525	64	0	108	0	172	0	495	282	0	777	0	0	0	0	0	1474
17:15	0	291	157	0	448	71	0	178	0	249	0	537	273	0	810	0	0	0	0	0	1507
17:30	0	317	120	0	437	63	0	160	0	223	0	571	222	0	793	0	0	0	0	0	1453
17:45	0	300	138	0	438	58	0	157	0	215	0	541	215	0	756	0	0	0	0	0	1409
Total Volume	0	1252	596	0	1848	256	0	603	0	859	0	2144	992	0	3136	0	0	0	0	0	5843
% App Total	0.0%	67.7%	32.3%	0.0%		29.8%	0.0%	70.2%	0.0%		0.0%	68.4%	31.6%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.910	.823	.000	.880	.901	.000	.847	.000	.862	.000	.939	.879	.000	.968	.000	.000	.000	.000	.000	.969

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-011 Hopyard Road-I-580 EB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hopyard Road Southbound					I-580 EB On-Ramp Westbound					Hopyard Road Northbound					I-580 EB Ramps Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	159	73	0	232	0	0	0	0	0	0	156	38	0	194	160	0	262	0	422	848	0
07:15	0	197	86	0	283	0	0	0	0	0	0	164	56	0	220	164	0	272	0	436	939	0
07:30	0	243	110	0	353	0	0	0	0	0	0	148	45	0	193	173	0	354	0	527	1073	0
07:45	0	314	117	0	431	0	0	0	0	0	0	175	56	0	231	165	0	362	0	527	1189	0
Total	0	913	386	0	1299	0	0	0	0	0	0	643	195	0	838	662	0	1250	0	1912	4049	0
08:00	0	314	136	0	450	0	0	0	0	0	0	179	43	0	222	143	0	409	0	552	1224	0
08:15	0	324	101	0	425	0	0	0	0	0	0	156	42	0	198	123	0	368	0	491	1114	0
08:30	0	340	128	0	468	0	0	0	0	0	0	185	46	0	231	125	0	381	0	506	1205	0
08:45	0	338	115	0	453	0	0	0	0	0	0	217	56	0	273	153	0	364	0	517	1243	0
Total	0	1316	480	0	1796	0	0	0	0	0	0	737	187	0	924	544	0	1522	0	2066	4786	0
16:00	0	209	108	0	317	0	0	0	0	0	0	401	87	0	488	209	0	160	0	369	1174	0
16:15	0	248	123	0	371	0	0	0	0	0	0	402	76	0	478	194	0	170	0	364	1213	0
16:30	0	247	108	0	355	0	0	0	0	0	0	442	88	0	530	242	0	198	0	440	1325	0
16:45	0	241	89	0	330	0	0	0	0	0	0	497	88	0	585	233	0	221	0	454	1369	0
Total	0	945	428	0	1373	0	0	0	0	0	0	1742	339	0	2081	878	0	749	0	1627	5081	0
17:00	0	281	134	0	415	0	0	0	0	0	0	565	90	0	655	222	0	130	0	352	1422	0
17:15	0	233	115	0	348	0	0	0	0	0	0	568	81	0	649	224	0	135	0	359	1356	0
17:30	0	266	125	0	391	0	0	0	0	0	0	516	96	0	612	255	0	155	0	410	1413	0
17:45	0	243	110	0	353	0	0	0	0	0	0	529	74	0	603	254	0	157	0	411	1367	0
Total	0	1023	484	0	1507	0	0	0	0	0	0	2178	341	0	2519	955	0	577	0	1532	5558	0
Grand Total	0	4197	1778	0	5975	0	0	0	0	0	0	5300	1062	0	6362	3039	0	4098	0	7137	19474	0
Apprch %	0.0%	70.2%	29.8%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	83.3%	16.7%	0.0%		42.6%	0.0%	57.4%	0.0%			
Total %	0.0%	21.6%	9.1%	0.0%	30.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.2%	5.5%	0.0%	32.7%	15.6%	0.0%	21.0%	0.0%	36.6%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-011 Hopyard Road-I-580 EB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hopyard Road Southbound					I-580 EB On-Ramp Westbound					Hopyard Road Northbound					I-580 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	314	136	0	450	0	0	0	0	0	0	179	43	0	222	143	0	409	0	552	1224
08:15	0	324	101	0	425	0	0	0	0	0	0	156	42	0	198	123	0	368	0	491	1114
08:30	0	340	128	0	468	0	0	0	0	0	0	185	46	0	231	125	0	381	0	506	1205
08:45	0	338	115	0	453	0	0	0	0	0	0	217	56	0	273	153	0	364	0	517	1243
Total Volume	0	1316	480	0	1796	0	0	0	0	0	0	737	187	0	924	544	0	1522	0	2066	4786
% App Total	0.0%	73.3%	26.7%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	79.8%	20.2%	0.0%		26.3%	0.0%	73.7%	0.0%		
PHF	.000	.968	.882	.000	.959	.000	.000	.000	.000	.000	.000	.849	.835	.000	.846	.889	.000	.930	.000	.936	.963

PM PEAK HOUR	Hopyard Road Southbound					I-580 EB On-Ramp Westbound					Hopyard Road Northbound					I-580 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	241	89	0	330	0	0	0	0	0	0	497	88	0	585	233	0	221	0	454	1369
17:00	0	281	134	0	415	0	0	0	0	0	0	565	90	0	655	222	0	130	0	352	1422
17:15	0	233	115	0	348	0	0	0	0	0	0	568	81	0	649	224	0	135	0	359	1356
17:30	0	266	125	0	391	0	0	0	0	0	0	516	96	0	612	255	0	155	0	410	1413
Total Volume	0	1021	463	0	1484	0	0	0	0	0	0	2146	355	0	2501	934	0	641	0	1575	5560
% App Total	0.0%	68.8%	31.2%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	85.8%	14.2%	0.0%		59.3%	0.0%	40.7%	0.0%		
PHF	.000	.908	.864	.000	.894	.000	.000	.000	.000	.000	.000	.945	.924	.000	.955	.916	.000	.725	.000	.867	.977

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-012 Hopyard Drive-Owens Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	97	209	83	0	389	15	13	43	1	72	9	93	18	7	127	64	17	10	0	91	679	8
07:15	131	275	96	0	502	18	9	30	1	58	7	132	22	3	164	53	11	7	0	71	795	4
07:30	123	350	94	0	567	22	16	37	2	77	9	122	18	4	153	44	28	8	0	80	877	6
07:45	173	431	107	0	711	15	26	53	1	95	19	136	17	4	176	35	18	9	0	62	1044	5
Total	524	1265	380	0	2169	70	64	163	5	302	44	483	75	18	620	196	74	34	0	304	3395	23
08:00	166	406	128	0	700	16	23	53	0	92	19	120	14	4	157	54	22	15	0	91	1040	4
08:15	174	417	118	1	710	18	23	47	2	90	28	110	18	4	160	48	18	17	0	83	1043	7
08:30	179	381	117	0	677	24	28	42	1	95	12	132	27	6	177	55	22	12	0	89	1038	7
08:45	220	375	124	0	719	16	25	51	1	93	25	152	21	4	202	67	18	17	0	102	1116	5
Total	739	1579	487	1	2806	74	99	193	4	370	84	514	80	18	696	224	80	61	0	365	4237	23
16:00	90	173	88	0	351	22	26	120	2	170	25	228	10	7	270	158	43	26	0	227	1018	9
16:15	112	217	106	0	435	30	25	139	0	194	20	219	17	3	259	107	31	31	0	169	1057	3
16:30	113	218	86	0	417	24	24	123	2	173	28	282	24	4	338	161	35	22	0	218	1146	6
16:45	117	234	134	0	485	30	25	145	2	202	21	281	21	1	324	132	23	24	0	179	1190	3
Total	432	842	414	0	1688	106	100	527	6	739	94	1010	72	15	1191	558	132	103	0	793	4411	21
17:00	87	206	107	1	401	29	36	161	4	230	18	303	33	3	357	206	44	21	0	271	1259	8
17:15	96	198	109	1	404	40	34	181	2	257	26	288	22	1	337	160	37	14	1	212	1210	5
17:30	79	195	106	0	380	29	38	146	4	217	25	313	21	6	365	158	42	25	1	226	1188	11
17:45	101	191	135	1	428	31	38	182	1	252	32	296	27	3	358	129	34	28	1	192	1230	6
Total	363	790	457	3	1613	129	146	670	11	956	101	1200	103	13	1417	653	157	88	3	901	4887	30
Grand Total	2058	4476	1738	4	8276	379	409	1553	26	2367	323	3207	330	64	3924	1631	443	286	3	2363	16930	97
Apprch %	24.9%	54.1%	21.0%	0.0%		16.0%	17.3%	65.6%	1.1%		8.2%	81.7%	8.4%	1.6%		69.0%	18.7%	12.1%	0.1%			
Total %	12.2%	26.4%	10.3%	0.0%	48.9%	2.2%	2.4%	9.2%	0.2%	14.0%	1.9%	18.9%	1.9%	0.4%	23.2%	9.6%	2.6%	1.7%	0.0%	14.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-012 Hopyard Drive-Owens Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	166	406	128	0	700	16	23	53	0	92	19	120	14	4	157	54	22	15	0	91	1040
08:15	174	417	118	1	710	18	23	47	2	90	28	110	18	4	160	48	18	17	0	83	1043
08:30	179	381	117	0	677	24	28	42	1	95	12	132	27	6	177	55	22	12	0	89	1038
08:45	220	375	124	0	719	16	25	51	1	93	25	152	21	4	202	67	18	17	0	102	1116
Total Volume	739	1579	487	1	2806	74	99	193	4	370	84	514	80	18	696	224	80	61	0	365	4237
% App Total	26.3%	56.3%	17.4%	0.0%		20.0%	26.8%	52.2%	1.1%		12.1%	73.9%	11.5%	2.6%		61.4%	21.9%	16.7%	0.0%		
PHF	.840	.947	.951	.250	.976	.771	.884	.910	.500	.974	.750	.845	.741	.750	.861	.836	.909	.897	.000	.895	.949

PM PEAK HOUR	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	87	206	107	1	401	29	36	161	4	230	18	303	33	3	357	206	44	21	0	271	1259
17:15	96	198	109	1	404	40	34	181	2	257	26	288	22	1	337	160	37	14	1	212	1210
17:30	79	195	106	0	380	29	38	146	4	217	25	313	21	6	365	158	42	25	1	226	1188
17:45	101	191	135	1	428	31	38	182	1	252	32	296	27	3	358	129	34	28	1	192	1230
Total Volume	363	790	457	3	1613	129	146	670	11	956	101	1200	103	13	1417	653	157	88	3	901	4887
% App Total	22.5%	49.0%	28.3%	0.2%		13.5%	15.3%	70.1%	1.2%		7.1%	84.7%	7.3%	0.9%		72.5%	17.4%	9.8%	0.3%		
PHF	.899	.959	.846	.750	.942	.806	.961	.920	.688	.930	.789	.958	.780	.542	.971	.792	.892	.786	.750	.831	.970

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-013 Johnson Drive-Owens Drive (north).ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	38	1	0	39	4	1	2	0	7	19	48	4	0	71	0	0	11	0	11	128	0
07:15	0	38	0	0	38	5	0	0	0	5	23	43	1	0	67	0	0	8	0	8	118	0
07:30	1	45	1	0	47	0	2	0	0	2	23	51	2	0	76	1	1	23	0	25	150	0
07:45	1	41	1	0	43	3	1	2	0	6	39	60	3	0	102	0	2	14	0	16	167	0
Total	2	162	3	0	167	12	4	4	0	20	104	202	10	0	316	1	3	56	0	60	563	0
08:00	2	57	1	0	60	3	0	2	0	5	30	57	2	0	89	0	0	18	0	18	172	0
08:15	2	43	0	0	45	9	1	2	0	12	36	55	1	0	92	0	0	32	0	32	181	0
08:30	1	50	1	0	52	5	2	0	0	7	30	57	5	0	92	0	2	21	0	23	174	0
08:45	3	44	1	0	48	7	0	3	0	10	46	73	5	0	124	0	2	26	0	28	210	0
Total	8	194	3	0	205	24	3	7	0	34	142	242	13	0	397	0	4	97	0	101	737	0
16:00	3	70	3	0	76	36	5	5	0	46	40	49	20	0	109	1	3	50	0	54	285	0
16:15	3	52	0	0	55	32	2	6	0	40	57	57	14	0	128	0	6	43	0	49	272	0
16:30	8	60	2	0	70	35	5	3	0	43	35	44	20	0	99	1	2	38	0	41	253	0
16:45	1	61	0	0	62	34	4	7	0	45	44	59	14	0	117	2	1	45	0	48	272	0
Total	15	243	5	0	263	137	16	21	0	174	176	209	68	0	453	4	12	176	0	192	1082	0
17:00	4	67	0	0	71	33	1	5	0	39	32	63	24	0	119	0	4	47	0	51	280	0
17:15	4	64	0	0	68	37	2	5	0	44	37	79	18	0	134	1	0	34	0	35	281	0
17:30	6	66	2	0	74	40	0	2	0	42	35	57	26	0	118	2	2	40	0	44	278	0
17:45	8	47	2	0	57	45	1	8	0	54	40	49	20	0	109	1	3	38	0	42	262	0
Total	22	244	4	0	270	155	4	20	0	179	144	248	88	0	480	4	9	159	0	172	1101	0
Grand Total	47	843	15	0	905	328	27	52	0	407	566	901	179	0	1646	9	28	488	0	525	3483	0
Apprch %	5.2%	93.1%	1.7%	0.0%		80.6%	6.6%	12.8%	0.0%		34.4%	54.7%	10.9%	0.0%		1.7%	5.3%	93.0%	0.0%			
Total %	1.3%	24.2%	0.4%	0.0%	26.0%	9.4%	0.8%	1.5%	0.0%	11.7%	16.3%	25.9%	5.1%	0.0%	47.3%	0.3%	0.8%	14.0%	0.0%	15.1%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-013 Johnson Drive-Owens Drive (north).ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	2	57	1	0	60	3	0	2	0	5	30	57	2	0	89	0	0	18	0	18	172
08:15	2	43	0	0	45	9	1	2	0	12	36	55	1	0	92	0	0	32	0	32	181
08:30	1	50	1	0	52	5	2	0	0	7	30	57	5	0	92	0	2	21	0	23	174
08:45	3	44	1	0	48	7	0	3	0	10	46	73	5	0	124	0	2	26	0	28	210
Total Volume	8	194	3	0	205	24	3	7	0	34	142	242	13	0	397	0	4	97	0	101	737
% App Total	3.9%	94.6%	1.5%	0.0%		70.6%	8.8%	20.6%	0.0%		35.8%	61.0%	3.3%	0.0%		0.0%	4.0%	96.0%	0.0%		
PHF	.667	.851	.750	.000	.854	.667	.375	.583	.000	.708	.772	.829	.650	.000	.800	.000	.500	.758	.000	.789	.877

PM PEAK HOUR	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	1	61	0	0	62	34	4	7	0	45	44	59	14	0	117	2	1	45	0	48	272
17:00	4	67	0	0	71	33	1	5	0	39	32	63	24	0	119	0	4	47	0	51	280
17:15	4	64	0	0	68	37	2	5	0	44	37	79	18	0	134	1	0	34	0	35	281
17:30	6	66	2	0	74	40	0	2	0	42	35	57	26	0	118	2	2	40	0	44	278
Total Volume	15	258	2	0	275	144	7	19	0	170	148	258	82	0	488	5	7	166	0	178	1111
% App Total	5.5%	93.8%	0.7%	0.0%		84.7%	4.1%	11.2%	0.0%		30.3%	52.9%	16.8%	0.0%		2.8%	3.9%	93.3%	0.0%		
PHF	.625	.963	.250	.000	.929	.900	.438	.679	.000	.944	.841	.816	.788	.000	.910	.625	.438	.883	.000	.873	.988

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-014 Johnson Drive-Owens Drive (south).ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	51	4	1	0	56	15	5	72	0	92	2	5	9	0	16	0	2	3	0	5	169	0
07:15	37	7	1	0	45	14	14	72	0	100	2	9	9	0	20	0	4	0	0	4	169	0
07:30	61	10	0	0	71	18	19	73	0	110	6	7	3	0	16	0	8	3	0	11	208	0
07:45	52	9	1	0	62	26	16	98	0	140	6	13	4	0	23	1	4	5	0	10	235	0
Total	201	30	3	0	234	73	54	315	0	442	16	34	25	0	75	1	18	11	0	30	781	0
08:00	62	13	0	0	75	32	28	93	0	153	1	12	9	0	22	0	1	7	0	8	258	0
08:15	78	17	0	0	95	38	20	96	0	154	7	5	4	0	16	0	1	3	0	4	269	0
08:30	64	13	0	0	77	56	17	81	0	154	0	9	10	0	19	0	7	3	0	10	260	0
08:45	76	12	2	0	90	23	21	116	0	160	2	11	10	0	23	1	5	2	0	8	281	0
Total	280	55	2	0	337	149	86	386	0	621	10	37	33	0	80	1	14	15	0	30	1068	0
16:00	148	25	2	0	175	6	17	103	0	126	4	10	33	0	47	1	34	8	0	43	391	0
16:15	121	13	0	0	134	3	7	119	0	129	1	9	26	0	36	2	20	2	0	24	323	0
16:30	128	15	0	0	143	8	11	97	0	116	1	8	54	0	63	0	13	11	0	24	346	0
16:45	124	18	1	0	143	8	25	120	0	153	6	9	39	0	54	1	23	10	0	34	384	0
Total	521	71	3	0	595	25	60	439	0	524	12	36	152	0	200	4	90	31	0	125	1444	0
17:00	145	20	0	0	165	10	17	106	1	134	3	16	78	0	97	1	32	9	0	42	438	1
17:15	135	19	0	0	154	10	15	118	3	146	3	22	35	0	60	0	25	8	0	33	393	3
17:30	125	15	0	0	140	9	28	107	1	145	4	16	54	0	74	0	20	5	0	25	384	1
17:45	140	22	2	0	164	6	45	111	0	162	2	15	34	0	51	0	26	3	0	29	406	0
Total	545	76	2	0	623	35	105	442	5	587	12	69	201	0	282	1	103	25	0	129	1621	5
Grand Total	1547	232	10	0	1789	282	305	1582	5	2174	50	176	411	0	637	7	225	82	0	314	4914	5
Apprch %	86.5%	13.0%	0.6%	0.0%		13.0%	14.0%	72.8%	0.2%		7.8%	27.6%	64.5%	0.0%		2.2%	71.7%	26.1%	0.0%			
Total %	31.5%	4.7%	0.2%	0.0%	36.4%	5.7%	6.2%	32.2%	0.1%	44.2%	1.0%	3.6%	8.4%	0.0%	13.0%	0.1%	4.6%	1.7%	0.0%	6.4%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-014 Johnson Drive-Owens Drive (south).ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	62	13	0	0	75	32	28	93	0	153	1	12	9	0	22	0	1	7	0	8	258
08:15	78	17	0	0	95	38	20	96	0	154	7	5	4	0	16	0	1	3	0	4	269
08:30	64	13	0	0	77	56	17	81	0	154	0	9	10	0	19	0	7	3	0	10	260
08:45	76	12	2	0	90	23	21	116	0	160	2	11	10	0	23	1	5	2	0	8	281
Total Volume	280	55	2	0	337	149	86	386	0	621	10	37	33	0	80	1	14	15	0	30	1068
% App Total	83.1%	16.3%	0.6%	0.0%		24.0%	13.8%	62.2%	0.0%		12.5%	46.3%	41.3%	0.0%		3.3%	46.7%	50.0%	0.0%		
PHF	.897	.809	.250	.000	.887	.665	.768	.832	.000	.970	.357	.771	.825	.000	.870	.250	.500	.536	.000	.750	.950

PM PEAK HOUR	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	145	20	0	0	165	10	17	106	1	134	3	16	78	0	97	1	32	9	0	42	438
17:15	135	19	0	0	154	10	15	118	3	146	3	22	35	0	60	0	25	8	0	33	393
17:30	125	15	0	0	140	9	28	107	1	145	4	16	54	0	74	0	20	5	0	25	384
17:45	140	22	2	0	164	6	45	111	0	162	2	15	34	0	51	0	26	3	0	29	406
Total Volume	545	76	2	0	623	35	105	442	5	587	12	69	201	0	282	1	103	25	0	129	1621
% App Total	87.5%	12.2%	0.3%	0.0%		6.0%	17.9%	75.3%	0.9%		4.3%	24.5%	71.3%	0.0%		0.8%	79.8%	19.4%	0.0%		
PHF	.940	.864	.250	.000	.944	.875	.583	.936	.417	.906	.750	.784	.644	.000	.727	.250	.805	.694	.000	.768	.925

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-015 Hopyard Road-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	25	82	35	3	145	3	179	14	1	197	76	94	7	0	177	16	74	35	1	126	645	5
07:15	42	163	26	3	234	7	207	25	1	240	102	130	7	1	240	12	79	56	1	148	862	6
07:30	39	204	37	2	282	10	204	30	1	245	148	116	14	2	280	27	109	78	0	214	1021	5
07:45	60	168	58	2	288	18	288	21	3	330	162	117	24	0	303	22	174	92	0	288	1209	5
Total	166	617	156	10	949	38	878	90	6	1012	488	457	52	3	1000	77	436	261	2	776	3737	21
08:00	102	189	52	1	344	5	204	24	1	234	138	113	22	1	274	37	162	58	0	257	1109	3
08:15	77	161	59	10	307	12	270	22	2	306	178	115	37	2	332	24	173	57	1	255	1200	15
08:30	61	183	67	9	320	12	249	29	1	291	165	130	24	1	320	38	149	86	0	273	1204	11
08:45	65	143	49	5	262	16	247	25	4	292	147	157	27	0	331	17	202	82	0	301	1186	9
Total	305	676	227	25	1233	45	970	100	8	1123	628	515	110	4	1257	116	686	283	1	1086	4699	38
16:00	47	153	40	12	252	29	190	25	5	249	145	145	14	2	306	25	211	121	0	357	1164	19
16:15	38	188	34	22	282	22	177	26	2	227	127	158	13	1	299	33	191	109	0	333	1141	25
16:30	67	164	42	6	279	18	187	32	2	239	132	203	25	2	362	40	211	118	1	370	1250	11
16:45	64	182	44	22	312	40	234	35	0	309	134	185	25	1	345	33	221	128	1	383	1349	24
Total	216	687	160	62	1125	109	788	118	9	1024	538	691	77	6	1312	131	834	476	2	1443	4904	79
17:00	59	165	46	15	285	30	286	27	1	344	196	209	19	3	427	44	260	149	0	453	1509	19
17:15	65	190	45	5	305	28	299	43	3	373	158	184	19	1	362	47	259	155	1	462	1502	10
17:30	42	167	53	17	279	27	261	39	0	327	169	217	13	1	400	38	252	133	2	425	1431	20
17:45	62	163	32	12	269	32	216	42	2	292	133	191	17	2	343	47	196	116	0	359	1263	16
Total	228	685	176	49	1138	117	1062	151	6	1336	656	801	68	7	1532	176	967	553	3	1699	5705	65
Grand Total	915	2665	719	146	4445	309	3698	459	29	4495	2310	2464	307	20	5101	500	2923	1573	8	5004	19045	203
Apprch %	20.6%	60.0%	16.2%	3.3%		6.9%	82.3%	10.2%	0.6%		45.3%	48.3%	6.0%	0.4%		10.0%	58.4%	31.4%	0.2%			
Total %	4.8%	14.0%	3.8%	0.8%	23.3%	1.6%	19.4%	2.4%	0.2%	23.6%	12.1%	12.9%	1.6%	0.1%	26.8%	2.6%	15.3%	8.3%	0.0%	26.3%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-015 Hopyard Road-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	60	168	58	2	288	18	288	21	3	330	162	117	24	0	303	22	174	92	0	288	1209
08:00	102	189	52	1	344	5	204	24	1	234	138	113	22	1	274	37	162	58	0	257	1109
08:15	77	161	59	10	307	12	270	22	2	306	178	115	37	2	332	24	173	57	1	255	1200
08:30	61	183	67	9	320	12	249	29	1	291	165	130	24	1	320	38	149	86	0	273	1204
Total Volume	300	701	236	22	1259	47	1011	96	7	1161	643	475	107	4	1229	121	658	293	1	1073	4722
% App Total	23.8%	55.7%	18.7%	1.7%		4.0%	87.1%	8.3%	0.6%		52.3%	38.6%	8.7%	0.3%		11.3%	61.3%	27.3%	0.1%		
PHF	.735	.927	.881	.550	.915	.653	.878	.828	.583	.880	.903	.913	.723	.500	.925	.796	.945	.796	.250	.931	.976

PM PEAK HOUR	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	64	182	44	22	312	40	234	35	0	309	134	185	25	1	345	33	221	128	1	383	1349
17:00	59	165	46	15	285	30	286	27	1	344	196	209	19	3	427	44	260	149	0	453	1509
17:15	65	190	45	5	305	28	299	43	3	373	158	184	19	1	362	47	259	155	1	462	1502
17:30	42	167	53	17	279	27	261	39	0	327	169	217	13	1	400	38	252	133	2	425	1431
Total Volume	230	704	188	59	1181	125	1080	144	4	1353	657	795	76	6	1534	162	992	565	4	1723	5791
% App Total	19.5%	59.6%	15.9%	5.0%		9.2%	79.8%	10.6%	0.3%		42.8%	51.8%	5.0%	0.4%		9.4%	57.6%	32.8%	0.2%		
PHF	.885	.926	.887	.670	.946	.781	.903	.837	.333	.907	.838	.916	.760	.500	.898	.862	.954	.911	.500	.932	.959

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-016 Hopyard Road-West Las Positas Avenue.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hopyard Road Southbound					West Las Positas Avenue Westbound					Hopyard Road Northbound					West Las Positas Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	8	93	11	2	114	30	22	8	0	60	19	182	45	4	250	14	13	16	1	44	468	7
07:15	17	138	16	1	172	42	16	8	0	66	36	216	43	1	296	13	25	41	2	81	615	4
07:30	20	205	21	3	249	48	41	13	0	102	37	268	48	4	357	18	27	29	1	75	783	8
07:45	50	209	22	4	285	69	35	8	0	112	50	263	55	1	369	16	28	41	1	86	852	6
Total	95	645	70	10	820	189	114	37	0	340	142	929	191	10	1272	61	93	127	5	286	2718	25
08:00	30	161	19	4	214	46	37	6	0	89	48	229	59	5	341	23	35	55	0	113	757	9
08:15	36	173	23	4	236	51	81	11	0	143	118	243	75	5	441	16	31	70	0	117	937	9
08:30	30	179	9	5	223	82	83	13	0	178	85	220	56	2	363	23	63	111	1	198	962	8
08:45	22	183	15	4	224	69	27	16	1	113	63	248	82	4	397	36	93	102	2	233	967	11
Total	118	696	66	17	897	248	228	46	1	523	314	940	272	16	1542	98	222	338	3	661	3623	37
16:00	7	292	32	5	336	85	39	20	1	145	60	163	46	6	275	27	44	78	0	149	905	12
16:15	19	264	19	1	303	84	48	31	0	163	65	164	53	5	287	33	46	83	1	163	916	7
16:30	16	289	23	3	331	106	59	18	2	185	57	238	53	2	350	21	46	67	1	135	1001	8
16:45	9	300	19	4	332	116	69	31	0	216	87	179	76	2	344	31	43	88	2	164	1056	8
Total	51	1145	93	13	1302	391	215	100	3	709	269	744	228	15	1256	112	179	316	4	611	3878	35
17:00	22	360	17	7	406	125	73	38	2	238	75	209	68	0	352	17	42	96	1	156	1152	10
17:15	17	301	17	7	342	137	69	34	0	240	98	185	91	5	379	21	64	127	2	214	1175	14
17:30	16	321	24	5	366	133	58	29	0	220	94	249	106	1	450	21	46	100	2	169	1205	8
17:45	15	237	16	4	272	103	65	21	0	189	74	198	83	4	359	16	49	91	0	156	976	8
Total	70	1219	74	23	1386	498	265	122	2	887	341	841	348	10	1540	75	201	414	5	695	4508	40
Grand Total	334	3705	303	63	4405	1326	822	305	6	2459	1066	3454	1039	51	5610	346	695	1195	17	2253	14727	137
Apprch %	7.6%	84.1%	6.9%	1.4%		53.9%	33.4%	12.4%	0.2%		19.0%	61.6%	18.5%	0.9%		15.4%	30.8%	53.0%	0.8%			
Total %	2.3%	25.2%	2.1%	0.4%	29.9%	9.0%	5.6%	2.1%	0.0%	16.7%	7.2%	23.5%	7.1%	0.3%	38.1%	2.3%	4.7%	8.1%	0.1%	15.3%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-016 Hopyard Road-West Las Positas Avenue.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hopyard Road Southbound					West Las Positas Avenue Westbound					Hopyard Road Northbound					West Las Positas Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	30	161	19	4	214	46	37	6	0	89	48	229	59	5	341	23	35	55	0	113	757
08:15	36	173	23	4	236	51	81	11	0	143	118	243	75	5	441	16	31	70	0	117	937
08:30	30	179	9	5	223	82	83	13	0	178	85	220	56	2	363	23	63	111	1	198	962
08:45	22	183	15	4	224	69	27	16	1	113	63	248	82	4	397	36	93	102	2	233	967
Total Volume	118	696	66	17	897	248	228	46	1	523	314	940	272	16	1542	98	222	338	3	661	3623
% App Total	13.2%	77.6%	7.4%	1.9%		47.4%	43.6%	8.8%	0.2%		20.4%	61.0%	17.6%	1.0%		14.8%	33.6%	51.1%	0.5%		
PHF	.819	.951	.717	.850	.950	.756	.687	.719	.250	.735	.665	.948	.829	.800	.874	.681	.597	.761	.375	.709	.937

PM PEAK HOUR	Hopyard Road Southbound					West Las Positas Avenue Westbound					Hopyard Road Northbound					West Las Positas Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	9	300	19	4	332	116	69	31	0	216	87	179	76	2	344	31	43	88	2	164	1056
17:00	22	360	17	7	406	125	73	38	2	238	75	209	68	0	352	17	42	96	1	156	1152
17:15	17	301	17	7	342	137	69	34	0	240	98	185	91	5	379	21	64	127	2	214	1175
17:30	16	321	24	5	366	133	58	29	0	220	94	249	106	1	450	21	46	100	2	169	1205
Total Volume	64	1282	77	23	1446	511	269	132	2	914	354	822	341	8	1525	90	195	411	7	703	4588
% App Total	4.4%	88.7%	5.3%	1.6%		55.9%	29.4%	14.4%	0.2%		23.2%	53.9%	22.4%	0.5%		12.8%	27.7%	58.5%	1.0%		
PHF	.727	.890	.802	.821	.890	.932	.921	.868	.250	.952	.903	.825	.804	.400	.847	.726	.762	.809	.875	.821	.952

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-017 Hacienda Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hacienda Drive Southbound					Stoneridge Drive Westbound					Hacienda Drive Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	3	24	8	0	35	1	198	4	0	203	3	11	0	0	14	10	36	4	0	50	302	0
07:15	4	20	20	0	44	5	249	2	0	256	2	12	0	0	14	11	37	12	0	60	374	0
07:30	2	45	30	0	77	5	250	8	0	263	0	13	0	0	13	23	42	8	0	73	426	0
07:45	9	37	35	0	81	6	328	3	1	338	2	12	4	1	19	19	75	12	0	106	544	2
Total	18	126	93	0	237	17	1025	17	1	1060	7	48	4	1	60	63	190	36	0	289	1646	2
08:00	6	47	60	0	113	3	264	7	1	275	5	20	2	1	28	32	76	16	0	124	540	2
08:15	5	52	51	0	108	6	269	2	0	277	4	21	2	0	27	32	99	11	0	142	554	0
08:30	7	59	56	0	122	2	284	9	0	295	7	22	5	0	34	39	74	8	0	121	572	0
08:45	14	37	47	1	99	1	264	12	0	277	5	18	3	0	26	38	91	14	0	143	545	1
Total	32	195	214	1	442	12	1081	30	1	1124	21	81	12	1	115	141	340	49	0	530	2211	3
16:00	6	32	50	0	88	0	129	9	0	138	14	32	1	0	47	30	208	6	0	244	517	0
16:15	15	35	45	0	95	1	94	5	0	100	11	24	1	0	36	33	188	4	0	225	456	0
16:30	11	32	46	0	89	1	126	3	0	130	13	37	5	0	55	39	211	3	0	253	527	0
16:45	13	40	61	0	114	2	133	4	0	139	14	34	0	0	48	44	241	5	0	290	591	0
Total	45	139	202	0	386	4	482	21	0	507	52	127	7	0	186	146	848	18	0	1012	2091	0
17:00	14	42	75	0	131	1	141	7	0	149	17	48	9	0	74	54	257	6	1	318	672	1
17:15	17	59	63	0	139	3	131	14	0	148	23	40	4	0	67	71	262	3	1	337	691	1
17:30	15	70	83	0	168	5	144	9	0	158	12	57	2	0	71	44	218	5	0	267	664	0
17:45	7	49	57	0	113	2	97	1	0	100	9	53	3	2	67	53	200	8	0	261	541	2
Total	53	220	278	0	551	11	513	31	0	555	61	198	18	2	279	222	937	22	2	1183	2568	4
Grand Total	148	680	787	1	1616	44	3101	99	2	3246	141	454	41	4	640	572	2315	125	2	3014	8516	9
Apprch %	9.2%	42.1%	48.7%	0.1%		1.4%	95.5%	3.0%	0.1%		22.0%	70.9%	6.4%	0.6%		19.0%	76.8%	4.1%	0.1%			
Total %	1.7%	8.0%	9.2%	0.0%	19.0%	0.5%	36.4%	1.2%	0.0%	38.1%	1.7%	5.3%	0.5%	0.0%	7.5%	6.7%	27.2%	1.5%	0.0%	35.4%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-017 Hacienda Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hacienda Drive Southbound					Stoneridge Drive Westbound					Hacienda Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	6	47	60	0	113	3	264	7	1	275	5	20	2	1	28	32	76	16	0	124	540
08:15	5	52	51	0	108	6	269	2	0	277	4	21	2	0	27	32	99	11	0	142	554
08:30	7	59	56	0	122	2	284	9	0	295	7	22	5	0	34	39	74	8	0	121	572
08:45	14	37	47	1	99	1	264	12	0	277	5	18	3	0	26	38	91	14	0	143	545
Total Volume	32	195	214	1	442	12	1081	30	1	1124	21	81	12	1	115	141	340	49	0	530	2211
% App Total	7.2%	44.1%	48.4%	0.2%		1.1%	96.2%	2.7%	0.1%		18.3%	70.4%	10.4%	0.9%		26.6%	64.2%	9.2%	0.0%		
PHF	.571	.826	.892	.250	.906	.500	.952	.625	.250	.953	.750	.920	.600	.250	.846	.904	.859	.766	.000	.927	.966

PM PEAK HOUR	Hacienda Drive Southbound					Stoneridge Drive Westbound					Hacienda Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	13	40	61	0	114	2	133	4	0	139	14	34	0	0	48	44	241	5	0	290	591
17:00	14	42	75	0	131	1	141	7	0	149	17	48	9	0	74	54	257	6	1	318	672
17:15	17	59	63	0	139	3	131	14	0	148	23	40	4	0	67	71	262	3	1	337	691
17:30	15	70	83	0	168	5	144	9	0	158	12	57	2	0	71	44	218	5	0	267	664
Total Volume	59	211	282	0	552	11	549	34	0	594	66	179	15	0	260	213	978	19	2	1212	2618
% App Total	10.7%	38.2%	51.1%	0.0%		1.9%	92.4%	5.7%	0.0%		25.4%	68.8%	5.8%	0.0%		17.6%	80.7%	1.6%	0.2%		
PHF	.868	.754	.849	.000	.821	.550	.953	.607	.000	.940	.717	.785	.417	.000	.878	.750	.933	.792	.500	.899	.947

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-001 I-680 SB Ramps-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	94	0	132	0	226	0	213	53	0	266	0	0	0	0	0	0	243	57	0	300	792	0
13:15	82	0	150	0	232	0	265	50	0	315	0	0	0	0	0	0	198	56	0	254	801	0
13:30	91	0	159	0	250	0	247	59	0	306	0	0	0	0	0	0	233	71	0	304	860	0
13:45	84	0	152	0	236	0	239	42	0	281	0	0	0	0	0	0	226	68	0	294	811	0
Total	351	0	593	0	944	0	964	204	0	1168	0	0	0	0	0	0	900	252	0	1152	3264	0
14:00	74	0	139	0	213	0	227	52	0	279	0	0	0	0	0	0	237	61	0	298	790	0
14:15	95	0	168	0	263	0	238	54	0	292	0	0	0	0	0	0	221	57	0	278	833	0
14:30	70	0	161	0	231	0	226	45	0	271	0	0	0	0	0	0	242	67	0	309	811	0
14:45	88	0	169	0	257	0	195	47	0	242	0	0	0	0	0	0	216	64	0	280	779	0
Total	327	0	637	0	964	0	886	198	0	1084	0	0	0	0	0	0	916	249	0	1165	3213	0
15:00	80	0	130	0	210	0	195	50	0	245	0	0	0	0	0	0	223	59	0	282	737	0
15:15	89	0	112	0	201	0	192	49	0	241	0	0	0	0	0	0	234	74	0	308	750	0
15:30	74	0	136	0	210	0	216	63	0	279	0	0	0	0	0	0	239	67	0	306	795	0
15:45	80	0	129	0	209	0	196	58	0	254	0	0	0	0	0	0	223	65	0	288	751	0
Total	323	0	507	0	830	0	799	220	0	1019	0	0	0	0	0	0	919	265	0	1184	3033	0
Grand Total	1001	0	1737	0	2738	0	2649	622	0	3271	0	0	0	0	0	0	2735	766	0	3501	9510	0
Apprch %	36.6%	0.0%	63.4%	0.0%		0.0%	81.0%	19.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	78.1%	21.9%	0.0%			
Total %	10.5%	0.0%	18.3%	0.0%	28.8%	0.0%	27.9%	6.5%	0.0%	34.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.8%	8.1%	0.0%	36.8%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-001 I-680 SB Ramps-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:30 to 14:30																					
Peak Hour For Entire Intersection Begins at 13:30																					
13:30	91	0	159	0	250	0	247	59	0	306	0	0	0	0	0	0	233	71	0	304	860
13:45	84	0	152	0	236	0	239	42	0	281	0	0	0	0	0	0	226	68	0	294	811
14:00	74	0	139	0	213	0	227	52	0	279	0	0	0	0	0	0	237	61	0	298	790
14:15	95	0	168	0	263	0	238	54	0	292	0	0	0	0	0	0	221	57	0	278	833
Total Volume	344	0	618	0	962	0	951	207	0	1158	0	0	0	0	0	0	917	257	0	1174	3294
% App Total	35.8%	0.0%	64.2%	0.0%		0.0%	82.1%	17.9%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	78.1%	21.9%	0.0%		
PHF	.905	.000	.920	.000	.914	.000	.963	.877	.000	.946	.000	.000	.000	.000	.000	.000	.967	.905	.000	.965	.958

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-002 I-680 NB Ramps-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	0	0	0	0	0	0	205	78	0	283	65	0	43	0	108	0	185	138	0	323	714	0
13:15	0	0	0	0	0	0	224	100	0	324	94	0	53	0	147	0	175	111	0	286	757	0
13:30	0	0	0	0	0	0	236	105	0	341	65	0	53	0	118	0	192	127	0	319	778	0
13:45	0	0	0	0	0	0	207	130	0	337	80	0	36	0	116	0	195	105	0	300	753	0
Total	0	0	0	0	0	0	872	413	0	1285	304	0	185	0	489	0	747	481	0	1228	3002	0
14:00	0	0	0	0	0	0	203	100	0	303	67	0	47	0	114	0	178	116	0	294	711	0
14:15	0	0	0	0	0	0	234	77	0	311	68	0	39	0	107	0	190	142	0	332	750	0
14:30	0	0	0	0	0	0	189	86	0	275	72	0	41	0	113	0	192	131	0	323	711	0
14:45	0	0	0	0	0	0	172	93	0	265	84	0	39	0	123	0	172	123	0	295	683	0
Total	0	0	0	0	0	0	798	356	0	1154	291	0	166	0	457	0	732	512	0	1244	2855	0
15:00	0	0	0	0	0	0	182	116	0	298	51	0	34	0	85	0	192	120	0	312	695	0
15:15	0	0	0	0	0	0	196	103	0	299	62	0	45	0	107	0	186	127	0	313	719	0
15:30	0	0	0	0	0	0	197	115	0	312	67	0	43	0	110	0	170	151	0	321	743	0
15:45	0	0	0	0	0	0	195	100	0	295	68	0	45	0	113	0	165	132	0	297	705	0
Total	0	0	0	0	0	0	770	434	0	1204	248	0	167	0	415	0	713	530	0	1243	2862	0
Grand Total	0	0	0	0	0	0	2440	1203	0	3643	843	0	518	0	1361	0	2192	1523	0	3715	8719	0
Apprch %	0.0%	0.0%	0.0%	0.0%		0.0%	67.0%	33.0%	0.0%		61.9%	0.0%	38.1%	0.0%		0.0%	59.0%	41.0%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.0%	13.8%	0.0%	41.8%	9.7%	0.0%	5.9%	0.0%	15.6%	0.0%	25.1%	17.5%	0.0%	42.6%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-002 I-680 NB Ramps-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:00 to 14:00																					
Peak Hour For Entire Intersection Begins at 13:00																					
13:00	0	0	0	0	0	0	205	78	0	283	65	0	43	0	108	0	185	138	0	323	714
13:15	0	0	0	0	0	0	224	100	0	324	94	0	53	0	147	0	175	111	0	286	757
13:30	0	0	0	0	0	0	236	105	0	341	65	0	53	0	118	0	192	127	0	319	778
13:45	0	0	0	0	0	0	207	130	0	337	80	0	36	0	116	0	195	105	0	300	753
Total Volume	0	0	0	0	0	0	872	413	0	1285	304	0	185	0	489	0	747	481	0	1228	3002
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	67.9%	32.1%	0.0%		62.2%	0.0%	37.8%	0.0%		0.0%	60.8%	39.2%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.924	.794	.000	.942	.809	.000	.873	.000	.832	.000	.958	.871	.000	.950	.965

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-003 Johnson Drive-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	6	0	38	0	44	3	245	16	0	264	5	1	1	0	7	37	186	6	0	229	544	0
13:15	13	0	45	0	58	2	261	16	1	280	1	0	2	0	3	37	176	8	0	221	562	1
13:30	10	1	47	0	58	2	301	8	1	312	5	1	3	0	9	27	198	6	0	231	610	1
13:45	8	0	31	0	39	1	285	10	0	296	10	0	5	0	15	43	195	4	0	242	592	0
Total	37	1	161	0	199	8	1092	50	2	1152	21	2	11	0	34	144	755	24	0	923	2308	2
14:00	9	0	44	0	53	1	261	7	0	269	6	2	2	0	10	35	174	6	0	215	547	0
14:15	18	1	41	0	60	1	255	12	0	268	4	1	0	0	5	31	200	3	0	234	567	0
14:30	14	0	50	0	64	3	227	7	0	237	2	0	2	0	4	26	197	5	0	228	533	0
14:45	4	0	40	0	44	2	213	9	0	224	1	0	3	0	4	34	187	3	0	224	496	0
Total	45	1	175	0	221	7	956	35	0	998	13	3	7	0	23	126	758	17	0	901	2143	0
15:00	7	0	54	0	61	3	244	5	0	252	4	1	1	0	6	36	175	2	0	213	532	0
15:15	6	0	37	0	43	0	245	19	0	264	12	1	2	0	15	35	192	3	0	230	552	0
15:30	4	0	53	0	57	2	263	12	1	278	4	0	2	0	6	25	194	7	0	226	567	1
15:45	7	1	41	0	49	2	250	15	1	268	3	0	1	0	4	31	174	1	0	206	527	1
Total	24	1	185	0	210	7	1002	51	2	1062	23	2	6	0	31	127	735	13	0	875	2178	2
Grand Total	106	3	521	0	630	22	3050	136	4	3212	57	7	24	0	88	397	2248	54	0	2699	6629	4
Apprch %	16.8%	0.5%	82.7%	0.0%		0.7%	95.0%	4.2%	0.1%		64.8%	8.0%	27.3%	0.0%		14.7%	83.3%	2.0%	0.0%			
Total %	1.6%	0.0%	7.9%	0.0%	9.5%	0.3%	46.0%	2.1%	0.1%	48.5%	0.9%	0.1%	0.4%	0.0%	1.3%	6.0%	33.9%	0.8%	0.0%	40.7%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-003 Johnson Drive-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:30 to 14:30																					
Peak Hour For Entire Intersection Begins at 13:30																					
13:30	10	1	47	0	58	2	301	8	1	312	5	1	3	0	9	27	198	6	0	231	610
13:45	8	0	31	0	39	1	285	10	0	296	10	0	5	0	15	43	195	4	0	242	592
14:00	9	0	44	0	53	1	261	7	0	269	6	2	2	0	10	35	174	6	0	215	547
14:15	18	1	41	0	60	1	255	12	0	268	4	1	0	0	5	31	200	3	0	234	567
Total Volume	45	2	163	0	210	5	1102	37	1	1145	25	4	10	0	39	136	767	19	0	922	2316
% App Total	21.4%	1.0%	77.6%	0.0%		0.4%	96.2%	3.2%	0.1%		64.1%	10.3%	25.6%	0.0%		14.8%	83.2%	2.1%	0.0%		
PHF	.625	.500	.867	.000	.875	.625	.915	.771	.250	.917	.625	.500	.500	.000	.650	.791	.959	.792	.000	.952	.949

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-004 Johnson Drive-Commerce Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	2	22	0	0	24	16	0	12	0	28	0	34	13	0	47	0	0	0	0	0	99	0
13:15	2	38	0	0	40	8	0	2	0	10	0	32	16	0	48	0	0	0	0	0	98	0
13:30	8	40	0	0	48	12	0	6	0	18	0	24	8	0	32	0	0	0	0	0	98	0
13:45	6	24	0	0	30	9	0	6	0	15	0	34	14	0	48	0	0	0	0	0	93	0
Total	18	124	0	0	142	45	0	26	0	71	0	124	51	0	175	0	0	0	0	0	388	0
14:00	10	47	0	0	57	14	0	11	0	25	0	35	12	0	47	0	0	0	0	0	129	0
14:15	6	47	0	0	53	5	0	8	0	13	0	31	8	0	39	0	0	0	0	0	105	0
14:30	7	43	0	0	50	11	0	5	0	16	0	28	6	0	34	0	0	0	0	0	100	0
14:45	10	32	0	0	42	10	0	7	0	17	0	27	7	0	34	0	0	0	0	0	93	0
Total	33	169	0	0	202	40	0	31	0	71	0	121	33	0	154	0	0	0	0	0	427	0
15:00	5	41	0	0	46	11	0	9	0	20	0	29	8	0	37	0	0	0	0	0	103	0
15:15	8	30	0	0	38	10	0	6	0	16	0	36	7	0	43	0	0	0	0	0	97	0
15:30	7	35	0	0	42	10	0	7	0	17	0	27	6	0	33	0	0	0	0	0	92	0
15:45	9	32	0	0	41	5	0	7	0	12	0	30	8	0	38	0	0	0	0	0	91	0
Total	29	138	0	0	167	36	0	29	0	65	0	122	29	0	151	0	0	0	0	0	383	0
Grand Total	80	431	0	0	511	121	0	86	0	207	0	367	113	0	480	0	0	0	0	0	1198	0
Apprch %	15.7%	84.3%	0.0%	0.0%		58.5%	0.0%	41.5%	0.0%		0.0%	76.5%	23.5%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	6.7%	36.0%	0.0%	0.0%	42.7%	10.1%	0.0%	7.2%	0.0%	17.3%	0.0%	30.6%	9.4%	0.0%	40.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-004 Johnson Drive-Commerce Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:45 to 14:45																					
Peak Hour For Entire Intersection Begins at 13:45																					
13:45	6	24	0	0	30	9	0	6	0	15	0	34	14	0	48	0	0	0	0	0	93
14:00	10	47	0	0	57	14	0	11	0	25	0	35	12	0	47	0	0	0	0	0	129
14:15	6	47	0	0	53	5	0	8	0	13	0	31	8	0	39	0	0	0	0	0	105
14:30	7	43	0	0	50	11	0	5	0	16	0	28	6	0	34	0	0	0	0	0	100
Total Volume	29	161	0	0	190	39	0	30	0	69	0	128	40	0	168	0	0	0	0	0	427
% App Total	15.3%	84.7%	0.0%	0.0%		56.5%	0.0%	43.5%	0.0%		0.0%	76.2%	23.8%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.725	.856	.000	.000	.833	.696	.000	.682	.000	.690	.000	.914	.714	.000	.875	.000	.000	.000	.000	.000	.828

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-005 Johnson Drive-Park and Ride Lot.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	0	40	0	0	40	0	0	0	0	0	8	46	0	0	54	0	0	2	0	2	96	0
13:15	0	52	1	0	53	0	0	0	0	0	1	50	0	1	52	1	0	8	0	9	114	1
13:30	0	52	0	0	52	0	0	0	0	0	0	33	0	1	34	0	0	1	0	1	87	1
13:45	0	36	0	0	36	0	0	0	0	0	1	53	0	2	56	0	0	1	0	1	93	2
Total	0	180	1	0	181	0	0	0	0	0	10	182	0	4	196	1	0	12	0	13	390	4
14:00	0	55	0	0	55	0	0	0	0	0	1	44	0	0	45	0	0	1	0	1	101	0
14:15	0	62	0	0	62	0	0	0	0	0	1	38	0	2	41	0	0	0	0	0	103	2
14:30	0	56	0	0	56	0	0	0	0	0	2	32	0	1	35	0	0	2	0	2	93	1
14:45	0	42	0	1	43	0	0	0	0	0	3	37	0	1	41	0	0	2	0	2	86	2
Total	0	215	0	1	216	0	0	0	0	0	7	151	0	4	162	0	0	5	0	5	383	5
15:00	0	53	0	0	53	0	0	0	0	0	6	40	0	0	46	0	0	5	0	5	104	0
15:15	0	44	0	0	44	0	0	0	0	0	3	47	0	2	52	0	0	3	0	3	99	2
15:30	0	51	0	0	51	0	0	0	0	0	5	33	0	0	38	0	0	3	0	3	92	0
15:45	0	39	0	0	39	0	0	0	0	0	6	38	0	1	45	0	0	10	0	10	94	1
Total	0	187	0	0	187	0	0	0	0	0	20	158	0	3	181	0	0	21	0	21	389	3
Grand Total	0	582	1	1	584	0	0	0	0	0	37	491	0	11	539	1	0	38	0	39	1162	12
Apprch %	0.0%	99.7%	0.2%	0.2%		0.0%	0.0%	0.0%	0.0%		6.9%	91.1%	0.0%	2.0%		2.6%	0.0%	97.4%	0.0%			
Total %	0.0%	50.1%	0.1%	0.1%	50.3%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	42.3%	0.0%	0.9%	46.4%	0.1%	0.0%	3.3%	0.0%	3.4%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-005 Johnson Drive-Park and Ride Lot.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:15 to 14:15																					
Peak Hour For Entire Intersection Begins at 13:15																					
13:15	0	52	1	0	53	0	0	0	0	0	1	50	0	1	52	1	0	8	0	9	114
13:30	0	52	0	0	52	0	0	0	0	0	0	33	0	1	34	0	0	1	0	1	87
13:45	0	36	0	0	36	0	0	0	0	0	1	53	0	2	56	0	0	1	0	1	93
14:00	0	55	0	0	55	0	0	0	0	0	1	44	0	0	45	0	0	1	0	1	101
Total Volume	0	195	1	0	196	0	0	0	0	0	3	180	0	4	187	1	0	11	0	12	395
% App Total	0.0%	99.5%	0.5%	0.0%		0.0%	0.0%	0.0%	0.0%		1.6%	96.3%	0.0%	2.1%		8.3%	0.0%	91.7%	0.0%		
PHF	.000	.886	.250	.000	.891	.000	.000	.000	.000	.000	.750	.849	.000	.500	.835	.250	.000	.344	.000	.333	.866

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-006 Hopyard Drive-Owens Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	79	143	118	0	340	40	29	80	3	152	47	163	23	6	239	132	23	21	0	176	907	9
13:15	71	170	137	5	383	16	28	62	4	110	50	185	25	6	266	139	31	38	1	209	968	16
13:30	79	129	99	0	307	29	28	73	1	131	32	173	23	3	231	147	18	28	1	194	863	5
13:45	83	169	107	0	359	23	41	75	3	142	44	201	24	10	279	121	30	33	0	184	964	13
Total	312	611	461	5	1389	108	126	290	11	535	173	722	95	25	1015	539	102	120	2	763	3702	43
14:00	82	150	113	1	346	20	28	63	1	112	35	188	32	9	264	134	22	32	0	188	910	11
14:15	72	149	99	0	320	29	29	75	4	137	50	159	22	4	235	130	25	19	1	175	867	9
14:30	68	132	97	1	298	24	27	62	1	114	29	138	19	9	195	126	31	26	1	184	791	12
14:45	84	149	115	1	349	8	28	70	0	106	35	198	24	6	263	123	30	23	0	176	894	7
Total	306	580	424	3	1313	81	112	270	6	469	149	683	97	28	957	513	108	100	2	723	3462	39
15:00	66	148	106	1	321	19	27	72	3	121	35	156	14	3	208	110	31	19	0	160	810	7
15:15	67	135	91	2	295	20	28	76	2	126	30	167	22	4	223	121	27	39	0	187	831	8
15:30	64	122	101	2	289	12	22	62	3	99	34	150	17	6	207	105	28	23	0	156	751	11
15:45	66	129	82	3	280	18	28	66	1	113	24	146	24	6	200	98	18	20	0	136	729	10
Total	263	534	380	8	1185	69	105	276	9	459	123	619	77	19	838	434	104	101	0	639	3121	36
Grand Total	881	1725	1265	16	3887	258	343	836	26	1463	445	2024	269	72	2810	1486	314	321	4	2125	10285	118
Apprch %	22.7%	44.4%	32.5%	0.4%		17.6%	23.4%	57.1%	1.8%		15.8%	72.0%	9.6%	2.6%		69.9%	14.8%	15.1%	0.2%			
Total %	8.6%	16.8%	12.3%	0.2%	37.8%	2.5%	3.3%	8.1%	0.3%	14.2%	4.3%	19.7%	2.6%	0.7%	27.3%	14.4%	3.1%	3.1%	0.0%	20.7%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-006 Hopyard Drive-Owens Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:15 to 14:15																					
Peak Hour For Entire Intersection Begins at 13:15																					
13:15	71	170	137	5	383	16	28	62	4	110	50	185	25	6	266	139	31	38	1	209	968
13:30	79	129	99	0	307	29	28	73	1	131	32	173	23	3	231	147	18	28	1	194	863
13:45	83	169	107	0	359	23	41	75	3	142	44	201	24	10	279	121	30	33	0	184	964
14:00	82	150	113	1	346	20	28	63	1	112	35	188	32	9	264	134	22	32	0	188	910
Total Volume	315	618	456	6	1395	88	125	273	9	495	161	747	104	28	1040	541	101	131	2	775	3705
% App Total	22.6%	44.3%	32.7%	0.4%		17.8%	25.3%	55.2%	1.8%		15.5%	71.8%	10.0%	2.7%		69.8%	13.0%	16.9%	0.3%		
PHF	.949	.909	.832	.300	.911	.759	.762	.910	.563	.871	.805	.929	.813	.700	.932	.920	.815	.862	.500	.927	.957

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-007 Johnson Drive-Owens Drive (north).ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	6	59	0	0	65	64	4	8	0	76	71	40	21	0	132	1	6	66	0	73	346	0
13:15	1	56	1	0	58	48	12	8	0	68	67	42	35	0	144	4	9	57	0	70	340	0
13:30	11	53	1	0	65	58	4	9	0	71	52	30	35	0	117	1	6	70	0	77	330	0
13:45	3	63	1	0	67	66	4	3	0	73	62	41	34	0	137	2	6	45	0	53	330	0
Total	21	231	3	0	255	236	24	28	0	288	252	153	125	0	530	8	27	238	0	273	1346	0
14:00	6	60	1	0	67	56	7	12	0	75	64	40	22	0	126	0	3	52	0	55	323	0
14:15	5	56	1	0	62	53	4	7	0	64	72	29	27	0	128	1	1	37	0	39	293	0
14:30	13	39	0	0	52	57	4	11	0	72	66	31	16	0	113	1	5	66	0	72	309	0
14:45	4	42	1	0	47	49	3	15	0	67	58	46	23	0	127	0	5	57	0	62	303	0
Total	28	197	3	0	228	215	18	45	0	278	260	146	88	0	494	2	14	212	0	228	1228	0
15:00	6	60	0	0	66	40	3	9	0	52	58	40	41	0	139	0	5	47	0	52	309	0
15:15	7	48	0	0	55	58	7	7	0	72	48	37	19	0	104	0	4	60	0	64	295	0
15:30	9	45	2	0	56	37	3	5	0	45	56	43	19	0	118	1	2	48	0	51	270	0
15:45	4	33	1	0	38	51	1	11	0	63	41	30	16	0	87	1	3	58	0	62	250	0
Total	26	186	3	0	215	186	14	32	0	232	203	150	95	0	448	2	14	213	0	229	1124	0
Grand Total	75	614	9	0	698	637	56	105	0	798	715	449	308	0	1472	12	55	663	0	730	3698	0
Apprch %	10.7%	88.0%	1.3%	0.0%		79.8%	7.0%	13.2%	0.0%		48.6%	30.5%	20.9%	0.0%		1.6%	7.5%	90.8%	0.0%			
Total %	2.0%	16.6%	0.2%	0.0%	18.9%	17.2%	1.5%	2.8%	0.0%	21.6%	19.3%	12.1%	8.3%	0.0%	39.8%	0.3%	1.5%	17.9%	0.0%	19.7%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-007 Johnson Drive-Owens Drive (north).ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:00 to 14:00																					
Peak Hour For Entire Intersection Begins at 13:00																					
13:00	6	59	0	0	65	64	4	8	0	76	71	40	21	0	132	1	6	66	0	73	346
13:15	1	56	1	0	58	48	12	8	0	68	67	42	35	0	144	4	9	57	0	70	340
13:30	11	53	1	0	65	58	4	9	0	71	52	30	35	0	117	1	6	70	0	77	330
13:45	3	63	1	0	67	66	4	3	0	73	62	41	34	0	137	2	6	45	0	53	330
Total Volume	21	231	3	0	255	236	24	28	0	288	252	153	125	0	530	8	27	238	0	273	1346
% App Total	8.2%	90.6%	1.2%	0.0%		81.9%	8.3%	9.7%	0.0%		47.5%	28.9%	23.6%	0.0%		2.9%	9.9%	87.2%	0.0%		
PHF	.477	.917	.750	.000	.951	.894	.500	.778	.000	.947	.887	.911	.893	.000	.920	.500	.750	.850	.000	.886	.973

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-008 Johnson Drive-Owens Drive (south).ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	162	25	0	0	187	2	16	123	1	142	0	12	5	0	17	1	6	1	0	8	354	1
13:15	141	23	0	0	164	5	13	145	3	166	1	11	9	0	21	1	9	6	0	16	367	3
13:30	145	39	0	0	184	9	6	102	0	117	5	15	17	0	37	0	22	14	0	36	374	0
13:45	146	30	2	0	178	7	6	134	1	148	0	12	3	0	15	0	13	3	0	16	357	1
Total	594	117	2	0	713	23	41	504	5	573	6	50	34	0	90	2	50	24	0	76	1452	5
14:00	144	20	0	0	164	8	6	127	0	141	2	6	10	0	18	0	8	4	0	12	335	0
14:15	141	21	0	0	162	3	5	125	0	133	2	6	11	0	19	1	3	4	0	8	322	0
14:30	148	18	1	0	167	8	10	105	1	124	0	10	8	0	18	1	5	3	0	9	318	1
14:45	134	16	2	0	152	4	17	114	1	136	2	17	2	0	21	1	6	7	0	14	323	1
Total	567	75	3	0	645	23	38	471	2	534	6	39	31	0	76	3	22	18	0	43	1298	2
15:00	115	20	1	0	136	4	13	117	1	135	1	20	7	0	28	0	19	3	0	22	321	1
15:15	160	26	0	0	186	4	6	99	1	110	0	12	5	0	17	1	13	3	0	17	330	1
15:30	105	21	2	0	128	10	13	109	0	132	1	8	7	0	16	0	21	5	0	26	302	0
15:45	109	30	0	0	139	8	10	87	1	106	0	7	9	0	16	0	4	2	0	6	267	1
Total	489	97	3	0	589	26	42	412	3	483	2	47	28	0	77	1	57	13	0	71	1220	3
Grand Total	1650	289	8	0	1947	72	121	1387	10	1590	14	136	93	0	243	6	129	55	0	190	3970	10
Apprch %	84.7%	14.8%	0.4%	0.0%		4.5%	7.6%	87.2%	0.6%		5.8%	56.0%	38.3%	0.0%		3.2%	67.9%	28.9%	0.0%			
Total %	41.6%	7.3%	0.2%	0.0%	49.0%	1.8%	3.0%	34.9%	0.3%	40.1%	0.4%	3.4%	2.3%	0.0%	6.1%	0.2%	3.2%	1.4%	0.0%	4.8%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-008 Johnson Drive-Owens Drive (south).ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:00 to 14:00																					
Peak Hour For Entire Intersection Begins at 13:00																					
13:00	162	25	0	0	187	2	16	123	1	142	0	12	5	0	17	1	6	1	0	8	354
13:15	141	23	0	0	164	5	13	145	3	166	1	11	9	0	21	1	9	6	0	16	367
13:30	145	39	0	0	184	9	6	102	0	117	5	15	17	0	37	0	22	14	0	36	374
13:45	146	30	2	0	178	7	6	134	1	148	0	12	3	0	15	0	13	3	0	16	357
Total Volume	594	117	2	0	713	23	41	504	5	573	6	50	34	0	90	2	50	24	0	76	1452
% App Total	83.3%	16.4%	0.3%	0.0%		4.0%	7.2%	88.0%	0.9%		6.7%	55.6%	37.8%	0.0%		2.6%	65.8%	31.6%	0.0%		
PHF	.917	.750	.250	.000	.953	.639	.641	.869	.417	.863	.300	.833	.500	.000	.608	.500	.568	.429	.000	.528	.971

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-009 Hopyard Road-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	30	119	39	18	206	18	108	28	6	160	100	157	21	3	281	30	72	67	2	171	818	29
13:15	35	127	36	15	213	9	131	26	3	169	70	164	12	2	248	27	93	59	0	179	809	20
13:30	34	132	46	9	221	14	131	27	3	175	92	183	15	3	293	32	79	46	2	159	848	17
13:45	28	150	32	13	223	16	127	20	5	168	97	165	18	7	287	40	94	68	0	202	880	25
Total	127	528	153	55	863	57	497	101	17	672	359	669	66	15	1109	129	338	240	4	711	3355	91
14:00	29	133	35	19	216	16	113	33	0	162	90	184	11	3	288	30	62	64	2	158	824	24
14:15	22	154	45	9	230	25	124	26	1	176	63	126	12	2	203	44	98	50	1	193	802	13
14:30	17	103	42	5	167	14	98	23	1	136	75	141	9	1	226	29	84	69	2	184	713	9
14:45	28	130	36	8	202	14	96	26	1	137	67	185	9	0	261	31	73	58	3	165	765	12
Total	96	520	158	41	815	69	431	108	3	611	295	636	41	6	978	134	317	241	8	700	3104	58
15:00	19	116	31	4	170	12	118	14	5	149	73	142	17	1	233	33	85	56	6	180	732	16
15:15	20	132	33	13	198	11	126	22	0	159	62	124	12	1	199	29	74	64	0	167	723	14
15:30	23	121	35	6	185	9	113	25	2	149	99	149	17	2	267	36	88	67	2	193	794	12
15:45	19	115	39	3	176	16	120	17	0	153	73	108	15	3	199	22	81	50	3	156	684	9
Total	81	484	138	26	729	48	477	78	7	610	307	523	61	7	898	120	328	237	11	696	2933	51
Grand Total	304	1532	449	122	2407	174	1405	287	27	1893	961	1828	168	28	2985	383	983	718	23	2107	9392	200
Apprch %	12.6%	63.6%	18.7%	5.1%		9.2%	74.2%	15.2%	1.4%		32.2%	61.2%	5.6%	0.9%		18.2%	46.7%	34.1%	1.1%			
Total %	3.2%	16.3%	4.8%	1.3%	25.6%	1.9%	15.0%	3.1%	0.3%	20.2%	10.2%	19.5%	1.8%	0.3%	31.8%	4.1%	10.5%	7.6%	0.2%	22.4%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-009 Hopyard Road-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:15 to 14:15																					
Peak Hour For Entire Intersection Begins at 13:15																					
13:15	35	127	36	15	213	9	131	26	3	169	70	164	12	2	248	27	93	59	0	179	809
13:30	34	132	46	9	221	14	131	27	3	175	92	183	15	3	293	32	79	46	2	159	848
13:45	28	150	32	13	223	16	127	20	5	168	97	165	18	7	287	40	94	68	0	202	880
14:00	29	133	35	19	216	16	113	33	0	162	90	184	11	3	288	30	62	64	2	158	824
Total Volume	126	542	149	56	873	55	502	106	11	674	349	696	56	15	1116	129	328	237	4	698	3361
% App Total	14.4%	62.1%	17.1%	6.4%		8.2%	74.5%	15.7%	1.6%		31.3%	62.4%	5.0%	1.3%		18.5%	47.0%	34.0%	0.6%		
PHF	.900	.903	.810	.737	.979	.859	.958	.803	.550	.963	.899	.946	.778	.536	.952	.806	.872	.871	.500	.864	.955

APPENDIX B: LOS WORKSHEETS

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	701	511	761	0	0	1040
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	730	532	793	0	0	1083
RTOR Reduction (vph)	0	114	0	0	0	0
Lane Group Flow (vph)	730	418	793	0	0	1083
Confl. Peds. (#/hr)				5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	13.9	13.9	13.6			13.6
Effective Green, g (s)	15.0	15.0	14.7			14.7
Actuated g/C Ratio	0.42	0.42	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1505	1221	2185			2185
v/s Ratio Prot	c0.20	0.14	0.15			c0.20
v/s Ratio Perm						
v/c Ratio	0.49	0.34	0.36			0.50
Uniform Delay, d1	7.5	7.0	7.3			7.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.2	0.1			0.2
Delay (s)	7.8	7.2	7.4			7.9
Level of Service	A	A	A			A
Approach Delay (s)	7.5		7.4			7.9
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	35.7	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	0	557	0	0	0	0	521	234	0	1290	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2829		3693	1618
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2829		3693	1618
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	460	0	612	0	0	0	0	573	257	0	1418	496
RTOR Reduction (vph)	0	0	53	0	0	0	0	0	115	0	0	223
Lane Group Flow (vph)	460	0	559	0	0	0	0	573	142	0	1418	273
Confl. Peds. (#/hr)									4	4		
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	16.8		16.8					28.5	28.5		28.5	28.5
Effective Green, g (s)	17.9		17.9					29.6	29.6		29.6	29.5
Actuated g/C Ratio	0.33		0.33					0.55	0.55		0.55	0.55
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1198		972					2043	1565		2043	892
v/s Ratio Prot								0.16			c0.38	
v/s Ratio Perm	0.13		c0.19						0.05			0.17
v/c Ratio	0.38		0.57					0.28	0.09		0.69	0.31
Uniform Delay, d1	13.6		14.7					6.3	5.6		8.7	6.5
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2		0.8					0.1	0.0		1.0	0.2
Delay (s)	13.8		15.5					6.4	5.6		9.7	6.7
Level of Service	B		B					A	A		A	A
Approach Delay (s)		14.8			0.0			6.2			8.9	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	7.1
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	36	56	106	18	311	15	304	95	287	277	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1731		1829	1925	2880	1829	5043		3547	3657	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1731		1829	1925	2880	1829	5043		3547	3657	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	8	42	65	123	21	362	17	353	110	334	322	3
RTOR Reduction (vph)	0	49	0	0	0	160	0	55	0	0	0	2
Lane Group Flow (vph)	8	58	0	123	21	202	17	408	0	334	322	1
Confl. Peds. (#/hr)			6	6					9	9		
Confl. Bikes (#/hr)									1			2
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.8	14.1		7.6	20.9	37.1	1.8	19.8		10.2	28.2	28.2
Effective Green, g (s)	1.8	17.1		8.6	23.9	40.1	2.8	22.8		11.2	31.2	31.2
Actuated g/C Ratio	0.03	0.24		0.12	0.33	0.56	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	45	412		219	641	1610	71	1603		554	1591	702
v/s Ratio Prot	0.00	0.03		c0.07	0.01	c0.07	0.01	c0.08		c0.09	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.18	0.14		0.56	0.03	0.13	0.24	0.25		0.60	0.20	0.00
Uniform Delay, d1	34.2	21.5		29.8	16.1	7.5	33.4	18.1		28.2	12.5	11.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1		2.0	0.0	0.0	0.6	0.2		1.3	0.1	0.0
Delay (s)	34.9	21.6		31.7	16.1	7.5	34.1	18.3		29.5	12.7	11.4
Level of Service	C	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.5			13.8			18.9			21.2	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	617	1565	0	510	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2880
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2880
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	663	1683	0	548	777
RTOR Reduction (vph)	0	0	0	0	0	13
Lane Group Flow (vph)	0	663	1683	0	548	764
Confl. Peds. (#/hr)	8			8		
Confl. Bikes (#/hr)				5		
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		55.6	55.6		32.4	32.4
Effective Green, g (s)		58.6	58.6		35.4	35.4
Actuated g/C Ratio		0.59	0.59		0.35	0.35
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3079	3079		1255	1019
v/s Ratio Prot		0.13	c0.32		0.15	
v/s Ratio Perm						c0.27
v/c Ratio		0.22	0.55		0.44	0.75
Uniform Delay, d1		9.8	12.6		24.7	28.4
Progression Factor		1.00	0.91		1.00	1.00
Incremental Delay, d2		0.2	0.6		0.2	3.1
Delay (s)		10.0	12.1		24.9	31.5
Level of Service		A	B		C	C
Approach Delay (s)		10.0	12.1		28.8	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	900	0	0	1306	612	662
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	957	0	0	1389	651	704
RTOR Reduction (vph)	0	0	0	0	0	164
Lane Group Flow (vph)	957	0	0	1389	651	540
Confl. Bikes (#/hr)		7				
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	63.5			63.5	24.5	24.5
Effective Green, g (s)	66.5			66.5	27.5	27.5
Actuated g/C Ratio	0.66			0.66	0.28	0.28
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3494			2431	975	792
v/s Ratio Prot	0.18			c0.38	0.18	c0.19
v/s Ratio Perm						
v/c Ratio	0.27			0.57	0.67	0.68
Uniform Delay, d1	6.9			9.0	32.2	32.3
Progression Factor	0.99			0.50	1.00	1.00
Incremental Delay, d2	0.2			0.9	1.7	2.4
Delay (s)	7.0			5.3	33.9	34.8
Level of Service	A			A	C	C
Approach Delay (s)	7.0			5.3	34.4	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	203	1333	24	12	1813	86	11	2	11	41	1	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3513	5188		1811	5204	1583		1734			1813	1610
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.89			0.74	1.00
Satd. Flow (perm)	3513	5188		1811	5204	1583		1571			1406	1610
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	216	1418	26	13	1929	91	12	2	12	44	1	223
RTOR Reduction (vph)	0	1	0	0	0	23	0	10	0	0	0	24
Lane Group Flow (vph)	216	1443	0	13	1929	68	0	16	0	0	45	199
Confl. Peds. (#/hr)	5					5			2	2		
Confl. Bikes (#/hr)			7			3			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Actuated Green, G (s)	11.6	72.3		1.4	62.1	62.1		11.3			11.3	22.9
Effective Green, g (s)	12.6	75.3		2.4	65.1	65.1		13.3			13.3	26.9
Actuated g/C Ratio	0.13	0.75		0.02	0.65	0.65		0.13			0.13	0.27
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	442	3906		43	3387	1030		208			186	433
v/s Ratio Prot	c0.06	0.28		0.01	c0.37							c0.06
v/s Ratio Perm						0.04		0.01			0.03	0.06
v/c Ratio	0.49	0.37		0.30	0.57	0.07		0.07			0.24	0.46
Uniform Delay, d1	40.7	4.2		48.0	9.7	6.4		38.0			38.8	30.5
Progression Factor	1.13	0.88		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.8	0.3		3.9	0.7	0.1		0.2			0.7	0.8
Delay (s)	46.9	4.0		51.9	10.4	6.5		38.1			39.5	31.3
Level of Service	D	A		D	B	A		D			D	C
Approach Delay (s)		9.6			10.5			38.1			32.6	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	55	36	180	98	42	132
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	61	40	200	109	47	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	494	254			309	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	494	254			309	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	95			96	
cM capacity (veh/h)	514	784			1252	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	309	193
Volume Left	61	0	47
Volume Right	40	109	0
cSH	595	1700	1252
Volume to Capacity	0.17	0.18	0.04
Queue Length 95th (ft)	15	0	3
Control Delay (s)	12.3	0.0	2.2
Lane LOS	B		A
Approach Delay (s)	12.3	0.0	2.2
Approach LOS	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	245	0	5	286	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	272	0	6	318	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			272		601	272
vC1, stage 1 conf vol					272	
vC2, stage 2 conf vol					329	
vCu, unblocked vol			272		601	272
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1291		636	766

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	272	6	318	8
Volume Left	0	6	0	0
Volume Right	0	0	0	8
cSH	1700	1291	1700	766
Volume to Capacity	0.16	0.00	0.19	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	7.8	0.0	9.7
Lane LOS		A		A
Approach Delay (s)	0.0	0.1		9.7
Approach LOS				A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	1166	53	20	1688	43	163	30	28	9	8	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1616	1847	5307	1621		1562		1847	1944	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.68	1.00	1.00
Satd. Flow (perm)	1847	5307	1616	1847	5307	1621		1260		1319	1944	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	173	1215	55	21	1758	45	170	31	29	9	8	52
RTOR Reduction (vph)	0	0	19	0	0	22	0	5	0	0	0	40
Lane Group Flow (vph)	173	1215	36	21	1758	23	0	225	0	9	8	12
Confl. Peds. (#/hr)	3					3	1					1
Confl. Bikes (#/hr)			3			3			3			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	21.4	75.7	75.7	2.9	57.2	57.2		26.4		26.4	26.4	26.4
Effective Green, g (s)	22.4	78.7	78.7	3.9	60.2	60.2		28.4		28.4	28.4	28.4
Actuated g/C Ratio	0.19	0.66	0.66	0.03	0.50	0.50		0.24		0.24	0.24	0.24
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	344	3480	1059	60	2662	813		298		312	460	386
v/s Ratio Prot	c0.09	0.23		0.01	c0.33						0.00	
v/s Ratio Perm			0.02			0.01		c0.18		0.01		0.01
v/c Ratio	0.50	0.35	0.03	0.35	0.66	0.03		0.76		0.03	0.02	0.03
Uniform Delay, d1	43.8	9.2	7.3	56.8	22.3	15.1		42.6		35.2	35.1	35.2
Progression Factor	1.00	1.00	1.00	0.86	1.18	2.76		1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.3	0.1	3.0	1.1	0.1		10.4		0.0	0.0	0.0
Delay (s)	45.0	9.5	7.3	51.6	27.4	41.8		53.0		35.2	35.1	35.3
Level of Service	D	A	A	D	C	D		D		D	D	D
Approach Delay (s)		13.7			28.0			53.0			35.2	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	296	404	962	0	0	1500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3513	2852	5204			3622
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3513	2852	5204			3622
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	315	430	1023	0	0	1596
RTOR Reduction (vph)	0	104	0	0	0	0
Lane Group Flow (vph)	315	326	1023	0	0	1596
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	15.0	15.0	33.0			33.0
Effective Green, g (s)	18.0	18.0	36.0			36.0
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1053	855	3122			2173
v/s Ratio Prot	0.09	c0.11	0.20			c0.44
v/s Ratio Perm						
v/c Ratio	0.30	0.38	0.33			0.73
Uniform Delay, d1	16.1	16.6	6.0			8.6
Progression Factor	1.00	1.00	0.97			1.00
Incremental Delay, d2	0.3	0.6	0.3			2.2
Delay (s)	16.5	17.2	6.0			10.8
Level of Service	B	B	A			B
Approach Delay (s)	16.9		6.0			10.8
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	546	1522	0	737	1316	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	569	1585	0	768	1371	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	569	1583	0	768	1371	0
Confl. Bikes (#/hr)						1
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.16	c0.55		0.15	c0.26	
v/s Ratio Perm						
v/c Ratio	0.28	0.94		0.46	0.82	
Uniform Delay, d1	6.2	11.6		16.4	19.0	
Progression Factor	1.00	1.00		0.71	0.76	
Incremental Delay, d2	0.0	11.0		0.9	3.7	
Delay (s)	6.2	22.6		12.6	18.1	
Level of Service	A	C		B	B	
Approach Delay (s)	18.2			12.6	18.1	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	224	80	61	78	99	193	102	506	80	740	1611	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3270		1829	1829	1554	1829	5255	1614	3547	5046	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3270		1829	1829	1554	1829	5255	1614	3547	5046	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	84	64	82	104	203	107	533	84	779	1696	513
RTOR Reduction (vph)	0	28	0	0	0	116	0	0	0	0	39	0
Lane Group Flow (vph)	127	229	0	82	104	87	107	533	84	779	2170	0
Confl. Peds. (#/hr)			18	18			8		4	4		8
Confl. Bikes (#/hr)			1			5			1			1
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	16.5	16.5		6.9	6.9	36.8	9.2	44.7	120.0	29.9	65.4	
Effective Green, g (s)	19.5	19.5		9.9	9.9	42.8	10.2	47.7	120.0	30.9	68.4	
Actuated g/C Ratio	0.16	0.16		0.08	0.08	0.36	0.08	0.40	1.00	0.26	0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	270	531		150	150	554	155	2088	1614	913	2876	
v/s Ratio Prot	c0.08	0.07		0.04	c0.06	0.06	0.06	0.10		c0.22	c0.43	
v/s Ratio Perm									0.05			
v/c Ratio	0.47	0.43		0.55	0.69	0.16	0.69	0.26	0.05	0.85	0.75	
Uniform Delay, d1	45.6	45.3		52.9	53.6	26.3	53.4	24.2	0.0	42.4	19.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.70	1.56	1.00	0.99	0.87	
Incremental Delay, d2	0.5	0.2		2.2	10.6	0.0	9.9	0.3	0.1	3.8	0.9	
Delay (s)	46.0	45.5		55.1	64.2	26.4	47.3	38.1	0.1	45.6	17.9	
Level of Service	D	D		E	E	C	D	D	A	D	B	
Approach Delay (s)		45.7			42.5			35.0			25.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	4	97	24	3	7	142	242	13	8	194	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	5	110	27	3	8	161	275	15	9	220	3

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	5	110	31	8	161	290	9	224
Volume Left (vph)	0	0	27	0	161	0	9	0
Volume Right (vph)	0	110	0	8	0	15	0	3
Hadj (s)	0.09	-0.61	0.53	-0.61	0.58	0.05	0.58	0.07
Departure Headway (s)	6.3	5.6	6.8	5.7	5.8	5.2	6.0	5.5
Degree Utilization, x	0.01	0.17	0.06	0.01	0.26	0.42	0.02	0.34
Capacity (veh/h)	529	595	483	573	608	672	574	635
Control Delay (s)	8.1	8.5	9.0	7.5	9.5	10.7	7.9	10.1
Approach Delay (s)	8.5		8.7		10.3		10.0	
Approach LOS	A		A		B		A	

Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	14	15	149	86	386	10	37	33	280	55	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1793	1718		1793	1888	1586	1793	1743		1704	1729	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1793	1718		1793	1888	1586	1793	1743		1704	1729	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	15	16	157	91	406	11	39	35	295	58	2
RTOR Reduction (vph)	0	14	0	0	0	156	0	30	0	0	0	0
Lane Group Flow (vph)	1	17	0	157	91	250	11	44	0	150	205	0
Confl. Peds. (#/hr)	1		2	2		1	1					1
Confl. Bikes (#/hr)			1			3			1			1
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.7	5.1		10.2	14.6	31.3	6.4	6.4		16.7	16.7	
Effective Green, g (s)	1.7	7.1		11.2	16.6	35.3	8.4	8.4		18.7	18.7	
Actuated g/C Ratio	0.03	0.12		0.20	0.29	0.61	0.15	0.15		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	212		349	546	1058	262	255		555	563	
v/s Ratio Prot	0.00	c0.01		c0.09	0.05	c0.08	0.01	c0.03		0.09	c0.12	
v/s Ratio Perm						0.08						
v/c Ratio	0.02	0.08		0.45	0.17	0.24	0.04	0.17		0.27	0.36	
Uniform Delay, d1	27.0	22.3		20.4	15.2	5.0	21.0	21.5		14.3	14.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.9	0.1	0.1	0.1	0.3		0.3	0.4	
Delay (s)	27.2	22.4		21.3	15.4	5.1	21.1	21.8		14.6	15.2	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		22.6			10.4			21.7			14.9	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	686	283	53	970	100	632	515	110	330	676	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1622	3547	5255	1613	5157	3657	1614	3547	5255	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1622	3547	5255	1613	5157	3657	1614	3547	5255	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	119	700	289	54	990	102	645	526	112	337	690	232
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	119	700	289	54	990	102	645	526	112	337	690	232
Confl. Peds. (#/hr)	8		1	1		8	2		1	1		2
Confl. Bikes (#/hr)			3						6			2
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.4	31.8	52.8	5.2	29.6	120.0	21.0	47.6	120.0	15.4	40.0	120.0
Effective Green, g (s)	8.4	34.8	58.8	6.2	32.6	120.0	24.0	50.6	120.0	16.4	43.0	120.0
Actuated g/C Ratio	0.07	0.29	0.49	0.05	0.27	1.00	0.20	0.42	1.00	0.14	0.36	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	248	1523	794	183	1427	1613	1031	1542	1614	484	1883	1615
v/s Ratio Prot	c0.03	0.13	0.07	0.02	c0.19		c0.13	0.14		c0.09	c0.13	
v/s Ratio Perm			0.11			0.06			0.07			c0.14
v/c Ratio	0.48	0.46	0.36	0.30	0.69	0.06	0.63	0.34	0.07	0.70	0.37	0.14
Uniform Delay, d1	53.7	34.9	19.0	54.8	39.2	0.0	43.9	23.4	0.0	49.4	28.4	0.0
Progression Factor	0.84	1.05	0.86	1.29	1.10	1.00	0.66	0.34	1.00	0.68	1.09	1.00
Incremental Delay, d2	0.5	0.4	0.1	0.3	1.7	0.1	0.8	0.5	0.1	3.3	0.5	0.2
Delay (s)	45.5	37.2	16.3	71.2	44.9	0.1	29.6	8.5	0.1	36.9	31.4	0.2
Level of Service	D	D	B	E	D	A	C	A	A	D	C	A
Approach Delay (s)		32.6			42.2			18.4			27.1	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	222	338	249	228	46	330	940	272	134	696	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	236	360	265	243	49	351	1000	289	143	740	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	45
Lane Group Flow (vph)	107	236	360	265	243	49	351	1000	289	143	740	25
Confl. Peds. (#/hr)	14		4	4		14	3		2	2		3
Confl. Bikes (#/hr)			5			6			12			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.8	17.6	120.0	13.0	22.8	120.0	30.0	61.2	120.0	8.2	39.4	39.4
Effective Green, g (s)	8.8	20.6	120.0	14.0	25.8	120.0	31.0	64.2	120.0	9.2	42.4	42.4
Actuated g/C Ratio	0.07	0.17	1.00	0.12	0.22	1.00	0.26	0.54	1.00	0.08	0.35	0.35
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	262	633	1629	418	793	1623	925	2839	1627	274	1875	572
v/s Ratio Prot	c0.03	c0.06		c0.07	0.07		0.10	c0.19		c0.04	c0.14	
v/s Ratio Perm			0.22			0.03			0.18			0.02
v/c Ratio	0.41	0.37	0.22	0.63	0.31	0.03	0.38	0.35	0.18	0.52	0.39	0.04
Uniform Delay, d1	53.1	44.0	0.0	50.6	39.6	0.0	36.6	16.0	0.0	53.3	29.2	25.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.63	1.00	0.94	0.60	1.00
Incremental Delay, d2	0.4	0.8	0.3	2.3	0.5	0.0	0.1	0.3	0.2	0.8	0.6	0.1
Delay (s)	53.5	44.8	0.3	52.9	40.0	0.0	26.7	10.3	0.2	50.7	18.0	25.6
Level of Service	D	D	A	D	D	A	C	B	A	D	B	C
Approach Delay (s)		23.3			42.6			12.0			23.5	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	141	340	49	13	1081	30	22	81	12	33	195	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3582		1829	5232		3547	3579		1829	4808	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3582		1829	5232		3547	3579		1829	4808	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	145	351	51	13	1114	31	23	84	12	34	201	221
RTOR Reduction (vph)	0	6	0	0	1	0	0	10	0	0	176	0
Lane Group Flow (vph)	145	396	0	13	1144	0	23	86	0	34	246	0
Confl. Peds. (#/hr)							1		3	3		1
Confl. Bikes (#/hr)			1			1			5			
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.2	71.7		3.0	64.5		4.0	20.0		5.3	21.3	
Effective Green, g (s)	11.2	74.7		4.0	67.5		5.0	23.0		6.3	24.3	
Actuated g/C Ratio	0.09	0.62		0.03	0.56		0.04	0.19		0.05	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	331	2229		60	2943		147	685		96	973	
v/s Ratio Prot	c0.04	0.11		0.01	c0.22		0.01	0.02		c0.02	c0.05	
v/s Ratio Perm												
v/c Ratio	0.44	0.18		0.22	0.39		0.16	0.13		0.35	0.25	
Uniform Delay, d1	51.4	9.6		56.5	14.7		55.5	40.2		54.9	40.2	
Progression Factor	0.76	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		1.8	0.4		0.5	0.1		2.2	0.1	
Delay (s)	39.7	12.7		58.3	15.1		56.0	40.3		57.1	40.4	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		19.9			15.6			43.3			41.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	260	801	1736	0	0	956
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	277	852	1847	0	0	1017
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	277	848	1847	0	0	1017
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.0	29.0	31.3			31.3
Effective Green, g (s)	30.1	30.1	32.4			32.4
Actuated g/C Ratio	0.44	0.44	0.47			0.47
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1574	1277	2510			2510
v/s Ratio Prot	0.08	c0.29	c0.35			0.19
v/s Ratio Perm						
v/c Ratio	0.18	0.66	0.74			0.41
Uniform Delay, d1	11.7	15.2	14.6			11.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	1.3	1.2			0.1
Delay (s)	11.7	16.5	15.7			11.9
Level of Service	B	B	B			B
Approach Delay (s)	15.3		15.7			11.9
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	503	0	340	0	0	0	0	1846	770	0	776	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2842		3693	1616
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2842		3693	1616
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	529	0	358	0	0	0	0	1943	811	0	817	463
RTOR Reduction (vph)	0	0	198	0	0	0	0	0	120	0	0	161
Lane Group Flow (vph)	529	0	160	0	0	0	0	1943	691	0	817	302
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	16.0		16.0					42.7	42.7		42.7	42.7
Effective Green, g (s)	17.1		17.1					43.8	43.8		43.8	43.7
Actuated g/C Ratio	0.26		0.26					0.65	0.65		0.65	0.65
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	915		743					2417	1860		2417	1055
v/s Ratio Prot								c0.53			0.22	
v/s Ratio Perm	c0.15		0.06						0.24			0.19
v/c Ratio	0.58		0.22					0.80	0.37		0.34	0.29
Uniform Delay, d1	21.7		19.6					8.4	5.3		5.1	4.9
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9		0.1					2.0	0.1		0.1	0.2
Delay (s)	22.6		19.8					10.4	5.4		5.2	5.1
Level of Service	C		B					B	A		A	A
Approach Delay (s)		21.5			0.0			9.0			5.2	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	42	47	95	55	378	27	294	77	330	431	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1847	1774		1847	1944	2908	1847	5126		3583	3693	1626
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1847	1774		1847	1944	2908	1847	5126		3583	3693	1626
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	45	51	102	59	406	29	316	83	355	463	6
RTOR Reduction (vph)	0	39	0	0	0	178	0	47	0	0	0	3
Lane Group Flow (vph)	4	57	0	102	59	228	29	352	0	355	463	3
Confl. Peds. (#/hr)			4	4			1		2	2		1
Confl. Bikes (#/hr)									1			6
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.7	14.0		6.9	20.2	36.6	2.0	19.3		10.4	27.7	27.7
Effective Green, g (s)	1.7	17.0		7.9	23.2	39.6	3.0	22.3		11.4	30.7	30.7
Actuated g/C Ratio	0.02	0.24		0.11	0.33	0.56	0.04	0.32		0.16	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	44	427		206	638	1631	78	1619		578	1605	707
v/s Ratio Prot	0.00	0.03		c0.06	0.03	c0.08	0.02	0.07		c0.10	c0.13	
v/s Ratio Perm												0.00
v/c Ratio	0.09	0.13		0.50	0.09	0.14	0.37	0.22		0.61	0.29	0.00
Uniform Delay, d1	33.7	21.0		29.5	16.4	7.4	32.9	17.7		27.6	12.9	11.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1		0.7	0.0	0.0	1.1	0.1		1.4	0.2	0.0
Delay (s)	34.0	21.1		30.2	16.4	7.4	34.0	17.9		28.9	13.1	11.3
Level of Service	C	C		C	B	A	C	B		C	B	B
Approach Delay (s)		21.6			12.4			19.0			19.9	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1898	931	0	689	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	2086	1023	0	757	482
RTOR Reduction (vph)	0	0	0	0	0	118
Lane Group Flow (vph)	0	2086	1023	0	757	364
Confl. Peds. (#/hr)	2			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		32.0	32.0		16.0	16.0
Effective Green, g (s)		35.0	35.0		19.0	19.0
Actuated g/C Ratio		0.58	0.58		0.32	0.32
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3095	3095		1134	920
v/s Ratio Prot		c0.39	0.19		c0.21	
v/s Ratio Perm						0.13
v/c Ratio		0.67	0.33		0.67	0.40
Uniform Delay, d1		8.6	6.5		17.8	16.0
Progression Factor		1.00	0.86		1.00	1.00
Incremental Delay, d2		1.2	0.2		1.5	0.3
Delay (s)		9.8	5.8		19.3	16.3
Level of Service		A	A		B	B
Approach Delay (s)		9.8	5.8		18.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1826	0	0	1509	235	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1963	0	0	1623	253	367
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	1963	0	0	1623	253	357
Confl. Bikes (#/hr)		7				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	35.5			35.5	12.5	12.5
Effective Green, g (s)	38.5			38.5	15.5	15.5
Actuated g/C Ratio	0.64			0.64	0.26	0.26
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3405			2369	925	751
v/s Ratio Prot	0.37			c0.44	0.07	c0.12
v/s Ratio Perm						
v/c Ratio	0.58			0.69	0.27	0.47
Uniform Delay, d1	6.1			6.9	17.8	18.8
Progression Factor	1.12			2.39	1.00	1.00
Incremental Delay, d2	0.6			1.1	0.2	0.5
Delay (s)	7.4			17.5	17.9	19.3
Level of Service	A			B	B	B
Approach Delay (s)	7.4			17.5	18.7	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	345	1791	31	24	2108	137	19	1	19	106	4	412
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3583	5291		1847	5307	1623		1760			1854	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86			0.74	1.00
Satd. Flow (perm)	3583	5291		1847	5307	1623		1556			1434	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	375	1947	34	26	2291	149	21	1	21	115	4	448
RTOR Reduction (vph)	0	1	0	0	0	41	0	16	0	0	0	16
Lane Group Flow (vph)	375	1980	0	26	2291	108	0	27	0	0	119	432
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			7			2			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	15.4	74.4		4.2	63.2	63.2		26.4			26.4	46.8
Effective Green, g (s)	16.4	77.4		5.2	66.2	66.2		28.4			28.4	48.8
Actuated g/C Ratio	0.14	0.65		0.04	0.55	0.55		0.24			0.24	0.41
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	489	3412		80	2927	895		368			339	671
v/s Ratio Prot	c0.10	0.37		0.01	c0.43							c0.26
v/s Ratio Perm						0.07		0.02			0.08	
v/c Ratio	0.77	0.58		0.33	0.78	0.12		0.07			0.35	0.64
Uniform Delay, d1	50.0	12.1		55.7	21.2	12.9		35.6			38.1	28.6
Progression Factor	0.93	0.93		1.40	1.09	0.48		1.00			1.00	1.00
Incremental Delay, d2	6.2	0.6		2.0	1.8	0.2		0.1			0.6	2.1
Delay (s)	52.5	11.9		80.1	25.0	6.4		35.7			38.8	30.7
Level of Service	D	B		F	C	A		D			D	C
Approach Delay (s)		18.4			24.5			35.7			32.4	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	169	55	268	125	53	247
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	188	61	298	139	59	274
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	759	367			437	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	759	367			437	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	47	91			95	
cM capacity (veh/h)	355	678			1123	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	249	437	333
Volume Left	188	0	59
Volume Right	61	139	0
cSH	402	1700	1123
Volume to Capacity	0.62	0.26	0.05
Queue Length 95th (ft)	101	0	4
Control Delay (s)	27.5	0.0	1.9
Lane LOS	D		A
Approach Delay (s)	27.5	0.0	1.9
Approach LOS	D		

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	465	2	34	448	3	57
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	517	2	38	498	3	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			519		1091	518
vC1, stage 1 conf vol					518	
vC2, stage 2 conf vol					573	
vCu, unblocked vol			519		1091	518
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		99	89
cM capacity (veh/h)			1047		444	558

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	519	38	498	67
Volume Left	0	38	0	3
Volume Right	2	0	0	63
cSH	1700	1047	1700	551
Volume to Capacity	0.31	0.04	0.29	0.12
Queue Length 95th (ft)	0	3	0	10
Control Delay (s)	0.0	8.6	0.0	12.4
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		12.4
Approach LOS				B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1658	213	53	1950	10	97	18	37	48	24	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1614	1847	5307	1622		1543		1843	1944	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.80		0.65	1.00	1.00
Satd. Flow (perm)	1847	5307	1614	1847	5307	1622		1269		1255	1944	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	1802	232	58	2120	11	105	20	40	52	26	257
RTOR Reduction (vph)	0	0	61	0	0	4	0	11	0	0	0	92
Lane Group Flow (vph)	36	1802	171	58	2120	7	0	154	0	52	26	165
Confl. Peds. (#/hr)	3					3			3	3		
Confl. Bikes (#/hr)			5			2			1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	4.2	73.4	73.4	6.9	76.1	76.1		24.7		24.7	24.7	24.7
Effective Green, g (s)	5.2	76.4	76.4	7.9	79.1	79.1		26.7		26.7	26.7	26.7
Actuated g/C Ratio	0.04	0.64	0.64	0.07	0.66	0.66		0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	80	3378	1027	121	3498	1069		282		279	432	367
v/s Ratio Prot	0.02	c0.34		0.03	c0.40						0.01	
v/s Ratio Perm			0.11			0.00		c0.12		0.04		0.10
v/c Ratio	0.45	0.53	0.17	0.48	0.61	0.01		0.55		0.19	0.06	0.45
Uniform Delay, d1	56.0	12.0	8.9	54.1	11.6	7.0		41.3		37.8	36.8	40.3
Progression Factor	0.96	1.12	1.65	1.15	1.30	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	3.4	0.5	0.3	2.6	0.7	0.0		2.2		0.3	0.1	0.9
Delay (s)	57.2	14.0	14.9	64.8	15.8	7.0		43.5		38.2	36.8	41.2
Level of Service	E	B	B	E	B	A		D		D	D	D
Approach Delay (s)		14.8			17.0			43.5			40.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	256	603	2144	0	0	1252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			3693
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			3693
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	269	635	2257	0	0	1318
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	269	632	2257	0	0	1318
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	18.0	18.0	30.0			30.0
Effective Green, g (s)	21.0	21.0	33.0			33.0
Actuated g/C Ratio	0.35	0.35	0.55			0.55
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1254	1017	2918			2031
v/s Ratio Prot	0.08	c0.22	c0.43			0.36
v/s Ratio Perm						
v/c Ratio	0.21	0.62	0.77			0.65
Uniform Delay, d1	13.7	16.2	10.6			9.4
Progression Factor	1.00	1.00	1.28			1.00
Incremental Delay, d2	0.2	1.7	1.4			1.6
Delay (s)	13.9	17.9	14.9			11.1
Level of Service	B	B	B			B
Approach Delay (s)	16.7		14.9			11.1
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	955	577	0	2178	1023	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3583	2908		5307	5307	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3583	2908		5307	5307	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	974	589	0	2222	1044	0
RTOR Reduction (vph)	0	12	0	0	0	0
Lane Group Flow (vph)	974	577	0	2222	1044	0
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	23.2	23.2		24.8	24.8	
Effective Green, g (s)	26.2	26.2		27.8	27.8	
Actuated g/C Ratio	0.44	0.44		0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1564	1269		2458	2458	
v/s Ratio Prot	c0.27	0.20		c0.42	0.20	
v/s Ratio Perm						
v/c Ratio	0.62	0.45		0.90	0.42	
Uniform Delay, d1	13.1	11.9		14.9	10.8	
Progression Factor	1.00	1.00		1.00	0.58	
Incremental Delay, d2	0.6	0.1		6.0	0.5	
Delay (s)	13.6	12.0		20.9	6.7	
Level of Service	B	B		C	A	
Approach Delay (s)	13.0			20.9	6.7	
Approach LOS	B			C	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	656	157	88	140	146	670	114	1196	103	366	777	457
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3340		1847	1847	1570	1847	5307	1627	3583	4972	
Flt Permitted	0.95	0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3340		1847	1847	1570	1847	5307	1627	3583	4972	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	676	162	91	144	151	691	118	1233	106	377	801	471
RTOR Reduction (vph)	0	15	0	0	0	63	0	0	0	0	104	0
Lane Group Flow (vph)	365	549	0	144	151	628	118	1233	106	377	1168	0
Confl. Peds. (#/hr)			16	16			9		10	10		9
Confl. Bikes (#/hr)			7			1			1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	23.3	23.3		17.0	17.0	29.7	7.3	25.0	100.0	12.7	30.4	
Effective Green, g (s)	26.3	26.3		20.0	20.0	35.7	8.3	28.0	100.0	13.7	33.4	
Actuated g/C Ratio	0.26	0.26		0.20	0.20	0.36	0.08	0.28	1.00	0.14	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	441	878		369	369	560	153	1485	1627	490	1660	
v/s Ratio Prot	c0.22	0.16		0.08	0.08	c0.40	0.06	c0.23		0.11	0.23	
v/s Ratio Perm									0.07			
v/c Ratio	0.83	0.62		0.39	0.41	1.12	0.77	0.83	0.07	0.77	0.70	
Uniform Delay, d1	34.7	32.5		34.7	34.9	32.1	44.9	33.8	0.0	41.6	29.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.5	1.0		0.2	0.3	76.0	19.4	5.5	0.1	6.5	2.5	
Delay (s)	46.3	33.5		35.0	35.1	108.1	64.3	39.3	0.1	48.1	31.5	
Level of Service	D	C		C	D	F	E	D	A	D	C	
Approach Delay (s)		38.5			86.3			38.5			35.3	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	7	166	144	7	19	148	258	82	15	258	2
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	5	7	168	145	7	19	149	261	83	15	261	2

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	12	168	153	19	149	343	15	263
Volume Left (vph)	5	0	145	0	149	0	15	0
Volume Right (vph)	0	168	0	19	0	83	0	2
Hadj (s)	0.24	-0.67	0.51	-0.67	0.53	-0.13	0.53	0.03
Departure Headway (s)	7.1	6.2	7.3	6.2	6.6	5.9	6.8	6.3
Degree Utilization, x	0.02	0.29	0.31	0.03	0.27	0.56	0.03	0.46
Capacity (veh/h)	467	537	458	535	530	594	497	545
Control Delay (s)	9.1	10.5	12.4	8.2	10.8	15.0	8.8	13.4
Approach Delay (s)	10.4		11.9		13.7		13.2	
Approach LOS	B		B		B		B	

Intersection Summary			
Delay	12.8		
Level of Service	B		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	103	25	40	105	442	12	69	201	545	76	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.89		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1878		1847	1944	1638	1847	1706		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1878		1847	1944	1638	1847	1706		1754	1776	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	111	27	43	113	475	13	74	216	586	82	2
RTOR Reduction (vph)	0	9	0	0	0	206	0	110	0	0	0	0
Lane Group Flow (vph)	1	129	0	43	113	269	13	180	0	299	371	0
Confl. Peds. (#/hr)			1	1			2		2	2		2
Confl. Bikes (#/hr)			1			1			2			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	8.8		5.4	13.3	33.5	12.9	12.9		20.2	20.2	
Effective Green, g (s)	1.9	10.8		6.4	15.3	37.5	14.9	14.9		22.2	22.2	
Actuated g/C Ratio	0.03	0.16		0.10	0.23	0.57	0.22	0.22		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	305		178	448	1000	415	383		587	594	
v/s Ratio Prot	0.00	c0.07		0.02	0.06	c0.09	0.01	c0.11		0.17	c0.21	
v/s Ratio Perm						0.07						
v/c Ratio	0.02	0.42		0.24	0.25	0.27	0.03	0.47		0.51	0.62	
Uniform Delay, d1	31.3	24.9		27.7	20.8	7.4	20.1	22.3		17.7	18.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9		0.7	0.3	0.1	0.0	0.9		0.7	2.1	
Delay (s)	31.4	25.9		28.4	21.1	7.5	20.1	23.2		18.4	20.6	
Level of Service	C	C		C	C	A	C	C		B	C	
Approach Delay (s)		25.9			11.4			23.1			19.6	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	992	565	129	1080	144	663	795	76	289	704	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	173	1033	589	134	1125	150	691	828	79	301	733	196
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	173	1033	589	134	1125	150	691	828	79	301	733	196
Confl. Peds. (#/hr)	3		7	7		3	1		3	3		1
Confl. Bikes (#/hr)			1			1			6			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	28.0	55.0	6.8	27.8	120.0	27.0	51.8	120.0	13.4	36.2	120.0
Effective Green, g (s)	8.0	31.0	61.0	7.8	30.8	120.0	30.0	54.8	120.0	14.4	39.2	120.0
Actuated g/C Ratio	0.07	0.26	0.51	0.06	0.26	1.00	0.25	0.46	1.00	0.12	0.33	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	238	1370	830	232	1362	1631	1302	1686	1629	429	1733	1631
v/s Ratio Prot	c0.05	0.19	c0.18	0.04	c0.21		0.13	c0.22		c0.08	0.14	
v/s Ratio Perm			0.18			0.09			0.05			c0.12
v/c Ratio	0.73	0.75	0.71	0.58	0.83	0.09	0.53	0.49	0.05	0.70	0.42	0.12
Uniform Delay, d1	54.9	41.0	22.7	54.5	42.1	0.0	38.9	22.8	0.0	50.7	31.6	0.0
Progression Factor	0.88	0.99	0.96	1.28	1.18	1.00	0.60	0.36	1.00	0.80	0.73	1.00
Incremental Delay, d2	8.4	2.7	2.1	2.0	4.4	0.1	0.2	0.9	0.1	4.0	0.7	0.1
Delay (s)	56.5	43.3	23.8	72.0	54.2	0.1	23.6	9.2	0.1	44.8	23.6	0.1
Level of Service	E	D	C	E	D	A	C	A	A	D	C	A
Approach Delay (s)		38.2			50.1			15.0			25.1	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	195	411	513	269	132	362	822	341	87	1282	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	102	205	433	540	283	139	381	865	359	92	1349	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	102	205	433	540	283	139	381	865	359	92	1349	10
Confl. Peds. (#/hr)	3		2	2		3	1		1	1		1
Confl. Bikes (#/hr)			3			10			6			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.6	17.0	120.0	21.4	31.8	120.0	17.0	55.1	120.0	6.5	44.6	44.6
Effective Green, g (s)	7.6	20.0	120.0	22.4	34.8	120.0	18.0	58.1	120.0	7.5	47.6	47.6
Actuated g/C Ratio	0.06	0.17	1.00	0.19	0.29	1.00	0.15	0.48	1.00	0.06	0.40	0.40
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	226	615	1630	668	1070	1627	537	2569	1630	223	2105	644
v/s Ratio Prot	c0.03	c0.06		c0.15	0.08		c0.11	0.16		0.03	c0.25	
v/s Ratio Perm			0.27			0.09			0.22			0.01
v/c Ratio	0.45	0.33	0.27	0.81	0.26	0.09	0.71	0.34	0.22	0.41	0.64	0.01
Uniform Delay, d1	54.2	44.1	0.0	46.7	32.8	0.0	48.5	19.1	0.0	54.1	29.3	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.64	1.00	0.77	0.90	1.00
Incremental Delay, d2	0.5	0.7	0.4	6.7	0.3	0.1	2.9	0.3	0.3	0.5	1.5	0.0
Delay (s)	54.7	44.8	0.4	53.5	33.0	0.1	40.2	12.4	0.3	42.0	27.9	22.0
Level of Service	D	D	A	D	C	A	D	B	A	D	C	C
Approach Delay (s)		20.2			39.8			16.3			28.7	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	978	19	11	549	34	66	179	15	59	211	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3583	3682		1847	5256		3583	3645		1847	4806	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3583	3682		1847	5256		3583	3645		1847	4806	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	1029	20	12	578	36	69	188	16	62	222	297
RTOR Reduction (vph)	0	1	0	0	5	0	0	6	0	0	225	0
Lane Group Flow (vph)	226	1048	0	12	609	0	69	198	0	62	294	0
Confl. Peds. (#/hr)			3	3			1		4	4		1
Confl. Bikes (#/hr)			2			2						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.8	69.0		2.9	59.1		5.6	20.6		7.5	22.5	
Effective Green, g (s)	13.8	72.0		3.9	62.1		6.6	23.6		8.5	25.5	
Actuated g/C Ratio	0.12	0.60		0.03	0.52		0.05	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	412	2209		60	2719		197	716		130	1021	
v/s Ratio Prot	c0.06	c0.28		0.01	0.12		0.02	0.05		c0.03	c0.06	
v/s Ratio Perm												
v/c Ratio	0.55	0.47		0.20	0.22		0.35	0.28		0.48	0.29	
Uniform Delay, d1	50.2	13.4		56.5	15.8		54.6	41.0		53.6	39.6	
Progression Factor	0.76	1.32		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.7		1.6	0.2		1.1	0.2		2.7	0.2	
Delay (s)	39.3	18.4		58.2	16.0		55.7	41.2		56.4	39.8	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		22.1			16.8			44.8			41.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	917	951	0	344	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	965	1001	0	362	651
RTOR Reduction (vph)	0	0	0	0	0	93
Lane Group Flow (vph)	0	965	1001	0	362	558
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		32.1	32.1		15.9	15.9
Effective Green, g (s)		35.1	35.1		18.9	18.9
Actuated g/C Ratio		0.59	0.59		0.31	0.31
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3104	3104		1128	916
v/s Ratio Prot		0.18	c0.19		0.10	
v/s Ratio Perm						c0.19
v/c Ratio		0.31	0.32		0.32	0.61
Uniform Delay, d1		6.3	6.4		15.7	17.4
Progression Factor		1.00	0.76		1.00	1.00
Incremental Delay, d2		0.3	0.3		0.2	1.2
Delay (s)		6.6	5.1		15.8	18.6
Level of Service		A	A		B	B
Approach Delay (s)		6.6	5.1		17.6	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	747	0	0	872	304	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	778	0	0	908	317	193
RTOR Reduction (vph)	0	0	0	0	0	149
Lane Group Flow (vph)	778	0	0	908	317	44
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	37.4			37.4	10.6	10.6
Effective Green, g (s)	40.4			40.4	13.6	13.6
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3573			2486	812	659
v/s Ratio Prot	0.15			c0.25	c0.09	0.02
v/s Ratio Perm						
v/c Ratio	0.22			0.37	0.39	0.07
Uniform Delay, d1	3.8			4.2	19.7	18.2
Progression Factor	0.81			1.64	1.00	1.00
Incremental Delay, d2	0.1			0.4	0.3	0.0
Delay (s)	3.2			7.4	20.0	18.3
Level of Service	A			A	B	B
Approach Delay (s)	3.2			7.4	19.3	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	777	19	6	1102	37	25	4	10	45	2	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5285		1847	5307	1593		1804			1833	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.83			0.79	1.00
Satd. Flow (perm)	3583	5285		1847	5307	1593		1545			1525	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	143	818	20	6	1160	39	26	4	11	47	2	172
RTOR Reduction (vph)	0	1	0	0	0	12	0	9	0	0	0	41
Lane Group Flow (vph)	143	837	0	6	1160	27	0	32	0	0	49	131
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	10.1	88.0		1.4	79.3	79.3		15.6			15.6	30.7
Effective Green, g (s)	11.1	91.0		2.4	82.3	82.3		17.6			17.6	32.7
Actuated g/C Ratio	0.09	0.76		0.02	0.69	0.69		0.15			0.15	0.27
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	331	4007		36	3639	1092		226			223	450
v/s Ratio Prot	c0.04	0.16		0.00	c0.22							c0.08
v/s Ratio Perm						0.02		0.02			0.03	
v/c Ratio	0.43	0.21		0.17	0.32	0.02		0.14			0.22	0.29
Uniform Delay, d1	51.5	4.2		57.8	7.6	6.0		44.6			45.1	34.5
Progression Factor	1.01	1.17		1.26	0.27	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.9	0.1		1.9	0.2	0.0		0.3			0.5	0.4
Delay (s)	52.8	5.0		75.0	2.3	6.1		44.9			45.6	34.9
Level of Service	D	A		E	A	A		D			D	C
Approach Delay (s)		11.9			2.7			44.9			37.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	39	30	128	40	29	161
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	43	33	142	44	32	179
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	408	164			187	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408	164			187	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	96			98	
cM capacity (veh/h)	586	880			1388	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	77	187	211
Volume Left	43	0	32
Volume Right	33	44	0
cSH	685	1700	1388
Volume to Capacity	0.11	0.11	0.02
Queue Length 95th (ft)	9	0	2
Control Delay (s)	10.9	0.0	1.3
Lane LOS	B		A
Approach Delay (s)	10.9	0.0	1.3
Approach LOS	B		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	199	1	3	174	1	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	221	1	3	193	1	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			222		422	222
vC1, stage 1 conf vol					222	
vC2, stage 2 conf vol					200	
vCu, unblocked vol			222		422	222
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1347		727	818

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	222	3	193	13
Volume Left	0	3	0	1
Volume Right	1	0	0	12
cSH	1700	1347	1700	809
Volume to Capacity	0.13	0.00	0.11	0.02
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	7.7	0.0	9.5
Lane LOS		A		A
Approach Delay (s)	0.0	0.1		9.5
Approach LOS				A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	543	101	131	97	125	273	189	747	104	321	618	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3288		1847	1847	1570	1847	5307	1627	3583	4928	
Flt Permitted	0.95	0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3288		1847	1847	1570	1847	5307	1627	3583	4928	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	566	105	136	101	130	284	197	778	108	334	644	475
RTOR Reduction (vph)	0	31	0	0	0	60	0	0	0	0	97	0
Lane Group Flow (vph)	306	470	0	101	130	224	197	778	108	334	1022	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	25.3	25.3		12.5	12.5	26.9	16.2	45.8	120.0	14.4	44.0	
Effective Green, g (s)	28.3	28.3		15.5	15.5	32.9	17.2	48.8	120.0	15.4	47.0	
Actuated g/C Ratio	0.24	0.24		0.13	0.13	0.27	0.14	0.41	1.00	0.13	0.39	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	396	775		238	238	430	264	2158	1627	459	1930	
v/s Ratio Prot	c0.18	0.14		0.05	c0.07	0.14	c0.11	0.15		0.09	c0.21	
v/s Ratio Perm									c0.07			
v/c Ratio	0.77	0.61		0.42	0.55	0.52	0.75	0.36	0.07	0.73	0.53	
Uniform Delay, d1	42.8	40.9		48.1	49.0	36.9	49.3	24.8	0.0	50.3	28.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.45	0.58	1.00	1.00	1.00	
Incremental Delay, d2	8.3	0.9		0.4	1.4	0.5	9.3	0.5	0.1	4.8	1.0	
Delay (s)	51.1	41.8		48.6	50.3	37.4	81.0	14.7	0.1	55.1	29.1	
Level of Service	D	D		D	D	D	F	B	A	E	C	
Approach Delay (s)		45.4			42.9			25.3			35.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	27	238	236	24	28	252	153	125	21	231	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	8	28	245	243	25	29	260	158	129	22	238	3

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	36	245	268	29	260	287	22	241
Volume Left (vph)	8	0	243	0	260	0	22	0
Volume Right (vph)	0	245	0	29	0	129	0	3
Hadj (s)	0.13	-0.68	0.47	-0.68	0.52	-0.30	0.52	0.01
Departure Headway (s)	7.6	6.8	7.8	6.7	7.5	6.7	7.9	7.4
Degree Utilization, x	0.08	0.46	0.58	0.05	0.54	0.53	0.05	0.49
Capacity (veh/h)	444	503	443	507	461	514	430	457
Control Delay (s)	10.0	14.3	20.0	8.9	17.7	15.7	10.1	16.1
Approach Delay (s)	13.8		18.9		16.6		15.6	
Approach LOS	B		C		C		C	

Intersection Summary			
Delay	16.4		
Level of Service	C		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	50	24	28	41	504	6	50	34	594	117	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1847	1834		1847	1944	1652	1847	1816		1754	1782	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1847	1834		1847	1944	1652	1847	1816		1754	1782	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	52	25	29	42	520	6	52	35	612	121	2
RTOR Reduction (vph)	0	18	0	0	0	209	0	25	0	0	0	0
Lane Group Flow (vph)	2	59	0	29	42	311	6	62	0	312	423	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.7	5.5		2.2	7.0	33.0	9.1	9.1		26.0	26.0	
Effective Green, g (s)	1.7	7.5		3.2	9.0	37.0	11.1	11.1		28.0	28.0	
Actuated g/C Ratio	0.03	0.12		0.05	0.15	0.60	0.18	0.18		0.45	0.45	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	50	222		95	283	1069	331	326		794	807	
v/s Ratio Prot	0.00	c0.03		0.02	0.02	c0.13	0.00	c0.03		0.18	c0.24	
v/s Ratio Perm						0.06						
v/c Ratio	0.04	0.26		0.31	0.15	0.29	0.02	0.19		0.39	0.52	
Uniform Delay, d1	29.3	24.6		28.2	23.1	6.0	20.9	21.5		11.2	12.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		1.8	0.2	0.2	0.0	0.3		0.3	0.6	
Delay (s)	29.6	25.3		30.1	23.3	6.2	20.9	21.8		11.6	12.7	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		25.4			8.6			21.8			12.2	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	61.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	133	328	237	66	502	106	364	696	56	182	542	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	140	345	249	69	528	112	383	733	59	192	571	157
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	140	345	249	69	528	112	383	733	59	192	571	157
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	5.9	21.6	25.6	4.7	20.4	90.0	4.0	36.6	90.0	7.1	37.7	90.0
Effective Green, g (s)	6.9	24.6	31.6	5.7	23.4	90.0	7.0	39.6	90.0	8.1	40.7	90.0
Actuated g/C Ratio	0.08	0.27	0.35	0.06	0.26	1.00	0.08	0.44	1.00	0.09	0.45	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	274	1450	574	226	1379	1632	405	1624	1631	322	2399	1652
v/s Ratio Prot	c0.04	0.07	c0.03	0.02	0.10		c0.07	c0.20		c0.05	0.11	
v/s Ratio Perm			0.12			0.07			0.04			c0.10
v/c Ratio	0.51	0.24	0.43	0.31	0.38	0.07	0.95	0.45	0.04	0.60	0.24	0.10
Uniform Delay, d1	39.9	25.4	22.4	40.3	27.4	0.0	41.3	17.6	0.0	39.4	15.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	0.2	0.3	0.4	0.1	30.6	0.9	0.0	2.0	0.2	0.1
Delay (s)	40.6	25.6	22.5	40.5	27.7	0.1	71.9	18.5	0.0	41.4	15.4	0.1
Level of Service	D	C	C	D	C	A	E	B	A	D	B	A
Approach Delay (s)		27.4			24.6			35.0			18.2	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	701	511	767	0	0	1047
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	730	532	799	0	0	1091
RTOR Reduction (vph)	0	112	0	0	0	0
Lane Group Flow (vph)	730	420	799	0	0	1091
Confl. Peds. (#/hr)				5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	13.9	13.9	13.7			13.7
Effective Green, g (s)	15.0	15.0	14.8			14.8
Actuated g/C Ratio	0.42	0.42	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1501	1218	2193			2193
v/s Ratio Prot	c0.20	0.14	0.15			c0.21
v/s Ratio Perm						
v/c Ratio	0.49	0.34	0.36			0.50
Uniform Delay, d1	7.6	7.1	7.3			7.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.2	0.1			0.2
Delay (s)	7.8	7.2	7.4			7.9
Level of Service	A	A	A			A
Approach Delay (s)	7.6		7.4			7.9
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	0	565	0	0	0	0	531	234	0	1297	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2829		3693	1618
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2829		3693	1618
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	460	0	621	0	0	0	0	584	257	0	1425	496
RTOR Reduction (vph)	0	0	52	0	0	0	0	0	115	0	0	222
Lane Group Flow (vph)	460	0	569	0	0	0	0	584	142	0	1425	274
Confl. Peds. (#/hr)									4	4		
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	17.1		17.1					28.9	28.9		28.9	28.9
Effective Green, g (s)	18.2		18.2					30.0	30.0		30.0	29.9
Actuated g/C Ratio	0.34		0.34					0.55	0.55		0.55	0.55
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1203		976					2044	1565		2044	892
v/s Ratio Prot								0.16			c0.39	
v/s Ratio Perm	0.13		c0.20						0.05			0.17
v/c Ratio	0.38		0.58					0.29	0.09		0.70	0.31
Uniform Delay, d1	13.7		14.9					6.4	5.7		8.8	6.6
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2		0.9					0.1	0.0		1.1	0.2
Delay (s)	13.9		15.8					6.5	5.7		9.9	6.8
Level of Service	B		B					A	A		A	A
Approach Delay (s)		15.0			0.0			6.3			9.1	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	7.1
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	36	56	109	18	323	15	304	99	306	277	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1731		1829	1925	2880	1829	5036		3547	3657	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1731		1829	1925	2880	1829	5036		3547	3657	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	8	42	65	127	21	376	17	353	115	356	322	3
RTOR Reduction (vph)	0	50	0	0	0	165	0	57	0	0	0	2
Lane Group Flow (vph)	8	57	0	127	21	211	17	411	0	356	322	1
Confl. Peds. (#/hr)			6	6					9	9		
Confl. Bikes (#/hr)									1			2
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.8	14.1		7.7	21.0	37.6	1.8	19.8		10.6	28.6	28.6
Effective Green, g (s)	1.8	17.1		8.7	24.0	40.6	2.8	22.8		11.6	31.6	31.6
Actuated g/C Ratio	0.02	0.24		0.12	0.33	0.56	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	45	409		220	639	1619	70	1590		569	1600	706
v/s Ratio Prot	0.00	0.03		c0.07	0.01	c0.07	0.01	c0.08		c0.10	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.18	0.14		0.58	0.03	0.13	0.24	0.26		0.63	0.20	0.00
Uniform Delay, d1	34.5	21.7		30.0	16.3	7.5	33.7	18.4		28.3	12.5	11.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1		2.3	0.0	0.0	0.7	0.2		1.6	0.1	0.0
Delay (s)	35.2	21.8		32.3	16.3	7.5	34.3	18.6		29.8	12.6	11.4
Level of Service	D	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.7			13.8			19.1			21.6	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	658	1595	0	550	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2880
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2880
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	708	1715	0	591	777
RTOR Reduction (vph)	0	0	0	0	0	12
Lane Group Flow (vph)	0	708	1715	0	591	765
Confl. Peds. (#/hr)	8			8		
Confl. Bikes (#/hr)				5		
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		55.5	55.5		32.5	32.5
Effective Green, g (s)		58.5	58.5		35.5	35.5
Actuated g/C Ratio		0.58	0.58		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3074	3074		1259	1022
v/s Ratio Prot		0.13	c0.33		0.17	
v/s Ratio Perm						c0.27
v/c Ratio		0.23	0.56		0.47	0.75
Uniform Delay, d1		10.0	12.8		25.0	28.3
Progression Factor		1.00	0.93		1.00	1.00
Incremental Delay, d2		0.2	0.6		0.3	3.0
Delay (s)		10.1	12.5		25.2	31.4
Level of Service		B	B		C	C
Approach Delay (s)		10.1	12.5		28.7	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	981	0	0	1366	612	700
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1044	0	0	1453	651	745
RTOR Reduction (vph)	0	0	0	0	0	131
Lane Group Flow (vph)	1044	0	0	1453	651	614
Confl. Bikes (#/hr)		7				
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	62.0			62.0	26.0	26.0
Effective Green, g (s)	65.0			65.0	29.0	29.0
Actuated g/C Ratio	0.65			0.65	0.29	0.29
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3415			2377	1028	835
v/s Ratio Prot	0.20			c0.40	0.18	c0.21
v/s Ratio Perm						
v/c Ratio	0.31			0.61	0.63	0.74
Uniform Delay, d1	7.6			10.2	30.9	32.0
Progression Factor	0.99			0.44	1.00	1.00
Incremental Delay, d2	0.2			1.0	1.3	3.4
Delay (s)	7.8			5.5	32.2	35.4
Level of Service	A			A	C	D
Approach Delay (s)	7.8			5.5	33.9	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	1321	24	12	1804	155	11	2	11	93	1	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3513	5187		1811	5204	1583		1724			1816	1613
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3513	5187		1811	5204	1583		1724			1816	1613
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	359	1405	26	13	1919	165	12	2	12	99	1	335
RTOR Reduction (vph)	0	1	0	0	0	71	0	11	0	0	0	65
Lane Group Flow (vph)	359	1430	0	13	1919	94	0	15	0	0	100	270
Confl. Peds. (#/hr)	5					5			2	2		
Confl. Bikes (#/hr)			7			3			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases						6						4
Actuated Green, G (s)	15.2	67.8		1.4	54.0	54.0		3.0			7.8	23.0
Effective Green, g (s)	16.2	70.8		2.4	57.0	57.0		5.0			9.8	27.0
Actuated g/C Ratio	0.16	0.71		0.02	0.57	0.57		0.05			0.10	0.27
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	569	3672		43	2966	902		86			177	435
v/s Ratio Prot	c0.10	0.28		0.01	c0.37			c0.01			0.06	c0.11
v/s Ratio Perm						0.06						0.06
v/c Ratio	0.63	0.39		0.30	0.65	0.10		0.17			0.56	0.62
Uniform Delay, d1	39.1	5.9		48.0	14.6	9.8		45.5			43.1	32.0
Progression Factor	1.18	0.82		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.1	0.3		3.9	1.1	0.2		0.9			4.1	2.7
Delay (s)	48.1	5.1		51.9	15.8	10.1		46.5			47.2	34.8
Level of Service	D	A		D	B	B		D			D	C
Approach Delay (s)		13.7			15.5			46.5			37.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	55	70	190	98	74	154
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	61	78	211	109	82	171
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	601	266			320	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	601	266			320	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	90			93	
cM capacity (veh/h)	432	773			1240	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	139	320	253
Volume Left	61	0	82
Volume Right	78	109	0
cSH	574	1700	1240
Volume to Capacity	0.24	0.19	0.07
Queue Length 95th (ft)	24	0	5
Control Delay (s)	13.3	0.0	3.0
Lane LOS	B		A
Approach Delay (s)	13.3	0.0	3.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	402	0	5	489	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	447	0	6	543	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			447		1001	447
vC1, stage 1 conf vol					447	
vC2, stage 2 conf vol					554	
vCu, unblocked vol			447		1001	447
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1114		480	612

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	447	6	543	8
Volume Left	0	6	0	0
Volume Right	0	0	0	8
cSH	1700	1114	1700	612
Volume to Capacity	0.26	0.00	0.32	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	8.2	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.0
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	168	1198	60	20	1731	43	172	30	28	9	8	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1616	1847	5307	1621		1562		1847	1944	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.69	1.00	1.00
Satd. Flow (perm)	1847	5307	1616	1847	5307	1621		1257		1332	1944	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	175	1248	62	21	1803	45	179	31	29	9	8	55
RTOR Reduction (vph)	0	0	21	0	0	25	0	5	0	0	0	42
Lane Group Flow (vph)	175	1248	41	21	1803	20	0	234	0	9	8	13
Confl. Peds. (#/hr)	3					3	1					1
Confl. Bikes (#/hr)			3			3			3			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	28.4	76.2	76.2	2.8	50.6	50.6		26.0		26.0	26.0	26.0
Effective Green, g (s)	29.4	79.2	79.2	3.8	53.6	53.6		28.0		28.0	28.0	28.0
Actuated g/C Ratio	0.24	0.66	0.66	0.03	0.45	0.45		0.23		0.23	0.23	0.23
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	452	3502	1066	58	2370	724		293		310	453	380
v/s Ratio Prot	c0.09	0.24		0.01	c0.34						0.00	
v/s Ratio Perm			0.03			0.01		c0.19		0.01		0.01
v/c Ratio	0.39	0.36	0.04	0.36	0.76	0.03		0.80		0.03	0.02	0.03
Uniform Delay, d1	37.8	9.1	7.1	56.9	27.8	18.6		43.4		35.5	35.4	35.5
Progression Factor	1.00	1.00	1.00	0.84	1.23	2.74		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	3.3	2.1	0.1		14.4		0.0	0.0	0.0
Delay (s)	38.3	9.4	7.2	50.9	36.3	51.0		57.8		35.5	35.4	35.6
Level of Service	D	A	A	D	D	D		E		D	D	D
Approach Delay (s)		12.7			36.8			57.8			35.6	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	307	404	962	0	0	1517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3513	2852	5204			3622
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3513	2852	5204			3622
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	327	430	1023	0	0	1614
RTOR Reduction (vph)	0	104	0	0	0	0
Lane Group Flow (vph)	327	326	1023	0	0	1614
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	15.2	15.2	32.8			32.8
Effective Green, g (s)	18.2	18.2	35.8			35.8
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1065	865	3105			2161
v/s Ratio Prot	0.09	c0.11	0.20			c0.45
v/s Ratio Perm						
v/c Ratio	0.31	0.38	0.33			0.75
Uniform Delay, d1	16.1	16.4	6.1			8.8
Progression Factor	1.00	1.00	0.97			1.00
Incremental Delay, d2	0.3	0.6	0.3			2.4
Delay (s)	16.4	17.0	6.2			11.2
Level of Service	B	B	A			B
Approach Delay (s)	16.8		6.2			11.2
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	546	1510	0	739	1344	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	569	1573	0	770	1400	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	569	1571	0	770	1400	0
Confl. Bikes (#/hr)						1
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.16	c0.55		0.15	c0.27	
v/s Ratio Perm						
v/c Ratio	0.28	0.94		0.46	0.84	
Uniform Delay, d1	6.2	11.5		16.4	19.1	
Progression Factor	1.00	1.00		0.69	0.77	
Incremental Delay, d2	0.0	10.1		0.9	4.1	
Delay (s)	6.2	21.5		12.2	18.9	
Level of Service	A	C		B	B	
Approach Delay (s)	17.5			12.2	18.9	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	101	65	78	116	196	107	496	80	750	1591	513
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3283		1829	1829	1554	1829	5255	1614	3547	5035	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3283		1829	1829	1554	1829	5255	1614	3547	5035	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	249	106	68	82	122	206	113	522	84	789	1675	540
RTOR Reduction (vph)	0	24	0	0	0	112	0	0	0	0	43	0
Lane Group Flow (vph)	134	265	0	82	122	94	113	522	84	789	2172	0
Confl. Peds. (#/hr)			18	18			8		4	4		8
Confl. Bikes (#/hr)			1			5			1			1
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.1	17.1		7.0	7.0	37.1	9.5	43.8	120.0	30.1	64.4	
Effective Green, g (s)	20.1	20.1		10.0	10.0	43.1	10.5	46.8	120.0	31.1	67.4	
Actuated g/C Ratio	0.17	0.17		0.08	0.08	0.36	0.09	0.39	1.00	0.26	0.56	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	549		152	152	558	160	2049	1614	919	2827	
v/s Ratio Prot	0.08	c0.08		0.04	c0.07	0.06	0.06	0.10		c0.22	c0.43	
v/s Ratio Perm									0.05			
v/c Ratio	0.48	0.48		0.54	0.80	0.17	0.71	0.25	0.05	0.86	0.77	
Uniform Delay, d1	45.2	45.2		52.8	54.0	26.2	53.3	24.8	0.0	42.4	20.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.70	1.55	1.00	0.99	0.87	
Incremental Delay, d2	0.5	0.2		1.8	24.2	0.1	10.6	0.3	0.1	3.9	1.0	
Delay (s)	45.7	45.5		54.6	78.2	26.3	48.1	38.8	0.1	45.9	18.6	
Level of Service	D	D		D	E	C	D	D	A	D	B	
Approach Delay (s)		45.6			47.4			35.7			25.8	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	4	97	24	3	7	142	289	13	8	232	8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	7	5	110	27	3	8	161	328	15	9	264	9

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	11	110	31	8	161	343	9	273
Volume Left (vph)	7	0	27	0	161	0	9	0
Volume Right (vph)	0	110	0	8	0	15	0	9
Hadj (s)	0.39	-0.61	0.53	-0.61	0.58	0.05	0.58	0.06
Departure Headway (s)	6.8	5.8	7.1	5.9	5.9	5.3	6.1	5.6
Degree Utilization, x	0.02	0.18	0.06	0.01	0.26	0.51	0.02	0.42
Capacity (veh/h)	487	570	463	545	598	662	564	626
Control Delay (s)	8.8	8.9	9.3	7.8	9.7	12.5	8.0	11.4
Approach Delay (s)	8.8		9.0		11.6		11.3	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.1		
Level of Service	B		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	14	15	149	86	433	10	37	33	318	55	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1793	1718		1793	1888	1587	1793	1743		1704	1727	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1793	1718		1793	1888	1587	1793	1743		1704	1727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	15	16	157	91	456	11	39	35	335	58	2
RTOR Reduction (vph)	0	14	0	0	0	174	0	30	0	0	0	0
Lane Group Flow (vph)	1	17	0	157	91	282	11	44	0	171	224	0
Confl. Peds. (#/hr)	1		2	2		1	1					1
Confl. Bikes (#/hr)			1			3			1			1
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.7	5.1		10.3	14.7	31.8	6.4	6.4		17.1	17.1	
Effective Green, g (s)	1.7	7.1		11.3	16.7	35.8	8.4	8.4		19.1	19.1	
Actuated g/C Ratio	0.03	0.12		0.20	0.29	0.62	0.15	0.15		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	210		349	544	1063	260	252		562	569	
v/s Ratio Prot	0.00	c0.01		c0.09	0.05	c0.09	0.01	c0.03		0.10	c0.13	
v/s Ratio Perm						0.09						
v/c Ratio	0.02	0.08		0.45	0.17	0.27	0.04	0.17		0.30	0.39	
Uniform Delay, d1	27.3	22.5		20.6	15.4	5.0	21.3	21.7		14.5	14.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.9	0.1	0.1	0.1	0.3		0.3	0.5	
Delay (s)	27.4	22.7		21.5	15.5	5.2	21.4	22.0		14.8	15.4	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		22.8			10.2			22.0			15.1	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	699	294	53	987	100	646	516	110	330	677	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1623	3547	5255	1613	5157	3657	1614	3547	5255	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1623	3547	5255	1613	5157	3657	1614	3547	5255	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	128	713	300	54	1007	102	659	527	112	337	691	244
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	128	713	300	54	1007	102	659	527	112	337	691	244
Confl. Peds. (#/hr)	8		1	1		8	2		1	1		2
Confl. Bikes (#/hr)			3						6			2
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.0	32.7	57.8	5.2	29.9	120.0	25.1	46.9	120.0	15.2	35.0	120.0
Effective Green, g (s)	9.0	35.7	63.8	6.2	32.9	120.0	28.1	49.9	120.0	16.2	38.0	120.0
Actuated g/C Ratio	0.08	0.30	0.53	0.05	0.27	1.00	0.23	0.42	1.00	0.13	0.32	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	266	1563	862	183	1440	1613	1207	1520	1614	478	1664	1615
v/s Ratio Prot	c0.04	0.14	0.08	0.02	c0.19		c0.13	0.14		c0.09	c0.13	
v/s Ratio Perm			0.10			0.06			0.07			c0.15
v/c Ratio	0.48	0.46	0.35	0.30	0.70	0.06	0.55	0.35	0.07	0.71	0.42	0.15
Uniform Delay, d1	53.3	34.3	16.1	54.8	39.1	0.0	40.3	23.9	0.0	49.6	32.3	0.0
Progression Factor	0.84	0.94	0.56	1.29	1.07	1.00	0.62	0.34	1.00	0.69	1.00	1.00
Incremental Delay, d2	0.5	0.4	0.1	0.3	1.8	0.1	0.2	0.6	0.1	3.7	0.7	0.2
Delay (s)	45.2	32.6	9.2	71.2	43.5	0.1	25.3	8.8	0.1	37.9	32.9	0.2
Level of Service	D	C	A	E	D	A	C	A	A	D	C	A
Approach Delay (s)		27.8			41.0			16.4			28.0	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	222	338	249	228	46	330	955	272	134	707	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	236	360	265	243	49	351	1016	289	143	752	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	45
Lane Group Flow (vph)	107	236	360	265	243	49	351	1016	289	143	752	25
Confl. Peds. (#/hr)	14		4	4		14	3		2	2		3
Confl. Bikes (#/hr)			5			6			12			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.8	17.6	120.0	13.0	22.8	120.0	30.0	61.2	120.0	8.2	39.4	39.4
Effective Green, g (s)	8.8	20.6	120.0	14.0	25.8	120.0	31.0	64.2	120.0	9.2	42.4	42.4
Actuated g/C Ratio	0.07	0.17	1.00	0.12	0.22	1.00	0.26	0.54	1.00	0.08	0.35	0.35
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	262	633	1629	418	793	1623	925	2839	1627	274	1875	572
v/s Ratio Prot	c0.03	c0.06		c0.07	0.07		0.10	c0.19		c0.04	c0.14	
v/s Ratio Perm			0.22			0.03			0.18			0.02
v/c Ratio	0.41	0.37	0.22	0.63	0.31	0.03	0.38	0.36	0.18	0.52	0.40	0.04
Uniform Delay, d1	53.1	44.0	0.0	50.6	39.6	0.0	36.6	16.0	0.0	53.3	29.2	25.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.63	1.00	0.99	0.59	1.00
Incremental Delay, d2	0.4	0.8	0.3	2.3	0.5	0.0	0.1	0.3	0.2	0.8	0.6	0.1
Delay (s)	53.5	44.8	0.3	52.9	40.0	0.0	26.7	10.3	0.2	53.4	18.0	25.6
Level of Service	D	D	A	D	D	A	C	B	A	D	B	C
Approach Delay (s)		23.3			42.6			12.0			23.8	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	352	49	13	1096	30	22	81	12	33	195	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3584		1829	5232		3547	3579		1829	4806	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3584		1829	5232		3547	3579		1829	4806	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	146	363	51	13	1130	31	23	84	12	34	201	223
RTOR Reduction (vph)	0	5	0	0	1	0	0	10	0	0	178	0
Lane Group Flow (vph)	146	409	0	13	1160	0	23	86	0	34	246	0
Confl. Peds. (#/hr)							1		3	3		1
Confl. Bikes (#/hr)			1			1			5			
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.3	71.7		3.0	64.4		4.0	20.0		5.3	21.3	
Effective Green, g (s)	11.3	74.7		4.0	67.4		5.0	23.0		6.3	24.3	
Actuated g/C Ratio	0.09	0.62		0.03	0.56		0.04	0.19		0.05	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	334	2231		60	2938		147	685		96	973	
v/s Ratio Prot	c0.04	0.11		0.01	c0.22		0.01	0.02		c0.02	c0.05	
v/s Ratio Perm												
v/c Ratio	0.44	0.18		0.22	0.39		0.16	0.13		0.35	0.25	
Uniform Delay, d1	51.3	9.7		56.5	14.8		55.5	40.2		54.9	40.2	
Progression Factor	0.76	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		1.8	0.4		0.5	0.1		2.2	0.1	
Delay (s)	39.9	12.8		58.3	15.2		56.0	40.3		57.1	40.4	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		19.9			15.7			43.3			41.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	260	801	1746	0	0	966
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	277	852	1857	0	0	1028
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	277	848	1857	0	0	1028
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.1	29.1	31.5			31.5
Effective Green, g (s)	30.2	30.2	32.6			32.6
Actuated g/C Ratio	0.44	0.44	0.47			0.47
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1572	1276	2514			2514
v/s Ratio Prot	0.08	c0.29	c0.35			0.19
v/s Ratio Perm						
v/c Ratio	0.18	0.66	0.74			0.41
Uniform Delay, d1	11.7	15.3	14.7			11.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	1.3	1.2			0.1
Delay (s)	11.8	16.6	15.8			11.9
Level of Service	B	B	B			B
Approach Delay (s)	15.4		15.8			11.9
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	503	0	363	0	0	0	0	1871	770	0	786	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2842		3693	1616
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2842		3693	1616
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	529	0	382	0	0	0	0	1969	811	0	827	463
RTOR Reduction (vph)	0	0	195	0	0	0	0	0	116	0	0	157
Lane Group Flow (vph)	529	0	187	0	0	0	0	1969	695	0	827	306
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	16.0		16.0					44.1	44.1		44.1	44.1
Effective Green, g (s)	17.1		17.1					45.2	45.2		45.2	45.1
Actuated g/C Ratio	0.25		0.25					0.66	0.66		0.66	0.66
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	897		728					2443	1880		2443	1067
v/s Ratio Prot								c0.53			0.22	
v/s Ratio Perm	c0.15		0.06						0.24			0.19
v/c Ratio	0.59		0.26					0.81	0.37		0.34	0.29
Uniform Delay, d1	22.5		20.5					8.4	5.2		5.0	4.9
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0		0.2					2.0	0.1		0.1	0.1
Delay (s)	23.5		20.7					10.4	5.3		5.1	5.0
Level of Service	C		C					B	A		A	A
Approach Delay (s)		22.3			0.0			8.9			5.1	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	7.1
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	42	47	100	55	409	27	294	82	368	431	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1847	1774		1847	1944	2908	1847	5117		3583	3693	1626
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1847	1774		1847	1944	2908	1847	5117		3583	3693	1626
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	45	51	108	59	440	29	316	88	396	463	6
RTOR Reduction (vph)	0	39	0	0	0	190	0	50	0	0	0	3
Lane Group Flow (vph)	4	57	0	108	59	250	29	354	0	396	463	3
Confl. Peds. (#/hr)			4	4			1		2	2		1
Confl. Bikes (#/hr)									1			6
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.7	14.1		7.0	20.4	37.7	2.0	19.2		11.3	28.5	28.5
Effective Green, g (s)	1.7	17.1		8.0	23.4	40.7	3.0	22.2		12.3	31.5	31.5
Actuated g/C Ratio	0.02	0.24		0.11	0.33	0.57	0.04	0.31		0.17	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	43	423		206	635	1653	77	1586		615	1624	715
v/s Ratio Prot	0.00	0.03		c0.06	0.03	c0.09	0.02	0.07		c0.11	c0.13	
v/s Ratio Perm												0.00
v/c Ratio	0.09	0.14		0.52	0.09	0.15	0.38	0.22		0.64	0.29	0.00
Uniform Delay, d1	34.2	21.4		30.0	16.7	7.3	33.4	18.3		27.6	12.8	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1		1.1	0.0	0.0	1.1	0.2		1.7	0.2	0.0
Delay (s)	34.5	21.5		31.1	16.8	7.3	34.5	18.5		29.3	13.0	11.3
Level of Service	C	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.0			12.5			19.5			20.5	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1965	992	0	795	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	2159	1090	0	874	482
RTOR Reduction (vph)	0	0	0	0	0	99
Lane Group Flow (vph)	0	2159	1090	0	874	383
Confl. Peds. (#/hr)	2			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.4	31.4		16.6	16.6
Effective Green, g (s)		34.4	34.4		19.6	19.6
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3042	3042		1170	949
v/s Ratio Prot		c0.41	0.21		c0.24	
v/s Ratio Perm						0.13
v/c Ratio		0.71	0.36		0.75	0.40
Uniform Delay, d1		9.2	6.9		18.0	15.7
Progression Factor		1.00	0.84		1.00	1.00
Incremental Delay, d2		1.4	0.2		2.6	0.3
Delay (s)		10.6	6.0		20.6	15.9
Level of Service		B	A		C	B
Approach Delay (s)		10.6	6.0		19.0	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2000	0	0	1666	235	431
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	2151	0	0	1791	253	463
RTOR Reduction (vph)	0	0	0	0	0	6
Lane Group Flow (vph)	2151	0	0	1791	253	457
Confl. Bikes (#/hr)		7				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	33.6			33.6	14.4	14.4
Effective Green, g (s)	36.6			36.6	17.4	17.4
Actuated g/C Ratio	0.61			0.61	0.29	0.29
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3237			2252	1039	843
v/s Ratio Prot	0.41			c0.48	0.07	c0.16
v/s Ratio Perm						
v/c Ratio	0.66			0.80	0.24	0.54
Uniform Delay, d1	7.7			8.9	16.3	17.9
Progression Factor	1.08			2.28	1.00	1.00
Incremental Delay, d2	0.8			0.9	0.1	0.7
Delay (s)	9.1			21.2	16.4	18.7
Level of Service	A			C	B	B
Approach Delay (s)	9.1			21.2	17.9	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	680	1720	31	24	2033	281	19	1	19	257	4	767
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3583	5290		1847	5307	1623		1754			1853	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3583	5290		1847	5307	1623		1754			1853	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	739	1870	34	26	2210	305	21	1	21	279	4	834
RTOR Reduction (vph)	0	1	0	0	0	80	0	20	0	0	0	40
Lane Group Flow (vph)	739	1903	0	26	2210	225	0	23	0	0	283	794
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			7			2			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	24.0	65.8		4.2	46.0	46.0		4.0			26.0	50.0
Effective Green, g (s)	25.0	68.8		5.2	49.0	49.0		6.0			28.0	54.0
Actuated g/C Ratio	0.21	0.57		0.04	0.41	0.41		0.05			0.23	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	746	3032		80	2167	662		87			432	743
v/s Ratio Prot	0.21	0.36		0.01	c0.42			c0.01			0.15	c0.48
v/s Ratio Perm						0.14						
v/c Ratio	0.99	0.63		0.33	1.02	0.34		0.26			0.66	1.07
Uniform Delay, d1	47.4	17.1		55.7	35.5	24.4		54.9			41.6	33.0
Progression Factor	0.94	1.06		1.40	0.85	0.55		1.00			1.00	1.00
Incremental Delay, d2	27.3	0.8		1.9	22.6	1.1		1.6			3.6	52.8
Delay (s)	71.9	18.8		79.9	52.6	14.5		56.5			45.2	85.8
Level of Service	E	B		E	D	B		E			D	F
Approach Delay (s)		33.7			48.3			56.5			75.5	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	47.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	169	135	317	125	103	318
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	188	150	352	139	114	353
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1004	422			491	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1004	422			491	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	22	76			89	
cM capacity (veh/h)	239	632			1072	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	338	491	468
Volume Left	188	0	114
Volume Right	150	139	0
cSH	331	1700	1072
Volume to Capacity	1.02	0.29	0.11
Queue Length 95th (ft)	293	0	9
Control Delay (s)	91.6	0.0	3.0
Lane LOS	F		A
Approach Delay (s)	91.6	0.0	3.0
Approach LOS	F		

Intersection Summary			
Average Delay	25.0		
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	971	2	34	928	3	57
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1079	2	38	1031	3	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1081		2187	1080
vC1, stage 1 conf vol					1080	
vC2, stage 2 conf vol					1107	
vCu, unblocked vol			1081		2187	1080
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		98	76
cM capacity (veh/h)			645		218	265

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1081	38	1031	67
Volume Left	0	38	0	3
Volume Right	2	0	0	63
cSH	1700	645	1700	262
Volume to Capacity	0.64	0.06	0.61	0.25
Queue Length 95th (ft)	0	5	0	25
Control Delay (s)	0.0	10.9	0.0	23.3
Lane LOS		B		C
Approach Delay (s)	0.0	0.4		23.3
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1717	226	53	2007	10	109	18	37	48	24	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1615	1847	5307	1622		1545		1843	1944	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1847	5307	1615	1847	5307	1622		1253		1269	1944	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	1866	246	58	2182	11	118	20	40	52	26	261
RTOR Reduction (vph)	0	0	60	0	0	4	0	10	0	0	0	93
Lane Group Flow (vph)	40	1866	186	58	2182	7	0	169	0	52	26	168
Confl. Peds. (#/hr)	3					3			3	3		
Confl. Bikes (#/hr)			5			2			1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	5.6	75.0	75.0	7.0	76.4	76.4		23.0		23.0	23.0	23.0
Effective Green, g (s)	6.6	78.0	78.0	8.0	79.4	79.4		25.0		25.0	25.0	25.0
Actuated g/C Ratio	0.05	0.65	0.65	0.07	0.66	0.66		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	101	3449	1049	123	3511	1073		261		264	405	344
v/s Ratio Prot	0.02	c0.35		0.03	c0.41						0.01	
v/s Ratio Perm			0.12			0.00		c0.13		0.04		0.10
v/c Ratio	0.40	0.54	0.18	0.47	0.62	0.01		0.65		0.20	0.06	0.49
Uniform Delay, d1	54.8	11.3	8.3	54.0	11.7	6.9		43.4		39.2	38.1	41.9
Progression Factor	0.92	1.05	1.52	1.18	1.22	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	2.0	0.5	0.3	2.5	0.7	0.0		5.4		0.4	0.1	1.1
Delay (s)	52.3	12.4	12.9	66.0	14.9	6.9		48.8		39.6	38.2	42.9
Level of Service	D	B	B	E	B	A		D		D	D	D
Approach Delay (s)		13.2			16.2			48.8			42.1	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	282	603	2144	0	0	1271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			3693
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			3693
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	297	635	2257	0	0	1338
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	297	632	2257	0	0	1338
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	18.0	18.0	30.0			30.0
Effective Green, g (s)	21.0	21.0	33.0			33.0
Actuated g/C Ratio	0.35	0.35	0.55			0.55
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1254	1017	2918			2031
v/s Ratio Prot	0.08	c0.22	c0.43			0.36
v/s Ratio Perm						
v/c Ratio	0.24	0.62	0.77			0.66
Uniform Delay, d1	13.8	16.2	10.6			9.5
Progression Factor	1.00	1.00	1.28			1.00
Incremental Delay, d2	0.2	1.7	1.4			1.7
Delay (s)	14.0	17.9	14.9			11.2
Level of Service	B	B	B			B
Approach Delay (s)	16.6		14.9			11.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	955	570	0	2185	1068	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3583	2908		5307	5307	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3583	2908		5307	5307	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	974	582	0	2230	1090	0
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	974	572	0	2230	1090	0
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	23.1	23.1		24.9	24.9	
Effective Green, g (s)	26.1	26.1		27.9	27.9	
Actuated g/C Ratio	0.44	0.44		0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1558	1264		2467	2467	
v/s Ratio Prot	c0.27	0.20		c0.42	0.21	
v/s Ratio Perm						
v/c Ratio	0.63	0.45		0.90	0.44	
Uniform Delay, d1	13.2	11.9		14.8	10.8	
Progression Factor	1.00	1.00		1.00	0.60	
Incremental Delay, d2	0.6	0.1		6.0	0.5	
Delay (s)	13.7	12.0		20.8	7.0	
Level of Service	B	B		C	A	
Approach Delay (s)	13.1			20.8	7.0	
Approach LOS	B			C	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	697	216	108	140	175	674	133	1160	103	383	734	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3345		1847	1847	1570	1847	5307	1627	3583	4931	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3345		1847	1847	1570	1847	5307	1627	3583	4931	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	719	223	111	144	180	695	137	1196	106	395	757	537
RTOR Reduction (vph)	0	16	0	0	0	64	0	0	0	0	127	0
Lane Group Flow (vph)	388	649	0	144	180	631	137	1196	106	395	1167	0
Confl. Peds. (#/hr)			16	16			9		10	10		9
Confl. Bikes (#/hr)			7			1			1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	23.9	23.9		17.0	17.0	29.1	7.5	25.0	100.0	12.1	29.6	
Effective Green, g (s)	26.9	26.9		20.0	20.0	35.1	8.5	28.0	100.0	13.1	32.6	
Actuated g/C Ratio	0.27	0.27		0.20	0.20	0.35	0.08	0.28	1.00	0.13	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	451	899		369	369	551	156	1485	1627	469	1607	
v/s Ratio Prot	c0.23	0.19		0.08	0.10	c0.40	0.07	c0.23		0.11	0.24	
v/s Ratio Perm									0.07			
v/c Ratio	0.86	0.72		0.39	0.49	1.15	0.88	0.81	0.07	0.84	0.73	
Uniform Delay, d1	34.8	33.2		34.7	35.5	32.5	45.2	33.5	0.0	42.4	29.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.9	2.4		0.2	0.4	85.4	37.7	4.8	0.1	12.4	2.9	
Delay (s)	49.6	35.6		35.0	35.8	117.8	83.0	38.2	0.1	54.9	32.7	
Level of Service	D	D		C	D	F	F	D	A	D	C	
Approach Delay (s)		40.8			91.6			39.7			37.9	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	7	166	144	7	19	148	371	82	15	378	11
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	13	7	168	145	7	19	149	375	83	15	382	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	20	168	153	19	149	458	15	393
Volume Left (vph)	13	0	145	0	149	0	15	0
Volume Right (vph)	0	168	0	19	0	83	0	11
Hadj (s)	0.36	-0.67	0.51	-0.67	0.53	-0.09	0.53	0.01
Departure Headway (s)	8.0	6.9	8.1	6.9	7.0	6.3	7.2	6.7
Degree Utilization, x	0.04	0.32	0.34	0.04	0.29	0.81	0.03	0.73
Capacity (veh/h)	421	480	413	478	501	555	476	520
Control Delay (s)	10.1	12.0	14.0	9.0	11.6	29.4	9.2	24.5
Approach Delay (s)	11.8		13.5		25.0		24.0	
Approach LOS	B		B		D		C	

Intersection Summary			
Delay	21.4		
Level of Service	C		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	103	25	40	105	555	12	69	201	665	76	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.89		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1878		1847	1944	1638	1847	1706		1754	1774	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1878		1847	1944	1638	1847	1706		1754	1774	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	111	27	43	113	597	13	74	216	715	82	2
RTOR Reduction (vph)	0	9	0	0	0	259	0	110	0	0	0	0
Lane Group Flow (vph)	1	129	0	43	113	338	13	180	0	365	434	0
Confl. Peds. (#/hr)			1	1			2		2	2		2
Confl. Bikes (#/hr)			1			1			2			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	8.8		5.4	13.3	33.5	12.9	12.9		20.2	20.2	
Effective Green, g (s)	1.9	10.8		6.4	15.3	37.5	14.9	14.9		22.2	22.2	
Actuated g/C Ratio	0.03	0.16		0.10	0.23	0.57	0.22	0.22		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	305		178	448	1000	415	383		587	594	
v/s Ratio Prot	0.00	c0.07		0.02	0.06	c0.11	0.01	c0.11		0.21	c0.24	
v/s Ratio Perm						0.09						
v/c Ratio	0.02	0.42		0.24	0.25	0.34	0.03	0.47		0.62	0.73	
Uniform Delay, d1	31.3	24.9		27.7	20.8	7.7	20.1	22.3		18.5	19.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9		0.7	0.3	0.2	0.0	0.9		2.1	4.6	
Delay (s)	31.4	25.9		28.4	21.1	7.9	20.1	23.2		20.6	24.0	
Level of Service	C	C		C	C	A	C	C		C	C	
Approach Delay (s)		25.9			11.1			23.1			22.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	182	1016	584	129	1103	144	681	796	76	289	705	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	190	1058	608	134	1149	150	709	829	79	301	734	212
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	190	1058	608	134	1149	150	709	829	79	301	734	212
Confl. Peds. (#/hr)	3		7	7		3	1		3	3		1
Confl. Bikes (#/hr)			1			1			6			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	28.1	55.1	6.8	27.9	120.0	27.0	51.7	120.0	13.4	36.1	120.0
Effective Green, g (s)	8.0	31.1	61.1	7.8	30.9	120.0	30.0	54.7	120.0	14.4	39.1	120.0
Actuated g/C Ratio	0.07	0.26	0.51	0.06	0.26	1.00	0.25	0.46	1.00	0.12	0.33	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	238	1375	831	232	1366	1631	1302	1683	1629	429	1729	1631
v/s Ratio Prot	c0.05	0.20	c0.18	0.04	c0.22		0.14	c0.22		c0.08	0.14	
v/s Ratio Perm			0.19			0.09			0.05			c0.13
v/c Ratio	0.80	0.77	0.73	0.58	0.84	0.09	0.54	0.49	0.05	0.70	0.42	0.13
Uniform Delay, d1	55.2	41.1	23.0	54.5	42.2	0.0	39.1	22.9	0.0	50.7	31.6	0.0
Progression Factor	0.87	1.02	0.99	1.28	1.18	1.00	0.61	0.37	1.00	0.80	0.73	1.00
Incremental Delay, d2	14.8	2.9	2.7	2.0	5.0	0.1	0.2	0.9	0.1	4.0	0.7	0.2
Delay (s)	63.0	44.9	25.4	72.0	54.8	0.1	24.0	9.4	0.1	44.8	23.7	0.2
Level of Service	E	D	C	E	D	A	C	A	A	D	C	A
Approach Delay (s)		40.4			50.7			15.4			24.8	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	195	411	513	269	132	362	842	341	87	1302	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	102	205	433	540	283	139	381	886	359	92	1371	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	102	205	433	540	283	139	381	886	359	92	1371	10
Confl. Peds. (#/hr)	3		2	2		3	1		1	1		1
Confl. Bikes (#/hr)			3			10			6			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.6	17.0	120.0	21.4	31.8	120.0	17.0	55.1	120.0	6.5	44.6	44.6
Effective Green, g (s)	7.6	20.0	120.0	22.4	34.8	120.0	18.0	58.1	120.0	7.5	47.6	47.6
Actuated g/C Ratio	0.06	0.17	1.00	0.19	0.29	1.00	0.15	0.48	1.00	0.06	0.40	0.40
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	226	615	1630	668	1070	1627	537	2569	1630	223	2105	644
v/s Ratio Prot	c0.03	c0.06		c0.15	0.08		c0.11	0.17		0.03	c0.26	
v/s Ratio Perm			0.27			0.09			0.22			0.01
v/c Ratio	0.45	0.33	0.27	0.81	0.26	0.09	0.71	0.34	0.22	0.41	0.65	0.01
Uniform Delay, d1	54.2	44.1	0.0	46.7	32.8	0.0	48.5	19.2	0.0	54.1	29.4	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.64	1.00	0.77	0.91	1.00
Incremental Delay, d2	0.5	0.7	0.4	6.7	0.3	0.1	2.9	0.3	0.3	0.5	1.6	0.0
Delay (s)	54.7	44.8	0.4	53.5	33.0	0.1	40.2	12.5	0.3	42.3	28.3	22.0
Level of Service	D	D	A	D	C	A	D	B	A	D	C	C
Approach Delay (s)		20.2			39.8			16.3			29.1	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	999	19	11	569	34	66	179	15	59	211	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3583	3682		1847	5258		3583	3645		1847	4804	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3583	3682		1847	5258		3583	3645		1847	4804	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	229	1052	20	12	599	36	69	188	16	62	222	300
RTOR Reduction (vph)	0	1	0	0	4	0	0	6	0	0	228	0
Lane Group Flow (vph)	229	1071	0	12	631	0	69	198	0	62	294	0
Confl. Peds. (#/hr)			3	3			1		4	4		1
Confl. Bikes (#/hr)			2			2						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.9	69.0		2.9	59.0		5.6	20.6		7.5	22.5	
Effective Green, g (s)	13.9	72.0		3.9	62.0		6.6	23.6		8.5	25.5	
Actuated g/C Ratio	0.12	0.60		0.03	0.52		0.05	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	415	2209		60	2716		197	716		130	1020	
v/s Ratio Prot	c0.06	c0.29		0.01	0.12		0.02	0.05		c0.03	c0.06	
v/s Ratio Perm												
v/c Ratio	0.55	0.48		0.20	0.23		0.35	0.28		0.48	0.29	
Uniform Delay, d1	50.1	13.5		56.5	15.9		54.6	41.0		53.6	39.6	
Progression Factor	0.76	1.32		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.7		1.6	0.2		1.1	0.2		2.7	0.2	
Delay (s)	39.5	18.6		58.2	16.1		55.7	41.2		56.4	39.8	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		22.3			16.9			44.8			41.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1030	1047	0	483	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1084	1102	0	508	651
RTOR Reduction (vph)	0	0	0	0	0	70
Lane Group Flow (vph)	0	1084	1102	0	508	581
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.5	31.5		16.5	16.5
Effective Green, g (s)		34.5	34.5		19.5	19.5
Actuated g/C Ratio		0.58	0.58		0.32	0.32
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3051	3051		1164	945
v/s Ratio Prot		0.20	c0.21		0.14	
v/s Ratio Perm						c0.20
v/c Ratio		0.36	0.36		0.44	0.62
Uniform Delay, d1		6.8	6.8		15.9	17.1
Progression Factor		1.00	0.73		1.00	1.00
Incremental Delay, d2		0.3	0.3		0.3	1.2
Delay (s)		7.1	5.3		16.2	18.3
Level of Service		A	A		B	B
Approach Delay (s)		7.1	5.3		17.4	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1000	0	0	1087	304	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1042	0	0	1132	317	323
RTOR Reduction (vph)	0	0	0	0	0	120
Lane Group Flow (vph)	1042	0	0	1132	317	203
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	37.4			37.4	10.6	10.6
Effective Green, g (s)	40.4			40.4	13.6	13.6
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3573			2486	812	659
v/s Ratio Prot	0.20			c0.31	c0.09	0.07
v/s Ratio Perm						
v/c Ratio	0.29			0.46	0.39	0.31
Uniform Delay, d1	4.0			4.6	19.7	19.3
Progression Factor	0.82			1.87	1.00	1.00
Incremental Delay, d2	0.2			0.5	0.3	0.3
Delay (s)	3.5			9.1	20.0	19.6
Level of Service	A			A	B	B
Approach Delay (s)	3.5			9.1	19.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	588	703	19	6	1031	236	25	4	10	231	2	593
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5283		1847	5307	1593		1792			1852	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5283		1847	5307	1593		1792			1852	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	619	740	20	6	1085	248	26	4	11	243	2	624
RTOR Reduction (vph)	0	1	0	0	0	98	0	10	0	0	0	247
Lane Group Flow (vph)	619	759	0	6	1085	150	0	31	0	0	245	377
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	26.4	73.1		1.4	48.1	48.1		6.5			19.0	45.4
Effective Green, g (s)	27.4	76.1		2.4	51.1	51.1		8.5			21.0	49.4
Actuated g/C Ratio	0.23	0.63		0.02	0.43	0.43		0.07			0.18	0.41
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	818	3350		36	2259	678		126			324	680
v/s Ratio Prot	c0.17	0.14		0.00	c0.20			c0.02			c0.13	0.23
v/s Ratio Perm						0.09						
v/c Ratio	0.76	0.23		0.17	0.48	0.22		0.24			0.76	0.56
Uniform Delay, d1	43.2	9.4		57.8	24.9	21.8		52.7			47.1	26.9
Progression Factor	1.06	0.80		1.04	0.99	0.95		1.00			1.00	1.00
Incremental Delay, d2	3.9	0.2		2.2	0.7	0.8		1.0			9.7	1.0
Delay (s)	49.6	7.6		62.1	25.3	21.5		53.7			56.7	27.9
Level of Service	D	A		E	C	C		D			E	C
Approach Delay (s)		26.5			24.8			53.7			36.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	39	157	179	40	125	250
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	43	174	199	44	139	278
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	777	221			243	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	777	221			243	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	79			90	
cM capacity (veh/h)	327	818			1323	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	218	243	417
Volume Left	43	0	139
Volume Right	174	44	0
cSH	630	1700	1323
Volume to Capacity	0.35	0.14	0.10
Queue Length 95th (ft)	38	0	9
Control Delay (s)	13.7	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	13.7	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	815	1	3	825	1	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	906	1	3	917	1	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			907		1829	906
vC1, stage 1 conf vol					906	
vC2, stage 2 conf vol					923	
vCu, unblocked vol			907		1829	906
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			751		281	334

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	907	3	917	13
Volume Left	0	3	0	1
Volume Right	1	0	0	12
cSH	1700	751	1700	329
Volume to Capacity	0.53	0.00	0.54	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	9.8	0.0	16.4
Lane LOS		A		C
Approach Delay (s)	0.0	0.0		16.4
Approach LOS				C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	598	186	152	97	177	279	210	701	104	341	557	549
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3313		1847	1847	1570	1847	5307	1627	3583	4865	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3313		1847	1847	1570	1847	5307	1627	3583	4865	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	623	194	158	101	184	291	219	730	108	355	580	572
RTOR Reduction (vph)	0	26	0	0	0	58	0	0	0	0	135	0
Lane Group Flow (vph)	336	613	0	101	184	233	219	730	108	355	1017	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.8	26.8		13.7	13.7	28.5	17.1	42.7	120.0	14.8	40.4	
Effective Green, g (s)	29.8	29.8		16.7	16.7	34.5	18.1	45.7	120.0	15.8	43.4	
Actuated g/C Ratio	0.25	0.25		0.14	0.14	0.29	0.15	0.38	1.00	0.13	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	417	822		257	257	451	278	2021	1627	471	1759	
v/s Ratio Prot	c0.20	0.19		0.05	c0.10	0.15	c0.12	0.14		0.10	c0.21	
v/s Ratio Perm									c0.07			
v/c Ratio	0.81	0.75		0.39	0.72	0.52	0.79	0.36	0.07	0.75	0.58	
Uniform Delay, d1	42.4	41.6		47.0	49.4	35.8	49.1	26.7	0.0	50.2	30.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.47	0.59	1.00	1.00	0.99	
Incremental Delay, d2	10.3	3.3		0.4	7.7	0.4	12.3	0.5	0.1	6.0	1.4	
Delay (s)	52.6	44.9		47.4	57.0	36.2	84.7	16.1	0.1	56.2	32.2	
Level of Service	D	D		D	E	D	F	B	A	E	C	
Approach Delay (s)		47.5			44.8			28.7			37.8	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	26	27	238	236	24	28	252	320	125	21	392	21
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	27	28	245	243	25	29	260	330	129	22	404	22

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	55	245	268	29	260	459	22	426
Volume Left (vph)	27	0	243	0	260	0	22	0
Volume Right (vph)	0	245	0	29	0	129	0	22
Hadj (s)	0.26	-0.68	0.47	-0.68	0.52	-0.18	0.52	-0.02
Departure Headway (s)	8.9	8.0	9.0	7.8	8.3	7.7	8.6	8.0
Degree Utilization, x	0.14	0.54	0.67	0.06	0.60	0.98	0.05	0.95
Capacity (veh/h)	389	426	386	438	418	459	409	437
Control Delay (s)	12.1	18.8	27.2	10.2	22.0	62.1	10.8	58.2
Approach Delay (s)	17.6		25.5		47.6		55.9	
Approach LOS	C		D		E		F	

Intersection Summary			
Delay	40.9		
Level of Service	E		
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	50	24	28	41	671	6	50	34	755	117	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1834		1847	1944	1652	1847	1815		1754	1778	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1834		1847	1944	1652	1847	1815		1754	1778	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	52	25	29	42	692	6	52	35	778	121	2
RTOR Reduction (vph)	0	18	0	0	0	256	0	26	0	0	0	0
Lane Group Flow (vph)	2	59	0	29	42	436	6	61	0	397	504	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.8	7.6		2.3	9.1	37.8	8.8	8.8		28.7	28.7	
Effective Green, g (s)	1.8	9.6		3.3	11.1	41.8	10.8	10.8		30.7	30.7	
Actuated g/C Ratio	0.03	0.14		0.05	0.17	0.63	0.16	0.16		0.46	0.46	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	50	265		91	324	1114	300	295		810	822	
v/s Ratio Prot	0.00	c0.03		0.02	0.02	c0.18	0.00	c0.03		0.23	c0.28	
v/s Ratio Perm						0.08						
v/c Ratio	0.04	0.22		0.32	0.13	0.39	0.02	0.21		0.49	0.61	
Uniform Delay, d1	31.5	25.1		30.5	23.5	6.0	23.4	24.1		12.4	13.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4		2.0	0.2	0.2	0.0	0.3		0.5	1.4	
Delay (s)	31.8	25.5		32.5	23.7	6.3	23.4	24.4		12.9	14.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		25.7			8.2			24.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	66.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	366	269	66	543	106	398	699	56	182	545	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	159	385	283	69	572	112	419	736	59	192	574	179
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	159	385	283	69	572	112	419	736	59	192	574	179
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	5.9	22.1	26.1	4.7	20.9	90.0	4.0	36.1	90.0	7.1	37.2	90.0
Effective Green, g (s)	6.9	25.1	32.1	5.7	23.9	90.0	7.0	39.1	90.0	8.1	40.2	90.0
Actuated g/C Ratio	0.08	0.28	0.36	0.06	0.27	1.00	0.08	0.43	1.00	0.09	0.45	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	274	1480	583	226	1409	1632	405	1604	1631	322	2370	1652
v/s Ratio Prot	c0.04	0.07	c0.04	0.02	0.11		c0.08	c0.20		c0.05	0.11	
v/s Ratio Perm			0.14			0.07			0.04			c0.11
v/c Ratio	0.58	0.26	0.49	0.31	0.41	0.07	1.03	0.46	0.04	0.60	0.24	0.11
Uniform Delay, d1	40.2	25.2	22.5	40.3	27.2	0.0	41.5	18.0	0.0	39.4	15.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.2	0.2	0.3	0.4	0.1	53.9	0.9	0.0	2.0	0.2	0.1
Delay (s)	42.2	25.4	22.8	40.5	27.6	0.1	95.4	18.9	0.0	41.4	15.7	0.1
Level of Service	D	C	C	D	C	A	F	B	A	D	B	A
Approach Delay (s)		27.7			24.7			44.4			18.0	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	701	511	768	0	0	1046
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	730	532	800	0	0	1090
RTOR Reduction (vph)	0	112	0	0	0	0
Lane Group Flow (vph)	730	420	800	0	0	1090
Confl. Peds. (#/hr)				5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	13.9	13.9	13.7			13.7
Effective Green, g (s)	15.0	15.0	14.8			14.8
Actuated g/C Ratio	0.42	0.42	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1501	1218	2193			2193
v/s Ratio Prot	c0.20	0.14	0.15			c0.21
v/s Ratio Perm						
v/c Ratio	0.49	0.34	0.36			0.50
Uniform Delay, d1	7.6	7.1	7.3			7.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.2	0.1			0.2
Delay (s)	7.8	7.2	7.4			7.9
Level of Service	A	A	A			A
Approach Delay (s)	7.6		7.4			7.9
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	0	565	0	0	0	0	532	234	0	1296	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2829		3693	1618
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2829		3693	1618
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	460	0	621	0	0	0	0	585	257	0	1424	496
RTOR Reduction (vph)	0	0	52	0	0	0	0	0	115	0	0	223
Lane Group Flow (vph)	460	0	569	0	0	0	0	585	142	0	1424	273
Confl. Peds. (#/hr)									4	4		
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	17.1		17.1					28.8	28.8		28.8	28.8
Effective Green, g (s)	18.2		18.2					29.9	29.9		29.9	29.8
Actuated g/C Ratio	0.34		0.34					0.55	0.55		0.55	0.55
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1205		978					2041	1563		2041	891
v/s Ratio Prot								0.16			c0.39	
v/s Ratio Perm	0.13		c0.20						0.05			0.17
v/c Ratio	0.38		0.58					0.29	0.09		0.70	0.31
Uniform Delay, d1	13.7		14.8					6.4	5.7		8.8	6.6
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2		0.9					0.1	0.0		1.1	0.2
Delay (s)	13.9		15.7					6.5	5.7		9.9	6.8
Level of Service	B		B					A	A		A	A
Approach Delay (s)		14.9			0.0			6.3			9.1	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	7.1
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	36	56	109	18	326	15	304	98	304	277	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1731		1829	1925	2880	1829	5037		3547	3657	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1731		1829	1925	2880	1829	5037		3547	3657	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	8	42	65	127	21	379	17	353	114	353	322	3
RTOR Reduction (vph)	0	50	0	0	0	166	0	58	0	0	0	2
Lane Group Flow (vph)	8	57	0	127	21	213	17	409	0	353	322	1
Confl. Peds. (#/hr)			6	6					9	9		
Confl. Bikes (#/hr)									1			2
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.8	14.1		7.7	21.0	37.6	1.8	19.7		10.6	28.5	28.5
Effective Green, g (s)	1.8	17.1		8.7	24.0	40.6	2.8	22.7		11.6	31.5	31.5
Actuated g/C Ratio	0.02	0.24		0.12	0.33	0.56	0.04	0.31		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	45	410		220	640	1621	71	1585		570	1597	705
v/s Ratio Prot	0.00	0.03		c0.07	0.01	c0.07	0.01	c0.08		c0.10	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.18	0.14		0.58	0.03	0.13	0.24	0.26		0.62	0.20	0.00
Uniform Delay, d1	34.4	21.7		30.0	16.2	7.4	33.6	18.4		28.2	12.5	11.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1		2.3	0.0	0.0	0.6	0.2		1.4	0.1	0.0
Delay (s)	35.1	21.8		32.2	16.2	7.4	34.3	18.6		29.6	12.7	11.4
Level of Service	D	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.7			13.8			19.2			21.5	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	72.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	652	1599	0	551	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2880
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2880
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	701	1719	0	592	777
RTOR Reduction (vph)	0	0	0	0	0	12
Lane Group Flow (vph)	0	701	1719	0	592	765
Confl. Peds. (#/hr)	8			8		
Confl. Bikes (#/hr)				5		
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		55.5	55.5		32.5	32.5
Effective Green, g (s)		58.5	58.5		35.5	35.5
Actuated g/C Ratio		0.58	0.58		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3074	3074		1259	1022
v/s Ratio Prot		0.13	c0.33		0.17	
v/s Ratio Perm						c0.27
v/c Ratio		0.23	0.56		0.47	0.75
Uniform Delay, d1		9.9	12.8		25.0	28.3
Progression Factor		1.00	0.92		1.00	1.00
Incremental Delay, d2		0.2	0.6		0.3	3.0
Delay (s)		10.1	12.4		25.2	31.4
Level of Service		B	B		C	C
Approach Delay (s)		10.1	12.4		28.7	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	976	0	0	1376	612	698
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1038	0	0	1464	651	743
RTOR Reduction (vph)	0	0	0	0	0	133
Lane Group Flow (vph)	1038	0	0	1464	651	610
Confl. Bikes (#/hr)		7				
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	62.1			62.1	25.9	25.9
Effective Green, g (s)	65.1			65.1	28.9	28.9
Actuated g/C Ratio	0.65			0.65	0.29	0.29
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3421			2380	1025	832
v/s Ratio Prot	0.20			c0.40	0.18	c0.21
v/s Ratio Perm						
v/c Ratio	0.30			0.62	0.64	0.73
Uniform Delay, d1	7.6			10.2	31.0	32.1
Progression Factor	0.99			0.43	1.00	1.00
Incremental Delay, d2	0.2			1.0	1.3	3.4
Delay (s)	7.7			5.3	32.3	35.4
Level of Service	A			A	C	D
Approach Delay (s)	7.7			5.3	34.0	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	335	1315	24	12	1800	147	11	2	11	109	1	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3513	5187		1811	5204	1583		1724			1816	1612
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3513	5187		1811	5204	1583		1724			1816	1612
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	356	1399	26	13	1915	156	12	2	12	116	1	357
RTOR Reduction (vph)	0	2	0	0	0	69	0	11	0	0	0	64
Lane Group Flow (vph)	356	1423	0	13	1915	87	0	15	0	0	117	293
Confl. Peds. (#/hr)	5					5			2	2		
Confl. Bikes (#/hr)			7			3			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases						6						4
Actuated Green, G (s)	15.0	66.2		1.4	52.6	52.6		3.0			9.4	24.4
Effective Green, g (s)	16.0	69.2		2.4	55.6	55.6		5.0			11.4	28.4
Actuated g/C Ratio	0.16	0.69		0.02	0.56	0.56		0.05			0.11	0.28
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	562	3589		43	2893	880		86			207	457
v/s Ratio Prot	0.10	0.27		0.01	c0.37			c0.01			0.06	c0.11
v/s Ratio Perm						0.05						0.07
v/c Ratio	0.63	0.40		0.30	0.66	0.10		0.17			0.57	0.64
Uniform Delay, d1	39.3	6.5		48.0	15.6	10.4		45.5			42.0	31.3
Progression Factor	1.16	0.82		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.1	0.3		3.9	1.2	0.2		0.9			3.5	3.1
Delay (s)	47.7	5.6		51.9	16.8	10.7		46.5			45.5	34.4
Level of Service	D	A		D	B	B		D			D	C
Approach Delay (s)		14.0			16.6			46.5			37.1	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	58	70	191	97	68	152
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	64	78	212	108	76	169
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	586	266			320	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	586	266			320	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	90			94	
cM capacity (veh/h)	444	773			1240	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	142	320	244
Volume Left	64	0	76
Volume Right	78	108	0
cSH	578	1700	1240
Volume to Capacity	0.25	0.19	0.06
Queue Length 95th (ft)	24	0	5
Control Delay (s)	13.2	0.0	2.9
Lane LOS	B		A
Approach Delay (s)	13.2	0.0	2.9
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	439	0	5	479	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	488	0	6	532	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			488		1031	488
vC1, stage 1 conf vol					488	
vC2, stage 2 conf vol					543	
vCu, unblocked vol			488		1031	488
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1075		472	580

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	488	6	532	8
Volume Left	0	6	0	0
Volume Right	0	0	0	8
cSH	1700	1075	1700	580
Volume to Capacity	0.29	0.01	0.31	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	8.4	0.0	11.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.3
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	1209	61	20	1720	43	170	30	28	9	8	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1616	1847	5307	1621		1562		1847	1944	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.68	1.00	1.00
Satd. Flow (perm)	1847	5307	1616	1847	5307	1621		1257		1330	1944	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	176	1259	64	21	1792	45	177	31	29	9	8	56
RTOR Reduction (vph)	0	0	22	0	0	25	0	5	0	0	0	43
Lane Group Flow (vph)	176	1259	42	21	1792	20	0	232	0	9	8	13
Confl. Peds. (#/hr)	3					3	1					1
Confl. Bikes (#/hr)			3			3			3			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	28.4	76.3	76.3	2.8	50.7	50.7		25.9		25.9	25.9	25.9
Effective Green, g (s)	29.4	79.3	79.3	3.8	53.7	53.7		27.9		27.9	27.9	27.9
Actuated g/C Ratio	0.24	0.66	0.66	0.03	0.45	0.45		0.23		0.23	0.23	0.23
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	452	3507	1067	58	2374	725		292		309	451	379
v/s Ratio Prot	0.10	c0.24		0.01	c0.34						0.00	
v/s Ratio Perm			0.03			0.01		c0.18		0.01		0.01
v/c Ratio	0.39	0.36	0.04	0.36	0.75	0.03		0.80		0.03	0.02	0.03
Uniform Delay, d1	37.8	9.0	7.1	56.9	27.7	18.5		43.4		35.6	35.5	35.6
Progression Factor	1.00	1.00	1.00	0.84	1.23	2.74		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	3.3	2.0	0.1		13.9		0.0	0.0	0.0
Delay (s)	38.4	9.3	7.2	51.2	35.9	50.8		57.3		35.6	35.5	35.7
Level of Service	D	A	A	D	D	D		E		D	D	D
Approach Delay (s)		12.7			36.5			57.3			35.6	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	309	404	962	0	0	1515
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3513	2852	5204			3622
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3513	2852	5204			3622
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	329	430	1023	0	0	1612
RTOR Reduction (vph)	0	104	0	0	0	0
Lane Group Flow (vph)	329	326	1023	0	0	1612
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	15.2	15.2	32.8			32.8
Effective Green, g (s)	18.2	18.2	35.8			35.8
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1065	865	3105			2161
v/s Ratio Prot	0.09	c0.11	0.20			c0.45
v/s Ratio Perm						
v/c Ratio	0.31	0.38	0.33			0.75
Uniform Delay, d1	16.1	16.4	6.1			8.8
Progression Factor	1.00	1.00	0.97			1.00
Incremental Delay, d2	0.3	0.6	0.3			2.4
Delay (s)	16.4	17.0	6.2			11.2
Level of Service	B	B	A			B
Approach Delay (s)	16.8		6.2			11.2
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	546	1511	0	739	1344	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	569	1574	0	770	1400	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	569	1572	0	770	1400	0
Confl. Bikes (#/hr)						1
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.16	c0.55		0.15	c0.27	
v/s Ratio Perm						
v/c Ratio	0.28	0.94		0.46	0.84	
Uniform Delay, d1	6.2	11.5		16.4	19.1	
Progression Factor	1.00	1.00		0.69	0.78	
Incremental Delay, d2	0.0	10.1		0.9	4.1	
Delay (s)	6.2	21.6		12.2	18.9	
Level of Service	A	C		B	B	
Approach Delay (s)	17.5			12.2	18.9	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	238	101	65	76	112	195	108	498	80	752	1592	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3283		1829	1829	1554	1829	5255	1614	3547	5036	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3283		1829	1829	1554	1829	5255	1614	3547	5036	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	251	106	68	80	118	205	114	524	84	792	1676	538
RTOR Reduction (vph)	0	24	0	0	0	110	0	0	0	0	42	0
Lane Group Flow (vph)	136	265	0	80	118	95	114	524	84	792	2172	0
Confl. Peds. (#/hr)			18	18			8		4	4		8
Confl. Bikes (#/hr)			1			5			1			1
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.1	17.1		7.0	7.0	37.2	9.6	43.7	120.0	30.2	64.3	
Effective Green, g (s)	20.1	20.1		10.0	10.0	43.2	10.6	46.7	120.0	31.2	67.3	
Actuated g/C Ratio	0.17	0.17		0.08	0.08	0.36	0.09	0.39	1.00	0.26	0.56	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	549		152	152	559	161	2045	1614	922	2824	
v/s Ratio Prot	c0.08	0.08		0.04	c0.06	0.06	0.06	0.10		c0.22	c0.43	
v/s Ratio Perm									0.05			
v/c Ratio	0.49	0.48		0.53	0.78	0.17	0.71	0.26	0.05	0.86	0.77	
Uniform Delay, d1	45.3	45.2		52.7	53.9	26.2	53.2	24.9	0.0	42.3	20.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.70	1.55	1.00	0.99	0.87	
Incremental Delay, d2	0.5	0.2		1.5	19.9	0.1	10.7	0.3	0.1	3.9	1.0	
Delay (s)	45.8	45.5		54.2	73.8	26.2	48.0	38.9	0.1	45.9	18.6	
Level of Service	D	D		D	E	C	D	D	A	D	B	
Approach Delay (s)		45.6			45.7			35.9			25.8	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	4	97	24	3	7	142	285	13	8	233	8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	3	5	110	27	3	8	161	324	15	9	265	9

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	8	110	31	8	161	339	9	274
Volume Left (vph)	3	0	27	0	161	0	9	0
Volume Right (vph)	0	110	0	8	0	15	0	9
Hadj (s)	0.30	-0.61	0.53	-0.61	0.58	0.05	0.58	0.06
Departure Headway (s)	6.7	5.8	7.1	5.9	5.8	5.3	6.1	5.6
Degree Utilization, x	0.01	0.18	0.06	0.01	0.26	0.50	0.02	0.42
Capacity (veh/h)	494	570	464	547	600	663	566	629
Control Delay (s)	8.6	8.8	9.3	7.8	9.7	12.3	8.0	11.4
Approach Delay (s)	8.8		9.0		11.5		11.3	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.0		
Level of Service	B		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	14	15	149	86	429	10	37	33	319	55	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1793	1718		1793	1888	1587	1793	1743		1704	1727	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1793	1718		1793	1888	1587	1793	1743		1704	1727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	15	16	157	91	452	11	39	35	336	58	2
RTOR Reduction (vph)	0	14	0	0	0	173	0	30	0	0	0	0
Lane Group Flow (vph)	1	17	0	157	91	279	11	44	0	171	225	0
Confl. Peds. (#/hr)	1		2	2		1	1					1
Confl. Bikes (#/hr)			1			3			1			1
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.7	5.1		10.3	14.7	31.8	6.4	6.4		17.1	17.1	
Effective Green, g (s)	1.7	7.1		11.3	16.7	35.8	8.4	8.4		19.1	19.1	
Actuated g/C Ratio	0.03	0.12		0.20	0.29	0.62	0.15	0.15		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	210		349	544	1063	260	252		562	569	
v/s Ratio Prot	0.00	c0.01		c0.09	0.05	c0.09	0.01	c0.03		0.10	c0.13	
v/s Ratio Perm						0.09						
v/c Ratio	0.02	0.08		0.45	0.17	0.26	0.04	0.17		0.30	0.40	
Uniform Delay, d1	27.3	22.5		20.6	15.4	5.0	21.3	21.7		14.5	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.9	0.1	0.1	0.1	0.3		0.3	0.5	
Delay (s)	27.4	22.7		21.5	15.5	5.2	21.4	22.0		14.8	15.4	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		22.8			10.2			22.0			15.1	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	703	295	53	984	100	642	516	110	330	677	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1623	3547	5255	1613	5157	3657	1614	3547	5255	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1623	3547	5255	1613	5157	3657	1614	3547	5255	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	134	717	301	54	1004	102	655	527	112	337	691	241
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	134	717	301	54	1004	102	655	527	112	337	691	241
Confl. Peds. (#/hr)	8		1	1		8	2		1	1		2
Confl. Bikes (#/hr)			3						6			2
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.1	32.7	57.8	5.2	29.8	120.0	25.1	46.9	120.0	15.2	35.0	120.0
Effective Green, g (s)	9.1	35.7	63.8	6.2	32.8	120.0	28.1	49.9	120.0	16.2	38.0	120.0
Actuated g/C Ratio	0.08	0.30	0.53	0.05	0.27	1.00	0.23	0.42	1.00	0.13	0.32	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	268	1563	862	183	1436	1613	1207	1520	1614	478	1664	1615
v/s Ratio Prot	c0.04	0.14	0.08	0.02	c0.19		c0.13	0.14		c0.09	c0.13	
v/s Ratio Perm			0.10			0.06			0.07			c0.15
v/c Ratio	0.50	0.46	0.35	0.30	0.70	0.06	0.54	0.35	0.07	0.71	0.42	0.15
Uniform Delay, d1	53.3	34.3	16.2	54.8	39.2	0.0	40.3	23.9	0.0	49.6	32.3	0.0
Progression Factor	0.84	0.94	0.56	1.29	1.07	1.00	0.62	0.34	1.00	0.69	1.00	1.00
Incremental Delay, d2	0.5	0.4	0.1	0.3	1.8	0.1	0.2	0.6	0.1	3.7	0.7	0.2
Delay (s)	45.3	32.6	9.2	71.2	43.6	0.1	25.2	8.8	0.1	38.0	32.9	0.2
Level of Service	D	C	A	E	D	A	C	A	A	D	C	A
Approach Delay (s)		28.0			41.0			16.4			28.1	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	222	338	249	228	46	330	951	272	134	709	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	236	360	265	243	49	351	1012	289	143	754	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	45
Lane Group Flow (vph)	107	236	360	265	243	49	351	1012	289	143	754	25
Confl. Peds. (#/hr)	14		4	4		14	3		2	2		3
Confl. Bikes (#/hr)			5			6			12			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.8	17.6	120.0	13.0	22.8	120.0	30.0	61.2	120.0	8.2	39.4	39.4
Effective Green, g (s)	8.8	20.6	120.0	14.0	25.8	120.0	31.0	64.2	120.0	9.2	42.4	42.4
Actuated g/C Ratio	0.07	0.17	1.00	0.12	0.22	1.00	0.26	0.54	1.00	0.08	0.35	0.35
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	262	633	1629	418	793	1623	925	2839	1627	274	1875	572
v/s Ratio Prot	c0.03	c0.06		c0.07	0.07		0.10	c0.19		c0.04	c0.14	
v/s Ratio Perm			0.22			0.03			0.18			0.02
v/c Ratio	0.41	0.37	0.22	0.63	0.31	0.03	0.38	0.36	0.18	0.52	0.40	0.04
Uniform Delay, d1	53.1	44.0	0.0	50.6	39.6	0.0	36.6	16.0	0.0	53.3	29.2	25.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.63	1.00	0.99	0.59	1.00
Incremental Delay, d2	0.4	0.8	0.3	2.3	0.5	0.0	0.1	0.3	0.2	0.8	0.6	0.1
Delay (s)	53.5	44.8	0.3	52.9	40.0	0.0	26.7	10.3	0.2	53.6	18.0	25.6
Level of Service	D	D	A	D	D	A	C	B	A	D	B	C
Approach Delay (s)		23.3			42.6			12.0			23.8	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	354	49	13	1092	30	22	81	12	33	195	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3584		1829	5232		3547	3579		1829	4806	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3584		1829	5232		3547	3579		1829	4806	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	148	365	51	13	1126	31	23	84	12	34	201	223
RTOR Reduction (vph)	0	5	0	0	1	0	0	10	0	0	178	0
Lane Group Flow (vph)	148	411	0	13	1156	0	23	86	0	34	246	0
Confl. Peds. (#/hr)							1		3	3		1
Confl. Bikes (#/hr)			1			1			5			
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.3	71.7		3.0	64.4		4.0	20.0		5.3	21.3	
Effective Green, g (s)	11.3	74.7		4.0	67.4		5.0	23.0		6.3	24.3	
Actuated g/C Ratio	0.09	0.62		0.03	0.56		0.04	0.19		0.05	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	334	2231		60	2938		147	685		96	973	
v/s Ratio Prot	c0.04	0.11		0.01	c0.22		0.01	0.02		c0.02	c0.05	
v/s Ratio Perm												
v/c Ratio	0.44	0.18		0.22	0.39		0.16	0.13		0.35	0.25	
Uniform Delay, d1	51.4	9.7		56.5	14.8		55.5	40.2		54.9	40.2	
Progression Factor	0.76	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		1.8	0.4		0.5	0.1		2.2	0.1	
Delay (s)	39.9	12.8		58.3	15.2		56.0	40.3		57.1	40.4	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		19.9			15.7			43.3			41.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	260	801	1751	0	0	973
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	277	852	1863	0	0	1035
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	277	848	1863	0	0	1035
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.2	29.2	31.6			31.6
Effective Green, g (s)	30.3	30.3	32.7			32.7
Actuated g/C Ratio	0.44	0.44	0.47			0.47
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1573	1276	2515			2515
v/s Ratio Prot	0.08	c0.29	c0.35			0.20
v/s Ratio Perm						
v/c Ratio	0.18	0.66	0.74			0.41
Uniform Delay, d1	11.8	15.3	14.7			11.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	1.3	1.2			0.1
Delay (s)	11.8	16.6	15.9			12.0
Level of Service	B	B	B			B
Approach Delay (s)	15.5		15.9			12.0
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	503	0	372	0	0	0	0	1881	770	0	793	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2842		3693	1616
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2842		3693	1616
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	529	0	392	0	0	0	0	1980	811	0	835	463
RTOR Reduction (vph)	0	0	192	0	0	0	0	0	114	0	0	155
Lane Group Flow (vph)	529	0	200	0	0	0	0	1980	697	0	835	308
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	16.0		16.0					45.0	45.0		45.0	45.0
Effective Green, g (s)	17.1		17.1					46.1	46.1		46.1	46.0
Actuated g/C Ratio	0.25		0.25					0.67	0.67		0.67	0.66
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	885		718					2460	1893		2460	1074
v/s Ratio Prot								c0.54			0.23	
v/s Ratio Perm	c0.15		0.07						0.25			0.19
v/c Ratio	0.60		0.28					0.80	0.37		0.34	0.29
Uniform Delay, d1	23.0		21.1					8.3	5.1		5.0	4.8
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1		0.2					2.0	0.1		0.1	0.1
Delay (s)	24.1		21.3					10.3	5.2		5.1	5.0
Level of Service	C		C					B	A		A	A
Approach Delay (s)		22.9			0.0			8.8			5.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	7.1
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	42	47	102	55	420	27	294	85	387	431	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1847	1774		1847	1944	2908	1847	5112		3583	3693	1626
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1847	1774		1847	1944	2908	1847	5112		3583	3693	1626
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	45	51	110	59	452	29	316	91	416	463	6
RTOR Reduction (vph)	0	39	0	0	0	193	0	51	0	0	0	3
Lane Group Flow (vph)	4	57	0	110	59	259	29	356	0	416	463	3
Confl. Peds. (#/hr)			4	4			1		2	2		1
Confl. Bikes (#/hr)									1			6
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.7	14.1		7.1	20.5	38.3	2.0	19.2		11.8	29.0	29.0
Effective Green, g (s)	1.7	17.1		8.1	23.5	41.3	3.0	22.2		12.8	32.0	32.0
Actuated g/C Ratio	0.02	0.24		0.11	0.33	0.57	0.04	0.31		0.18	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	43	420		207	632	1663	76	1571		635	1636	720
v/s Ratio Prot	0.00	0.03		c0.06	0.03	c0.09	0.02	0.07		c0.12	c0.13	
v/s Ratio Perm												0.00
v/c Ratio	0.09	0.14		0.53	0.09	0.16	0.38	0.23		0.66	0.28	0.00
Uniform Delay, d1	34.5	21.7		30.3	16.9	7.3	33.7	18.6		27.6	12.8	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1		1.3	0.0	0.0	1.2	0.2		1.9	0.2	0.0
Delay (s)	34.8	21.8		31.6	17.0	7.3	34.9	18.8		29.5	13.0	11.2
Level of Service	C	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.3			12.5			19.8			20.7	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2000	1012	0	846	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	2198	1112	0	930	482
RTOR Reduction (vph)	0	0	0	0	0	93
Lane Group Flow (vph)	0	2198	1112	0	930	389
Confl. Peds. (#/hr)	2			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.3	31.3		16.7	16.7
Effective Green, g (s)		34.3	34.3		19.7	19.7
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3033	3033		1176	954
v/s Ratio Prot		c0.41	0.21		c0.26	
v/s Ratio Perm						0.13
v/c Ratio		0.72	0.37		0.79	0.41
Uniform Delay, d1		9.4	7.0		18.3	15.6
Progression Factor		1.00	0.88		1.00	1.00
Incremental Delay, d2		1.5	0.2		3.7	0.3
Delay (s)		10.9	6.3		22.0	15.9
Level of Service		B	A		C	B
Approach Delay (s)		10.9	6.3		19.9	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	130.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2085	0	0	1717	235	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	2242	0	0	1846	253	509
RTOR Reduction (vph)	0	0	0	0	0	5
Lane Group Flow (vph)	2242	0	0	1846	253	504
Confl. Bikes (#/hr)		7				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	33.0			33.0	15.0	15.0
Effective Green, g (s)	36.0			36.0	18.0	18.0
Actuated g/C Ratio	0.60			0.60	0.30	0.30
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3184			2215	1074	872
v/s Ratio Prot	0.42			c0.50	0.07	c0.17
v/s Ratio Perm						
v/c Ratio	0.70			0.83	0.24	0.58
Uniform Delay, d1	8.3			9.6	15.8	17.8
Progression Factor	1.06			2.02	1.00	1.00
Incremental Delay, d2	0.9			0.4	0.1	0.9
Delay (s)	9.7			19.8	15.9	18.7
Level of Service	A			B	B	B
Approach Delay (s)	9.7			19.8	17.8	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	823	1704	31	24	2016	382	19	1	19	332	4	875
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3583	5290		1847	5307	1623		1754			1852	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3583	5290		1847	5307	1623		1754			1852	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	895	1852	34	26	2191	415	21	1	21	361	4	951
RTOR Reduction (vph)	0	1	0	0	0	104	0	20	0	0	0	37
Lane Group Flow (vph)	895	1885	0	26	2191	311	0	23	0	0	365	914
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			7			2			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	27.0	63.8		4.2	41.0	41.0		4.0			28.0	55.0
Effective Green, g (s)	28.0	66.8		5.2	44.0	44.0		6.0			30.0	59.0
Actuated g/C Ratio	0.23	0.56		0.04	0.37	0.37		0.05			0.25	0.49
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	836	2944		80	1945	595		87			463	812
v/s Ratio Prot	0.25	0.36		0.01	c0.41			c0.01			0.20	c0.55
v/s Ratio Perm						0.19						
v/c Ratio	1.07	0.64		0.33	1.13	0.52		0.26			0.79	1.13
Uniform Delay, d1	46.0	18.3		55.7	38.0	29.8		54.9			42.0	30.5
Progression Factor	0.96	1.09		1.38	0.84	0.67		1.00			1.00	1.00
Incremental Delay, d2	48.4	0.8		1.9	62.8	2.6		1.6			8.7	72.0
Delay (s)	92.4	20.8		78.6	94.7	22.6		56.5			50.7	102.5
Level of Service	F	C		E	F	C		E			D	F
Approach Delay (s)		43.9			83.2			56.5			88.2	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	67.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	183	133	332	137	105	332
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	203	148	369	152	117	369
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1047	445			521	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1047	445			521	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	9	76			89	
cM capacity (veh/h)	224	613			1045	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	351	521	486
Volume Left	203	0	117
Volume Right	148	152	0
cSH	306	1700	1045
Volume to Capacity	1.15	0.31	0.11
Queue Length 95th (ft)	366	0	9
Control Delay (s)	134.6	0.0	3.1
Lane LOS	F		A
Approach Delay (s)	134.6	0.0	3.1
Approach LOS	F		

Intersection Summary			
Average Delay	35.9		
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1154	2	34	1172	3	57
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1282	2	38	1302	3	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1284		2661	1283
vC1, stage 1 conf vol					1283	
vC2, stage 2 conf vol					1378	
vCu, unblocked vol			1284		2661	1283
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			93		98	69
cM capacity (veh/h)			540		161	201

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1284	38	1302	67
Volume Left	0	38	0	3
Volume Right	2	0	0	63
cSH	1700	540	1700	199
Volume to Capacity	0.76	0.07	0.77	0.33
Queue Length 95th (ft)	0	6	0	35
Control Delay (s)	0.0	12.2	0.0	31.9
Lane LOS		B		D
Approach Delay (s)	0.0	0.3		31.9
Approach LOS				D

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	1766	230	53	2080	10	117	18	37	48	24	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1615	1847	5307	1622		1546		1843	1944	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.66	1.00	1.00
Satd. Flow (perm)	1847	5307	1615	1847	5307	1622		1248		1279	1944	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	1920	250	58	2261	11	127	20	40	52	26	265
RTOR Reduction (vph)	0	0	60	0	0	4	0	9	0	0	0	93
Lane Group Flow (vph)	45	1920	190	58	2261	7	0	178	0	52	26	172
Confl. Peds. (#/hr)	3					3			3	3		
Confl. Bikes (#/hr)			5			2			1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	5.6	74.5	74.5	7.0	75.9	75.9		23.5		23.5	23.5	23.5
Effective Green, g (s)	6.6	77.5	77.5	8.0	78.9	78.9		25.5		25.5	25.5	25.5
Actuated g/C Ratio	0.05	0.65	0.65	0.07	0.66	0.66		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	101	3427	1043	123	3489	1066		265		271	413	351
v/s Ratio Prot	0.02	c0.36		0.03	c0.43						0.01	
v/s Ratio Perm			0.12			0.00		c0.14		0.04		0.10
v/c Ratio	0.45	0.56	0.18	0.47	0.65	0.01		0.67		0.19	0.06	0.49
Uniform Delay, d1	54.9	11.8	8.5	54.0	12.3	7.1		43.4		38.8	37.7	41.5
Progression Factor	0.96	1.11	1.67	1.17	1.21	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	0.5	0.3	2.5	0.8	0.0		6.5		0.3	0.1	1.1
Delay (s)	55.0	13.6	14.5	65.8	15.7	7.1		49.9		39.1	37.8	42.6
Level of Service	E	B	B	E	B	A		D		D	D	D
Approach Delay (s)		14.5			16.9			49.9			41.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	289	603	2144	0	0	1280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			3693
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			3693
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	304	635	2257	0	0	1347
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	304	632	2257	0	0	1347
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	18.0	18.0	30.0			30.0
Effective Green, g (s)	21.0	21.0	33.0			33.0
Actuated g/C Ratio	0.35	0.35	0.55			0.55
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1254	1017	2918			2031
v/s Ratio Prot	0.08	c0.22	c0.43			0.36
v/s Ratio Perm						
v/c Ratio	0.24	0.62	0.77			0.66
Uniform Delay, d1	13.9	16.2	10.6			9.6
Progression Factor	1.00	1.00	1.28			1.00
Incremental Delay, d2	0.2	1.7	1.4			1.7
Delay (s)	14.1	17.9	14.9			11.3
Level of Service	B	B	B			B
Approach Delay (s)	16.6		14.9			11.3
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	955	564	0	2186	1084	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3583	2908		5307	5307	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3583	2908		5307	5307	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	974	576	0	2231	1106	0
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	974	567	0	2231	1106	0
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	23.1	23.1		24.9	24.9	
Effective Green, g (s)	26.1	26.1		27.9	27.9	
Actuated g/C Ratio	0.44	0.44		0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1558	1264		2467	2467	
v/s Ratio Prot	c0.27	0.19		c0.42	0.21	
v/s Ratio Perm						
v/c Ratio	0.63	0.45		0.90	0.45	
Uniform Delay, d1	13.2	11.9		14.8	10.8	
Progression Factor	1.00	1.00		1.00	0.60	
Incremental Delay, d2	0.6	0.1		6.0	0.5	
Delay (s)	13.7	12.0		20.9	7.0	
Level of Service	B	B		C	A	
Approach Delay (s)	13.1			20.9	7.0	
Approach LOS	B			C	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	701	213	113	148	175	684	137	1160	103	411	710	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3341		1847	1847	1570	1847	5307	1627	3583	4922	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3341		1847	1847	1570	1847	5307	1627	3583	4922	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	723	220	116	153	180	705	141	1196	106	424	732	543
RTOR Reduction (vph)	0	17	0	0	0	64	0	0	0	0	133	0
Lane Group Flow (vph)	390	652	0	153	180	641	141	1196	106	424	1142	0
Confl. Peds. (#/hr)			16	16			9		10	10		9
Confl. Bikes (#/hr)			7			1			1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	23.9	23.9		17.0	17.0	29.1	7.7	25.0	100.0	12.1	29.4	
Effective Green, g (s)	26.9	26.9		20.0	20.0	35.1	8.7	28.0	100.0	13.1	32.4	
Actuated g/C Ratio	0.27	0.27		0.20	0.20	0.35	0.09	0.28	1.00	0.13	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	451	898		369	369	551	160	1485	1627	469	1594	
v/s Ratio Prot	c0.23	0.20		0.08	0.10	c0.41	0.08	c0.23		0.12	0.23	
v/s Ratio Perm									0.07			
v/c Ratio	0.86	0.73		0.41	0.49	1.16	0.88	0.81	0.07	0.90	0.72	
Uniform Delay, d1	34.8	33.2		34.9	35.5	32.5	45.1	33.5	0.0	42.8	29.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.3	2.5		0.3	0.4	92.4	38.2	4.8	0.1	20.2	2.8	
Delay (s)	50.1	35.7		35.2	35.8	124.8	83.3	38.2	0.1	63.0	32.5	
Level of Service	D	D		D	D	F	F	D	A	E	C	
Approach Delay (s)		41.0			96.2			39.8			40.2	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	17	7	166	144	7	19	148	380	82	15	383	11
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	17	7	168	145	7	19	149	384	83	15	387	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	24	168	153	19	149	467	15	398
Volume Left (vph)	17	0	145	0	149	0	15	0
Volume Right (vph)	0	168	0	19	0	83	0	11
Hadj (s)	0.39	-0.67	0.51	-0.67	0.53	-0.09	0.53	0.01
Departure Headway (s)	8.0	7.0	8.1	7.0	7.0	6.4	7.3	6.7
Degree Utilization, x	0.05	0.32	0.35	0.04	0.29	0.83	0.03	0.74
Capacity (veh/h)	418	479	415	476	499	553	474	518
Control Delay (s)	10.3	12.1	14.2	9.0	11.7	31.7	9.3	25.6
Approach Delay (s)	11.9		13.6		26.8		25.0	
Approach LOS	B		B		D		D	

Intersection Summary			
Delay	22.6		
Level of Service	C		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	103	25	40	105	564	12	69	201	670	76	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.89		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1878		1847	1944	1638	1847	1706		1754	1774	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1878		1847	1944	1638	1847	1706		1754	1774	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	111	27	43	113	606	13	74	216	720	82	2
RTOR Reduction (vph)	0	9	0	0	0	263	0	110	0	0	0	0
Lane Group Flow (vph)	1	129	0	43	113	343	13	180	0	367	437	0
Confl. Peds. (#/hr)			1	1			2		2	2		2
Confl. Bikes (#/hr)			1			1			2			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	8.8		5.4	13.3	33.5	12.9	12.9		20.2	20.2	
Effective Green, g (s)	1.9	10.8		6.4	15.3	37.5	14.9	14.9		22.2	22.2	
Actuated g/C Ratio	0.03	0.16		0.10	0.23	0.57	0.22	0.22		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	305		178	448	1000	415	383		587	594	
v/s Ratio Prot	0.00	c0.07		0.02	0.06	c0.11	0.01	c0.11		0.21	c0.25	
v/s Ratio Perm						0.09						
v/c Ratio	0.02	0.42		0.24	0.25	0.34	0.03	0.47		0.63	0.74	
Uniform Delay, d1	31.3	24.9		27.7	20.8	7.8	20.1	22.3		18.6	19.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9		0.7	0.3	0.2	0.0	0.9		2.1	4.7	
Delay (s)	31.4	25.9		28.4	21.1	8.0	20.1	23.2		20.6	24.2	
Level of Service	C	C		C	C	A	C	C		C	C	
Approach Delay (s)		25.9			11.1			23.1			22.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	1032	591	129	1124	144	694	796	76	289	705	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	218	1075	616	134	1171	150	723	829	79	301	734	252
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	218	1075	616	134	1171	150	723	829	79	301	734	252
Confl. Peds. (#/hr)	3		7	7		3	1		3	3		1
Confl. Bikes (#/hr)			1			1			6			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	28.2	55.2	6.8	28.0	120.0	27.0	51.6	120.0	13.4	36.0	120.0
Effective Green, g (s)	8.0	31.2	61.2	7.8	31.0	120.0	30.0	54.6	120.0	14.4	39.0	120.0
Actuated g/C Ratio	0.07	0.26	0.51	0.06	0.26	1.00	0.25	0.46	1.00	0.12	0.32	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	238	1379	833	232	1370	1631	1302	1680	1629	429	1724	1631
v/s Ratio Prot	c0.06	0.20	c0.18	0.04	c0.22		0.14	c0.22		c0.08	0.14	
v/s Ratio Perm			0.19			0.09			0.05			c0.15
v/c Ratio	0.92	0.78	0.74	0.58	0.85	0.09	0.56	0.49	0.05	0.70	0.43	0.15
Uniform Delay, d1	55.7	41.2	23.1	54.5	42.4	0.0	39.2	23.0	0.0	50.7	31.7	0.0
Progression Factor	0.87	1.03	1.01	1.28	1.18	1.00	0.61	0.37	1.00	0.80	0.73	1.00
Incremental Delay, d2	33.8	3.1	2.8	2.0	5.5	0.1	0.3	0.9	0.1	4.0	0.7	0.2
Delay (s)	82.3	45.6	26.1	71.9	55.4	0.1	24.4	9.6	0.1	44.8	23.8	0.2
Level of Service	F	D	C	E	E	A	C	A	A	D	C	A
Approach Delay (s)		43.5			51.2			15.7			24.1	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	195	411	513	269	132	362	854	341	87	1309	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	102	205	433	540	283	139	381	899	359	92	1378	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	102	205	433	540	283	139	381	899	359	92	1378	10
Confl. Peds. (#/hr)	3		2	2		3	1		1	1		1
Confl. Bikes (#/hr)			3			10			6			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.6	17.0	120.0	21.4	31.8	120.0	17.0	55.1	120.0	6.5	44.6	44.6
Effective Green, g (s)	7.6	20.0	120.0	22.4	34.8	120.0	18.0	58.1	120.0	7.5	47.6	47.6
Actuated g/C Ratio	0.06	0.17	1.00	0.19	0.29	1.00	0.15	0.48	1.00	0.06	0.40	0.40
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	226	615	1630	668	1070	1627	537	2569	1630	223	2105	644
v/s Ratio Prot	c0.03	c0.06		c0.15	0.08		c0.11	0.17		0.03	c0.26	
v/s Ratio Perm			0.27			0.09			0.22			0.01
v/c Ratio	0.45	0.33	0.27	0.81	0.26	0.09	0.71	0.35	0.22	0.41	0.65	0.01
Uniform Delay, d1	54.2	44.1	0.0	46.7	32.8	0.0	48.5	19.2	0.0	54.1	29.5	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.64	1.00	0.78	0.91	1.00
Incremental Delay, d2	0.5	0.7	0.4	6.7	0.3	0.1	2.9	0.3	0.3	0.5	1.6	0.0
Delay (s)	54.7	44.8	0.4	53.5	33.0	0.1	40.2	12.5	0.3	42.4	28.5	22.0
Level of Service	D	D	A	D	C	A	D	B	A	D	C	C
Approach Delay (s)		20.2			39.8			16.3			29.2	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	1009	19	11	586	34	66	179	15	59	211	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3583	3682		1847	5259		3583	3645		1847	4801	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3583	3682		1847	5259		3583	3645		1847	4801	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	1062	20	12	617	36	69	188	16	62	222	304
RTOR Reduction (vph)	0	1	0	0	4	0	0	6	0	0	231	0
Lane Group Flow (vph)	237	1081	0	12	649	0	69	198	0	62	295	0
Confl. Peds. (#/hr)			3	3			1		4	4		1
Confl. Bikes (#/hr)			2			2						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.1	69.0		2.9	58.8		5.6	20.6		7.5	22.5	
Effective Green, g (s)	14.1	72.0		3.9	61.8		6.6	23.6		8.5	25.5	
Actuated g/C Ratio	0.12	0.60		0.03	0.51		0.05	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	421	2209		60	2708		197	716		130	1020	
v/s Ratio Prot	c0.07	c0.29		0.01	0.12		0.02	0.05		c0.03	c0.06	
v/s Ratio Perm												
v/c Ratio	0.56	0.49		0.20	0.24		0.35	0.28		0.48	0.29	
Uniform Delay, d1	50.0	13.6		56.5	16.1		54.6	41.0		53.6	39.6	
Progression Factor	0.76	1.32		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.7		1.6	0.2		1.1	0.2		2.7	0.2	
Delay (s)	39.7	18.6		58.2	16.3		55.7	41.2		56.4	39.8	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		22.4			17.1			44.8			41.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1072	1087	0	552	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1128	1144	0	581	651
RTOR Reduction (vph)	0	0	0	0	0	62
Lane Group Flow (vph)	0	1128	1144	0	581	589
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.3	31.3		16.7	16.7
Effective Green, g (s)		34.3	34.3		19.7	19.7
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3033	3033		1176	954
v/s Ratio Prot		0.21	c0.22		0.16	
v/s Ratio Perm						c0.20
v/c Ratio		0.37	0.38		0.49	0.62
Uniform Delay, d1		7.0	7.0		16.2	17.0
Progression Factor		1.00	0.71		1.00	1.00
Incremental Delay, d2		0.4	0.3		0.3	1.2
Delay (s)		7.3	5.3		16.5	18.2
Level of Service		A	A		B	B
Approach Delay (s)		7.3	5.3		17.4	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1110	0	0	1181	304	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1156	0	0	1230	317	380
RTOR Reduction (vph)	0	0	0	0	0	89
Lane Group Flow (vph)	1156	0	0	1230	317	291
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	36.9			36.9	11.1	11.1
Effective Green, g (s)	39.9			39.9	14.1	14.1
Actuated g/C Ratio	0.66			0.66	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3529			2455	842	683
v/s Ratio Prot	0.22			c0.33	0.09	c0.10
v/s Ratio Perm						
v/c Ratio	0.33			0.50	0.38	0.43
Uniform Delay, d1	4.3			5.0	19.3	19.5
Progression Factor	0.82			1.12	1.00	1.00
Incremental Delay, d2	0.2			0.5	0.3	0.4
Delay (s)	3.8			6.2	19.5	19.9
Level of Service	A			A	B	B
Approach Delay (s)	3.8			6.2	19.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	775	681	19	6	1011	376	25	4	10	370	2	769
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5282		1847	5307	1592		1785			1852	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5282		1847	5307	1592		1785			1852	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	816	717	20	6	1064	396	26	4	11	389	2	809
RTOR Reduction (vph)	0	2	0	0	0	197	0	10	0	0	0	40
Lane Group Flow (vph)	816	735	0	6	1064	199	0	31	0	0	391	769
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	30.3	59.8		1.4	30.9	30.9		4.2			34.6	64.9
Effective Green, g (s)	31.3	62.8		2.4	33.9	33.9		6.2			36.6	68.9
Actuated g/C Ratio	0.26	0.52		0.02	0.28	0.28		0.05			0.31	0.57
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	934	2764		36	1499	449		92			564	948
v/s Ratio Prot	c0.23	0.14		0.00	c0.20			c0.02			0.21	c0.47
v/s Ratio Perm						0.13						
v/c Ratio	0.87	0.27		0.17	0.71	0.44		0.33			0.69	0.81
Uniform Delay, d1	42.5	15.8		57.8	38.6	35.3		54.9			36.8	20.4
Progression Factor	0.99	0.84		1.10	0.98	0.93		1.00			1.00	1.00
Incremental Delay, d2	8.8	0.2		2.2	2.9	3.2		2.1			3.7	5.3
Delay (s)	50.7	13.5		65.7	40.8	35.9		57.0			40.4	25.7
Level of Service	D	B		E	D	D		E			D	C
Approach Delay (s)		33.0			39.6			57.0			30.5	
Approach LOS		C			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	161	176	58	129	262
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	67	179	196	64	143	291
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	806	228			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	806	228			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	78			89	
cM capacity (veh/h)	313	812			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	246	260	434
Volume Left	67	0	143
Volume Right	179	64	0
cSH	566	1700	1304
Volume to Capacity	0.43	0.15	0.11
Queue Length 95th (ft)	54	0	9
Control Delay (s)	16.1	0.0	3.4
Lane LOS	C		A
Approach Delay (s)	16.1	0.0	3.4
Approach LOS	C		

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1130	1	3	1152	1	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1256	1	3	1280	1	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1257		2543	1256
vC1, stage 1 conf vol					1256	
vC2, stage 2 conf vol					1287	
vCu, unblocked vol			1257		2543	1256
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	94
cM capacity (veh/h)			553		181	209

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1257	3	1280	13
Volume Left	0	3	0	1
Volume Right	1	0	0	12
cSH	1700	553	1700	206
Volume to Capacity	0.74	0.01	0.75	0.06
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	0.0	11.5	0.0	23.6
Lane LOS		B		C
Approach Delay (s)	0.0	0.0		23.6
Approach LOS				C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	603	184	157	108	171	293	216	704	104	392	516	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3309		1847	1847	1570	1847	5307	1627	3583	4848	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3309		1847	1847	1570	1847	5307	1627	3583	4848	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	628	192	164	112	178	305	225	733	108	408	538	573
RTOR Reduction (vph)	0	27	0	0	0	58	0	0	0	0	147	0
Lane Group Flow (vph)	339	618	0	112	178	247	225	733	108	408	964	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.9	26.9		13.6	13.6	29.3	17.4	41.8	120.0	15.7	40.1	
Effective Green, g (s)	29.9	29.9		16.6	16.6	35.3	18.4	44.8	120.0	16.7	43.1	
Actuated g/C Ratio	0.25	0.25		0.14	0.14	0.29	0.15	0.37	1.00	0.14	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	418	824		255	255	461	283	1981	1627	498	1741	
v/s Ratio Prot	c0.20	0.19		0.06	c0.10	0.16	c0.12	0.14		0.11	c0.20	
v/s Ratio Perm									c0.07			
v/c Ratio	0.81	0.75		0.44	0.70	0.54	0.80	0.37	0.07	0.82	0.55	
Uniform Delay, d1	42.4	41.6		47.4	49.3	35.5	49.0	27.3	0.0	50.2	30.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.47	0.59	1.00	1.00	0.99	
Incremental Delay, d2	10.8	3.3		0.4	6.6	0.6	13.0	0.5	0.1	9.6	1.3	
Delay (s)	53.2	44.9		47.9	55.9	36.1	85.1	16.7	0.1	59.9	31.8	
Level of Service	D	D		D	E	D	F	B	A	E	C	
Approach Delay (s)		47.8			44.2			29.4			39.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	30	27	238	236	24	28	252	320	125	21	400	25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	31	28	245	243	25	29	260	330	129	22	412	26

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	59	245	268	29	260	459	22	438
Volume Left (vph)	31	0	243	0	260	0	22	0
Volume Right (vph)	0	245	0	29	0	129	0	26
Hadj (s)	0.28	-0.68	0.47	-0.68	0.52	-0.18	0.52	-0.02
Departure Headway (s)	9.0	8.0	9.1	7.9	8.4	7.7	8.6	8.1
Degree Utilization, x	0.15	0.55	0.67	0.06	0.61	0.98	0.05	0.98
Capacity (veh/h)	387	426	380	438	415	459	408	438
Control Delay (s)	12.3	19.1	27.6	10.2	22.4	64.2	10.9	65.2
Approach Delay (s)	17.8		25.9		49.1		62.6	
Approach LOS	C		D		E		F	

Intersection Summary			
Delay	43.4		
Level of Service	E		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	50	24	28	41	671	6	50	34	763	117	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1834		1847	1944	1652	1847	1815		1754	1778	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1834		1847	1944	1652	1847	1815		1754	1778	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	52	25	29	42	692	6	52	35	787	121	2
RTOR Reduction (vph)	0	18	0	0	0	256	0	26	0	0	0	0
Lane Group Flow (vph)	2	59	0	29	42	436	6	61	0	401	509	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.8	7.6		2.3	9.1	37.9	8.8	8.8		28.8	28.8	
Effective Green, g (s)	1.8	9.6		3.3	11.1	41.9	10.8	10.8		30.8	30.8	
Actuated g/C Ratio	0.03	0.14		0.05	0.17	0.63	0.16	0.16		0.46	0.46	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	49	264		91	324	1115	299	294		812	823	
v/s Ratio Prot	0.00	c0.03		0.02	0.02	c0.18	0.00	c0.03		0.23	c0.29	
v/s Ratio Perm						0.08						
v/c Ratio	0.04	0.22		0.32	0.13	0.39	0.02	0.21		0.49	0.62	
Uniform Delay, d1	31.5	25.2		30.5	23.6	6.0	23.4	24.1		12.4	13.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4		2.0	0.2	0.2	0.0	0.4		0.5	1.4	
Delay (s)	31.9	25.6		32.5	23.8	6.3	23.4	24.5		12.9	14.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		25.7			8.2			24.4			14.0	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	203	401	286	66	573	106	414	699	56	182	545	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	214	422	301	69	603	112	436	736	59	192	574	239
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	214	422	301	69	603	112	436	736	59	192	574	239
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	6.0	22.4	26.4	4.7	21.1	90.0	4.0	35.8	90.0	7.1	36.9	90.0
Effective Green, g (s)	7.0	25.4	32.4	5.7	24.1	90.0	7.0	38.8	90.0	8.1	39.9	90.0
Actuated g/C Ratio	0.08	0.28	0.36	0.06	0.27	1.00	0.08	0.43	1.00	0.09	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	1497	588	226	1421	1632	405	1592	1631	322	2352	1652
v/s Ratio Prot	c0.06	0.08	c0.04	0.02	0.11		c0.08	c0.20		c0.05	0.11	
v/s Ratio Perm			0.14			0.07			0.04			c0.14
v/c Ratio	0.77	0.28	0.51	0.31	0.42	0.07	1.08	0.46	0.04	0.60	0.24	0.14
Uniform Delay, d1	40.7	25.2	22.6	40.3	27.2	0.0	41.5	18.2	0.0	39.4	15.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.0	0.2	0.3	0.3	0.4	0.1	66.7	1.0	0.0	2.0	0.2	0.2
Delay (s)	51.7	25.4	22.9	40.5	27.6	0.1	108.2	19.2	0.0	41.4	15.9	0.2
Level of Service	D	C	C	D	C	A	F	B	A	D	B	A
Approach Delay (s)		30.6			24.8			49.8			17.0	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	900	810	1210	0	0	1320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	947	853	1274	0	0	1389
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	947	843	1274	0	0	1389
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	26.1	26.1	21.3			21.3
Effective Green, g (s)	27.2	27.2	22.4			22.4
Actuated g/C Ratio	0.49	0.49	0.40			0.40
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1735	1408	2117			2117
v/s Ratio Prot	0.27	c0.29	0.24			c0.26
v/s Ratio Perm						
v/c Ratio	0.55	0.60	0.60			0.66
Uniform Delay, d1	9.9	10.3	13.1			13.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	0.7	0.5			0.7
Delay (s)	10.2	11.0	13.6			14.2
Level of Service	B	B	B			B
Approach Delay (s)	10.6		13.6			14.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	500	0	780	0	0	0	0	1010	370	0	1570	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.96	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2837					5255	1576		5024	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2837					5255	1576		5024	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	526	0	821	0	0	0	0	1063	389	0	1653	684
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	168	0	70	0
Lane Group Flow (vph)	526	0	808	0	0	0	0	1063	221	0	2267	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	30.0		30.0					41.2	41.2		41.2	
Effective Green, g (s)	31.1		31.1					42.3	42.3		42.3	
Actuated g/C Ratio	0.39		0.39					0.53	0.53		0.53	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1389		1111					2799	839		2676	
v/s Ratio Prot								0.20			c0.45	
v/s Ratio Perm	0.15		c0.28						0.14			
v/c Ratio	0.38		0.73					0.38	0.26		0.85	
Uniform Delay, d1	17.2		20.5					10.9	10.1		15.8	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		2.4					0.1	0.2		2.7	
Delay (s)	17.4		23.0					11.0	10.2		18.5	
Level of Service	B		C					B	B		B	
Approach Delay (s)		20.8			0.0			10.8			18.5	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	7.1
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	200	40	500	30	560	130	340	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1750		1829	1925	2880	1829	5084		3547	3657	1577
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1750		1829	1925	2880	1829	5084		3547	3657	1577
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	211	42	526	32	589	137	358	337	11
RTOR Reduction (vph)	0	41	0	0	0	205	0	37	0	0	0	6
Lane Group Flow (vph)	11	85	0	211	42	321	32	689	0	358	337	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.9	12.2		12.4	23.7	41.0	2.2	22.0		11.3	31.1	31.1
Effective Green, g (s)	1.9	15.2		13.4	26.7	44.0	3.2	25.0		12.3	34.1	34.1
Actuated g/C Ratio	0.02	0.20		0.17	0.34	0.56	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	44	341		314	659	1626	75	1631		560	1600	690
v/s Ratio Prot	0.01	c0.05		c0.12	0.02	0.11	0.02	c0.14		c0.10	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.25	0.25		0.67	0.06	0.20	0.43	0.42		0.64	0.21	0.01
Uniform Delay, d1	37.3	26.5		30.2	17.2	8.3	36.5	20.8		30.7	13.6	12.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		4.4	0.0	0.0	1.4	0.4		1.8	0.1	0.0
Delay (s)	38.4	26.7		34.6	17.2	8.3	37.9	21.1		32.5	13.7	12.4
Level of Service	D	C		C	B	A	D	C		C	B	B
Approach Delay (s)		27.6			15.9			21.9			23.2	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	710	1750	0	540	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2789
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2789
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	747	1842	0	568	768
RTOR Reduction (vph)	0	0	0	0	0	9
Lane Group Flow (vph)	0	747	1842	0	568	759
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		29.2	29.2		18.8	18.8
Effective Green, g (s)		32.2	32.2		21.8	21.8
Actuated g/C Ratio		0.54	0.54		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2820	2820		1288	1013
v/s Ratio Prot		0.14	c0.35		0.16	
v/s Ratio Perm						c0.27
v/c Ratio		0.26	0.65		0.44	0.75
Uniform Delay, d1		7.5	9.9		14.5	16.7
Progression Factor		1.00	0.92		1.00	1.00
Incremental Delay, d2		0.2	0.8		0.2	3.1
Delay (s)		7.7	9.9		14.7	19.8
Level of Service		A	A		B	B
Approach Delay (s)		7.7	9.9		17.6	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	980	0	0	1520	660	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1032	0	0	1600	695	705
RTOR Reduction (vph)	0	0	0	0	0	108
Lane Group Flow (vph)	1032	0	0	1600	695	597
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	31.8			31.8	16.2	16.2
Effective Green, g (s)	34.8			34.8	19.2	19.2
Actuated g/C Ratio	0.58			0.58	0.32	0.32
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3047			2121	1135	921
v/s Ratio Prot	0.20			c0.44	0.20	c0.21
v/s Ratio Perm						
v/c Ratio	0.34			0.75	0.61	0.65
Uniform Delay, d1	6.6			9.4	17.3	17.5
Progression Factor	0.53			2.47	1.00	1.00
Incremental Delay, d2	0.3			2.0	1.0	1.6
Delay (s)	3.8			25.2	18.2	19.1
Level of Service	A			C	B	B
Approach Delay (s)	3.8			25.2	18.7	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	1400	20	20	2060	110	10	5	10	50	5	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			0.98	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1737			1812	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.91			0.76	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1611			1435	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	242	1474	21	21	2168	116	11	5	11	53	5	232
RTOR Reduction (vph)	0	1	0	0	0	33	0	9	0	0	0	18
Lane Group Flow (vph)	242	1494	0	21	2168	83	0	18	0	0	58	214
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	13.4	83.1		3.3	73.0	73.0		18.6			18.6	37.0
Effective Green, g (s)	14.4	86.1		4.3	76.0	76.0		20.6			20.6	39.0
Actuated g/C Ratio	0.12	0.72		0.04	0.63	0.63		0.17			0.17	0.32
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	425	3762		65	3328	1036		276			246	531
v/s Ratio Prot	c0.07	0.28		0.01	c0.41							c0.13
v/s Ratio Perm						0.05		0.01			0.04	
v/c Ratio	0.57	0.40		0.32	0.65	0.08		0.06			0.24	0.40
Uniform Delay, d1	49.9	6.7		56.4	13.7	8.5		41.6			42.9	31.5
Progression Factor	0.98	0.99		1.28	0.08	0.00		1.00			1.00	1.00
Incremental Delay, d2	1.6	0.3		1.5	0.5	0.1		0.1			0.5	0.5
Delay (s)	50.2	6.9		73.8	1.6	0.1		41.7			43.4	32.0
Level of Service	D	A		E	A	A		D			D	C
Approach Delay (s)		13.0			2.2			41.7			34.2	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	40	215	110	50	150
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	42	226	116	53	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	547	284			342	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	547	284			342	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	94			96	
cM capacity (veh/h)	476	755			1217	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	105	342	211
Volume Left	63	0	53
Volume Right	42	116	0
cSH	559	1700	1217
Volume to Capacity	0.19	0.20	0.04
Queue Length 95th (ft)	17	0	3
Control Delay (s)	12.9	0.0	2.3
Lane LOS	B		A
Approach Delay (s)	12.9	0.0	2.3
Approach LOS	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	265	0	10	335	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	279	0	11	353	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				883		
pX, platoon unblocked						
vC, conflicting volume			279		653	279
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			279		653	279
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1284		429	760

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	279	11	353	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1284	1700	760
Volume to Capacity	0.16	0.01	0.21	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	7.8	0.0	9.8
Lane LOS		A		A
Approach Delay (s)	0.0	0.2		9.8
Approach LOS				A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	1210	80	30	1960	50	180	30	40	10	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1535		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.66	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1241		1273	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	1274	84	32	2063	53	189	32	42	11	11	53
RTOR Reduction (vph)	0	0	31	0	0	30	0	6	0	0	0	40
Lane Group Flow (vph)	179	1274	53	32	2063	23	0	257	0	11	11	13
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	73.0	73.0	4.3	49.7	49.7		27.7		27.7	27.7	27.7
Effective Green, g (s)	28.6	76.0	76.0	5.3	52.7	52.7		29.7		29.7	29.7	29.7
Actuated g/C Ratio	0.24	0.63	0.63	0.04	0.44	0.44		0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3328	1010	80	2307	707		307		315	476	397
v/s Ratio Prot	0.10	c0.24		0.02	c0.39						0.01	
v/s Ratio Perm			0.03			0.01		c0.21		0.01		0.01
v/c Ratio	0.41	0.38	0.05	0.40	0.89	0.03		0.84		0.03	0.02	0.03
Uniform Delay, d1	38.6	10.6	8.3	55.8	31.1	19.1		42.9		34.3	34.2	34.3
Progression Factor	0.81	0.74	0.96	0.92	1.12	1.87		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	2.7	4.9	0.1		17.7		0.0	0.0	0.0
Delay (s)	31.7	8.2	8.1	53.8	39.6	35.8		60.5		34.3	34.2	34.3
Level of Service	C	A	A	D	D	D		E		C	C	C
Approach Delay (s)		10.9			39.8			60.5			34.3	
Approach LOS		B			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	420	440	1170	0	0	1490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	442	463	1232	0	0	1568
RTOR Reduction (vph)	0	58	0	0	0	0
Lane Group Flow (vph)	442	405	1232	0	0	1568
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	16.5	16.5	31.5			31.5
Effective Green, g (s)	19.5	19.5	34.5			34.5
Actuated g/C Ratio	0.32	0.32	0.58			0.58
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1152	936	3021			2102
v/s Ratio Prot	0.12	c0.14	0.23			c0.43
v/s Ratio Perm						
v/c Ratio	0.38	0.43	0.41			0.75
Uniform Delay, d1	15.6	15.9	7.1			9.5
Progression Factor	1.00	1.00	1.41			1.00
Incremental Delay, d2	0.4	0.7	0.4			2.5
Delay (s)	16.1	16.6	10.3			12.0
Level of Service	B	B	B			B
Approach Delay (s)	16.3		10.3			12.0
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	650	1580	0	940	1360	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	684	1663	0	989	1432	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	684	1662	0	989	1432	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	36.0	36.0		17.0	17.0	
Effective Green, g (s)	39.0	39.0		20.0	20.0	
Actuated g/C Ratio	0.60	0.60		0.31	0.31	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2128	1728		1616	1616	
v/s Ratio Prot	0.19	c0.58		0.19	c0.27	
v/s Ratio Perm						
v/c Ratio	0.32	0.96		0.61	0.89	
Uniform Delay, d1	6.4	12.3		19.2	21.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	13.6		1.7	7.6	
Delay (s)	6.5	25.9		20.9	29.0	
Level of Service	A	C		C	C	
Approach Delay (s)	20.2			20.9	29.0	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	80	70	150	100	220	110	840	160	800	1620	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3260		1829	1829	1554	1829	5255	1605	3547	5031	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3260		1829	1829	1554	1829	5255	1605	3547	5031	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	242	84	74	158	105	232	116	884	168	842	1705	547
RTOR Reduction (vph)	0	33	0	0	0	84	0	0	0	0	39	0
Lane Group Flow (vph)	128	239	0	158	105	148	116	884	168	842	2213	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	16.6	16.6		13.9	13.9	44.4	11.2	37.0	120.0	30.5	56.3	
Effective Green, g (s)	19.6	19.6		16.9	16.9	50.4	12.2	40.0	120.0	31.5	59.3	
Actuated g/C Ratio	0.16	0.16		0.14	0.14	0.42	0.10	0.33	1.00	0.26	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	271	532		257	257	652	185	1751	1605	931	2486	
v/s Ratio Prot	c0.08	0.07		c0.09	0.06	0.10	0.06	0.17		c0.24	c0.44	
v/s Ratio Perm									0.10			
v/c Ratio	0.47	0.45		0.61	0.41	0.23	0.63	0.50	0.10	0.90	0.89	
Uniform Delay, d1	45.5	45.3		48.5	47.0	22.3	51.7	32.1	0.0	42.8	27.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.28	0.50	1.00	0.97	1.00	
Incremental Delay, d2	0.5	0.2		3.1	0.4	0.1	4.6	1.0	0.1	4.1	1.7	
Delay (s)	46.0	45.6		51.5	47.4	22.4	70.7	17.1	0.1	45.5	29.1	
Level of Service	D	D		D	D	C	E	B	A	D	C	
Approach Delay (s)		45.7			37.0			20.0			33.5	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	5	100	30	10	10	150	260	20	10	210	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	5	105	32	11	11	158	274	21	11	221	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	5	105	42	11	158	295	11	232
Volume Left (vph)	0	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	11
Hadj (s)	0.03	-0.67	0.41	-0.67	0.53	-0.02	0.53	0.00
Departure Headway (s)	6.2	5.5	6.7	5.6	5.7	5.2	6.0	5.4
Degree Utilization, x	0.01	0.16	0.08	0.02	0.25	0.42	0.02	0.35
Capacity (veh/h)	528	594	491	578	609	675	575	639
Control Delay (s)	8.1	8.4	9.1	7.5	9.5	10.8	7.9	10.1
Approach Delay (s)	8.4		8.7		10.3		10.0	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	170	90	410	30	40	50	290	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1759		1829	1925	1619	1829	1750		1737	1754	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1759		1829	1925	1619	1829	1750		1737	1754	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	179	95	432	32	42	53	305	63	11
RTOR Reduction (vph)	0	18	0	0	0	176	0	44	0	0	1	0
Lane Group Flow (vph)	11	24	0	179	95	256	32	51	0	156	222	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	5.3		10.4	14.8	31.5	8.5	8.5		16.7	16.7	
Effective Green, g (s)	1.9	7.3		11.4	16.8	35.5	10.5	10.5		18.7	18.7	
Actuated g/C Ratio	0.03	0.12		0.19	0.28	0.59	0.18	0.18		0.31	0.31	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	58	214		348	539	1040	320	306		542	547	
v/s Ratio Prot	c0.01	0.01		c0.10	0.05	c0.08	0.02	c0.03		0.09	c0.13	
v/s Ratio Perm						0.08						
v/c Ratio	0.19	0.11		0.51	0.18	0.25	0.10	0.17		0.29	0.41	
Uniform Delay, d1	28.3	23.4		21.8	16.3	5.8	20.7	21.0		15.6	16.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.2		1.3	0.2	0.1	0.1	0.3		0.3	0.5	
Delay (s)	29.8	23.6		23.1	16.5	5.9	20.9	21.2		15.9	16.7	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		24.9			11.7			21.2			16.4	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	730	340	130	1130	140	640	840	130	340	700	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	200	768	358	137	1189	147	674	884	137	358	737	242
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	200	768	358	137	1189	147	674	884	137	358	737	242
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.7	31.8	56.8	8.1	31.2	120.0	25.0	44.4	120.0	15.7	33.1	120.0
Effective Green, g (s)	9.7	34.8	62.8	9.1	34.2	120.0	28.0	47.4	120.0	16.7	36.1	120.0
Actuated g/C Ratio	0.08	0.29	0.52	0.08	0.29	1.00	0.23	0.39	1.00	0.14	0.30	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	286	1523	821	268	1497	1588	1203	1444	1593	493	1580	1588
v/s Ratio Prot	c0.06	0.15	0.10	0.04	c0.23		0.13	c0.24		c0.10	0.14	
v/s Ratio Perm			0.13			0.09			0.09			c0.15
v/c Ratio	0.70	0.50	0.44	0.51	0.79	0.09	0.56	0.61	0.09	0.73	0.47	0.15
Uniform Delay, d1	53.7	35.4	17.7	53.3	39.6	0.0	40.6	29.0	0.0	49.5	34.1	0.0
Progression Factor	0.83	0.84	0.62	1.33	0.98	1.00	0.63	0.47	1.00	0.66	0.59	1.00
Incremental Delay, d2	5.6	0.5	0.1	0.6	3.2	0.1	0.3	1.8	0.1	4.4	1.0	0.2
Delay (s)	50.3	30.1	11.0	71.7	42.0	0.1	25.8	15.5	0.1	37.0	21.2	0.2
Level of Service	D	C	B	E	D	A	C	B	A	D	C	A
Approach Delay (s)		28.0			40.6			18.3			21.6	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	370	430	380	320	70	450	1200	400	160	710	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	389	453	400	337	74	474	1263	421	168	747	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	168	389	453	400	337	74	474	1263	421	168	747	28
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.5	20.2	120.0	17.2	27.9	120.0	30.0	54.1	120.0	8.5	32.6	32.6
Effective Green, g (s)	10.5	23.2	120.0	18.2	30.9	120.0	31.0	57.1	120.0	9.5	35.6	35.6
Actuated g/C Ratio	0.09	0.19	1.00	0.15	0.26	1.00	0.26	0.48	1.00	0.08	0.30	0.30
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	310	707	1603	537	941	1613	916	2500	1615	280	1558	471
v/s Ratio Prot	0.05	c0.11		c0.11	0.09		0.13	c0.24		c0.05	c0.14	
v/s Ratio Perm			0.28			0.05			0.26			0.02
v/c Ratio	0.54	0.55	0.28	0.74	0.36	0.05	0.52	0.51	0.26	0.60	0.48	0.06
Uniform Delay, d1	52.4	43.7	0.0	48.7	36.4	0.0	38.1	21.7	0.0	53.4	34.6	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.55	1.00	0.84	0.64	1.00
Incremental Delay, d2	1.0	1.6	0.4	4.9	0.5	0.1	0.2	0.6	0.3	2.3	1.0	0.2
Delay (s)	53.5	45.3	0.4	53.6	36.9	0.1	25.8	12.5	0.3	47.3	23.4	30.5
Level of Service	D	D	A	D	D	A	C	B	A	D	C	C
Approach Delay (s)		26.5			41.8			13.1			28.0	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	350	50	30	1260	60	40	140	20	40	200	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3573		1829	5206		3547	3570		1829	4414	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3573		1829	5206		3547	3570		1829	4414	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	368	53	32	1326	63	42	147	21	42	211	232
RTOR Reduction (vph)	0	6	0	0	3	0	0	11	0	0	185	0
Lane Group Flow (vph)	168	415	0	32	1386	0	42	157	0	42	258	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.0	67.5		5.2	61.7		5.8	20.2		7.1	21.5	
Effective Green, g (s)	12.0	70.5		6.2	64.7		6.8	23.2		8.1	24.5	
Actuated g/C Ratio	0.10	0.59		0.05	0.54		0.06	0.19		0.07	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354	2099		94	2806		200	690		123	901	
v/s Ratio Prot	c0.05	0.12		0.02	c0.27		0.01	0.04		c0.02	c0.06	
v/s Ratio Perm												
v/c Ratio	0.47	0.20		0.34	0.49		0.21	0.23		0.34	0.29	
Uniform Delay, d1	51.0	11.6		54.9	17.4		54.0	40.8		53.4	40.4	
Progression Factor	0.81	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.2		2.2	0.6		0.5	0.2		1.7	0.2	
Delay (s)	42.3	15.3		57.1	18.0		54.6	41.0		55.1	40.5	
Level of Service	D	B		E	B		D	D		E	D	
Approach Delay (s)		23.0			18.9			43.7			41.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	540	810	2350	0	0	1520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	568	853	2474	0	0	1600
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	568	853	2474	0	0	1600
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.5	29.5	44.5			44.5
Effective Green, g (s)	30.6	30.6	45.6			45.6
Actuated g/C Ratio	0.37	0.37	0.55			0.55
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1320	1072	2915			2915
v/s Ratio Prot	0.16	c0.30	c0.47			0.30
v/s Ratio Perm						
v/c Ratio	0.43	0.80	0.85			0.55
Uniform Delay, d1	19.3	23.0	15.4			11.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	4.2	2.5			0.2
Delay (s)	19.5	27.2	17.9			11.9
Level of Service	B	C	B			B
Approach Delay (s)	24.1		17.9			11.9
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	770	0	420	0	0	0	0	2380	850	0	1600	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.97		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2839					5255	1583		5079	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2839					5255	1583		5079	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	811	0	442	0	0	0	0	2505	895	0	1684	484
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	291	0	86	0
Lane Group Flow (vph)	811	0	417	0	0	0	0	2505	604	0	2082	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	16.7		16.7					32.0	32.0		32.0	
Effective Green, g (s)	17.8		17.8					33.1	33.1		33.1	
Actuated g/C Ratio	0.31		0.31					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1109		888					3056	920		2954	
v/s Ratio Prot								c0.48			0.41	
v/s Ratio Perm	c0.23		0.15						0.38			
v/c Ratio	0.73		0.47					0.82	0.66		0.70	
Uniform Delay, d1	17.4		15.7					9.5	8.1		8.4	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		0.4					1.8	1.7		0.8	
Delay (s)	19.9		16.1					11.3	9.8		9.2	
Level of Service	B		B					B	A		A	
Approach Delay (s)		18.6			0.0			10.9			9.2	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	80	60	100	60	460	30	460	80	480	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1776		1829	1925	2880	1829	5121		3547	3657	1578
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1776		1829	1925	2880	1829	5121		3547	3657	1578
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	84	63	105	63	484	32	484	84	505	589	32
RTOR Reduction (vph)	0	30	0	0	0	220	0	25	0	0	0	18
Lane Group Flow (vph)	32	117	0	105	63	264	32	543	0	505	589	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	2.2	14.4		6.7	18.9	36.9	2.2	20.0		12.0	29.8	29.8
Effective Green, g (s)	3.2	17.4		7.7	21.9	39.9	3.2	23.0		13.0	32.8	32.8
Actuated g/C Ratio	0.04	0.24		0.11	0.30	0.55	0.04	0.31		0.18	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	80	422		192	576	1571	80	1611		630	1640	708
v/s Ratio Prot	0.02	c0.07		c0.06	0.03	0.09	0.02	0.11		c0.14	c0.16	
v/s Ratio Perm												0.01
v/c Ratio	0.40	0.28		0.55	0.11	0.17	0.40	0.34		0.80	0.36	0.02
Uniform Delay, d1	34.0	22.7		31.0	18.5	8.3	34.0	19.2		28.8	13.2	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		1.7	0.0	0.0	1.2	0.3		6.9	0.3	0.0
Delay (s)	35.2	22.8		32.7	18.6	8.3	35.2	19.5		35.7	13.5	11.2
Level of Service	D	C		C	B	A	D	B		D	B	B
Approach Delay (s)		25.1			13.2			20.3			23.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2210	1300	0	700	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2787
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2326	1368	0	737	463
RTOR Reduction (vph)	0	0	0	0	0	20
Lane Group Flow (vph)	0	2326	1368	0	737	444
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		30.0	30.0		18.0	18.0
Effective Green, g (s)		33.0	33.0		21.0	21.0
Actuated g/C Ratio		0.55	0.55		0.35	0.35
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2890	2890		1241	975
v/s Ratio Prot		c0.44	0.26		c0.21	
v/s Ratio Perm						0.16
v/c Ratio		0.80	0.47		0.59	0.45
Uniform Delay, d1		10.9	8.2		16.0	15.1
Progression Factor		1.16	0.88		1.00	1.00
Incremental Delay, d2		1.5	0.4		0.8	0.3
Delay (s)		14.1	7.7		16.8	15.4
Level of Service		B	A		B	B
Approach Delay (s)		14.1	7.7		16.2	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	131.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2020	0	0	1680	320	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2126	0	0	1768	337	400
RTOR Reduction (vph)	0	0	0	0	0	26
Lane Group Flow (vph)	2126	0	0	1768	337	374
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	87.4			87.4	20.6	20.6
Effective Green, g (s)	90.4			90.4	23.6	23.6
Actuated g/C Ratio	0.75			0.75	0.20	0.20
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3958			2754	697	566
v/s Ratio Prot	0.40			c0.48	0.09	c0.13
v/s Ratio Perm						
v/c Ratio	0.54			0.64	0.48	0.66
Uniform Delay, d1	6.1			7.1	42.8	44.5
Progression Factor	1.14			0.40	1.00	1.00
Incremental Delay, d2	0.4			0.7	0.5	2.9
Delay (s)	7.4			3.6	43.3	47.4
Level of Service	A			A	D	D
Approach Delay (s)	7.4			3.6	45.5	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	2020	30	20	2110	140	20	5	20	120	5	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			0.98	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5243		1829	5255	1636		1724			1808	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87			0.73	1.00
Satd. Flow (perm)	3547	5243		1829	5255	1636		1534			1377	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	368	2126	32	21	2221	147	21	5	21	126	5	442
RTOR Reduction (vph)	0	1	0	0	0	44	0	16	0	0	0	15
Lane Group Flow (vph)	368	2157	0	21	2221	103	0	31	0	0	131	427
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	17.9	73.6		3.3	59.0	59.0		28.1			28.1	51.0
Effective Green, g (s)	18.9	76.6		4.3	62.0	62.0		30.1			30.1	53.0
Actuated g/C Ratio	0.16	0.64		0.04	0.52	0.52		0.25			0.25	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	558	3346		65	2715	845		384			345	722
v/s Ratio Prot	c0.10	0.41		0.01	c0.42							c0.26
v/s Ratio Perm						0.06		0.02			0.10	
v/c Ratio	0.66	0.64		0.32	0.82	0.12		0.08			0.38	0.59
Uniform Delay, d1	47.5	13.3		56.4	24.3	15.0		34.4			37.2	25.3
Progression Factor	1.06	0.87		1.40	0.57	0.10		1.00			1.00	1.00
Incremental Delay, d2	2.4	0.8		2.1	2.2	0.2		0.1			0.7	1.3
Delay (s)	53.0	12.5		81.0	16.0	1.7		34.5			37.9	26.6
Level of Service	D	B		F	B	A		C			D	C
Approach Delay (s)		18.4			15.7			34.5			29.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	60	270	130	70	270
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	63	284	137	74	284
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	784	353			421	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	784	353			421	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	44	91			94	
cM capacity (veh/h)	338	691			1138	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	253	421	358
Volume Left	189	0	74
Volume Right	63	137	0
cSH	388	1700	1138
Volume to Capacity	0.65	0.25	0.06
Queue Length 95th (ft)	111	0	5
Control Delay (s)	30.0	0.0	2.2
Lane LOS	D		A
Approach Delay (s)	30.0	0.0	2.2
Approach LOS	D		

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	485	10	35	460	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	511	11	37	484	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1025		
pX, platoon unblocked						
vC, conflicting volume			521		1074	516
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			521		1074	516
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		96	89
cM capacity (veh/h)			1045		235	559

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	521	37	484	74
Volume Left	0	37	0	11
Volume Right	11	0	0	63
cSH	1700	1045	1700	467
Volume to Capacity	0.31	0.04	0.28	0.16
Queue Length 95th (ft)	0	3	0	14
Control Delay (s)	0.0	8.6	0.0	14.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		14.1
Approach LOS				B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	1900	220	40	1930	10	100	20	40	50	30	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1521		1823	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.79		0.64	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1245		1227	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	2000	232	42	2032	11	105	21	42	53	32	253
RTOR Reduction (vph)	0	0	53	0	0	5	0	11	0	0	0	202
Lane Group Flow (vph)	42	2000	179	42	2032	6	0	157	0	53	32	51
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	77.2	77.2	5.8	62.2	62.2		22.0		22.0	22.0	22.0
Effective Green, g (s)	21.8	80.2	80.2	6.8	65.2	65.2		24.0		24.0	24.0	24.0
Actuated g/C Ratio	0.18	0.67	0.67	0.06	0.54	0.54		0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3512	1065	103	2855	874		249		245	385	321
v/s Ratio Prot	0.02	c0.38		0.02	c0.39						0.02	
v/s Ratio Perm			0.11			0.00		c0.13		0.04		0.03
v/c Ratio	0.13	0.57	0.17	0.41	0.71	0.01		0.63		0.22	0.08	0.16
Uniform Delay, d1	41.1	10.7	7.4	54.7	20.4	12.6		43.9		40.1	39.0	39.7
Progression Factor	0.71	0.69	1.01	1.21	1.34	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.5	0.3	1.9	1.1	0.0		4.9		0.4	0.1	0.2
Delay (s)	29.2	7.9	7.8	67.9	28.5	12.6		48.9		40.6	39.1	39.9
Level of Service	C	A	A	E	C	B		D		D	D	D
Approach Delay (s)		8.3			29.2			48.9			39.9	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	290	620	2240	0	0	1260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	305	653	2358	0	0	1326
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	305	650	2358	0	0	1326
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	17.6	17.6	30.4			30.4
Effective Green, g (s)	20.6	20.6	33.4			33.4
Actuated g/C Ratio	0.34	0.34	0.56			0.56
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1217	988	2925			2035
v/s Ratio Prot	0.09	c0.23	c0.45			0.36
v/s Ratio Perm						
v/c Ratio	0.25	0.66	0.81			0.65
Uniform Delay, d1	14.2	16.7	10.7			9.3
Progression Factor	1.00	1.00	0.83			1.00
Incremental Delay, d2	0.2	2.1	1.2			1.6
Delay (s)	14.4	18.8	10.1			10.9
Level of Service	B	B	B			B
Approach Delay (s)	17.4		10.1			10.9
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1130	890	0	2170	1050	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1189	937	0	2284	1105	0
RTOR Reduction (vph)	0	58	0	0	0	0
Lane Group Flow (vph)	1189	879	0	2284	1105	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	14.0	14.0		19.0	19.0	
Effective Green, g (s)	17.0	17.0		22.0	22.0	
Actuated g/C Ratio	0.38	0.38		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1339	1088		2569	2569	
v/s Ratio Prot	c0.34	0.31		c0.43	0.21	
v/s Ratio Perm						
v/c Ratio	0.89	0.81		0.89	0.43	
Uniform Delay, d1	13.1	12.5		10.4	7.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.3	4.2		5.1	0.5	
Delay (s)	20.4	16.8		15.5	8.0	
Level of Service	C	B		B	A	
Approach Delay (s)	18.8			15.5	8.0	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	660	200	120	190	150	740	140	1130	180	420	1050	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3300		1829	1677	1554	1829	5255	1605	3547	4970	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3300		1829	1677	1554	1829	5255	1605	3547	4970	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	695	211	126	200	158	779	147	1189	189	442	1105	495
RTOR Reduction (vph)	0	16	0	0	37	72	0	0	0	0	63	0
Lane Group Flow (vph)	361	655	0	200	316	512	147	1189	189	442	1537	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.1	26.1		19.0	19.0	45.0	13.3	30.9	120.0	22.0	39.6	
Effective Green, g (s)	29.1	29.1		22.0	22.0	47.0	14.3	33.9	120.0	23.0	42.6	
Actuated g/C Ratio	0.24	0.24		0.18	0.18	0.39	0.12	0.28	1.00	0.19	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	403	800		335	307	608	217	1484	1605	679	1764	
v/s Ratio Prot	c0.22	0.20		0.11	c0.19	0.33	0.08	c0.23		0.12	c0.31	
v/s Ratio Perm									0.12			
v/c Ratio	0.90	0.82		0.60	1.03	0.84	0.68	0.80	0.12	0.65	0.87	
Uniform Delay, d1	44.0	43.0		44.9	49.0	33.1	50.6	39.9	0.0	44.8	36.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.15	0.69	1.00	0.89	0.87	
Incremental Delay, d2	21.2	6.2		1.9	59.4	9.9	6.3	4.5	0.1	1.4	5.2	
Delay (s)	65.2	49.2		46.8	108.4	43.0	64.3	31.9	0.1	41.5	36.6	
Level of Service	E	D		D	F	D	E	C	A	D	D	
Approach Delay (s)		54.8			64.0			31.1			37.7	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	170	150	10	20	150	290	90	20	290	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	11	179	158	11	21	158	305	95	21	305	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	21	179	168	21	158	400	21	316
Volume Left (vph)	11	0	158	0	158	0	21	0
Volume Right (vph)	0	179	0	21	0	95	0	11
Hadj (s)	0.28	-0.67	0.50	-0.67	0.53	-0.13	0.53	0.01
Departure Headway (s)	7.6	6.6	7.7	6.6	6.9	6.2	7.2	6.6
Degree Utilization, x	0.04	0.33	0.36	0.04	0.30	0.69	0.04	0.58
Capacity (veh/h)	438	501	433	500	505	558	476	514
Control Delay (s)	9.7	11.6	13.9	8.6	11.6	20.7	9.3	17.3
Approach Delay (s)	11.4		13.3		18.1		16.8	
Approach LOS	B		B		C		C	

Intersection Summary			
Delay	16.0		
Level of Service	C		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	110	40	40	120	480	10	60	200	560	100	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1836		1829	1925	1622	1829	1684		1737	1758	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1836		1829	1925	1622	1829	1684		1737	1758	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	116	42	42	126	505	11	63	211	589	105	11
RTOR Reduction (vph)	0	13	0	0	0	216	0	133	0	0	1	0
Lane Group Flow (vph)	11	145	0	42	126	289	11	141	0	324	380	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	10.4		3.3	12.7	34.4	12.8	12.8		21.7	21.7	
Effective Green, g (s)	2.0	12.4		4.3	14.7	38.4	14.8	14.8		23.7	23.7	
Actuated g/C Ratio	0.03	0.18		0.06	0.22	0.57	0.22	0.22		0.35	0.35	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	54	338		117	421	999	402	370		612	620	
v/s Ratio Prot	0.01	c0.08		c0.02	0.07	0.10	0.01	c0.08		0.19	c0.22	
v/s Ratio Perm						0.08						
v/c Ratio	0.20	0.43		0.36	0.30	0.29	0.03	0.38		0.53	0.61	
Uniform Delay, d1	31.8	24.3		30.1	21.9	7.4	20.6	22.3		17.3	18.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.9		1.9	0.4	0.2	0.0	0.7		0.8	1.8	
Delay (s)	33.7	25.1		32.0	22.3	7.6	20.6	23.0		18.1	19.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		25.7			11.8			22.9			19.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	1200	590	180	1130	150	660	800	90	260	900	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	1263	621	189	1189	158	695	842	95	274	947	200
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	211	1263	621	189	1189	158	695	842	95	274	947	200
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	11.3	33.0	53.0	9.9	31.6	120.0	20.0	43.8	120.0	13.3	36.1	120.0
Effective Green, g (s)	12.3	36.0	57.0	10.9	34.6	120.0	22.0	46.8	120.0	14.3	39.1	120.0
Actuated g/C Ratio	0.10	0.30	0.48	0.09	0.29	1.00	0.18	0.39	1.00	0.12	0.33	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	363	1576	781	322	1515	1588	945	1426	1593	422	1712	1588
v/s Ratio Prot	0.06	c0.24	c0.15	0.05	c0.23		0.13	0.23		c0.08	c0.18	
v/s Ratio Perm			0.25			0.10			0.06			0.13
v/c Ratio	0.58	0.80	0.80	0.59	0.78	0.10	0.74	0.59	0.06	0.65	0.55	0.13
Uniform Delay, d1	51.4	38.7	26.6	52.4	39.3	0.0	46.3	29.0	0.0	50.5	33.3	0.0
Progression Factor	1.23	1.29	1.45	0.92	0.91	1.00	0.75	0.61	1.00	1.46	0.92	1.00
Incremental Delay, d2	1.3	3.0	4.6	1.7	3.1	0.1	2.5	1.8	0.1	2.5	1.3	0.2
Delay (s)	64.6	52.9	43.1	50.1	38.7	0.1	37.2	19.4	0.1	76.4	32.0	0.2
Level of Service	E	D	D	D	D	A	D	B	A	E	C	A
Approach Delay (s)		51.2			36.2			25.8			36.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	240	597	600	280	140	370	830	340	120	1350	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	253	628	632	295	147	389	874	358	126	1421	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	125	253	628	632	295	147	389	874	358	126	1421	36
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.8	17.9	120.0	23.8	34.9	120.0	16.0	51.5	120.0	6.8	42.3	42.3
Effective Green, g (s)	7.8	20.9	120.0	24.8	37.9	120.0	17.0	54.5	120.0	7.8	45.3	45.3
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.14	0.45	1.00	0.06	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	230	636	1603	733	1155	1613	502	2386	1615	230	1983	599
v/s Ratio Prot	0.04	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.27	
v/s Ratio Perm			c0.39			0.09			0.22			0.02
v/c Ratio	0.54	0.40	0.39	0.86	0.26	0.09	0.77	0.37	0.22	0.55	0.72	0.06
Uniform Delay, d1	54.4	44.0	0.0	46.0	30.5	0.0	49.7	21.4	0.0	54.4	31.9	23.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.29	1.61	1.00	1.07	0.71	1.00
Incremental Delay, d2	1.4	0.9	0.7	9.9	0.2	0.1	6.5	0.4	0.3	1.4	2.2	0.2
Delay (s)	55.8	44.8	0.7	55.9	30.8	0.1	70.4	35.0	0.3	59.6	24.9	24.0
Level of Service	E	D	A	E	C	A	E	D	A	E	C	C
Approach Delay (s)		18.7			41.3			35.9			27.5	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	1260	30	20	560	40	70	180	20	60	270	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3641		1829	5183		3547	3587		1829	4436	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3641		1829	5183		3547	3587		1829	4436	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	1326	32	21	589	42	74	189	21	63	284	295
RTOR Reduction (vph)	0	1	0	0	5	0	0	8	0	0	174	0
Lane Group Flow (vph)	253	1357	0	21	626	0	74	202	0	63	405	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	67.3		3.3	56.8		6.7	21.5		7.9	22.7	
Effective Green, g (s)	14.8	70.3		4.3	59.8		7.7	24.5		8.9	25.7	
Actuated g/C Ratio	0.12	0.59		0.04	0.50		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	437	2133		65	2582		227	732		135	950	
v/s Ratio Prot	c0.07	c0.37		0.01	0.12		0.02	0.06		c0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.58	0.64		0.32	0.24		0.33	0.28		0.47	0.43	
Uniform Delay, d1	49.7	16.4		56.4	17.2		53.7	40.3		53.3	40.8	
Progression Factor	1.26	0.40		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	1.2		2.9	0.2		0.8	0.2		2.5	0.3	
Delay (s)	64.0	7.7		59.3	17.4		54.5	40.5		55.8	41.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.5			18.7			44.1			42.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1060	1070	0	370	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1116	1126	0	389	663
RTOR Reduction (vph)	0	0	0	0	0	65
Lane Group Flow (vph)	0	1116	1126	0	389	598
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.4	31.4		16.6	16.6
Effective Green, g (s)		34.4	34.4		19.6	19.6
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3042	3042		1170	949
v/s Ratio Prot		0.21	c0.21		0.11	
v/s Ratio Perm						c0.21
v/c Ratio		0.37	0.37		0.33	0.63
Uniform Delay, d1		6.9	6.9		15.3	17.1
Progression Factor		1.00	0.83		1.00	1.00
Incremental Delay, d2		0.3	0.3		0.2	1.3
Delay (s)		7.3	6.1		15.4	18.4
Level of Service		A	A		B	B
Approach Delay (s)		7.3	6.1		17.3	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	820	0	0	1030	330	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	863	0	0	1084	347	200
RTOR Reduction (vph)	0	0	0	0	0	153
Lane Group Flow (vph)	863	0	0	1084	347	47
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	37.0			37.0	11.0	11.0
Effective Green, g (s)	40.0			40.0	14.0	14.0
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3538			2462	836	678
v/s Ratio Prot	0.16			c0.29	c0.10	0.02
v/s Ratio Perm						
v/c Ratio	0.24			0.44	0.42	0.07
Uniform Delay, d1	4.0			4.7	19.5	17.9
Progression Factor	0.92			1.77	1.00	1.00
Incremental Delay, d2	0.2			0.5	0.3	0.0
Delay (s)	3.8			8.9	19.9	18.0
Level of Service	A			A	B	B
Approach Delay (s)	3.8			8.9	19.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	830	20	10	1270	50	30	10	10	60	10	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.96	1.00
Satd. Flow (prot)	3583	5285		1847	5307	1593		1827			1846	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.82			0.77	1.00
Satd. Flow (perm)	3583	5285		1847	5307	1593		1546			1475	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	874	21	11	1337	53	32	11	11	63	11	189
RTOR Reduction (vph)	0	1	0	0	0	18	0	8	0	0	0	25
Lane Group Flow (vph)	168	894	0	11	1337	35	0	46	0	0	74	164
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	10.9	86.6		1.5	77.2	77.2		16.9			16.9	32.8
Effective Green, g (s)	11.9	89.6		2.5	80.2	80.2		18.9			18.9	34.8
Actuated g/C Ratio	0.10	0.75		0.02	0.67	0.67		0.16			0.16	0.29
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	355	3946		38	3546	1064		243			232	479
v/s Ratio Prot	c0.05	0.17		0.01	c0.25							c0.10
v/s Ratio Perm						0.02		0.03			0.05	
v/c Ratio	0.47	0.23		0.29	0.38	0.03		0.19			0.32	0.34
Uniform Delay, d1	51.1	4.6		57.9	8.8	6.8		43.9			44.8	33.6
Progression Factor	1.00	1.13		1.29	0.27	0.00		1.00			1.00	1.00
Incremental Delay, d2	1.0	0.1		3.7	0.3	0.1		0.4			0.8	0.4
Delay (s)	52.1	5.4		78.5	2.7	0.1		44.3			45.6	34.0
Level of Service	D	A		E	A	A		D			D	C
Approach Delay (s)		12.8			3.2			44.3			37.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	40	160	50	40	190
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	42	168	53	42	200
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	479	195			221	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	479	195			221	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	95			97	
cM capacity (veh/h)	528	847			1348	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	95	221	242
Volume Left	53	0	42
Volume Right	42	53	0
cSH	634	1700	1348
Volume to Capacity	0.15	0.13	0.03
Queue Length 95th (ft)	13	0	2
Control Delay (s)	11.7	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	11.7	0.0	1.6
Approach LOS	B		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	230	10	10	210	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	242	11	11	221	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			253		489	247
vC1, stage 1 conf vol					247	
vC2, stage 2 conf vol					242	
vCu, unblocked vol			253		489	247
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	97
cM capacity (veh/h)			1313		690	791

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	253	11	221	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	1313	1700	754
Volume to Capacity	0.15	0.01	0.13	0.04
Queue Length 95th (ft)	0	1	0	3
Control Delay (s)	0.0	7.8	0.0	10.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.4		10.0
Approach LOS				A

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	560	110	160	190	130	320	210	1250	210	350	630	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3274		1847	1847	1570	1847	5307	1627	3583	4917	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3274		1847	1847	1570	1847	5307	1627	3583	4917	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	589	116	168	200	137	337	221	1316	221	368	663	516
RTOR Reduction (vph)	0	38	0	0	0	57	0	0	0	0	106	0
Lane Group Flow (vph)	318	517	0	200	137	280	221	1316	221	368	1073	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	25.4	25.4		15.2	15.2	30.2	17.2	42.4	120.0	15.0	40.2	
Effective Green, g (s)	28.4	28.4		18.2	18.2	36.2	18.2	45.4	120.0	16.0	43.2	
Actuated g/C Ratio	0.24	0.24		0.15	0.15	0.30	0.15	0.38	1.00	0.13	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	397	774		280	280	473	280	2007	1627	477	1770	
v/s Ratio Prot	c0.19	0.16		c0.11	0.07	0.18	c0.12	c0.25		0.10	0.22	
v/s Ratio Perm									c0.14			
v/c Ratio	0.80	0.67		0.71	0.49	0.59	0.79	0.66	0.14	0.77	0.61	
Uniform Delay, d1	43.1	41.5		48.4	46.6	35.6	49.1	30.8	0.0	50.2	31.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.33	0.72	1.00	1.00	1.00	
Incremental Delay, d2	10.5	1.7		7.0	0.5	1.3	12.6	1.7	0.2	6.9	1.6	
Delay (s)	53.6	43.2		55.4	47.1	36.9	77.9	23.8	0.2	57.2	33.0	
Level of Service	D	D		E	D	D	E	C	A	E	C	
Approach Delay (s)		47.0			44.5			27.6			38.7	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	40	240	240	80	40	260	170	140	30	230	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	42	253	253	84	42	274	179	147	32	242	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	53	253	337	42	274	326	32	253
Volume Left (vph)	11	0	253	0	274	0	32	0
Volume Right (vph)	0	253	0	42	0	147	0	11
Hadj (s)	0.12	-0.68	0.39	-0.68	0.52	-0.30	0.52	-0.01
Departure Headway (s)	8.1	7.3	8.1	7.0	8.0	7.2	8.5	7.9
Degree Utilization, x	0.12	0.51	0.76	0.08	0.61	0.65	0.07	0.56
Capacity (veh/h)	419	462	426	487	435	484	403	429
Control Delay (s)	11.0	16.6	31.4	9.5	21.4	21.4	10.9	19.2
Approach Delay (s)	15.6		28.9		21.4		18.3	
Approach LOS	C		D		C		C	

Intersection Summary			
Delay	21.5		
Level of Service	C		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	50	540	20	60	60	620	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1847	1832		1847	1944	1652	1847	1784		1754	1779	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1847	1832		1847	1944	1652	1847	1784		1754	1779	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	53	568	21	63	63	653	137	11
RTOR Reduction (vph)	0	19	0	0	0	215	0	39	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	53	353	21	87	0	333	467	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.9	8.3		4.0	10.4	39.1	9.3	9.3		28.7	28.7	
Effective Green, g (s)	2.9	10.3		5.0	12.4	43.1	11.3	11.3		30.7	30.7	
Actuated g/C Ratio	0.04	0.15		0.07	0.18	0.62	0.16	0.16		0.44	0.44	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	77	272		133	347	1098	301	290		777	788	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.14	0.01	c0.05		0.19	c0.26	
v/s Ratio Perm						0.07						
v/c Ratio	0.27	0.39		0.32	0.15	0.32	0.07	0.30		0.43	0.59	
Uniform Delay, d1	32.2	26.7		30.5	24.0	6.2	24.6	25.5		13.3	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.9		1.4	0.2	0.2	0.1	0.6		0.4	1.2	
Delay (s)	34.1	27.6		31.9	24.2	6.4	24.6	26.1		13.7	15.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		28.5			9.4			25.9			14.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	350	290	170	590	150	370	1140	70	190	570	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	368	305	179	621	158	389	1200	74	200	600	168
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	232	368	305	179	621	158	389	1200	74	200	600	168
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	21.0	25.0	6.0	20.0	90.0	4.0	35.8	90.0	7.2	37.0	90.0
Effective Green, g (s)	8.0	24.0	31.0	7.0	23.0	90.0	7.0	38.8	90.0	8.2	40.0	90.0
Actuated g/C Ratio	0.09	0.27	0.34	0.08	0.26	1.00	0.08	0.43	1.00	0.09	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	318	1415	563	278	1356	1632	405	1592	1631	326	2358	1652
v/s Ratio Prot	c0.06	0.07	c0.04	0.05	0.12		0.07	c0.32		c0.06	0.11	
v/s Ratio Perm			0.14			0.10			0.05			c0.10
v/c Ratio	0.73	0.26	0.54	0.64	0.46	0.10	0.96	0.75	0.05	0.61	0.25	0.10
Uniform Delay, d1	39.9	26.0	23.8	40.3	28.2	0.0	41.4	21.6	0.0	39.4	15.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.2	0.6	3.8	0.5	0.1	34.3	3.4	0.1	2.4	0.3	0.1
Delay (s)	46.9	26.2	24.3	44.1	28.8	0.1	75.6	24.9	0.1	41.8	15.9	0.1
Level of Service	D	C	C	D	C	A	E	C	A	D	B	A
Approach Delay (s)		30.9			26.9			35.7			18.5	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	900	810	1216	0	0	1327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	947	853	1280	0	0	1397
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	947	844	1280	0	0	1397
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	26.2	26.2	21.7			21.7
Effective Green, g (s)	27.3	27.3	22.8			22.8
Actuated g/C Ratio	0.49	0.49	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1726	1401	2135			2135
v/s Ratio Prot	0.27	c0.29	0.24			c0.27
v/s Ratio Perm						
v/c Ratio	0.55	0.60	0.60			0.65
Uniform Delay, d1	10.1	10.5	13.1			13.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	0.7	0.5			0.7
Delay (s)	10.4	11.2	13.5			14.2
Level of Service	B	B	B			B
Approach Delay (s)	10.8		13.5			14.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	6.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	500	0	788	0	0	0	0	1020	370	0	1577	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.96	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2837					5255	1575		5025	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2837					5255	1575		5025	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	526	0	829	0	0	0	0	1074	389	0	1660	684
RTOR Reduction (vph)	0	0	12	0	0	0	0	0	167	0	69	0
Lane Group Flow (vph)	526	0	817	0	0	0	0	1074	222	0	2275	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	30.4		30.4					41.5	41.5		41.5	
Effective Green, g (s)	31.5		31.5					42.6	42.6		42.6	
Actuated g/C Ratio	0.39		0.39					0.53	0.53		0.53	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1394		1115					2794	837		2672	
v/s Ratio Prot								0.20			c0.45	
v/s Ratio Perm	0.15		c0.29						0.14			
v/c Ratio	0.38		0.73					0.38	0.27		0.85	
Uniform Delay, d1	17.3		20.7					11.0	10.2		16.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		2.5					0.1	0.2		2.8	
Delay (s)	17.5		23.2					11.1	10.4		18.9	
Level of Service	B		C					B	B		B	
Approach Delay (s)		21.0			0.0			10.9			18.9	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	80.1	Sum of lost time (s)	7.1
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	203	40	512	30	560	134	359	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1750		1829	1925	2880	1829	5080		3547	3657	1577
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1750		1829	1925	2880	1829	5080		3547	3657	1577
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	214	42	539	32	589	141	378	337	11
RTOR Reduction (vph)	0	41	0	0	0	204	0	40	0	0	0	6
Lane Group Flow (vph)	11	85	0	214	42	335	32	690	0	378	337	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.9	12.3		12.5	23.9	41.5	2.3	22.0		11.6	31.3	31.3
Effective Green, g (s)	1.9	15.3		13.5	26.9	44.5	3.3	25.0		12.6	34.3	34.3
Actuated g/C Ratio	0.02	0.20		0.17	0.34	0.57	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	44	341		314	660	1634	76	1619		570	1599	689
v/s Ratio Prot	0.01	c0.05		c0.12	0.02	0.12	0.02	c0.14		c0.11	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.25	0.25		0.68	0.06	0.20	0.42	0.43		0.66	0.21	0.01
Uniform Delay, d1	37.6	26.7		30.4	17.3	8.3	36.6	21.0		30.9	13.7	12.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		4.8	0.0	0.0	1.4	0.4		2.3	0.1	0.0
Delay (s)	38.6	26.8		35.2	17.3	8.3	38.0	21.4		33.2	13.8	12.4
Level of Service	D	C		D	B	A	D	C		C	B	B
Approach Delay (s)		27.8			16.0			22.1			23.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	751	1780	0	580	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2789
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2789
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	791	1874	0	611	768
RTOR Reduction (vph)	0	0	0	0	0	8
Lane Group Flow (vph)	0	791	1874	0	611	760
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		29.1	29.1		18.9	18.9
Effective Green, g (s)		32.1	32.1		21.9	21.9
Actuated g/C Ratio		0.54	0.54		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2811	2811		1294	1017
v/s Ratio Prot		0.15	c0.36		0.17	
v/s Ratio Perm						c0.27
v/c Ratio		0.28	0.67		0.47	0.75
Uniform Delay, d1		7.6	10.1		14.6	16.6
Progression Factor		1.00	0.92		1.00	1.00
Incremental Delay, d2		0.3	0.9		0.3	3.0
Delay (s)		7.9	10.1		14.9	19.7
Level of Service		A	B		B	B
Approach Delay (s)		7.9	10.1		17.5	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1061	0	0	1580	660	708
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1117	0	0	1663	695	745
RTOR Reduction (vph)	0	0	0	0	0	86
Lane Group Flow (vph)	1117	0	0	1663	695	659
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	31.5			31.5	16.5	16.5
Effective Green, g (s)	34.5			34.5	19.5	19.5
Actuated g/C Ratio	0.58			0.58	0.32	0.32
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3021			2102	1152	936
v/s Ratio Prot	0.21			c0.45	0.20	c0.23
v/s Ratio Perm						
v/c Ratio	0.37			0.79	0.60	0.70
Uniform Delay, d1	6.9			9.9	17.0	17.7
Progression Factor	0.53			2.31	1.00	1.00
Incremental Delay, d2	0.3			2.2	0.9	2.4
Delay (s)	4.0			25.2	17.9	20.1
Level of Service	A			C	B	C
Approach Delay (s)	4.0			25.2	19.1	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	364	1386	20	20	2049	179	10	5	10	102	5	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1712			1837	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1712			1837	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	383	1459	21	21	2157	188	11	5	11	107	5	342
RTOR Reduction (vph)	0	1	0	0	0	61	0	11	0	0	0	50
Lane Group Flow (vph)	383	1479	0	21	2157	127	0	16	0	0	112	292
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	16.8	77.0		2.8	63.0	63.0		3.0			17.2	34.0
Effective Green, g (s)	17.8	80.0		3.8	66.0	66.0		5.0			19.2	38.0
Actuated g/C Ratio	0.15	0.67		0.03	0.55	0.55		0.04			0.16	0.32
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	526	3496		57	2890	899		71			293	518
v/s Ratio Prot	c0.11	0.28		0.01	c0.41			c0.01			0.06	c0.18
v/s Ratio Perm						0.08						
v/c Ratio	0.73	0.42		0.37	0.75	0.14		0.23			0.38	0.56
Uniform Delay, d1	48.8	9.3		56.9	20.6	13.2		55.6			45.1	34.1
Progression Factor	1.03	0.76		1.19	0.10	0.01		1.00			1.00	1.00
Incremental Delay, d2	4.4	0.3		1.9	0.9	0.2		1.7			0.8	1.4
Delay (s)	54.6	7.4		69.5	2.8	0.3		57.3			45.9	35.5
Level of Service	D	A		E	A	A		E			D	D
Approach Delay (s)		17.1			3.2			57.3			38.1	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	74	225	110	82	172
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	78	237	116	86	181
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	648	295			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	648	295			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	90			93	
cM capacity (veh/h)	404	745			1206	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	141	353	267
Volume Left	63	0	86
Volume Right	78	116	0
cSH	540	1700	1206
Volume to Capacity	0.26	0.21	0.07
Queue Length 95th (ft)	26	0	6
Control Delay (s)	14.0	0.0	3.1
Lane LOS	B		A
Approach Delay (s)	14.0	0.0	3.1
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	422	0	10	538	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	444	0	11	566	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				883		
pX, platoon unblocked						
vC, conflicting volume			444		1032	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			444		1032	444
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1116		256	614

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	444	11	566	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1116	1700	614
Volume to Capacity	0.26	0.01	0.33	0.02
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.3	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		11.0
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	1242	87	30	2003	50	189	30	40	10	10	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1535		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.67	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1238		1281	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	1307	92	32	2108	53	199	32	42	11	11	56
RTOR Reduction (vph)	0	0	34	0	0	30	0	6	0	0	0	42
Lane Group Flow (vph)	181	1307	58	32	2108	23	0	267	0	11	11	14
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	72.6	72.6	4.2	49.2	49.2		28.2		28.2	28.2	28.2
Effective Green, g (s)	28.6	75.6	75.6	5.2	52.2	52.2		30.2		30.2	30.2	30.2
Actuated g/C Ratio	0.24	0.63	0.63	0.04	0.44	0.44		0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3310	1004	79	2285	700		311		322	484	404
v/s Ratio Prot	0.10	c0.25		0.02	c0.40						0.01	
v/s Ratio Perm			0.04			0.01		c0.22		0.01		0.01
v/c Ratio	0.42	0.39	0.06	0.41	0.92	0.03		0.86		0.03	0.02	0.03
Uniform Delay, d1	38.6	10.9	8.5	55.9	32.0	19.4		42.9		33.9	33.8	33.9
Progression Factor	0.87	0.71	0.78	0.92	1.12	1.87		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	2.7	6.3	0.1		20.3		0.0	0.0	0.0
Delay (s)	34.1	8.1	6.7	53.9	42.1	36.4		63.1		33.9	33.8	33.9
Level of Service	C	A	A	D	D	D		E		C	C	C
Approach Delay (s)		11.0			42.1			63.1			33.9	
Approach LOS		B			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	430	440	1170	0	0	1508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	453	463	1232	0	0	1587
RTOR Reduction (vph)	0	58	0	0	0	0
Lane Group Flow (vph)	453	405	1232	0	0	1587
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	16.6	16.6	31.4			31.4
Effective Green, g (s)	19.6	19.6	34.4			34.4
Actuated g/C Ratio	0.33	0.33	0.57			0.57
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1158	940	3012			2096
v/s Ratio Prot	0.13	c0.14	0.23			c0.43
v/s Ratio Perm						
v/c Ratio	0.39	0.43	0.41			0.76
Uniform Delay, d1	15.6	15.8	7.1			9.7
Progression Factor	1.00	1.00	1.05			1.00
Incremental Delay, d2	0.5	0.7	0.4			2.6
Delay (s)	16.1	16.5	7.8			12.3
Level of Service	B	B	A			B
Approach Delay (s)	16.3		7.8			12.3
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	650	1568	0	942	1388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	684	1651	0	992	1461	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	684	1650	0	992	1461	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.19	c0.57		0.19	c0.28	
v/s Ratio Perm						
v/c Ratio	0.33	0.98		0.60	0.88	
Uniform Delay, d1	6.5	12.2		17.3	19.4	
Progression Factor	1.00	1.00		1.07	0.81	
Incremental Delay, d2	0.0	17.7		1.4	5.3	
Delay (s)	6.5	29.9		20.0	21.0	
Level of Service	A	C		B	C	
Approach Delay (s)	23.0			20.0	21.0	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	101	74	150	117	223	115	829	160	810	1600	546
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3274		1829	1829	1554	1829	5255	1605	3547	5020	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3274		1829	1829	1554	1829	5255	1605	3547	5020	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	256	106	78	158	123	235	121	873	168	853	1684	575
RTOR Reduction (vph)	0	28	0	0	0	77	0	0	0	0	42	0
Lane Group Flow (vph)	136	276	0	158	123	158	121	873	168	853	2217	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.2	17.2		13.9	13.9	44.7	11.5	36.1	120.0	30.8	55.4	
Effective Green, g (s)	20.2	20.2		16.9	16.9	50.7	12.5	39.1	120.0	31.8	58.4	
Actuated g/C Ratio	0.17	0.17		0.14	0.14	0.42	0.10	0.33	1.00	0.27	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	280	551		257	257	656	190	1712	1605	939	2443	
v/s Ratio Prot	0.08	c0.08		c0.09	0.07	0.10	0.07	0.17		c0.24	c0.44	
v/s Ratio Perm									0.10			
v/c Ratio	0.49	0.50		0.61	0.48	0.24	0.64	0.51	0.10	0.91	0.91	
Uniform Delay, d1	45.2	45.3		48.5	47.5	22.3	51.6	32.7	0.0	42.7	28.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.28	0.51	1.00	1.00	1.01	
Incremental Delay, d2	0.5	0.3		3.1	0.5	0.1	4.9	1.1	0.1	4.9	2.4	
Delay (s)	45.7	45.6		51.5	48.0	22.4	71.2	17.8	0.1	47.6	31.0	
Level of Service	D	D		D	D	C	E	B	A	D	C	
Approach Delay (s)		45.6			37.4			20.8			35.6	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	5	100	30	10	10	150	307	20	10	248	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	5	105	32	11	11	158	323	21	11	261	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	12	105	42	11	158	344	11	277
Volume Left (vph)	6	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	16
Hadj (s)	0.31	-0.67	0.41	-0.67	0.53	-0.01	0.53	-0.01
Departure Headway (s)	6.8	5.8	7.0	5.9	5.8	5.3	6.1	5.5
Degree Utilization, x	0.02	0.17	0.08	0.02	0.26	0.51	0.02	0.43
Capacity (veh/h)	490	570	472	551	599	665	566	630
Control Delay (s)	8.7	8.7	9.4	7.8	9.6	12.4	8.0	11.4
Approach Delay (s)	8.7		9.1		11.5		11.3	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.0		
Level of Service	B		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	170	90	457	30	40	50	328	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1759		1829	1925	1619	1829	1750		1737	1753	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1759		1829	1925	1619	1829	1750		1737	1753	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	179	95	481	32	42	53	345	63	11
RTOR Reduction (vph)	0	18	0	0	0	194	0	44	0	0	1	0
Lane Group Flow (vph)	11	24	0	179	95	287	32	51	0	176	242	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	5.3		10.4	14.8	32.2	8.5	8.5		17.4	17.4	
Effective Green, g (s)	1.9	7.3		11.4	16.8	36.2	10.5	10.5		19.4	19.4	
Actuated g/C Ratio	0.03	0.12		0.19	0.28	0.60	0.17	0.17		0.32	0.32	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	57	211		344	533	1047	316	303		556	561	
v/s Ratio Prot	c0.01	0.01		c0.10	0.05	c0.09	0.02	c0.03		0.10	c0.14	
v/s Ratio Perm						0.09						
v/c Ratio	0.19	0.11		0.52	0.18	0.27	0.10	0.17		0.32	0.43	
Uniform Delay, d1	28.6	23.8		22.1	16.7	5.9	21.1	21.3		15.6	16.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2		1.4	0.2	0.1	0.1	0.3		0.3	0.5	
Delay (s)	30.3	24.0		23.6	16.8	6.0	21.2	21.6		15.9	16.8	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		25.3			11.5			21.5			16.4	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	198	743	351	130	1147	140	654	841	130	340	701	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	208	782	369	137	1207	147	688	885	137	358	738	255
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	208	782	369	137	1207	147	688	885	137	358	738	255
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.8	32.0	57.1	8.1	31.3	120.0	25.1	44.2	120.0	15.7	32.8	120.0
Effective Green, g (s)	9.8	35.0	63.1	9.1	34.3	120.0	28.1	47.2	120.0	16.7	35.8	120.0
Actuated g/C Ratio	0.08	0.29	0.53	0.08	0.29	1.00	0.23	0.39	1.00	0.14	0.30	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	289	1532	825	268	1502	1588	1207	1438	1593	493	1567	1588
v/s Ratio Prot	c0.06	0.15	0.10	0.04	c0.23		0.13	c0.24		c0.10	0.14	
v/s Ratio Perm			0.13			0.09			0.09			c0.16
v/c Ratio	0.72	0.51	0.45	0.51	0.80	0.09	0.57	0.62	0.09	0.73	0.47	0.16
Uniform Delay, d1	53.8	35.4	17.6	53.3	39.7	0.0	40.6	29.1	0.0	49.5	34.4	0.0
Progression Factor	0.76	0.90	0.50	1.33	0.98	1.00	0.63	0.48	1.00	0.65	0.59	1.00
Incremental Delay, d2	6.6	0.5	0.1	0.6	3.5	0.1	0.4	1.8	0.1	4.4	1.0	0.2
Delay (s)	47.4	32.5	9.0	71.7	42.3	0.1	26.0	15.7	0.1	36.3	21.3	0.2
Level of Service	D	C	A	E	D	A	C	B	A	D	C	A
Approach Delay (s)		28.4			40.8			18.6			21.3	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	370	430	380	320	70	450	1215	400	160	721	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	389	453	400	337	74	474	1279	421	168	759	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	168	389	453	400	337	74	474	1279	421	168	759	28
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.5	20.2	120.0	17.2	27.9	120.0	30.0	54.1	120.0	8.5	32.6	32.6
Effective Green, g (s)	10.5	23.2	120.0	18.2	30.9	120.0	31.0	57.1	120.0	9.5	35.6	35.6
Actuated g/C Ratio	0.09	0.19	1.00	0.15	0.26	1.00	0.26	0.48	1.00	0.08	0.30	0.30
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	310	707	1603	537	941	1613	916	2500	1615	280	1558	471
v/s Ratio Prot	0.05	c0.11		c0.11	0.09		0.13	c0.24		c0.05	c0.14	
v/s Ratio Perm			0.28			0.05			0.26			0.02
v/c Ratio	0.54	0.55	0.28	0.74	0.36	0.05	0.52	0.51	0.26	0.60	0.49	0.06
Uniform Delay, d1	52.4	43.7	0.0	48.7	36.4	0.0	38.1	21.8	0.0	53.4	34.7	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.55	1.00	0.85	0.65	1.00
Incremental Delay, d2	1.0	1.6	0.4	4.9	0.5	0.1	0.2	0.6	0.3	2.3	1.1	0.2
Delay (s)	53.5	45.3	0.4	53.6	36.9	0.1	25.8	12.6	0.3	47.7	23.7	30.5
Level of Service	D	D	A	D	D	A	C	B	A	D	C	C
Approach Delay (s)		26.5			41.8			13.1			28.3	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	362	50	30	1275	60	40	140	20	40	200	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3576		1829	5206		3547	3570		1829	4411	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3576		1829	5206		3547	3570		1829	4411	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	169	381	53	32	1342	63	42	147	21	42	211	234
RTOR Reduction (vph)	0	6	0	0	3	0	0	11	0	0	186	0
Lane Group Flow (vph)	169	428	0	32	1402	0	42	157	0	42	259	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.0	67.5		5.2	61.7		5.8	20.2		7.1	21.5	
Effective Green, g (s)	12.0	70.5		6.2	64.7		6.8	23.2		8.1	24.5	
Actuated g/C Ratio	0.10	0.59		0.05	0.54		0.06	0.19		0.07	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354	2100		94	2806		200	690		123	900	
v/s Ratio Prot	c0.05	0.12		0.02	c0.27		0.01	0.04		c0.02	c0.06	
v/s Ratio Perm												
v/c Ratio	0.48	0.20		0.34	0.50		0.21	0.23		0.34	0.29	
Uniform Delay, d1	51.0	11.6		54.9	17.4		54.0	40.8		53.4	40.4	
Progression Factor	0.81	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.2		2.2	0.6		0.5	0.2		1.7	0.2	
Delay (s)	42.2	15.4		57.1	18.1		54.6	41.0		55.1	40.5	
Level of Service	D	B		E	B		D	D		E	D	
Approach Delay (s)		22.9			18.9			43.7			41.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	540	810	2360	0	0	1530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	568	853	2484	0	0	1611
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	568	853	2484	0	0	1611
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.5	29.5	44.5			44.5
Effective Green, g (s)	30.6	30.6	45.6			45.6
Actuated g/C Ratio	0.37	0.37	0.55			0.55
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1320	1072	2915			2915
v/s Ratio Prot	0.16	c0.30	c0.47			0.31
v/s Ratio Perm						
v/c Ratio	0.43	0.80	0.85			0.55
Uniform Delay, d1	19.3	23.0	15.5			11.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	4.2	2.6			0.2
Delay (s)	19.5	27.2	18.1			12.0
Level of Service	B	C	B			B
Approach Delay (s)	24.1		18.1			12.0
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	770	0	443	0	0	0	0	2405	850	0	1610	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.97		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2839					5255	1583		5080	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2839					5255	1583		5080	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	811	0	466	0	0	0	0	2532	895	0	1695	484
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	289	0	85	0
Lane Group Flow (vph)	811	0	441	0	0	0	0	2532	606	0	2094	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	16.7		16.7					32.0	32.0		32.0	
Effective Green, g (s)	17.8		17.8					33.1	33.1		33.1	
Actuated g/C Ratio	0.31		0.31					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1109		888					3056	920		2955	
v/s Ratio Prot								c0.48			0.41	
v/s Ratio Perm	c0.23		0.16						0.38			
v/c Ratio	0.73		0.50					0.83	0.66		0.71	
Uniform Delay, d1	17.4		15.9					9.6	8.1		8.5	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		0.4					2.0	1.7		0.8	
Delay (s)	19.9		16.3					11.6	9.8		9.3	
Level of Service	B		B					B	A		A	
Approach Delay (s)		18.6			0.0			11.1			9.3	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	80	60	105	60	491	30	460	85	518	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1776		1829	1925	2880	1829	5115		3547	3657	1578
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1776		1829	1925	2880	1829	5115		3547	3657	1578
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	84	63	111	63	517	32	484	89	545	589	32
RTOR Reduction (vph)	0	31	0	0	0	235	0	27	0	0	0	18
Lane Group Flow (vph)	32	116	0	111	63	282	32	546	0	545	589	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	2.2	14.4		6.8	19.0	37.0	2.2	20.2		12.0	30.0	30.0
Effective Green, g (s)	3.2	17.4		7.8	22.0	40.0	3.2	23.2		13.0	33.0	33.0
Actuated g/C Ratio	0.04	0.24		0.11	0.30	0.54	0.04	0.32		0.18	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	79	421		194	576	1569	79	1616		628	1644	709
v/s Ratio Prot	0.02	c0.07		c0.06	0.03	0.10	0.02	0.11		c0.15	c0.16	
v/s Ratio Perm												0.01
v/c Ratio	0.41	0.28		0.57	0.11	0.18	0.41	0.34		0.87	0.36	0.02
Uniform Delay, d1	34.2	22.9		31.2	18.6	8.4	34.2	19.2		29.4	13.3	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		2.5	0.0	0.0	1.2	0.3		11.8	0.3	0.0
Delay (s)	35.4	23.0		33.7	18.6	8.4	35.4	19.5		41.1	13.5	11.2
Level of Service	D	C		C	B	A	D	B		D	B	B
Approach Delay (s)		25.2			13.4			20.3			26.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2277	1361	0	806	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2792
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2792
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2397	1433	0	848	463
RTOR Reduction (vph)	0	0	0	0	0	16
Lane Group Flow (vph)	0	2397	1433	0	848	448
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		28.2	28.2		19.8	19.8
Effective Green, g (s)		31.2	31.2		22.8	22.8
Actuated g/C Ratio		0.52	0.52		0.38	0.38
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2732	2732		1347	1060
v/s Ratio Prot		c0.46	0.27		c0.24	
v/s Ratio Perm						0.16
v/c Ratio		0.88	0.52		0.63	0.42
Uniform Delay, d1		12.7	9.5		15.2	13.7
Progression Factor		1.17	1.24		1.00	1.00
Incremental Delay, d2		2.7	0.5		0.9	0.3
Delay (s)		17.5	12.3		16.1	14.0
Level of Service		B	B		B	B
Approach Delay (s)		17.5	12.3		15.4	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	140.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2194	0	0	1837	320	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2309	0	0	1934	337	495
RTOR Reduction (vph)	0	0	0	0	0	17
Lane Group Flow (vph)	2309	0	0	1934	337	478
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	84.5			84.5	23.5	23.5
Effective Green, g (s)	87.5			87.5	26.5	26.5
Actuated g/C Ratio	0.73			0.73	0.22	0.22
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3831			2666	783	636
v/s Ratio Prot	0.44			c0.53	0.09	c0.17
v/s Ratio Perm						
v/c Ratio	0.60			0.73	0.43	0.75
Uniform Delay, d1	7.9			9.3	40.3	43.7
Progression Factor	1.17			2.39	1.00	1.00
Incremental Delay, d2	0.4			0.2	0.4	5.0
Delay (s)	9.6			22.5	40.6	48.7
Level of Service	A			C	D	D
Approach Delay (s)	9.6			22.5	45.4	
Approach LOS	A			C	D	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1949	30	20	2034	284	20	5	20	271	5	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5243		1829	5255	1636		1704			1835	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5243		1829	5255	1636		1704			1835	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	2052	32	21	2141	299	21	5	21	285	5	816
RTOR Reduction (vph)	0	1	0	0	0	82	0	20	0	0	0	40
Lane Group Flow (vph)	721	2083	0	21	2141	217	0	27	0	0	290	776
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	24.0	66.2		2.8	45.0	45.0		4.0			27.0	51.0
Effective Green, g (s)	25.0	69.2		3.8	48.0	48.0		6.0			29.0	55.0
Actuated g/C Ratio	0.21	0.58		0.03	0.40	0.40		0.05			0.24	0.46
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	738	3023		57	2102	654		85			443	749
v/s Ratio Prot	0.20	0.40		0.01	c0.41			c0.02			0.16	c0.47
v/s Ratio Perm						0.13						
v/c Ratio	0.98	0.69		0.37	1.02	0.33		0.32			0.65	1.04
Uniform Delay, d1	47.2	17.8		56.9	36.0	24.9		55.0			41.0	32.5
Progression Factor	0.94	1.61		0.60	1.54	2.34		1.00			1.00	1.00
Incremental Delay, d2	23.6	1.0		2.9	21.4	1.0		2.2			3.5	42.7
Delay (s)	67.9	29.7		37.1	76.8	59.4		57.2			44.5	75.2
Level of Service	E	C		D	E	E		E			D	E
Approach Delay (s)		39.5			74.4			57.2			67.2	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	57.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	140	319	130	120	341
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	147	336	137	126	359
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1016	404			473	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1016	404			473	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	19	77			88	
cM capacity (veh/h)	233	646			1089	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	337	473	485
Volume Left	189	0	126
Volume Right	147	137	0
cSH	324	1700	1089
Volume to Capacity	1.04	0.28	0.12
Queue Length 95th (ft)	302	0	10
Control Delay (s)	98.0	0.0	3.2
Lane LOS	F		A
Approach Delay (s)	98.0	0.0	3.2
Approach LOS	F		

Intersection Summary			
Average Delay	26.7		
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	991	10	35	939	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1043	11	37	988	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1025		
pX, platoon unblocked						
vC, conflicting volume			1054		2111	1048
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1054		2111	1048
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		80	77
cM capacity (veh/h)			661		53	277

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1054	37	988	74
Volume Left	0	37	0	11
Volume Right	11	0	0	63
cSH	1700	661	1700	173
Volume to Capacity	0.62	0.06	0.58	0.43
Queue Length 95th (ft)	0	4	0	48
Control Delay (s)	0.0	10.8	0.0	40.6
Lane LOS		B		E
Approach Delay (s)	0.0	0.4		40.6
Approach LOS				E

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1959	233	40	1987	10	112	20	40	50	30	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1523		1823	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1233		1244	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	2062	245	42	2092	11	118	21	42	53	32	257
RTOR Reduction (vph)	0	0	55	0	0	5	0	10	0	0	0	204
Lane Group Flow (vph)	46	2062	190	42	2092	6	0	171	0	53	32	53
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	76.4	76.4	5.8	61.4	61.4		22.8		22.8	22.8	22.8
Effective Green, g (s)	21.8	79.4	79.4	6.8	64.4	64.4		24.8		24.8	24.8	24.8
Actuated g/C Ratio	0.18	0.66	0.66	0.06	0.54	0.54		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3477	1055	103	2820	864		254		257	397	332
v/s Ratio Prot	0.03	c0.39		0.02	c0.40						0.02	
v/s Ratio Perm			0.12			0.00		c0.14		0.04		0.03
v/c Ratio	0.14	0.59	0.18	0.41	0.74	0.01		0.67		0.21	0.08	0.16
Uniform Delay, d1	41.2	11.3	7.8	54.7	21.4	12.9		43.9		39.4	38.4	39.1
Progression Factor	1.28	1.67	2.26	1.21	1.33	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6	0.3	1.8	1.3	0.0		6.8		0.4	0.1	0.2
Delay (s)	53.1	19.5	17.9	68.0	29.6	12.9		50.7		39.8	38.5	39.3
Level of Service	D	B	B	E	C	B		D		D	D	D
Approach Delay (s)		20.0			30.3			50.7			39.3	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	316	620	2240	0	0	1283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	333	653	2358	0	0	1351
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	333	650	2358	0	0	1351
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	17.6	17.6	30.4			30.4
Effective Green, g (s)	20.6	20.6	33.4			33.4
Actuated g/C Ratio	0.34	0.34	0.56			0.56
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1217	988	2925			2035
v/s Ratio Prot	0.09	c0.23	c0.45			0.37
v/s Ratio Perm						
v/c Ratio	0.27	0.66	0.81			0.66
Uniform Delay, d1	14.3	16.7	10.7			9.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.3	2.1	2.5			1.7
Delay (s)	14.5	18.8	13.2			11.1
Level of Service	B	B	B			B
Approach Delay (s)	17.4		13.2			11.1
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1130	879	0	2177	1099	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1189	925	0	2292	1157	0
RTOR Reduction (vph)	0	50	0	0	0	0
Lane Group Flow (vph)	1189	875	0	2292	1157	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	14.0	14.0		19.0	19.0	
Effective Green, g (s)	17.0	17.0		22.0	22.0	
Actuated g/C Ratio	0.38	0.38		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1339	1088		2569	2569	
v/s Ratio Prot	c0.34	0.30		c0.44	0.22	
v/s Ratio Perm						
v/c Ratio	0.89	0.80		0.89	0.45	
Uniform Delay, d1	13.1	12.5		10.4	7.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.3	4.2		5.2	0.6	
Delay (s)	20.4	16.7		15.7	8.1	
Level of Service	C	B		B	A	
Approach Delay (s)	18.8			15.7	8.1	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	115.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	701	259	140	190	179	744	159	1097	180	437	1007	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3305		1829	1689	1554	1829	5255	1605	3547	4936	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3305		1829	1689	1554	1829	5255	1605	3547	4936	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	738	273	147	200	188	783	167	1155	189	460	1060	562
RTOR Reduction (vph)	0	16	0	0	31	72	0	0	0	0	77	0
Lane Group Flow (vph)	384	758	0	200	353	515	167	1155	189	460	1545	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	27.0	27.0		19.0	19.0	45.0	14.2	30.0	120.0	22.0	37.8	
Effective Green, g (s)	30.0	30.0		22.0	22.0	47.0	15.2	33.0	120.0	23.0	40.8	
Actuated g/C Ratio	0.25	0.25		0.18	0.18	0.39	0.13	0.28	1.00	0.19	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	416	826		335	309	608	231	1445	1605	679	1678	
v/s Ratio Prot	c0.23	0.23		0.11	c0.21	0.33	0.09	c0.22		0.13	c0.31	
v/s Ratio Perm									0.12			
v/c Ratio	0.92	0.92		0.60	1.14	0.85	0.72	0.80	0.12	0.68	0.92	
Uniform Delay, d1	43.9	43.8		44.9	49.0	33.2	50.4	40.4	0.0	45.1	38.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.12	0.69	1.00	1.00	1.00	
Incremental Delay, d2	25.6	14.6		1.9	95.4	10.2	8.8	4.6	0.1	2.1	9.8	
Delay (s)	69.4	58.4		46.8	144.4	43.4	65.2	32.6	0.1	47.2	47.9	
Level of Service	E	E		D	F	D	E	C	A	D	D	
Approach Delay (s)		62.1			77.1			32.2			47.7	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	10	170	150	10	20	150	403	90	20	410	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	19	11	179	158	11	21	158	424	95	21	432	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	29	179	168	21	158	519	21	452
Volume Left (vph)	19	0	158	0	158	0	21	0
Volume Right (vph)	0	179	0	21	0	95	0	20
Hadj (s)	0.36	-0.67	0.50	-0.67	0.53	-0.09	0.53	0.00
Departure Headway (s)	8.4	7.4	8.6	7.4	7.4	6.7	7.6	7.1
Degree Utilization, x	0.07	0.37	0.40	0.04	0.32	0.97	0.04	0.89
Capacity (veh/h)	405	459	401	457	477	519	459	502
Control Delay (s)	10.9	13.5	16.0	9.5	12.7	56.9	9.8	42.4
Approach Delay (s)	13.1		15.3		46.6		41.0	
Approach LOS	B		C		E		E	

Intersection Summary			
Delay	36.5		
Level of Service	E		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	110	40	40	120	593	10	60	200	680	100	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1829	1836		1829	1925	1621	1829	1684		1737	1756	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1829	1836		1829	1925	1621	1829	1684		1737	1756	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	116	42	42	126	624	11	63	211	716	105	11
RTOR Reduction (vph)	0	13	0	0	0	248	0	136	0	0	1	0
Lane Group Flow (vph)	11	145	0	42	126	376	11	138	0	394	437	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	13.2		3.4	15.6	39.0	12.4	12.4		23.4	23.4	
Effective Green, g (s)	2.0	15.2		4.4	17.6	43.0	14.4	14.4		25.4	25.4	
Actuated g/C Ratio	0.03	0.21		0.06	0.25	0.60	0.20	0.20		0.36	0.36	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	390		112	474	1044	368	339		617	624	
v/s Ratio Prot	0.01	0.08		c0.02	0.07	c0.13	0.01	c0.08		0.23	c0.25	
v/s Ratio Perm						0.10						
v/c Ratio	0.22	0.37		0.38	0.27	0.36	0.03	0.41		0.64	0.70	
Uniform Delay, d1	33.9	24.0		32.2	21.7	7.2	22.9	24.8		19.2	19.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.6		2.1	0.3	0.2	0.0	0.8		2.2	3.6	
Delay (s)	36.1	24.6		34.3	22.0	7.4	22.9	25.6		21.4	23.3	
Level of Service	D	C		C	C	A	C	C		C	C	
Approach Delay (s)		25.4			11.2			25.5			22.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	1224	609	180	1153	150	678	801	90	260	901	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	227	1288	641	189	1214	158	714	843	95	274	948	217
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	227	1288	641	189	1214	158	714	843	95	274	948	217
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	11.8	33.3	53.3	9.9	31.4	120.0	20.0	43.5	120.0	13.3	35.8	120.0
Effective Green, g (s)	12.8	36.3	57.3	10.9	34.4	120.0	22.0	46.5	120.0	14.3	38.8	120.0
Actuated g/C Ratio	0.11	0.30	0.48	0.09	0.29	1.00	0.18	0.39	1.00	0.12	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	378	1589	785	322	1506	1588	945	1417	1593	422	1699	1588
v/s Ratio Prot	0.06	c0.25	c0.15	0.05	c0.23		0.14	0.23		c0.08	c0.18	
v/s Ratio Perm			0.26			0.10			0.06			0.14
v/c Ratio	0.60	0.81	0.82	0.59	0.81	0.10	0.76	0.59	0.06	0.65	0.56	0.14
Uniform Delay, d1	51.2	38.7	26.8	52.4	39.7	0.0	46.5	29.3	0.0	50.5	33.5	0.0
Progression Factor	1.44	1.07	1.25	0.92	0.90	1.00	0.75	0.61	1.00	1.46	0.93	1.00
Incremental Delay, d2	1.5	3.1	5.3	1.7	3.6	0.1	3.0	1.8	0.1	2.5	1.3	0.2
Delay (s)	75.2	44.6	38.9	50.0	39.4	0.1	38.0	19.7	0.1	76.1	32.6	0.2
Level of Service	E	D	D	D	D	A	D	B	A	E	C	A
Approach Delay (s)		46.1			36.7			26.5			36.0	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	240	597	600	280	140	370	850	340	120	1370	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	253	628	632	295	147	389	895	358	126	1442	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	125	253	628	632	295	147	389	895	358	126	1442	36
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.8	17.9	120.0	23.8	34.9	120.0	16.0	51.5	120.0	6.8	42.3	42.3
Effective Green, g (s)	7.8	20.9	120.0	24.8	37.9	120.0	17.0	54.5	120.0	7.8	45.3	45.3
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.14	0.45	1.00	0.06	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	230	636	1603	733	1155	1613	502	2386	1615	230	1983	599
v/s Ratio Prot	0.04	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.27	
v/s Ratio Perm			c0.39			0.09			0.22			0.02
v/c Ratio	0.54	0.40	0.39	0.86	0.26	0.09	0.77	0.38	0.22	0.55	0.73	0.06
Uniform Delay, d1	54.4	44.0	0.0	46.0	30.5	0.0	49.7	21.5	0.0	54.4	32.0	23.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.29	1.60	1.00	1.07	0.71	1.00
Incremental Delay, d2	1.4	0.9	0.7	9.9	0.2	0.1	6.5	0.4	0.3	1.4	2.3	0.2
Delay (s)	55.8	44.8	0.7	55.9	30.8	0.1	70.3	35.0	0.3	59.7	25.1	24.0
Level of Service	E	D	A	E	C	A	E	C	A	E	C	C
Approach Delay (s)		18.7			41.3			35.8			27.7	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	1281	30	20	580	40	70	180	20	60	270	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3642		1829	5185		3547	3587		1829	4432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3642		1829	5185		3547	3587		1829	4432	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	256	1348	32	21	611	42	74	189	21	63	284	298
RTOR Reduction (vph)	0	1	0	0	5	0	0	8	0	0	175	0
Lane Group Flow (vph)	256	1379	0	21	648	0	74	202	0	63	407	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.9	67.3		3.3	56.7		6.7	21.5		7.9	22.7	
Effective Green, g (s)	14.9	70.3		4.3	59.7		7.7	24.5		8.9	25.7	
Actuated g/C Ratio	0.12	0.59		0.04	0.50		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	440	2133		65	2579		227	732		135	949	
v/s Ratio Prot	c0.07	c0.38		0.01	0.12		0.02	0.06		c0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.58	0.65		0.32	0.25		0.33	0.28		0.47	0.43	
Uniform Delay, d1	49.6	16.6		56.4	17.3		53.7	40.3		53.3	40.8	
Progression Factor	1.26	0.40		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.2		2.9	0.2		0.8	0.2		2.5	0.3	
Delay (s)	64.0	7.9		59.3	17.5		54.5	40.5		55.8	41.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.7			18.8			44.1			42.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1173	1166	0	509	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1235	1227	0	536	663
RTOR Reduction (vph)	0	0	0	0	0	49
Lane Group Flow (vph)	0	1235	1227	0	536	614
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.0	31.0		17.0	17.0
Effective Green, g (s)		34.0	34.0		20.0	20.0
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3007	3007		1194	969
v/s Ratio Prot		c0.23	0.23		0.15	
v/s Ratio Perm						c0.21
v/c Ratio		0.41	0.41		0.45	0.63
Uniform Delay, d1		7.3	7.3		15.7	16.9
Progression Factor		1.00	0.74		1.00	1.00
Incremental Delay, d2		0.4	0.4		0.3	1.4
Delay (s)		7.8	5.8		15.9	18.3
Level of Service		A	A		B	B
Approach Delay (s)		7.8	5.8		17.2	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1073	0	0	1245	330	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1129	0	0	1311	347	332
RTOR Reduction (vph)	0	0	0	0	0	95
Lane Group Flow (vph)	1129	0	0	1311	347	237
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	37.0			37.0	11.0	11.0
Effective Green, g (s)	40.0			40.0	14.0	14.0
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3538			2462	836	678
v/s Ratio Prot	0.21			c0.35	c0.10	0.08
v/s Ratio Perm						
v/c Ratio	0.32			0.53	0.42	0.35
Uniform Delay, d1	4.2			5.2	19.5	19.2
Progression Factor	0.96			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.8	0.3	0.3
Delay (s)	4.3			6.0	19.9	19.5
Level of Service	A			A	B	B
Approach Delay (s)	4.3			6.0	19.7	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	612	756	20	10	1199	249	30	10	10	246	10	610
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5283		1847	5307	1607		1817			1855	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5283		1847	5307	1607		1817			1855	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	644	796	21	11	1262	262	32	11	11	259	11	642
RTOR Reduction (vph)	0	3	0	0	0	176	0	10	0	0	0	76
Lane Group Flow (vph)	644	814	0	11	1262	86	0	44	0	0	270	566
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	15.1	34.7		1.4	21.0	21.0		3.0			15.9	31.0
Effective Green, g (s)	16.1	37.7		2.4	24.0	24.0		5.0			17.9	35.0
Actuated g/C Ratio	0.21	0.50		0.03	0.32	0.32		0.07			0.24	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	769	2655		59	1698	514		121			442	770
v/s Ratio Prot	c0.18	0.15		0.01	c0.24			c0.02			0.15	c0.34
v/s Ratio Perm						0.05						
v/c Ratio	0.84	0.31		0.19	0.74	0.17		0.36			0.61	0.73
Uniform Delay, d1	28.2	11.0		35.3	22.8	18.3		33.5			25.4	16.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	7.9	0.3		1.5	3.0	0.7		1.8			2.5	3.7
Delay (s)	36.1	11.3		36.9	25.7	19.0		35.3			27.9	19.9
Level of Service	D	B		D	C	B		D			C	B
Approach Delay (s)		22.2			24.7			35.3			22.3	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	167	211	50	136	279
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	176	222	53	143	294
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	828	248			275	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	828	248			275	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	78			89	
cM capacity (veh/h)	303	790			1288	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	228	275	437
Volume Left	53	0	143
Volume Right	176	53	0
cSH	577	1700	1288
Volume to Capacity	0.40	0.16	0.11
Queue Length 95th (ft)	47	0	9
Control Delay (s)	15.3	0.0	3.4
Lane LOS	C		A
Approach Delay (s)	15.3	0.0	3.4
Approach LOS	C		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	846	10	10	861	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	891	11	11	906	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			901		1823	896
vC1, stage 1 conf vol					896	
vC2, stage 2 conf vol					927	
vCu, unblocked vol			901		1823	896
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			754		280	339

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	901	11	906	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	754	1700	317
Volume to Capacity	0.53	0.01	0.53	0.10
Queue Length 95th (ft)	0	1	0	8
Control Delay (s)	0.0	9.8	0.0	17.6
Lane LOS		A		C
Approach Delay (s)	0.0	0.1		17.6
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	615	195	181	190	182	326	231	1204	210	370	569	583
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3300		1847	1847	1570	1847	5307	1627	3583	4856	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3300		1847	1847	1570	1847	5307	1627	3583	4856	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	647	205	191	200	192	343	243	1267	221	389	599	614
RTOR Reduction (vph)	0	31	0	0	0	57	0	0	0	0	145	0
Lane Group Flow (vph)	349	663	0	200	192	286	243	1267	221	389	1068	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	27.0	27.0		15.2	15.2	30.4	18.1	40.6	120.0	15.2	37.7	
Effective Green, g (s)	30.0	30.0		18.2	18.2	36.4	19.1	43.6	120.0	16.2	40.7	
Actuated g/C Ratio	0.25	0.25		0.15	0.15	0.30	0.16	0.36	1.00	0.13	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	420	825		280	280	476	293	1928	1627	483	1646	
v/s Ratio Prot	c0.21	0.20		c0.11	0.10	0.18	c0.13	c0.24		0.11	0.22	
v/s Ratio Perm									c0.14			
v/c Ratio	0.83	0.80		0.71	0.69	0.60	0.83	0.66	0.14	0.81	0.88dr	
Uniform Delay, d1	42.6	42.2		48.4	48.2	35.6	48.9	31.9	0.0	50.4	33.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.34	0.72	1.00	1.00	0.99	
Incremental Delay, d2	12.5	5.4		7.0	5.5	1.5	16.4	1.7	0.2	9.0	2.0	
Delay (s)	55.1	47.6		55.4	53.6	37.1	82.0	24.8	0.2	59.4	35.2	
Level of Service	E	D		E	D	D	F	C	A	E	D	
Approach Delay (s)		50.1			46.4			29.7			41.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	28	40	240	240	80	40	260	337	140	30	391	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	42	253	253	84	42	274	355	147	32	412	29

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	72	253	337	42	274	502	32	441
Volume Left (vph)	29	0	253	0	274	0	32	0
Volume Right (vph)	0	253	0	42	0	147	0	29
Hadj (s)	0.22	-0.68	0.39	-0.68	0.52	-0.19	0.52	-0.03
Departure Headway (s)	9.3	8.4	9.2	8.1	8.9	8.2	9.0	8.5
Degree Utilization, x	0.19	0.59	0.86	0.10	0.68	1.0	0.08	1.0
Capacity (veh/h)	378	412	385	434	397	443	389	424
Control Delay (s)	13.2	21.8	46.6	10.8	27.3	114.7	11.6	82.7
Approach Delay (s)	19.9		42.7		83.8		77.9	
Approach LOS	C		E		F		F	

Intersection Summary			
Delay	63.8		
Level of Service	F		
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	50	707	20	60	60	781	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1831		1847	1944	1652	1847	1784		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1831		1847	1944	1652	1847	1784		1754	1776	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	53	744	21	63	63	822	137	11
RTOR Reduction (vph)	0	19	0	0	0	270	0	40	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	53	474	21	86	0	419	550	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.9	8.4		3.9	10.4	42.3	9.4	9.4		31.9	31.9	
Effective Green, g (s)	2.9	10.4		4.9	12.4	46.3	11.4	11.4		33.9	33.9	
Actuated g/C Ratio	0.04	0.14		0.07	0.17	0.64	0.16	0.16		0.47	0.47	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	73	262		124	332	1121	290	280		819	829	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.20	0.01	c0.05		0.24	c0.31	
v/s Ratio Perm						0.09						
v/c Ratio	0.29	0.41		0.34	0.16	0.42	0.07	0.31		0.51	0.66	
Uniform Delay, d1	33.8	28.3		32.3	25.7	6.5	26.1	27.1		13.6	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.0		1.6	0.2	0.3	0.1	0.6		0.5	2.0	
Delay (s)	36.0	29.3		33.9	25.9	6.8	26.2	27.7		14.1	17.0	
Level of Service	D	C		C	C	A	C	C		B	B	
Approach Delay (s)		30.3			9.3			27.5			15.7	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	238	388	322	170	631	150	404	1143	70	190	573	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	251	408	339	179	664	158	425	1203	74	200	603	191
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	251	408	339	179	664	158	425	1203	74	200	603	191
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	21.4	25.4	6.0	20.4	90.0	4.0	35.4	90.0	7.2	36.6	90.0
Effective Green, g (s)	8.0	24.4	31.4	7.0	23.4	90.0	7.0	38.4	90.0	8.2	39.6	90.0
Actuated g/C Ratio	0.09	0.27	0.35	0.08	0.26	1.00	0.08	0.43	1.00	0.09	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	318	1438	570	278	1379	1632	405	1575	1631	326	2335	1652
v/s Ratio Prot	c0.07	0.08	c0.05	0.05	0.13		c0.08	c0.33		c0.06	0.11	
v/s Ratio Perm			0.16			0.10			0.05			c0.12
v/c Ratio	0.79	0.28	0.59	0.64	0.48	0.10	1.05	0.76	0.05	0.61	0.26	0.12
Uniform Delay, d1	40.2	25.9	24.1	40.3	28.2	0.0	41.5	21.9	0.0	39.4	15.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.4	0.2	1.1	3.8	0.6	0.1	58.3	3.6	0.1	2.4	0.3	0.1
Delay (s)	51.5	26.1	25.2	44.1	28.7	0.1	99.8	25.5	0.1	41.8	16.2	0.1
Level of Service	D	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		32.2			27.0			42.9			18.3	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	900	810	1217	0	0	1326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	947	853	1281	0	0	1396
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	947	844	1281	0	0	1396
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	26.2	26.2	21.6			21.6
Effective Green, g (s)	27.3	27.3	22.7			22.7
Actuated g/C Ratio	0.49	0.49	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1729	1404	2130			2130
v/s Ratio Prot	0.27	c0.29	0.24			c0.27
v/s Ratio Perm						
v/c Ratio	0.55	0.60	0.60			0.66
Uniform Delay, d1	10.0	10.4	13.1			13.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	0.7	0.5			0.7
Delay (s)	10.4	11.1	13.6			14.2
Level of Service	B	B	B			B
Approach Delay (s)	10.7		13.6			14.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	500	0	788	0	0	0	0	1021	370	0	1576	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.96	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2837					5255	1575		5025	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2837					5255	1575		5025	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	526	0	829	0	0	0	0	1075	389	0	1659	684
RTOR Reduction (vph)	0	0	12	0	0	0	0	0	166	0	70	0
Lane Group Flow (vph)	526	0	817	0	0	0	0	1075	223	0	2273	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	30.4		30.4					41.5	41.5		41.5	
Effective Green, g (s)	31.5		31.5					42.6	42.6		42.6	
Actuated g/C Ratio	0.39		0.39					0.53	0.53		0.53	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1394		1115					2794	837		2672	
v/s Ratio Prot								0.20			c0.45	
v/s Ratio Perm	0.15		c0.29						0.14			
v/c Ratio	0.38		0.73					0.38	0.27		0.85	
Uniform Delay, d1	17.3		20.7					11.0	10.2		16.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		2.5					0.1	0.2		2.8	
Delay (s)	17.5		23.2					11.1	10.4		18.8	
Level of Service	B		C					B	B		B	
Approach Delay (s)		21.0			0.0			10.9			18.8	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	80.1	Sum of lost time (s)	7.1
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	203	40	515	30	560	133	357	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1750		1829	1925	2880	1829	5081		3547	3657	1577
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1750		1829	1925	2880	1829	5081		3547	3657	1577
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	214	42	542	32	589	140	376	337	11
RTOR Reduction (vph)	0	41	0	0	0	204	0	39	0	0	0	6
Lane Group Flow (vph)	11	85	0	214	42	338	32	690	0	376	337	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.9	12.3		12.5	23.9	41.5	2.3	22.0		11.6	31.3	31.3
Effective Green, g (s)	1.9	15.3		13.5	26.9	44.5	3.3	25.0		12.6	34.3	34.3
Actuated g/C Ratio	0.02	0.20		0.17	0.34	0.57	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	44	341		314	660	1634	76	1620		570	1599	689
v/s Ratio Prot	0.01	c0.05		c0.12	0.02	0.12	0.02	c0.14		c0.11	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.25	0.25		0.68	0.06	0.21	0.42	0.43		0.66	0.21	0.01
Uniform Delay, d1	37.6	26.7		30.4	17.3	8.3	36.6	21.0		30.9	13.7	12.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		4.8	0.0	0.0	1.4	0.4		2.1	0.1	0.0
Delay (s)	38.6	26.8		35.2	17.3	8.3	38.0	21.4		33.0	13.8	12.4
Level of Service	D	C		D	B	A	D	C		C	B	B
Approach Delay (s)		27.8			16.0			22.1			23.8	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	745	1784	0	581	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2789
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2789
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	784	1878	0	612	768
RTOR Reduction (vph)	0	0	0	0	0	8
Lane Group Flow (vph)	0	784	1878	0	612	760
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		29.1	29.1		18.9	18.9
Effective Green, g (s)		32.1	32.1		21.9	21.9
Actuated g/C Ratio		0.54	0.54		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2811	2811		1294	1017
v/s Ratio Prot		0.15	c0.36		0.17	
v/s Ratio Perm						c0.27
v/c Ratio		0.28	0.67		0.47	0.75
Uniform Delay, d1		7.6	10.1		14.6	16.6
Progression Factor		1.00	0.94		1.00	1.00
Incremental Delay, d2		0.2	0.9		0.3	3.0
Delay (s)		7.9	10.4		14.9	19.7
Level of Service		A	B		B	B
Approach Delay (s)		7.9	10.4		17.6	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1056	0	0	1590	660	706
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1112	0	0	1674	695	743
RTOR Reduction (vph)	0	0	0	0	0	88
Lane Group Flow (vph)	1112	0	0	1674	695	655
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	31.5			31.5	16.5	16.5
Effective Green, g (s)	34.5			34.5	19.5	19.5
Actuated g/C Ratio	0.58			0.58	0.32	0.32
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3021			2102	1152	936
v/s Ratio Prot	0.21			c0.46	0.20	c0.23
v/s Ratio Perm						
v/c Ratio	0.37			0.80	0.60	0.70
Uniform Delay, d1	6.9			10.0	17.0	17.7
Progression Factor	0.52			2.29	1.00	1.00
Incremental Delay, d2	0.3			2.2	0.9	2.4
Delay (s)	3.9			25.1	17.9	20.1
Level of Service	A			C	B	C
Approach Delay (s)	3.9			25.1	19.0	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	362	1380	20	20	2045	171	10	5	10	118	5	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1712			1837	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1712			1837	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	381	1453	21	21	2153	180	11	5	11	124	5	364
RTOR Reduction (vph)	0	1	0	0	0	63	0	11	0	0	0	49
Lane Group Flow (vph)	381	1473	0	21	2153	117	0	16	0	0	129	315
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	16.7	75.2		2.8	61.3	61.3		3.0			19.0	35.7
Effective Green, g (s)	17.7	78.2		3.8	64.3	64.3		5.0			21.0	39.7
Actuated g/C Ratio	0.15	0.65		0.03	0.54	0.54		0.04			0.18	0.33
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	523	3417		57	2815	876		71			321	541
v/s Ratio Prot	c0.11	0.28		0.01	c0.41			c0.01			0.07	c0.19
v/s Ratio Perm						0.07						
v/c Ratio	0.73	0.43		0.37	0.76	0.13		0.23			0.40	0.58
Uniform Delay, d1	48.9	10.1		56.9	21.9	13.9		55.6			43.9	33.3
Progression Factor	0.99	0.77		1.21	0.10	0.01		1.00			1.00	1.00
Incremental Delay, d2	4.5	0.4		1.9	1.0	0.2		1.7			0.8	1.6
Delay (s)	52.9	8.1		70.8	3.1	0.3		57.3			44.8	34.9
Level of Service	D	A		E	A	A		E			D	C
Approach Delay (s)		17.3			3.5			57.3			37.5	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	63	74	226	109	76	170
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	66	78	238	115	80	179
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	634	295			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634	295			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	90			93	
cM capacity (veh/h)	414	744			1206	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	144	353	259
Volume Left	66	0	80
Volume Right	78	115	0
cSH	544	1700	1206
Volume to Capacity	0.26	0.21	0.07
Queue Length 95th (ft)	26	0	5
Control Delay (s)	14.0	0.0	3.0
Lane LOS	B		A
Approach Delay (s)	14.0	0.0	3.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	459	0	10	528	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	483	0	11	556	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				883		
pX, platoon unblocked						
vC, conflicting volume			483		1060	483
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			483		1060	483
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1080		246	583

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	483	11	556	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1080	1700	583
Volume to Capacity	0.28	0.01	0.33	0.02
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.4	0.0	11.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		11.3
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	1253	88	30	1992	50	187	30	40	10	10	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1535		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.67	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1239		1278	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	182	1319	93	32	2097	53	197	32	42	11	11	57
RTOR Reduction (vph)	0	0	34	0	0	30	0	6	0	0	0	43
Lane Group Flow (vph)	182	1319	59	32	2097	23	0	265	0	11	11	14
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	72.6	72.6	4.2	49.2	49.2		28.2		28.2	28.2	28.2
Effective Green, g (s)	28.6	75.6	75.6	5.2	52.2	52.2		30.2		30.2	30.2	30.2
Actuated g/C Ratio	0.24	0.63	0.63	0.04	0.44	0.44		0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3310	1004	79	2285	700		311		321	484	404
v/s Ratio Prot	0.10	c0.25		0.02	c0.40						0.01	
v/s Ratio Perm			0.04			0.01		c0.21		0.01		0.01
v/c Ratio	0.42	0.40	0.06	0.41	0.92	0.03		0.85		0.03	0.02	0.04
Uniform Delay, d1	38.7	11.0	8.5	55.9	31.9	19.4		42.8		33.9	33.8	33.9
Progression Factor	0.86	0.72	0.81	0.91	1.12	1.87		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	2.7	6.0	0.1		19.6		0.0	0.0	0.0
Delay (s)	33.7	8.2	7.0	53.5	41.6	36.4		62.4		33.9	33.8	33.9
Level of Service	C	A	A	D	D	D		E		C	C	C
Approach Delay (s)		11.0			41.7			62.4			33.9	
Approach LOS		B			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	433	440	1170	0	0	1505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	456	463	1232	0	0	1584
RTOR Reduction (vph)	0	58	0	0	0	0
Lane Group Flow (vph)	456	405	1232	0	0	1584
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	16.6	16.6	31.4			31.4
Effective Green, g (s)	19.6	19.6	34.4			34.4
Actuated g/C Ratio	0.33	0.33	0.57			0.57
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1158	940	3012			2096
v/s Ratio Prot	0.13	c0.14	0.23			c0.43
v/s Ratio Perm						
v/c Ratio	0.39	0.43	0.41			0.76
Uniform Delay, d1	15.6	15.8	7.1			9.6
Progression Factor	1.00	1.00	1.05			1.00
Incremental Delay, d2	0.5	0.7	0.4			2.6
Delay (s)	16.1	16.5	7.8			12.2
Level of Service	B	B	A			B
Approach Delay (s)	16.3		7.8			12.2
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	650	1569	0	942	1388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	684	1652	0	992	1461	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	684	1651	0	992	1461	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.19	c0.57		0.19	c0.28	
v/s Ratio Perm						
v/c Ratio	0.33	0.98		0.60	0.88	
Uniform Delay, d1	6.5	12.2		17.3	19.4	
Progression Factor	1.00	1.00		1.08	0.81	
Incremental Delay, d2	0.0	17.8		1.4	5.3	
Delay (s)	6.5	30.0		20.0	21.0	
Level of Service	A	C		C	C	
Approach Delay (s)	23.1			20.0	21.0	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	101	74	148	113	222	116	831	160	812	1601	544
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3274		1829	1829	1554	1829	5255	1605	3547	5021	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3274		1829	1829	1554	1829	5255	1605	3547	5021	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	257	106	78	156	119	234	122	875	168	855	1685	573
RTOR Reduction (vph)	0	28	0	0	0	76	0	0	0	0	42	0
Lane Group Flow (vph)	136	277	0	156	119	158	122	875	168	855	2216	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.3	17.3		13.8	13.8	44.7	11.5	36.0	120.0	30.9	55.4	
Effective Green, g (s)	20.3	20.3		16.8	16.8	50.7	12.5	39.0	120.0	31.9	58.4	
Actuated g/C Ratio	0.17	0.17		0.14	0.14	0.42	0.10	0.32	1.00	0.27	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	281	553		256	256	656	190	1707	1605	942	2443	
v/s Ratio Prot	0.08	c0.08		c0.09	0.07	0.10	0.07	0.17		c0.24	c0.44	
v/s Ratio Perm									0.10			
v/c Ratio	0.48	0.50		0.61	0.46	0.24	0.64	0.51	0.10	0.91	0.91	
Uniform Delay, d1	45.1	45.2		48.5	47.5	22.3	51.6	32.8	0.0	42.6	28.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.28	0.52	1.00	1.00	1.01	
Incremental Delay, d2	0.5	0.3		2.8	0.5	0.1	5.3	1.1	0.1	4.9	2.4	
Delay (s)	45.6	45.5		51.3	48.0	22.3	71.4	18.2	0.1	47.5	31.0	
Level of Service	D	D		D	D	C	E	B	A	D	C	
Approach Delay (s)		45.5			37.2			21.1			35.5	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	5	100	30	10	10	150	303	20	10	249	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	5	105	32	11	11	158	319	21	11	262	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	8	105	42	11	158	340	11	278
Volume Left (vph)	3	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	16
Hadj (s)	0.22	-0.67	0.41	-0.67	0.53	-0.01	0.53	-0.01
Departure Headway (s)	6.7	5.8	6.9	5.9	5.8	5.3	6.1	5.5
Degree Utilization, x	0.02	0.17	0.08	0.02	0.26	0.50	0.02	0.43
Capacity (veh/h)	496	571	473	553	600	666	568	633
Control Delay (s)	8.6	8.7	9.3	7.8	9.6	12.2	8.0	11.4
Approach Delay (s)	8.7		9.0		11.4		11.3	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	10.9		
Level of Service	B		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	170	90	453	30	40	50	329	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1759		1829	1925	1619	1829	1750		1737	1753	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1759		1829	1925	1619	1829	1750		1737	1753	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	179	95	477	32	42	53	346	63	11
RTOR Reduction (vph)	0	18	0	0	0	192	0	44	0	0	1	0
Lane Group Flow (vph)	11	24	0	179	95	285	32	51	0	176	243	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	5.3		10.4	14.8	32.2	8.5	8.5		17.4	17.4	
Effective Green, g (s)	1.9	7.3		11.4	16.8	36.2	10.5	10.5		19.4	19.4	
Actuated g/C Ratio	0.03	0.12		0.19	0.28	0.60	0.17	0.17		0.32	0.32	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	57	211		344	533	1047	316	303		556	561	
v/s Ratio Prot	c0.01	0.01		c0.10	0.05	c0.09	0.02	c0.03		0.10	c0.14	
v/s Ratio Perm						0.09						
v/c Ratio	0.19	0.11		0.52	0.18	0.27	0.10	0.17		0.32	0.43	
Uniform Delay, d1	28.6	23.8		22.1	16.7	5.9	21.1	21.3		15.6	16.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2		1.4	0.2	0.1	0.1	0.3		0.3	0.5	
Delay (s)	30.3	24.0		23.6	16.8	6.0	21.2	21.6		15.9	16.8	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		25.3			11.6			21.5			16.4	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	747	352	130	1144	140	650	841	130	340	701	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	215	786	371	137	1204	147	684	885	137	358	738	252
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	215	786	371	137	1204	147	684	885	137	358	738	252
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.8	32.0	57.0	8.1	31.3	120.0	25.0	44.2	120.0	15.7	32.9	120.0
Effective Green, g (s)	9.8	35.0	63.0	9.1	34.3	120.0	28.0	47.2	120.0	16.7	35.9	120.0
Actuated g/C Ratio	0.08	0.29	0.52	0.08	0.29	1.00	0.23	0.39	1.00	0.14	0.30	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	289	1532	824	268	1502	1588	1203	1438	1593	493	1572	1588
v/s Ratio Prot	c0.06	0.15	0.11	0.04	c0.23		0.13	c0.24		c0.10	0.14	
v/s Ratio Perm			0.13			0.09			0.09			c0.16
v/c Ratio	0.74	0.51	0.45	0.51	0.80	0.09	0.57	0.62	0.09	0.73	0.47	0.16
Uniform Delay, d1	53.9	35.4	17.7	53.3	39.7	0.0	40.7	29.1	0.0	49.5	34.3	0.0
Progression Factor	0.75	0.89	0.53	1.33	0.98	1.00	0.63	0.48	1.00	0.64	0.59	1.00
Incremental Delay, d2	8.2	0.5	0.1	0.6	3.4	0.1	0.3	1.8	0.1	4.4	1.0	0.2
Delay (s)	48.4	32.1	9.6	71.8	42.2	0.1	26.0	15.7	0.1	36.3	21.2	0.2
Level of Service	D	C	A	E	D	A	C	B	A	D	C	A
Approach Delay (s)		28.6			40.8			18.6			21.3	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	370	430	380	320	70	450	1211	400	160	723	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	389	453	400	337	74	474	1275	421	168	761	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	168	389	453	400	337	74	474	1275	421	168	761	28
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.5	20.2	120.0	17.2	27.9	120.0	30.0	54.1	120.0	8.5	32.6	32.6
Effective Green, g (s)	10.5	23.2	120.0	18.2	30.9	120.0	31.0	57.1	120.0	9.5	35.6	35.6
Actuated g/C Ratio	0.09	0.19	1.00	0.15	0.26	1.00	0.26	0.48	1.00	0.08	0.30	0.30
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	310	707	1603	537	941	1613	916	2500	1615	280	1558	471
v/s Ratio Prot	0.05	c0.11		c0.11	0.09		0.13	c0.24		c0.05	c0.14	
v/s Ratio Perm			0.28			0.05			0.26			0.02
v/c Ratio	0.54	0.55	0.28	0.74	0.36	0.05	0.52	0.51	0.26	0.60	0.49	0.06
Uniform Delay, d1	52.4	43.7	0.0	48.7	36.4	0.0	38.1	21.8	0.0	53.4	34.7	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.55	1.00	0.85	0.65	1.00
Incremental Delay, d2	1.0	1.6	0.4	4.9	0.5	0.1	0.2	0.6	0.3	2.3	1.1	0.2
Delay (s)	53.5	45.3	0.4	53.6	36.9	0.1	25.8	12.6	0.3	47.8	23.7	30.5
Level of Service	D	D	A	D	D	A	C	B	A	D	C	C
Approach Delay (s)		26.5			41.8			13.1			28.3	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	364	50	30	1271	60	40	140	20	40	200	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3576		1829	5206		3547	3570		1829	4411	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3576		1829	5206		3547	3570		1829	4411	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	383	53	32	1338	63	42	147	21	42	211	234
RTOR Reduction (vph)	0	6	0	0	3	0	0	11	0	0	186	0
Lane Group Flow (vph)	172	430	0	32	1398	0	42	157	0	42	259	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.1	67.5		5.2	61.6		5.8	20.2		7.1	21.5	
Effective Green, g (s)	12.1	70.5		6.2	64.6		6.8	23.2		8.1	24.5	
Actuated g/C Ratio	0.10	0.59		0.05	0.54		0.06	0.19		0.07	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	357	2100		94	2802		200	690		123	900	
v/s Ratio Prot	c0.05	0.12		0.02	c0.27		0.01	0.04		c0.02	c0.06	
v/s Ratio Perm												
v/c Ratio	0.48	0.20		0.34	0.50		0.21	0.23		0.34	0.29	
Uniform Delay, d1	51.0	11.6		54.9	17.5		54.0	40.8		53.4	40.4	
Progression Factor	0.81	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.2		2.2	0.6		0.5	0.2		1.7	0.2	
Delay (s)	42.1	15.4		57.1	18.1		54.6	41.0		55.1	40.5	
Level of Service	D	B		E	B		D	D		E	D	
Approach Delay (s)		23.0			19.0			43.7			41.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	540	810	2365	0	0	1537
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	568	853	2489	0	0	1618
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	568	853	2489	0	0	1618
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.5	29.5	44.5			44.5
Effective Green, g (s)	30.6	30.6	45.6			45.6
Actuated g/C Ratio	0.37	0.37	0.55			0.55
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1320	1072	2915			2915
v/s Ratio Prot	0.16	c0.30	c0.47			0.31
v/s Ratio Perm						
v/c Ratio	0.43	0.80	0.85			0.56
Uniform Delay, d1	19.3	23.0	15.5			11.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	4.2	2.6			0.2
Delay (s)	19.5	27.2	18.1			12.0
Level of Service	B	C	B			B
Approach Delay (s)	24.1		18.1			12.0
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	770	0	452	0	0	0	0	2415	850	0	1617	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.97		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2839					5255	1583		5080	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2839					5255	1583		5080	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	811	0	476	0	0	0	0	2542	895	0	1702	484
RTOR Reduction (vph)	0	0	24	0	0	0	0	0	287	0	85	0
Lane Group Flow (vph)	811	0	452	0	0	0	0	2542	608	0	2101	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	16.7		16.7					32.1	32.1		32.1	
Effective Green, g (s)	17.8		17.8					33.2	33.2		33.2	
Actuated g/C Ratio	0.31		0.31					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1107		886					3060	922		2958	
v/s Ratio Prot								c0.48			0.41	
v/s Ratio Perm	c0.23		0.16						0.38			
v/c Ratio	0.73		0.51					0.83	0.66		0.71	
Uniform Delay, d1	17.5		16.0					9.6	8.1		8.5	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		0.5					2.0	1.7		0.8	
Delay (s)	20.0		16.5					11.7	9.8		9.3	
Level of Service	C		B					B	A		A	
Approach Delay (s)		18.7			0.0			11.2			9.3	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	7.1
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	80	60	107	60	502	30	460	88	537	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1776		1829	1925	2880	1829	5109		3547	3657	1578
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1776		1829	1925	2880	1829	5109		3547	3657	1578
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	84	63	113	63	528	32	484	93	565	589	32
RTOR Reduction (vph)	0	31	0	0	0	240	0	29	0	0	0	18
Lane Group Flow (vph)	32	116	0	113	63	288	32	548	0	565	589	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	2.2	14.4		6.8	19.0	37.0	2.2	20.2		12.0	30.0	30.0
Effective Green, g (s)	3.2	17.4		7.8	22.0	40.0	3.2	23.2		13.0	33.0	33.0
Actuated g/C Ratio	0.04	0.24		0.11	0.30	0.54	0.04	0.32		0.18	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	79	421		194	576	1569	79	1614		628	1644	709
v/s Ratio Prot	0.02	c0.07		c0.06	0.03	0.10	0.02	0.11		c0.16	c0.16	
v/s Ratio Perm												0.01
v/c Ratio	0.41	0.28		0.58	0.11	0.18	0.41	0.34		0.90	0.36	0.02
Uniform Delay, d1	34.2	22.9		31.2	18.6	8.4	34.2	19.2		29.6	13.3	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		2.9	0.0	0.0	1.2	0.3		15.4	0.3	0.0
Delay (s)	35.4	23.0		34.1	18.6	8.5	35.4	19.5		44.9	13.5	11.2
Level of Service	D	C		C	B	A	D	B		D	B	B
Approach Delay (s)		25.2			13.5			20.3			28.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2312	1381	0	857	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2793
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2793
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2434	1454	0	902	463
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	2434	1454	0	902	449
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		27.6	27.6		20.4	20.4
Effective Green, g (s)		30.6	30.6		23.4	23.4
Actuated g/C Ratio		0.51	0.51		0.39	0.39
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2680	2680		1383	1089
v/s Ratio Prot		c0.46	0.28		c0.25	
v/s Ratio Perm						0.16
v/c Ratio		0.91	0.54		0.65	0.41
Uniform Delay, d1		13.4	10.0		15.0	13.3
Progression Factor		1.17	1.22		1.00	1.00
Incremental Delay, d2		3.6	0.6		1.1	0.3
Delay (s)		19.3	12.7		16.1	13.6
Level of Service		B	B		B	B
Approach Delay (s)		19.3	12.7		15.2	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	143.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2279	0	0	1888	320	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2399	0	0	1987	337	539
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	2399	0	0	1987	337	525
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	83.5			83.5	24.5	24.5
Effective Green, g (s)	86.5			86.5	27.5	27.5
Actuated g/C Ratio	0.72			0.72	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3787			2636	812	660
v/s Ratio Prot	0.46			c0.54	0.09	c0.18
v/s Ratio Perm						
v/c Ratio	0.63			0.75	0.42	0.80
Uniform Delay, d1	8.6			10.2	39.4	43.6
Progression Factor	1.18			2.19	1.00	1.00
Incremental Delay, d2	0.5			0.2	0.3	6.6
Delay (s)	10.6			22.6	39.7	50.2
Level of Service	B			C	D	D
Approach Delay (s)	10.6			22.6	46.2	
Approach LOS	B			C	D	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	1933	30	20	2017	385	20	5	20	346	5	883
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5243		1829	5255	1636		1704			1834	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5243		1829	5255	1636		1704			1834	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	872	2035	32	21	2123	405	21	5	21	364	5	929
RTOR Reduction (vph)	0	1	0	0	0	104	0	20	0	0	0	38
Lane Group Flow (vph)	872	2066	0	21	2123	301	0	27	0	0	369	891
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	26.0	65.2		2.8	42.0	42.0		4.0			28.0	54.0
Effective Green, g (s)	27.0	68.2		3.8	45.0	45.0		6.0			30.0	58.0
Actuated g/C Ratio	0.22	0.57		0.03	0.38	0.38		0.05			0.25	0.48
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	798	2979		57	1970	613		85			458	790
v/s Ratio Prot	0.25	0.39		0.01	c0.40			c0.02			0.20	c0.54
v/s Ratio Perm						0.18						
v/c Ratio	1.09	0.69		0.37	1.08	0.49		0.32			0.81	1.13
Uniform Delay, d1	46.5	18.5		56.9	37.5	28.7		55.0			42.3	31.0
Progression Factor	0.97	1.61		0.59	1.50	2.14		1.00			1.00	1.00
Incremental Delay, d2	56.4	1.0		2.7	42.1	1.9		2.2			9.9	73.4
Delay (s)	101.6	30.8		36.1	98.5	63.2		57.2			52.2	104.4
Level of Service	F	C		D	F	E		E			D	F
Approach Delay (s)		51.8			92.4			57.2			89.6	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	74.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	194	138	334	142	122	355
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	204	145	352	149	128	374
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1057	426			501	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1057	426			501	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	7	77			88	
cM capacity (veh/h)	219	628			1063	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	349	501	502
Volume Left	204	0	128
Volume Right	145	149	0
cSH	300	1700	1063
Volume to Capacity	1.16	0.29	0.12
Queue Length 95th (ft)	373	0	10
Control Delay (s)	141.0	0.0	3.3
Lane LOS	F		A
Approach Delay (s)	141.0	0.0	3.3
Approach LOS	F		

Intersection Summary			
Average Delay	37.6		
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1174	10	35	1183	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1236	11	37	1245	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1025		
pX, platoon unblocked						
vC, conflicting volume			1246		2560	1241
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1246		2560	1241
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		61	70
cM capacity (veh/h)			558		27	213

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1246	37	1245	74
Volume Left	0	37	0	11
Volume Right	11	0	0	63
cSH	1700	558	1700	108
Volume to Capacity	0.73	0.07	0.73	0.68
Queue Length 95th (ft)	0	5	0	89
Control Delay (s)	0.0	11.9	0.0	91.3
Lane LOS		B		F
Approach Delay (s)	0.0	0.3		91.3
Approach LOS				F

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	2008	237	40	2060	10	120	20	40	50	30	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1524		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1229		1253	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	2114	249	42	2168	11	126	21	42	53	32	261
RTOR Reduction (vph)	0	0	55	0	0	5	0	9	0	0	0	206
Lane Group Flow (vph)	51	2114	194	42	2168	6	0	180	0	53	32	55
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	75.9	75.9	5.8	60.9	60.9		23.3		23.3	23.3	23.3
Effective Green, g (s)	21.8	78.9	78.9	6.8	63.9	63.9		25.3		25.3	25.3	25.3
Actuated g/C Ratio	0.18	0.66	0.66	0.06	0.53	0.53		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3455	1048	103	2798	857		259		264	405	338
v/s Ratio Prot	0.03	c0.40		0.02	c0.41						0.02	
v/s Ratio Perm			0.12			0.00		c0.15		0.04		0.03
v/c Ratio	0.15	0.61	0.18	0.41	0.77	0.01		0.69		0.20	0.08	0.16
Uniform Delay, d1	41.3	11.8	8.0	54.7	22.3	13.2		43.8		39.0	38.0	38.7
Progression Factor	1.23	1.57	2.03	1.21	1.31	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	0.3	1.8	1.5	0.0		7.8		0.4	0.1	0.2
Delay (s)	51.0	19.1	16.6	67.9	30.6	13.2		51.6		39.4	38.1	38.9
Level of Service	D	B	B	E	C	B		D		D	D	D
Approach Delay (s)		19.5			31.2			51.6			38.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	323	620	2240	0	0	1293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	340	653	2358	0	0	1361
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	340	650	2358	0	0	1361
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	17.7	17.7	30.3			30.3
Effective Green, g (s)	20.7	20.7	33.3			33.3
Actuated g/C Ratio	0.34	0.34	0.55			0.55
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1223	993	2916			2029
v/s Ratio Prot	0.10	c0.23	c0.45			0.37
v/s Ratio Perm						
v/c Ratio	0.28	0.65	0.81			0.67
Uniform Delay, d1	14.2	16.6	10.8			9.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.3	2.1	2.5			1.8
Delay (s)	14.5	18.7	13.3			11.2
Level of Service	B	B	B			B
Approach Delay (s)	17.3		13.3			11.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1130	872	0	2178	1116	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1189	918	0	2293	1175	0
RTOR Reduction (vph)	0	47	0	0	0	0
Lane Group Flow (vph)	1189	871	0	2293	1175	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	14.0	14.0		19.0	19.0	
Effective Green, g (s)	17.0	17.0		22.0	22.0	
Actuated g/C Ratio	0.38	0.38		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1339	1088		2569	2569	
v/s Ratio Prot	c0.34	0.30		c0.44	0.22	
v/s Ratio Perm						
v/c Ratio	0.89	0.80		0.89	0.46	
Uniform Delay, d1	13.1	12.5		10.4	7.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.3	4.1		5.3	0.6	
Delay (s)	20.4	16.5		15.7	8.2	
Level of Service	C	B		B	A	
Approach Delay (s)	18.7			15.7	8.2	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	115.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	705	256	145	198	179	754	163	1097	180	465	983	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3301		1829	1688	1554	1829	5255	1605	3547	4929	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3301		1829	1688	1554	1829	5255	1605	3547	4929	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	742	269	153	208	188	794	172	1155	189	489	1035	568
RTOR Reduction (vph)	0	17	0	0	32	72	0	0	0	0	79	0
Lane Group Flow (vph)	386	762	0	208	355	523	172	1155	189	489	1524	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	27.0	27.0		19.0	19.0	45.0	14.3	30.0	120.0	22.0	37.7	
Effective Green, g (s)	30.0	30.0		22.0	22.0	47.0	15.3	33.0	120.0	23.0	40.7	
Actuated g/C Ratio	0.25	0.25		0.18	0.18	0.39	0.13	0.28	1.00	0.19	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	416	825		335	309	608	233	1445	1605	679	1671	
v/s Ratio Prot	c0.23	0.23		0.11	c0.21	0.34	0.09	c0.22		0.14	c0.31	
v/s Ratio Perm									0.12			
v/c Ratio	0.93	0.92		0.62	1.15	0.86	0.74	0.80	0.12	0.72	0.91	
Uniform Delay, d1	43.9	43.9		45.2	49.0	33.5	50.4	40.4	0.0	45.5	37.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.11	0.72	1.00	1.00	1.00	
Incremental Delay, d2	26.3	15.5		2.6	98.0	11.5	9.8	4.6	0.1	3.2	9.1	
Delay (s)	70.3	59.4		47.7	147.0	45.0	65.9	33.5	0.1	48.7	47.0	
Level of Service	E	E		D	F	D	E	C	A	D	D	
Approach Delay (s)		63.0			78.7			33.0			47.4	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	10	170	150	10	20	150	412	90	20	415	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	11	179	158	11	21	158	434	95	21	437	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	34	179	168	21	158	528	21	457
Volume Left (vph)	23	0	158	0	158	0	21	0
Volume Right (vph)	0	179	0	21	0	95	0	20
Hadj (s)	0.38	-0.67	0.50	-0.67	0.53	-0.09	0.53	0.00
Departure Headway (s)	8.5	7.5	8.6	7.5	7.4	6.8	7.7	7.1
Degree Utilization, x	0.08	0.37	0.40	0.04	0.33	1.00	0.04	0.90
Capacity (veh/h)	404	459	400	456	475	528	458	500
Control Delay (s)	11.1	13.6	16.1	9.6	12.7	62.9	9.8	45.3
Approach Delay (s)	13.2		15.4		51.4		43.7	
Approach LOS	B		C		F		E	

Intersection Summary			
Delay	39.5		
Level of Service	E		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	110	40	40	120	602	10	60	200	685	100	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1829	1836		1829	1925	1621	1829	1684		1737	1756	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1829	1836		1829	1925	1621	1829	1684		1737	1756	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	116	42	42	126	634	11	63	211	721	105	11
RTOR Reduction (vph)	0	13	0	0	0	252	0	136	0	0	1	0
Lane Group Flow (vph)	11	145	0	42	126	382	11	138	0	397	439	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	13.2		3.4	15.6	39.1	12.4	12.4		23.5	23.5	
Effective Green, g (s)	2.0	15.2		4.4	17.6	43.1	14.4	14.4		25.5	25.5	
Actuated g/C Ratio	0.03	0.21		0.06	0.25	0.60	0.20	0.20		0.36	0.36	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	390		112	473	1045	368	339		619	626	
v/s Ratio Prot	0.01	0.08		c0.02	0.07	c0.13	0.01	c0.08		0.23	c0.25	
v/s Ratio Perm						0.11						
v/c Ratio	0.22	0.37		0.38	0.27	0.37	0.03	0.41		0.64	0.70	
Uniform Delay, d1	34.0	24.1		32.2	21.7	7.2	22.9	24.8		19.2	19.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.6		2.1	0.3	0.2	0.0	0.8		2.3	3.6	
Delay (s)	36.1	24.7		34.3	22.0	7.5	23.0	25.6		21.5	23.3	
Level of Service	D	C		C	C	A	C	C		C	C	
Approach Delay (s)		25.4			11.2			25.5			22.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	71.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	1240	616	180	1174	150	691	801	90	260	901	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	256	1305	648	189	1236	158	727	843	95	274	948	257
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	256	1305	648	189	1236	158	727	843	95	274	948	257
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	12.5	33.3	53.3	10.1	30.9	120.0	20.0	43.3	120.0	13.3	35.6	120.0
Effective Green, g (s)	13.5	36.3	57.3	11.1	33.9	120.0	22.0	46.3	120.0	14.3	38.6	120.0
Actuated g/C Ratio	0.11	0.30	0.48	0.09	0.28	1.00	0.18	0.39	1.00	0.12	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	399	1589	785	328	1484	1588	945	1410	1593	422	1690	1588
v/s Ratio Prot	0.07	c0.25	c0.15	0.05	c0.24		0.14	0.23		c0.08	c0.18	
v/s Ratio Perm			0.26			0.10			0.06			0.16
v/c Ratio	0.64	0.82	0.83	0.58	0.83	0.10	0.77	0.60	0.06	0.65	0.56	0.16
Uniform Delay, d1	50.9	38.8	27.0	52.2	40.4	0.0	46.6	29.4	0.0	50.5	33.7	0.0
Progression Factor	1.45	1.09	1.27	0.92	0.90	1.00	0.75	0.62	1.00	1.44	0.94	1.00
Incremental Delay, d2	2.1	3.3	5.5	1.5	4.5	0.1	3.4	1.8	0.1	2.5	1.3	0.2
Delay (s)	75.8	45.5	39.8	49.5	40.9	0.1	38.5	20.0	0.1	75.3	32.9	0.2
Level of Service	E	D	D	D	D	A	D	B	A	E	C	A
Approach Delay (s)		47.3			37.9			26.9			35.0	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	240	597	600	280	140	370	862	340	120	1377	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	253	628	632	295	147	389	907	358	126	1449	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	125	253	628	632	295	147	389	907	358	126	1449	36
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.8	17.9	120.0	23.8	34.9	120.0	16.0	51.5	120.0	6.8	42.3	42.3
Effective Green, g (s)	7.8	20.9	120.0	24.8	37.9	120.0	17.0	54.5	120.0	7.8	45.3	45.3
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.14	0.45	1.00	0.06	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	230	636	1603	733	1155	1613	502	2386	1615	230	1983	599
v/s Ratio Prot	0.04	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.28	
v/s Ratio Perm			c0.39			0.09			0.22			0.02
v/c Ratio	0.54	0.40	0.39	0.86	0.26	0.09	0.77	0.38	0.22	0.55	0.73	0.06
Uniform Delay, d1	54.4	44.0	0.0	46.0	30.5	0.0	49.7	21.6	0.0	54.4	32.1	23.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.28	1.60	1.00	1.07	0.71	1.00
Incremental Delay, d2	1.4	0.9	0.7	9.9	0.2	0.1	6.5	0.4	0.3	1.4	2.3	0.2
Delay (s)	55.8	44.8	0.7	55.9	30.8	0.1	70.2	35.0	0.3	59.4	25.2	24.0
Level of Service	E	D	A	E	C	A	E	C	A	E	C	C
Approach Delay (s)		18.7			41.3			35.8			27.7	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	1291	30	20	597	40	70	180	20	60	270	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3642		1829	5187		3547	3587		1829	4427	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3642		1829	5187		3547	3587		1829	4427	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	1359	32	21	628	42	74	189	21	63	284	302
RTOR Reduction (vph)	0	1	0	0	5	0	0	8	0	0	178	0
Lane Group Flow (vph)	263	1390	0	21	665	0	74	202	0	63	408	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.2	67.3		3.3	56.4		6.7	21.5		7.9	22.7	
Effective Green, g (s)	15.2	70.3		4.3	59.4		7.7	24.5		8.9	25.7	
Actuated g/C Ratio	0.13	0.59		0.04	0.49		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	449	2133		65	2567		227	732		135	948	
v/s Ratio Prot	c0.07	c0.38		0.01	0.13		0.02	0.06		c0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.59	0.65		0.32	0.26		0.33	0.28		0.47	0.43	
Uniform Delay, d1	49.4	16.6		56.4	17.6		53.7	40.3		53.3	40.8	
Progression Factor	1.26	0.40		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.3		2.9	0.2		0.8	0.2		2.5	0.3	
Delay (s)	63.7	8.0		59.3	17.8		54.5	40.5		55.8	41.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.8			19.1			44.1			42.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1215	1206	0	578	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1279	1269	0	608	663
RTOR Reduction (vph)	0	0	0	0	0	43
Lane Group Flow (vph)	0	1279	1269	0	608	620
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		30.7	30.7		17.3	17.3
Effective Green, g (s)		33.7	33.7		20.3	20.3
Actuated g/C Ratio		0.56	0.56		0.34	0.34
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2980	2980		1212	983
v/s Ratio Prot		c0.24	0.24		0.17	
v/s Ratio Perm						c0.21
v/c Ratio		0.43	0.43		0.50	0.63
Uniform Delay, d1		7.6	7.6		15.8	16.7
Progression Factor		1.00	0.71		1.00	1.00
Incremental Delay, d2		0.5	0.4		0.3	1.3
Delay (s)		8.0	5.7		16.1	18.0
Level of Service		A	A		B	B
Approach Delay (s)		8.0	5.7		17.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1183	0	0	1339	330	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1245	0	0	1409	347	389
RTOR Reduction (vph)	0	0	0	0	0	69
Lane Group Flow (vph)	1245	0	0	1409	347	320
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	36.3			36.3	11.7	11.7
Effective Green, g (s)	39.3			39.3	14.7	14.7
Actuated g/C Ratio	0.65			0.65	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3476			2418	877	712
v/s Ratio Prot	0.23			c0.38	0.10	c0.11
v/s Ratio Perm						
v/c Ratio	0.36			0.58	0.40	0.45
Uniform Delay, d1	4.7			5.8	18.9	19.2
Progression Factor	0.94			1.00	1.00	1.00
Incremental Delay, d2	0.3			1.0	0.3	0.5
Delay (s)	4.7			6.8	19.2	19.7
Level of Service	A			A	B	B
Approach Delay (s)	4.7			6.8	19.5	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	799	734	20	10	1179	389	30	10	10	385	10	786
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5282		1847	5307	1607		1817			1854	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5282		1847	5307	1607		1817			1854	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	841	773	21	11	1241	409	32	11	11	405	11	827
RTOR Reduction (vph)	0	3	0	0	0	287	0	10	0	0	0	76
Lane Group Flow (vph)	841	791	0	11	1241	122	0	44	0	0	416	751
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	19.5	34.6		1.4	16.5	16.5		3.0			16.0	35.5
Effective Green, g (s)	20.5	37.6		2.4	19.5	19.5		5.0			18.0	39.5
Actuated g/C Ratio	0.27	0.50		0.03	0.26	0.26		0.07			0.24	0.53
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	979	2648		59	1379	417		121			444	870
v/s Ratio Prot	0.23	0.15		0.01	c0.23			c0.02			c0.22	c0.45
v/s Ratio Perm						0.08						
v/c Ratio	0.86	0.30		0.19	0.90	0.29		0.36			0.94	0.86
Uniform Delay, d1	25.9	11.0		35.3	26.8	22.2		33.5			27.9	15.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	7.6	0.3		1.5	9.7	1.8		1.8			27.3	8.8
Delay (s)	33.5	11.3		36.9	36.5	24.0		35.3			55.2	24.2
Level of Service	C	B		D	D	C		D			E	C
Approach Delay (s)		22.7			33.4			35.3			34.6	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	71	171	208	68	140	291
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	75	180	219	72	147	306
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	856	255			291	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	856	255			291	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	74	77			88	
cM capacity (veh/h)	290	784			1271	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	255	291	454
Volume Left	75	0	147
Volume Right	180	72	0
cSH	523	1700	1271
Volume to Capacity	0.49	0.17	0.12
Queue Length 95th (ft)	66	0	10
Control Delay (s)	18.2	0.0	3.4
Lane LOS	C		A
Approach Delay (s)	18.2	0.0	3.4
Approach LOS	C		

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1161	10	10	1188	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1222	11	11	1251	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1233		2499	1227
vC1, stage 1 conf vol					1227	
vC2, stage 2 conf vol					1272	
vCu, unblocked vol			1233		2499	1227
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	90
cM capacity (veh/h)			565		184	217

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1233	11	1251	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	565	1700	205
Volume to Capacity	0.73	0.02	0.74	0.15
Queue Length 95th (ft)	0	1	0	13
Control Delay (s)	0.0	11.5	0.0	25.7
Lane LOS		B		D
Approach Delay (s)	0.0	0.1		25.7
Approach LOS				D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	620	193	186	201	176	340	237	1207	210	421	528	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3297		1847	1847	1570	1847	5307	1627	3583	4839	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3297		1847	1847	1570	1847	5307	1627	3583	4839	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	653	203	196	212	185	358	249	1271	221	443	556	615
RTOR Reduction (vph)	0	32	0	0	0	56	0	0	0	0	156	0
Lane Group Flow (vph)	353	667	0	212	185	302	249	1271	221	443	1015	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	27.1	27.1		15.5	15.5	31.6	18.3	39.3	120.0	16.1	37.1	
Effective Green, g (s)	30.1	30.1		18.5	18.5	37.6	19.3	42.3	120.0	17.1	40.1	
Actuated g/C Ratio	0.25	0.25		0.15	0.15	0.31	0.16	0.35	1.00	0.14	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	421	826		284	284	491	297	1870	1627	510	1617	
v/s Ratio Prot	c0.21	0.20		c0.11	0.10	0.19	0.13	c0.24		c0.12	0.21	
v/s Ratio Perm									c0.14			
v/c Ratio	0.84	0.81		0.75	0.65	0.61	0.84	0.68	0.14	0.87	0.88dr	
Uniform Delay, d1	42.6	42.2		48.5	47.7	35.0	48.8	33.1	0.0	50.4	33.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.34	0.73	1.00	1.00	0.99	
Incremental Delay, d2	13.1	5.5		9.0	4.0	1.6	17.4	2.0	0.2	14.1	1.9	
Delay (s)	55.7	47.7		57.5	51.8	36.6	82.7	26.1	0.2	64.5	35.0	
Level of Service	E	D		E	D	D	F	C	A	E	D	
Approach Delay (s)		50.4			46.2			30.9			43.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	32	40	240	240	80	40	260	337	140	30	399	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	34	42	253	253	84	42	274	355	147	32	420	34

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	76	253	337	42	274	502	32	454
Volume Left (vph)	34	0	253	0	274	0	32	0
Volume Right (vph)	0	253	0	42	0	147	0	34
Hadj (s)	0.24	-0.68	0.39	-0.68	0.52	-0.19	0.52	-0.03
Departure Headway (s)	9.3	8.4	9.2	8.1	8.9	8.2	9.0	8.5
Degree Utilization, x	0.20	0.59	0.86	0.10	0.68	1.0	0.08	1.0
Capacity (veh/h)	378	412	384	433	396	442	388	427
Control Delay (s)	13.4	21.8	46.8	10.8	27.3	115.3	11.6	91.8
Approach Delay (s)	19.9		42.8		84.3		86.6	
Approach LOS	C		E		F		F	

Intersection Summary			
Delay	66.1		
Level of Service	F		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	50	707	20	60	60	789	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1831		1847	1944	1652	1847	1784		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1831		1847	1944	1652	1847	1784		1754	1776	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	53	744	21	63	63	831	137	11
RTOR Reduction (vph)	0	19	0	0	0	269	0	40	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	53	475	21	86	0	424	554	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.9	8.4		3.9	10.4	42.5	9.4	9.4		32.1	32.1	
Effective Green, g (s)	2.9	10.4		4.9	12.4	46.5	11.4	11.4		34.1	34.1	
Actuated g/C Ratio	0.04	0.14		0.07	0.17	0.64	0.16	0.16		0.47	0.47	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	73	261		124	331	1123	289	279		821	831	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.20	0.01	c0.05		0.24	c0.31	
v/s Ratio Perm						0.09						
v/c Ratio	0.29	0.41		0.34	0.16	0.42	0.07	0.31		0.52	0.67	
Uniform Delay, d1	33.9	28.4		32.4	25.8	6.5	26.2	27.2		13.6	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.1		1.6	0.2	0.3	0.1	0.6		0.6	2.0	
Delay (s)	36.1	29.5		34.0	26.0	6.8	26.3	27.8		14.1	17.0	
Level of Service	D	C		C	C	A	C	C		B	B	
Approach Delay (s)		30.4			9.3			27.6			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	423	339	170	661	150	420	1143	70	190	573	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	305	445	357	179	696	158	442	1203	74	200	603	251
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	305	445	357	179	696	158	442	1203	74	200	603	251
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	21.7	25.7	6.0	20.7	90.0	4.0	35.1	90.0	7.2	36.3	90.0
Effective Green, g (s)	8.0	24.7	31.7	7.0	23.7	90.0	7.0	38.1	90.0	8.2	39.3	90.0
Actuated g/C Ratio	0.09	0.27	0.35	0.08	0.26	1.00	0.08	0.42	1.00	0.09	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	318	1456	576	278	1397	1632	405	1563	1631	326	2317	1652
v/s Ratio Prot	c0.09	0.08	c0.05	0.05	0.13		c0.08	c0.33		c0.06	0.11	
v/s Ratio Perm			0.17			0.10			0.05			c0.15
v/c Ratio	0.96	0.31	0.62	0.64	0.50	0.10	1.09	0.77	0.05	0.61	0.26	0.15
Uniform Delay, d1	40.8	25.9	24.2	40.3	28.1	0.0	41.5	22.2	0.0	39.4	16.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.8	0.3	1.4	3.8	0.6	0.1	71.6	3.7	0.1	2.4	0.3	0.2
Delay (s)	79.7	26.1	25.6	44.1	28.7	0.1	113.1	25.9	0.1	41.8	16.4	0.2
Level of Service	E	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		40.7			27.0			47.2			17.3	
Approach LOS		D			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	910	860	1510	0	0	1650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	958	905	1589	0	0	1737
RTOR Reduction (vph)	0	8	0	0	0	0
Lane Group Flow (vph)	958	897	1589	0	0	1737
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	21.4	21.4	22.1			22.1
Effective Green, g (s)	22.5	22.5	23.2			23.2
Actuated g/C Ratio	0.44	0.44	0.45			0.45
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1543	1253	2358			2358
v/s Ratio Prot	0.27	c0.31	0.30			c0.33
v/s Ratio Perm						
v/c Ratio	0.62	0.72	0.67			0.74
Uniform Delay, d1	11.3	12.0	11.3			11.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.8	2.0	0.8			1.2
Delay (s)	12.1	13.9	12.0			13.0
Level of Service	B	B	B			B
Approach Delay (s)	13.0		12.0			13.0
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	6.0
Intersection Capacity Utilization	108.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	590	0	960	0	0	0	0	1210	380	0	1570	880
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		0.99					1.00	0.97		1.00	1.00
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3547		2839					3657	2786		3657	1636
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3547		2839					3657	2786		3657	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	621	0	1011	0	0	0	0	1274	400	0	1653	926
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	181	0	0	454
Lane Group Flow (vph)	621	0	996	0	0	0	0	1274	219	0	1653	472
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	21.6		21.6					29.0	29.0		29.0	29.0
Effective Green, g (s)	22.7		22.7					30.1	30.1		30.1	30.0
Actuated g/C Ratio	0.39		0.39					0.51	0.51		0.51	0.51
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1369		1096					1872	1426		1872	834
v/s Ratio Prot								0.35			c0.45	
v/s Ratio Perm	0.18		c0.35						0.08			0.29
v/c Ratio	0.45		0.91					0.68	0.15		0.88	0.57
Uniform Delay, d1	13.4		17.1					10.7	7.6		12.8	9.9
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2		10.9					1.0	0.1		5.3	0.9
Delay (s)	13.7		28.0					11.8	7.7		18.1	10.8
Level of Service	B		C					B	A		B	B
Approach Delay (s)		22.5			0.0			10.8			15.5	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	7.1
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	200	40	510	50	730	150	470	510	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1748		1829	1925	2880	1829	5099		3547	3657	1576
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1748		1829	1925	2880	1829	5099		3547	3657	1576
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	211	42	537	53	768	158	495	537	11
RTOR Reduction (vph)	0	39	0	0	0	156	0	31	0	0	0	6
Lane Group Flow (vph)	11	87	0	211	42	381	53	895	0	495	537	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	1.0	16.1		11.9	27.0	47.7	3.7	22.8		14.7	33.8	33.8
Effective Green, g (s)	2.0	19.1		12.9	30.0	50.7	4.7	25.8		15.7	36.8	36.8
Actuated g/C Ratio	0.02	0.22		0.15	0.35	0.59	0.05	0.30		0.18	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	42	390		275	675	1707	100	1538		651	1574	678
v/s Ratio Prot	0.01	0.05		c0.12	0.02	c0.13	0.03	c0.18		c0.14	0.15	
v/s Ratio Perm												0.00
v/c Ratio	0.26	0.22		0.77	0.06	0.22	0.53	0.58		0.76	0.34	0.01
Uniform Delay, d1	41.0	27.1		34.9	18.4	8.2	39.3	25.3		33.1	16.3	13.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		10.9	0.0	0.0	2.7	0.9		4.7	0.3	0.0
Delay (s)	42.2	27.2		45.8	18.4	8.2	42.0	26.2		37.8	16.5	13.9
Level of Service	D	C		D	B	A	D	C		D	B	B
Approach Delay (s)		28.4			18.8			27.0			26.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	850	1660	0	600	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2792
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2792
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	895	1747	0	632	789
RTOR Reduction (vph)	0	0	0	0	0	8
Lane Group Flow (vph)	0	895	1747	0	632	781
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		27.8	27.8		20.2	20.2
Effective Green, g (s)		30.8	30.8		23.2	23.2
Actuated g/C Ratio		0.51	0.51		0.39	0.39
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2697	2697		1371	1079
v/s Ratio Prot		0.17	c0.33		0.18	
v/s Ratio Perm						c0.28
v/c Ratio		0.33	0.65		0.46	0.72
Uniform Delay, d1		8.6	10.6		13.7	15.7
Progression Factor		1.00	0.88		1.00	1.00
Incremental Delay, d2		0.3	0.9		0.2	2.4
Delay (s)		8.9	10.3		14.0	18.1
Level of Service		A	B		B	B
Approach Delay (s)		8.9	10.3		16.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1160	0	0	1460	660	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1221	0	0	1537	695	705
RTOR Reduction (vph)	0	0	0	0	0	90
Lane Group Flow (vph)	1221	0	0	1537	695	615
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	33.5			33.5	14.5	14.5
Effective Green, g (s)	36.5			36.5	17.5	17.5
Actuated g/C Ratio	0.61			0.61	0.29	0.29
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3196			2224	1034	840
v/s Ratio Prot	0.23			c0.42	0.20	c0.21
v/s Ratio Perm						
v/c Ratio	0.38			0.69	0.67	0.73
Uniform Delay, d1	6.0			7.9	18.7	19.1
Progression Factor	0.68			1.15	1.00	1.00
Incremental Delay, d2	0.3			1.4	1.7	3.3
Delay (s)	4.4			10.6	20.5	22.5
Level of Service	A			B	C	C
Approach Delay (s)	4.4			10.6	21.5	
Approach LOS	A			B	C	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	1500	20	20	2030	210	10	5	10	50	10	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1738			1822	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.90			0.77	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1602			1460	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	326	1579	21	21	2137	221	11	5	11	53	11	232
RTOR Reduction (vph)	0	1	0	0	0	41	0	9	0	0	0	55
Lane Group Flow (vph)	326	1599	0	21	2137	180	0	18	0	0	64	177
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	16.3	84.8		3.6	72.1	72.1		16.6			16.6	37.9
Effective Green, g (s)	17.3	87.8		4.6	75.1	75.1		18.6			18.6	39.9
Actuated g/C Ratio	0.14	0.73		0.04	0.63	0.63		0.16			0.16	0.33
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	511	3836		70	3288	1023		248			226	543
v/s Ratio Prot	c0.09	0.30		0.01	c0.41							c0.11
v/s Ratio Perm						0.11		0.01			0.04	
v/c Ratio	0.64	0.42		0.30	0.65	0.18		0.07			0.28	0.33
Uniform Delay, d1	48.4	6.2		56.1	14.2	9.4		43.3			44.8	30.0
Progression Factor	0.98	0.96		0.59	0.28	0.30		1.00			1.00	1.00
Incremental Delay, d2	2.3	0.3		1.5	0.6	0.2		0.1			0.7	0.4
Delay (s)	49.8	6.2		34.6	4.6	3.0		43.4			45.5	30.3
Level of Service	D	A		C	A	A		D			D	C
Approach Delay (s)		13.6			4.7			43.4			33.6	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	40	225	110	50	160
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	42	237	116	53	168
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	568	295			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	568	295			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	94			96	
cM capacity (veh/h)	463	745			1206	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	105	353	221
Volume Left	63	0	53
Volume Right	42	116	0
cSH	545	1700	1206
Volume to Capacity	0.19	0.21	0.04
Queue Length 95th (ft)	18	0	3
Control Delay (s)	13.2	0.0	2.2
Lane LOS	B		A
Approach Delay (s)	13.2	0.0	2.2
Approach LOS	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	270	0	10	515	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	284	0	11	542	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				982		
pX, platoon unblocked						
vC, conflicting volume			284		847	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			284		847	284
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1278		329	755

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	284	11	542	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1278	1700	755
Volume to Capacity	0.17	0.01	0.32	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	7.8	0.0	9.8
Lane LOS		A		A
Approach Delay (s)	0.0	0.1		9.8
Approach LOS				A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	1310	80	30	2000	50	210	30	40	10	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1536		1825	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.77		0.66	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1232		1266	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	1379	84	32	2105	53	221	32	42	11	11	53
RTOR Reduction (vph)	0	0	28	0	0	27	0	6	0	0	0	37
Lane Group Flow (vph)	179	1379	56	32	2105	26	0	289	0	11	11	16
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	15.6	67.2	67.2	4.6	56.2	56.2		33.2		33.2	33.2	33.2
Effective Green, g (s)	16.6	70.2	70.2	5.6	59.2	59.2		35.2		35.2	35.2	35.2
Actuated g/C Ratio	0.14	0.59	0.59	0.05	0.49	0.49		0.29		0.29	0.29	0.29
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	253	3074	933	85	2592	794		361		371	564	471
v/s Ratio Prot	c0.10	0.26		0.02	c0.40						0.01	
v/s Ratio Perm			0.03			0.02		c0.23		0.01		0.01
v/c Ratio	0.71	0.45	0.06	0.38	0.81	0.03		0.80		0.03	0.02	0.03
Uniform Delay, d1	49.4	14.0	10.7	55.5	25.7	15.7		39.2		30.2	30.1	30.3
Progression Factor	0.76	0.40	0.09	1.21	0.55	1.25		1.00		1.00	1.00	1.00
Incremental Delay, d2	8.2	0.4	0.1	1.8	1.9	0.0		12.1		0.0	0.0	0.0
Delay (s)	45.6	6.0	1.1	69.0	15.9	19.6		51.2		30.3	30.1	30.3
Level of Service	D	A	A	E	B	B		D		C	C	C
Approach Delay (s)		10.1			16.8			51.2			30.3	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	440	560	1330	0	0	1640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	463	589	1400	0	0	1726
RTOR Reduction (vph)	0	73	0	0	0	0
Lane Group Flow (vph)	463	516	1400	0	0	1726
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	13.0	13.0	35.0			35.0
Effective Green, g (s)	16.0	16.0	38.0			38.0
Actuated g/C Ratio	0.27	0.27	0.63			0.63
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	945	768	3328			2316
v/s Ratio Prot	0.13	c0.18	0.27			c0.47
v/s Ratio Perm						
v/c Ratio	0.49	0.67	0.42			0.75
Uniform Delay, d1	18.6	19.7	5.5			7.6
Progression Factor	1.00	1.00	0.40			1.00
Incremental Delay, d2	0.8	3.0	0.3			2.2
Delay (s)	19.4	22.7	2.6			9.9
Level of Service	B	C	A			A
Approach Delay (s)	21.2		2.6			9.9
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	750	1670	0	1020	1480	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	789	1758	0	1074	1558	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	789	1757	0	1074	1558	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	39.0	39.0		19.0	19.0	
Effective Green, g (s)	42.0	42.0		22.0	22.0	
Actuated g/C Ratio	0.60	0.60		0.31	0.31	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2128	1728		1651	1651	
v/s Ratio Prot	0.22	c0.61		0.20	c0.30	
v/s Ratio Perm						
v/c Ratio	0.37	1.02		0.65	0.94	
Uniform Delay, d1	7.2	14.0		20.7	23.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	26.0		2.0	12.3	
Delay (s)	7.2	40.0		22.7	35.7	
Level of Service	A	D		C	D	
Approach Delay (s)	29.8			22.7	35.7	
Approach LOS	C			C	D	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	90	80	180	100	240	120	990	180	860	1740	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3257		1829	1829	1554	1829	5255	1605	3547	5033	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3257		1829	1829	1554	1829	5255	1605	3547	5033	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	95	84	189	105	253	126	1042	189	905	1832	579
RTOR Reduction (vph)	0	36	0	0	0	95	0	0	0	0	40	0
Lane Group Flow (vph)	137	259	0	189	105	158	126	1042	189	905	2371	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.0	17.0		9.0	9.0	42.5	8.0	38.5	120.0	33.5	64.0	
Effective Green, g (s)	20.0	20.0		12.0	12.0	48.5	9.0	41.5	120.0	34.5	67.0	
Actuated g/C Ratio	0.17	0.17		0.10	0.10	0.40	0.08	0.35	1.00	0.29	0.56	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	277	542		182	182	628	137	1817	1605	1019	2810	
v/s Ratio Prot	c0.08	0.08		c0.10	0.06	0.10	c0.07	0.20		c0.26	c0.47	
v/s Ratio Perm									0.12			
v/c Ratio	0.49	0.48		1.04	0.58	0.25	0.92	0.57	0.12	0.89	0.84	
Uniform Delay, d1	45.4	45.3		54.0	51.6	23.7	55.1	32.0	0.0	40.9	22.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.68	0.49	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.2		77.2	2.7	0.1	51.0	1.3	0.1	9.3	3.3	
Delay (s)	45.9	45.5		131.2	54.3	23.8	88.3	16.9	0.1	50.2	25.4	
Level of Service	D	D		F	D	C	F	B	A	D	C	
Approach Delay (s)		45.6			66.8			21.2			32.2	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	5	100	30	10	10	150	300	20	10	220	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	5	105	32	11	11	158	316	21	11	232	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	5	105	42	11	158	337	11	242
Volume Left (vph)	0	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	11
Hadj (s)	0.03	-0.67	0.41	-0.67	0.53	-0.01	0.53	0.00
Departure Headway (s)	6.4	5.7	6.8	5.8	5.8	5.2	6.0	5.5
Degree Utilization, x	0.01	0.17	0.08	0.02	0.25	0.49	0.02	0.37
Capacity (veh/h)	518	581	481	564	607	673	570	633
Control Delay (s)	8.2	8.6	9.2	7.7	9.5	11.9	7.9	10.5
Approach Delay (s)	8.6		8.9		11.2		10.4	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	10.5		
Level of Service	B		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	180	80	480	40	40	70	300	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.90		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1759		1829	1925	1616	1829	1725		1737	1754	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1759		1829	1925	1616	1829	1725		1737	1754	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	189	84	505	42	42	74	316	63	11
RTOR Reduction (vph)	0	19	0	0	0	196	0	61	0	0	2	0
Lane Group Flow (vph)	11	23	0	189	84	309	42	55	0	161	227	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	5.5		14.2	18.8	35.0	8.9	8.9		16.2	16.2	
Effective Green, g (s)	1.9	7.5		15.2	20.8	39.0	10.9	10.9		18.2	18.2	
Actuated g/C Ratio	0.03	0.12		0.24	0.33	0.61	0.17	0.17		0.29	0.29	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	54	206		435	627	1063	312	294		495	500	
v/s Ratio Prot	c0.01	0.01		c0.10	0.04	c0.08	0.02	c0.03		0.09	c0.13	
v/s Ratio Perm						0.11						
v/c Ratio	0.20	0.11		0.43	0.13	0.29	0.13	0.19		0.33	0.45	
Uniform Delay, d1	30.2	25.2		20.6	15.2	5.9	22.4	22.7		18.0	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.2		0.7	0.1	0.2	0.2	0.3		0.4	0.7	
Delay (s)	32.1	25.4		21.3	15.3	6.0	22.6	23.0		18.3	19.4	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		26.8			10.7			22.9			19.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	790	360	150	1170	170	680	900	140	410	800	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1566	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1566	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	832	379	158	1232	179	716	947	147	432	842	242
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	221	832	379	158	1232	179	716	947	147	432	842	242
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	9.6	25.6	42.6	12.3	28.3	120.0	17.0	43.9	120.0	18.2	43.1	120.0
Effective Green, g (s)	10.6	28.6	48.6	13.3	31.3	120.0	20.0	46.9	120.0	19.2	46.1	120.0
Actuated g/C Ratio	0.09	0.24	0.41	0.11	0.26	1.00	0.17	0.39	1.00	0.16	0.38	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	313	1252	673	393	1370	1588	859	1429	1593	567	2018	1588
v/s Ratio Prot	0.06	0.16	c0.09	0.04	c0.23		c0.14	c0.26		c0.12	0.16	
v/s Ratio Perm			0.15			0.11			0.09			0.15
v/c Ratio	0.71	0.66	0.56	0.40	0.90	0.11	0.83	0.66	0.09	0.76	0.42	0.15
Uniform Delay, d1	53.2	41.4	27.5	49.6	42.8	0.0	48.4	30.0	0.0	48.2	27.1	0.0
Progression Factor	0.70	1.00	0.94	0.71	0.66	1.00	0.80	0.67	1.00	0.69	1.11	1.00
Incremental Delay, d2	5.4	1.6	0.6	0.2	8.2	0.1	6.3	2.3	0.1	5.2	0.6	0.2
Delay (s)	42.9	43.1	26.6	35.5	36.4	0.1	45.1	22.5	0.1	38.5	30.7	0.2
Level of Service	D	D	C	D	D	A	D	C	A	D	C	A
Approach Delay (s)		38.7			32.2			29.6			28.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	380	450	500	410	70	480	1260	440	170	760	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	400	474	526	432	74	505	1326	463	179	800	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	168	400	474	526	432	74	505	1326	463	179	800	28
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	8.5	20.4	120.0	21.7	33.6	120.0	26.0	48.7	120.0	9.2	31.9	31.9
Effective Green, g (s)	9.5	23.4	120.0	22.7	36.6	120.0	27.0	51.7	120.0	10.2	34.9	34.9
Actuated g/C Ratio	0.08	0.19	1.00	0.19	0.31	1.00	0.22	0.43	1.00	0.08	0.29	0.29
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	280	713	1603	670	1115	1613	798	2264	1615	301	1528	462
v/s Ratio Prot	c0.05	c0.11		c0.15	0.12		0.14	c0.25		c0.05	0.15	
v/s Ratio Perm			0.30			0.05			0.29			0.02
v/c Ratio	0.60	0.56	0.30	0.79	0.39	0.05	0.63	0.59	0.29	0.59	0.52	0.06
Uniform Delay, d1	53.4	43.7	0.0	46.3	32.9	0.0	42.0	26.0	0.0	52.9	35.6	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.61	1.00	1.05	0.62	1.00
Incremental Delay, d2	2.3	1.7	0.5	5.6	0.5	0.1	1.0	0.9	0.4	2.1	1.3	0.2
Delay (s)	55.7	45.3	0.5	51.9	33.3	0.1	30.6	16.8	0.4	57.4	23.3	31.0
Level of Service	E	D	A	D	C	A	C	B	A	E	C	C
Approach Delay (s)		26.6			40.4			16.5			29.6	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	540	70	40	1410	60	50	140	20	50	240	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3580		1829	5211		3547	3570		1829	4484	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3580		1829	5211		3547	3570		1829	4484	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	200	568	74	42	1484	63	53	147	21	53	253	232
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	151	0
Lane Group Flow (vph)	200	635	0	42	1544	0	53	158	0	53	334	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.5	67.3		5.6	61.4		5.5	20.8		6.3	21.6	
Effective Green, g (s)	12.5	70.3		6.6	64.4		6.5	23.8		7.3	24.6	
Actuated g/C Ratio	0.10	0.59		0.05	0.54		0.05	0.20		0.06	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	369	2097		100	2796		192	708		111	919	
v/s Ratio Prot	c0.06	0.18		0.02	c0.30		0.01	0.04		c0.03	c0.07	
v/s Ratio Perm												
v/c Ratio	0.54	0.30		0.42	0.55		0.28	0.22		0.48	0.36	
Uniform Delay, d1	51.0	12.5		54.8	18.3		54.5	40.3		54.5	41.0	
Progression Factor	0.81	1.30		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.3		2.8	0.8		0.8	0.2		3.2	0.2	
Delay (s)	43.0	16.6		57.7	19.1		55.3	40.5		57.7	41.2	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		22.9			20.1			44.0			42.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	270	610	2390	0	0	1640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	642	2516	0	0	1726
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	284	642	2516	0	0	1726
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	21.3	21.3	44.4			44.4
Effective Green, g (s)	22.4	22.4	45.5			45.5
Actuated g/C Ratio	0.30	0.30	0.62			0.62
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1075	872	3235			3235
v/s Ratio Prot	0.08	c0.22	c0.48			0.33
v/s Ratio Perm						
v/c Ratio	0.26	0.74	0.78			0.53
Uniform Delay, d1	19.5	23.1	10.5			8.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	3.3	1.2			0.2
Delay (s)	19.6	26.4	11.7			8.3
Level of Service	B	C	B			A
Approach Delay (s)	24.3		11.7			8.3
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	890	0	710	0	0	0	0	2280	850	0	1510	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2835					5255	1570		5090	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2835					5255	1570		5090	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	937	0	747	0	0	0	0	2400	895	0	1589	421
RTOR Reduction (vph)	0	0	33	0	0	0	0	0	156	0	41	0
Lane Group Flow (vph)	937	0	714	0	0	0	0	2400	739	0	1969	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	32.4		32.4					54.2	54.2		54.2	
Effective Green, g (s)	33.5		33.5					55.3	55.3		55.3	
Actuated g/C Ratio	0.35		0.35					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1253		1001					3065	915		2969	
v/s Ratio Prot								0.46			0.39	
v/s Ratio Perm	c0.26		0.25						c0.47			
v/c Ratio	0.75		0.71					0.78	0.81		0.66	
Uniform Delay, d1	26.9		26.5					15.1	15.6		13.4	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		2.4					1.4	5.3		0.6	
Delay (s)	29.4		28.9					16.5	20.9		14.0	
Level of Service	C		C					B	C		B	
Approach Delay (s)		29.2			0.0			17.7			14.0	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	94.8	Sum of lost time (s)	7.1
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	120	100	110	60	470	50	470	110	490	580	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1765		1829	1925	2880	1829	5082		3547	3657	1578
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1765		1829	1925	2880	1829	5082		3547	3657	1578
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	126	105	116	63	495	53	495	116	516	611	32
RTOR Reduction (vph)	0	25	0	0	0	142	0	32	0	0	0	18
Lane Group Flow (vph)	32	206	0	116	63	353	53	579	0	516	611	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	3.3	16.7		8.1	21.5	44.5	3.8	21.1		17.0	34.3	34.3
Effective Green, g (s)	4.3	19.7		9.1	24.5	47.5	4.8	24.1		18.0	37.3	37.3
Actuated g/C Ratio	0.05	0.24		0.11	0.30	0.57	0.06	0.29		0.22	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	94	419		200	568	1650	105	1477		770	1645	710
v/s Ratio Prot	0.02	c0.12		c0.06	0.03	0.12	0.03	0.11		c0.15	c0.17	
v/s Ratio Perm												0.01
v/c Ratio	0.34	0.49		0.58	0.11	0.21	0.50	0.39		0.67	0.37	0.02
Uniform Delay, d1	37.9	27.3		35.1	21.3	8.6	37.9	23.5		29.7	15.1	12.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3		2.5	0.0	0.0	1.4	0.4		1.8	0.3	0.0
Delay (s)	38.7	27.6		37.6	21.3	8.6	39.3	23.9		31.5	15.4	12.7
Level of Service	D	C		D	C	A	D	C		C	B	B
Approach Delay (s)		29.0			14.8			25.1			22.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	82.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1980	1150	0	600	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2763
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2763
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2084	1211	0	632	495
RTOR Reduction (vph)	0	0	0	0	0	126
Lane Group Flow (vph)	0	2084	1211	0	632	369
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		81.4	81.4		26.6	26.6
Effective Green, g (s)		84.4	84.4		29.6	29.6
Actuated g/C Ratio		0.70	0.70		0.25	0.25
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3696	3696		874	681
v/s Ratio Prot		c0.40	0.23		c0.18	
v/s Ratio Perm						0.13
v/c Ratio		0.56	0.33		0.72	0.54
Uniform Delay, d1		8.8	6.9		41.4	39.3
Progression Factor		1.07	0.67		1.00	1.00
Incremental Delay, d2		0.4	0.2		3.0	0.9
Delay (s)		9.8	4.8		44.4	40.2
Level of Service		A	A		D	D
Approach Delay (s)		9.8	4.8		42.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1830	0	0	1530	330	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1926	0	0	1611	347	411
RTOR Reduction (vph)	0	0	0	0	0	39
Lane Group Flow (vph)	1926	0	0	1611	347	372
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	87.5			87.5	20.5	20.5
Effective Green, g (s)	90.5			90.5	23.5	23.5
Actuated g/C Ratio	0.75			0.75	0.20	0.20
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3963			2757	694	564
v/s Ratio Prot	0.37			c0.44	0.10	c0.13
v/s Ratio Perm						
v/c Ratio	0.49			0.58	0.50	0.66
Uniform Delay, d1	5.7			6.5	43.0	44.6
Progression Factor	0.66			0.41	1.00	1.00
Incremental Delay, d2	0.4			0.6	0.6	2.9
Delay (s)	4.1			3.3	43.6	47.5
Level of Service	A			A	D	D
Approach Delay (s)	4.1			3.3	45.7	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	1830	40	20	1960	150	30	10	20	130	10	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5238		1829	5255	1636		1754			1814	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.83			0.70	1.00
Satd. Flow (perm)	3547	5238		1829	5255	1636		1496			1328	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	368	1926	42	21	2063	158	32	11	21	137	11	442
RTOR Reduction (vph)	0	1	0	0	0	44	0	15	0	0	0	15
Lane Group Flow (vph)	368	1967	0	21	2063	114	0	49	0	0	148	427
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	17.9	73.6		3.3	59.0	59.0		28.1			28.1	51.0
Effective Green, g (s)	18.9	76.6		4.3	62.0	62.0		30.1			30.1	53.0
Actuated g/C Ratio	0.16	0.64		0.04	0.52	0.52		0.25			0.25	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	558	3343		65	2715	845		375			333	722
v/s Ratio Prot	c0.10	0.38		0.01	c0.39							c0.26
v/s Ratio Perm						0.07		0.03			0.11	
v/c Ratio	0.66	0.59		0.32	0.76	0.13		0.13			0.44	0.59
Uniform Delay, d1	47.5	12.6		56.4	23.1	15.1		34.8			37.9	25.3
Progression Factor	1.02	1.12		1.42	0.61	0.14		1.00			1.00	1.00
Incremental Delay, d2	2.5	0.7		2.3	1.6	0.3		0.2			0.9	1.3
Delay (s)	50.8	14.8		82.2	15.8	2.3		35.0			38.8	26.6
Level of Service	D	B		F	B	A		C			D	C
Approach Delay (s)		20.4			15.4			35.0			29.7	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	60	290	130	70	290
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	63	305	137	74	305
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	826	374			442	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	826	374			442	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	41	91			93	
cM capacity (veh/h)	319	672			1118	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	253	442	379
Volume Left	189	0	74
Volume Right	63	137	0
cSH	367	1700	1118
Volume to Capacity	0.69	0.26	0.07
Queue Length 95th (ft)	123	0	5
Control Delay (s)	33.8	0.0	2.2
Lane LOS	D		A
Approach Delay (s)	33.8	0.0	2.2
Approach LOS	D		

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	500	10	40	470	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	526	11	42	495	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			537		1111	532
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			537		1111	532
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		95	88
cM capacity (veh/h)			1031		222	548

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	537	42	495	74
Volume Left	0	42	0	11
Volume Right	11	0	0	63
cSH	1700	1031	1700	453
Volume to Capacity	0.32	0.04	0.29	0.16
Queue Length 95th (ft)	0	3	0	14
Control Delay (s)	0.0	8.6	0.0	14.5
Lane LOS		A		B
Approach Delay (s)	0.0	0.7		14.5
Approach LOS				B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	1720	220	40	1790	10	100	20	40	50	30	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1521		1823	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.79		0.64	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1245		1227	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	1811	232	42	1884	11	105	21	42	53	32	253
RTOR Reduction (vph)	0	0	58	0	0	5	0	11	0	0	0	202
Lane Group Flow (vph)	42	1811	174	42	1884	6	0	157	0	53	32	51
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	77.2	77.2	5.8	62.2	62.2		22.0		22.0	22.0	22.0
Effective Green, g (s)	21.8	80.2	80.2	6.8	65.2	65.2		24.0		24.0	24.0	24.0
Actuated g/C Ratio	0.18	0.67	0.67	0.06	0.54	0.54		0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3512	1065	103	2855	874		249		245	385	321
v/s Ratio Prot	0.02	c0.34		0.02	c0.36						0.02	
v/s Ratio Perm			0.11			0.00		c0.13		0.04		0.03
v/c Ratio	0.13	0.52	0.16	0.41	0.66	0.01		0.63		0.22	0.08	0.16
Uniform Delay, d1	41.1	10.1	7.4	54.7	19.5	12.6		43.9		40.1	39.0	39.7
Progression Factor	0.67	0.65	0.68	1.17	1.41	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.5	0.3	2.1	1.0	0.0		4.9		0.4	0.1	0.2
Delay (s)	27.9	7.0	5.3	66.2	28.4	12.6		48.9		40.6	39.1	39.9
Level of Service	C	A	A	E	C	B		D		D	D	D
Approach Delay (s)		7.2			29.2			48.9			39.9	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	330	650	2360	0	0	1300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	347	684	2484	0	0	1368
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	347	674	2484	0	0	1368
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.10	c0.23	c0.47			0.37
v/s Ratio Perm						
v/c Ratio	0.45	1.08	0.69			0.55
Uniform Delay, d1	20.4	23.5	5.7			4.8
Progression Factor	1.00	1.00	1.06			1.00
Incremental Delay, d2	0.9	59.5	0.4			0.9
Delay (s)	21.3	83.0	6.4			5.7
Level of Service	C	F	A			A
Approach Delay (s)	62.2		6.4			5.7
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1270	1020	0	2180	1110	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1337	1074	0	2295	1168	0
RTOR Reduction (vph)	0	43	0	0	0	0
Lane Group Flow (vph)	1337	1031	0	2295	1168	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	22.0	22.0		26.0	26.0	
Effective Green, g (s)	25.0	25.0		29.0	29.0	
Actuated g/C Ratio	0.42	0.42		0.48	0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1477	1200		2539	2539	
v/s Ratio Prot	c0.38	0.36		c0.44	0.22	
v/s Ratio Perm						
v/c Ratio	0.91	0.86		0.90	0.46	
Uniform Delay, d1	16.4	15.9		14.2	10.3	
Progression Factor	1.00	1.00		1.00	0.96	
Incremental Delay, d2	8.0	6.1		5.9	0.5	
Delay (s)	24.4	22.0		20.1	10.4	
Level of Service	C	C		C	B	
Approach Delay (s)	23.3			20.1	10.4	
Approach LOS	C			C	B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	670	210	140	210	150	760	150	1300	200	590	1070	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3291		1829	1678	1554	1829	5255	1605	3547	4975	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3291		1829	1678	1554	1829	5255	1605	3547	4975	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	705	221	147	221	158	800	158	1368	211	621	1126	495
RTOR Reduction (vph)	0	21	0	0	40	80	0	0	0	0	71	0
Lane Group Flow (vph)	381	671	0	221	310	528	158	1368	211	621	1550	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	25.8	25.8		18.0	18.0	40.0	10.6	26.2	110.0	18.0	33.6	
Effective Green, g (s)	28.8	28.8		21.0	21.0	42.0	11.6	29.2	110.0	19.0	36.6	
Actuated g/C Ratio	0.26	0.26		0.19	0.19	0.38	0.11	0.27	1.00	0.17	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	435	861		349	320	593	192	1394	1605	612	1655	
v/s Ratio Prot	c0.23	0.20		0.12	c0.18	0.34	0.09	c0.26		0.18	c0.31	
v/s Ratio Perm									0.13			
v/c Ratio	0.88	0.78		0.63	0.97	0.89	0.82	0.98	0.13	1.01	0.94	
Uniform Delay, d1	38.9	37.7		41.0	44.2	31.9	48.2	40.1	0.0	45.5	35.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.1	4.1		2.8	41.4	15.2	22.9	20.0	0.2	40.1	11.5	
Delay (s)	56.0	41.8		43.7	85.6	47.0	71.1	60.2	0.2	85.6	47.1	
Level of Service	E	D		D	F	D	E	E	A	F	D	
Approach Delay (s)		46.8			57.9			53.9			57.7	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	54.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	190	160	10	20	160	300	90	20	320	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	11	200	168	11	21	168	316	95	21	337	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	21	200	179	21	168	411	21	347
Volume Left (vph)	11	0	168	0	168	0	21	0
Volume Right (vph)	0	200	0	21	0	95	0	11
Hadj (s)	0.28	-0.67	0.50	-0.67	0.53	-0.13	0.53	0.01
Departure Headway (s)	7.8	6.9	8.0	6.9	7.1	6.5	7.4	6.9
Degree Utilization, x	0.05	0.38	0.40	0.04	0.33	0.74	0.04	0.66
Capacity (veh/h)	427	478	420	483	489	539	463	501
Control Delay (s)	10.0	12.9	15.1	8.9	12.5	24.4	9.5	21.3
Approach Delay (s)	12.6		14.4		21.0		20.6	
Approach LOS	B		B		C		C	

Intersection Summary			
Delay	18.6		
Level of Service	C		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	120	40	30	40	500	10	60	210	600	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1841		1829	1925	1621	1829	1682		1737	1759	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1841		1829	1925	1621	1829	1682		1737	1759	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	126	42	32	42	526	11	63	221	632	116	11
RTOR Reduction (vph)	0	12	0	0	0	220	0	140	0	0	1	0
Lane Group Flow (vph)	11	156	0	32	42	306	11	144	0	348	410	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	12.7		2.0	13.7	35.6	12.4	12.4		21.9	21.9	
Effective Green, g (s)	2.0	14.7		3.0	15.7	39.6	14.4	14.4		23.9	23.9	
Actuated g/C Ratio	0.03	0.22		0.04	0.23	0.58	0.21	0.21		0.35	0.35	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	397		80	444	1015	387	356		610	618	
v/s Ratio Prot	0.01	c0.08		c0.02	0.02	0.11	0.01	c0.09		0.20	c0.23	
v/s Ratio Perm						0.08						
v/c Ratio	0.21	0.39		0.40	0.09	0.30	0.03	0.40		0.57	0.66	
Uniform Delay, d1	32.2	22.8		31.6	20.6	7.2	21.3	23.1		17.9	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.6		3.3	0.1	0.2	0.0	0.8		1.3	2.7	
Delay (s)	34.2	23.5		34.9	20.7	7.4	21.3	23.8		19.2	21.3	
Level of Service	C	C		C	C	A	C	C		B	C	
Approach Delay (s)		24.1			9.8			23.8			20.4	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	980	580	120	1120	210	480	840	40	340	910	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1566	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1566	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	1032	611	126	1179	221	505	884	42	358	958	253
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	263	1032	611	126	1179	221	505	884	42	358	958	253
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	12.7	30.0	50.1	13.0	30.3	120.0	20.1	41.7	120.0	15.3	35.9	120.0
Effective Green, g (s)	13.7	33.0	54.1	14.0	33.3	120.0	22.1	44.7	120.0	16.3	38.9	120.0
Actuated g/C Ratio	0.11	0.28	0.45	0.12	0.28	1.00	0.18	0.37	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	404	1445	745	413	1458	1588	949	1362	1593	481	1703	1588
v/s Ratio Prot	0.07	0.20	c0.15	0.04	c0.22		0.10	c0.24		c0.10	0.18	
v/s Ratio Perm			0.24			0.14			0.03			0.16
v/c Ratio	0.65	0.71	0.82	0.31	0.81	0.14	0.53	0.65	0.03	0.74	0.56	0.16
Uniform Delay, d1	50.9	39.2	28.7	48.5	40.4	0.0	44.3	31.2	0.0	49.8	33.5	0.0
Progression Factor	1.23	1.14	1.23	0.83	0.83	1.00	0.71	0.60	1.00	1.55	1.13	1.00
Incremental Delay, d2	2.6	1.9	6.2	0.1	3.6	0.2	0.3	2.3	0.0	5.1	1.3	0.2
Delay (s)	64.9	46.6	41.5	40.4	37.2	0.2	31.8	21.1	0.0	82.6	39.1	0.2
Level of Service	E	D	D	D	D	A	C	C	A	F	D	A
Approach Delay (s)		47.5			32.1			24.3			42.8	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	240	600	610	290	140	380	840	350	130	1370	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	253	632	642	305	147	400	884	368	137	1442	105
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	65
Lane Group Flow (vph)	116	253	632	642	305	147	400	884	368	137	1442	40
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.7	17.9	120.0	24.0	35.2	120.0	15.1	50.5	120.0	7.6	43.0	43.0
Effective Green, g (s)	7.7	20.9	120.0	25.0	38.2	120.0	16.1	53.5	120.0	8.6	46.0	46.0
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.13	0.45	1.00	0.07	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	227	636	1603	738	1164	1613	475	2342	1615	254	2014	609
v/s Ratio Prot	0.03	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.27	
v/s Ratio Perm			c0.39			0.09			0.23			0.03
v/c Ratio	0.51	0.40	0.39	0.87	0.26	0.09	0.84	0.38	0.23	0.54	0.72	0.07
Uniform Delay, d1	54.3	44.0	0.0	45.9	30.4	0.0	50.7	22.2	0.0	53.8	31.4	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.55	1.00	1.08	0.70	3.30
Incremental Delay, d2	0.8	0.9	0.7	10.4	0.3	0.1	11.9	0.5	0.3	1.1	2.1	0.2
Delay (s)	55.1	44.8	0.7	56.3	30.7	0.1	75.5	34.8	0.3	59.2	24.3	77.5
Level of Service	E	D	A	E	C	A	E	C	A	E	C	E
Approach Delay (s)		18.2			41.6			37.0			30.4	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	1230	30	20	560	50	70	210	30	80	220	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3641		1829	5165		3547	3569		1829	4359	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3641		1829	5165		3547	3569		1829	4359	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	1295	32	21	589	53	74	221	32	84	232	295
RTOR Reduction (vph)	0	1	0	0	7	0	0	10	0	0	210	0
Lane Group Flow (vph)	263	1326	0	21	635	0	74	243	0	84	317	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.2	67.2		3.3	56.3		6.7	21.1		8.4	22.8	
Effective Green, g (s)	15.2	70.2		4.3	59.3		7.7	24.1		9.4	25.8	
Actuated g/C Ratio	0.13	0.59		0.04	0.49		0.06	0.20		0.08	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	449	2129		65	2552		227	716		143	937	
v/s Ratio Prot	c0.07	c0.36		0.01	0.12		0.02	0.07		c0.05	c0.07	
v/s Ratio Perm												
v/c Ratio	0.59	0.62		0.32	0.25		0.33	0.34		0.59	0.34	
Uniform Delay, d1	49.4	16.3		56.4	17.5		53.7	41.1		53.4	39.9	
Progression Factor	1.22	0.39		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.1		2.9	0.2		0.8	0.3		6.0	0.2	
Delay (s)	61.7	7.4		59.3	17.7		54.5	41.4		59.5	40.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.4			19.1			44.4			42.8	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1270	1010	0	410	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1337	1063	0	432	684
RTOR Reduction (vph)	0	0	0	0	0	77
Lane Group Flow (vph)	0	1337	1063	0	432	607
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.1	31.1		16.9	16.9
Effective Green, g (s)		34.1	34.1		19.9	19.9
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3016	3016		1188	964
v/s Ratio Prot		c0.25	0.20		0.12	
v/s Ratio Perm						c0.21
v/c Ratio		0.44	0.35		0.36	0.63
Uniform Delay, d1		7.5	7.0		15.2	16.9
Progression Factor		1.00	0.81		1.00	1.00
Incremental Delay, d2		0.5	0.3		0.2	1.3
Delay (s)		7.9	6.0		15.4	18.2
Level of Service		A	A		B	B
Approach Delay (s)		7.9	6.0		17.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1030	0	0	970	350	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1084	0	0	1021	368	221
RTOR Reduction (vph)	0	0	0	0	0	106
Lane Group Flow (vph)	1084	0	0	1021	368	115
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	36.6			36.6	11.4	11.4
Effective Green, g (s)	39.6			39.6	14.4	14.4
Actuated g/C Ratio	0.66			0.66	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3502			2437	859	697
v/s Ratio Prot	0.20			c0.28	c0.10	0.04
v/s Ratio Perm						
v/c Ratio	0.31			0.42	0.43	0.17
Uniform Delay, d1	4.4			4.8	19.3	18.0
Progression Factor	1.12			1.71	1.00	1.00
Incremental Delay, d2	0.2			0.5	0.3	0.1
Delay (s)	5.1			8.7	19.7	18.2
Level of Service	A			A	B	B
Approach Delay (s)	5.1			8.7	19.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	1020	20	10	1240	50	30	10	10	60	10	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.96	1.00
Satd. Flow (prot)	3583	5289		1847	5307	1593		1827			1846	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.82			0.77	1.00
Satd. Flow (perm)	3583	5289		1847	5307	1593		1545			1474	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	1074	21	11	1305	53	32	11	11	63	11	189
RTOR Reduction (vph)	0	1	0	0	0	18	0	8	0	0	0	27
Lane Group Flow (vph)	211	1094	0	11	1305	35	0	46	0	0	74	162
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	12.4	86.7		1.5	75.8	75.8		16.8			16.8	34.2
Effective Green, g (s)	13.4	89.7		2.5	78.8	78.8		18.8			18.8	36.2
Actuated g/C Ratio	0.11	0.75		0.02	0.66	0.66		0.16			0.16	0.30
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	400	3953		38	3484	1046		242			230	498
v/s Ratio Prot	c0.06	0.21		0.01	c0.25							c0.10
v/s Ratio Perm						0.02		0.03			0.05	
v/c Ratio	0.53	0.28		0.29	0.37	0.03		0.19			0.32	0.33
Uniform Delay, d1	50.3	4.8		57.9	9.4	7.2		44.0			44.9	32.5
Progression Factor	0.96	1.04		1.29	0.27	0.00		1.00			1.00	1.00
Incremental Delay, d2	1.2	0.2		3.7	0.3	0.1		0.4			0.8	0.4
Delay (s)	49.6	5.2		78.4	2.8	0.1		44.3			45.8	32.8
Level of Service	D	A		E	A	A		D			D	C
Approach Delay (s)		12.4			3.3			44.3			36.5	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	40	200	50	40	190
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	42	211	53	42	200
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	521	237			263	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	521	237			263	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	95			97	
cM capacity (veh/h)	499	802			1301	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	95	263	242
Volume Left	53	0	42
Volume Right	42	53	0
cSH	600	1700	1301
Volume to Capacity	0.16	0.15	0.03
Queue Length 95th (ft)	14	0	3
Control Delay (s)	12.1	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	12.1	0.0	1.6
Approach LOS	B		

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	230	10	10	250	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	242	11	11	263	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			253		532	247
vC1, stage 1 conf vol					247	
vC2, stage 2 conf vol					284	
vCu, unblocked vol			253		532	247
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	97
cM capacity (veh/h)			1313		668	791

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	253	11	263	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	1313	1700	745
Volume to Capacity	0.15	0.01	0.15	0.04
Queue Length 95th (ft)	0	1	0	3
Control Delay (s)	0.0	7.8	0.0	10.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.3		10.0
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	580	130	170	130	160	350	220	950	140	410	780	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3281		1847	1847	1570	1847	5307	1627	3583	4961	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3281		1847	1847	1570	1847	5307	1627	3583	4961	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	611	137	179	137	168	368	232	1000	147	432	821	526
RTOR Reduction (vph)	0	51	0	0	0	80	0	0	0	0	129	0
Lane Group Flow (vph)	330	546	0	137	168	288	232	1000	147	432	1218	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	21.2	21.2		5.0	5.0	17.7	11.8	29.1	90.0	12.7	30.0	
Effective Green, g (s)	24.2	24.2		8.0	8.0	23.7	12.8	32.1	90.0	13.7	33.0	
Actuated g/C Ratio	0.27	0.27		0.09	0.09	0.26	0.14	0.36	1.00	0.15	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	451	882		164	164	413	262	1892	1627	545	1819	
v/s Ratio Prot	c0.20	0.17		0.07	c0.09	0.18	c0.13	0.19		0.12	c0.25	
v/s Ratio Perm									c0.09			
v/c Ratio	0.73	0.62		0.84	1.02	0.70	0.89	0.53	0.09	0.79	0.67	
Uniform Delay, d1	29.9	28.9		40.4	41.0	29.9	37.9	23.0	0.0	36.8	23.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.2	0.9		28.0	76.8	4.1	27.2	1.1	0.1	7.3	2.0	
Delay (s)	35.2	29.8		68.4	117.8	34.0	65.1	24.0	0.1	44.0	25.9	
Level of Service	D	C		E	F	C	E	C	A	D	C	
Approach Delay (s)		31.7			61.9			28.4			30.3	
Approach LOS		C			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	40	250	250	80	40	270	190	150	30	240	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	42	263	263	84	42	284	200	158	32	253	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	53	263	347	42	284	358	32	263
Volume Left (vph)	11	0	263	0	284	0	32	0
Volume Right (vph)	0	263	0	42	0	158	0	11
Hadj (s)	0.12	-0.68	0.40	-0.68	0.52	-0.29	0.52	-0.01
Departure Headway (s)	8.3	7.5	8.3	7.2	8.2	7.4	8.7	8.1
Degree Utilization, x	0.12	0.55	0.80	0.08	0.64	0.73	0.08	0.59
Capacity (veh/h)	410	450	419	476	427	476	395	419
Control Delay (s)	11.3	18.1	36.2	9.7	23.6	26.7	11.2	21.1
Approach Delay (s)	17.0		33.3		25.3		20.1	
Approach LOS	C		D		D		C	

Intersection Summary			
Delay	24.7		
Level of Service	C		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	60	580	30	60	80	640	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.91		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1847	1832		1847	1944	1652	1847	1762		1754	1779	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1847	1832		1847	1944	1652	1847	1762		1754	1779	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	63	611	32	63	84	674	137	11
RTOR Reduction (vph)	0	19	0	0	0	229	0	52	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	63	382	32	95	0	344	477	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.9	8.3		4.0	10.4	39.8	9.4	9.4		29.4	29.4	
Effective Green, g (s)	2.9	10.3		5.0	12.4	43.8	11.4	11.4		31.4	31.4	
Actuated g/C Ratio	0.04	0.15		0.07	0.18	0.62	0.16	0.16		0.45	0.45	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	76	269		131	343	1102	300	286		785	796	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.16	0.02	c0.05		0.20	c0.27	
v/s Ratio Perm						0.08						
v/c Ratio	0.28	0.40		0.32	0.18	0.35	0.11	0.33		0.44	0.60	
Uniform Delay, d1	32.6	27.1		30.9	24.5	6.3	25.0	26.0		13.3	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.0		1.4	0.3	0.2	0.2	0.7		0.4	1.2	
Delay (s)	34.6	28.1		32.4	24.8	6.5	25.2	26.7		13.7	15.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		29.0			9.6			26.4			14.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	420	310	90	650	140	400	900	80	240	700	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	442	326	95	684	147	421	947	84	253	737	211
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	189	442	326	95	684	147	421	947	84	253	737	211
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	6.0	23.0	27.0	4.8	21.8	90.0	4.0	33.5	90.0	8.7	36.2	90.0
Effective Green, g (s)	7.0	26.0	33.0	5.8	24.8	90.0	7.0	36.5	90.0	9.7	39.2	90.0
Actuated g/C Ratio	0.08	0.29	0.37	0.06	0.28	1.00	0.08	0.41	1.00	0.11	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	1533	599	230	1462	1632	405	1497	1631	386	2311	1652
v/s Ratio Prot	c0.05	0.08	c0.04	0.03	0.13		c0.08	c0.26		c0.07	0.14	
v/s Ratio Perm			0.16			0.09			0.05			c0.13
v/c Ratio	0.68	0.29	0.54	0.41	0.47	0.09	1.04	0.63	0.05	0.66	0.32	0.13
Uniform Delay, d1	40.4	24.8	22.5	40.5	27.1	0.0	41.5	21.4	0.0	38.5	16.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.2	0.5	0.4	0.5	0.1	55.3	2.0	0.1	3.0	0.4	0.2
Delay (s)	45.5	25.0	23.1	40.9	27.6	0.1	96.8	23.4	0.1	41.6	17.0	0.2
Level of Service	D	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		28.4			24.6			43.4			19.2	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	910	860	1517	0	0	1656
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	958	905	1597	0	0	1743
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	958	902	1597	0	0	1743
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	31.7	31.7	29.2			29.2
Effective Green, g (s)	32.8	32.8	30.3			30.3
Actuated g/C Ratio	0.47	0.47	0.44			0.44
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1683	1367	2304			2304
v/s Ratio Prot	0.27	c0.31	0.30			c0.33
v/s Ratio Perm						
v/c Ratio	0.57	0.66	0.69			0.76
Uniform Delay, d1	13.1	13.9	15.6			16.3
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	1.2	0.9			1.5
Delay (s)	13.5	15.1	16.6			17.8
Level of Service	B	B	B			B
Approach Delay (s)	14.3		16.6			17.8
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	6.0
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	590	0	968	0	0	0	0	1221	380	0	1576	880
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.95	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2833					5255	1565		4972	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2833					5255	1565		4972	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	621	0	1019	0	0	0	0	1285	400	0	1659	926
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	136	0	90	0
Lane Group Flow (vph)	621	0	992	0	0	0	0	1285	264	0	2495	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	40.8		40.8					60.8	60.8		60.8	
Effective Green, g (s)	41.9		41.9					61.9	61.9		61.9	
Actuated g/C Ratio	0.38		0.38					0.56	0.56		0.56	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1353		1081					2962	882		2802	
v/s Ratio Prot								0.24			c0.50	
v/s Ratio Perm	0.18		c0.35						0.17			
v/c Ratio	0.46		0.92					0.43	0.30		0.89	
Uniform Delay, d1	25.5		32.3					13.8	12.6		21.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		12.0					0.1	0.2		4.0	
Delay (s)	25.7		44.4					13.9	12.8		25.0	
Level of Service	C		D					B	B		C	
Approach Delay (s)		37.3			0.0			13.7			25.0	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	109.8	Sum of lost time (s)	7.1
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	203	40	525	50	730	153	487	510	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1746		1829	1925	2880	1829	5096		3547	3657	1576
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1746		1829	1925	2880	1829	5096		3547	3657	1576
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	214	42	553	53	768	161	513	537	11
RTOR Reduction (vph)	0	32	0	0	0	126	0	27	0	0	0	6
Lane Group Flow (vph)	11	94	0	214	42	427	53	902	0	513	537	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	1.0	16.6		14.5	30.1	53.7	5.4	25.0		17.6	37.2	37.2
Effective Green, g (s)	2.0	19.6		15.5	33.1	56.7	6.4	28.0		18.6	40.2	40.2
Actuated g/C Ratio	0.02	0.21		0.17	0.35	0.61	0.07	0.30		0.20	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	39	365		302	680	1742	124	1522		704	1568	676
v/s Ratio Prot	0.01	0.05		c0.12	0.02	c0.15	0.03	c0.18		c0.14	0.15	
v/s Ratio Perm												0.00
v/c Ratio	0.28	0.26		0.71	0.06	0.25	0.43	0.59		0.73	0.34	0.01
Uniform Delay, d1	45.1	31.0		37.0	20.0	8.6	41.9	28.0		35.2	17.9	15.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1		6.1	0.0	0.0	0.9	0.9		3.2	0.3	0.0
Delay (s)	46.6	31.1		43.1	20.0	8.6	42.8	28.9		38.4	18.2	15.3
Level of Service	D	C		D	C	A	D	C		D	B	B
Approach Delay (s)		32.4			18.3			29.7			27.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	93.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	885	1694	0	641	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2775
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2775
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	932	1783	0	675	789
RTOR Reduction (vph)	0	0	0	0	0	35
Lane Group Flow (vph)	0	932	1783	0	675	754
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		76.1	76.1		31.9	31.9
Effective Green, g (s)		79.1	79.1		34.9	34.9
Actuated g/C Ratio		0.66	0.66		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3463	3463		1031	807
v/s Ratio Prot		0.18	c0.34		0.19	
v/s Ratio Perm						c0.27
v/c Ratio		0.27	0.51		0.65	0.93
Uniform Delay, d1		8.5	10.6		37.3	41.4
Progression Factor		1.05	1.26		1.00	1.00
Incremental Delay, d2		0.1	0.4		1.5	17.7
Delay (s)		9.0	13.7		38.8	59.1
Level of Service		A	B		D	E
Approach Delay (s)		9.0	13.7		49.7	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1236	0	0	1530	660	706
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1301	0	0	1611	695	743
RTOR Reduction (vph)	0	0	0	0	0	128
Lane Group Flow (vph)	1301	0	0	1611	695	615
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	82.5			82.5	25.5	25.5
Effective Green, g (s)	85.5			85.5	28.5	28.5
Actuated g/C Ratio	0.71			0.71	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3744			2605	842	684
v/s Ratio Prot	0.25			c0.44	0.20	c0.21
v/s Ratio Perm						
v/c Ratio	0.35			0.62	0.83	0.90
Uniform Delay, d1	6.6			8.9	43.4	44.4
Progression Factor	0.23			2.43	1.00	1.00
Incremental Delay, d2	0.2			0.8	6.6	14.6
Delay (s)	1.7			22.3	50.0	59.0
Level of Service	A			C	D	E
Approach Delay (s)	1.7			22.3	54.6	
Approach LOS	A			C	D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	442	1480	20	20	2015	271	10	5	10	118	10	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1712			1840	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1712			1840	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	465	1558	21	21	2121	285	11	5	11	124	11	364
RTOR Reduction (vph)	0	1	0	0	0	68	0	11	0	0	0	48
Lane Group Flow (vph)	465	1578	0	21	2121	217	0	16	0	0	135	316
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	19.5	76.8		2.8	60.1	60.1		3.0			17.4	36.9
Effective Green, g (s)	20.5	79.8		3.8	63.1	63.1		5.0			19.4	40.9
Actuated g/C Ratio	0.17	0.66		0.03	0.53	0.53		0.04			0.16	0.34
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	605	3487		57	2763	860		71			297	557
v/s Ratio Prot	c0.13	0.30		0.01	c0.40			c0.01			0.07	c0.19
v/s Ratio Perm						0.13						
v/c Ratio	0.77	0.45		0.37	0.77	0.25		0.23			0.45	0.57
Uniform Delay, d1	47.5	9.6		56.9	22.6	15.6		55.6			45.5	32.3
Progression Factor	0.97	0.94		0.79	1.88	2.73		1.00			1.00	1.00
Incremental Delay, d2	5.0	0.4		1.6	0.8	0.3		1.7			1.1	1.3
Delay (s)	51.2	9.4		46.8	43.3	42.7		57.3			46.6	33.6
Level of Service	D	A		D	D	D		E			D	C
Approach Delay (s)		18.9			43.3			57.3			37.2	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	63	74	236	109	76	180
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	66	78	248	115	80	189
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	655	306			363	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	655	306			363	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	89			93	
cM capacity (veh/h)	402	734			1195	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	144	363	269
Volume Left	66	0	80
Volume Right	78	115	0
cSH	532	1700	1195
Volume to Capacity	0.27	0.21	0.07
Queue Length 95th (ft)	27	0	5
Control Delay (s)	14.3	0.0	2.9
Lane LOS	B		A
Approach Delay (s)	14.3	0.0	2.9
Approach LOS	B		

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	464	0	10	708	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	488	0	11	745	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			488		1255	488
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			488		1255	488
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1075		188	579

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	488	11	745	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1075	1700	579
Volume to Capacity	0.29	0.01	0.44	0.02
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.4	0.0	11.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.3
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	1353	88	30	2032	50	217	30	40	10	10	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1537		1825	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.77		0.68	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1231		1298	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	182	1424	93	32	2139	53	228	32	42	11	11	57
RTOR Reduction (vph)	0	0	35	0	0	31	0	5	0	0	0	42
Lane Group Flow (vph)	182	1424	59	32	2139	22	0	297	0	11	11	15
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	71.0	71.0	4.2	47.6	47.6		29.8		29.8	29.8	29.8
Effective Green, g (s)	28.6	74.0	74.0	5.2	50.6	50.6		31.8		31.8	31.8	31.8
Actuated g/C Ratio	0.24	0.62	0.62	0.04	0.42	0.42		0.27		0.27	0.27	0.27
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3240	983	79	2215	678		326		343	510	425
v/s Ratio Prot	0.10	c0.27		0.02	c0.41						0.01	
v/s Ratio Perm			0.04			0.01		c0.24		0.01		0.01
v/c Ratio	0.42	0.44	0.06	0.41	0.97	0.03		0.91		0.03	0.02	0.04
Uniform Delay, d1	38.7	12.1	9.2	55.9	33.9	20.4		42.7		32.7	32.6	32.7
Progression Factor	1.31	1.67	4.08	1.25	1.30	3.78		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.4	0.1	2.5	10.1	0.1		28.3		0.0	0.0	0.0
Delay (s)	51.3	20.6	37.4	72.2	54.3	77.0		71.0		32.7	32.6	32.8
Level of Service	D	C	D	E	D	E		E		C	C	C
Approach Delay (s)		24.8			55.1			71.0			32.7	
Approach LOS		C			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	453	560	1330	0	0	1655
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	477	589	1400	0	0	1742
RTOR Reduction (vph)	0	98	0	0	0	0
Lane Group Flow (vph)	477	491	1400	0	0	1742
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.13	c0.17	0.27			c0.48
v/s Ratio Perm						
v/c Ratio	0.62	0.79	0.39			0.70
Uniform Delay, d1	21.3	22.2	4.1			5.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	2.2	7.5	0.3			1.6
Delay (s)	23.5	29.7	4.4			7.4
Level of Service	C	C	A			A
Approach Delay (s)	26.9		4.4			7.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	750	1659	0	1022	1508	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	789	1746	0	1076	1587	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	789	1746	0	1076	1587	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	39.0	39.0		19.0	19.0	
Effective Green, g (s)	42.0	42.0		22.0	22.0	
Actuated g/C Ratio	0.60	0.60		0.31	0.31	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2128	1728		1651	1651	
v/s Ratio Prot	0.22	c0.61		0.20	c0.30	
v/s Ratio Perm						
v/c Ratio	0.37	1.01		0.65	0.96	
Uniform Delay, d1	7.2	14.0		20.7	23.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	24.2		2.0	14.7	
Delay (s)	7.2	38.2		22.7	38.3	
Level of Service	A	D		C	D	
Approach Delay (s)	28.5			22.7	38.3	
Approach LOS	C			C	D	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	254	111	84	178	113	242	126	981	180	872	1721	574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.95	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3270		1829	1736	1554	1829	5255	1605	3547	5024	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3270		1829	1736	1554	1829	5255	1605	3547	5024	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	267	117	88	187	119	255	133	1033	189	918	1812	604
RTOR Reduction (vph)	0	31	0	0	15	86	0	0	0	0	46	0
Lane Group Flow (vph)	144	297	0	187	165	108	133	1033	189	918	2370	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.7	17.7		9.0	9.0	46.0	12.2	38.3	120.0	33.0	59.1	
Effective Green, g (s)	20.7	20.7		12.0	12.0	48.0	13.2	41.3	120.0	34.0	62.1	
Actuated g/C Ratio	0.17	0.17		0.10	0.10	0.40	0.11	0.34	1.00	0.28	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	287	564		182	173	621	201	1808	1605	1004	2599	
v/s Ratio Prot	0.09	c0.09		c0.10	0.09	0.07	c0.07	0.20		0.26	c0.47	
v/s Ratio Perm									0.12			
v/c Ratio	0.50	0.53		1.03	0.95	0.17	0.66	0.57	0.12	0.91	0.91	
Uniform Delay, d1	45.0	45.2		54.0	53.7	23.2	51.3	32.1	0.0	41.6	26.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.43	1.09	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.4		74.1	53.8	0.0	5.9	1.3	0.1	12.2	6.2	
Delay (s)	45.5	45.6		128.1	107.5	23.3	79.2	36.4	0.1	53.8	32.7	
Level of Service	D	D		F	F	C	E	D	A	D	C	
Approach Delay (s)		45.6			85.2			35.5			38.5	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	5	100	30	10	10	150	343	20	10	259	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	5	105	32	11	11	158	361	21	11	273	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	8	105	42	11	158	382	11	288
Volume Left (vph)	3	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	16
Hadj (s)	0.22	-0.67	0.41	-0.67	0.53	0.00	0.53	0.00
Departure Headway (s)	6.8	5.9	7.1	6.0	5.9	5.3	6.1	5.6
Degree Utilization, x	0.02	0.17	0.08	0.02	0.26	0.56	0.02	0.45
Capacity (veh/h)	487	559	464	540	598	664	562	626
Control Delay (s)	8.7	8.9	9.5	7.9	9.7	13.8	8.0	11.8
Approach Delay (s)	8.9		9.2		12.6		11.7	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.7		
Level of Service	B		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	180	80	523	40	40	70	339	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.90		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1760		1829	1925	1618	1829	1726		1737	1754	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1760		1829	1925	1618	1829	1726		1737	1754	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	189	84	551	42	42	74	357	63	11
RTOR Reduction (vph)	0	18	0	0	0	236	0	60	0	0	2	0
Lane Group Flow (vph)	11	24	0	189	84	315	42	56	0	196	233	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	6.2		9.0	14.3	29.2	8.9	8.9		14.9	14.9	
Effective Green, g (s)	1.9	8.2		10.0	16.3	33.2	10.9	10.9		16.9	16.9	
Actuated g/C Ratio	0.03	0.14		0.17	0.28	0.57	0.19	0.19		0.29	0.29	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	248		315	540	1009	343	324		506	511	
v/s Ratio Prot	0.01	0.01		c0.10	0.04	c0.09	0.02	c0.03		0.11	c0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.19	0.10		0.60	0.16	0.31	0.12	0.17		0.39	0.46	
Uniform Delay, d1	27.3	21.7		22.2	15.7	6.5	19.6	19.8		16.4	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.2		3.1	0.1	0.2	0.2	0.3		0.5	0.6	
Delay (s)	28.8	21.8		25.2	15.8	6.6	19.7	20.0		16.9	17.4	
Level of Service	C	C		C	B	A	B	C		B	B	
Approach Delay (s)		23.3			11.8			19.9			17.2	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	224	807	372	150	1184	170	690	901	140	410	801	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1569	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1569	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	849	392	158	1246	179	726	948	147	432	843	252
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	236	849	392	158	1246	179	726	948	147	432	843	252
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	12.0	26.3	46.3	17.0	31.3	120.0	20.0	40.3	120.0	16.4	35.7	120.0
Effective Green, g (s)	13.0	29.3	50.3	18.0	34.3	120.0	22.0	43.3	120.0	17.4	38.7	120.0
Actuated g/C Ratio	0.11	0.24	0.42	0.15	0.29	1.00	0.18	0.36	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	384	1283	696	532	1502	1588	945	1319	1593	514	1694	1588
v/s Ratio Prot	0.07	0.16	c0.10	0.04	c0.24		0.14	c0.26		c0.12	0.16	
v/s Ratio Perm			0.15			0.11			0.09			0.16
v/c Ratio	0.61	0.66	0.56	0.30	0.83	0.11	0.77	0.72	0.09	0.84	0.50	0.16
Uniform Delay, d1	51.1	40.9	26.5	45.4	40.1	0.0	46.6	33.1	0.0	49.9	32.8	0.0
Progression Factor	1.39	1.22	1.44	0.76	0.76	1.00	0.78	0.69	1.00	1.41	1.14	1.00
Incremental Delay, d2	2.0	1.7	0.6	0.1	4.2	0.1	3.4	3.3	0.1	10.7	1.0	0.2
Delay (s)	73.2	51.4	38.8	34.8	34.8	0.1	39.7	26.3	0.1	81.0	38.2	0.2
Level of Service	E	D	D	C	C	A	D	C	A	F	D	A
Approach Delay (s)		51.6			30.9			29.5			44.0	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	380	450	500	410	70	480	1271	440	170	773	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	400	474	526	432	74	505	1338	463	179	814	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	168	400	474	526	432	74	505	1338	463	179	814	37
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.0	20.4	120.0	21.4	34.8	120.0	15.0	50.4	120.0	7.8	43.2	43.2
Effective Green, g (s)	8.0	23.4	120.0	22.4	37.8	120.0	16.0	53.4	120.0	8.8	46.2	46.2
Actuated g/C Ratio	0.07	0.19	1.00	0.19	0.31	1.00	0.13	0.44	1.00	0.07	0.39	0.39
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	236	713	1603	662	1151	1613	472	2338	1615	260	2023	611
v/s Ratio Prot	c0.05	c0.11		c0.15	0.12		c0.14	c0.25		c0.05	0.15	
v/s Ratio Perm			0.30			0.05			0.29			0.02
v/c Ratio	0.71	0.56	0.30	0.79	0.38	0.05	1.07	0.57	0.29	0.69	0.40	0.06
Uniform Delay, d1	54.9	43.7	0.0	46.6	31.9	0.0	52.0	24.8	0.0	54.3	26.9	23.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.15	1.35	1.00	1.09	0.68	1.00
Incremental Delay, d2	8.2	1.7	0.5	6.1	0.4	0.1	61.1	1.0	0.4	5.7	0.6	0.2
Delay (s)	63.0	45.3	0.5	52.7	32.4	0.1	121.0	34.5	0.4	64.7	18.9	23.4
Level of Service	E	D	A	D	C	A	F	C	A	E	B	C
Approach Delay (s)		27.8			40.4			46.6			26.8	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	193	554	70	40	1421	60	50	140	20	50	240	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3582		1829	5211		3547	3570		1829	4481	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3582		1829	5211		3547	3570		1829	4481	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	203	583	74	42	1496	63	53	147	21	53	253	234
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	155	0
Lane Group Flow (vph)	203	651	0	42	1556	0	53	158	0	53	332	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.2	65.0		6.7	59.5		6.1	20.8		7.5	22.2	
Effective Green, g (s)	13.2	68.0		7.7	62.5		7.1	23.8		8.5	25.2	
Actuated g/C Ratio	0.11	0.57		0.06	0.52		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	390	2029		117	2714		209	708		129	941	
v/s Ratio Prot	c0.06	0.18		0.02	c0.30		0.01	0.04		c0.03	c0.07	
v/s Ratio Perm												
v/c Ratio	0.52	0.32		0.36	0.57		0.25	0.22		0.41	0.35	
Uniform Delay, d1	50.4	13.8		53.8	19.6		53.9	40.3		53.4	40.4	
Progression Factor	1.21	0.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.3		1.9	0.9		0.6	0.2		2.1	0.2	
Delay (s)	62.3	4.6		55.7	20.5		54.6	40.5		55.5	40.7	
Level of Service	E	A		E	C		D	D		E	D	
Approach Delay (s)		18.2			21.5			43.9			42.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	270	610	2405	0	0	1657
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	642	2532	0	0	1744
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	284	642	2532	0	0	1744
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	21.3	21.3	44.4			44.4
Effective Green, g (s)	22.4	22.4	45.5			45.5
Actuated g/C Ratio	0.30	0.30	0.62			0.62
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1075	872	3235			3235
v/s Ratio Prot	0.08	c0.22	c0.48			0.33
v/s Ratio Perm						
v/c Ratio	0.26	0.74	0.78			0.54
Uniform Delay, d1	19.5	23.1	10.5			8.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	3.3	1.3			0.2
Delay (s)	19.6	26.4	11.8			8.3
Level of Service	B	C	B			A
Approach Delay (s)	24.3		11.8			8.3
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	890	0	742	0	0	0	0	2315	850	0	1527	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2835					5255	1570		5091	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2835					5255	1570		5091	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	937	0	781	0	0	0	0	2437	895	0	1607	421
RTOR Reduction (vph)	0	0	31	0	0	0	0	0	153	0	40	0
Lane Group Flow (vph)	937	0	750	0	0	0	0	2437	742	0	1988	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	32.7		32.7					55.0	55.0		55.0	
Effective Green, g (s)	33.8		33.8					56.1	56.1		56.1	
Actuated g/C Ratio	0.35		0.35					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1250		999					3074	918		2978	
v/s Ratio Prot								0.46			0.39	
v/s Ratio Perm	0.26		c0.26						c0.47			
v/c Ratio	0.75		0.75					0.79	0.81		0.67	
Uniform Delay, d1	27.3		27.3					15.4	15.7		13.6	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		3.2					1.5	5.3		0.6	
Delay (s)	29.8		30.6					16.9	21.0		14.1	
Level of Service	C		C					B	C		B	
Approach Delay (s)		30.2			0.0			18.0			14.1	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	120	100	117	60	512	50	470	118	547	580	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1764		1829	1925	2880	1829	5072		3547	3657	1577
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1764		1829	1925	2880	1829	5072		3547	3657	1577
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	126	105	123	63	539	53	495	124	576	611	32
RTOR Reduction (vph)	0	25	0	0	0	134	0	37	0	0	0	18
Lane Group Flow (vph)	32	206	0	123	63	405	53	582	0	576	611	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	3.4	18.0		10.4	25.0	49.1	4.0	20.9		18.1	35.0	35.0
Effective Green, g (s)	4.4	21.0		11.4	28.0	52.1	5.0	23.9		19.1	38.0	38.0
Actuated g/C Ratio	0.05	0.24		0.13	0.32	0.60	0.06	0.27		0.22	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	92	423		238	616	1716	104	1386		775	1590	685
v/s Ratio Prot	0.02	c0.12		c0.07	0.03	0.14	0.03	0.11		c0.16	c0.17	
v/s Ratio Perm												0.01
v/c Ratio	0.35	0.49		0.52	0.10	0.24	0.51	0.42		0.74	0.38	0.02
Uniform Delay, d1	40.1	28.6		35.4	20.9	8.3	40.0	26.1		31.9	16.8	14.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3		0.8	0.0	0.0	1.4	0.4		3.4	0.3	0.0
Delay (s)	40.9	28.9		36.2	20.9	8.3	41.4	26.5		35.3	17.1	14.1
Level of Service	D	C		D	C	A	D	C		D	B	B
Approach Delay (s)		30.4			14.1			27.7			25.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2082	1231	0	757	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2772
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2772
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2192	1296	0	797	495
RTOR Reduction (vph)	0	0	0	0	0	101
Lane Group Flow (vph)	0	2192	1296	0	797	394
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		77.8	77.8		30.2	30.2
Effective Green, g (s)		80.8	80.8		33.2	33.2
Actuated g/C Ratio		0.67	0.67		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3538	3538		981	766
v/s Ratio Prot		c0.42	0.25		c0.22	
v/s Ratio Perm						0.14
v/c Ratio		0.62	0.37		0.81	0.51
Uniform Delay, d1		11.0	8.5		40.5	36.6
Progression Factor		1.04	1.50		1.00	1.00
Incremental Delay, d2		0.6	0.2		5.2	0.6
Delay (s)		12.0	13.0		45.7	37.2
Level of Service		B	B		D	D
Approach Delay (s)		12.0	13.0		42.4	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	132.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2089	0	0	1738	330	522
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2199	0	0	1829	347	549
RTOR Reduction (vph)	0	0	0	0	0	22
Lane Group Flow (vph)	2199	0	0	1829	347	527
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	83.5			83.5	24.5	24.5
Effective Green, g (s)	86.5			86.5	27.5	27.5
Actuated g/C Ratio	0.72			0.72	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3787			2636	812	660
v/s Ratio Prot	0.42			c0.50	0.10	c0.18
v/s Ratio Perm						
v/c Ratio	0.58			0.69	0.43	0.80
Uniform Delay, d1	8.0			9.4	39.5	43.6
Progression Factor	0.74			2.11	1.00	1.00
Incremental Delay, d2	0.5			0.1	0.4	6.7
Delay (s)	6.5			19.8	39.9	50.4
Level of Service	A			B	D	D
Approach Delay (s)	6.5			19.8	46.3	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	1743	40	20	1867	395	30	10	20	356	10	883
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5237		1829	5255	1636		1746			1836	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5237		1829	5255	1636		1746			1836	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	872	1835	42	21	1965	416	32	11	21	375	11	929
RTOR Reduction (vph)	0	2	0	0	0	116	0	15	0	0	0	36
Lane Group Flow (vph)	872	1875	0	21	1965	300	0	49	0	0	386	893
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	28.0	64.2		2.8	39.0	39.0		4.0			29.0	57.0
Effective Green, g (s)	29.0	67.2		3.8	42.0	42.0		6.0			31.0	61.0
Actuated g/C Ratio	0.24	0.56		0.03	0.35	0.35		0.05			0.26	0.51
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	857	2932		57	1839	572		87			474	831
v/s Ratio Prot	0.25	0.36		0.01	c0.37			c0.03			0.21	c0.55
v/s Ratio Perm						0.18						
v/c Ratio	1.02	0.64		0.37	1.07	0.53		0.56			0.81	1.07
Uniform Delay, d1	45.5	18.1		56.9	39.0	31.1		55.7			41.8	29.5
Progression Factor	1.03	1.38		0.57	1.48	2.10		1.00			1.00	1.00
Incremental Delay, d2	31.7	0.9		2.9	39.5	2.5		8.0			10.3	53.3
Delay (s)	78.7	25.9		35.2	97.4	67.8		63.7			52.1	82.8
Level of Service	E	C		D	F	E		E			D	F
Approach Delay (s)		42.6			91.7			63.7			73.8	
Approach LOS		D			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	67.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	194	138	354	142	122	375
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	204	145	373	149	128	395
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1099	447			522	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1099	447			522	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	1	76			88	
cM capacity (veh/h)	206	611			1044	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	349	522	523
Volume Left	204	0	128
Volume Right	145	149	0
cSH	285	1700	1044
Volume to Capacity	1.23	0.31	0.12
Queue Length 95th (ft)	405	0	10
Control Delay (s)	166.9	0.0	3.3
Lane LOS	F		A
Approach Delay (s)	166.9	0.0	3.3
Approach LOS	F		

Intersection Summary			
Average Delay	43.1		
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1189	10	40	1193	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1252	11	42	1256	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			1262		2597	1257
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1262		2597	1257
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		59	70
cM capacity (veh/h)			551		25	209

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1262	42	1256	74
Volume Left	0	42	0	11
Volume Right	11	0	0	63
cSH	1700	551	1700	103
Volume to Capacity	0.74	0.08	0.74	0.72
Queue Length 95th (ft)	0	6	0	94
Control Delay (s)	0.0	12.1	0.0	100.3
Lane LOS		B		F
Approach Delay (s)	0.0	0.4		100.3
Approach LOS				F

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	1828	237	40	1920	10	120	20	40	50	30	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1524		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1229		1253	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	1924	249	42	2021	11	126	21	42	53	32	261
RTOR Reduction (vph)	0	0	61	0	0	5	0	9	0	0	0	206
Lane Group Flow (vph)	51	1924	188	42	2021	6	0	180	0	53	32	55
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	75.9	75.9	5.8	60.9	60.9		23.3		23.3	23.3	23.3
Effective Green, g (s)	21.8	78.9	78.9	6.8	63.9	63.9		25.3		25.3	25.3	25.3
Actuated g/C Ratio	0.18	0.66	0.66	0.06	0.53	0.53		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3455	1048	103	2798	857		259		264	405	338
v/s Ratio Prot	0.03	c0.37		0.02	c0.38						0.02	
v/s Ratio Perm			0.12			0.00		c0.15		0.04		0.03
v/c Ratio	0.15	0.56	0.18	0.41	0.72	0.01		0.69		0.20	0.08	0.16
Uniform Delay, d1	41.3	11.1	8.0	54.7	21.3	13.2		43.8		39.0	38.0	38.7
Progression Factor	1.22	1.54	2.34	1.18	1.37	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.3	2.0	1.2	0.0		7.8		0.4	0.1	0.2
Delay (s)	50.5	17.6	19.0	66.3	30.4	13.2		51.6		39.4	38.1	38.9
Level of Service	D	B	B	E	C	B		D		D	D	D
Approach Delay (s)		18.5			31.0			51.6			38.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	363	650	2360	0	0	1335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	382	684	2484	0	0	1405
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	382	674	2484	0	0	1405
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.11	c0.23	c0.47			0.38
v/s Ratio Perm						
v/c Ratio	0.50	1.08	0.69			0.56
Uniform Delay, d1	20.6	23.5	5.7			4.9
Progression Factor	1.00	1.00	0.79			1.00
Incremental Delay, d2	1.1	59.5	0.5			0.9
Delay (s)	21.7	83.0	4.9			5.8
Level of Service	C	F	A			A
Approach Delay (s)	61.0		4.9			5.8
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1270	1000	0	2188	1178	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1337	1053	0	2303	1240	0
RTOR Reduction (vph)	0	35	0	0	0	0
Lane Group Flow (vph)	1337	1018	0	2303	1240	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	22.0	22.0		26.0	26.0	
Effective Green, g (s)	25.0	25.0		29.0	29.0	
Actuated g/C Ratio	0.42	0.42		0.48	0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1477	1200		2539	2539	
v/s Ratio Prot	c0.38	0.35		c0.44	0.24	
v/s Ratio Perm						
v/c Ratio	0.91	0.85		0.91	0.49	
Uniform Delay, d1	16.4	15.8		14.3	10.5	
Progression Factor	1.00	1.00		1.00	0.96	
Incremental Delay, d2	8.0	5.5		6.0	0.6	
Delay (s)	24.4	21.3		20.3	10.7	
Level of Service	C	C		C	B	
Approach Delay (s)	23.1			20.3	10.7	
Approach LOS	C			C	B	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	715	266	165	218	179	774	173	1267	200	635	1003	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3294		1829	1689	1554	1829	5255	1605	3547	4935	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3294		1829	1689	1554	1829	5255	1605	3547	4935	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	753	280	174	229	188	815	182	1334	211	668	1056	568
RTOR Reduction (vph)	0	21	0	0	34	80	0	0	0	0	88	0
Lane Group Flow (vph)	407	779	0	229	350	539	182	1334	211	668	1536	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.5	26.5		18.0	18.0	40.0	11.2	25.5	110.0	18.0	32.3	
Effective Green, g (s)	29.5	29.5		21.0	21.0	42.0	12.2	28.5	110.0	19.0	35.3	
Actuated g/C Ratio	0.27	0.27		0.19	0.19	0.38	0.11	0.26	1.00	0.17	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	446	883		349	322	593	202	1361	1605	612	1583	
v/s Ratio Prot	c0.24	0.24		0.13	c0.21	0.35	0.10	c0.25		0.19	c0.31	
v/s Ratio Perm									0.13			
v/c Ratio	0.91	0.88		0.66	1.09	0.91	0.90	0.98	0.13	1.09	0.97	
Uniform Delay, d1	39.0	38.6		41.2	44.5	32.2	48.3	40.5	0.0	45.5	36.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.5	10.0		3.4	75.4	17.5	36.5	20.1	0.2	63.8	16.6	
Delay (s)	61.5	48.6		44.5	119.9	49.7	84.8	60.6	0.2	109.3	53.5	
Level of Service	E	D		D	F	D	F	E	A	F	D	
Approach Delay (s)		53.0			70.6			55.7			69.7	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	63.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	10	190	160	10	20	160	422	90	20	445	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	11	200	168	11	21	168	444	95	21	468	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	34	200	179	21	168	539	21	488
Volume Left (vph)	23	0	168	0	168	0	21	0
Volume Right (vph)	0	200	0	21	0	95	0	20
Hadj (s)	0.38	-0.67	0.50	-0.67	0.53	-0.09	0.53	0.01
Departure Headway (s)	8.6	7.6	8.7	7.6	7.7	7.0	7.8	7.3
Degree Utilization, x	0.08	0.42	0.43	0.04	0.36	1.0	0.05	0.99
Capacity (veh/h)	400	456	396	451	462	514	449	488
Control Delay (s)	11.2	14.8	17.1	9.8	13.7	80.4	10.0	63.7
Approach Delay (s)	14.3		16.3		64.5		61.5	
Approach LOS	B		C		F		F	

Intersection Summary			
Delay	50.6		
Level of Service	F		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	120	40	30	40	622	10	60	210	725	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1829	1841		1829	1925	1622	1829	1682		1737	1757	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1829	1841		1829	1925	1622	1829	1682		1737	1757	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	126	42	32	42	655	11	63	221	763	116	11
RTOR Reduction (vph)	0	12	0	0	0	262	0	142	0	0	1	0
Lane Group Flow (vph)	11	156	0	32	42	393	11	142	0	420	469	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	12.6		2.1	13.7	38.7	12.4	12.4		25.0	25.0	
Effective Green, g (s)	2.0	14.6		3.1	15.7	42.7	14.4	14.4		27.0	27.0	
Actuated g/C Ratio	0.03	0.21		0.04	0.22	0.60	0.20	0.20		0.38	0.38	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	378		79	425	1042	370	340		659	667	
v/s Ratio Prot	0.01	0.08		c0.02	0.02	c0.14	0.01	c0.08		0.24	c0.27	
v/s Ratio Perm						0.10						
v/c Ratio	0.22	0.41		0.41	0.10	0.38	0.03	0.42		0.64	0.70	
Uniform Delay, d1	33.8	24.5		33.1	22.1	7.3	22.7	24.7		18.0	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.7		3.4	0.1	0.2	0.0	0.8		2.0	3.4	
Delay (s)	35.9	25.3		36.5	22.2	7.6	22.8	25.5		20.1	22.0	
Level of Service	D	C		D	C	A	C	C		C	C	
Approach Delay (s)		25.9			9.7			25.4			21.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	293	1020	606	120	1164	210	511	841	40	340	911	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1565	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1565	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	308	1074	638	126	1225	221	538	885	42	358	959	309
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	308	1074	638	126	1225	221	538	885	42	358	959	309
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	13.6	30.7	50.7	13.2	30.3	120.0	20.0	40.8	120.0	15.3	35.1	120.0
Effective Green, g (s)	14.6	33.7	54.7	14.2	33.3	120.0	22.0	43.8	120.0	16.3	38.1	120.0
Actuated g/C Ratio	0.12	0.28	0.46	0.12	0.28	1.00	0.18	0.36	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	431	1475	752	419	1458	1588	945	1334	1593	481	1668	1588
v/s Ratio Prot	0.09	0.20	c0.16	0.04	c0.23		0.10	c0.24		c0.10	0.18	
v/s Ratio Perm			0.25			0.14			0.03			0.19
v/c Ratio	0.71	0.73	0.85	0.30	0.84	0.14	0.57	0.66	0.03	0.74	0.57	0.19
Uniform Delay, d1	50.7	39.0	29.0	48.4	40.8	0.0	44.7	31.9	0.0	49.8	34.2	0.0
Progression Factor	1.44	1.12	1.32	0.84	0.85	1.00	0.72	0.62	1.00	1.45	1.22	1.00
Incremental Delay, d2	4.0	1.9	7.3	0.1	4.7	0.2	0.5	2.5	0.0	5.1	1.4	0.3
Delay (s)	76.9	45.5	45.6	40.6	39.3	0.2	32.7	22.3	0.0	77.5	43.1	0.3
Level of Service	E	D	D	D	D	A	C	C	A	E	D	A
Approach Delay (s)		50.3			33.9			25.5			42.6	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	240	600	610	290	140	380	872	350	130	1397	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	253	632	642	305	147	400	918	368	137	1471	105
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	65
Lane Group Flow (vph)	116	253	632	642	305	147	400	918	368	137	1471	40
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.7	17.9	120.0	24.0	35.2	120.0	15.1	50.5	120.0	7.6	43.0	43.0
Effective Green, g (s)	7.7	20.9	120.0	25.0	38.2	120.0	16.1	53.5	120.0	8.6	46.0	46.0
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.13	0.45	1.00	0.07	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	227	636	1603	738	1164	1613	475	2342	1615	254	2014	609
v/s Ratio Prot	0.03	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.28	
v/s Ratio Perm			c0.39			0.09			0.23			0.03
v/c Ratio	0.51	0.40	0.39	0.87	0.26	0.09	0.84	0.39	0.23	0.54	0.73	0.07
Uniform Delay, d1	54.3	44.0	0.0	45.9	30.4	0.0	50.7	22.3	0.0	53.8	31.7	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.53	1.00	1.07	0.71	3.28
Incremental Delay, d2	0.8	0.9	0.7	10.4	0.3	0.1	12.0	0.5	0.3	1.1	2.3	0.2
Delay (s)	55.1	44.8	0.7	56.3	30.7	0.1	75.3	34.7	0.3	58.8	24.7	76.9
Level of Service	E	D	A	E	C	A	E	C	A	E	C	E
Approach Delay (s)		18.2			41.6			36.8			30.6	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	1261	30	20	597	50	70	210	30	80	220	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.90	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3641		1829	5171		3547	3569		1829	4350	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3641		1829	5171		3547	3569		1829	4350	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	1327	32	21	628	53	74	221	32	84	232	302
RTOR Reduction (vph)	0	1	0	0	6	0	0	10	0	0	216	0
Lane Group Flow (vph)	274	1358	0	21	675	0	74	243	0	84	318	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.5	67.2		3.3	56.0		6.7	21.1		8.4	22.8	
Effective Green, g (s)	15.5	70.2		4.3	59.0		7.7	24.1		9.4	25.8	
Actuated g/C Ratio	0.13	0.59		0.04	0.49		0.06	0.20		0.08	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	458	2129		65	2542		227	716		143	935	
v/s Ratio Prot	c0.08	c0.37		0.01	0.13		0.02	0.07		c0.05	c0.07	
v/s Ratio Perm												
v/c Ratio	0.60	0.64		0.32	0.27		0.33	0.34		0.59	0.34	
Uniform Delay, d1	49.3	16.5		56.4	17.8		53.7	41.1		53.4	39.9	
Progression Factor	1.21	0.41		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	1.2		2.9	0.3		0.8	0.3		6.0	0.2	
Delay (s)	61.2	8.0		59.3	18.1		54.5	41.4		59.5	40.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.9			19.3			44.4			42.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1425	1146	0	618	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1500	1206	0	651	684
RTOR Reduction (vph)	0	0	0	0	0	51
Lane Group Flow (vph)	0	1500	1206	0	651	633
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		30.6	30.6		17.4	17.4
Effective Green, g (s)		33.6	33.6		20.4	20.4
Actuated g/C Ratio		0.56	0.56		0.34	0.34
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2971	2971		1218	988
v/s Ratio Prot		c0.28	0.23		0.18	
v/s Ratio Perm						c0.22
v/c Ratio		0.50	0.41		0.53	0.64
Uniform Delay, d1		8.1	7.5		16.0	16.7
Progression Factor		1.00	0.71		1.00	1.00
Incremental Delay, d2		0.6	0.4		0.5	1.4
Delay (s)		8.7	5.7		16.4	18.1
Level of Service		A	A		B	B
Approach Delay (s)		8.7	5.7		17.3	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1393	0	0	1279	350	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1466	0	0	1346	368	411
RTOR Reduction (vph)	0	0	0	0	0	38
Lane Group Flow (vph)	1466	0	0	1346	368	373
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	35.3			35.3	12.7	12.7
Effective Green, g (s)	38.3			38.3	15.7	15.7
Actuated g/C Ratio	0.64			0.64	0.26	0.26
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3387			2357	937	760
v/s Ratio Prot	0.28			c0.36	0.10	c0.13
v/s Ratio Perm						
v/c Ratio	0.43			0.57	0.39	0.49
Uniform Delay, d1	5.4			6.2	18.2	18.8
Progression Factor	1.09			1.27	1.00	1.00
Incremental Delay, d2	0.4			0.6	0.3	0.5
Delay (s)	6.3			8.4	18.5	19.3
Level of Service	A			A	B	B
Approach Delay (s)	6.3			8.4	18.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	839	924	20	10	1149	389	30	10	10	385	10	786
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5287		1847	5307	1592		1812			1854	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5287		1847	5307	1592		1812			1854	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	883	973	21	11	1209	409	32	11	11	405	11	827
RTOR Reduction (vph)	0	2	0	0	0	180	0	8	0	0	0	33
Lane Group Flow (vph)	883	992	0	11	1209	229	0	46	0	0	416	794
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	31.5	61.6		1.4	31.5	31.5		4.0			33.0	64.5
Effective Green, g (s)	32.5	64.6		2.4	34.5	34.5		6.0			35.0	68.5
Actuated g/C Ratio	0.27	0.54		0.02	0.29	0.29		0.05			0.29	0.57
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	970	2846		36	1525	457		90			540	943
v/s Ratio Prot	c0.25	0.19		0.01	c0.23			c0.03			0.22	c0.48
v/s Ratio Perm						0.14						
v/c Ratio	0.91	0.35		0.31	0.79	0.50		0.52			0.77	0.84
Uniform Delay, d1	42.3	15.7		58.0	39.5	35.6		55.6			38.8	21.3
Progression Factor	1.00	0.88		1.07	0.98	0.95		1.00			1.00	1.00
Incremental Delay, d2	11.6	0.3		4.8	4.3	3.9		4.9			6.7	6.9
Delay (s)	53.9	14.2		67.0	43.1	37.7		60.5			45.5	28.1
Level of Service	D	B		E	D	D		E			D	C
Approach Delay (s)		32.9			41.9			60.5			34.0	
Approach LOS		C			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	71	171	248	68	140	291
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	75	180	261	72	147	306
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	898	297			333	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	898	297			333	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	76			88	
cM capacity (veh/h)	273	743			1227	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	255	333	454
Volume Left	75	0	147
Volume Right	180	72	0
cSH	493	1700	1227
Volume to Capacity	0.52	0.20	0.12
Queue Length 95th (ft)	73	0	10
Control Delay (s)	19.8	0.0	3.5
Lane LOS	C		A
Approach Delay (s)	19.8	0.0	3.5
Approach LOS	C		

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1161	10	10	1228	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1222	11	11	1293	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1233		2541	1227
vC1, stage 1 conf vol					1227	
vC2, stage 2 conf vol					1314	
vCu, unblocked vol			1233		2541	1227
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	90
cM capacity (veh/h)			565		179	217

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1233	11	1293	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	565	1700	203
Volume to Capacity	0.73	0.02	0.76	0.16
Queue Length 95th (ft)	0	1	0	13
Control Delay (s)	0.0	11.5	0.0	26.0
Lane LOS		B		D
Approach Delay (s)	0.0	0.1		26.0
Approach LOS				D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	640	213	196	141	206	370	247	907	140	481	678	594
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3302		1847	1847	1570	1847	5307	1627	3583	4894	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3302		1847	1847	1570	1847	5307	1627	3583	4894	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	674	224	206	148	217	389	260	955	147	506	714	625
RTOR Reduction (vph)	0	43	0	0	0	79	0	0	0	0	176	0
Lane Group Flow (vph)	364	697	0	148	217	310	260	955	147	506	1163	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	22.6	22.6		5.0	5.0	18.5	10.4	26.9	90.0	13.5	30.0	
Effective Green, g (s)	25.6	25.6		8.0	8.0	24.5	11.4	29.9	90.0	14.5	33.0	
Actuated g/C Ratio	0.28	0.28		0.09	0.09	0.27	0.13	0.33	1.00	0.16	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	477	939		164	164	427	233	1763	1627	577	1794	
v/s Ratio Prot	c0.22	0.21		0.08	c0.12	0.20	c0.14	0.18		c0.14	c0.24	
v/s Ratio Perm									0.09			
v/c Ratio	0.76	0.74		0.90	1.32	0.73	1.12	0.54	0.09	0.88	0.65	
Uniform Delay, d1	29.4	29.2		40.6	41.0	29.7	39.3	24.5	0.0	36.9	23.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.4	2.8		42.4	181.4	5.1	93.6	1.2	0.1	13.7	1.8	
Delay (s)	35.8	32.0		83.0	222.4	34.8	132.9	25.7	0.1	50.5	25.5	
Level of Service	D	C		F	F	C	F	C	A	D	C	
Approach Delay (s)		33.3			98.3			43.4			32.4	
Approach LOS		C			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	32	40	250	250	80	40	270	357	150	30	409	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	34	42	263	263	84	42	284	376	158	32	431	34

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	76	263	347	42	284	534	32	464
Volume Left (vph)	34	0	263	0	284	0	32	0
Volume Right (vph)	0	263	0	42	0	158	0	34
Hadj (s)	0.24	-0.68	0.40	-0.68	0.52	-0.19	0.52	-0.03
Departure Headway (s)	9.4	8.5	9.2	8.2	9.0	8.3	9.1	8.6
Degree Utilization, x	0.20	0.62	0.89	0.10	0.71	1.0	0.08	1.0
Capacity (veh/h)	375	410	383	431	393	440	384	426
Control Delay (s)	13.5	23.3	52.1	10.9	30.0	147.9	11.7	104.3
Approach Delay (s)	21.1		47.7		106.9		98.4	
Approach LOS	C		E		F		F	

Intersection Summary			
Delay	79.3		
Level of Service	F		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	60	747	30	60	80	809	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.91		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1831		1847	1944	1652	1847	1762		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1831		1847	1944	1652	1847	1762		1754	1776	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	63	786	32	63	84	852	137	11
RTOR Reduction (vph)	0	19	0	0	0	297	0	50	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	63	489	32	97	0	435	564	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	2.0	8.7		4.0	10.7	41.4	12.3	12.3		30.7	30.7	
Effective Green, g (s)	3.0	10.7		5.0	12.7	45.4	14.3	14.3		32.7	32.7	
Actuated g/C Ratio	0.04	0.14		0.07	0.17	0.61	0.19	0.19		0.44	0.44	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	74	262		123	330	1070	353	337		767	777	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.20	0.02	c0.05		0.25	c0.32	
v/s Ratio Perm						0.10						
v/c Ratio	0.28	0.41		0.34	0.19	0.46	0.09	0.29		0.57	0.73	
Uniform Delay, d1	34.8	29.1		33.3	26.6	8.0	24.8	25.8		15.7	17.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.0		1.7	0.3	0.3	0.1	0.5		1.0	3.4	
Delay (s)	36.9	30.2		34.9	26.9	8.3	25.0	26.3		16.7	20.7	
Level of Service	D	C		C	C	A	C	C		B	C	
Approach Delay (s)		31.1			10.8			26.1			19.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	493	359	90	721	140	450	903	80	240	703	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	519	378	95	759	147	474	951	84	253	740	293
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	263	519	378	95	759	147	474	951	84	253	740	293
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	6.0	23.7	27.8	4.8	22.5	90.0	4.1	32.8	90.0	8.7	35.4	90.0
Effective Green, g (s)	7.0	26.7	33.8	5.8	25.5	90.0	7.1	35.8	90.0	9.7	38.4	90.0
Actuated g/C Ratio	0.08	0.30	0.38	0.06	0.28	1.00	0.08	0.40	1.00	0.11	0.43	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	1574	614	230	1503	1632	410	1468	1631	386	2264	1652
v/s Ratio Prot	c0.07	0.10	c0.05	0.03	0.14		c0.09	c0.26		c0.07	0.14	
v/s Ratio Perm			0.18			0.09			0.05			c0.18
v/c Ratio	0.95	0.33	0.62	0.41	0.50	0.09	1.16	0.65	0.05	0.66	0.33	0.18
Uniform Delay, d1	41.3	24.7	22.8	40.5	27.0	0.0	41.5	22.0	0.0	38.5	17.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.9	0.3	1.3	0.4	0.6	0.1	94.4	2.2	0.1	3.0	0.4	0.2
Delay (s)	80.2	24.9	24.1	40.9	27.5	0.1	135.9	24.2	0.1	41.6	17.6	0.2
Level of Service	F	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		37.2			24.8			57.9			18.3	
Approach LOS		D			C			E			B	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	910	860	1516	0	0	1657
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	958	905	1596	0	0	1744
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	958	902	1596	0	0	1744
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	31.7	31.7	29.3			29.3
Effective Green, g (s)	32.8	32.8	30.4			30.4
Actuated g/C Ratio	0.47	0.47	0.44			0.44
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1681	1365	2308			2308
v/s Ratio Prot	0.27	c0.31	0.30			c0.33
v/s Ratio Perm						
v/c Ratio	0.57	0.66	0.69			0.76
Uniform Delay, d1	13.1	13.9	15.6			16.3
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	1.2	0.9			1.5
Delay (s)	13.6	15.2	16.5			17.7
Level of Service	B	B	B			B
Approach Delay (s)	14.3		16.5			17.7
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	6.0
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	590	0	968	0	0	0	0	1220	380	0	1577	880
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.95	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2833					5255	1565		4973	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2833					5255	1565		4973	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	621	0	1019	0	0	0	0	1284	400	0	1660	926
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	136	0	89	0
Lane Group Flow (vph)	621	0	992	0	0	0	0	1284	264	0	2497	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	40.8		40.8					60.9	60.9		60.9	
Effective Green, g (s)	41.9		41.9					62.0	62.0		62.0	
Actuated g/C Ratio	0.38		0.38					0.56	0.56		0.56	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1352		1080					2964	882		2805	
v/s Ratio Prot								0.24			c0.50	
v/s Ratio Perm	0.18		c0.35						0.17			
v/c Ratio	0.46		0.92					0.43	0.30		0.89	
Uniform Delay, d1	25.5		32.4					13.8	12.6		21.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		12.1					0.1	0.2		4.0	
Delay (s)	25.8		44.5					13.9	12.7		24.9	
Level of Service	C		D					B	B		C	
Approach Delay (s)		37.4			0.0			13.6			24.9	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	109.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	203	40	522	50	730	154	489	510	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1746		1829	1925	2880	1829	5095		3547	3657	1576
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1746		1829	1925	2880	1829	5095		3547	3657	1576
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	214	42	549	53	768	162	515	537	11
RTOR Reduction (vph)	0	32	0	0	0	126	0	27	0	0	0	6
Lane Group Flow (vph)	11	94	0	214	42	423	53	903	0	515	537	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	1.0	16.5		14.6	30.1	53.7	5.4	25.1		17.6	37.3	37.3
Effective Green, g (s)	2.0	19.5		15.6	33.1	56.7	6.4	28.1		18.6	40.3	40.3
Actuated g/C Ratio	0.02	0.21		0.17	0.35	0.60	0.07	0.30		0.20	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	38	362		304	679	1740	124	1526		703	1571	677
v/s Ratio Prot	0.01	0.05		c0.12	0.02	c0.15	0.03	c0.18		c0.15	0.15	
v/s Ratio Perm												0.00
v/c Ratio	0.29	0.26		0.70	0.06	0.24	0.43	0.59		0.73	0.34	0.01
Uniform Delay, d1	45.2	31.1		36.9	20.1	8.6	41.9	28.0		35.3	17.9	15.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1		5.9	0.0	0.0	0.9	0.9		3.4	0.3	0.0
Delay (s)	46.7	31.3		42.9	20.1	8.6	42.8	28.9		38.7	18.2	15.3
Level of Service	D	C		D	C	A	D	C		D	B	B
Approach Delay (s)		32.5			18.3			29.7			28.1	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	891	1690	0	640	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2775
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2775
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	938	1779	0	674	789
RTOR Reduction (vph)	0	0	0	0	0	35
Lane Group Flow (vph)	0	938	1779	0	674	754
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		76.1	76.1		31.9	31.9
Effective Green, g (s)		79.1	79.1		34.9	34.9
Actuated g/C Ratio		0.66	0.66		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3463	3463		1031	807
v/s Ratio Prot		0.18	c0.34		0.19	
v/s Ratio Perm						c0.27
v/c Ratio		0.27	0.51		0.65	0.93
Uniform Delay, d1		8.5	10.5		37.3	41.4
Progression Factor		1.05	1.25		1.00	1.00
Incremental Delay, d2		0.1	0.4		1.5	17.7
Delay (s)		9.0	13.5		38.8	59.1
Level of Service		A	B		D	E
Approach Delay (s)		9.0	13.5		49.7	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1241	0	0	1520	660	708
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1306	0	0	1600	695	745
RTOR Reduction (vph)	0	0	0	0	0	126
Lane Group Flow (vph)	1306	0	0	1600	695	619
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	82.4			82.4	25.6	25.6
Effective Green, g (s)	85.4			85.4	28.6	28.6
Actuated g/C Ratio	0.71			0.71	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3739			2602	845	686
v/s Ratio Prot	0.25			c0.44	0.20	c0.21
v/s Ratio Perm						
v/c Ratio	0.35			0.61	0.82	0.90
Uniform Delay, d1	6.6			8.9	43.3	44.3
Progression Factor	0.23			2.38	1.00	1.00
Incremental Delay, d2	0.2			0.8	6.5	15.1
Delay (s)	1.8			21.9	49.8	59.4
Level of Service	A			C	D	E
Approach Delay (s)	1.8			21.9	54.8	
Approach LOS	A			C	D	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	444	1486	20	20	2019	279	10	5	10	102	10	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1712			1841	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1712			1841	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	467	1564	21	21	2125	294	11	5	11	107	11	342
RTOR Reduction (vph)	0	1	0	0	0	70	0	11	0	0	0	49
Lane Group Flow (vph)	467	1584	0	21	2125	224	0	16	0	0	118	293
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	19.5	77.8		2.8	61.1	61.1		3.0			16.4	35.9
Effective Green, g (s)	20.5	80.8		3.8	64.1	64.1		5.0			18.4	39.9
Actuated g/C Ratio	0.17	0.67		0.03	0.53	0.53		0.04			0.15	0.33
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	605	3530		57	2807	873		71			282	543
v/s Ratio Prot	c0.13	0.30		0.01	c0.40			c0.01			0.06	c0.18
v/s Ratio Perm						0.14						
v/c Ratio	0.77	0.45		0.37	0.76	0.26		0.23			0.42	0.54
Uniform Delay, d1	47.5	9.2		56.9	21.9	15.1		55.6			46.0	32.6
Progression Factor	0.97	0.94		0.82	1.89	2.77		1.00			1.00	1.00
Incremental Delay, d2	5.2	0.3		1.5	0.8	0.3		1.7			1.0	1.1
Delay (s)	51.2	9.0		48.1	42.1	42.1		57.3			47.0	33.7
Level of Service	D	A		D	D	D		E			D	C
Approach Delay (s)		18.6			42.2			57.3			37.1	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	74	235	110	82	182
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	78	247	116	86	192
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	669	305			363	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	669	305			363	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	89			93	
cM capacity (veh/h)	392	735			1195	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	141	363	278
Volume Left	63	0	86
Volume Right	78	116	0
cSH	528	1700	1195
Volume to Capacity	0.27	0.21	0.07
Queue Length 95th (ft)	27	0	6
Control Delay (s)	14.3	0.0	3.0
Lane LOS	B		A
Approach Delay (s)	14.3	0.0	3.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	427	0	10	718	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	449	0	11	756	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			449		1226	449
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			449		1226	449
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1111		195	610

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	449	11	756	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1111	1700	610
Volume to Capacity	0.26	0.01	0.44	0.02
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.3	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.0
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	1342	87	30	2043	50	219	30	40	10	10	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1537		1825	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.77		0.68	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1230		1300	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	1413	92	32	2151	53	231	32	42	11	11	56
RTOR Reduction (vph)	0	0	35	0	0	31	0	5	0	0	0	41
Lane Group Flow (vph)	181	1413	57	32	2151	22	0	300	0	11	11	15
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	70.9	70.9	4.2	47.5	47.5		29.9		29.9	29.9	29.9
Effective Green, g (s)	28.6	73.9	73.9	5.2	50.5	50.5		31.9		31.9	31.9	31.9
Actuated g/C Ratio	0.24	0.62	0.62	0.04	0.42	0.42		0.27		0.27	0.27	0.27
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3236	982	79	2211	677		326		345	511	427
v/s Ratio Prot	0.10	c0.27		0.02	c0.41						0.01	
v/s Ratio Perm			0.04			0.01		c0.24		0.01		0.01
v/c Ratio	0.42	0.44	0.06	0.41	0.97	0.03		0.92		0.03	0.02	0.03
Uniform Delay, d1	38.6	12.1	9.2	55.9	34.1	20.4		42.8		32.6	32.5	32.6
Progression Factor	1.32	1.68	4.19	1.24	1.30	3.70		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.4	0.1	2.5	11.2	0.1		29.7		0.0	0.0	0.0
Delay (s)	51.5	20.7	38.6	72.1	55.5	75.6		72.5		32.7	32.5	32.7
Level of Service	D	C	D	E	E	E		E		C	C	C
Approach Delay (s)		25.0			56.2			72.5			32.7	
Approach LOS		C			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	450	560	1330	0	0	1658
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	474	589	1400	0	0	1745
RTOR Reduction (vph)	0	98	0	0	0	0
Lane Group Flow (vph)	474	491	1400	0	0	1745
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.13	c0.17	0.27			c0.48
v/s Ratio Perm						
v/c Ratio	0.62	0.79	0.39			0.70
Uniform Delay, d1	21.2	22.2	4.1			5.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	2.1	7.5	0.3			1.6
Delay (s)	23.4	29.7	4.4			7.4
Level of Service	C	C	A			A
Approach Delay (s)	26.9		4.4			7.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	750	1658	0	1022	1508	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	789	1745	0	1076	1587	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	789	1745	0	1076	1587	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	39.0	39.0		19.0	19.0	
Effective Green, g (s)	42.0	42.0		22.0	22.0	
Actuated g/C Ratio	0.60	0.60		0.31	0.31	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2128	1728		1651	1651	
v/s Ratio Prot	0.22	c0.61		0.20	c0.30	
v/s Ratio Perm						
v/c Ratio	0.37	1.01		0.65	0.96	
Uniform Delay, d1	7.2	14.0		20.7	23.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	24.0		2.0	14.7	
Delay (s)	7.2	38.0		22.7	38.3	
Level of Service	A	D		C	D	
Approach Delay (s)	28.4			22.7	38.3	
Approach LOS	C			C	D	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	111	84	180	117	243	125	979	180	870	1720	576
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.95	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3270		1829	1738	1554	1829	5255	1605	3547	5023	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3270		1829	1738	1554	1829	5255	1605	3547	5023	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	266	117	88	189	123	256	132	1031	189	916	1811	606
RTOR Reduction (vph)	0	31	0	0	15	86	0	0	0	0	46	0
Lane Group Flow (vph)	144	296	0	189	169	109	132	1031	189	916	2371	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.6	17.6		9.0	9.0	46.0	12.1	38.4	120.0	33.0	59.3	
Effective Green, g (s)	20.6	20.6		12.0	12.0	48.0	13.1	41.4	120.0	34.0	62.3	
Actuated g/C Ratio	0.17	0.17		0.10	0.10	0.40	0.11	0.34	1.00	0.28	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	285	561		182	173	621	199	1812	1605	1004	2607	
v/s Ratio Prot	0.09	c0.09		c0.10	0.10	0.07	c0.07	0.20		0.26	c0.47	
v/s Ratio Perm									0.12			
v/c Ratio	0.51	0.53		1.04	0.98	0.17	0.66	0.57	0.12	0.91	0.91	
Uniform Delay, d1	45.1	45.3		54.0	53.9	23.2	51.3	32.0	0.0	41.6	26.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.43	1.09	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.4		77.2	60.4	0.0	6.0	1.2	0.1	12.0	6.0	
Delay (s)	45.6	45.7		131.2	114.2	23.3	79.4	36.3	0.1	53.6	32.3	
Level of Service	D	D		F	F	C	E	D	A	D	C	
Approach Delay (s)		45.6			88.6			35.4			38.2	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	5	100	30	10	10	150	347	20	10	258	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	5	105	32	11	11	158	365	21	11	272	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	12	105	42	11	158	386	11	287
Volume Left (vph)	6	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	16
Hadj (s)	0.31	-0.67	0.41	-0.67	0.53	0.00	0.53	0.00
Departure Headway (s)	6.9	5.9	7.1	6.0	5.9	5.3	6.1	5.6
Degree Utilization, x	0.02	0.17	0.08	0.02	0.26	0.57	0.02	0.45
Capacity (veh/h)	481	558	463	539	597	663	560	624
Control Delay (s)	8.8	8.9	9.5	7.9	9.7	14.0	8.1	11.9
Approach Delay (s)	8.9		9.2		12.7		11.7	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.8		
Level of Service	B		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	180	80	527	40	40	70	338	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.90		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1760		1829	1925	1618	1829	1726		1737	1754	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1760		1829	1925	1618	1829	1726		1737	1754	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	189	84	555	42	42	74	356	63	11
RTOR Reduction (vph)	0	18	0	0	0	237	0	60	0	0	2	0
Lane Group Flow (vph)	11	24	0	189	84	318	42	56	0	196	232	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	6.2		9.0	14.3	29.2	8.9	8.9		14.9	14.9	
Effective Green, g (s)	1.9	8.2		10.0	16.3	33.2	10.9	10.9		16.9	16.9	
Actuated g/C Ratio	0.03	0.14		0.17	0.28	0.57	0.19	0.19		0.29	0.29	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	248		315	540	1009	343	324		506	511	
v/s Ratio Prot	0.01	0.01		c0.10	0.04	c0.09	0.02	c0.03		0.11	c0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.19	0.10		0.60	0.16	0.31	0.12	0.17		0.39	0.45	
Uniform Delay, d1	27.3	21.7		22.2	15.7	6.5	19.6	19.8		16.4	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.2		3.1	0.1	0.2	0.2	0.3		0.5	0.6	
Delay (s)	28.8	21.8		25.2	15.8	6.6	19.7	20.0		16.9	17.4	
Level of Service	C	C		C	B	A	B	C		B	B	
Approach Delay (s)		23.3			11.8			19.9			17.2	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	803	371	150	1187	170	694	901	140	410	801	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1569	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1569	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	229	845	391	158	1249	179	731	948	147	432	843	255
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	229	845	391	158	1249	179	731	948	147	432	843	255
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	11.8	26.2	46.2	17.0	31.4	120.0	20.0	40.4	120.0	16.4	35.8	120.0
Effective Green, g (s)	12.8	29.2	50.2	18.0	34.4	120.0	22.0	43.4	120.0	17.4	38.8	120.0
Actuated g/C Ratio	0.11	0.24	0.42	0.15	0.29	1.00	0.18	0.36	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	378	1278	695	532	1506	1588	945	1322	1593	514	1699	1588
v/s Ratio Prot	0.06	0.16	c0.10	0.04	c0.24		0.14	c0.26		c0.12	0.16	
v/s Ratio Perm			0.15			0.11			0.09			0.16
v/c Ratio	0.61	0.66	0.56	0.30	0.83	0.11	0.77	0.72	0.09	0.84	0.50	0.16
Uniform Delay, d1	51.2	40.9	26.5	45.4	40.1	0.0	46.6	33.0	0.0	49.9	32.7	0.0
Progression Factor	1.40	1.21	1.44	0.76	0.76	1.00	0.78	0.69	1.00	1.41	1.14	1.00
Incremental Delay, d2	1.8	1.7	0.6	0.1	4.2	0.1	3.6	3.3	0.1	10.7	1.0	0.2
Delay (s)	73.3	51.4	38.7	34.8	34.8	0.1	40.0	26.2	0.1	80.9	38.2	0.2
Level of Service	E	D	D	C	C	A	D	C	A	F	D	A
Approach Delay (s)		51.4			30.9			29.6			43.9	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	380	450	500	410	70	480	1275	440	170	771	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	400	474	526	432	74	505	1342	463	179	812	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	168	400	474	526	432	74	505	1342	463	179	812	37
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.0	20.4	120.0	21.4	34.8	120.0	15.0	50.4	120.0	7.8	43.2	43.2
Effective Green, g (s)	8.0	23.4	120.0	22.4	37.8	120.0	16.0	53.4	120.0	8.8	46.2	46.2
Actuated g/C Ratio	0.07	0.19	1.00	0.19	0.31	1.00	0.13	0.44	1.00	0.07	0.39	0.39
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	236	713	1603	662	1151	1613	472	2338	1615	260	2023	611
v/s Ratio Prot	c0.05	c0.11		c0.15	0.12		c0.14	c0.26		c0.05	0.15	
v/s Ratio Perm			0.30			0.05			0.29			0.02
v/c Ratio	0.71	0.56	0.30	0.79	0.38	0.05	1.07	0.57	0.29	0.69	0.40	0.06
Uniform Delay, d1	54.9	43.7	0.0	46.6	31.9	0.0	52.0	24.8	0.0	54.3	26.8	23.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.15	1.35	1.00	1.09	0.68	1.00
Incremental Delay, d2	8.2	1.7	0.5	6.1	0.4	0.1	61.1	1.0	0.4	5.7	0.6	0.2
Delay (s)	63.0	45.3	0.5	52.7	32.4	0.1	121.0	34.6	0.4	64.6	18.9	23.4
Level of Service	E	D	A	D	C	A	F	C	A	E	B	C
Approach Delay (s)		27.8			40.4			46.6			26.8	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	552	70	40	1425	60	50	140	20	50	240	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3582		1829	5211		3547	3570		1829	4481	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3582		1829	5211		3547	3570		1829	4481	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	201	581	74	42	1500	63	53	147	21	53	253	234
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	155	0
Lane Group Flow (vph)	201	649	0	42	1560	0	53	158	0	53	332	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.1	65.0		6.7	59.6		6.1	20.8		7.5	22.2	
Effective Green, g (s)	13.1	68.0		7.7	62.6		7.1	23.8		8.5	25.2	
Actuated g/C Ratio	0.11	0.57		0.06	0.52		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	387	2029		117	2718		209	708		129	941	
v/s Ratio Prot	c0.06	0.18		0.02	c0.30		0.01	0.04		c0.03	c0.07	
v/s Ratio Perm												
v/c Ratio	0.52	0.32		0.36	0.57		0.25	0.22		0.41	0.35	
Uniform Delay, d1	50.5	13.8		53.8	19.6		53.9	40.3		53.4	40.4	
Progression Factor	1.21	0.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.3		1.9	0.9		0.6	0.2		2.1	0.2	
Delay (s)	62.3	4.6		55.7	20.5		54.6	40.5		55.5	40.7	
Level of Service	E	A		E	C		D	D		E	D	
Approach Delay (s)		18.1			21.4			43.9			42.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	270	610	2400	0	0	1650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	642	2526	0	0	1737
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	284	642	2526	0	0	1737
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	21.3	21.3	44.4			44.4
Effective Green, g (s)	22.4	22.4	45.5			45.5
Actuated g/C Ratio	0.30	0.30	0.62			0.62
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1075	872	3235			3235
v/s Ratio Prot	0.08	c0.22	c0.48			0.33
v/s Ratio Perm						
v/c Ratio	0.26	0.74	0.78			0.54
Uniform Delay, d1	19.5	23.1	10.5			8.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	3.3	1.3			0.2
Delay (s)	19.6	26.4	11.8			8.3
Level of Service	B	C	B			A
Approach Delay (s)	24.3		11.8			8.3
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	890	0	733	0	0	0	0	2305	850	0	1520	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2835					5255	1570		5091	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2835					5255	1570		5091	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	937	0	772	0	0	0	0	2426	895	0	1600	421
RTOR Reduction (vph)	0	0	32	0	0	0	0	0	154	0	40	0
Lane Group Flow (vph)	937	0	740	0	0	0	0	2426	741	0	1981	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	32.6		32.6					54.8	54.8		54.8	
Effective Green, g (s)	33.7		33.7					55.9	55.9		55.9	
Actuated g/C Ratio	0.35		0.35					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1250		999					3072	918		2976	
v/s Ratio Prot								0.46			0.39	
v/s Ratio Perm	c0.26		0.26						c0.47			
v/c Ratio	0.75		0.74					0.79	0.81		0.67	
Uniform Delay, d1	27.2		27.1					15.3	15.6		13.5	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		3.0					1.4	5.3		0.6	
Delay (s)	29.8		30.1					16.7	20.9		14.1	
Level of Service	C		C					B	C		B	
Approach Delay (s)		29.9			0.0			17.9			14.1	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	7.1
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	120	100	115	60	501	50	470	115	528	580	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1764		1829	1925	2880	1829	5076		3547	3657	1576
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1764		1829	1925	2880	1829	5076		3547	3657	1576
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	126	105	121	63	527	53	495	121	556	611	32
RTOR Reduction (vph)	0	25	0	0	0	135	0	36	0	0	0	18
Lane Group Flow (vph)	32	206	0	121	63	392	53	580	0	556	611	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	3.4	17.9		10.3	24.8	48.5	3.9	20.6		17.7	34.4	34.4
Effective Green, g (s)	4.4	20.9		11.3	27.8	51.5	4.9	23.6		18.7	37.4	37.4
Actuated g/C Ratio	0.05	0.24		0.13	0.32	0.60	0.06	0.27		0.22	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	93	426		238	618	1714	103	1384		766	1581	681
v/s Ratio Prot	0.02	c0.12		c0.07	0.03	0.14	0.03	0.11		c0.16	c0.17	
v/s Ratio Perm												0.01
v/c Ratio	0.34	0.48		0.51	0.10	0.23	0.51	0.42		0.73	0.39	0.02
Uniform Delay, d1	39.7	28.2		35.0	20.6	8.2	39.6	25.8		31.5	16.7	14.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3		0.6	0.0	0.0	1.8	0.4		2.9	0.3	0.0
Delay (s)	40.5	28.5		35.6	20.6	8.2	41.4	26.3		34.4	17.1	14.1
Level of Service	D	C		D	C	A	D	C		C	B	B
Approach Delay (s)		29.9			14.0			27.5			25.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2047	1211	0	706	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2769
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2769
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2155	1275	0	743	495
RTOR Reduction (vph)	0	0	0	0	0	107
Lane Group Flow (vph)	0	2155	1275	0	743	388
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		78.9	78.9		29.1	29.1
Effective Green, g (s)		81.9	81.9		32.1	32.1
Actuated g/C Ratio		0.68	0.68		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3586	3586		948	740
v/s Ratio Prot		c0.41	0.24		c0.21	
v/s Ratio Perm						0.14
v/c Ratio		0.60	0.36		0.78	0.52
Uniform Delay, d1		10.3	8.0		40.7	37.4
Progression Factor		1.05	1.60		1.00	1.00
Incremental Delay, d2		0.5	0.2		4.3	0.7
Delay (s)		11.3	13.0		45.0	38.1
Level of Service		B	B		D	D
Approach Delay (s)		11.3	13.0		42.3	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	129.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2004	0	0	1687	330	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2109	0	0	1776	347	505
RTOR Reduction (vph)	0	0	0	0	0	26
Lane Group Flow (vph)	2109	0	0	1776	347	479
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	84.5			84.5	23.5	23.5
Effective Green, g (s)	87.5			87.5	26.5	26.5
Actuated g/C Ratio	0.73			0.73	0.22	0.22
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3831			2666	783	636
v/s Ratio Prot	0.40			c0.49	0.10	c0.17
v/s Ratio Perm						
v/c Ratio	0.55			0.67	0.44	0.75
Uniform Delay, d1	7.4			8.6	40.4	43.7
Progression Factor	0.72			2.34	1.00	1.00
Incremental Delay, d2	0.4			0.4	0.4	5.1
Delay (s)	5.7			20.4	40.8	48.7
Level of Service	A			C	D	D
Approach Delay (s)	5.7			20.4	45.5	
Approach LOS	A			C	D	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1759	40	20	1884	294	30	10	20	281	10	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5237		1829	5255	1636		1746			1836	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5237		1829	5255	1636		1746			1836	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	1852	42	21	1983	309	32	11	21	296	11	816
RTOR Reduction (vph)	0	2	0	0	0	85	0	15	0	0	0	39
Lane Group Flow (vph)	721	1892	0	21	1983	224	0	49	0	0	307	777
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	25.0	66.2		2.8	44.0	44.0		4.0			27.0	52.0
Effective Green, g (s)	26.0	69.2		3.8	47.0	47.0		6.0			29.0	56.0
Actuated g/C Ratio	0.22	0.58		0.03	0.39	0.39		0.05			0.24	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	768	3020		57	2058	640		87			443	763
v/s Ratio Prot	0.20	0.36		0.01	c0.38			c0.03			0.17	c0.47
v/s Ratio Perm						0.14						
v/c Ratio	0.94	0.63		0.37	0.96	0.35		0.56			0.69	1.02
Uniform Delay, d1	46.2	16.8		56.9	35.7	25.7		55.7			41.4	32.0
Progression Factor	1.07	1.38		0.59	1.54	2.32		1.00			1.00	1.00
Incremental Delay, d2	16.4	0.8		3.1	10.7	1.1		8.0			4.6	37.3
Delay (s)	65.9	24.0		36.6	65.6	60.9		63.7			46.1	69.3
Level of Service	E	C		D	E	E		E			D	E
Approach Delay (s)		35.6			64.7			63.7			62.9	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	140	339	130	120	361
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	147	357	137	126	380
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1058	425			494	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1058	425			494	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	14	77			88	
cM capacity (veh/h)	219	629			1070	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	337	494	506
Volume Left	189	0	126
Volume Right	147	137	0
cSH	307	1700	1070
Volume to Capacity	1.10	0.29	0.12
Queue Length 95th (ft)	332	0	10
Control Delay (s)	117.9	0.0	3.2
Lane LOS	F		A
Approach Delay (s)	117.9	0.0	3.2
Approach LOS	F		

Intersection Summary			
Average Delay	30.9		
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1006	10	40	949	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1059	11	42	999	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			1069		2147	1064
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1069		2147	1064
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		79	77
cM capacity (veh/h)			652		50	271

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1069	42	999	74
Volume Left	0	42	0	11
Volume Right	11	0	0	63
cSH	1700	652	1700	166
Volume to Capacity	0.63	0.06	0.59	0.44
Queue Length 95th (ft)	0	5	0	51
Control Delay (s)	0.0	10.9	0.0	43.1
Lane LOS		B		E
Approach Delay (s)	0.0	0.4		43.1
Approach LOS				E

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1779	233	40	1847	10	112	20	40	50	30	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1523		1823	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1233		1244	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	1873	245	42	1944	11	118	21	42	53	32	257
RTOR Reduction (vph)	0	0	61	0	0	5	0	10	0	0	0	204
Lane Group Flow (vph)	46	1873	184	42	1944	6	0	171	0	53	32	53
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	76.4	76.4	5.8	61.4	61.4		22.8		22.8	22.8	22.8
Effective Green, g (s)	21.8	79.4	79.4	6.8	64.4	64.4		24.8		24.8	24.8	24.8
Actuated g/C Ratio	0.18	0.66	0.66	0.06	0.54	0.54		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3477	1055	103	2820	864		254		257	397	332
v/s Ratio Prot	0.03	c0.36		0.02	c0.37						0.02	
v/s Ratio Perm			0.12			0.00		c0.14		0.04		0.03
v/c Ratio	0.14	0.54	0.17	0.41	0.69	0.01		0.67		0.21	0.08	0.16
Uniform Delay, d1	41.2	10.7	7.8	54.7	20.4	12.9		43.9		39.4	38.4	39.1
Progression Factor	1.29	1.70	2.75	1.18	1.40	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.3	2.0	1.1	0.0		6.8		0.4	0.1	0.2
Delay (s)	53.4	18.6	21.6	66.5	29.6	12.9		50.7		39.8	38.5	39.3
Level of Service	D	B	C	E	C	B		D		D	D	D
Approach Delay (s)		19.7			30.3			50.7			39.3	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	356	650	2360	0	0	1324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	375	684	2484	0	0	1394
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	375	674	2484	0	0	1394
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.11	c0.23	c0.47			0.38
v/s Ratio Perm						
v/c Ratio	0.49	1.08	0.69			0.56
Uniform Delay, d1	20.6	23.5	5.7			4.9
Progression Factor	1.00	1.00	0.79			1.00
Incremental Delay, d2	1.0	59.5	0.5			0.9
Delay (s)	21.6	83.0	4.9			5.8
Level of Service	C	F	A			A
Approach Delay (s)	61.3		4.9			5.8
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1270	1008	0	2187	1160	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1337	1061	0	2302	1221	0
RTOR Reduction (vph)	0	37	0	0	0	0
Lane Group Flow (vph)	1337	1024	0	2302	1221	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	22.0	22.0		26.0	26.0	
Effective Green, g (s)	25.0	25.0		29.0	29.0	
Actuated g/C Ratio	0.42	0.42		0.48	0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1477	1200		2539	2539	
v/s Ratio Prot	c0.38	0.36		c0.44	0.23	
v/s Ratio Perm						
v/c Ratio	0.91	0.85		0.91	0.48	
Uniform Delay, d1	16.4	15.8		14.3	10.4	
Progression Factor	1.00	1.00		1.00	0.96	
Incremental Delay, d2	8.0	5.8		6.0	0.6	
Delay (s)	24.4	21.7		20.3	10.6	
Level of Service	C	C		C	B	
Approach Delay (s)	23.2			20.3	10.6	
Approach LOS	C			C	B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	120.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	711	269	160	210	179	764	169	1267	200	607	1027	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3297		1829	1690	1554	1829	5255	1605	3547	4942	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3297		1829	1690	1554	1829	5255	1605	3547	4942	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	748	283	168	221	188	804	178	1334	211	639	1081	562
RTOR Reduction (vph)	0	20	0	0	34	80	0	0	0	0	85	0
Lane Group Flow (vph)	404	775	0	221	347	531	178	1334	211	639	1558	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.5	26.5		18.0	18.0	40.0	11.0	25.5	110.0	18.0	32.5	
Effective Green, g (s)	29.5	29.5		21.0	21.0	42.0	12.0	28.5	110.0	19.0	35.5	
Actuated g/C Ratio	0.27	0.27		0.19	0.19	0.38	0.11	0.26	1.00	0.17	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	446	884		349	322	593	199	1361	1605	612	1594	
v/s Ratio Prot	c0.24	0.23		0.12	c0.21	0.34	0.10	c0.25		0.18	c0.32	
v/s Ratio Perm									0.13			
v/c Ratio	0.91	0.88		0.63	1.08	0.90	0.89	0.98	0.13	1.04	0.98	
Uniform Delay, d1	38.9	38.5		41.0	44.5	31.9	48.4	40.5	0.0	45.5	36.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.2	9.4		2.8	72.4	15.7	35.3	20.1	0.2	48.4	17.8	
Delay (s)	60.1	47.9		43.7	116.9	47.6	83.7	60.6	0.2	93.9	54.7	
Level of Service	E	D		D	F	D	F	E	A	F	D	
Approach Delay (s)		52.0			68.7			55.6			65.7	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	61.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	10	190	160	10	20	160	413	90	20	440	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	19	11	200	168	11	21	168	435	95	21	463	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	29	200	179	21	168	529	21	483
Volume Left (vph)	19	0	168	0	168	0	21	0
Volume Right (vph)	0	200	0	21	0	95	0	20
Hadj (s)	0.36	-0.67	0.50	-0.67	0.53	-0.09	0.53	0.01
Departure Headway (s)	8.6	7.6	8.7	7.6	7.6	7.0	7.8	7.3
Degree Utilization, x	0.07	0.42	0.43	0.04	0.36	1.0	0.05	0.98
Capacity (veh/h)	402	456	396	452	463	513	450	483
Control Delay (s)	11.0	14.8	17.0	9.7	13.6	73.3	10.0	60.5
Approach Delay (s)	14.3		16.2		58.9		58.4	
Approach LOS	B		C		F		F	

Intersection Summary			
Delay	47.2		
Level of Service	E		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	120	40	30	40	613	10	60	210	720	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1829	1841		1829	1925	1622	1829	1682		1737	1757	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1829	1841		1829	1925	1622	1829	1682		1737	1757	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	126	42	32	42	645	11	63	221	758	116	11
RTOR Reduction (vph)	0	12	0	0	0	258	0	142	0	0	1	0
Lane Group Flow (vph)	11	156	0	32	42	387	11	142	0	417	467	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	12.6		2.1	13.7	38.6	12.4	12.4		24.9	24.9	
Effective Green, g (s)	2.0	14.6		3.1	15.7	42.6	14.4	14.4		26.9	26.9	
Actuated g/C Ratio	0.03	0.21		0.04	0.22	0.60	0.20	0.20		0.38	0.38	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	378		79	425	1041	370	341		658	665	
v/s Ratio Prot	0.01	c0.08		c0.02	0.02	0.14	0.01	c0.08		0.24	c0.27	
v/s Ratio Perm						0.10						
v/c Ratio	0.22	0.41		0.41	0.10	0.37	0.03	0.42		0.63	0.70	
Uniform Delay, d1	33.7	24.5		33.1	22.0	7.3	22.7	24.6		18.0	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.7		3.4	0.1	0.2	0.0	0.8		2.0	3.4	
Delay (s)	35.9	25.2		36.4	22.1	7.5	22.7	25.5		20.0	22.0	
Level of Service	D	C		D	C	A	C	C		C	C	
Approach Delay (s)		25.9			9.7			25.4			21.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	71.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	1004	599	120	1143	210	498	841	40	340	911	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1565	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1565	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	280	1057	631	126	1203	221	524	885	42	358	959	269
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	280	1057	631	126	1203	221	524	885	42	358	959	269
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	13.1	30.4	50.4	13.0	30.3	120.0	20.0	41.3	120.0	15.3	35.6	120.0
Effective Green, g (s)	14.1	33.4	54.4	14.0	33.3	120.0	22.0	44.3	120.0	16.3	38.6	120.0
Actuated g/C Ratio	0.12	0.28	0.45	0.12	0.28	1.00	0.18	0.37	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	416	1462	748	413	1458	1588	945	1350	1593	481	1690	1588
v/s Ratio Prot	0.08	0.20	c0.15	0.04	c0.23		0.10	c0.24		c0.10	0.18	
v/s Ratio Perm			0.25			0.14			0.03			0.17
v/c Ratio	0.67	0.72	0.84	0.31	0.83	0.14	0.55	0.66	0.03	0.74	0.57	0.17
Uniform Delay, d1	50.7	39.1	29.0	48.5	40.6	0.0	44.5	31.5	0.0	49.8	33.8	0.0
Progression Factor	1.45	1.12	1.33	0.83	0.84	1.00	0.72	0.61	1.00	1.47	1.23	1.00
Incremental Delay, d2	2.9	1.9	7.3	0.1	4.2	0.2	0.4	2.4	0.0	5.1	1.3	0.2
Delay (s)	76.4	45.7	45.8	40.6	38.2	0.2	32.4	21.7	0.0	78.1	42.8	0.2
Level of Service	E	D	D	D	D	A	C	C	A	E	D	A
Approach Delay (s)		50.1			32.9			24.9			43.6	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	240	600	610	290	140	380	860	350	130	1390	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	253	632	642	305	147	400	905	368	137	1463	105
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	65
Lane Group Flow (vph)	116	253	632	642	305	147	400	905	368	137	1463	40
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.7	17.9	120.0	24.0	35.2	120.0	15.1	50.5	120.0	7.6	43.0	43.0
Effective Green, g (s)	7.7	20.9	120.0	25.0	38.2	120.0	16.1	53.5	120.0	8.6	46.0	46.0
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.13	0.45	1.00	0.07	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	227	636	1603	738	1164	1613	475	2342	1615	254	2014	609
v/s Ratio Prot	0.03	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.28	
v/s Ratio Perm			c0.39			0.09			0.23			0.03
v/c Ratio	0.51	0.40	0.39	0.87	0.26	0.09	0.84	0.39	0.23	0.54	0.73	0.07
Uniform Delay, d1	54.3	44.0	0.0	45.9	30.4	0.0	50.7	22.3	0.0	53.8	31.6	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.54	1.00	1.08	0.71	3.29
Incremental Delay, d2	0.8	0.9	0.7	10.4	0.3	0.1	12.0	0.5	0.3	1.1	2.2	0.2
Delay (s)	55.1	44.8	0.7	56.3	30.7	0.1	75.4	34.7	0.3	59.1	24.6	77.3
Level of Service	E	D	A	E	C	A	E	C	A	E	C	E
Approach Delay (s)		18.2			41.6			36.9			30.6	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	1251	30	20	580	50	70	210	30	80	220	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3641		1829	5168		3547	3569		1829	4355	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3641		1829	5168		3547	3569		1829	4355	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	266	1317	32	21	611	53	74	221	32	84	232	298
RTOR Reduction (vph)	0	1	0	0	7	0	0	10	0	0	213	0
Lane Group Flow (vph)	266	1348	0	21	657	0	74	243	0	84	317	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.3	67.2		3.3	56.2		6.7	21.1		8.4	22.8	
Effective Green, g (s)	15.3	70.2		4.3	59.2		7.7	24.1		9.4	25.8	
Actuated g/C Ratio	0.13	0.59		0.04	0.49		0.06	0.20		0.08	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	452	2129		65	2549		227	716		143	936	
v/s Ratio Prot	c0.07	c0.37		0.01	0.13		0.02	0.07		c0.05	c0.07	
v/s Ratio Perm												
v/c Ratio	0.59	0.63		0.32	0.26		0.33	0.34		0.59	0.34	
Uniform Delay, d1	49.4	16.4		56.4	17.6		53.7	41.1		53.4	39.9	
Progression Factor	1.21	0.41		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.2		2.9	0.2		0.8	0.3		6.0	0.2	
Delay (s)	61.3	7.9		59.3	17.9		54.5	41.4		59.5	40.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.7			19.2			44.4			42.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1383	1106	0	549	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1456	1164	0	578	684
RTOR Reduction (vph)	0	0	0	0	0	58
Lane Group Flow (vph)	0	1456	1164	0	578	626
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		30.7	30.7		17.3	17.3
Effective Green, g (s)		33.7	33.7		20.3	20.3
Actuated g/C Ratio		0.56	0.56		0.34	0.34
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2980	2980		1212	983
v/s Ratio Prot		c0.27	0.22		0.16	
v/s Ratio Perm						c0.22
v/c Ratio		0.49	0.39		0.48	0.64
Uniform Delay, d1		7.9	7.4		15.7	16.7
Progression Factor		1.00	0.74		1.00	1.00
Incremental Delay, d2		0.6	0.3		0.3	1.4
Delay (s)		8.5	5.8		16.0	18.1
Level of Service		A	A		B	B
Approach Delay (s)		8.5	5.8		17.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1283	0	0	1185	350	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1351	0	0	1247	368	353
RTOR Reduction (vph)	0	0	0	0	0	53
Lane Group Flow (vph)	1351	0	0	1247	368	300
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	36.5			36.5	11.5	11.5
Effective Green, g (s)	39.5			39.5	14.5	14.5
Actuated g/C Ratio	0.66			0.66	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3493			2431	865	702
v/s Ratio Prot	0.25			c0.34	0.10	c0.10
v/s Ratio Perm						
v/c Ratio	0.39			0.51	0.43	0.43
Uniform Delay, d1	4.7			5.3	19.2	19.2
Progression Factor	1.12			1.51	1.00	1.00
Incremental Delay, d2	0.3			0.6	0.3	0.4
Delay (s)	5.6			8.6	19.6	19.7
Level of Service	A			A	B	B
Approach Delay (s)	5.6			8.6	19.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	652	946	20	10	1169	249	30	10	10	246	10	610
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5288		1847	5307	1593		1814			1855	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5288		1847	5307	1593		1814			1855	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	686	996	21	11	1231	262	32	11	11	259	11	642
RTOR Reduction (vph)	0	2	0	0	0	110	0	8	0	0	0	36
Lane Group Flow (vph)	686	1015	0	11	1231	152	0	46	0	0	270	606
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	26.5	63.4		1.4	38.3	38.3		4.8			30.4	56.9
Effective Green, g (s)	27.5	66.4		2.4	41.3	41.3		6.8			32.4	60.9
Actuated g/C Ratio	0.23	0.55		0.02	0.34	0.34		0.06			0.27	0.51
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	821	2926		36	1826	548		102			500	838
v/s Ratio Prot	c0.19	0.19		0.01	c0.23			c0.03			0.15	c0.37
v/s Ratio Perm						0.10						
v/c Ratio	0.84	0.35		0.31	0.67	0.28		0.46			0.54	0.72
Uniform Delay, d1	44.1	14.8		58.0	33.6	28.5		54.8			37.4	23.0
Progression Factor	1.08	0.82		1.04	0.99	0.97		1.00			1.00	1.00
Incremental Delay, d2	7.0	0.3		4.8	2.0	1.3		3.2			1.2	3.1
Delay (s)	54.5	12.4		65.4	35.4	28.9		58.0			38.6	26.1
Level of Service	D	B		E	D	C		E			D	C
Approach Delay (s)		29.4			34.5			58.0			29.8	
Approach LOS		C			C			E			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	167	251	50	136	279
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	176	264	53	143	294
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	871	291			317	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	871	291			317	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	77			88	
cM capacity (veh/h)	285	749			1243	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	228	317	437
Volume Left	53	0	143
Volume Right	176	53	0
cSH	544	1700	1243
Volume to Capacity	0.42	0.19	0.12
Queue Length 95th (ft)	52	0	10
Control Delay (s)	16.3	0.0	3.5
Lane LOS	C		A
Approach Delay (s)	16.3	0.0	3.5
Approach LOS	C		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	846	10	10	901	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	891	11	11	948	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			901		1865	896
vC1, stage 1 conf vol					896	
vC2, stage 2 conf vol					969	
vCu, unblocked vol			901		1865	896
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			754		272	339

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	901	11	948	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	754	1700	314
Volume to Capacity	0.53	0.01	0.56	0.10
Queue Length 95th (ft)	0	1	0	8
Control Delay (s)	0.0	9.8	0.0	17.8
Lane LOS		A		C
Approach Delay (s)	0.0	0.1		17.8
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	635	215	191	130	212	356	241	904	140	430	719	593
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3305		1847	1847	1570	1847	5307	1627	3583	4907	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3305		1847	1847	1570	1847	5307	1627	3583	4907	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	668	226	201	137	223	375	254	952	147	453	757	624
RTOR Reduction (vph)	0	42	0	0	0	80	0	0	0	0	165	0
Lane Group Flow (vph)	361	692	0	137	223	295	254	952	147	453	1216	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	22.6	22.6		5.0	5.0	17.6	10.4	27.8	90.0	12.6	30.0	
Effective Green, g (s)	25.6	25.6		8.0	8.0	23.6	11.4	30.8	90.0	13.6	33.0	
Actuated g/C Ratio	0.28	0.28		0.09	0.09	0.26	0.13	0.34	1.00	0.15	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	477	940		164	164	411	233	1816	1627	541	1799	
v/s Ratio Prot	c0.21	0.21		0.07	c0.12	c0.19	c0.14	0.18		0.13	c0.25	
v/s Ratio Perm									0.09			
v/c Ratio	0.76	0.74		0.84	1.36	0.72	1.09	0.52	0.09	0.84	0.68	
Uniform Delay, d1	29.4	29.1		40.4	41.0	30.2	39.3	23.7	0.0	37.1	24.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.0	2.6		28.0	196.1	4.9	85.1	1.1	0.1	10.4	2.1	
Delay (s)	35.4	31.8		68.4	237.1	35.1	124.4	24.8	0.1	47.5	26.1	
Level of Service	D	C		E	F	D	F	C	A	D	C	
Approach Delay (s)		33.0			102.6			40.8			31.4	
Approach LOS		C			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	28	40	250	250	80	40	270	357	150	30	401	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	42	263	263	84	42	284	376	158	32	422	29

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	72	263	347	42	284	534	32	452
Volume Left (vph)	29	0	263	0	284	0	32	0
Volume Right (vph)	0	263	0	42	0	158	0	29
Hadj (s)	0.22	-0.68	0.40	-0.68	0.52	-0.19	0.52	-0.03
Departure Headway (s)	9.4	8.5	9.2	8.2	9.0	8.3	9.1	8.6
Degree Utilization, x	0.19	0.62	0.89	0.10	0.71	1.0	0.08	1.0
Capacity (veh/h)	376	411	384	431	393	440	385	423
Control Delay (s)	13.3	23.2	51.9	10.8	29.9	146.9	11.7	94.1
Approach Delay (s)	21.1		47.4		106.2		88.7	
Approach LOS	C		E		F		F	

Intersection Summary			
Delay	76.7		
Level of Service	F		
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	60	747	30	60	80	801	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.91		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1831		1847	1944	1652	1847	1762		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1831		1847	1944	1652	1847	1762		1754	1776	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	63	786	32	63	84	843	137	11
RTOR Reduction (vph)	0	19	0	0	0	298	0	50	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	63	488	32	97	0	430	560	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	2.0	8.7		4.0	10.7	41.2	12.4	12.4		30.5	30.5	
Effective Green, g (s)	3.0	10.7		5.0	12.7	45.2	14.4	14.4		32.5	32.5	
Actuated g/C Ratio	0.04	0.14		0.07	0.17	0.61	0.19	0.19		0.44	0.44	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	74	262		123	330	1067	356	340		764	773	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.20	0.02	c0.06		0.25	c0.32	
v/s Ratio Perm						0.10						
v/c Ratio	0.28	0.41		0.34	0.19	0.46	0.09	0.29		0.56	0.73	
Uniform Delay, d1	34.8	29.1		33.2	26.5	8.0	24.7	25.7		15.7	17.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.0		1.7	0.3	0.3	0.1	0.5		1.0	3.4	
Delay (s)	36.9	30.1		34.9	26.8	8.3	24.8	26.2		16.7	20.8	
Level of Service	D	C		C	C	A	C	C		B	C	
Approach Delay (s)		31.1			10.9			25.9			19.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	198	458	342	90	691	140	434	903	80	240	703	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	208	482	360	95	727	147	457	951	84	253	740	233
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	208	482	360	95	727	147	457	951	84	253	740	233
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	6.0	23.4	27.5	4.8	22.2	90.0	4.1	33.1	90.0	8.7	35.7	90.0
Effective Green, g (s)	7.0	26.4	33.5	5.8	25.2	90.0	7.1	36.1	90.0	9.7	38.7	90.0
Actuated g/C Ratio	0.08	0.29	0.37	0.06	0.28	1.00	0.08	0.40	1.00	0.11	0.43	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	1556	608	230	1485	1632	410	1481	1631	386	2282	1652
v/s Ratio Prot	c0.06	0.09	c0.05	0.03	0.14		c0.09	c0.26		c0.07	0.14	
v/s Ratio Perm			0.17			0.09			0.05			c0.14
v/c Ratio	0.75	0.31	0.59	0.41	0.49	0.09	1.11	0.64	0.05	0.66	0.32	0.14
Uniform Delay, d1	40.6	24.7	22.7	40.5	27.0	0.0	41.5	21.7	0.0	38.5	17.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.2	0.2	1.0	0.4	0.5	0.1	79.3	2.2	0.1	3.0	0.4	0.2
Delay (s)	49.9	25.0	23.8	40.9	27.6	0.1	120.8	23.9	0.1	41.6	17.4	0.2
Level of Service	D	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		29.5			24.7			52.2			19.1	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX C: SIGNAL WARRANT ANALYSIS AND LOS WORKSHEETS

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

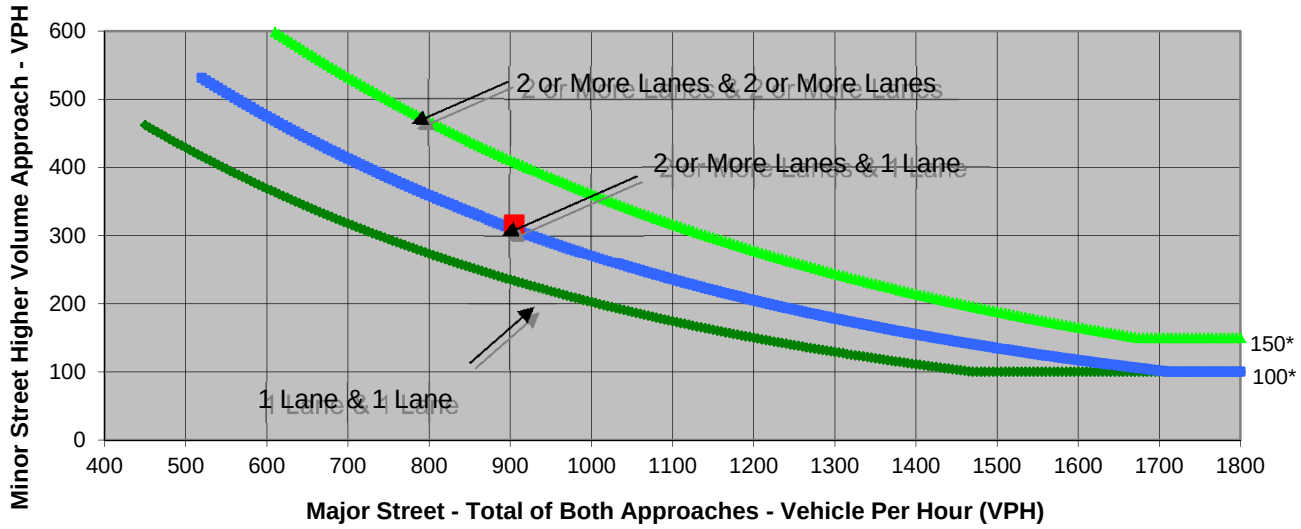
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	105	0	183
Through	332	332	0	0
Right	137	0	0	133
Total	469	437	0	316

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**906**	**316**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

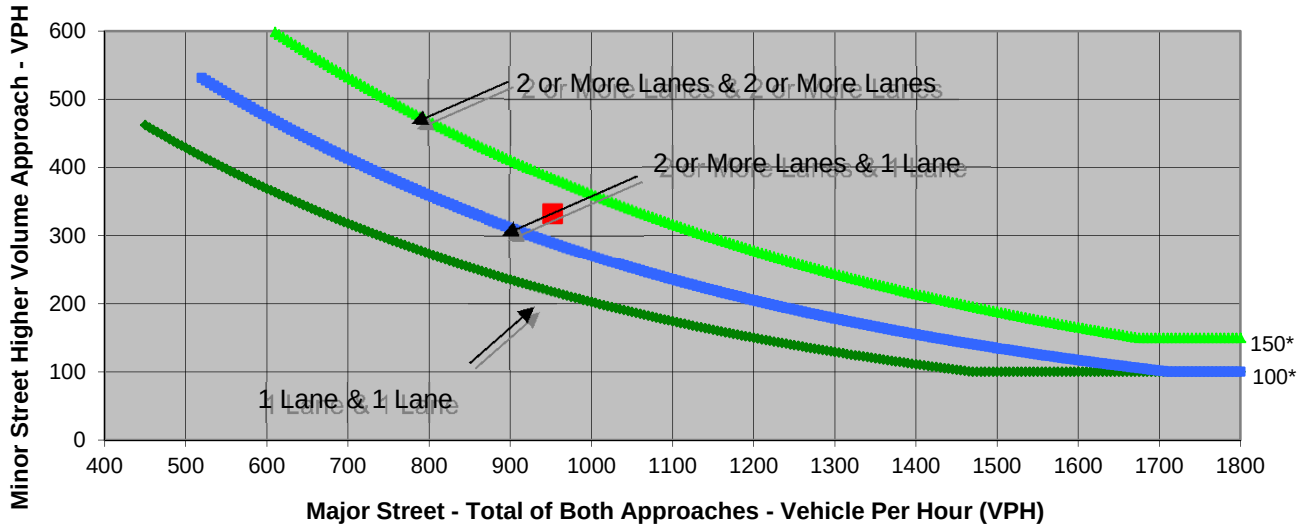
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	122	0	194
Through	334	355	0	0
Right	142	0	0	138
Total	476	477	0	332

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**953**	**332**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

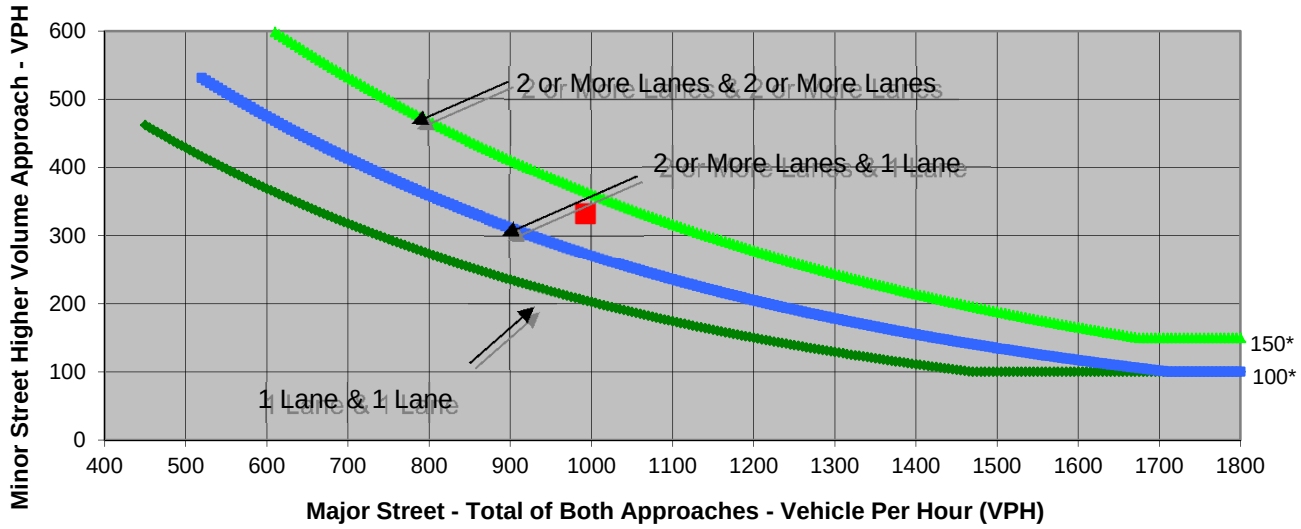
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	122	0	194
Through	354	375	0	0
Right	142	0	0	138
Total	496	497	0	332

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**993**	**332**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

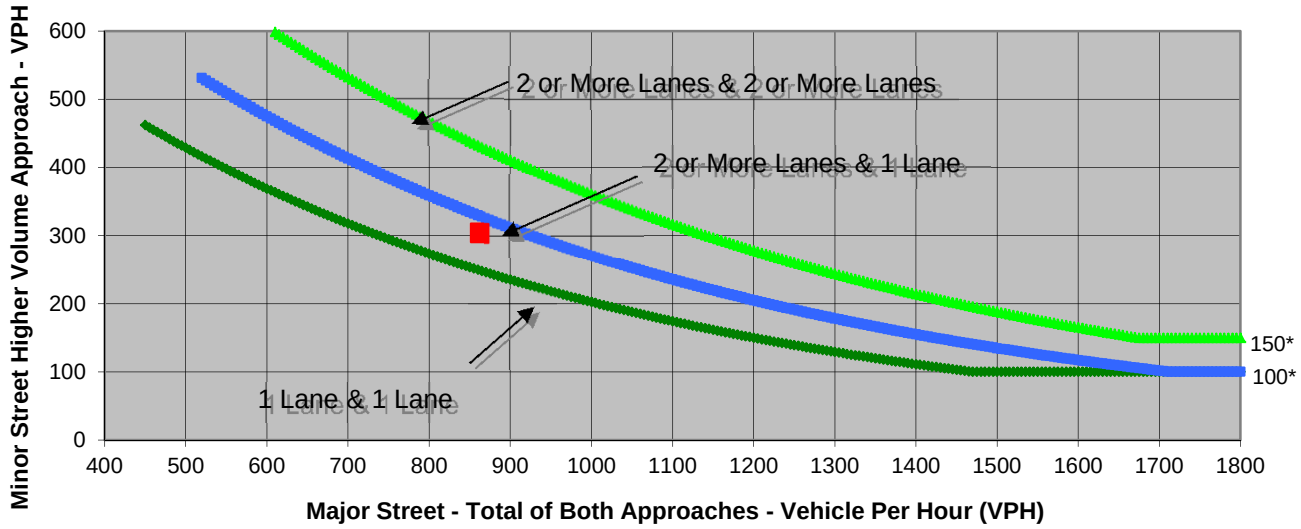
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	103	0	169
Through	317	318	0	0
Right	125	0	0	135
Total	442	421	0	304

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**863**	**304**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

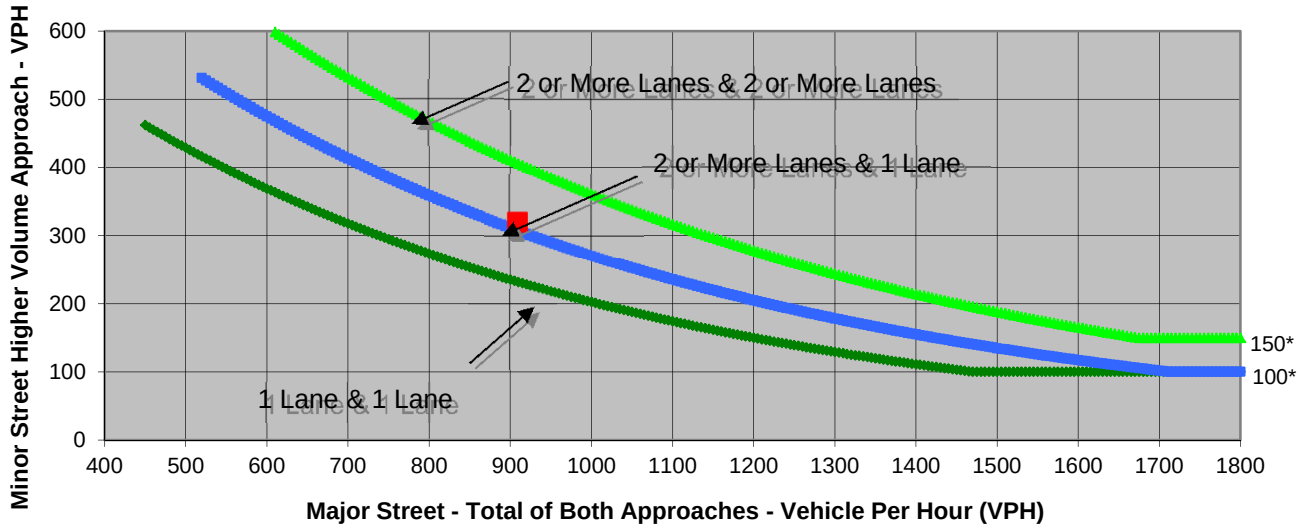
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	120	0	180
Through	319	341	0	0
Right	130	0	0	140
Total	449	461	0	320

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**910**	**320**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

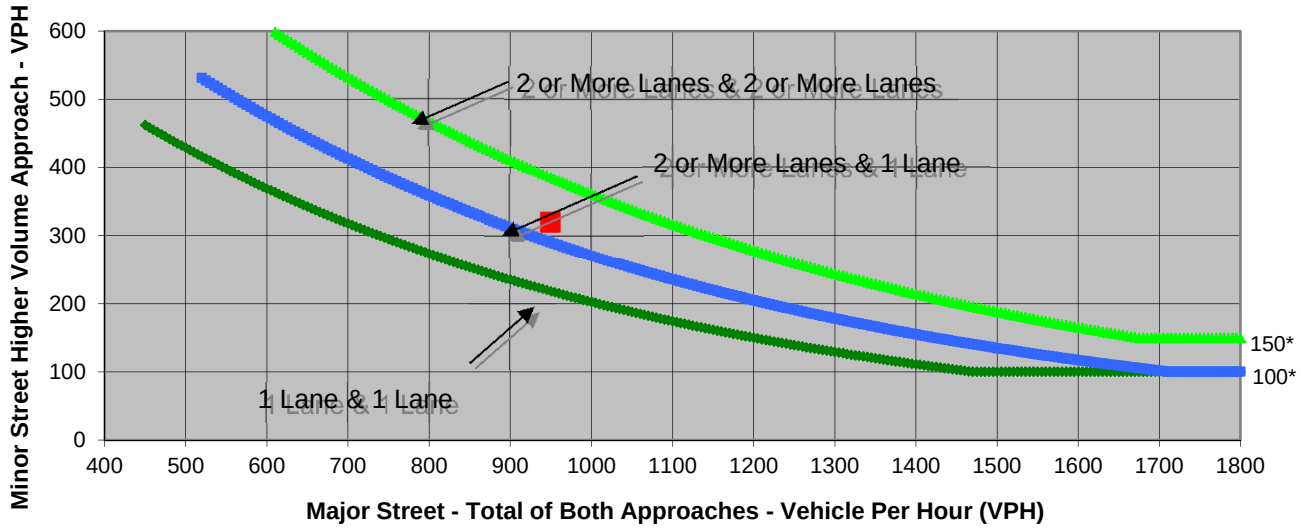
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	120	0	180
Through	339	361	0	0
Right	130	0	0	140
Total	469	481	0	320

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**950**	**320**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2 - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive (North)

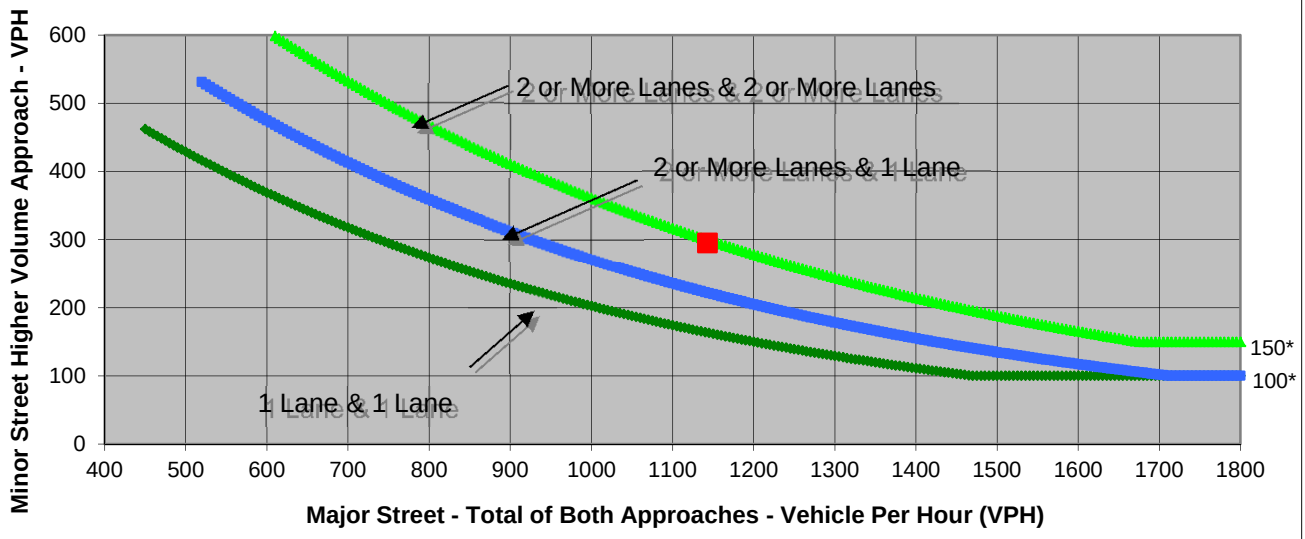
Turn Movement Volumes

	NB	SB	EB	WB
Left	252	21	30	236
Through	320	400	27	24
Right	125	25	238	28
Total	697	446	295	288

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive (North)	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,143**	**295**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near-Term with Project
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Owens Drive (North)

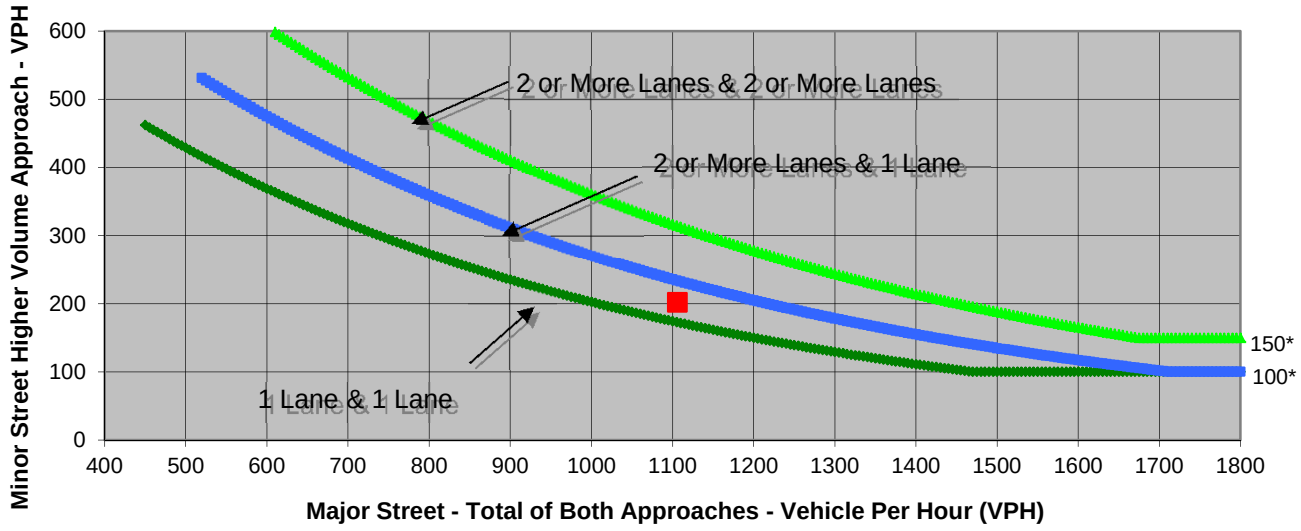
Turn Movement Volumes

	NB	SB	EB	WB
Left	150	20	22	150
Through	412	415	10	10
Right	90	19	170	20
Total	652	454	202	180

Major Street Direction

X	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive (North)	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,106**	**202**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2 - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive

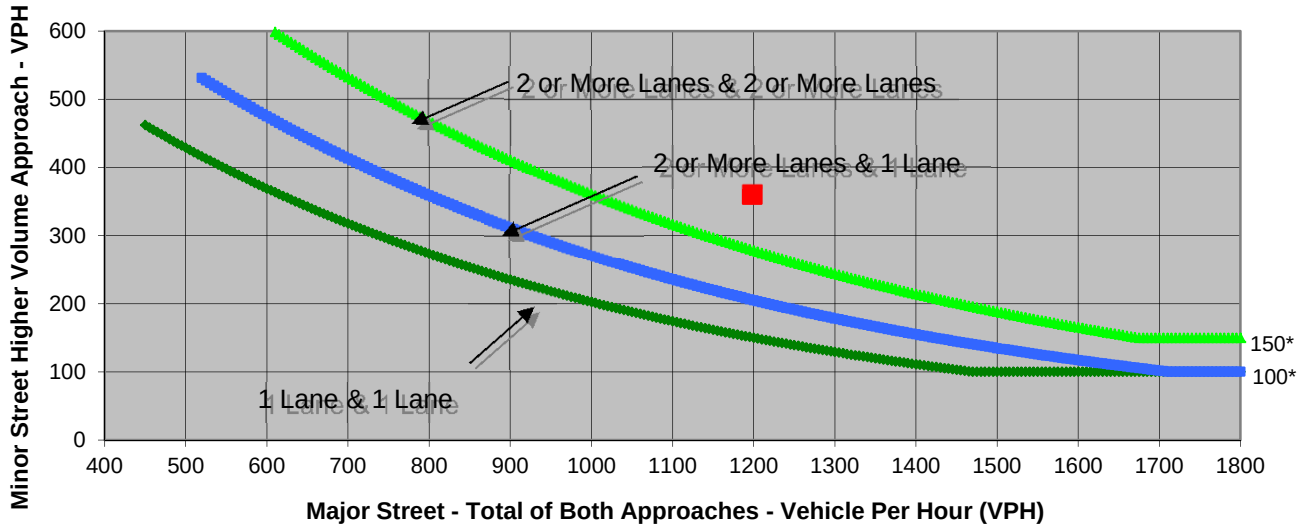
Turn Movement Volumes

	NB	SB	EB	WB
Left	260	30	32	240
Through	337	399	40	80
Right	140	32	240	40
Total	737	461	312	360

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,198**	**360**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Owens Drive

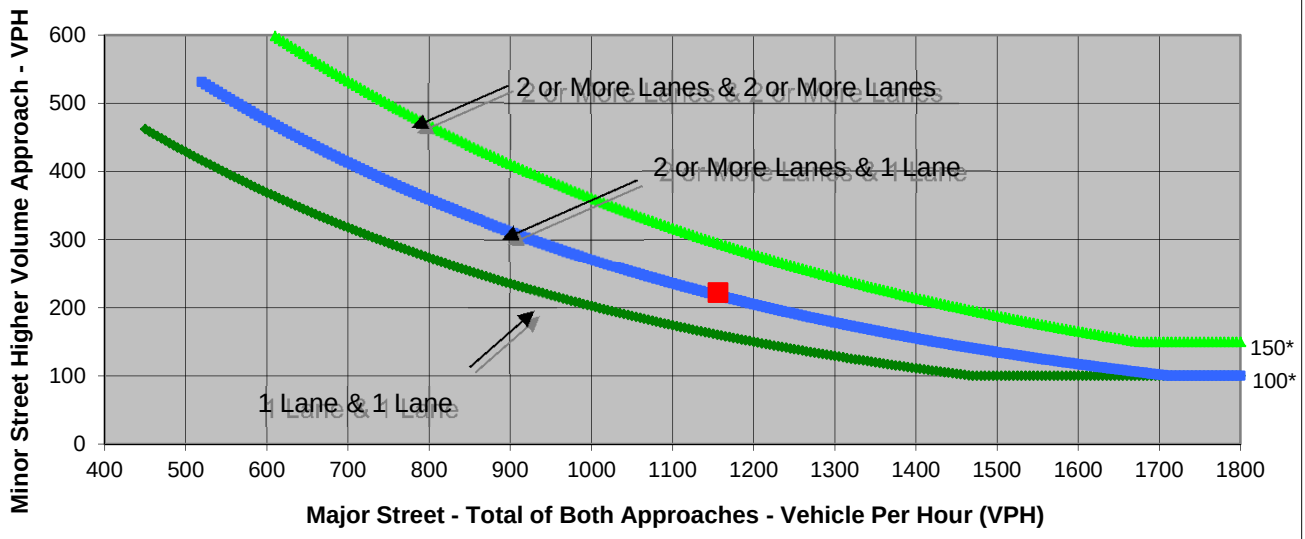
Turn Movement Volumes

	NB	SB	EB	WB
Left	160	20	22	160
Through	422	445	10	10
Right	90	19	190	20
Total	672	484	222	190

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,156**	**222**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2 - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive

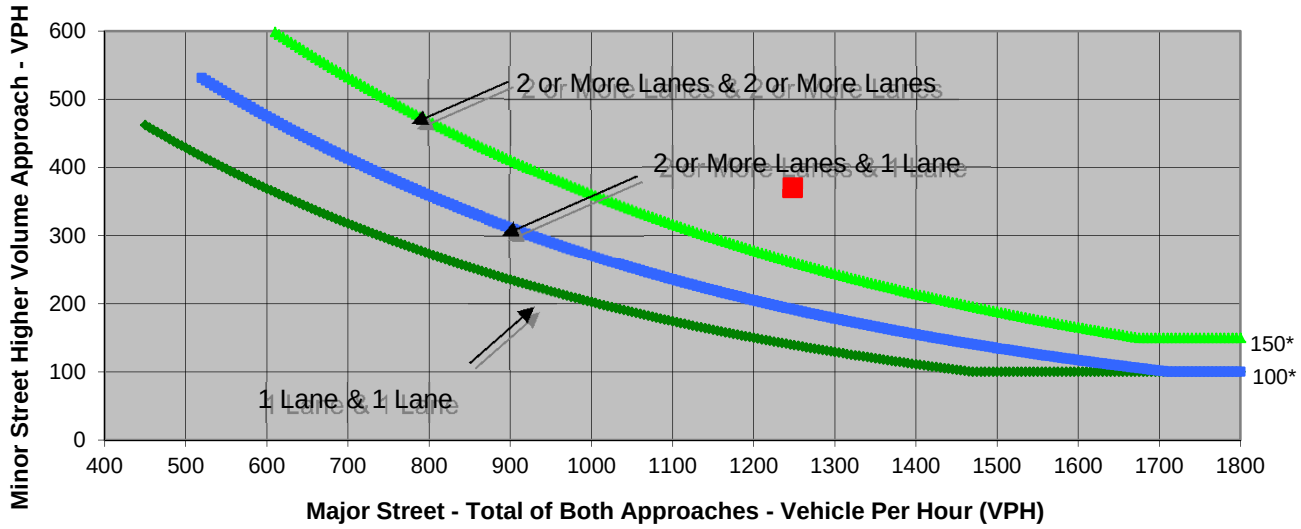
Turn Movement Volumes

	NB	SB	EB	WB
Left	270	30	32	250
Through	357	409	40	80
Right	150	32	250	40
Total	777	471	322	370

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,248**	**370**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2a - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive (North)

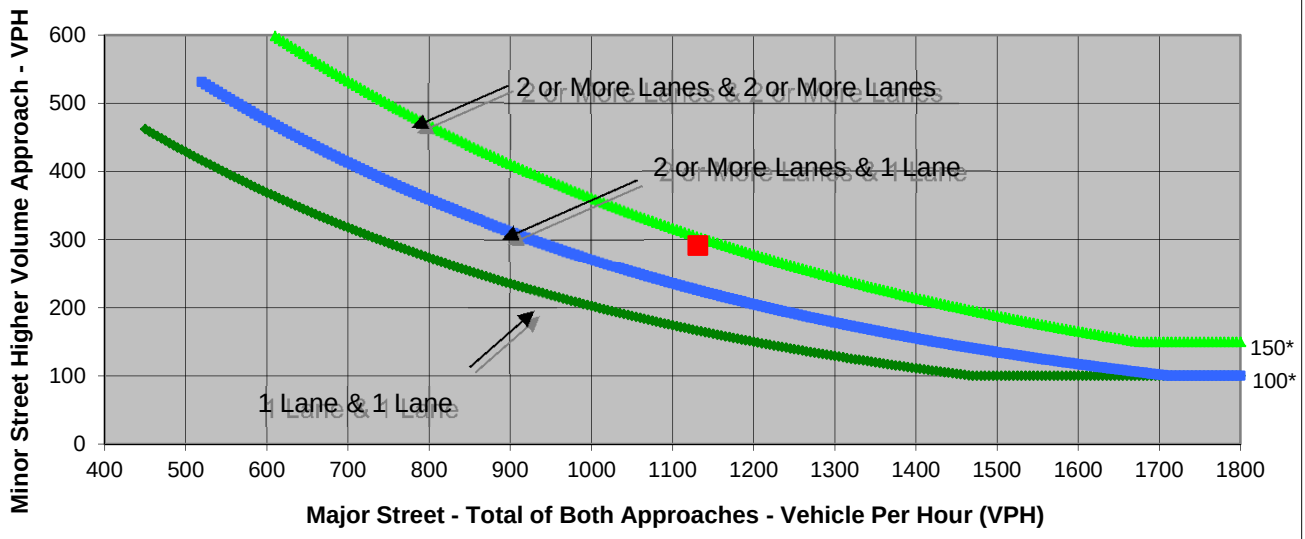
Turn Movement Volumes

	NB	SB	EB	WB
Left	252	21	26	236
Through	320	392	27	24
Right	125	21	238	28
Total	697	434	291	288

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive (North)	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,131**	**291**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near-Term with Project
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Owens Drive (North)

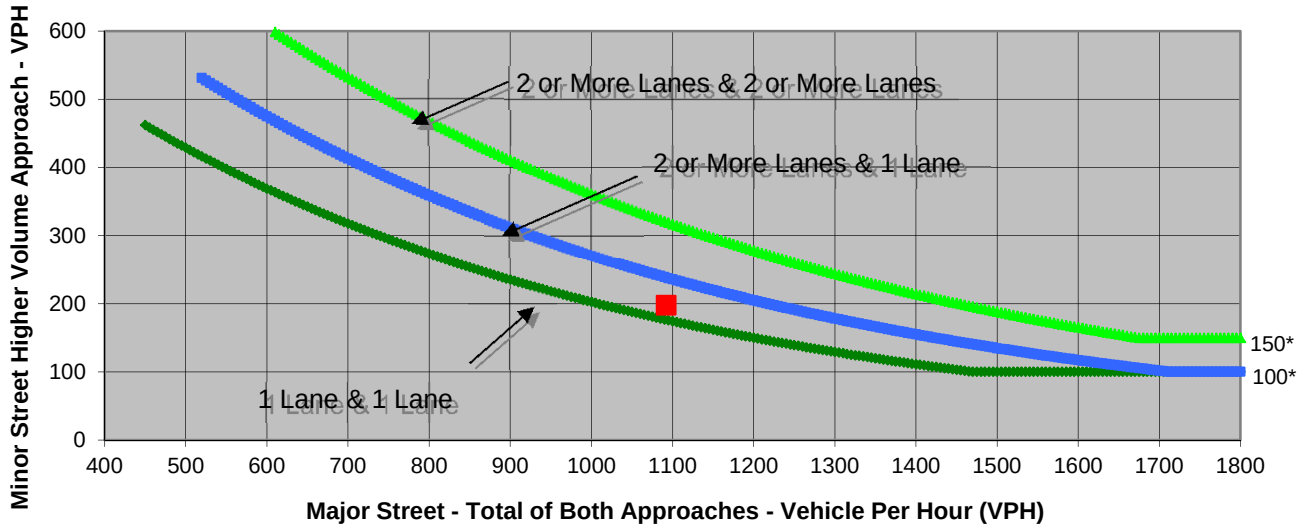
Turn Movement Volumes

	NB	SB	EB	WB
Left	150	20	18	150
Through	403	410	10	10
Right	90	19	170	20
Total	643	449	198	180

Major Street Direction

X	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive (North)	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,092**	**198**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scencario 2a - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive

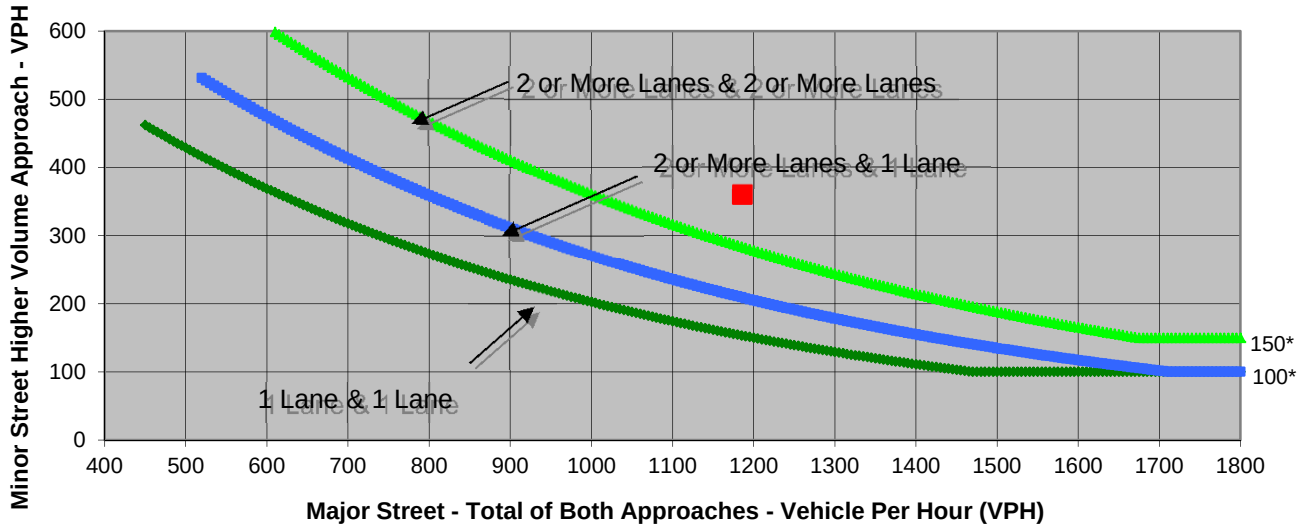
Turn Movement Volumes

	NB	SB	EB	WB
Left	260	30	28	240
Through	337	391	40	80
Right	140	28	240	40
Total	737	449	308	360

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,186**	**360**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Owens Drive

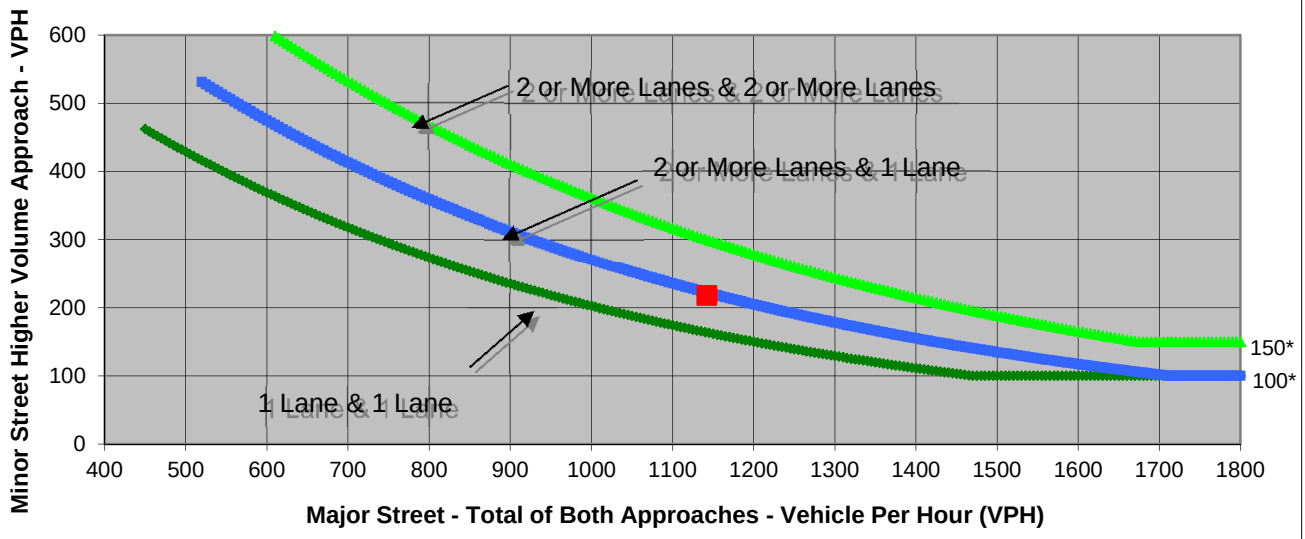
Turn Movement Volumes

	NB	SB	EB	WB
Left	160	20	18	160
Through	413	440	10	10
Right	90	19	190	20
Total	663	479	218	190

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,142**	**218**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2a - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive

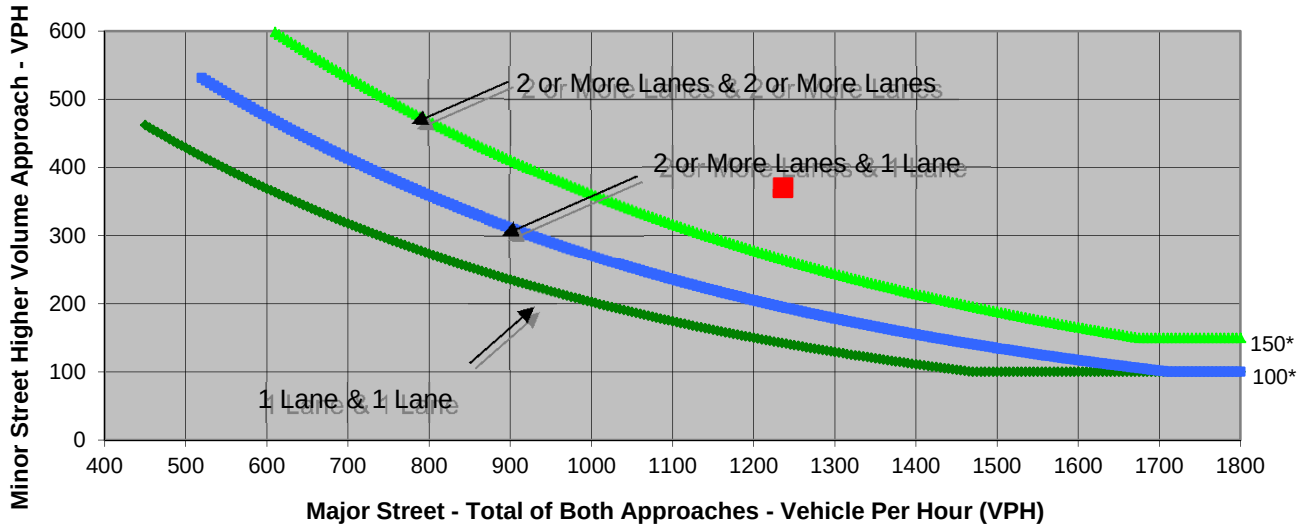
Turn Movement Volumes

	NB	SB	EB	WB
Left	270	30	28	250
Through	357	401	40	80
Right	150	28	250	40
Total	777	459	318	370

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,236**	**370**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

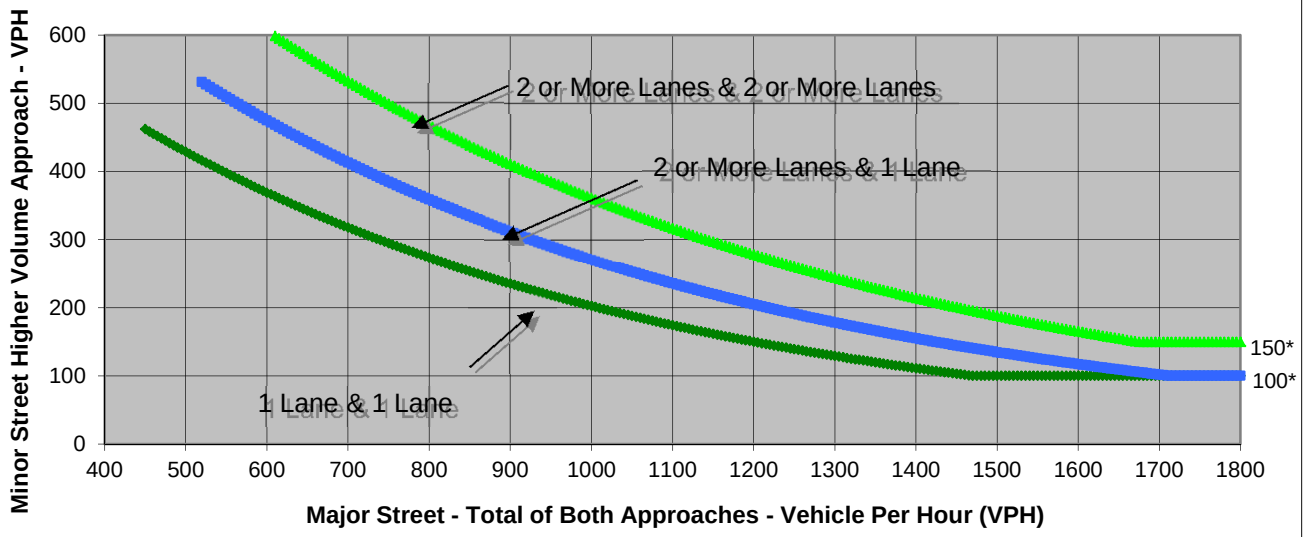
Turn Movement Volumes

	NB	SB	EB	WB
Left	3	0	0	34
Through	0	0	1,554	1,171
Right	57	0	2	0
Total	60	0	1,556	1,205

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**2,761**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

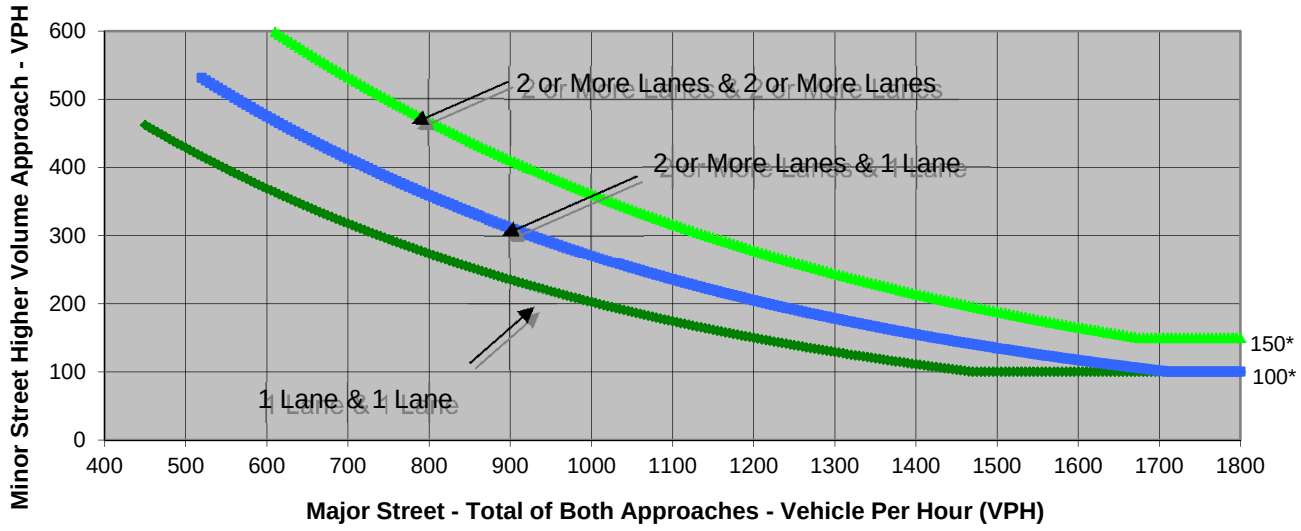
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	35
Through	0	0	1,174	1,183
Right	60	0	10	0
Total	70	0	1,184	1,218

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**2,402**	**70**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

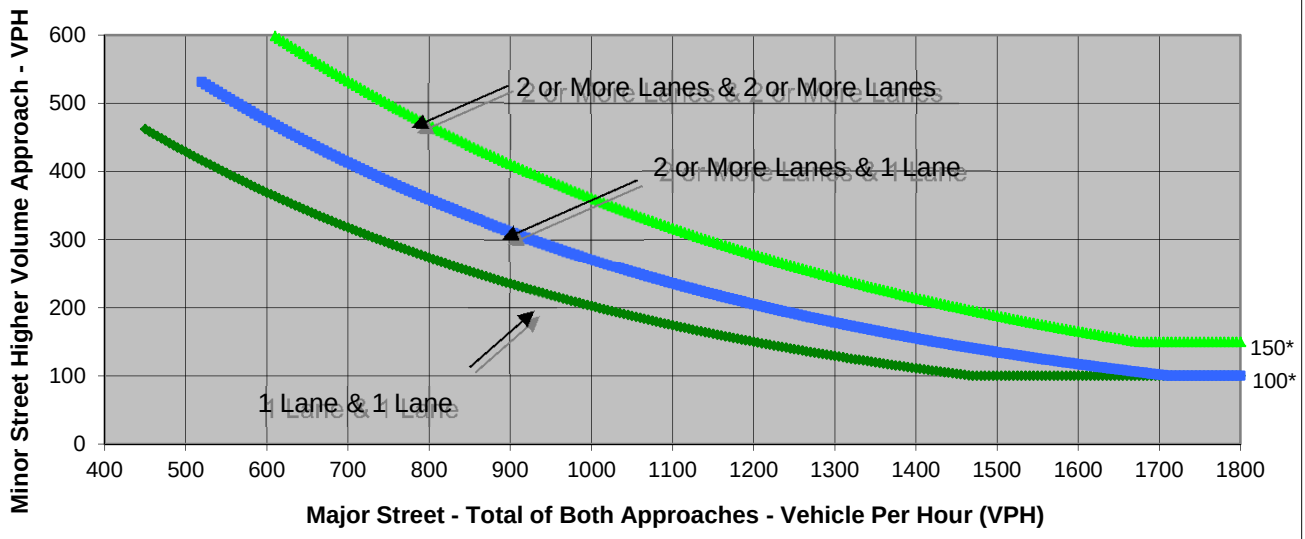
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	40
Through	0	0	1,189	1,193
Right	60	0	10	0
Total	70	0	1,199	1,233

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**2,432**	**70**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

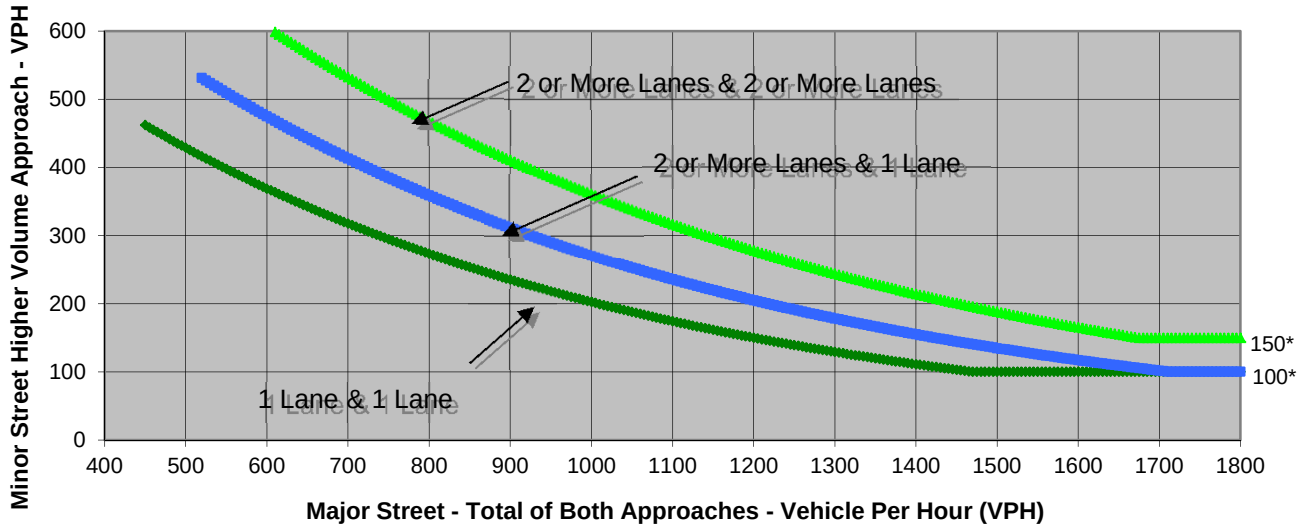
Turn Movement Volumes

	NB	SB	EB	WB
Left	3	0	0	34
Through	0	0	971	928
Right	57	0	2	0
Total	60	0	973	962

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,935**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

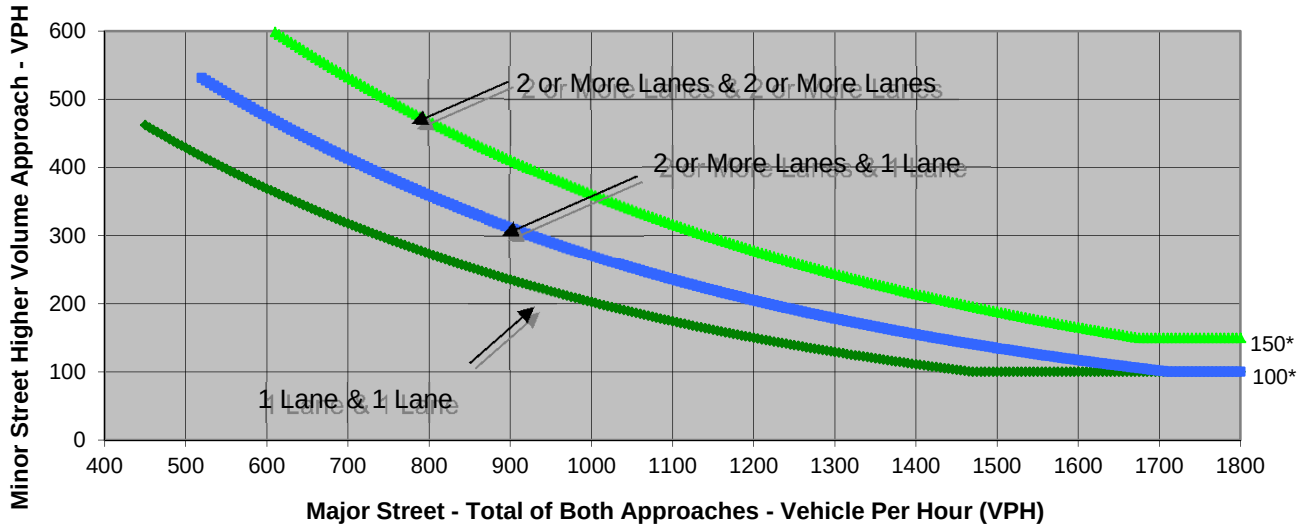
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	35
Through	0	0	991	939
Right	60	0	10	0
Total	70	0	1,001	974

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,975**	**70**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

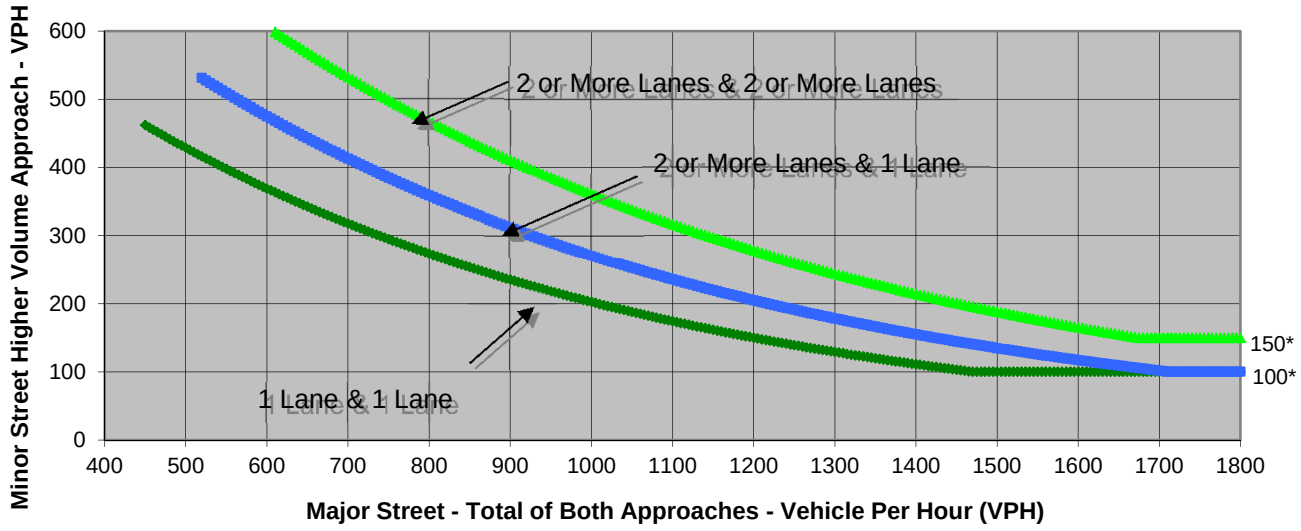
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	40
Through	0	0	1,006	949
Right	60	0	10	0
Total	70	0	1,016	989

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**2,005**	**70**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	680	1720	31	24	2033	281	19	1	19	257	4	767
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5208	5290		1847	5307	1623		1754			1853	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5208	5290		1847	5307	1623		1754			1853	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	739	1870	34	26	2210	305	21	1	21	279	4	834
RTOR Reduction (vph)	0	1	0	0	0	83	0	20	0	0	0	39
Lane Group Flow (vph)	739	1903	0	26	2210	222	0	23	0	0	283	795
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			7			2			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	57.8		4.2	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	60.8		5.2	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.51		0.04	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	824	2680		80	2078	635		87			555	770
v/s Ratio Prot	0.14	0.36		0.01	c0.42			c0.01			0.15	c0.48
v/s Ratio Perm						0.14						
v/c Ratio	0.90	0.71		0.33	1.06	0.35		0.26			0.51	1.03
Uniform Delay, d1	49.5	22.8		55.7	36.5	25.7		54.9			34.7	32.0
Progression Factor	0.95	1.04		1.28	0.85	0.59		1.00			1.00	1.00
Incremental Delay, d2	10.4	1.3		1.9	37.5	1.2		1.6			0.7	41.1
Delay (s)	57.3	25.1		73.0	68.7	16.4		56.5			35.4	73.1
Level of Service	E	C		E	E	B		E			D	E
Approach Delay (s)		34.1			62.5			56.5			63.6	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	50.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	169	135	317	125	103	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1761		1851		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1761		1851		1829	1925
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	188	150	352	139	114	353
RTOR Reduction (vph)	50	0	24	0	0	0
Lane Group Flow (vph)	288	0	467	0	114	353
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		18.5		5.1	27.7
Effective Green, g (s)	12.6		18.5		5.1	27.7
Actuated g/C Ratio	0.26		0.38		0.11	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	457		706		192	1099
v/s Ratio Prot	c0.16		c0.25		c0.06	0.18
v/s Ratio Perm						
v/c Ratio	0.63		0.66		0.59	0.32
Uniform Delay, d1	15.9		12.4		20.7	5.5
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.8		2.3		4.9	0.2
Delay (s)	18.7		14.7		25.6	5.6
Level of Service	B		B		C	A
Approach Delay (s)	18.7		14.7			10.5
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	48.5	Sum of lost time (s)	12.3
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
13: Johnson & Owens Dr (N)

3/20/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	27	238	236	24	28	252	320	125	21	392	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1884	1652		1860	1580	1847	1847		1847	1927	
Flt Permitted		0.82	1.00		0.71	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1575	1652		1373	1580	1847	1847		1847	1927	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	27	28	245	243	25	29	260	330	129	22	404	22
RTOR Reduction (vph)	0	0	179	0	0	21	0	19	0	0	3	0
Lane Group Flow (vph)	0	55	66	0	268	8	260	440	0	22	423	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		14.0	14.0		14.0	14.0	10.4	28.6		1.2	19.4	
Effective Green, g (s)		15.0	15.0		15.0	15.0	11.4	29.6		2.2	20.4	
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.20	0.53		0.04	0.36	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		421	441		367	422	375	974		72	700	
v/s Ratio Prot							c0.14	0.24		0.01	c0.22	
v/s Ratio Perm		0.03	0.04		c0.20	0.00						
v/c Ratio		0.13	0.15		0.73	0.02	0.69	0.45		0.31	0.60	
Uniform Delay, d1		15.6	15.7		18.7	15.1	20.7	8.2		26.2	14.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.2		7.3	0.0	5.5	0.3		2.4	1.5	
Delay (s)		15.7	15.8		26.0	15.1	26.2	8.6		28.6	16.0	
Level of Service		B	B		C	B	C	A		C	B	
Approach Delay (s)		15.8			24.9			14.9			16.7	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	9.3
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Johnson & Stoneridge

3/20/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	823	1704	31	24	2016	382	19	1	19	332	4	875
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5241		1829	5255	1636		1685			1834	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5241		1829	5255	1636		1685			1834	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	866	1794	33	25	2122	402	20	1	20	349	4	921
RTOR Reduction (vph)	0	1	0	0	0	104	0	19	0	0	0	39
Lane Group Flow (vph)	866	1826	0	25	2122	298	0	22	0	0	353	882
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	57.8		4.2	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	60.8		5.2	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.51		0.04	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2655		79	2058	640		84			550	763
v/s Ratio Prot	0.17	0.35		0.01	c0.40			c0.01			0.19	c0.54
v/s Ratio Perm						0.18						
v/c Ratio	1.06	0.69		0.32	1.03	0.47		0.26			0.64	1.16
Uniform Delay, d1	50.5	22.4		55.7	36.5	27.2		54.9			36.4	32.0
Progression Factor	0.95	1.08		1.27	0.84	0.64		1.00			1.00	1.00
Incremental Delay, d2	45.1	1.1		1.8	26.3	1.9		1.7			2.6	84.7
Delay (s)	93.1	25.2		72.8	57.1	19.4		56.5			39.0	116.7
Level of Service	F	C		E	E	B		E			D	F
Approach Delay (s)		47.1			51.3			56.5			95.2	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	58.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	183	133	332	137	105	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1764		1849		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1764		1849		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	193	140	349	144	111	349
RTOR Reduction (vph)	45	0	25	0	0	0
Lane Group Flow (vph)	288	0	468	0	111	349
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		18.6		5.1	27.8
Effective Green, g (s)	12.6		18.6		5.1	27.8
Actuated g/C Ratio	0.26		0.38		0.10	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	457		707		191	1101
v/s Ratio Prot	c0.16		c0.25		c0.06	0.18
v/s Ratio Perm						
v/c Ratio	0.63		0.66		0.58	0.32
Uniform Delay, d1	15.9		12.4		20.7	5.4
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.7		2.3		4.4	0.2
Delay (s)	18.7		14.7		25.2	5.6
Level of Service	B		B		C	A
Approach Delay (s)	18.7		14.7			10.3
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	48.6	Sum of lost time (s)	12.3
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	27	238	236	24	28	252	320	125	21	400	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1879	1652		1860	1579	1847	1847		1847	1924	
Flt Permitted		0.80	1.00		0.70	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1543	1652		1368	1579	1847	1847		1847	1924	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	31	28	245	243	25	29	260	330	129	22	412	26
RTOR Reduction (vph)	0	0	179	0	0	21	0	19	0	0	4	0
Lane Group Flow (vph)	0	59	66	0	268	8	260	440	0	22	434	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		14.1	14.1		14.1	14.1	10.4	28.7		1.2	19.5	
Effective Green, g (s)		15.1	15.1		15.1	15.1	11.4	29.7		2.2	20.5	
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.20	0.53		0.04	0.36	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		413	443		366	423	373	974		72	700	
v/s Ratio Prot							c0.14	0.24		0.01	c0.23	
v/s Ratio Perm		0.04	0.04		c0.20	0.00						
v/c Ratio		0.14	0.15		0.73	0.02	0.70	0.45		0.31	0.62	
Uniform Delay, d1		15.7	15.7		18.8	15.1	20.8	8.3		26.3	14.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		7.4	0.0	5.6	0.3		2.4	1.7	
Delay (s)		15.8	15.9		26.1	15.2	26.4	8.6		28.7	16.4	
Level of Service		B	B		C	B	C	A		C	B	
Approach Delay (s)		15.9			25.1			15.0			17.0	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	9.3
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1949	30	20	2034	284	20	5	20	271	5	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5243		1829	5255	1636		1704			1835	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5243		1829	5255	1636		1704			1835	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	2052	32	21	2141	299	21	5	21	285	5	816
RTOR Reduction (vph)	0	1	0	0	0	83	0	20	0	0	0	39
Lane Group Flow (vph)	721	2083	0	21	2141	216	0	27	0	0	290	777
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	59.2		2.8	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	62.2		3.8	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.52		0.03	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2717		57	2058	640		85			550	763
v/s Ratio Prot	0.14	0.40		0.01	c0.41			c0.02			0.16	c0.47
v/s Ratio Perm						0.13						
v/c Ratio	0.88	0.77		0.37	1.04	0.34		0.32			0.53	1.02
Uniform Delay, d1	49.4	23.1		56.9	36.5	25.6		55.0			34.9	32.0
Progression Factor	0.95	1.09		1.29	0.87	0.61		1.00			1.00	1.00
Incremental Delay, d2	8.3	1.5		3.3	29.5	1.2		2.2			0.9	37.3
Delay (s)	55.3	26.7		77.0	61.3	16.8		57.2			35.8	69.3
Level of Service	E	C		E	E	B		E			D	E
Approach Delay (s)		34.1			56.0			57.2			60.5	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	47.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	180	140	319	130	120	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1762		1850		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1762		1850		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	147	336	137	126	359
RTOR Reduction (vph)	48	0	26	0	0	0
Lane Group Flow (vph)	288	0	447	0	126	359
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.5		17.9		5.1	27.1
Effective Green, g (s)	12.5		17.9		5.1	27.1
Actuated g/C Ratio	0.26		0.37		0.11	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	460		692		195	1091
v/s Ratio Prot	c0.16		c0.24		c0.07	0.19
v/s Ratio Perm						
v/c Ratio	0.63		0.65		0.65	0.33
Uniform Delay, d1	15.6		12.3		20.5	5.5
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.7		2.1		7.2	0.2
Delay (s)	18.2		14.4		27.6	5.7
Level of Service	B		B		C	A
Approach Delay (s)	18.2		14.4			11.4
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	10	170	150	10	20	150	403	90	20	410	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1866	1636		1839	1636	1829	1872		1829	1912	
Flt Permitted		0.81	1.00		0.72	1.00	0.44	1.00		0.39	1.00	
Satd. Flow (perm)		1550	1636		1382	1636	855	1872		749	1912	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	19	11	179	158	11	21	158	424	95	21	432	20
RTOR Reduction (vph)	0	0	130	0	0	15	0	16	0	0	3	0
Lane Group Flow (vph)	0	30	49	0	169	6	158	503	0	21	449	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.1	8.1		8.1	8.1	16.7	16.7		16.7	16.7	
Effective Green, g (s)		9.1	9.1		9.1	9.1	17.7	17.7		17.7	17.7	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.54	0.54		0.54	0.54	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		427	451		381	451	458	1004		401	1025	
v/s Ratio Prot								c0.27			0.23	
v/s Ratio Perm		0.02	0.03		c0.12	0.00	0.18			0.03		
v/c Ratio		0.07	0.11		0.44	0.01	0.34	0.50		0.05	0.44	
Uniform Delay, d1		8.8	8.9		9.9	8.7	4.4	4.8		3.6	4.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.8	0.0	0.5	0.4		0.1	0.3	
Delay (s)		8.9	9.0		10.7	8.7	4.8	5.2		3.7	4.9	
Level of Service		A	A		B	A	A	A		A	A	
Approach Delay (s)		9.0			10.5			5.1			4.9	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	33.0	Sum of lost time (s)	6.2
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	40	240	240	80	40	260	337	140	30	391	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1895	1652		1874	1579	1847	1842		1847	1922	
Flt Permitted		0.81	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1568	1652		1426	1579	1847	1842		1847	1922	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	42	253	253	84	42	274	355	147	32	412	29
RTOR Reduction (vph)	0	0	180	0	0	30	0	21	0	0	4	0
Lane Group Flow (vph)	0	71	73	0	337	12	274	481	0	32	437	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		15.5	15.5		15.5	15.5	10.5	27.0		2.5	19.0	
Effective Green, g (s)		16.5	16.5		16.5	16.5	11.5	28.0		3.5	20.0	
Actuated g/C Ratio		0.29	0.29		0.29	0.29	0.20	0.49		0.06	0.35	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		451	475		410	454	370	900		112	670	
v/s Ratio Prot							c0.15	0.26		0.02	c0.23	
v/s Ratio Perm		0.05	0.04		c0.24	0.01						
v/c Ratio		0.16	0.15		0.82	0.03	0.74	0.53		0.29	0.65	
Uniform Delay, d1		15.2	15.2		19.0	14.6	21.5	10.1		25.7	15.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		12.5	0.0	7.8	0.6		1.4	2.3	
Delay (s)		15.4	15.3		31.5	14.7	29.3	10.7		27.1	18.0	
Level of Service		B	B		C	B	C	B		C	B	
Approach Delay (s)		15.4			29.6			17.3			18.6	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	9.3
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis Alternative 2: Near-Term With Project Mitigated
6: Johnson & Stoneridge

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	1933	30	20	2017	385	20	5	20	346	5	883
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5243		1829	5255	1636		1704			1834	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5243		1829	5255	1636		1704			1834	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	872	2035	32	21	2123	405	21	5	21	364	5	929
RTOR Reduction (vph)	0	1	0	0	0	105	0	20	0	0	0	39
Lane Group Flow (vph)	872	2066	0	21	2123	300	0	27	0	0	369	890
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	59.2		2.8	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	62.2		3.8	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.52		0.03	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2717		57	2058	640		85			550	763
v/s Ratio Prot	0.17	0.39		0.01	c0.40			c0.02			0.20	c0.54
v/s Ratio Perm						0.18						
v/c Ratio	1.07	0.76		0.37	1.03	0.47		0.32			0.67	1.17
Uniform Delay, d1	50.5	23.0		56.9	36.5	27.2		55.0			36.8	32.0
Progression Factor	0.96	1.11		1.30	0.84	0.64		1.00			1.00	1.00
Incremental Delay, d2	46.2	1.4		3.2	26.5	2.0		2.2			3.2	88.9
Delay (s)	94.7	27.0		77.2	57.3	19.5		57.2			40.0	120.9
Level of Service	F	C		E	E	B		E			D	F
Approach Delay (s)		47.1			51.5			57.2			97.9	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	194	138	334	142	122	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1765		1848		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1765		1848		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	145	352	149	128	374
RTOR Reduction (vph)	43	0	26	0	0	0
Lane Group Flow (vph)	306	0	475	0	128	374
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.9		18.5		5.1	27.7
Effective Green, g (s)	12.9		18.5		5.1	27.7
Actuated g/C Ratio	0.26		0.38		0.10	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	466		700		191	1092
v/s Ratio Prot	c0.17		c0.26		c0.07	0.19
v/s Ratio Perm						
v/c Ratio	0.66		0.68		0.67	0.34
Uniform Delay, d1	16.0		12.7		21.0	5.7
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	3.3		2.6		8.9	0.2
Delay (s)	19.3		15.3		29.9	5.9
Level of Service	B		B		C	A
Approach Delay (s)	19.3		15.3			12.0
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	48.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	10	170	150	10	20	150	412	90	20	415	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1862	1636		1839	1636	1829	1873		1829	1912	
Flt Permitted		0.79	1.00		0.72	1.00	0.44	1.00		0.38	1.00	
Satd. Flow (perm)		1517	1636		1376	1636	848	1873		736	1912	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	11	179	158	11	21	158	434	95	21	437	20
RTOR Reduction (vph)	0	0	130	0	0	15	0	16	0	0	3	0
Lane Group Flow (vph)	0	34	49	0	169	6	158	513	0	21	454	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.1	8.1		8.1	8.1	16.9	16.9		16.9	16.9	
Effective Green, g (s)		9.1	9.1		9.1	9.1	17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.54	0.54		0.54	0.54	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		415	448		377	448	457	1009		396	1030	
v/s Ratio Prot								c0.27			0.24	
v/s Ratio Perm		0.02	0.03		c0.12	0.00	0.19			0.03		
v/c Ratio		0.08	0.11		0.45	0.01	0.35	0.51		0.05	0.44	
Uniform Delay, d1		8.9	9.0		10.0	8.8	4.3	4.9		3.6	4.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.9	0.0	0.5	0.4		0.1	0.3	
Delay (s)		9.0	9.1		10.8	8.8	4.8	5.3		3.7	4.9	
Level of Service		A	A		B	A	A	A		A	A	
Approach Delay (s)		9.1			10.6			5.2			4.9	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	33.2	Sum of lost time (s)	6.2
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis Alternative 2: Near-Term With Project Mitigated
13: Johnson & Owens Dr (N)

Saturday AF Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	40	240	240	80	40	260	337	140	30	399	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1891	1652		1874	1579	1847	1842		1847	1919	
Flt Permitted		0.75	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1458	1652		1420	1579	1847	1842		1847	1919	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	42	253	253	84	42	274	355	147	32	420	34
RTOR Reduction (vph)	0	0	182	0	0	30	0	22	0	0	5	0
Lane Group Flow (vph)	0	76	71	0	337	12	274	480	0	32	449	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		15.2	15.2		15.2	15.2	10.5	27.5		2.5	19.5	
Effective Green, g (s)		16.2	16.2		16.2	16.2	11.5	28.5		3.5	20.5	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.20	0.50		0.06	0.36	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		410	465		400	444	369	912		112	684	
v/s Ratio Prot							c0.15	0.26		0.02	c0.23	
v/s Ratio Perm		0.05	0.04		c0.24	0.01						
v/c Ratio		0.19	0.15		0.84	0.03	0.74	0.53		0.29	0.66	
Uniform Delay, d1		15.6	15.5		19.4	14.9	21.6	9.9		25.8	15.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		14.8	0.0	7.9	0.6		1.4	2.3	
Delay (s)		15.9	15.7		34.3	15.0	29.5	10.4		27.2	17.8	
Level of Service		B	B		C	B	C	B		C	B	
Approach Delay (s)		15.7			32.1			17.2			18.4	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	9.3
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1759	40	20	1884	294	30	10	20	281	10	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5237		1829	5255	1636		1746			1836	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5237		1829	5255	1636		1746			1836	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	1852	42	21	1983	309	32	11	21	296	11	816
RTOR Reduction (vph)	0	2	0	0	0	85	0	15	0	0	0	39
Lane Group Flow (vph)	721	1892	0	21	1983	224	0	49	0	0	307	777
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	59.2		2.8	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	62.2		3.8	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.52		0.03	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2714		57	2058	640		87			550	763
v/s Ratio Prot	0.14	0.36		0.01	c0.38			c0.03			0.17	c0.47
v/s Ratio Perm						0.14						
v/c Ratio	0.88	0.70		0.37	0.96	0.35		0.56			0.56	1.02
Uniform Delay, d1	49.4	21.8		56.9	35.7	25.7		55.7			35.3	32.0
Progression Factor	0.96	1.05		1.29	0.88	0.65		1.00			1.00	1.00
Incremental Delay, d2	8.9	1.2		3.4	11.5	1.3		8.0			1.2	37.3
Delay (s)	56.1	24.1		76.8	42.8	18.1		63.7			36.5	69.3
Level of Service	E	C		E	D	B		E			D	E
Approach Delay (s)		33.0			39.8			63.7			60.3	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	180	140	339	130	120	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1762		1853		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1762		1853		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	147	357	137	126	380
RTOR Reduction (vph)	48	0	24	0	0	0
Lane Group Flow (vph)	288	0	470	0	126	380
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		18.4		5.1	27.6
Effective Green, g (s)	12.6		18.4		5.1	27.6
Actuated g/C Ratio	0.26		0.38		0.11	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	458		704		192	1097
v/s Ratio Prot	c0.16		c0.25		c0.07	0.20
v/s Ratio Perm						
v/c Ratio	0.63		0.67		0.66	0.35
Uniform Delay, d1	15.8		12.5		20.8	5.6
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.7		2.4		7.8	0.2
Delay (s)	18.5		14.9		28.6	5.8
Level of Service	B		B		C	A
Approach Delay (s)	18.5		14.9			11.5
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	12.3
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	10	190	160	10	20	160	413	90	20	440	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1866	1636		1839	1636	1829	1873		1829	1913	
Flt Permitted		0.80	1.00		0.72	1.00	0.42	1.00		0.38	1.00	
Satd. Flow (perm)		1545	1636		1381	1636	805	1873		732	1913	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	19	11	200	168	11	21	168	435	95	21	463	20
RTOR Reduction (vph)	0	0	145	0	0	15	0	16	0	0	3	0
Lane Group Flow (vph)	0	30	55	0	179	6	168	514	0	21	480	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.2	8.2		8.2	8.2	16.9	16.9		16.9	16.9	
Effective Green, g (s)		9.2	9.2		9.2	9.2	17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.54	0.54		0.54	0.54	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		426	451		381	451	432	1006		393	1028	
v/s Ratio Prot								c0.27			0.25	
v/s Ratio Perm		0.02	0.03		c0.13	0.00	0.21			0.03		
v/c Ratio		0.07	0.12		0.47	0.01	0.39	0.51		0.05	0.47	
Uniform Delay, d1		8.9	9.0		10.0	8.8	4.5	4.9		3.7	4.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.9	0.0	0.6	0.4		0.1	0.3	
Delay (s)		9.0	9.1		10.9	8.8	5.1	5.4		3.7	5.1	
Level of Service		A	A		B	A	A	A		A	A	
Approach Delay (s)		9.1			10.7			5.3			5.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	33.3	Sum of lost time (s)	6.2
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	40	250	250	80	40	270	357	150	30	401	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1895	1652		1873	1578	1847	1841		1847	1922	
Flt Permitted		0.80	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1539	1652		1423	1578	1847	1841		1847	1922	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	42	263	263	84	42	284	376	158	32	422	29
RTOR Reduction (vph)	0	0	187	0	0	30	0	22	0	0	4	0
Lane Group Flow (vph)	0	71	76	0	347	12	284	512	0	32	447	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		15.8	15.8		15.8	15.8	10.5	27.3		2.6	19.4	
Effective Green, g (s)		16.8	16.8		16.8	16.8	11.5	28.3		3.6	20.4	
Actuated g/C Ratio		0.29	0.29		0.29	0.29	0.20	0.49		0.06	0.35	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		445	478		412	457	366	898		114	676	
v/s Ratio Prot							c0.15	0.28		0.02	c0.23	
v/s Ratio Perm		0.05	0.05		c0.24	0.01						
v/c Ratio		0.16	0.16		0.84	0.03	0.78	0.57		0.28	0.66	
Uniform Delay, d1		15.3	15.3		19.4	14.7	22.0	10.5		26.0	15.9	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		14.4	0.0	9.9	0.9		1.3	2.4	
Delay (s)		15.5	15.5		33.8	14.8	31.9	11.4		27.3	18.3	
Level of Service		B	B		C	B	C	B		C	B	
Approach Delay (s)		15.5			31.7			18.5			18.9	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	9.3
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	1743	40	20	1867	395	30	10	20	356	10	883
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5237		1829	5255	1636		1746			1836	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5237		1829	5255	1636		1746			1836	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	872	1835	42	21	1965	416	32	11	21	375	11	929
RTOR Reduction (vph)	0	2	0	0	0	116	0	15	0	0	0	39
Lane Group Flow (vph)	872	1875	0	21	1965	300	0	49	0	0	386	890
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	59.2		2.8	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	62.2		3.8	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.52		0.03	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2714		57	2058	640		87			550	763
v/s Ratio Prot	0.17	0.36		0.01	c0.37			c0.03			0.21	c0.54
v/s Ratio Perm						0.18						
v/c Ratio	1.07	0.69		0.37	0.95	0.47		0.56			0.70	1.17
Uniform Delay, d1	50.5	21.7		56.9	35.5	27.2		55.7			37.2	32.0
Progression Factor	0.96	1.09		1.30	0.86	0.71		1.00			1.00	1.00
Incremental Delay, d2	47.2	1.1		3.3	10.2	2.0		8.0			4.0	88.9
Delay (s)	95.6	24.8		77.2	40.7	21.5		63.7			41.3	120.9
Level of Service	F	C		E	D	C		E			D	F
Approach Delay (s)		47.2			37.7			63.7			97.5	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	194	138	354	142	122	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1765		1851		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1765		1851		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	145	373	149	128	395
RTOR Reduction (vph)	43	0	25	0	0	0
Lane Group Flow (vph)	306	0	497	0	128	395
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	13.0		19.0		5.1	28.2
Effective Green, g (s)	13.0		19.0		5.1	28.2
Actuated g/C Ratio	0.26		0.38		0.10	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	464		711		188	1098
v/s Ratio Prot	c0.17		c0.27		c0.07	0.21
v/s Ratio Perm						
v/c Ratio	0.66		0.70		0.68	0.36
Uniform Delay, d1	16.2		12.8		21.4	5.7
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	3.4		3.0		9.7	0.2
Delay (s)	19.6		15.8		31.1	5.9
Level of Service	B		B		C	A
Approach Delay (s)	19.6		15.8			12.1
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	12.3
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	10	190	160	10	20	160	422	90	20	445	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1862	1636		1839	1636	1829	1874		1829	1913	
Flt Permitted		0.79	1.00		0.71	1.00	0.41	1.00		0.37	1.00	
Satd. Flow (perm)		1514	1636		1375	1636	797	1874		718	1913	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	11	200	168	11	21	168	444	95	21	468	20
RTOR Reduction (vph)	0	0	145	0	0	15	0	15	0	0	3	0
Lane Group Flow (vph)	0	34	55	0	179	6	168	524	0	21	485	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.3	8.3		8.3	8.3	17.1	17.1		17.1	17.1	
Effective Green, g (s)		9.3	9.3		9.3	9.3	18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.54	0.54		0.54	0.54	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		419	452		380	452	429	1009		386	1030	
v/s Ratio Prot								c0.28			0.25	
v/s Ratio Perm		0.02	0.03		c0.13	0.00	0.21			0.03		
v/c Ratio		0.08	0.12		0.47	0.01	0.39	0.52		0.05	0.47	
Uniform Delay, d1		9.0	9.1		10.1	8.8	4.5	5.0		3.7	4.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.9	0.0	0.6	0.5		0.1	0.3	
Delay (s)		9.1	9.2		11.0	8.8	5.1	5.4		3.7	5.1	
Level of Service		A	A		B	A	A	A		A	A	
Approach Delay (s)		9.2			10.8			5.3			5.1	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	33.6	Sum of lost time (s)	6.2
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	40	250	250	80	40	270	357	150	30	409	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1891	1652		1873	1578	1847	1841		1847	1920	
Flt Permitted		0.73	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1419	1652		1416	1578	1847	1841		1847	1920	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	42	263	263	84	42	284	376	158	32	431	34
RTOR Reduction (vph)	0	0	189	0	0	30	0	22	0	0	4	0
Lane Group Flow (vph)	0	76	74	0	347	12	284	512	0	32	461	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		15.3	15.3		15.3	15.3	10.6	27.8		2.6	19.8	
Effective Green, g (s)		16.3	16.3		16.3	16.3	11.6	28.8		3.6	20.8	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.20	0.50		0.06	0.36	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		398	464		397	443	369	914		114	688	
v/s Ratio Prot							c0.15	0.28		0.02	c0.24	
v/s Ratio Perm		0.05	0.04		c0.25	0.01						
v/c Ratio		0.19	0.16		0.87	0.03	0.77	0.56		0.28	0.67	
Uniform Delay, d1		15.8	15.7		19.9	15.1	21.9	10.2		26.0	15.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		18.7	0.0	9.3	0.8		1.3	2.5	
Delay (s)		16.1	15.9		38.6	15.1	31.3	11.0		27.3	18.2	
Level of Service		B	B		D	B	C	B		C	B	
Approach Delay (s)		15.9			36.1			18.0			18.8	
Approach LOS		B			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	9.3
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX D: FREEWAY MAINLINE & RAMP MERGE/DIVERGE ANALYSIS WORKSHEETS

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing Without Project
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	5,600	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,095	70.0	62.8	**33.3**	**D**
B-2	I-680 SB	North of Stoneridge Drive	AM	6,700	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,506	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	5,500	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,082	70.0	63.1	**33.0**	**D**
B-4	I-680 SB	South of Stoneridge Drive	AM	5,600	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,120	70.0	62.2	**34.1**	**D**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	6,900	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,581	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	4,800	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	1,796	70.0	67.9	**26.4**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	5,700	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,158	70.0	61.3	**35.2**	**E**
B-8	I-680 SB	South of Stoneridge Drive	PM	4,900	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	1,855	70.0	67.2	**27.6**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Existing Without Project
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	5,600	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,300	6,300
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	5,600	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,300	6,300
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	5,600	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,361	6,361
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	5,600	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,361	6,361
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	6,900	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,763	7,763
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	6,900	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,763	7,763
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	4,900	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,566	5,566
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	4,900	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,566	5,566

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	228	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	730	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	801
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	170	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	187
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	338	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	371
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	761	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,031	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,132
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	579	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	636
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	813	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	893

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	228	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	338	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	371
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	761	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	813	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	893
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	3,776
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,755		0.595			0.595	3,751
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,601		0.593			0.593	3,773
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,741
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,652
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,139		0.595			0.595	4,622
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,527		0.593			0.593	3,301
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,273

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,300	7,200	No	6,550	7,200	No	2,524	No	No	3,776	4,026	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,300	7,200	No	7,101	7,200	No	2,549	No	No	3,751	4,553	4,600	No
M-3	I-680 SB	Eastbound Stoneridge Drive	6,361	7,200	No	6,548	7,200	No	2,588	No	No	3,773	3,960	4,600	No
M-4	I-680 SB	Westbound Stoneridge Drive	6,361	7,200	No	6,732	7,200	No	2,620	No	No	3,741	4,112	4,600	No
M-5	I-680 NB	Eastbound Stoneridge Drive	7,763	7,200	**Yes**	8,598	7,200	**Yes**	3,110	Yes	No	5,063	5,898	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	7,763	7,200	**Yes**	8,894	7,200	**Yes**	3,141	Yes	No	5,063	6,194	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	5,566	7,200	No	6,201	7,200	No	2,264	No	No	3,301	3,937	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	5,566	7,200	No	6,458	7,200	No	2,292	No	No	3,273	4,166	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	250	2,100	No	**31.9**	**D**	0.469	56.9	62.1	58.8
M-2	I-680 NB	Westbound Stoneridge Drive	801	2,100	No	**36.6**	**E**	0.633	52.3	62.0	55.4
M-3	I-680 SB	Eastbound Stoneridge Drive	187	2,100	No	**32.8**	**D**	0.475	56.7	61.7	58.6
M-4	I-680 SB	Westbound Stoneridge Drive	371	2,100	No	**35.0**	**D**	0.525	55.3	0.0	55.3
M-5	I-680 NB	Eastbound Stoneridge Drive	835	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,132	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	636	2,100	No	**32.4**	**D**	0.471	56.8	0.0	56.8
M-8	I-680 SB	Westbound Stoneridge Drive	893	2,100	No	**35.2**	**E**	0.538	54.9	0.0	54.9

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing Without Project
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	5,500	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,038	6,038
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	6,700	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	7,355	7,355
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	5,700	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,258	6,258
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	4,800	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,270	5,270

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,274	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,399
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,233	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,354
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	576	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	632
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,128	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,238

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.545			0.545
D-2	I-680 SB	Stoneridge Drive	No														0.514			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.574			0.574
D-4	I-680 SB	Stoneridge Drive	No														0.571			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	3,926
D-2	I-680 SB	Stoneridge Drive	4,054
D-3	I-680 NB	Stoneridge Drive	3,864
D-4	I-680 SB	Stoneridge Drive	3,052

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,038	7,200	No	2,112	No	No	3,926	4,400	No	4,639	7,200	No
D-2	I-680 SB	Stoneridge Drive	7,355	7,200	**Yes**	3,301	Yes	Yes	4,655	4,400	**Yes**	6,002	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,258	7,200	No	2,394	No	No	3,864	4,400	No	5,625	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,270	7,200	No	2,217	No	No	3,052	4,400	No	4,031	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,399	2,100	No	**28.1**	**D**	0.424	58.1	72.5	62.4
D-2	I-680 SB	Stoneridge Drive	1,354	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	632	2,100	No	**27.6**	**C**	0.355	60.1	71.4	63.9
D-4	I-680 SB	Stoneridge Drive	1,238	4,100	No	**8.2**	**A**	0.409	58.5	72.0	63.5

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing Wth Alternative 2a
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	5,634	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,108	70.0	62.5	**33.7**	**D**
B-2	I-680 SB	North of Stoneridge Drive	AM	6,740	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,521	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	5,538	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,097	70.0	62.8	**33.4**	**D**
B-4	I-680 SB	South of Stoneridge Drive	AM	5,630	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,132	70.0	61.9	**34.4**	**D**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,022	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,627	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	4,906	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	1,835	70.0	67.4	**27.2**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	5,790	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,192	70.0	60.3	**36.3**	**E**
B-8	I-680 SB	South of Stoneridge Drive	PM	4,995	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	1,891	70.0	66.7	**28.4**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Existing Wth Alternative 2a
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	5,634	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,338	6,338
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	5,634	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,338	6,338
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	5,630	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,395	6,395
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	5,630	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,395	6,395
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,022	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,900	7,900
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,022	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,900	7,900
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	4,995	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,674	5,674
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	4,995	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,674	5,674

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	228	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	764	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	839
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	170	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	187
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	368	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	404
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	761	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,153	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,266
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	579	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	636
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	908	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	997

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	228	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	368	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	404
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	761	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	908	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	997
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	3,799
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,771		0.595			0.595	3,774
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,608		0.593			0.593	3,793
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,761
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,735
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,197		0.595			0.595	4,704
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,550		0.593			0.593	3,366
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,337

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,338	7,200	No	6,589	7,200	No	2,539	No	No	3,799	4,049	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,338	7,200	No	7,177	7,200	No	2,564	No	No	3,774	4,613	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	6,395	7,200	No	6,582	7,200	No	2,602	No	No	3,793	3,980	4,600	No
M-4	I-680 SB	Westbound Stoneridge Drive	6,395	7,200	No	6,799	7,200	No	2,634	No	No	3,761	4,165	4,600	No
M-5	I-680 NB	Eastbound Stoneridge Drive	7,900	7,200	**Yes**	8,735	7,200	**Yes**	3,165	Yes	No	5,200	6,035	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	7,900	7,200	**Yes**	9,166	7,200	**Yes**	3,196	Yes	No	5,200	6,466	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	5,674	7,200	No	6,309	7,200	No	2,308	No	No	3,366	4,001	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	5,674	7,200	No	6,670	7,200	No	2,337	No	No	3,337	4,334	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	250	2,100	No	**32.1**	**D**	0.474	56.7	62.0	58.7
M-2	I-680 NB	Westbound Stoneridge Drive	839	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	187	2,100	No	**32.9**	**D**	0.479	56.6	61.7	58.5
M-4	I-680 SB	Westbound Stoneridge Drive	404	2,100	No	**35.4**	**E**	0.538	54.9	0.0	54.9
M-5	I-680 NB	Eastbound Stoneridge Drive	835	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,266	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	636	2,100	No	**32.9**	**D**	0.484	56.5	0.0	56.5
M-8	I-680 SB	Westbound Stoneridge Drive	997	2,100	No	**36.4**	**E**	0.584	53.6	0.0	53.6

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing Wth Alternative 2a
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	5,538	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,080	6,080
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	6,740	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	7,399	7,399
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	5,790	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,356	6,356
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	4,906	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,386	5,386

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,312	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,440
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,273	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,398
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	999	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,097
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,234	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,355

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.542			0.542
D-2	I-680 SB	Stoneridge Drive	No														0.511			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.551			0.551
D-4	I-680 SB	Stoneridge Drive	No														0.563			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	3,954
D-2	I-680 SB	Stoneridge Drive	4,098
D-3	I-680 NB	Stoneridge Drive	3,993
D-4	I-680 SB	Stoneridge Drive	3,169

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,080	7,200	No	2,126	No	No	3,954	4,400	No	4,639	7,200	No
D-2	I-680 SB	Stoneridge Drive	7,399	7,200	**Yes**	3,301	Yes	Yes	4,699	4,400	**Yes**	6,002	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,356	7,200	No	2,363	No	No	3,993	4,400	No	5,260	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,386	7,200	No	2,217	No	No	3,169	4,400	No	4,031	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,440	2,100	No	**28.4**	**D**	0.428	58.0	72.4	62.4
D-2	I-680 SB	Stoneridge Drive	1,398	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	1,097	2,100	No	**28.7**	**D**	0.397	58.9	71.5	63.0
D-4	I-680 SB	Stoneridge Drive	1,355	4,100	No	**9.2**	**A**	0.420	58.2	72.0	63.2

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing With Alternative 2
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	5,641	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,110	70.0	62.5	**33.8**	**D**
B-2	I-680 SB	North of Stoneridge Drive	AM	6,741	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,522	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	5,536	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,096	70.0	62.8	**33.4**	**D**
B-4	I-680 SB	South of Stoneridge Drive	AM	5,636	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,134	70.0	61.9	**34.5**	**D**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,062	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,642	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	4,957	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	1,854	70.0	67.2	**27.6**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	5,832	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,208	70.0	59.9	**36.9**	**E**
B-8	I-680 SB	South of Stoneridge Drive	PM	5,027	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	1,903	70.0	66.5	**28.6**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Existing With Alternative 2
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	5,641	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,346	6,346
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	5,641	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,346	6,346
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	5,636	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,402	6,402
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	5,636	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,402	6,402
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,062	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,945	7,945
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,062	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,945	7,945
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	5,027	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,710	5,710
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	5,027	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,710	5,710

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	228	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	771	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	846
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	170	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	187
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	374	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	411
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	761	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,193	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,310
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	579	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	636
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	940	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,032

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	228	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	374	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	411
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	761	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	940	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,032
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	3,803
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,775		0.595			0.595	3,779
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,610		0.593			0.593	3,797
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,765
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,762
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,216		0.595			0.595	4,730
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,558		0.593			0.593	3,387
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,358

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,346	7,200	No	6,596	7,200	No	2,543	No	No	3,803	4,054	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,346	7,200	No	7,193	7,200	No	2,568	No	No	3,779	4,625	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	6,402	7,200	No	6,588	7,200	No	2,604	No	No	3,797	3,984	4,600	No
M-4	I-680 SB	Westbound Stoneridge Drive	6,402	7,200	No	6,812	7,200	No	2,637	No	No	3,765	4,176	4,600	No
M-5	I-680 NB	Eastbound Stoneridge Drive	7,945	7,200	**Yes**	8,780	7,200	**Yes**	3,183	Yes	No	5,245	6,080	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	7,945	7,200	**Yes**	9,254	7,200	**Yes**	3,214	Yes	No	5,245	6,554	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	5,710	7,200	No	6,346	7,200	No	2,323	No	No	3,387	4,023	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	5,710	7,200	No	6,742	7,200	No	2,352	No	No	3,358	4,390	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	250	2,100	No	**32.1**	**D**	0.476	56.7	62.0	58.6
M-2	I-680 NB	Westbound Stoneridge Drive	846	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	187	2,100	No	**33.0**	**D**	0.480	56.6	61.6	58.5
M-4	I-680 SB	Westbound Stoneridge Drive	411	2,100	No	**35.5**	**E**	0.541	54.9	0.0	54.9
M-5	I-680 NB	Eastbound Stoneridge Drive	835	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,310	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	636	2,100	No	**33.0**	**D**	0.488	56.3	0.0	56.3
M-8	I-680 SB	Westbound Stoneridge Drive	1,032	2,100	No	**36.9**	**E**	0.601	53.2	0.0	53.2

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing With Alternative 2
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	5,536	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,078	6,078
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	6,741	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	7,400	7,400
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	5,832	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,403	6,403
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	4,957	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,442	5,442

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,310	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,438
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,274	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,399
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	708	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	777
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,285	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,411

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.542			0.542
D-2	I-680 SB	Stoneridge Drive	No														0.511			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.564			0.564
D-4	I-680 SB	Stoneridge Drive	No														0.559			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	3,952
D-2	I-680 SB	Stoneridge Drive	4,099
D-3	I-680 NB	Stoneridge Drive	3,951
D-4	I-680 SB	Stoneridge Drive	3,225

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,078	7,200	No	2,125	No	No	3,952	4,400	No	4,639	7,200	No
D-2	I-680 SB	Stoneridge Drive	7,400	7,200	**Yes**	3,301	Yes	Yes	4,700	4,400	**Yes**	6,002	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,403	7,200	No	2,452	No	No	3,951	4,400	No	5,625	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,442	7,200	No	2,217	No	No	3,225	4,400	No	4,031	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,438	2,100	No	**28.3**	**D**	0.427	58.0	72.4	62.4
D-2	I-680 SB	Stoneridge Drive	1,399	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	777	2,100	No	**28.3**	**D**	0.368	59.7	71.1	63.6
D-4	I-680 SB	Stoneridge Drive	1,411	4,100	No	**9.7**	**A**	0.425	58.1	72.0	63.1

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Cumulative Without Project
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	6,160	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,304	70.0	56.8	**40.5**	**E**
B-2	I-680 SB	North of Stoneridge Drive	AM	7,370	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,757	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	6,050	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,291	70.0	57.3	**40.0**	**E**
B-4	I-680 SB	South of Stoneridge Drive	AM	6,160	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,332	70.0	55.9	**41.7**	**E**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,590	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,839	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	5,280	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	1,975	70.0	65.3	**30.2**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	6,270	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,374	70.0	54.3	**43.7**	**E**
B-8	I-680 SB	South of Stoneridge Drive	PM	5,390	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,041	70.0	64.0	**31.9**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Cumulative Without Project
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	6,160	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,930	6,930
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	6,160	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,930	6,930
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	6,160	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,997	6,997
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	6,160	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,997	6,997
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,590	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,539	8,539
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,590	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,539	8,539
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	5,390	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,122	6,122
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	5,390	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,122	6,122

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	290	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	800	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	878
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	340	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	373
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	460	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	505
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	750	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	880	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	966
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	560	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	615
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	710	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	779

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	290	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	460	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	505
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	750	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	710	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	779
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,153
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,907		0.595			0.595	4,126
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,777		0.593			0.593	4,150
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	4,115
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	5,118
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,270		0.595			0.595	5,084
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,642		0.593			0.593	3,632
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,601

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,930	7,200	No	7,248	7,200	**Yes**	2,777	Yes	No	4,230	4,548	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,930	7,200	No	7,808	7,200	**Yes**	2,804	Yes	No	4,230	5,108	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	6,997	7,200	No	7,370	7,200	**Yes**	2,847	Yes	No	4,297	4,670	4,600	**Yes**
M-4	I-680 SB	Westbound Stoneridge Drive	6,997	7,200	No	7,502	7,200	**Yes**	2,882	Yes	No	4,297	4,802	4,600	**Yes**
M-5	I-680 NB	Eastbound Stoneridge Drive	8,539	7,200	**Yes**	9,362	7,200	**Yes**	3,421	Yes	No	5,839	6,662	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	8,539	7,200	**Yes**	9,505	7,200	**Yes**	3,455	Yes	No	5,839	6,805	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	6,122	7,200	No	6,737	7,200	No	2,491	No	No	3,632	4,246	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	6,122	7,200	No	6,902	7,200	No	2,522	No	No	3,601	4,380	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	318	2,100	No	**-**	**F**	-	-	-	-
M-2	I-680 NB	Westbound Stoneridge Drive	878	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	373	2,100	No	**-**	**F**	-	-	-	-
M-4	I-680 SB	Westbound Stoneridge Drive	505	2,100	No	**-**	**F**	-	-	-	-
M-5	I-680 NB	Eastbound Stoneridge Drive	823	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	966	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	615	2,100	No	**34.8**	**D**	0.543	54.8	0.0	54.8
M-8	I-680 SB	Westbound Stoneridge Drive	779	2,100	No	**36.9**	**E**	0.598	53.2	0.0	53.2

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Cumulative Without Project
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	6,050	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,642	6,642
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	7,370	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	8,091	8,091
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	6,270	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,883	6,883
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	5,280	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,797	5,797

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,330	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,460
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,350	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,482
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	720	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	790
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,070	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,175

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.527			0.527
D-2	I-680 SB	Stoneridge Drive	No														0.490			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.552			0.552
D-4	I-680 SB	Stoneridge Drive	No														0.561			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	4,190
D-2	I-680 SB	Stoneridge Drive	4,456
D-3	I-680 NB	Stoneridge Drive	4,151
D-4	I-680 SB	Stoneridge Drive	3,255

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,642	7,200	No	2,452	No	No	4,190	4,400	No	5,182	7,200	No
D-2	I-680 SB	Stoneridge Drive	8,091	7,200	**Yes**	3,635	Yes	Yes	5,391	4,400	**Yes**	6,609	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,883	7,200	No	2,732	Yes	No	4,183	4,400	No	6,093	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,797	7,200	No	2,542	No	Yes	3,312	4,400	No	4,622	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,460	2,100	No	**30.4**	**D**	0.429	58.0	71.1	62.2
D-2	I-680 SB	Stoneridge Drive	1,482	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	790	2,100	No	**30.3**	**D**	0.369	59.7	70.2	63.4
D-4	I-680 SB	Stoneridge Drive	1,175	4,100	No	**10.5**	**B**	0.404	58.7	71.0	63.4

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA | Agency or Company City of Pleasanton
Analysis Year Cumulative With Alternative 2a | Date 3/18/2015
Analyst Fehr and Peers | Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	6,194	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,317	70.0	56.4	**41.1**	**E**
B-2	I-680 SB	North of Stoneridge Drive	AM	7,410	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,772	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	6,088	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,305	70.0	56.8	**40.6**	**E**
B-4	I-680 SB	South of Stoneridge Drive	AM	6,190	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,344	70.0	55.5	**42.3**	**E**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,712	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,885	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	5,386	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,015	70.0	64.6	**31.2**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	6,360	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,408	70.0	-	**-**	**F**
B-8	I-680 SB	South of Stoneridge Drive	PM	5,485	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,077	70.0	63.3	**32.8**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Cumulative With Alternative 2a
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	6,194	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,968	6,968
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	6,194	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,968	6,968
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	6,190	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	7,031	7,031
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	6,190	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	7,031	7,031
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,712	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,676	8,676
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,712	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,676	8,676
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	5,485	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,230	6,230
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	5,485	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,230	6,230

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	290	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	834	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	916
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	340	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	373
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	490	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	538
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	750	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,002	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,100
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	560	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	615
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	805	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	884

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	290	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	490	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	538
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	750	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	805	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	884
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,176
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,923		0.595			0.595	4,149
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,785		0.593			0.593	4,171
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	4,135
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	5,200
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,328		0.595			0.595	5,166
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,665		0.593			0.593	3,696
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,664

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,968	7,200	No	7,287	7,200	**Yes**	2,792	Yes	No	4,268	4,587	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,968	7,200	No	7,884	7,200	**Yes**	2,819	Yes	No	4,268	5,184	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	7,031	7,200	No	7,404	7,200	**Yes**	2,860	Yes	No	4,331	4,704	4,600	**Yes**
M-4	I-680 SB	Westbound Stoneridge Drive	7,031	7,200	No	7,569	7,200	**Yes**	2,896	Yes	No	4,331	4,869	4,600	**Yes**
M-5	I-680 NB	Eastbound Stoneridge Drive	8,676	7,200	**Yes**	9,499	7,200	**Yes**	3,476	Yes	No	5,976	6,799	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	8,676	7,200	**Yes**	9,776	7,200	**Yes**	3,510	Yes	No	5,976	7,076	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	6,230	7,200	No	6,845	7,200	No	2,535	No	No	3,696	4,310	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	6,230	7,200	No	7,114	7,200	No	2,566	No	No	3,664	4,548	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	318	2,100	No	**-**	**F**	-	-	-	-
M-2	I-680 NB	Westbound Stoneridge Drive	916	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	373	2,100	No	**-**	**F**	-	-	-	-
M-4	I-680 SB	Westbound Stoneridge Drive	538	2,100	No	**-**	**F**	-	-	-	-
M-5	I-680 NB	Eastbound Stoneridge Drive	823	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,100	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	615	2,100	No	**35.3**	**E**	0.561	54.3	0.0	54.3
M-8	I-680 SB	Westbound Stoneridge Drive	884	2,100	No	**38.2**	**E**	0.655	51.7	0.0	51.7

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Cumulative With Alternative 2a
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	6,088	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,684	6,684
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	7,410	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	8,135	8,135
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	6,360	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,982	6,982
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	5,386	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,913	5,913

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,368	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,502
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,390	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,526
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	810	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	889
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,176	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,291

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.524			0.524
D-2	I-680 SB	Stoneridge Drive	No														0.486			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.545			0.545
D-4	I-680 SB	Stoneridge Drive	No														0.553			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	4,216
D-2	I-680 SB	Stoneridge Drive	4,500
D-3	I-680 NB	Stoneridge Drive	4,207
D-4	I-680 SB	Stoneridge Drive	3,371

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,684	7,200	No	2,467	No	No	4,216	4,400	No	5,182	7,200	No
D-2	I-680 SB	Stoneridge Drive	8,135	7,200	**Yes**	3,635	Yes	Yes	5,435	4,400	**Yes**	6,609	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,982	7,200	No	2,775	Yes	No	4,282	4,400	No	6,093	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,913	7,200	No	2,542	No	Yes	3,379	4,400	No	4,622	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,502	2,100	No	**30.6**	**D**	0.433	57.9	71.1	62.1
D-2	I-680 SB	Stoneridge Drive	1,526	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	889	2,100	No	**31.2**	**D**	0.378	59.4	70.2	63.2
D-4	I-680 SB	Stoneridge Drive	1,291	4,100	No	**11.0**	**B**	0.414	58.4	70.8	63.1

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA | Agency or Company City of Pleasanton
Analysis Year Cumulative With Alternative 2 | Date 3/18/2015
Analyst Fehr and Peers | Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	6,201	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,320	70.0	56.3	**41.2**	**E**
B-2	I-680 SB	North of Stoneridge Drive	AM	7,411	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,772	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	6,086	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,304	70.0	56.8	**40.5**	**E**
B-4	I-680 SB	South of Stoneridge Drive	AM	6,196	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,346	70.0	55.4	**42.4**	**E**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,752	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,900	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	5,437	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,034	70.0	64.2	**31.7**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	6,402	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,424	70.0	-	**-**	**F**
B-8	I-680 SB	South of Stoneridge Drive	PM	5,517	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,089	70.0	63.0	**33.2**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Cumulative With Alternative 2
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	6,201	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,976	6,976
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	6,201	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,976	6,976
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	6,196	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	7,038	7,038
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	6,196	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	7,038	7,038
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,752	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,721	8,721
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,752	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,721	8,721
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	5,517	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,267	6,267
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	5,517	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,267	6,267

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	290	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	841	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	923
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	340	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	373
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	496	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	545
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	750	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,042	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,144
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	560	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	615
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	837	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	919

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	290	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	496	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	545
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	750	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	837	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	919
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,181
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,926		0.595			0.595	4,154
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,786		0.593			0.593	4,175
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	4,139
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	5,227
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,347		0.595			0.595	5,193
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,673		0.593			0.593	3,717
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,686

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,976	7,200	No	7,294	7,200	**Yes**	2,795	Yes	No	4,276	4,594	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,976	7,200	No	7,899	7,200	**Yes**	2,822	Yes	No	4,276	5,199	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	7,038	7,200	No	7,411	7,200	**Yes**	2,863	Yes	No	4,338	4,711	4,600	**Yes**
M-4	I-680 SB	Westbound Stoneridge Drive	7,038	7,200	No	7,582	7,200	**Yes**	2,899	Yes	No	4,338	4,882	4,600	**Yes**
M-5	I-680 NB	Eastbound Stoneridge Drive	8,721	7,200	**Yes**	9,544	7,200	**Yes**	3,494	Yes	No	6,021	6,844	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	8,721	7,200	**Yes**	9,865	7,200	**Yes**	3,528	Yes	No	6,021	7,165	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	6,267	7,200	No	6,881	7,200	No	2,549	No	No	3,717	4,332	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	6,267	7,200	No	7,185	7,200	No	2,581	No	No	3,686	4,605	4,600	**Yes**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	318	2,100	No	**-**	**F**	-	-	-	-
M-2	I-680 NB	Westbound Stoneridge Drive	923	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	373	2,100	No	**-**	**F**	-	-	-	-
M-4	I-680 SB	Westbound Stoneridge Drive	545	2,100	No	**-**	**F**	-	-	-	-
M-5	I-680 NB	Eastbound Stoneridge Drive	823	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,144	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	615	2,100	No	**35.5**	**E**	0.567	54.1	0.0	54.1
M-8	I-680 SB	Westbound Stoneridge Drive	919	2,100	No	**-**	**F**	-	-	-	-

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Cumulative With Alternative 2
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	6,086	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,681	6,681
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	7,411	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	8,136	8,136
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	6,402	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	7,028	7,028
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	5,437	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,969	5,969

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,366	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,500
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,391	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,527
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	852	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	935
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,227	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,347

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.524			0.524
D-2	I-680 SB	Stoneridge Drive	No														0.486			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.541			0.541
D-4	I-680 SB	Stoneridge Drive	No														0.549			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	4,215
D-2	I-680 SB	Stoneridge Drive	4,501
D-3	I-680 NB	Stoneridge Drive	4,233
D-4	I-680 SB	Stoneridge Drive	3,427

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,681	7,200	No	2,467	No	No	4,215	4,400	No	5,182	7,200	No
D-2	I-680 SB	Stoneridge Drive	8,136	7,200	**Yes**	3,635	Yes	Yes	5,436	4,400	**Yes**	6,609	7,200	No
D-3	I-680 NB	Stoneridge Drive	7,028	7,200	No	2,795	Yes	No	4,328	4,400	No	6,093	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,969	7,200	No	2,542	No	No	3,427	4,400	No	4,622	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,500	2,100	No	**30.6**	**D**	0.433	57.9	71.1	62.1
D-2	I-680 SB	Stoneridge Drive	1,527	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	935	2,100	No	**31.6**	**D**	0.382	59.3	70.2	63.0
D-4	I-680 SB	Stoneridge Drive	1,347	4,100	No	**11.4**	**B**	0.419	58.3	70.8	63.0

APPENDIX E: ALAMEDA CTC MTS ROADWAY ANALYSIS WORKSHEETS

Johnson Drive Economic Development Zone - Alternative 2
Alameda CTC Roadway System Analysis Summary - 2020 PM

Link Location	Segment Limits		A node	B node	# Lanes	Model Volume	Project Trips	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Freeway Segments															
I-580 Eastbound															
Between	Palo Verde Road	Foothill Road	29016	29013	4	8,458	68	8,458	8,526	1.06	1.07	F	F	-	No
Between	Foothill Road	I-680	29015	29030	5	7,656	35	7,656	7,691	0.77	0.77	D	D	No	-
Between	I-680	Hopyard Road	29002	31885	4	6,393	21	6,393	6,414	0.80	0.80	D	D	No	-
Between	Hopyard Road	Hacienda Drive	28992	29047	7	10,828	31	10,828	10,859	0.77	0.78	D	D	No	-
Between	Hacienda Drive	Tassajara Road	29045	28995	6	8,832	85	8,832	8,917	0.74	0.74	C	C	No	-
I-580 Westbound															
Between	Tassajara Road	Hacienda Drive	28986	29046	5	5,275	88	5,275	5,363	0.53	0.54	B	B	No	-
Between	Hacienda Drive	Hopyard Road	29048	28974	5	5,545	58	5,545	5,603	0.55	0.56	B	B	No	-
Between	Hopyard Road	I-680	28976	28982	5	5,793	26	5,793	5,819	0.58	0.58	B	B	No	-
Between	I-680	Foothill Road	28970	28961	5	5,765	47	5,765	5,812	0.58	0.58	B	B	No	-
Between	Foothill Road	Palo Verde Road	28960	28959	4	5,387	68	5,387	5,455	0.67	0.68	C	C	No	-
I-680 Southbound															
Between	Alcosta Boulevard	I-580	28973	29011	5	6,971	112	6,971	7,083	0.70	0.71	C	C	No	-
Between	I-580	Stoneridge Drive	29029	29134	4	4,685	157	4,685	4,842	0.59	0.61	C	C	No	-
Between	Stoneridge Drive	Bernal Ave	31925	29000	3	4,367	127	4,367	4,494	0.73	0.75	C	C	No	-
I-680 Northbound															
Between	Bernal Avenue	Stoneridge Drive	29001	31926	3	4,655	132	4,655	4,787	0.78	0.80	D	D	No	-
Between	Stoneridge Drive	I-580	29135	29003	4	5,190	162	5,190	5,352	0.65	0.67	C	C	No	-
Between	I-580	Alcosta Boulevard	29019	28972	4	5,603	110	5,603	5,713	0.70	0.71	C	C	No	-
Arterials															
Foothill Road/San Ramon Road Southbound															
Between	Amador Valley Boule	Dublin Boulevard	28966	33829	2	667	17	667	684	0.42	0.43	B	B	No	-
Between	Dublin Boulevard	I-580	28962	28964	3	2,842	17	2,842	2,859	1.18	1.19	F	F	-	No
Between	I-580	Stoneridge Drive	28038	33836	2	982	59	982	1,041	0.61	0.65	C	C	No	-
Between	Stoneridge Drive	West Las Positas Bou	31859	31900	1	507	7	507	514	0.63	0.64	C	C	No	-
Foothill Road/San Ramon Road Northbound															
Between	West Las Positas Bou	Stoneridge Drive	31900	31859	1	874	8	874	882	1.09	1.10	F	F	-	No
Between	Stoneridge Drive	I-580	33836	28038	3	565	42	565	607	0.24	0.25	A	A	No	-
Between	I-580	Dublin Boulevard	28964	28962	3	918	15	918	933	0.38	0.39	B	B	No	-
Between	Dublin Boulevard	Amador Valley Boulev	33826	28966	3	2,106	15	2,106	2,121	0.88	0.88	D	D	No	-

Johnson Drive Economic Development Zone - Alternative 2
Alameda CTC Roadway System Analysis Summary - 2020 PM

Link Location	Segment Limits		A node	B node	# Lanes	Model Volume	Project Trips	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Stoneridge Drive Eastbound															
Between	Foothill Road	Springdale Avenue	31797	29008	3	216	65	216	281	0.09	0.12	A	A	No	-
Between	Springdale Avenue	I-680	33839	29007	3	802	102	802	904	0.33	0.38	A	B	No	-
Between	I-680	Johnson Drive	29137	28991	3	1,186	478	1,186	1,664	0.49	0.69	B	C	No	-
Between	Johnson Drive	Franklin Drive	28991	27981	3	1,270	133	1,270	1,403	0.53	0.58	B	B	No	-
Between	Franklin Drive	Hopyard Road	33849	28990	3	1,001	226	1,001	1,227	0.42	0.51	B	B	No	-
Between	Hopyard Road	Hacienda Drive	33865	29071	2	417	40	417	457	0.26	0.29	A	A	No	-
Between	Hacienda Drive	West Las Positas Bou	33927	31913	3	265	31	265	296	0.11	0.12	A	A	No	-
Between	West Las Positas Bou	Santa Rita Road	33924	31920	3	310	17	310	327	0.13	0.14	A	A	No	-
Stoneridge Drive Westbound															
Between	Santa Rita Road	West Las Positas Bou	31920	33924	3	252	20	252	272	0.11	0.11	A	A	No	-
Between	West Las Positas Bou	Hacienda Drive	31913	33927	2	362	37	362	399	0.23	0.25	A	A	No	-
Between	Hacienda Drive	Hopyard Road	33853	33892	3	449	44	449	493	0.19	0.21	A	A	No	-
Between	Hopyard Road	Franklin Drive	28990	33849	3	1,003	130	1,003	1,133	0.42	0.47	B	B	No	-
Between	Franklin Drive	Johnson Drive	27981	28991	3	1,192	245	1,192	1,437	0.50	0.60	B	C	No	-
Between	Johnson Drive	I-680	28991	29137	3	1,353	463	1,353	1,816	0.56	0.76	B	D	No	-
Between	I-680	Springdale Avenue	29007	33839	3	930	81	930	1,011	0.39	0.42	B	B	No	-
Between	Springdale Avenue	Foothill Road	29008	31797	3	280	49	280	329	0.12	0.14	A	A	No	-
Hopyard Road/Dougherty Road Southbound															
Between	Amador Valley Boulev	Dublin Boulevard	28984	33947	3	513	28	513	541	0.21	0.23	A	A	No	-
Between	Dublin Boulevard	I-580	28975	28977	3	2,718	32	2,718	2,750	1.13	1.15	F	F	-	No
Between	I-580	Owens Drive	28993	33846	3	1,022	97	1,022	1,119	0.43	0.47	B	B	No	-
Between	Owens Drive	Stoneridge Drive	28981	31809	3	822	79	822	901	0.34	0.38	A	B	No	-
Between	Stoneridge Drive	West Las Positas Bou	33855	33856	3	1,076	27	1,076	1,103	0.45	0.46	B	B	No	-
Between	West Las Positas Bou	Valley Avenue	29004	33872	3	995	27	995	1,022	0.41	0.43	B	B	No	-
Hopyard Road/Dougherty Road Northbound															
Between	Valley Avenue	West Las Positas Bou	33872	29004	3	1,715	32	1,715	1,747	0.71	0.73	C	C	No	-
Between	West Las Positas Bou	Stoneridge Drive	33856	33855	3	811	32	811	843	0.34	0.35	A	B	No	-
Between	Stoneridge Drive	Owens Drive	31809	28981	3	1,029	74	1,029	1,103	0.43	0.46	B	B	No	-
Between	Owens Drive	I-580	33846	28993	3	1,885	77	1,885	1,962	0.79	0.82	D	D	No	-
Between	I-580	Dublin Boulevard	28977	28975	4	1,456	27	1,456	1,483	0.45	0.46	B	B	No	-
Between	Dublin Boulevard	Amador Valley Boulev	33947	28984	3	1,750	24	1,750	1,774	0.73	0.74	C	C	No	-

Fehr & Peers, 2015.

Johnson Drive Economic Development Zone - Alternative 2
Alameda CTC Roadway System Analysis Summary - 2040 PM

Link Location	Segment Limits		A node	B node	# Lanes	Model Volume	Project Trips	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Freeway Segments															
I-580 Eastbound															
Between	Palo Verde Road	Foothill Road	29016	29013	4	9,172	68	9,172	9,240	1.15	1.16	F	F	-	No
Between	Foothill Road	I-680	29015	29030	5	8,258	35	8,258	8,293	0.83	0.83	D	D	No	-
Between	I-680	Hopyard Road	29002	31885	4	6,925	21	6,925	6,946	0.87	0.87	D	D	No	-
Between	Hopyard Road	Hacienda Drive	28992	29047	7	10,594	31	10,594	10,625	0.76	0.76	D	D	No	-
Between	Hacienda Drive	Tassajara Road	29045	28995	6	9,459	85	9,459	9,544	0.79	0.80	D	D	No	-
I-580 Westbound															
Between	Tassajara Road	Hacienda Drive	28986	29046	5	6,228	88	6,228	6,316	0.62	0.63	C	C	No	-
Between	Hacienda Drive	Hopyard Road	29048	28974	5	6,302	58	6,302	6,360	0.63	0.64	C	C	No	-
Between	Hopyard Road	I-680	28976	28982	5	5,990	26	5,990	6,016	0.60	0.60	C	C	No	-
Between	I-680	Foothill Road	28970	28961	5	6,084	47	6,084	6,131	0.61	0.61	C	C	No	-
Between	Foothill Road	Palo Verde Road	28960	28959	4	6,011	68	6,011	6,079	0.75	0.76	C	D	No	-
I-680 Southbound															
Between	Alcosta Boulevard	I-580	28973	29011	5	6,555	112	6,555	6,667	0.66	0.67	C	C	No	-
Between	I-580	Stoneridge Drive	29029	29134	4	4,574	157	4,574	4,731	0.57	0.59	B	C	No	-
Between	Stoneridge Drive	Bernal Ave	31925	29000	3	4,173	127	4,173	4,300	0.70	0.72	C	C	No	-
I-680 Northbound															
Between	Bernal Avenue	Stoneridge Drive	29001	31926	3	4,141	132	4,141	4,273	0.69	0.71	C	C	No	-
Between	Stoneridge Drive	I-580	29135	29003	4	4,626	162	4,626	4,788	0.58	0.60	B	C	No	-
Between	I-580	Alcosta Boulevard	29019	28972	4	5,830	110	5,830	5,940	0.73	0.74	C	C	No	-
Arterials															
Foothill Road/San Ramon Road Southbound															
Between	Amador Valley Boulev	Dublin Boulevard	28966	33829	2	674	17	674	691	0.42	0.43	B	B	No	-
Between	Dublin Boulevard	I-580	28962	28964	3	3,283	17	3,283	3,300	1.37	1.38	F	F	-	No
Between	I-580	Stoneridge Drive	28038	33836	2	948	59	948	1,007	0.59	0.63	C	C	No	-
Between	Stoneridge Drive	West Las Positas Bou	31859	31900	1	567	7	567	574	0.71	0.72	C	C	No	-
Foothill Road/San Ramon Road Northbound															
Between	West Las Positas Bou	Stoneridge Drive	31900	31859	1	874	8	874	882	1.09	1.10	F	F	-	No
Between	Stoneridge Drive	I-580	33836	28038	3	672	42	672	714	0.28	0.30	A	A	No	-
Between	I-580	Dublin Boulevard	28964	28962	3	1,147	15	1,147	1,162	0.48	0.48	B	B	No	-
Between	Dublin Boulevard	Amador Valley Boulev	33826	28966	3	2,147	15	2,147	2,162	0.89	0.90	D	D	No	-

Johnson Drive Economic Development Zone - Alternative 2
Alameda CTC Roadway System Analysis Summary - 2040 PM

Link Location	Segment Limits		A node	B node	# Lanes	Model Volume	Project Trips	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Stoneridge Drive Eastbound															
Between	Foothill Road	Springdale Avenue	31797	29008	3	273	65	273	338	0.11	0.14	A	A	No	-
Between	Springdale Avenue	I-680	33839	29007	3	975	102	975	1,077	0.41	0.45	B	B	No	-
Between	I-680	Johnson Drive	29137	28991	3	1,576	478	1,576	2,054	0.66	0.86	C	D	No	-
Between	Johnson Drive	Franklin Drive	28991	27981	3	1,664	133	1,664	1,797	0.69	0.75	C	C	No	-
Between	Franklin Drive	Hopyard Road	33849	28990	3	1,403	226	1,403	1,629	0.58	0.68	B	C	No	-
Between	Hopyard Road	Hacienda Drive	33892	33853	3	662	40	662	702	0.28	0.29	A	A	No	-
Between	Hacienda Drive	West Las Positas Bou	33927	31913	3	325	31	325	356	0.14	0.15	A	A	No	-
Between	West Las Positas Bou	Santa Rita Road	33924	31920	3	513	17	513	530	0.21	0.22	A	A	No	-
Stoneridge Drive Westbound															
Between	Santa Rita Road	West Las Positas Bou	31920	33924	3	310	20	310	330	0.13	0.14	A	A	No	-
Between	West Las Positas Bou	Hacienda Drive	31913	33927	2	564	37	564	601	0.35	0.38	B	B	No	-
Between	Hacienda Drive	Hopyard Road	29071	33865	3	467	44	467	511	0.19	0.21	A	A	No	-
Between	Hopyard Road	Franklin Drive	28990	33849	3	1,189	130	1,189	1,319	0.50	0.55	B	B	No	-
Between	Franklin Drive	Johnson Drive	27981	28991	3	1,368	245	1,368	1,613	0.57	0.67	B	C	No	-
Between	Johnson Drive	I-680	28991	29137	3	1,523	463	1,523	1,986	0.63	0.83	C	D	No	-
Between	I-680	Springdale Avenue	29007	33839	3	1,173	81	1,173	1,254	0.49	0.52	B	B	No	-
Between	Springdale Avenue	Foothill Road	29008	31797	3	275	49	275	324	0.11	0.14	A	A	No	-
Hopyard Road/Dougherty Road Southbound															
Between	Amador Valley Boulev	Dublin Boulevard	28984	33947	3	616	28	616	644	0.26	0.27	A	A	No	-
Between	Dublin Boulevard	I-580	28975	28977	3	3,266	32	3,266	3,298	1.36	1.37	F	F	-	No
Between	I-580	Owens Drive	28993	33846	3	1,204	97	1,204	1,301	0.50	0.54	B	B	No	-
Between	Owens Drive	Stoneridge Drive	28981	31809	3	845	79	845	924	0.35	0.39	B	B	No	-
Between	Stoneridge Drive	West Las Positas Bou	33855	33856	3	1,244	27	1,244	1,271	0.52	0.53	B	B	No	-
Between	West Las Positas Bou	Valley Avenue	29004	33872	3	1,064	27	1,064	1,091	0.44	0.45	B	B	No	-
Hopyard Road/Dougherty Road Northbound															
Between	Valley Avenue	West Las Positas Bou	33872	29004	3	1,885	32	1,885	1,917	0.79	0.80	D	D	No	-
Between	West Las Positas Bou	Stoneridge Drive	33856	33855	3	860	32	860	892	0.36	0.37	B	B	No	-
Between	Stoneridge Drive	Owens Drive	31809	28981	3	1,086	74	1,086	1,160	0.45	0.48	B	B	No	-
Between	Owens Drive	I-580	33846	28993	3	2,237	77	2,237	2,314	0.93	0.96	E	E	No	-
Between	I-580	Dublin Boulevard	28977	28975	4	1,662	27	1,662	1,689	0.52	0.53	B	B	No	-
Between	Dublin Boulevard	Amador Valley Boulev	33947	28984	3	2,335	24	2,335	2,359	0.97	0.98	E	E	No	-

Fehr & Peers, 2015.

APPENDIX F: LAND USE STUDY
(see SEIR Appendix C)

APPENDIX A: TRAFFIC COUNTS

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-001 San Ramon Road-I-580 WB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	San Ramon Road Southbound					I-580 WB Ramps Westbound					San Ramon Road Northbound					I-580 WB On-Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	164	134	0	298	93	0	89	0	182	0	91	59	0	150	0	0	0	0	0	630	0
07:15	0	142	86	0	228	110	0	135	0	245	0	137	59	0	196	0	0	0	0	0	669	0
07:30	0	233	149	0	382	132	0	163	0	295	0	201	44	0	245	0	0	0	0	0	922	0
07:45	0	282	158	0	440	187	0	168	0	355	0	190	37	0	227	0	0	0	0	0	1022	0
Total	0	821	527	0	1348	522	0	555	0	1077	0	619	199	0	818	0	0	0	0	0	3243	0
08:00	0	253	155	0	408	157	0	110	0	267	0	189	42	0	231	0	0	0	0	0	906	0
08:15	0	223	129	0	352	170	0	131	0	301	0	177	44	0	221	0	0	0	0	0	874	0
08:30	0	282	119	0	401	187	0	102	0	289	0	194	56	0	250	0	0	0	0	0	940	0
08:45	0	240	121	0	361	163	0	144	0	307	0	192	44	0	236	0	0	0	0	0	904	0
Total	0	998	524	0	1522	677	0	487	0	1164	0	752	186	0	938	0	0	0	0	0	3624	0
16:00	0	227	140	0	367	86	0	149	0	235	0	315	134	0	449	0	0	0	0	0	1051	0
16:15	0	213	155	0	368	67	0	182	0	249	0	306	139	0	445	0	0	0	0	0	1062	0
16:30	0	200	144	0	344	56	0	166	0	222	0	363	143	0	506	0	0	0	0	0	1072	0
16:45	0	218	138	0	356	67	0	170	0	237	0	375	143	0	518	0	0	0	0	0	1111	0
Total	0	858	577	0	1435	276	0	667	0	943	0	1359	559	0	1918	0	0	0	0	0	4296	0
17:00	0	241	160	0	401	62	0	182	0	244	0	402	176	0	578	0	0	0	0	0	1223	0
17:15	0	252	148	0	400	58	0	192	0	250	0	493	162	0	655	0	0	0	0	0	1305	0
17:30	0	246	159	0	405	70	0	195	0	265	0	425	160	0	585	0	0	0	0	0	1255	0
17:45	0	217	124	0	341	70	0	232	0	302	0	416	115	0	531	0	0	0	0	0	1174	0
Total	0	956	591	0	1547	260	0	801	0	1061	0	1736	613	0	2349	0	0	0	0	0	4957	0
Grand Total	0	3633	2219	0	5852	1735	0	2510	0	4245	0	4466	1557	0	6023	0	0	0	0	0	16120	0
Apprch %	0.0%	62.1%	37.9%	0.0%		40.9%	0.0%	59.1%	0.0%		0.0%	74.1%	25.9%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.0%	22.5%	13.8%	0.0%	36.3%	10.8%	0.0%	15.6%	0.0%	26.3%	0.0%	27.7%	9.7%	0.0%	37.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-001 San Ramon Road-I-580 WB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	San Ramon Road Southbound					I-580 WB Ramps Westbound					San Ramon Road Northbound					I-580 WB On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	282	158	0	440	187	0	168	0	355	0	190	37	0	227	0	0	0	0	0	1022
08:00	0	253	155	0	408	157	0	110	0	267	0	189	42	0	231	0	0	0	0	0	906
08:15	0	223	129	0	352	170	0	131	0	301	0	177	44	0	221	0	0	0	0	0	874
08:30	0	282	119	0	401	187	0	102	0	289	0	194	56	0	250	0	0	0	0	0	940
Total Volume	0	1040	561	0	1601	701	0	511	0	1212	0	750	179	0	929	0	0	0	0	0	3742
% App Total	0.0%	65.0%	35.0%	0.0%		57.8%	0.0%	42.2%	0.0%		0.0%	80.7%	19.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.922	.888	.000	.910	.937	.000	.760	.000	.854	.000	.966	.799	.000	.929	.000	.000	.000	.000	.000	.915

PM PEAK HOUR	San Ramon Road Southbound					I-580 WB Ramps Westbound					San Ramon Road Northbound					I-580 WB On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	241	160	0	401	62	0	182	0	244	0	402	176	0	578	0	0	0	0	0	1223
17:15	0	252	148	0	400	58	0	192	0	250	0	493	162	0	655	0	0	0	0	0	1305
17:30	0	246	159	0	405	70	0	195	0	265	0	425	160	0	585	0	0	0	0	0	1255
17:45	0	217	124	0	341	70	0	232	0	302	0	416	115	0	531	0	0	0	0	0	1174
Total Volume	0	956	591	0	1547	260	0	801	0	1061	0	1736	613	0	2349	0	0	0	0	0	4957
% App Total	0.0%	61.8%	38.2%	0.0%		24.5%	0.0%	75.5%	0.0%		0.0%	73.9%	26.1%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.948	.923	.000	.955	.929	.000	.863	.000	.878	.000	.880	.871	.000	.897	.000	.000	.000	.000	.000	.950

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-002 Foothill Road-I-580 EB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Foothill Road Southbound					I-580 EB On-Ramp Westbound					Foothill Road Northbound					I-580 EB Ramps Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	181	77	0	258	0	0	0	0	0	0	93	23	0	116	58	0	81	0	139	513	0
07:15	0	200	61	0	261	0	0	0	0	0	0	119	24	0	143	82	0	108	0	190	594	0
07:30	0	259	117	0	376	0	0	0	0	0	0	132	42	0	174	95	0	106	0	201	751	0
07:45	0	337	117	0	454	0	0	0	0	0	0	120	55	0	175	126	0	130	0	256	885	0
Total	0	977	372	0	1349	0	0	0	0	0	0	464	144	0	608	361	0	425	0	786	2743	0
08:00	0	319	109	0	428	0	0	0	0	0	0	118	49	0	167	105	0	144	0	249	844	0
08:15	0	294	99	0	393	0	0	0	0	0	0	143	40	0	183	89	0	135	0	224	800	0
08:30	0	340	129	0	469	0	0	0	0	0	0	140	90	0	230	99	0	148	0	247	946	0
08:45	0	317	89	0	406	0	0	0	0	0	0	152	74	0	226	97	0	142	0	239	871	0
Total	0	1270	426	0	1696	0	0	0	0	0	0	553	253	0	806	390	0	569	0	959	3461	0
16:00	0	223	92	0	315	0	0	0	0	0	0	346	191	0	537	104	0	76	0	180	1032	0
16:15	0	184	101	0	285	0	0	0	0	0	0	317	191	0	508	106	0	75	0	181	974	0
16:30	0	180	86	0	266	0	0	0	0	0	0	394	211	0	605	125	0	74	0	199	1070	0
16:45	0	195	88	0	283	0	0	0	0	0	0	370	204	0	574	128	0	80	0	208	1065	0
Total	0	782	367	0	1149	0	0	0	0	0	0	1427	797	0	2224	463	0	305	0	768	4141	0
17:00	0	187	104	0	291	0	0	0	0	0	0	492	202	0	694	110	0	80	0	190	1175	0
17:15	0	193	133	0	326	0	0	0	0	0	0	507	172	0	679	128	0	89	0	217	1222	0
17:30	0	201	105	0	306	0	0	0	0	0	0	463	192	0	655	137	0	91	0	228	1189	0
17:45	0	205	89	0	294	0	0	0	0	0	0	368	159	0	527	147	0	85	0	232	1053	0
Total	0	786	431	0	1217	0	0	0	0	0	0	1830	725	0	2555	522	0	345	0	867	4639	0
Grand Total	0	3815	1596	0	5411	0	0	0	0	0	0	4274	1919	0	6193	1736	0	1644	0	3380	14984	0
Apprch %	0.0%	70.5%	29.5%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	69.0%	31.0%	0.0%		51.4%	0.0%	48.6%	0.0%			
Total %	0.0%	25.5%	10.7%	0.0%	36.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.5%	12.8%	0.0%	41.3%	11.6%	0.0%	11.0%	0.0%	22.6%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-002 Foothill Road-I-580 EB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Foothill Road Southbound					I-580 EB On-Ramp Westbound					Foothill Road Northbound					I-580 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	0	337	117	0	454	0	0	0	0	0	0	120	55	0	175	126	0	130	0	256	885
08:00	0	319	109	0	428	0	0	0	0	0	0	118	49	0	167	105	0	144	0	249	844
08:15	0	294	99	0	393	0	0	0	0	0	0	143	40	0	183	89	0	135	0	224	800
08:30	0	340	129	0	469	0	0	0	0	0	0	140	90	0	230	99	0	148	0	247	946
Total Volume	0	1290	454	0	1744	0	0	0	0	0	0	521	234	0	755	419	0	557	0	976	3475
% App Total	0.0%	74.0%	26.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	69.0%	31.0%	0.0%		42.9%	0.0%	57.1%	0.0%		
PHF	.000	.949	.880	.000	.930	.000	.000	.000	.000	.000	.000	.911	.650	.000	.821	.831	.000	.941	.000	.953	.918

PM PEAK HOUR	Foothill Road Southbound					I-580 EB On-Ramp Westbound					Foothill Road Northbound					I-580 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	195	88	0	283	0	0	0	0	0	0	370	204	0	574	128	0	80	0	208	1065
17:00	0	187	104	0	291	0	0	0	0	0	0	492	202	0	694	110	0	80	0	190	1175
17:15	0	193	133	0	326	0	0	0	0	0	0	507	172	0	679	128	0	89	0	217	1222
17:30	0	201	105	0	306	0	0	0	0	0	0	463	192	0	655	137	0	91	0	228	1189
Total Volume	0	776	430	0	1206	0	0	0	0	0	0	1832	770	0	2602	503	0	340	0	843	4651
% App Total	0.0%	64.3%	35.7%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	70.4%	29.6%	0.0%		59.7%	0.0%	40.3%	0.0%		
PHF	.000	.965	.808	.000	.925	.000	.000	.000	.000	.000	.000	.903	.944	.000	.937	.918	.000	.934	.000	.924	.952

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-003 Foothill Road-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Foothill Road Southbound					Stoneridge Drive Westbound					Foothill Road Northbound					Laurel Creek Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	30	66	2	0	98	50	1	56	0	107	2	47	7	0	56	2	4	2	0	8	269	0
07:15	31	78	1	0	110	29	0	57	0	86	4	64	9	1	78	1	1	4	0	6	280	1
07:30	59	88	0	0	147	41	3	66	0	110	0	67	14	1	82	0	6	4	0	10	349	1
07:45	76	89	0	0	165	24	3	68	1	96	3	47	26	0	76	1	6	9	1	17	354	2
Total	196	321	3	0	520	144	7	247	1	399	9	225	56	2	292	4	17	19	1	41	1252	4
08:00	76	78	2	0	156	18	4	70	0	92	0	66	12	0	78	0	7	7	0	14	340	0
08:15	65	56	1	0	122	25	0	68	0	93	0	61	24	0	85	0	14	10	0	24	324	0
08:30	71	89	0	0	160	38	7	87	0	132	4	81	25	0	110	3	11	26	0	40	442	0
08:45	75	54	0	0	129	25	7	86	0	118	11	96	34	0	141	4	4	13	0	21	409	0
Total	287	277	3	0	567	106	18	311	0	435	15	304	95	0	414	7	36	56	0	99	1515	0
16:00	69	96	4	0	169	22	10	76	0	108	7	65	21	0	93	2	14	17	0	33	403	0
16:15	68	87	2	0	157	24	7	80	0	111	5	46	18	0	69	4	12	5	0	21	358	0
16:30	80	99	8	0	187	21	7	95	0	123	3	71	16	0	90	2	9	10	0	21	421	0
16:45	68	96	2	0	166	18	8	78	0	104	6	63	18	0	87	2	13	8	0	23	380	0
Total	285	378	16	0	679	85	32	329	0	446	21	245	73	0	339	10	48	40	0	98	1562	0
17:00	83	103	2	0	188	25	12	117	1	155	7	69	20	0	96	2	9	15	0	26	465	1
17:15	110	106	2	0	218	14	22	105	0	141	10	68	16	0	94	0	14	13	0	27	480	0
17:30	69	126	0	0	195	36	13	78	1	128	4	94	23	0	121	0	6	11	0	17	461	1
17:45	67	94	0	0	161	18	8	78	1	105	5	71	18	0	94	2	7	9	0	18	378	1
Total	329	429	4	0	762	93	55	378	3	529	26	302	77	0	405	4	36	48	0	88	1784	3
Grand Total	1097	1405	26	0	2528	428	112	1265	4	1809	71	1076	301	2	1450	25	137	163	1	326	6113	7
Apprch %	43.4%	55.6%	1.0%	0.0%		23.7%	6.2%	69.9%	0.2%		4.9%	74.2%	20.8%	0.1%		7.7%	42.0%	50.0%	0.3%			
Total %	17.9%	23.0%	0.4%	0.0%	41.4%	7.0%	1.8%	20.7%	0.1%	29.6%	1.2%	17.6%	4.9%	0.0%	23.7%	0.4%	2.2%	2.7%	0.0%	5.3%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-003 Foothill Road-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Foothill Road Southbound					Stoneridge Drive Westbound					Foothill Road Northbound					Laurel Creek Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	76	78	2	0	156	18	4	70	0	92	0	66	12	0	78	0	7	7	0	14	340
08:15	65	56	1	0	122	25	0	68	0	93	0	61	24	0	85	0	14	10	0	24	324
08:30	71	89	0	0	160	38	7	87	0	132	4	81	25	0	110	3	11	26	0	40	442
08:45	75	54	0	0	129	25	7	86	0	118	11	96	34	0	141	4	4	13	0	21	409
Total Volume	287	277	3	0	567	106	18	311	0	435	15	304	95	0	414	7	36	56	0	99	1515
% App Total	50.6%	48.9%	0.5%	0.0%		24.4%	4.1%	71.5%	0.0%		3.6%	73.4%	22.9%	0.0%		7.1%	36.4%	56.6%	0.0%		
PHF	.944	.778	.375	.000	.886	.697	.643	.894	.000	.824	.341	.792	.699	.000	.734	.438	.643	.538	.000	.619	.857

PM PEAK HOUR	Foothill Road Southbound					Stoneridge Drive Westbound					Foothill Road Northbound					Laurel Creek Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	68	96	2	0	166	18	8	78	0	104	6	63	18	0	87	2	13	8	0	23	380
17:00	83	103	2	0	188	25	12	117	1	155	7	69	20	0	96	2	9	15	0	26	465
17:15	110	106	2	0	218	14	22	105	0	141	10	68	16	0	94	0	14	13	0	27	480
17:30	69	126	0	0	195	36	13	78	1	128	4	94	23	0	121	0	6	11	0	17	461
Total Volume	330	431	6	0	767	93	55	378	2	528	27	294	77	0	398	4	42	47	0	93	1786
% App Total	43.0%	56.2%	0.8%	0.0%		17.6%	10.4%	71.6%	0.4%		6.8%	73.9%	19.3%	0.0%		4.3%	45.2%	50.5%	0.0%		
PHF	.750	.855	.750	.000	.880	.646	.625	.808	.500	.852	.675	.782	.837	.000	.822	.500	.750	.783	.000	.861	.930

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-004 I-680 SB Ramps-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	72	0	94	0	166	0	166	63	0	229	0	0	0	0	0	0	78	31	0	109	504	0
07:15	73	0	90	0	163	0	164	83	0	247	0	0	0	0	0	0	82	25	0	107	517	0
07:30	128	0	138	0	266	0	257	82	0	339	0	0	0	0	0	0	138	37	0	175	780	0
07:45	119	0	132	0	251	0	367	69	0	436	0	0	0	0	0	0	163	34	0	197	884	0
Total	392	0	454	0	846	0	954	297	0	1251	0	0	0	0	0	0	461	127	0	588	2685	0
08:00	113	0	180	0	293	0	330	91	0	421	0	0	0	0	0	0	125	44	0	169	883	0
08:15	117	0	173	0	290	0	377	87	0	464	0	0	0	0	0	0	159	43	0	202	956	0
08:30	137	0	179	0	316	0	441	82	0	523	0	0	0	0	0	0	145	41	0	186	1025	0
08:45	143	0	191	0	334	0	417	78	0	495	0	0	0	0	0	0	188	42	0	230	1059	0
Total	510	0	723	0	1233	0	1565	338	0	1903	0	0	0	0	0	0	617	170	0	787	3923	0
16:00	150	0	100	0	250	0	215	149	0	364	0	0	0	0	0	0	342	115	0	457	1071	0
16:15	156	0	93	0	249	0	206	101	0	307	0	0	0	0	0	0	361	101	0	462	1018	0
16:30	139	0	114	0	253	0	197	147	0	344	0	0	0	0	0	0	383	106	0	489	1086	0
16:45	154	0	108	0	262	0	199	171	0	370	0	0	0	0	0	0	422	116	0	538	1170	0
Total	599	0	415	0	1014	0	817	568	0	1385	0	0	0	0	0	0	1508	438	0	1946	4345	0
17:00	210	0	102	0	312	0	232	218	0	450	0	0	0	0	0	0	521	181	0	702	1464	0
17:15	187	0	111	0	298	0	259	222	0	481	0	0	0	0	0	0	472	168	0	640	1419	0
17:30	138	0	118	0	256	0	241	199	0	440	0	0	0	0	0	0	483	114	0	597	1293	0
17:45	131	0	99	0	230	0	204	139	0	343	0	0	0	0	0	0	340	100	0	440	1013	0
Total	666	0	430	0	1096	0	936	778	0	1714	0	0	0	0	0	0	1816	563	0	2379	5189	0
Grand Total	2167	0	2022	0	4189	0	4272	1981	0	6253	0	0	0	0	0	0	4402	1298	0	5700	16142	0
Apprch %	51.7%	0.0%	48.3%	0.0%		0.0%	68.3%	31.7%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	77.2%	22.8%	0.0%			
Total %	13.4%	0.0%	12.5%	0.0%	26.0%	0.0%	26.5%	12.3%	0.0%	38.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.3%	8.0%	0.0%	35.3%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-004 I-680 SB Ramps-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	113	0	180	0	293	0	330	91	0	421	0	0	0	0	0	0	125	44	0	169	883
08:15	117	0	173	0	290	0	377	87	0	464	0	0	0	0	0	0	159	43	0	202	956
08:30	137	0	179	0	316	0	441	82	0	523	0	0	0	0	0	0	145	41	0	186	1025
08:45	143	0	191	0	334	0	417	78	0	495	0	0	0	0	0	0	188	42	0	230	1059
Total Volume	510	0	723	0	1233	0	1565	338	0	1903	0	0	0	0	0	0	617	170	0	787	3923
% App Total	41.4%	0.0%	58.6%	0.0%		0.0%	82.2%	17.8%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	78.4%	21.6%	0.0%		
PHF	.892	.000	.946	.000	.923	.000	.887	.929	.000	.910	.000	.000	.000	.000	.000	.000	.820	.966	.000	.855	.926

PM PEAK HOUR	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	154	0	108	0	262	0	199	171	0	370	0	0	0	0	0	0	422	116	0	538	1170
17:00	210	0	102	0	312	0	232	218	0	450	0	0	0	0	0	0	521	181	0	702	1464
17:15	187	0	111	0	298	0	259	222	0	481	0	0	0	0	0	0	472	168	0	640	1419
17:30	138	0	118	0	256	0	241	199	0	440	0	0	0	0	0	0	483	114	0	597	1293
Total Volume	689	0	439	0	1128	0	931	810	0	1741	0	0	0	0	0	0	1898	579	0	2477	5346
% App Total	61.1%	0.0%	38.9%	0.0%		0.0%	53.5%	46.5%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	76.6%	23.4%	0.0%		
PHF	.820	.000	.930	.000	.904	.000	.899	.912	.000	.905	.000	.000	.000	.000	.000	.000	.911	.800	.000	.882	.913

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-005 I-680 NB Ramps-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	0	0	0	0	0	175	148	0	323	49	0	91	0	140	0	112	37	0	149	612	0
07:15	0	0	0	0	0	0	202	214	0	416	54	0	101	0	155	0	123	34	0	157	728	0
07:30	0	0	0	0	0	0	235	210	0	445	93	0	107	0	200	0	208	50	0	258	903	0
07:45	0	0	0	0	0	0	322	221	0	543	125	0	164	0	289	0	223	57	0	280	1112	0
Total	0	0	0	0	0	0	934	793	0	1727	321	0	463	0	784	0	666	178	0	844	3355	0
08:00	0	0	0	0	0	0	282	201	0	483	133	0	138	0	271	0	201	42	0	243	997	0
08:15	0	0	0	0	0	0	331	204	0	535	142	0	159	0	301	0	214	61	0	275	1111	0
08:30	0	0	0	0	0	0	377	193	0	570	177	0	156	0	333	0	221	56	0	277	1180	0
08:45	0	0	0	0	0	0	316	133	0	449	160	0	185	0	345	0	264	69	0	333	1127	0
Total	0	0	0	0	0	0	1306	731	0	2037	612	0	638	0	1250	0	900	228	0	1128	4415	0
16:00	0	0	0	0	0	0	296	218	0	514	50	0	61	0	111	0	344	138	0	482	1107	0
16:15	0	0	0	0	0	0	270	221	0	491	53	0	81	0	134	0	380	145	0	525	1150	0
16:30	0	0	0	0	0	0	274	216	0	490	58	0	68	0	126	0	361	166	0	527	1143	0
16:45	0	0	0	0	0	0	338	253	0	591	47	0	94	0	141	0	413	167	0	580	1312	0
Total	0	0	0	0	0	0	1178	908	0	2086	208	0	304	0	512	0	1498	616	0	2114	4712	0
17:00	0	0	0	0	0	0	392	282	0	674	60	0	77	0	137	0	479	235	0	714	1525	0
17:15	0	0	1	0	1	0	407	278	0	685	65	0	78	0	143	0	519	167	0	686	1515	0
17:30	0	0	0	0	0	0	372	218	0	590	63	0	92	0	155	0	415	186	0	601	1346	0
17:45	0	0	0	0	0	0	285	214	0	499	53	0	91	0	144	0	357	126	0	483	1126	0
Total	0	0	1	0	1	0	1456	992	0	2448	241	0	338	0	579	0	1770	714	0	2484	5512	0
Grand Total	0	0	1	0	1	0	4874	3424	0	8298	1382	0	1743	0	3125	0	4834	1736	0	6570	17994	0
Apprch %	0.0%	0.0%	100.0%	0.0%		0.0%	58.7%	41.3%	0.0%		44.2%	0.0%	55.8%	0.0%		0.0%	73.6%	26.4%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.1%	19.0%	0.0%	46.1%	7.7%	0.0%	9.7%	0.0%	17.4%	0.0%	26.9%	9.6%	0.0%	36.5%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-005 I-680 NB Ramps-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	0	0	0	0	0	282	201	0	483	133	0	138	0	271	0	201	42	0	243	997
08:15	0	0	0	0	0	0	331	204	0	535	142	0	159	0	301	0	214	61	0	275	1111
08:30	0	0	0	0	0	0	377	193	0	570	177	0	156	0	333	0	221	56	0	277	1180
08:45	0	0	0	0	0	0	316	133	0	449	160	0	185	0	345	0	264	69	0	333	1127
Total Volume	0	0	0	0	0	0	1306	731	0	2037	612	0	638	0	1250	0	900	228	0	1128	4415
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	64.1%	35.9%	0.0%		49.0%	0.0%	51.0%	0.0%		0.0%	79.8%	20.2%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.866	.896	.000	.893	.864	.000	.862	.000	.906	.000	.852	.826	.000	.847	.935

PM PEAK HOUR	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	338	253	0	591	47	0	94	0	141	0	413	167	0	580	1312
17:00	0	0	0	0	0	0	392	282	0	674	60	0	77	0	137	0	479	235	0	714	1525
17:15	0	0	1	0	1	0	407	278	0	685	65	0	78	0	143	0	519	167	0	686	1515
17:30	0	0	0	0	0	0	372	218	0	590	63	0	92	0	155	0	415	186	0	601	1346
Total Volume	0	0	1	0	1	0	1509	1031	0	2540	235	0	341	0	576	0	1826	755	0	2581	5698
% App Total	0.0%	0.0%	100.0%	0.0%		0.0%	59.4%	40.6%	0.0%		40.8%	0.0%	59.2%	0.0%		0.0%	70.7%	29.3%	0.0%		
PHF	.000	.000	.250	.000	.250	.000	.927	.914	.000	.927	.904	.000	.907	.000	.929	.000	.880	.803	.000	.904	.934

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-006 Johnson Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	17	0	44	0	61	1	267	26	0	294	1	0	0	0	1	50	145	4	0	199	555	0
07:15	14	0	38	0	52	4	375	28	0	407	3	2	2	0	7	40	188	6	0	234	700	0
07:30	27	1	50	0	78	4	406	15	0	425	4	1	3	0	8	44	237	5	0	286	797	0
07:45	12	1	64	0	77	3	466	30	1	500	4	0	1	0	5	66	331	4	0	401	983	1
Total	70	2	196	0	268	12	1514	99	1	1626	12	3	6	0	21	200	901	19	0	1120	3035	1
08:00	9	1	71	0	81	2	426	25	0	453	4	1	2	0	7	34	313	1	0	348	889	0
08:15	11	0	54	0	65	4	453	16	0	473	3	0	3	0	6	51	334	6	0	391	935	0
08:30	12	0	47	0	59	3	544	17	1	565	4	0	5	0	9	49	306	12	0	367	1000	1
08:45	9	0	38	0	47	2	390	28	0	420	0	1	1	0	2	69	380	5	2	456	925	2
Total	41	1	210	0	252	11	1813	86	1	1911	11	2	11	0	24	203	1333	24	2	1562	3749	3
16:00	32	1	91	0	124	7	443	23	0	473	6	0	2	0	8	36	369	10	3	418	1023	3
16:15	16	0	74	0	90	4	379	28	0	411	14	1	5	0	20	93	351	9	0	453	974	0
16:30	24	0	70	0	94	5	413	22	2	442	17	1	7	0	25	62	354	6	0	422	983	2
16:45	22	0	80	0	102	2	475	36	0	513	3	0	3	0	6	89	415	3	1	508	1129	1
Total	94	1	315	0	410	18	1710	109	2	1839	40	2	17	0	59	280	1489	28	4	1801	4109	6
17:00	31	0	127	0	158	5	563	24	2	594	3	0	6	0	9	69	460	9	0	538	1299	2
17:15	21	2	105	0	128	4	559	48	0	611	8	1	2	0	11	112	483	8	0	603	1353	0
17:30	29	2	92	0	123	11	511	29	0	551	5	0	8	0	13	74	418	11	0	503	1190	0
17:45	23	1	71	0	95	3	417	19	0	439	5	1	15	0	21	84	366	7	0	457	1012	0
Total	104	5	395	0	504	23	2050	120	2	2195	21	2	31	0	54	339	1727	35	0	2101	4854	2
Grand Total	309	9	1116	0	1434	64	7087	414	6	7571	84	9	65	0	158	1022	5450	106	6	6584	15747	12
Apprch %	21.5%	0.6%	77.8%	0.0%		0.8%	93.6%	5.5%	0.1%		53.2%	5.7%	41.1%	0.0%		15.5%	82.8%	1.6%	0.1%			
Total %	2.0%	0.1%	7.1%	0.0%	9.1%	0.4%	45.0%	2.6%	0.0%	48.1%	0.5%	0.1%	0.4%	0.0%	1.0%	6.5%	34.6%	0.7%	0.0%	41.8%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-006 Johnson Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	12	1	64	0	77	3	466	30	1	500	4	0	1	0	5	66	331	4	0	401	983
08:00	9	1	71	0	81	2	426	25	0	453	4	1	2	0	7	34	313	1	0	348	889
08:15	11	0	54	0	65	4	453	16	0	473	3	0	3	0	6	51	334	6	0	391	935
08:30	12	0	47	0	59	3	544	17	1	565	4	0	5	0	9	49	306	12	0	367	1000
Total Volume	44	2	236	0	282	12	1889	88	2	1991	15	1	11	0	27	200	1284	23	0	1507	3807
% App Total	15.6%	0.7%	83.7%	0.0%		0.6%	94.9%	4.4%	0.1%		55.6%	3.7%	40.7%	0.0%		13.3%	85.2%	1.5%	0.0%		
PHF	.917	.500	.831	.000	.870	.750	.868	.733	.500	.881	.938	.250	.550	.000	.750	.758	.961	.479	.000	.940	.952

PM PEAK HOUR	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	22	0	80	0	102	2	475	36	0	513	3	0	3	0	6	89	415	3	1	508	1129
17:00	31	0	127	0	158	5	563	24	2	594	3	0	6	0	9	69	460	9	0	538	1299
17:15	21	2	105	0	128	4	559	48	0	611	8	1	2	0	11	112	483	8	0	603	1353
17:30	29	2	92	0	123	11	511	29	0	551	5	0	8	0	13	74	418	11	0	503	1190
Total Volume	103	4	404	0	511	22	2108	137	2	2269	19	1	19	0	39	344	1776	31	1	2152	4971
% App Total	20.2%	0.8%	79.1%	0.0%		1.0%	92.9%	6.0%	0.1%		48.7%	2.6%	48.7%	0.0%		16.0%	82.5%	1.4%	0.0%		
PHF	.831	.500	.795	.000	.809	.500	.936	.714	.250	.928	.594	.250	.594	.000	.750	.768	.919	.705	.250	.892	.919

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-007 Johnson Drive-Commerce Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	19	44	0	0	63	13	0	5	0	18	0	19	31	0	50	0	0	0	0	0	131	0
07:15	5	34	0	0	39	14	0	2	1	17	0	34	22	0	56	0	0	0	0	0	112	1
07:30	9	50	0	0	59	8	0	5	0	13	0	33	22	0	55	0	0	0	0	0	127	0
07:45	15	41	0	0	56	22	0	7	0	29	0	49	36	0	85	0	0	0	0	0	170	0
Total	48	169	0	0	217	57	0	19	1	77	0	135	111	0	246	0	0	0	0	0	540	1
08:00	14	36	0	0	50	9	0	12	0	21	0	36	21	0	57	0	0	0	0	0	128	0
08:15	5	30	0	0	35	11	0	9	0	20	0	38	21	0	59	0	0	0	0	0	114	0
08:30	8	25	0	0	33	13	0	8	0	21	0	57	20	0	77	0	0	0	0	0	131	0
08:45	9	32	0	0	41	14	0	8	0	22	0	56	36	0	92	0	0	0	0	0	155	0
Total	36	123	0	0	159	47	0	37	0	84	0	187	98	0	285	0	0	0	0	0	528	0
16:00	11	50	0	0	61	44	0	22	0	66	0	42	15	0	57	0	0	0	0	0	184	0
16:15	10	36	0	0	46	29	0	5	0	34	0	71	18	0	89	0	0	0	0	0	169	0
16:30	9	41	0	0	50	31	0	20	0	51	0	65	20	0	85	0	0	0	0	0	186	0
16:45	9	47	0	0	56	29	0	16	0	45	0	63	32	0	95	0	0	0	0	0	196	0
Total	39	174	0	0	213	133	0	63	0	196	0	241	85	0	326	0	0	0	0	0	735	0
17:00	13	84	0	0	97	52	0	11	0	63	0	67	29	0	96	0	0	0	0	0	256	0
17:15	21	56	0	0	77	48	0	20	0	68	0	80	41	0	121	0	0	0	0	0	266	0
17:30	10	60	0	0	70	40	0	8	0	48	0	58	23	0	81	0	0	0	0	0	199	0
17:45	20	42	0	0	62	25	0	12	0	37	0	65	21	0	86	0	0	0	0	0	185	0
Total	64	242	0	0	306	165	0	51	0	216	0	270	114	0	384	0	0	0	0	0	906	0
Grand Total	187	708	0	0	895	402	0	170	1	573	0	833	408	0	1241	0	0	0	0	0	2709	1
Apprch %	20.9%	79.1%	0.0%	0.0%		70.2%	0.0%	29.7%	0.2%		0.0%	67.1%	32.9%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	6.9%	26.1%	0.0%	0.0%	33.0%	14.8%	0.0%	6.3%	0.0%	21.2%	0.0%	30.7%	15.1%	0.0%	45.8%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-007 Johnson Drive-Commerce Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	15	41	0	0	56	22	0	7	0	29	0	49	36	0	85	0	0	0	0	0	170
08:00	14	36	0	0	50	9	0	12	0	21	0	36	21	0	57	0	0	0	0	0	128
08:15	5	30	0	0	35	11	0	9	0	20	0	38	21	0	59	0	0	0	0	0	114
08:30	8	25	0	0	33	13	0	8	0	21	0	57	20	0	77	0	0	0	0	0	131
Total Volume	42	132	0	0	174	55	0	36	0	91	0	180	98	0	278	0	0	0	0	0	543
% App Total	24.1%	75.9%	0.0%	0.0%		60.4%	0.0%	39.6%	0.0%		0.0%	64.7%	35.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.700	.805	.000	.000	.777	.625	.000	.750	.000	.784	.000	.789	.681	.000	.818	.000	.000	.000	.000	.000	.799

PM PEAK HOUR	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	9	47	0	0	56	29	0	16	0	45	0	63	32	0	95	0	0	0	0	0	196
17:00	13	84	0	0	97	52	0	11	0	63	0	67	29	0	96	0	0	0	0	0	256
17:15	21	56	0	0	77	48	0	20	0	68	0	80	41	0	121	0	0	0	0	0	266
17:30	10	60	0	0	70	40	0	8	0	48	0	58	23	0	81	0	0	0	0	0	199
Total Volume	53	247	0	0	300	169	0	55	0	224	0	268	125	0	393	0	0	0	0	0	917
% App Total	17.7%	82.3%	0.0%	0.0%		75.4%	0.0%	24.6%	0.0%		0.0%	68.2%	31.8%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.631	.735	.000	.000	.773	.813	.000	.688	.000	.824	.000	.838	.762	.000	.812	.000	.000	.000	.000	.000	.862

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-008 Johnson Drive-Park and Ride Lot.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	55	1	0	56	0	0	0	0	0	11	57	0	0	68	0	0	5	0	5	129	0
07:15	0	51	3	0	54	0	0	0	0	0	4	67	0	0	71	0	0	2	0	2	127	0
07:30	0	68	0	0	68	0	0	0	0	0	8	57	0	0	65	0	0	3	0	3	136	0
07:45	0	77	2	0	79	0	0	0	0	0	8	81	0	1	90	3	0	4	0	7	176	1
Total	0	251	6	0	257	0	0	0	0	0	31	262	0	1	294	3	0	14	0	17	568	1
08:00	0	71	0	0	71	0	0	0	0	0	3	61	0	0	64	0	0	5	0	5	140	0
08:15	0	70	0	0	70	0	0	0	0	0	0	65	0	0	65	0	0	0	0	0	135	0
08:30	0	57	0	0	57	0	0	0	0	0	1	77	0	0	78	0	0	0	0	0	135	0
08:45	0	45	0	0	45	0	0	0	0	0	1	87	0	0	88	0	0	2	0	2	135	0
Total	0	243	0	0	243	0	0	0	0	0	5	290	0	0	295	0	0	7	0	7	545	0
16:00	0	115	0	0	115	0	0	0	0	0	6	53	0	0	59	0	0	5	0	5	179	0
16:15	0	80	0	0	80	0	0	0	0	0	9	104	0	0	113	0	0	12	0	12	205	0
16:30	0	84	0	0	84	0	0	0	0	0	3	94	0	0	97	0	0	6	0	6	187	0
16:45	0	94	2	0	96	0	0	0	0	0	7	115	0	0	122	1	0	15	0	16	234	0
Total	0	373	2	0	375	0	0	0	0	0	25	366	0	0	391	1	0	38	0	39	805	0
17:00	0	155	0	0	155	0	0	0	0	0	2	93	0	1	96	0	0	3	0	3	254	1
17:15	0	112	0	0	112	0	0	0	0	0	11	149	0	0	160	2	0	17	0	19	291	0
17:30	0	104	0	0	104	0	0	0	0	0	14	92	0	0	106	0	0	22	0	22	232	0
17:45	0	78	0	0	78	0	0	0	0	0	5	97	0	0	102	1	0	11	0	12	192	0
Total	0	449	0	0	449	0	0	0	0	0	32	431	0	1	464	3	0	53	0	56	969	1
Grand Total	0	1316	8	0	1324	0	0	0	0	0	93	1349	0	2	1444	7	0	112	0	119	2887	2
Apprch %	0.0%	99.4%	0.6%	0.0%		0.0%	0.0%	0.0%	0.0%		6.4%	93.4%	0.0%	0.1%		5.9%	0.0%	94.1%	0.0%			
Total %	0.0%	45.6%	0.3%	0.0%	45.9%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	46.7%	0.0%	0.1%	50.0%	0.2%	0.0%	3.9%	0.0%	4.1%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-008 Johnson Drive-Park and Ride Lot.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	0	68	0	0	68	0	0	0	0	0	8	57	0	0	65	0	0	3	0	3	136
07:45	0	77	2	0	79	0	0	0	0	0	8	81	0	1	90	3	0	4	0	7	176
08:00	0	71	0	0	71	0	0	0	0	0	3	61	0	0	64	0	0	5	0	5	140
08:15	0	70	0	0	70	0	0	0	0	0	0	65	0	0	65	0	0	0	0	0	135
Total Volume	0	286	2	0	288	0	0	0	0	0	19	264	0	1	284	3	0	12	0	15	587
% App Total	0.0%	99.3%	0.7%	0.0%		0.0%	0.0%	0.0%	0.0%		6.7%	93.0%	0.0%	0.4%		20.0%	0.0%	80.0%	0.0%		
PHF	.000	.929	.250	.000	.911	.000	.000	.000	.000	.000	.594	.815	.000	.250	.789	.250	.000	.600	.000	.536	.834

PM PEAK HOUR	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	94	2	0	96	0	0	0	0	0	7	115	0	0	122	1	0	15	0	16	234
17:00	0	155	0	0	155	0	0	0	0	0	2	93	0	1	96	0	0	3	0	3	254
17:15	0	112	0	0	112	0	0	0	0	0	11	149	0	0	160	2	0	17	0	19	291
17:30	0	104	0	0	104	0	0	0	0	0	14	92	0	0	106	0	0	22	0	22	232
Total Volume	0	465	2	0	467	0	0	0	0	0	34	449	0	1	484	3	0	57	0	60	1011
% App Total	0.0%	99.6%	0.4%	0.0%		0.0%	0.0%	0.0%	0.0%		7.0%	92.8%	0.0%	0.2%		5.0%	0.0%	95.0%	0.0%		
PHF	.000	.750	.250	.000	.753	.000	.000	.000	.000	.000	.607	.753	.000	.250	.756	.375	.000	.648	.000	.682	.869

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-009 Franklin Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Franklin Drive Southbound					Stoneridge Drive Westbound					Denker Drive Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	2	5	0	7	4	263	7	0	274	34	7	5	0	46	18	133	8	0	159	486	0
07:15	0	0	4	0	4	1	336	7	0	344	52	9	6	0	67	20	168	11	1	200	615	1
07:30	0	1	7	0	8	2	345	13	1	361	55	3	13	0	71	26	231	9	0	266	706	1
07:45	2	3	10	0	15	1	462	18	0	481	41	6	6	0	53	37	289	8	0	334	883	0
Total	2	6	26	0	34	8	1406	45	1	1460	182	25	30	0	237	101	821	36	1	959	2690	2
08:00	0	2	10	0	12	4	367	12	2	385	49	8	4	0	61	37	287	8	0	332	790	2
08:15	1	2	19	0	22	3	460	11	1	475	45	7	7	0	59	33	284	15	1	333	889	2
08:30	5	4	12	0	21	5	462	12	2	481	34	7	7	0	48	39	272	16	2	329	879	4
08:45	3	0	9	0	12	2	399	8	1	410	35	8	10	0	53	52	323	14	2	391	866	3
Total	9	8	50	0	67	14	1688	43	6	1751	163	30	28	0	221	161	1166	53	5	1385	3424	11
16:00	9	6	53	0	68	1	387	3	2	393	23	1	8	0	32	12	366	37	0	415	908	2
16:15	12	4	41	0	57	7	335	4	4	350	32	0	14	0	46	6	299	41	1	347	800	5
16:30	11	3	56	0	70	1	382	1	3	387	21	2	9	0	32	14	365	42	1	422	911	4
16:45	13	6	61	0	80	11	435	4	2	452	25	4	8	0	37	8	374	38	0	420	989	2
Total	45	19	211	0	275	20	1539	12	11	1582	101	7	39	0	147	40	1404	158	2	1604	3608	13
17:00	10	10	71	0	91	6	534	2	5	547	15	3	8	0	26	7	444	67	2	520	1184	7
17:15	15	4	54	0	73	13	511	3	1	528	27	6	14	0	47	8	421	52	0	481	1129	1
17:30	10	4	50	0	64	11	470	1	4	486	30	5	7	0	42	8	419	56	0	483	1075	4
17:45	9	6	40	0	55	10	369	1	2	382	21	4	10	0	35	16	323	42	2	383	855	4
Total	44	24	215	0	283	40	1884	7	12	1943	93	18	39	0	150	39	1607	217	4	1867	4243	16
Grand Total	100	57	502	0	659	82	6517	107	30	6736	539	80	136	0	755	341	4998	464	12	5815	13965	42
Apprch %	15.2%	8.6%	76.2%	0.0%		1.2%	96.7%	1.6%	0.4%		71.4%	10.6%	18.0%	0.0%		5.9%	86.0%	8.0%	0.2%			
Total %	0.7%	0.4%	3.6%	0.0%	4.7%	0.6%	46.7%	0.8%	0.2%	48.2%	3.9%	0.6%	1.0%	0.0%	5.4%	2.4%	35.8%	3.3%	0.1%	41.6%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-009 Franklin Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Franklin Drive Southbound					Stoneridge Drive Westbound					Denker Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	2	3	10	0	15	1	462	18	0	481	41	6	6	0	53	37	289	8	0	334	883
08:00	0	2	10	0	12	4	367	12	2	385	49	8	4	0	61	37	287	8	0	332	790
08:15	1	2	19	0	22	3	460	11	1	475	45	7	7	0	59	33	284	15	1	333	889
08:30	5	4	12	0	21	5	462	12	2	481	34	7	7	0	48	39	272	16	2	329	879
Total Volume	8	11	51	0	70	13	1751	53	5	1822	169	28	24	0	221	146	1132	47	3	1328	3441
% App Total	11.4%	15.7%	72.9%	0.0%		0.7%	96.1%	2.9%	0.3%		76.5%	12.7%	10.9%	0.0%		11.0%	85.2%	3.5%	0.2%		
PHF	.400	.688	.671	.000	.795	.650	.948	.736	.625	.947	.862	.875	.857	.000	.906	.936	.979	.734	.375	.994	.968

PM PEAK HOUR	Franklin Drive Southbound					Stoneridge Drive Westbound					Denker Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	13	6	61	0	80	11	435	4	2	452	25	4	8	0	37	8	374	38	0	420	989
17:00	10	10	71	0	91	6	534	2	5	547	15	3	8	0	26	7	444	67	2	520	1184
17:15	15	4	54	0	73	13	511	3	1	528	27	6	14	0	47	8	421	52	0	481	1129
17:30	10	4	50	0	64	11	470	1	4	486	30	5	7	0	42	8	419	56	0	483	1075
Total Volume	48	24	236	0	308	41	1950	10	12	2013	97	18	37	0	152	31	1658	213	2	1904	4377
% App Total	15.6%	7.8%	76.6%	0.0%		2.0%	96.9%	0.5%	0.6%		63.8%	11.8%	24.3%	0.0%		1.6%	87.1%	11.2%	0.1%		
PHF	.800	.600	.831	.000	.846	.788	.913	.625	.600	.920	.808	.750	.661	.000	.809	.969	.934	.795	.250	.915	.924

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-010 Dougherty Road-I-580 WB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Dougherty Road Southbound					I-580 WB Ramps Westbound					Dougherty Road Northbound					I-580 WB On-Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	170	138	0	308	45	0	111	0	156	0	221	80	0	301	0	0	0	0	0	765	0
07:15	0	236	159	0	395	63	0	111	0	174	0	259	79	0	338	0	0	0	0	0	907	0
07:30	0	331	138	0	469	41	0	149	0	190	0	263	64	0	327	0	0	0	0	0	986	0
07:45	0	357	151	0	508	67	0	125	0	192	0	260	70	0	330	0	0	0	0	0	1030	0
Total	0	1094	586	0	1680	216	0	496	0	712	0	1003	293	0	1296	0	0	0	0	0	3688	0
08:00	0	362	142	0	504	71	0	93	0	164	0	249	78	0	327	0	0	0	0	0	995	0
08:15	0	374	155	0	529	68	0	101	0	169	0	205	67	0	272	0	0	0	0	0	970	0
08:30	0	392	152	0	544	61	0	93	0	154	0	228	89	0	317	0	0	0	0	0	1015	0
08:45	0	372	149	0	521	71	0	117	0	188	0	280	87	0	367	0	0	0	0	0	1076	0
Total	0	1500	598	0	2098	271	0	404	0	675	0	962	321	0	1283	0	0	0	0	0	4056	0
16:00	0	267	150	0	417	53	0	105	0	158	0	399	217	0	616	0	0	0	0	0	1191	0
16:15	0	322	141	0	463	68	0	125	0	193	0	394	189	0	583	0	0	0	0	0	1239	0
16:30	0	286	145	0	431	61	0	112	0	173	0	460	232	0	692	0	0	0	0	0	1296	0
16:45	0	266	127	0	393	66	0	114	0	180	0	516	196	0	712	0	0	0	0	0	1285	0
Total	0	1141	563	0	1704	248	0	456	0	704	0	1769	834	0	2603	0	0	0	0	0	5011	0
17:00	0	344	181	0	525	64	0	108	0	172	0	495	282	0	777	0	0	0	0	0	1474	0
17:15	0	291	157	0	448	71	0	178	0	249	0	537	273	0	810	0	0	0	0	0	1507	0
17:30	0	317	120	0	437	63	0	160	0	223	0	571	222	0	793	0	0	0	0	0	1453	0
17:45	0	300	138	0	438	58	0	157	0	215	0	541	215	0	756	0	0	0	0	0	1409	0
Total	0	1252	596	0	1848	256	0	603	0	859	0	2144	992	0	3136	0	0	0	0	0	5843	0
Grand Total	0	4987	2343	0	7330	991	0	1959	0	2950	0	5878	2440	0	8318	0	0	0	0	0	18598	0
Apprch %	0.0%	68.0%	32.0%	0.0%		33.6%	0.0%	66.4%	0.0%		0.0%	70.7%	29.3%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.0%	26.8%	12.6%	0.0%	39.4%	5.3%	0.0%	10.5%	0.0%	15.9%	0.0%	31.6%	13.1%	0.0%	44.7%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-010 Dougherty Road-I-580 WB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Dougherty Road Southbound					I-580 WB Ramps Westbound					Dougherty Road Northbound					I-580 WB On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	362	142	0	504	71	0	93	0	164	0	249	78	0	327	0	0	0	0	0	995
08:15	0	374	155	0	529	68	0	101	0	169	0	205	67	0	272	0	0	0	0	0	970
08:30	0	392	152	0	544	61	0	93	0	154	0	228	89	0	317	0	0	0	0	0	1015
08:45	0	372	149	0	521	71	0	117	0	188	0	280	87	0	367	0	0	0	0	0	1076
Total Volume	0	1500	598	0	2098	271	0	404	0	675	0	962	321	0	1283	0	0	0	0	0	4056
% App Total	0.0%	71.5%	28.5%	0.0%		40.1%	0.0%	59.9%	0.0%		0.0%	75.0%	25.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.957	.965	.000	.964	.954	.000	.863	.000	.898	.000	.859	.902	.000	.874	.000	.000	.000	.000	.000	.942

PM PEAK HOUR	Dougherty Road Southbound					I-580 WB Ramps Westbound					Dougherty Road Northbound					I-580 WB On-Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	344	181	0	525	64	0	108	0	172	0	495	282	0	777	0	0	0	0	0	1474
17:15	0	291	157	0	448	71	0	178	0	249	0	537	273	0	810	0	0	0	0	0	1507
17:30	0	317	120	0	437	63	0	160	0	223	0	571	222	0	793	0	0	0	0	0	1453
17:45	0	300	138	0	438	58	0	157	0	215	0	541	215	0	756	0	0	0	0	0	1409
Total Volume	0	1252	596	0	1848	256	0	603	0	859	0	2144	992	0	3136	0	0	0	0	0	5843
% App Total	0.0%	67.7%	32.3%	0.0%		29.8%	0.0%	70.2%	0.0%		0.0%	68.4%	31.6%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.910	.823	.000	.880	.901	.000	.847	.000	.862	.000	.939	.879	.000	.968	.000	.000	.000	.000	.000	.969

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-011 Hopyard Road-I-580 EB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hopyard Road Southbound					I-580 EB On-Ramp Westbound					Hopyard Road Northbound					I-580 EB Ramps Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	159	73	0	232	0	0	0	0	0	0	156	38	0	194	160	0	262	0	422	848	0
07:15	0	197	86	0	283	0	0	0	0	0	0	164	56	0	220	164	0	272	0	436	939	0
07:30	0	243	110	0	353	0	0	0	0	0	0	148	45	0	193	173	0	354	0	527	1073	0
07:45	0	314	117	0	431	0	0	0	0	0	0	175	56	0	231	165	0	362	0	527	1189	0
Total	0	913	386	0	1299	0	0	0	0	0	0	643	195	0	838	662	0	1250	0	1912	4049	0
08:00	0	314	136	0	450	0	0	0	0	0	0	179	43	0	222	143	0	409	0	552	1224	0
08:15	0	324	101	0	425	0	0	0	0	0	0	156	42	0	198	123	0	368	0	491	1114	0
08:30	0	340	128	0	468	0	0	0	0	0	0	185	46	0	231	125	0	381	0	506	1205	0
08:45	0	338	115	0	453	0	0	0	0	0	0	217	56	0	273	153	0	364	0	517	1243	0
Total	0	1316	480	0	1796	0	0	0	0	0	0	737	187	0	924	544	0	1522	0	2066	4786	0
16:00	0	209	108	0	317	0	0	0	0	0	0	401	87	0	488	209	0	160	0	369	1174	0
16:15	0	248	123	0	371	0	0	0	0	0	0	402	76	0	478	194	0	170	0	364	1213	0
16:30	0	247	108	0	355	0	0	0	0	0	0	442	88	0	530	242	0	198	0	440	1325	0
16:45	0	241	89	0	330	0	0	0	0	0	0	497	88	0	585	233	0	221	0	454	1369	0
Total	0	945	428	0	1373	0	0	0	0	0	0	1742	339	0	2081	878	0	749	0	1627	5081	0
17:00	0	281	134	0	415	0	0	0	0	0	0	565	90	0	655	222	0	130	0	352	1422	0
17:15	0	233	115	0	348	0	0	0	0	0	0	568	81	0	649	224	0	135	0	359	1356	0
17:30	0	266	125	0	391	0	0	0	0	0	0	516	96	0	612	255	0	155	0	410	1413	0
17:45	0	243	110	0	353	0	0	0	0	0	0	529	74	0	603	254	0	157	0	411	1367	0
Total	0	1023	484	0	1507	0	0	0	0	0	0	2178	341	0	2519	955	0	577	0	1532	5558	0
Grand Total	0	4197	1778	0	5975	0	0	0	0	0	0	5300	1062	0	6362	3039	0	4098	0	7137	19474	0
Apprch %	0.0%	70.2%	29.8%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	83.3%	16.7%	0.0%		42.6%	0.0%	57.4%	0.0%			
Total %	0.0%	21.6%	9.1%	0.0%	30.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.2%	5.5%	0.0%	32.7%	15.6%	0.0%	21.0%	0.0%	36.6%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-011 Hopyard Road-I-580 EB Ramps.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hopyard Road Southbound					I-580 EB On-Ramp Westbound					Hopyard Road Northbound					I-580 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	0	314	136	0	450	0	0	0	0	0	0	179	43	0	222	143	0	409	0	552	1224
08:15	0	324	101	0	425	0	0	0	0	0	0	156	42	0	198	123	0	368	0	491	1114
08:30	0	340	128	0	468	0	0	0	0	0	0	185	46	0	231	125	0	381	0	506	1205
08:45	0	338	115	0	453	0	0	0	0	0	0	217	56	0	273	153	0	364	0	517	1243
Total Volume	0	1316	480	0	1796	0	0	0	0	0	0	737	187	0	924	544	0	1522	0	2066	4786
% App Total	0.0%	73.3%	26.7%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	79.8%	20.2%	0.0%		26.3%	0.0%	73.7%	0.0%		
PHF	.000	.968	.882	.000	.959	.000	.000	.000	.000	.000	.000	.849	.835	.000	.846	.889	.000	.930	.000	.936	.963

PM PEAK HOUR	Hopyard Road Southbound					I-580 EB On-Ramp Westbound					Hopyard Road Northbound					I-580 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	241	89	0	330	0	0	0	0	0	0	497	88	0	585	233	0	221	0	454	1369
17:00	0	281	134	0	415	0	0	0	0	0	0	565	90	0	655	222	0	130	0	352	1422
17:15	0	233	115	0	348	0	0	0	0	0	0	568	81	0	649	224	0	135	0	359	1356
17:30	0	266	125	0	391	0	0	0	0	0	0	516	96	0	612	255	0	155	0	410	1413
Total Volume	0	1021	463	0	1484	0	0	0	0	0	0	2146	355	0	2501	934	0	641	0	1575	5560
% App Total	0.0%	68.8%	31.2%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	85.8%	14.2%	0.0%		59.3%	0.0%	40.7%	0.0%		
PHF	.000	.908	.864	.000	.894	.000	.000	.000	.000	.000	.000	.945	.924	.000	.955	.916	.000	.725	.000	.867	.977

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-012 Hopyard Drive-Owens Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	97	209	83	0	389	15	13	43	1	72	9	93	18	7	127	64	17	10	0	91	679	8
07:15	131	275	96	0	502	18	9	30	1	58	7	132	22	3	164	53	11	7	0	71	795	4
07:30	123	350	94	0	567	22	16	37	2	77	9	122	18	4	153	44	28	8	0	80	877	6
07:45	173	431	107	0	711	15	26	53	1	95	19	136	17	4	176	35	18	9	0	62	1044	5
Total	524	1265	380	0	2169	70	64	163	5	302	44	483	75	18	620	196	74	34	0	304	3395	23
08:00	166	406	128	0	700	16	23	53	0	92	19	120	14	4	157	54	22	15	0	91	1040	4
08:15	174	417	118	1	710	18	23	47	2	90	28	110	18	4	160	48	18	17	0	83	1043	7
08:30	179	381	117	0	677	24	28	42	1	95	12	132	27	6	177	55	22	12	0	89	1038	7
08:45	220	375	124	0	719	16	25	51	1	93	25	152	21	4	202	67	18	17	0	102	1116	5
Total	739	1579	487	1	2806	74	99	193	4	370	84	514	80	18	696	224	80	61	0	365	4237	23
16:00	90	173	88	0	351	22	26	120	2	170	25	228	10	7	270	158	43	26	0	227	1018	9
16:15	112	217	106	0	435	30	25	139	0	194	20	219	17	3	259	107	31	31	0	169	1057	3
16:30	113	218	86	0	417	24	24	123	2	173	28	282	24	4	338	161	35	22	0	218	1146	6
16:45	117	234	134	0	485	30	25	145	2	202	21	281	21	1	324	132	23	24	0	179	1190	3
Total	432	842	414	0	1688	106	100	527	6	739	94	1010	72	15	1191	558	132	103	0	793	4411	21
17:00	87	206	107	1	401	29	36	161	4	230	18	303	33	3	357	206	44	21	0	271	1259	8
17:15	96	198	109	1	404	40	34	181	2	257	26	288	22	1	337	160	37	14	1	212	1210	5
17:30	79	195	106	0	380	29	38	146	4	217	25	313	21	6	365	158	42	25	1	226	1188	11
17:45	101	191	135	1	428	31	38	182	1	252	32	296	27	3	358	129	34	28	1	192	1230	6
Total	363	790	457	3	1613	129	146	670	11	956	101	1200	103	13	1417	653	157	88	3	901	4887	30
Grand Total	2058	4476	1738	4	8276	379	409	1553	26	2367	323	3207	330	64	3924	1631	443	286	3	2363	16930	97
Apprch %	24.9%	54.1%	21.0%	0.0%		16.0%	17.3%	65.6%	1.1%		8.2%	81.7%	8.4%	1.6%		69.0%	18.7%	12.1%	0.1%			
Total %	12.2%	26.4%	10.3%	0.0%	48.9%	2.2%	2.4%	9.2%	0.2%	14.0%	1.9%	18.9%	1.9%	0.4%	23.2%	9.6%	2.6%	1.7%	0.0%	14.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-012 Hopyard Drive-Owens Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	166	406	128	0	700	16	23	53	0	92	19	120	14	4	157	54	22	15	0	91	1040
08:15	174	417	118	1	710	18	23	47	2	90	28	110	18	4	160	48	18	17	0	83	1043
08:30	179	381	117	0	677	24	28	42	1	95	12	132	27	6	177	55	22	12	0	89	1038
08:45	220	375	124	0	719	16	25	51	1	93	25	152	21	4	202	67	18	17	0	102	1116
Total Volume	739	1579	487	1	2806	74	99	193	4	370	84	514	80	18	696	224	80	61	0	365	4237
% App Total	26.3%	56.3%	17.4%	0.0%		20.0%	26.8%	52.2%	1.1%		12.1%	73.9%	11.5%	2.6%		61.4%	21.9%	16.7%	0.0%		
PHF	.840	.947	.951	.250	.976	.771	.884	.910	.500	.974	.750	.845	.741	.750	.861	.836	.909	.897	.000	.895	.949

PM PEAK HOUR	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	87	206	107	1	401	29	36	161	4	230	18	303	33	3	357	206	44	21	0	271	1259
17:15	96	198	109	1	404	40	34	181	2	257	26	288	22	1	337	160	37	14	1	212	1210
17:30	79	195	106	0	380	29	38	146	4	217	25	313	21	6	365	158	42	25	1	226	1188
17:45	101	191	135	1	428	31	38	182	1	252	32	296	27	3	358	129	34	28	1	192	1230
Total Volume	363	790	457	3	1613	129	146	670	11	956	101	1200	103	13	1417	653	157	88	3	901	4887
% App Total	22.5%	49.0%	28.3%	0.2%		13.5%	15.3%	70.1%	1.2%		7.1%	84.7%	7.3%	0.9%		72.5%	17.4%	9.8%	0.3%		
PHF	.899	.959	.846	.750	.942	.806	.961	.920	.688	.930	.789	.958	.780	.542	.971	.792	.892	.786	.750	.831	.970

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-013 Johnson Drive-Owens Drive (north).ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	0	38	1	0	39	4	1	2	0	7	19	48	4	0	71	0	0	11	0	11	128	0
07:15	0	38	0	0	38	5	0	0	0	5	23	43	1	0	67	0	0	8	0	8	118	0
07:30	1	45	1	0	47	0	2	0	0	2	23	51	2	0	76	1	1	23	0	25	150	0
07:45	1	41	1	0	43	3	1	2	0	6	39	60	3	0	102	0	2	14	0	16	167	0
Total	2	162	3	0	167	12	4	4	0	20	104	202	10	0	316	1	3	56	0	60	563	0
08:00	2	57	1	0	60	3	0	2	0	5	30	57	2	0	89	0	0	18	0	18	172	0
08:15	2	43	0	0	45	9	1	2	0	12	36	55	1	0	92	0	0	32	0	32	181	0
08:30	1	50	1	0	52	5	2	0	0	7	30	57	5	0	92	0	2	21	0	23	174	0
08:45	3	44	1	0	48	7	0	3	0	10	46	73	5	0	124	0	2	26	0	28	210	0
Total	8	194	3	0	205	24	3	7	0	34	142	242	13	0	397	0	4	97	0	101	737	0
16:00	3	70	3	0	76	36	5	5	0	46	40	49	20	0	109	1	3	50	0	54	285	0
16:15	3	52	0	0	55	32	2	6	0	40	57	57	14	0	128	0	6	43	0	49	272	0
16:30	8	60	2	0	70	35	5	3	0	43	35	44	20	0	99	1	2	38	0	41	253	0
16:45	1	61	0	0	62	34	4	7	0	45	44	59	14	0	117	2	1	45	0	48	272	0
Total	15	243	5	0	263	137	16	21	0	174	176	209	68	0	453	4	12	176	0	192	1082	0
17:00	4	67	0	0	71	33	1	5	0	39	32	63	24	0	119	0	4	47	0	51	280	0
17:15	4	64	0	0	68	37	2	5	0	44	37	79	18	0	134	1	0	34	0	35	281	0
17:30	6	66	2	0	74	40	0	2	0	42	35	57	26	0	118	2	2	40	0	44	278	0
17:45	8	47	2	0	57	45	1	8	0	54	40	49	20	0	109	1	3	38	0	42	262	0
Total	22	244	4	0	270	155	4	20	0	179	144	248	88	0	480	4	9	159	0	172	1101	0
Grand Total	47	843	15	0	905	328	27	52	0	407	566	901	179	0	1646	9	28	488	0	525	3483	0
Apprch %	5.2%	93.1%	1.7%	0.0%		80.6%	6.6%	12.8%	0.0%		34.4%	54.7%	10.9%	0.0%		1.7%	5.3%	93.0%	0.0%			
Total %	1.3%	24.2%	0.4%	0.0%	26.0%	9.4%	0.8%	1.5%	0.0%	11.7%	16.3%	25.9%	5.1%	0.0%	47.3%	0.3%	0.8%	14.0%	0.0%	15.1%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-013 Johnson Drive-Owens Drive (north).ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	2	57	1	0	60	3	0	2	0	5	30	57	2	0	89	0	0	18	0	18	172
08:15	2	43	0	0	45	9	1	2	0	12	36	55	1	0	92	0	0	32	0	32	181
08:30	1	50	1	0	52	5	2	0	0	7	30	57	5	0	92	0	2	21	0	23	174
08:45	3	44	1	0	48	7	0	3	0	10	46	73	5	0	124	0	2	26	0	28	210
Total Volume	8	194	3	0	205	24	3	7	0	34	142	242	13	0	397	0	4	97	0	101	737
% App Total	3.9%	94.6%	1.5%	0.0%		70.6%	8.8%	20.6%	0.0%		35.8%	61.0%	3.3%	0.0%		0.0%	4.0%	96.0%	0.0%		
PHF	.667	.851	.750	.000	.854	.667	.375	.583	.000	.708	.772	.829	.650	.000	.800	.000	.500	.758	.000	.789	.877

PM PEAK HOUR	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	1	61	0	0	62	34	4	7	0	45	44	59	14	0	117	2	1	45	0	48	272
17:00	4	67	0	0	71	33	1	5	0	39	32	63	24	0	119	0	4	47	0	51	280
17:15	4	64	0	0	68	37	2	5	0	44	37	79	18	0	134	1	0	34	0	35	281
17:30	6	66	2	0	74	40	0	2	0	42	35	57	26	0	118	2	2	40	0	44	278
Total Volume	15	258	2	0	275	144	7	19	0	170	148	258	82	0	488	5	7	166	0	178	1111
% App Total	5.5%	93.8%	0.7%	0.0%		84.7%	4.1%	11.2%	0.0%		30.3%	52.9%	16.8%	0.0%		2.8%	3.9%	93.3%	0.0%		
PHF	.625	.963	.250	.000	.929	.900	.438	.679	.000	.944	.841	.816	.788	.000	.910	.625	.438	.883	.000	.873	.988

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-014 Johnson Drive-Owens Drive (south).ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	51	4	1	0	56	15	5	72	0	92	2	5	9	0	16	0	2	3	0	5	169	0
07:15	37	7	1	0	45	14	14	72	0	100	2	9	9	0	20	0	4	0	0	4	169	0
07:30	61	10	0	0	71	18	19	73	0	110	6	7	3	0	16	0	8	3	0	11	208	0
07:45	52	9	1	0	62	26	16	98	0	140	6	13	4	0	23	1	4	5	0	10	235	0
Total	201	30	3	0	234	73	54	315	0	442	16	34	25	0	75	1	18	11	0	30	781	0
08:00	62	13	0	0	75	32	28	93	0	153	1	12	9	0	22	0	1	7	0	8	258	0
08:15	78	17	0	0	95	38	20	96	0	154	7	5	4	0	16	0	1	3	0	4	269	0
08:30	64	13	0	0	77	56	17	81	0	154	0	9	10	0	19	0	7	3	0	10	260	0
08:45	76	12	2	0	90	23	21	116	0	160	2	11	10	0	23	1	5	2	0	8	281	0
Total	280	55	2	0	337	149	86	386	0	621	10	37	33	0	80	1	14	15	0	30	1068	0
16:00	148	25	2	0	175	6	17	103	0	126	4	10	33	0	47	1	34	8	0	43	391	0
16:15	121	13	0	0	134	3	7	119	0	129	1	9	26	0	36	2	20	2	0	24	323	0
16:30	128	15	0	0	143	8	11	97	0	116	1	8	54	0	63	0	13	11	0	24	346	0
16:45	124	18	1	0	143	8	25	120	0	153	6	9	39	0	54	1	23	10	0	34	384	0
Total	521	71	3	0	595	25	60	439	0	524	12	36	152	0	200	4	90	31	0	125	1444	0
17:00	145	20	0	0	165	10	17	106	1	134	3	16	78	0	97	1	32	9	0	42	438	1
17:15	135	19	0	0	154	10	15	118	3	146	3	22	35	0	60	0	25	8	0	33	393	3
17:30	125	15	0	0	140	9	28	107	1	145	4	16	54	0	74	0	20	5	0	25	384	1
17:45	140	22	2	0	164	6	45	111	0	162	2	15	34	0	51	0	26	3	0	29	406	0
Total	545	76	2	0	623	35	105	442	5	587	12	69	201	0	282	1	103	25	0	129	1621	5
Grand Total	1547	232	10	0	1789	282	305	1582	5	2174	50	176	411	0	637	7	225	82	0	314	4914	5
Apprch %	86.5%	13.0%	0.6%	0.0%		13.0%	14.0%	72.8%	0.2%		7.8%	27.6%	64.5%	0.0%		2.2%	71.7%	26.1%	0.0%			
Total %	31.5%	4.7%	0.2%	0.0%	36.4%	5.7%	6.2%	32.2%	0.1%	44.2%	1.0%	3.6%	8.4%	0.0%	13.0%	0.1%	4.6%	1.7%	0.0%	6.4%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-014 Johnson Drive-Owens Drive (south).ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	62	13	0	0	75	32	28	93	0	153	1	12	9	0	22	0	1	7	0	8	258
08:15	78	17	0	0	95	38	20	96	0	154	7	5	4	0	16	0	1	3	0	4	269
08:30	64	13	0	0	77	56	17	81	0	154	0	9	10	0	19	0	7	3	0	10	260
08:45	76	12	2	0	90	23	21	116	0	160	2	11	10	0	23	1	5	2	0	8	281
Total Volume	280	55	2	0	337	149	86	386	0	621	10	37	33	0	80	1	14	15	0	30	1068
% App Total	83.1%	16.3%	0.6%	0.0%		24.0%	13.8%	62.2%	0.0%		12.5%	46.3%	41.3%	0.0%		3.3%	46.7%	50.0%	0.0%		
PHF	.897	.809	.250	.000	.887	.665	.768	.832	.000	.970	.357	.771	.825	.000	.870	.250	.500	.536	.000	.750	.950

PM PEAK HOUR	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	145	20	0	0	165	10	17	106	1	134	3	16	78	0	97	1	32	9	0	42	438
17:15	135	19	0	0	154	10	15	118	3	146	3	22	35	0	60	0	25	8	0	33	393
17:30	125	15	0	0	140	9	28	107	1	145	4	16	54	0	74	0	20	5	0	25	384
17:45	140	22	2	0	164	6	45	111	0	162	2	15	34	0	51	0	26	3	0	29	406
Total Volume	545	76	2	0	623	35	105	442	5	587	12	69	201	0	282	1	103	25	0	129	1621
% App Total	87.5%	12.2%	0.3%	0.0%		6.0%	17.9%	75.3%	0.9%		4.3%	24.5%	71.3%	0.0%		0.8%	79.8%	19.4%	0.0%		
PHF	.940	.864	.250	.000	.944	.875	.583	.936	.417	.906	.750	.784	.644	.000	.727	.250	.805	.694	.000	.768	.925

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-015 Hopyard Road-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	25	82	35	3	145	3	179	14	1	197	76	94	7	0	177	16	74	35	1	126	645	5
07:15	42	163	26	3	234	7	207	25	1	240	102	130	7	1	240	12	79	56	1	148	862	6
07:30	39	204	37	2	282	10	204	30	1	245	148	116	14	2	280	27	109	78	0	214	1021	5
07:45	60	168	58	2	288	18	288	21	3	330	162	117	24	0	303	22	174	92	0	288	1209	5
Total	166	617	156	10	949	38	878	90	6	1012	488	457	52	3	1000	77	436	261	2	776	3737	21
08:00	102	189	52	1	344	5	204	24	1	234	138	113	22	1	274	37	162	58	0	257	1109	3
08:15	77	161	59	10	307	12	270	22	2	306	178	115	37	2	332	24	173	57	1	255	1200	15
08:30	61	183	67	9	320	12	249	29	1	291	165	130	24	1	320	38	149	86	0	273	1204	11
08:45	65	143	49	5	262	16	247	25	4	292	147	157	27	0	331	17	202	82	0	301	1186	9
Total	305	676	227	25	1233	45	970	100	8	1123	628	515	110	4	1257	116	686	283	1	1086	4699	38
16:00	47	153	40	12	252	29	190	25	5	249	145	145	14	2	306	25	211	121	0	357	1164	19
16:15	38	188	34	22	282	22	177	26	2	227	127	158	13	1	299	33	191	109	0	333	1141	25
16:30	67	164	42	6	279	18	187	32	2	239	132	203	25	2	362	40	211	118	1	370	1250	11
16:45	64	182	44	22	312	40	234	35	0	309	134	185	25	1	345	33	221	128	1	383	1349	24
Total	216	687	160	62	1125	109	788	118	9	1024	538	691	77	6	1312	131	834	476	2	1443	4904	79
17:00	59	165	46	15	285	30	286	27	1	344	196	209	19	3	427	44	260	149	0	453	1509	19
17:15	65	190	45	5	305	28	299	43	3	373	158	184	19	1	362	47	259	155	1	462	1502	10
17:30	42	167	53	17	279	27	261	39	0	327	169	217	13	1	400	38	252	133	2	425	1431	20
17:45	62	163	32	12	269	32	216	42	2	292	133	191	17	2	343	47	196	116	0	359	1263	16
Total	228	685	176	49	1138	117	1062	151	6	1336	656	801	68	7	1532	176	967	553	3	1699	5705	65
Grand Total	915	2665	719	146	4445	309	3698	459	29	4495	2310	2464	307	20	5101	500	2923	1573	8	5004	19045	203
Apprch %	20.6%	60.0%	16.2%	3.3%		6.9%	82.3%	10.2%	0.6%		45.3%	48.3%	6.0%	0.4%		10.0%	58.4%	31.4%	0.2%			
Total %	4.8%	14.0%	3.8%	0.8%	23.3%	1.6%	19.4%	2.4%	0.2%	23.6%	12.1%	12.9%	1.6%	0.1%	26.8%	2.6%	15.3%	8.3%	0.0%	26.3%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-015 Hopyard Road-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
07:45	60	168	58	2	288	18	288	21	3	330	162	117	24	0	303	22	174	92	0	288	1209
08:00	102	189	52	1	344	5	204	24	1	234	138	113	22	1	274	37	162	58	0	257	1109
08:15	77	161	59	10	307	12	270	22	2	306	178	115	37	2	332	24	173	57	1	255	1200
08:30	61	183	67	9	320	12	249	29	1	291	165	130	24	1	320	38	149	86	0	273	1204
Total Volume	300	701	236	22	1259	47	1011	96	7	1161	643	475	107	4	1229	121	658	293	1	1073	4722
% App Total	23.8%	55.7%	18.7%	1.7%		4.0%	87.1%	8.3%	0.6%		52.3%	38.6%	8.7%	0.3%		11.3%	61.3%	27.3%	0.1%		
PHF	.735	.927	.881	.550	.915	.653	.878	.828	.583	.880	.903	.913	.723	.500	.925	.796	.945	.796	.250	.931	.976

PM PEAK HOUR	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	64	182	44	22	312	40	234	35	0	309	134	185	25	1	345	33	221	128	1	383	1349
17:00	59	165	46	15	285	30	286	27	1	344	196	209	19	3	427	44	260	149	0	453	1509
17:15	65	190	45	5	305	28	299	43	3	373	158	184	19	1	362	47	259	155	1	462	1502
17:30	42	167	53	17	279	27	261	39	0	327	169	217	13	1	400	38	252	133	2	425	1431
Total Volume	230	704	188	59	1181	125	1080	144	4	1353	657	795	76	6	1534	162	992	565	4	1723	5791
% App Total	19.5%	59.6%	15.9%	5.0%		9.2%	79.8%	10.6%	0.3%		42.8%	51.8%	5.0%	0.4%		9.4%	57.6%	32.8%	0.2%		
PHF	.885	.926	.887	.670	.946	.781	.903	.837	.333	.907	.838	.916	.760	.500	.898	.862	.954	.911	.500	.932	.959

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-016 Hopyard Road-West Las Positas Avenue.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hopyard Road Southbound					West Las Positas Avenue Westbound					Hopyard Road Northbound					West Las Positas Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	8	93	11	2	114	30	22	8	0	60	19	182	45	4	250	14	13	16	1	44	468	7
07:15	17	138	16	1	172	42	16	8	0	66	36	216	43	1	296	13	25	41	2	81	615	4
07:30	20	205	21	3	249	48	41	13	0	102	37	268	48	4	357	18	27	29	1	75	783	8
07:45	50	209	22	4	285	69	35	8	0	112	50	263	55	1	369	16	28	41	1	86	852	6
Total	95	645	70	10	820	189	114	37	0	340	142	929	191	10	1272	61	93	127	5	286	2718	25
08:00	30	161	19	4	214	46	37	6	0	89	48	229	59	5	341	23	35	55	0	113	757	9
08:15	36	173	23	4	236	51	81	11	0	143	118	243	75	5	441	16	31	70	0	117	937	9
08:30	30	179	9	5	223	82	83	13	0	178	85	220	56	2	363	23	63	111	1	198	962	8
08:45	22	183	15	4	224	69	27	16	1	113	63	248	82	4	397	36	93	102	2	233	967	11
Total	118	696	66	17	897	248	228	46	1	523	314	940	272	16	1542	98	222	338	3	661	3623	37
16:00	7	292	32	5	336	85	39	20	1	145	60	163	46	6	275	27	44	78	0	149	905	12
16:15	19	264	19	1	303	84	48	31	0	163	65	164	53	5	287	33	46	83	1	163	916	7
16:30	16	289	23	3	331	106	59	18	2	185	57	238	53	2	350	21	46	67	1	135	1001	8
16:45	9	300	19	4	332	116	69	31	0	216	87	179	76	2	344	31	43	88	2	164	1056	8
Total	51	1145	93	13	1302	391	215	100	3	709	269	744	228	15	1256	112	179	316	4	611	3878	35
17:00	22	360	17	7	406	125	73	38	2	238	75	209	68	0	352	17	42	96	1	156	1152	10
17:15	17	301	17	7	342	137	69	34	0	240	98	185	91	5	379	21	64	127	2	214	1175	14
17:30	16	321	24	5	366	133	58	29	0	220	94	249	106	1	450	21	46	100	2	169	1205	8
17:45	15	237	16	4	272	103	65	21	0	189	74	198	83	4	359	16	49	91	0	156	976	8
Total	70	1219	74	23	1386	498	265	122	2	887	341	841	348	10	1540	75	201	414	5	695	4508	40
Grand Total	334	3705	303	63	4405	1326	822	305	6	2459	1066	3454	1039	51	5610	346	695	1195	17	2253	14727	137
Apprch %	7.6%	84.1%	6.9%	1.4%		53.9%	33.4%	12.4%	0.2%		19.0%	61.6%	18.5%	0.9%		15.4%	30.8%	53.0%	0.8%			
Total %	2.3%	25.2%	2.1%	0.4%	29.9%	9.0%	5.6%	2.1%	0.0%	16.7%	7.2%	23.5%	7.1%	0.3%	38.1%	2.3%	4.7%	8.1%	0.1%	15.3%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-016 Hopyard Road-West Las Positas Avenue.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hopyard Road Southbound					West Las Positas Avenue Westbound					Hopyard Road Northbound					West Las Positas Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	30	161	19	4	214	46	37	6	0	89	48	229	59	5	341	23	35	55	0	113	757
08:15	36	173	23	4	236	51	81	11	0	143	118	243	75	5	441	16	31	70	0	117	937
08:30	30	179	9	5	223	82	83	13	0	178	85	220	56	2	363	23	63	111	1	198	962
08:45	22	183	15	4	224	69	27	16	1	113	63	248	82	4	397	36	93	102	2	233	967
Total Volume	118	696	66	17	897	248	228	46	1	523	314	940	272	16	1542	98	222	338	3	661	3623
% App Total	13.2%	77.6%	7.4%	1.9%		47.4%	43.6%	8.8%	0.2%		20.4%	61.0%	17.6%	1.0%		14.8%	33.6%	51.1%	0.5%		
PHF	.819	.951	.717	.850	.950	.756	.687	.719	.250	.735	.665	.948	.829	.800	.874	.681	.597	.761	.375	.709	.937

PM PEAK HOUR	Hopyard Road Southbound					West Las Positas Avenue Westbound					Hopyard Road Northbound					West Las Positas Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	9	300	19	4	332	116	69	31	0	216	87	179	76	2	344	31	43	88	2	164	1056
17:00	22	360	17	7	406	125	73	38	2	238	75	209	68	0	352	17	42	96	1	156	1152
17:15	17	301	17	7	342	137	69	34	0	240	98	185	91	5	379	21	64	127	2	214	1175
17:30	16	321	24	5	366	133	58	29	0	220	94	249	106	1	450	21	46	100	2	169	1205
Total Volume	64	1282	77	23	1446	511	269	132	2	914	354	822	341	8	1525	90	195	411	7	703	4588
% App Total	4.4%	88.7%	5.3%	1.6%		55.9%	29.4%	14.4%	0.2%		23.2%	53.9%	22.4%	0.5%		12.8%	27.7%	58.5%	1.0%		
PHF	.727	.890	.802	.821	.890	.932	.921	.868	.250	.952	.903	.825	.804	.400	.847	.726	.762	.809	.875	.821	.952

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-017 Hacienda Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

	Hacienda Drive Southbound					Stoneridge Drive Westbound					Hacienda Drive Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	3	24	8	0	35	1	198	4	0	203	3	11	0	0	14	10	36	4	0	50	302	0
07:15	4	20	20	0	44	5	249	2	0	256	2	12	0	0	14	11	37	12	0	60	374	0
07:30	2	45	30	0	77	5	250	8	0	263	0	13	0	0	13	23	42	8	0	73	426	0
07:45	9	37	35	0	81	6	328	3	1	338	2	12	4	1	19	19	75	12	0	106	544	2
Total	18	126	93	0	237	17	1025	17	1	1060	7	48	4	1	60	63	190	36	0	289	1646	2
08:00	6	47	60	0	113	3	264	7	1	275	5	20	2	1	28	32	76	16	0	124	540	2
08:15	5	52	51	0	108	6	269	2	0	277	4	21	2	0	27	32	99	11	0	142	554	0
08:30	7	59	56	0	122	2	284	9	0	295	7	22	5	0	34	39	74	8	0	121	572	0
08:45	14	37	47	1	99	1	264	12	0	277	5	18	3	0	26	38	91	14	0	143	545	1
Total	32	195	214	1	442	12	1081	30	1	1124	21	81	12	1	115	141	340	49	0	530	2211	3
16:00	6	32	50	0	88	0	129	9	0	138	14	32	1	0	47	30	208	6	0	244	517	0
16:15	15	35	45	0	95	1	94	5	0	100	11	24	1	0	36	33	188	4	0	225	456	0
16:30	11	32	46	0	89	1	126	3	0	130	13	37	5	0	55	39	211	3	0	253	527	0
16:45	13	40	61	0	114	2	133	4	0	139	14	34	0	0	48	44	241	5	0	290	591	0
Total	45	139	202	0	386	4	482	21	0	507	52	127	7	0	186	146	848	18	0	1012	2091	0
17:00	14	42	75	0	131	1	141	7	0	149	17	48	9	0	74	54	257	6	1	318	672	1
17:15	17	59	63	0	139	3	131	14	0	148	23	40	4	0	67	71	262	3	1	337	691	1
17:30	15	70	83	0	168	5	144	9	0	158	12	57	2	0	71	44	218	5	0	267	664	0
17:45	7	49	57	0	113	2	97	1	0	100	9	53	3	2	67	53	200	8	0	261	541	2
Total	53	220	278	0	551	11	513	31	0	555	61	198	18	2	279	222	937	22	2	1183	2568	4
Grand Total	148	680	787	1	1616	44	3101	99	2	3246	141	454	41	4	640	572	2315	125	2	3014	8516	9
Apprch %	9.2%	42.1%	48.7%	0.1%		1.4%	95.5%	3.0%	0.1%		22.0%	70.9%	6.4%	0.6%		19.0%	76.8%	4.1%	0.1%			
Total %	1.7%	8.0%	9.2%	0.0%	19.0%	0.5%	36.4%	1.2%	0.0%	38.1%	1.7%	5.3%	0.5%	0.0%	7.5%	6.7%	27.2%	1.5%	0.0%	35.4%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-017 Hacienda Drive-Stoneridge Drive.ppd
Date : 10/1/2014

Unshifted Count = All Vehicles

AM PEAK HOUR	Hacienda Drive Southbound					Stoneridge Drive Westbound					Hacienda Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	6	47	60	0	113	3	264	7	1	275	5	20	2	1	28	32	76	16	0	124	540
08:15	5	52	51	0	108	6	269	2	0	277	4	21	2	0	27	32	99	11	0	142	554
08:30	7	59	56	0	122	2	284	9	0	295	7	22	5	0	34	39	74	8	0	121	572
08:45	14	37	47	1	99	1	264	12	0	277	5	18	3	0	26	38	91	14	0	143	545
Total Volume	32	195	214	1	442	12	1081	30	1	1124	21	81	12	1	115	141	340	49	0	530	2211
% App Total	7.2%	44.1%	48.4%	0.2%		1.1%	96.2%	2.7%	0.1%		18.3%	70.4%	10.4%	0.9%		26.6%	64.2%	9.2%	0.0%		
PHF	.571	.826	.892	.250	.906	.500	.952	.625	.250	.953	.750	.920	.600	.250	.846	.904	.859	.766	.000	.927	.966

PM PEAK HOUR	Hacienda Drive Southbound					Stoneridge Drive Westbound					Hacienda Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	13	40	61	0	114	2	133	4	0	139	14	34	0	0	48	44	241	5	0	290	591
17:00	14	42	75	0	131	1	141	7	0	149	17	48	9	0	74	54	257	6	1	318	672
17:15	17	59	63	0	139	3	131	14	0	148	23	40	4	0	67	71	262	3	1	337	691
17:30	15	70	83	0	168	5	144	9	0	158	12	57	2	0	71	44	218	5	0	267	664
Total Volume	59	211	282	0	552	11	549	34	0	594	66	179	15	0	260	213	978	19	2	1212	2618
% App Total	10.7%	38.2%	51.1%	0.0%		1.9%	92.4%	5.7%	0.0%		25.4%	68.8%	5.8%	0.0%		17.6%	80.7%	1.6%	0.2%		
PHF	.868	.754	.849	.000	.821	.550	.953	.607	.000	.940	.717	.785	.417	.000	.878	.750	.933	.792	.500	.899	.947

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-001 I-680 SB Ramps-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	94	0	132	0	226	0	213	53	0	266	0	0	0	0	0	0	243	57	0	300	792	0
13:15	82	0	150	0	232	0	265	50	0	315	0	0	0	0	0	0	198	56	0	254	801	0
13:30	91	0	159	0	250	0	247	59	0	306	0	0	0	0	0	0	233	71	0	304	860	0
13:45	84	0	152	0	236	0	239	42	0	281	0	0	0	0	0	0	226	68	0	294	811	0
Total	351	0	593	0	944	0	964	204	0	1168	0	0	0	0	0	0	900	252	0	1152	3264	0
14:00	74	0	139	0	213	0	227	52	0	279	0	0	0	0	0	0	237	61	0	298	790	0
14:15	95	0	168	0	263	0	238	54	0	292	0	0	0	0	0	0	221	57	0	278	833	0
14:30	70	0	161	0	231	0	226	45	0	271	0	0	0	0	0	0	242	67	0	309	811	0
14:45	88	0	169	0	257	0	195	47	0	242	0	0	0	0	0	0	216	64	0	280	779	0
Total	327	0	637	0	964	0	886	198	0	1084	0	0	0	0	0	0	916	249	0	1165	3213	0
15:00	80	0	130	0	210	0	195	50	0	245	0	0	0	0	0	0	223	59	0	282	737	0
15:15	89	0	112	0	201	0	192	49	0	241	0	0	0	0	0	0	234	74	0	308	750	0
15:30	74	0	136	0	210	0	216	63	0	279	0	0	0	0	0	0	239	67	0	306	795	0
15:45	80	0	129	0	209	0	196	58	0	254	0	0	0	0	0	0	223	65	0	288	751	0
Total	323	0	507	0	830	0	799	220	0	1019	0	0	0	0	0	0	919	265	0	1184	3033	0
Grand Total	1001	0	1737	0	2738	0	2649	622	0	3271	0	0	0	0	0	0	2735	766	0	3501	9510	0
Apprch %	36.6%	0.0%	63.4%	0.0%		0.0%	81.0%	19.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	78.1%	21.9%	0.0%			
Total %	10.5%	0.0%	18.3%	0.0%	28.8%	0.0%	27.9%	6.5%	0.0%	34.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.8%	8.1%	0.0%	36.8%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-001 I-680 SB Ramps-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	I-680 SB Ramps Southbound					Stoneridge Drive Westbound					I-680 SB On-Ramp Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:30 to 14:30																					
Peak Hour For Entire Intersection Begins at 13:30																					
13:30	91	0	159	0	250	0	247	59	0	306	0	0	0	0	0	0	233	71	0	304	860
13:45	84	0	152	0	236	0	239	42	0	281	0	0	0	0	0	0	226	68	0	294	811
14:00	74	0	139	0	213	0	227	52	0	279	0	0	0	0	0	0	237	61	0	298	790
14:15	95	0	168	0	263	0	238	54	0	292	0	0	0	0	0	0	221	57	0	278	833
Total Volume	344	0	618	0	962	0	951	207	0	1158	0	0	0	0	0	0	917	257	0	1174	3294
% App Total	35.8%	0.0%	64.2%	0.0%		0.0%	82.1%	17.9%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	78.1%	21.9%	0.0%		
PHF	.905	.000	.920	.000	.914	.000	.963	.877	.000	.946	.000	.000	.000	.000	.000	.000	.967	.905	.000	.965	.958

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-002 I-680 NB Ramps-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	0	0	0	0	0	0	205	78	0	283	65	0	43	0	108	0	185	138	0	323	714	0
13:15	0	0	0	0	0	0	224	100	0	324	94	0	53	0	147	0	175	111	0	286	757	0
13:30	0	0	0	0	0	0	236	105	0	341	65	0	53	0	118	0	192	127	0	319	778	0
13:45	0	0	0	0	0	0	207	130	0	337	80	0	36	0	116	0	195	105	0	300	753	0
Total	0	0	0	0	0	0	872	413	0	1285	304	0	185	0	489	0	747	481	0	1228	3002	0
14:00	0	0	0	0	0	0	203	100	0	303	67	0	47	0	114	0	178	116	0	294	711	0
14:15	0	0	0	0	0	0	234	77	0	311	68	0	39	0	107	0	190	142	0	332	750	0
14:30	0	0	0	0	0	0	189	86	0	275	72	0	41	0	113	0	192	131	0	323	711	0
14:45	0	0	0	0	0	0	172	93	0	265	84	0	39	0	123	0	172	123	0	295	683	0
Total	0	0	0	0	0	0	798	356	0	1154	291	0	166	0	457	0	732	512	0	1244	2855	0
15:00	0	0	0	0	0	0	182	116	0	298	51	0	34	0	85	0	192	120	0	312	695	0
15:15	0	0	0	0	0	0	196	103	0	299	62	0	45	0	107	0	186	127	0	313	719	0
15:30	0	0	0	0	0	0	197	115	0	312	67	0	43	0	110	0	170	151	0	321	743	0
15:45	0	0	0	0	0	0	195	100	0	295	68	0	45	0	113	0	165	132	0	297	705	0
Total	0	0	0	0	0	0	770	434	0	1204	248	0	167	0	415	0	713	530	0	1243	2862	0
Grand Total	0	0	0	0	0	0	2440	1203	0	3643	843	0	518	0	1361	0	2192	1523	0	3715	8719	0
Apprch %	0.0%	0.0%	0.0%	0.0%		0.0%	67.0%	33.0%	0.0%		61.9%	0.0%	38.1%	0.0%		0.0%	59.0%	41.0%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.0%	13.8%	0.0%	41.8%	9.7%	0.0%	5.9%	0.0%	15.6%	0.0%	25.1%	17.5%	0.0%	42.6%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-002 I-680 NB Ramps-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	I-680 NB On-Ramp Southbound					Stoneridge Drive Westbound					I-680 NB Ramps Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:00 to 14:00																					
Peak Hour For Entire Intersection Begins at 13:00																					
13:00	0	0	0	0	0	0	205	78	0	283	65	0	43	0	108	0	185	138	0	323	714
13:15	0	0	0	0	0	0	224	100	0	324	94	0	53	0	147	0	175	111	0	286	757
13:30	0	0	0	0	0	0	236	105	0	341	65	0	53	0	118	0	192	127	0	319	778
13:45	0	0	0	0	0	0	207	130	0	337	80	0	36	0	116	0	195	105	0	300	753
Total Volume	0	0	0	0	0	0	872	413	0	1285	304	0	185	0	489	0	747	481	0	1228	3002
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	67.9%	32.1%	0.0%		62.2%	0.0%	37.8%	0.0%		0.0%	60.8%	39.2%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.924	.794	.000	.942	.809	.000	.873	.000	.832	.000	.958	.871	.000	.950	.965

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-003 Johnson Drive-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	6	0	38	0	44	3	245	16	0	264	5	1	1	0	7	37	186	6	0	229	544	0
13:15	13	0	45	0	58	2	261	16	1	280	1	0	2	0	3	37	176	8	0	221	562	1
13:30	10	1	47	0	58	2	301	8	1	312	5	1	3	0	9	27	198	6	0	231	610	1
13:45	8	0	31	0	39	1	285	10	0	296	10	0	5	0	15	43	195	4	0	242	592	0
Total	37	1	161	0	199	8	1092	50	2	1152	21	2	11	0	34	144	755	24	0	923	2308	2
14:00	9	0	44	0	53	1	261	7	0	269	6	2	2	0	10	35	174	6	0	215	547	0
14:15	18	1	41	0	60	1	255	12	0	268	4	1	0	0	5	31	200	3	0	234	567	0
14:30	14	0	50	0	64	3	227	7	0	237	2	0	2	0	4	26	197	5	0	228	533	0
14:45	4	0	40	0	44	2	213	9	0	224	1	0	3	0	4	34	187	3	0	224	496	0
Total	45	1	175	0	221	7	956	35	0	998	13	3	7	0	23	126	758	17	0	901	2143	0
15:00	7	0	54	0	61	3	244	5	0	252	4	1	1	0	6	36	175	2	0	213	532	0
15:15	6	0	37	0	43	0	245	19	0	264	12	1	2	0	15	35	192	3	0	230	552	0
15:30	4	0	53	0	57	2	263	12	1	278	4	0	2	0	6	25	194	7	0	226	567	1
15:45	7	1	41	0	49	2	250	15	1	268	3	0	1	0	4	31	174	1	0	206	527	1
Total	24	1	185	0	210	7	1002	51	2	1062	23	2	6	0	31	127	735	13	0	875	2178	2
Grand Total	106	3	521	0	630	22	3050	136	4	3212	57	7	24	0	88	397	2248	54	0	2699	6629	4
Apprch %	16.8%	0.5%	82.7%	0.0%		0.7%	95.0%	4.2%	0.1%		64.8%	8.0%	27.3%	0.0%		14.7%	83.3%	2.0%	0.0%			
Total %	1.6%	0.0%	7.9%	0.0%	9.5%	0.3%	46.0%	2.1%	0.1%	48.5%	0.9%	0.1%	0.4%	0.0%	1.3%	6.0%	33.9%	0.8%	0.0%	40.7%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-003 Johnson Drive-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Stoneridge Drive Westbound					Johnson Drive Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:30 to 14:30																					
Peak Hour For Entire Intersection Begins at 13:30																					
13:30	10	1	47	0	58	2	301	8	1	312	5	1	3	0	9	27	198	6	0	231	610
13:45	8	0	31	0	39	1	285	10	0	296	10	0	5	0	15	43	195	4	0	242	592
14:00	9	0	44	0	53	1	261	7	0	269	6	2	2	0	10	35	174	6	0	215	547
14:15	18	1	41	0	60	1	255	12	0	268	4	1	0	0	5	31	200	3	0	234	567
Total Volume	45	2	163	0	210	5	1102	37	1	1145	25	4	10	0	39	136	767	19	0	922	2316
% App Total	21.4%	1.0%	77.6%	0.0%		0.4%	96.2%	3.2%	0.1%		64.1%	10.3%	25.6%	0.0%		14.8%	83.2%	2.1%	0.0%		
PHF	.625	.500	.867	.000	.875	.625	.915	.771	.250	.917	.625	.500	.500	.000	.650	.791	.959	.792	.000	.952	.949

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-004 Johnson Drive-Commerce Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	2	22	0	0	24	16	0	12	0	28	0	34	13	0	47	0	0	0	0	0	99	0
13:15	2	38	0	0	40	8	0	2	0	10	0	32	16	0	48	0	0	0	0	0	98	0
13:30	8	40	0	0	48	12	0	6	0	18	0	24	8	0	32	0	0	0	0	0	98	0
13:45	6	24	0	0	30	9	0	6	0	15	0	34	14	0	48	0	0	0	0	0	93	0
Total	18	124	0	0	142	45	0	26	0	71	0	124	51	0	175	0	0	0	0	0	388	0
14:00	10	47	0	0	57	14	0	11	0	25	0	35	12	0	47	0	0	0	0	0	129	0
14:15	6	47	0	0	53	5	0	8	0	13	0	31	8	0	39	0	0	0	0	0	105	0
14:30	7	43	0	0	50	11	0	5	0	16	0	28	6	0	34	0	0	0	0	0	100	0
14:45	10	32	0	0	42	10	0	7	0	17	0	27	7	0	34	0	0	0	0	0	93	0
Total	33	169	0	0	202	40	0	31	0	71	0	121	33	0	154	0	0	0	0	0	427	0
15:00	5	41	0	0	46	11	0	9	0	20	0	29	8	0	37	0	0	0	0	0	103	0
15:15	8	30	0	0	38	10	0	6	0	16	0	36	7	0	43	0	0	0	0	0	97	0
15:30	7	35	0	0	42	10	0	7	0	17	0	27	6	0	33	0	0	0	0	0	92	0
15:45	9	32	0	0	41	5	0	7	0	12	0	30	8	0	38	0	0	0	0	0	91	0
Total	29	138	0	0	167	36	0	29	0	65	0	122	29	0	151	0	0	0	0	0	383	0
Grand Total	80	431	0	0	511	121	0	86	0	207	0	367	113	0	480	0	0	0	0	0	1198	0
Apprch %	15.7%	84.3%	0.0%	0.0%		58.5%	0.0%	41.5%	0.0%		0.0%	76.5%	23.5%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	6.7%	36.0%	0.0%	0.0%	42.7%	10.1%	0.0%	7.2%	0.0%	17.3%	0.0%	30.6%	9.4%	0.0%	40.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-004 Johnson Drive-Commerce Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Commerce Drive Westbound					Johnson Drive Northbound					Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:45 to 14:45																					
Peak Hour For Entire Intersection Begins at 13:45																					
13:45	6	24	0	0	30	9	0	6	0	15	0	34	14	0	48	0	0	0	0	0	93
14:00	10	47	0	0	57	14	0	11	0	25	0	35	12	0	47	0	0	0	0	0	129
14:15	6	47	0	0	53	5	0	8	0	13	0	31	8	0	39	0	0	0	0	0	105
14:30	7	43	0	0	50	11	0	5	0	16	0	28	6	0	34	0	0	0	0	0	100
Total Volume	29	161	0	0	190	39	0	30	0	69	0	128	40	0	168	0	0	0	0	0	427
% App Total	15.3%	84.7%	0.0%	0.0%		56.5%	0.0%	43.5%	0.0%		0.0%	76.2%	23.8%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.725	.856	.000	.000	.833	.696	.000	.682	.000	.690	.000	.914	.714	.000	.875	.000	.000	.000	.000	.000	.828

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-005 Johnson Drive-Park and Ride Lot.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	0	40	0	0	40	0	0	0	0	0	8	46	0	0	54	0	0	2	0	2	96	0
13:15	0	52	1	0	53	0	0	0	0	0	1	50	0	1	52	1	0	8	0	9	114	1
13:30	0	52	0	0	52	0	0	0	0	0	0	33	0	1	34	0	0	1	0	1	87	1
13:45	0	36	0	0	36	0	0	0	0	0	1	53	0	2	56	0	0	1	0	1	93	2
Total	0	180	1	0	181	0	0	0	0	0	10	182	0	4	196	1	0	12	0	13	390	4
14:00	0	55	0	0	55	0	0	0	0	0	1	44	0	0	45	0	0	1	0	1	101	0
14:15	0	62	0	0	62	0	0	0	0	0	1	38	0	2	41	0	0	0	0	0	103	2
14:30	0	56	0	0	56	0	0	0	0	0	2	32	0	1	35	0	0	2	0	2	93	1
14:45	0	42	0	1	43	0	0	0	0	0	3	37	0	1	41	0	0	2	0	2	86	2
Total	0	215	0	1	216	0	0	0	0	0	7	151	0	4	162	0	0	5	0	5	383	5
15:00	0	53	0	0	53	0	0	0	0	0	6	40	0	0	46	0	0	5	0	5	104	0
15:15	0	44	0	0	44	0	0	0	0	0	3	47	0	2	52	0	0	3	0	3	99	2
15:30	0	51	0	0	51	0	0	0	0	0	5	33	0	0	38	0	0	3	0	3	92	0
15:45	0	39	0	0	39	0	0	0	0	0	6	38	0	1	45	0	0	10	0	10	94	1
Total	0	187	0	0	187	0	0	0	0	0	20	158	0	3	181	0	0	21	0	21	389	3
Grand Total	0	582	1	1	584	0	0	0	0	0	37	491	0	11	539	1	0	38	0	39	1162	12
Apprch %	0.0%	99.7%	0.2%	0.2%		0.0%	0.0%	0.0%	0.0%		6.9%	91.1%	0.0%	2.0%		2.6%	0.0%	97.4%	0.0%			
Total %	0.0%	50.1%	0.1%	0.1%	50.3%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	42.3%	0.0%	0.9%	46.4%	0.1%	0.0%	3.3%	0.0%	3.4%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-005 Johnson Drive-Park and Ride Lot.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Westbound					Johnson Drive Northbound					Park and Ride Lot Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:15 to 14:15																					
Peak Hour For Entire Intersection Begins at 13:15																					
13:15	0	52	1	0	53	0	0	0	0	0	1	50	0	1	52	1	0	8	0	9	114
13:30	0	52	0	0	52	0	0	0	0	0	0	33	0	1	34	0	0	1	0	1	87
13:45	0	36	0	0	36	0	0	0	0	0	1	53	0	2	56	0	0	1	0	1	93
14:00	0	55	0	0	55	0	0	0	0	0	1	44	0	0	45	0	0	1	0	1	101
Total Volume	0	195	1	0	196	0	0	0	0	0	3	180	0	4	187	1	0	11	0	12	395
% App Total	0.0%	99.5%	0.5%	0.0%		0.0%	0.0%	0.0%	0.0%		1.6%	96.3%	0.0%	2.1%		8.3%	0.0%	91.7%	0.0%		
PHF	.000	.886	.250	.000	.891	.000	.000	.000	.000	.000	.750	.849	.000	.500	.835	.250	.000	.344	.000	.333	.866

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-006 Hopyard Drive-Owens Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	79	143	118	0	340	40	29	80	3	152	47	163	23	6	239	132	23	21	0	176	907	9
13:15	71	170	137	5	383	16	28	62	4	110	50	185	25	6	266	139	31	38	1	209	968	16
13:30	79	129	99	0	307	29	28	73	1	131	32	173	23	3	231	147	18	28	1	194	863	5
13:45	83	169	107	0	359	23	41	75	3	142	44	201	24	10	279	121	30	33	0	184	964	13
Total	312	611	461	5	1389	108	126	290	11	535	173	722	95	25	1015	539	102	120	2	763	3702	43
14:00	82	150	113	1	346	20	28	63	1	112	35	188	32	9	264	134	22	32	0	188	910	11
14:15	72	149	99	0	320	29	29	75	4	137	50	159	22	4	235	130	25	19	1	175	867	9
14:30	68	132	97	1	298	24	27	62	1	114	29	138	19	9	195	126	31	26	1	184	791	12
14:45	84	149	115	1	349	8	28	70	0	106	35	198	24	6	263	123	30	23	0	176	894	7
Total	306	580	424	3	1313	81	112	270	6	469	149	683	97	28	957	513	108	100	2	723	3462	39
15:00	66	148	106	1	321	19	27	72	3	121	35	156	14	3	208	110	31	19	0	160	810	7
15:15	67	135	91	2	295	20	28	76	2	126	30	167	22	4	223	121	27	39	0	187	831	8
15:30	64	122	101	2	289	12	22	62	3	99	34	150	17	6	207	105	28	23	0	156	751	11
15:45	66	129	82	3	280	18	28	66	1	113	24	146	24	6	200	98	18	20	0	136	729	10
Total	263	534	380	8	1185	69	105	276	9	459	123	619	77	19	838	434	104	101	0	639	3121	36
Grand Total	881	1725	1265	16	3887	258	343	836	26	1463	445	2024	269	72	2810	1486	314	321	4	2125	10285	118
Apprch %	22.7%	44.4%	32.5%	0.4%		17.6%	23.4%	57.1%	1.8%		15.8%	72.0%	9.6%	2.6%		69.9%	14.8%	15.1%	0.2%			
Total %	8.6%	16.8%	12.3%	0.2%	37.8%	2.5%	3.3%	8.1%	0.3%	14.2%	4.3%	19.7%	2.6%	0.7%	27.3%	14.4%	3.1%	3.1%	0.0%	20.7%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-006 Hopyard Drive-Owens Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Hopyard Drive Southbound					Owens Drive Westbound					Hopyard Drive Northbound					Owens Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:15 to 14:15																					
Peak Hour For Entire Intersection Begins at 13:15																					
13:15	71	170	137	5	383	16	28	62	4	110	50	185	25	6	266	139	31	38	1	209	968
13:30	79	129	99	0	307	29	28	73	1	131	32	173	23	3	231	147	18	28	1	194	863
13:45	83	169	107	0	359	23	41	75	3	142	44	201	24	10	279	121	30	33	0	184	964
14:00	82	150	113	1	346	20	28	63	1	112	35	188	32	9	264	134	22	32	0	188	910
Total Volume	315	618	456	6	1395	88	125	273	9	495	161	747	104	28	1040	541	101	131	2	775	3705
% App Total	22.6%	44.3%	32.7%	0.4%		17.8%	25.3%	55.2%	1.8%		15.5%	71.8%	10.0%	2.7%		69.8%	13.0%	16.9%	0.3%		
PHF	.949	.909	.832	.300	.911	.759	.762	.910	.563	.871	.805	.929	.813	.700	.932	.920	.815	.862	.500	.927	.957

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-007 Johnson Drive-Owens Drive (north).ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	6	59	0	0	65	64	4	8	0	76	71	40	21	0	132	1	6	66	0	73	346	0
13:15	1	56	1	0	58	48	12	8	0	68	67	42	35	0	144	4	9	57	0	70	340	0
13:30	11	53	1	0	65	58	4	9	0	71	52	30	35	0	117	1	6	70	0	77	330	0
13:45	3	63	1	0	67	66	4	3	0	73	62	41	34	0	137	2	6	45	0	53	330	0
Total	21	231	3	0	255	236	24	28	0	288	252	153	125	0	530	8	27	238	0	273	1346	0
14:00	6	60	1	0	67	56	7	12	0	75	64	40	22	0	126	0	3	52	0	55	323	0
14:15	5	56	1	0	62	53	4	7	0	64	72	29	27	0	128	1	1	37	0	39	293	0
14:30	13	39	0	0	52	57	4	11	0	72	66	31	16	0	113	1	5	66	0	72	309	0
14:45	4	42	1	0	47	49	3	15	0	67	58	46	23	0	127	0	5	57	0	62	303	0
Total	28	197	3	0	228	215	18	45	0	278	260	146	88	0	494	2	14	212	0	228	1228	0
15:00	6	60	0	0	66	40	3	9	0	52	58	40	41	0	139	0	5	47	0	52	309	0
15:15	7	48	0	0	55	58	7	7	0	72	48	37	19	0	104	0	4	60	0	64	295	0
15:30	9	45	2	0	56	37	3	5	0	45	56	43	19	0	118	1	2	48	0	51	270	0
15:45	4	33	1	0	38	51	1	11	0	63	41	30	16	0	87	1	3	58	0	62	250	0
Total	26	186	3	0	215	186	14	32	0	232	203	150	95	0	448	2	14	213	0	229	1124	0
Grand Total	75	614	9	0	698	637	56	105	0	798	715	449	308	0	1472	12	55	663	0	730	3698	0
Apprch %	10.7%	88.0%	1.3%	0.0%		79.8%	7.0%	13.2%	0.0%		48.6%	30.5%	20.9%	0.0%		1.6%	7.5%	90.8%	0.0%			
Total %	2.0%	16.6%	0.2%	0.0%	18.9%	17.2%	1.5%	2.8%	0.0%	21.6%	19.3%	12.1%	8.3%	0.0%	39.8%	0.3%	1.5%	17.9%	0.0%	19.7%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-007 Johnson Drive-Owens Drive (north).ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Owens Drive (north) Westbound					Johnson Drive Northbound					Owens Drive (north) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:00 to 14:00																					
Peak Hour For Entire Intersection Begins at 13:00																					
13:00	6	59	0	0	65	64	4	8	0	76	71	40	21	0	132	1	6	66	0	73	346
13:15	1	56	1	0	58	48	12	8	0	68	67	42	35	0	144	4	9	57	0	70	340
13:30	11	53	1	0	65	58	4	9	0	71	52	30	35	0	117	1	6	70	0	77	330
13:45	3	63	1	0	67	66	4	3	0	73	62	41	34	0	137	2	6	45	0	53	330
Total Volume	21	231	3	0	255	236	24	28	0	288	252	153	125	0	530	8	27	238	0	273	1346
% App Total	8.2%	90.6%	1.2%	0.0%		81.9%	8.3%	9.7%	0.0%		47.5%	28.9%	23.6%	0.0%		2.9%	9.9%	87.2%	0.0%		
PHF	.477	.917	.750	.000	.951	.894	.500	.778	.000	.947	.887	.911	.893	.000	.920	.500	.750	.850	.000	.886	.973

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-008 Johnson Drive-Owens Drive (south).ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	162	25	0	0	187	2	16	123	1	142	0	12	5	0	17	1	6	1	0	8	354	1
13:15	141	23	0	0	164	5	13	145	3	166	1	11	9	0	21	1	9	6	0	16	367	3
13:30	145	39	0	0	184	9	6	102	0	117	5	15	17	0	37	0	22	14	0	36	374	0
13:45	146	30	2	0	178	7	6	134	1	148	0	12	3	0	15	0	13	3	0	16	357	1
Total	594	117	2	0	713	23	41	504	5	573	6	50	34	0	90	2	50	24	0	76	1452	5
14:00	144	20	0	0	164	8	6	127	0	141	2	6	10	0	18	0	8	4	0	12	335	0
14:15	141	21	0	0	162	3	5	125	0	133	2	6	11	0	19	1	3	4	0	8	322	0
14:30	148	18	1	0	167	8	10	105	1	124	0	10	8	0	18	1	5	3	0	9	318	1
14:45	134	16	2	0	152	4	17	114	1	136	2	17	2	0	21	1	6	7	0	14	323	1
Total	567	75	3	0	645	23	38	471	2	534	6	39	31	0	76	3	22	18	0	43	1298	2
15:00	115	20	1	0	136	4	13	117	1	135	1	20	7	0	28	0	19	3	0	22	321	1
15:15	160	26	0	0	186	4	6	99	1	110	0	12	5	0	17	1	13	3	0	17	330	1
15:30	105	21	2	0	128	10	13	109	0	132	1	8	7	0	16	0	21	5	0	26	302	0
15:45	109	30	0	0	139	8	10	87	1	106	0	7	9	0	16	0	4	2	0	6	267	1
Total	489	97	3	0	589	26	42	412	3	483	2	47	28	0	77	1	57	13	0	71	1220	3
Grand Total	1650	289	8	0	1947	72	121	1387	10	1590	14	136	93	0	243	6	129	55	0	190	3970	10
Apprch %	84.7%	14.8%	0.4%	0.0%		4.5%	7.6%	87.2%	0.6%		5.8%	56.0%	38.3%	0.0%		3.2%	67.9%	28.9%	0.0%			
Total %	41.6%	7.3%	0.2%	0.0%	49.0%	1.8%	3.0%	34.9%	0.3%	40.1%	0.4%	3.4%	2.3%	0.0%	6.1%	0.2%	3.2%	1.4%	0.0%	4.8%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-008 Johnson Drive-Owens Drive (south).ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Johnson Drive Southbound					Owens Drive (south) Westbound					Johnson Drive Northbound					Owens Drive (south) Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:00 to 14:00																					
Peak Hour For Entire Intersection Begins at 13:00																					
13:00	162	25	0	0	187	2	16	123	1	142	0	12	5	0	17	1	6	1	0	8	354
13:15	141	23	0	0	164	5	13	145	3	166	1	11	9	0	21	1	9	6	0	16	367
13:30	145	39	0	0	184	9	6	102	0	117	5	15	17	0	37	0	22	14	0	36	374
13:45	146	30	2	0	178	7	6	134	1	148	0	12	3	0	15	0	13	3	0	16	357
Total Volume	594	117	2	0	713	23	41	504	5	573	6	50	34	0	90	2	50	24	0	76	1452
% App Total	83.3%	16.4%	0.3%	0.0%		4.0%	7.2%	88.0%	0.9%		6.7%	55.6%	37.8%	0.0%		2.6%	65.8%	31.6%	0.0%		
PHF	.917	.750	.250	.000	.953	.639	.641	.869	.417	.863	.300	.833	.500	.000	.608	.500	.568	.429	.000	.528	.971

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Heavy Trucks on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : 14-7634-009 Hopyard Road-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
13:00	30	119	39	18	206	18	108	28	6	160	100	157	21	3	281	30	72	67	2	171	818	29
13:15	35	127	36	15	213	9	131	26	3	169	70	164	12	2	248	27	93	59	0	179	809	20
13:30	34	132	46	9	221	14	131	27	3	175	92	183	15	3	293	32	79	46	2	159	848	17
13:45	28	150	32	13	223	16	127	20	5	168	97	165	18	7	287	40	94	68	0	202	880	25
Total	127	528	153	55	863	57	497	101	17	672	359	669	66	15	1109	129	338	240	4	711	3355	91
14:00	29	133	35	19	216	16	113	33	0	162	90	184	11	3	288	30	62	64	2	158	824	24
14:15	22	154	45	9	230	25	124	26	1	176	63	126	12	2	203	44	98	50	1	193	802	13
14:30	17	103	42	5	167	14	98	23	1	136	75	141	9	1	226	29	84	69	2	184	713	9
14:45	28	130	36	8	202	14	96	26	1	137	67	185	9	0	261	31	73	58	3	165	765	12
Total	96	520	158	41	815	69	431	108	3	611	295	636	41	6	978	134	317	241	8	700	3104	58
15:00	19	116	31	4	170	12	118	14	5	149	73	142	17	1	233	33	85	56	6	180	732	16
15:15	20	132	33	13	198	11	126	22	0	159	62	124	12	1	199	29	74	64	0	167	723	14
15:30	23	121	35	6	185	9	113	25	2	149	99	149	17	2	267	36	88	67	2	193	794	12
15:45	19	115	39	3	176	16	120	17	0	153	73	108	15	3	199	22	81	50	3	156	684	9
Total	81	484	138	26	729	48	477	78	7	610	307	523	61	7	898	120	328	237	11	696	2933	51
Grand Total	304	1532	449	122	2407	174	1405	287	27	1893	961	1828	168	28	2985	383	983	718	23	2107	9392	200
Apprch %	12.6%	63.6%	18.7%	5.1%		9.2%	74.2%	15.2%	1.4%		32.2%	61.2%	5.6%	0.9%		18.2%	46.7%	34.1%	1.1%			
Total %	3.2%	16.3%	4.8%	1.3%	25.6%	1.9%	15.0%	3.1%	0.3%	20.2%	10.2%	19.5%	1.8%	0.3%	31.8%	4.1%	10.5%	7.6%	0.2%	22.4%	100.0%	

ALL TRAFFIC DATA

City of Pleasanton
All Vehicles on Unshifted
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(916) 771-8700
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File Name : 14-7634-009 Hopyard Road-Stoneridge Drive.ppd
Date : 10/4/2014

Unshifted Count = All Vehicles

PM PEAK HOUR	Hopyard Road Southbound					Stoneridge Drive Westbound					Hopyard Road Northbound					Stoneridge Drive Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 13:15 to 14:15																					
Peak Hour For Entire Intersection Begins at 13:15																					
13:15	35	127	36	15	213	9	131	26	3	169	70	164	12	2	248	27	93	59	0	179	809
13:30	34	132	46	9	221	14	131	27	3	175	92	183	15	3	293	32	79	46	2	159	848
13:45	28	150	32	13	223	16	127	20	5	168	97	165	18	7	287	40	94	68	0	202	880
14:00	29	133	35	19	216	16	113	33	0	162	90	184	11	3	288	30	62	64	2	158	824
Total Volume	126	542	149	56	873	55	502	106	11	674	349	696	56	15	1116	129	328	237	4	698	3361
% App Total	14.4%	62.1%	17.1%	6.4%		8.2%	74.5%	15.7%	1.6%		31.3%	62.4%	5.0%	1.3%		18.5%	47.0%	34.0%	0.6%		
PHF	.900	.903	.810	.737	.979	.859	.958	.803	.550	.963	.899	.946	.778	.536	.952	.806	.872	.871	.500	.864	.955

APPENDIX B: LOS WORKSHEETS

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	701	511	761	0	0	1040
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	730	532	793	0	0	1083
RTOR Reduction (vph)	0	114	0	0	0	0
Lane Group Flow (vph)	730	418	793	0	0	1083
Confl. Peds. (#/hr)				5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	13.9	13.9	13.6			13.6
Effective Green, g (s)	15.0	15.0	14.7			14.7
Actuated g/C Ratio	0.42	0.42	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1505	1221	2185			2185
v/s Ratio Prot	c0.20	0.14	0.15			c0.20
v/s Ratio Perm						
v/c Ratio	0.49	0.34	0.36			0.50
Uniform Delay, d1	7.5	7.0	7.3			7.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.2	0.1			0.2
Delay (s)	7.8	7.2	7.4			7.9
Level of Service	A	A	A			A
Approach Delay (s)	7.5		7.4			7.9
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	35.7	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	0	557	0	0	0	0	521	234	0	1290	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2829		3693	1618
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2829		3693	1618
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	460	0	612	0	0	0	0	573	257	0	1418	496
RTOR Reduction (vph)	0	0	53	0	0	0	0	0	115	0	0	223
Lane Group Flow (vph)	460	0	559	0	0	0	0	573	142	0	1418	273
Confl. Peds. (#/hr)									4	4		
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	16.8		16.8					28.5	28.5		28.5	28.5
Effective Green, g (s)	17.9		17.9					29.6	29.6		29.6	29.5
Actuated g/C Ratio	0.33		0.33					0.55	0.55		0.55	0.55
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1198		972					2043	1565		2043	892
v/s Ratio Prot								0.16			c0.38	
v/s Ratio Perm	0.13		c0.19						0.05			0.17
v/c Ratio	0.38		0.57					0.28	0.09		0.69	0.31
Uniform Delay, d1	13.6		14.7					6.3	5.6		8.7	6.5
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2		0.8					0.1	0.0		1.0	0.2
Delay (s)	13.8		15.5					6.4	5.6		9.7	6.7
Level of Service	B		B					A	A		A	A
Approach Delay (s)		14.8			0.0			6.2			8.9	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	7.1
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	36	56	106	18	311	15	304	95	287	277	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1731		1829	1925	2880	1829	5043		3547	3657	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1731		1829	1925	2880	1829	5043		3547	3657	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	8	42	65	123	21	362	17	353	110	334	322	3
RTOR Reduction (vph)	0	49	0	0	0	160	0	55	0	0	0	2
Lane Group Flow (vph)	8	58	0	123	21	202	17	408	0	334	322	1
Confl. Peds. (#/hr)			6	6					9	9		
Confl. Bikes (#/hr)									1			2
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.8	14.1		7.6	20.9	37.1	1.8	19.8		10.2	28.2	28.2
Effective Green, g (s)	1.8	17.1		8.6	23.9	40.1	2.8	22.8		11.2	31.2	31.2
Actuated g/C Ratio	0.03	0.24		0.12	0.33	0.56	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	45	412		219	641	1610	71	1603		554	1591	702
v/s Ratio Prot	0.00	0.03		c0.07	0.01	c0.07	0.01	c0.08		c0.09	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.18	0.14		0.56	0.03	0.13	0.24	0.25		0.60	0.20	0.00
Uniform Delay, d1	34.2	21.5		29.8	16.1	7.5	33.4	18.1		28.2	12.5	11.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1		2.0	0.0	0.0	0.6	0.2		1.3	0.1	0.0
Delay (s)	34.9	21.6		31.7	16.1	7.5	34.1	18.3		29.5	12.7	11.4
Level of Service	C	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.5			13.8			18.9			21.2	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	617	1565	0	510	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2880
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2880
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	663	1683	0	548	777
RTOR Reduction (vph)	0	0	0	0	0	13
Lane Group Flow (vph)	0	663	1683	0	548	764
Confl. Peds. (#/hr)	8			8		
Confl. Bikes (#/hr)				5		
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		55.6	55.6		32.4	32.4
Effective Green, g (s)		58.6	58.6		35.4	35.4
Actuated g/C Ratio		0.59	0.59		0.35	0.35
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3079	3079		1255	1019
v/s Ratio Prot		0.13	c0.32		0.15	
v/s Ratio Perm						c0.27
v/c Ratio		0.22	0.55		0.44	0.75
Uniform Delay, d1		9.8	12.6		24.7	28.4
Progression Factor		1.00	0.91		1.00	1.00
Incremental Delay, d2		0.2	0.6		0.2	3.1
Delay (s)		10.0	12.1		24.9	31.5
Level of Service		A	B		C	C
Approach Delay (s)		10.0	12.1		28.8	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	900	0	0	1306	612	662
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	957	0	0	1389	651	704
RTOR Reduction (vph)	0	0	0	0	0	164
Lane Group Flow (vph)	957	0	0	1389	651	540
Confl. Bikes (#/hr)		7				
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	63.5			63.5	24.5	24.5
Effective Green, g (s)	66.5			66.5	27.5	27.5
Actuated g/C Ratio	0.66			0.66	0.28	0.28
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3494			2431	975	792
v/s Ratio Prot	0.18			c0.38	0.18	c0.19
v/s Ratio Perm						
v/c Ratio	0.27			0.57	0.67	0.68
Uniform Delay, d1	6.9			9.0	32.2	32.3
Progression Factor	0.99			0.50	1.00	1.00
Incremental Delay, d2	0.2			0.9	1.7	2.4
Delay (s)	7.0			5.3	33.9	34.8
Level of Service	A			A	C	C
Approach Delay (s)	7.0			5.3	34.4	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	203	1333	24	12	1813	86	11	2	11	41	1	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3513	5188		1811	5204	1583		1734			1813	1610
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.89			0.74	1.00
Satd. Flow (perm)	3513	5188		1811	5204	1583		1571			1406	1610
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	216	1418	26	13	1929	91	12	2	12	44	1	223
RTOR Reduction (vph)	0	1	0	0	0	23	0	10	0	0	0	24
Lane Group Flow (vph)	216	1443	0	13	1929	68	0	16	0	0	45	199
Confl. Peds. (#/hr)	5					5			2	2		
Confl. Bikes (#/hr)			7			3			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Actuated Green, G (s)	11.6	72.3		1.4	62.1	62.1		11.3			11.3	22.9
Effective Green, g (s)	12.6	75.3		2.4	65.1	65.1		13.3			13.3	26.9
Actuated g/C Ratio	0.13	0.75		0.02	0.65	0.65		0.13			0.13	0.27
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	442	3906		43	3387	1030		208			186	433
v/s Ratio Prot	c0.06	0.28		0.01	c0.37							c0.06
v/s Ratio Perm						0.04		0.01			0.03	0.06
v/c Ratio	0.49	0.37		0.30	0.57	0.07		0.07			0.24	0.46
Uniform Delay, d1	40.7	4.2		48.0	9.7	6.4		38.0			38.8	30.5
Progression Factor	1.13	0.88		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.8	0.3		3.9	0.7	0.1		0.2			0.7	0.8
Delay (s)	46.9	4.0		51.9	10.4	6.5		38.1			39.5	31.3
Level of Service	D	A		D	B	A		D			D	C
Approach Delay (s)		9.6			10.5			38.1			32.6	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	55	36	180	98	42	132
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	61	40	200	109	47	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	494	254			309	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	494	254			309	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	95			96	
cM capacity (veh/h)	514	784			1252	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	309	193
Volume Left	61	0	47
Volume Right	40	109	0
cSH	595	1700	1252
Volume to Capacity	0.17	0.18	0.04
Queue Length 95th (ft)	15	0	3
Control Delay (s)	12.3	0.0	2.2
Lane LOS	B		A
Approach Delay (s)	12.3	0.0	2.2
Approach LOS	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	245	0	5	286	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	272	0	6	318	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			272		601	272
vC1, stage 1 conf vol					272	
vC2, stage 2 conf vol					329	
vCu, unblocked vol			272		601	272
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1291		636	766

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	272	6	318	8
Volume Left	0	6	0	0
Volume Right	0	0	0	8
cSH	1700	1291	1700	766
Volume to Capacity	0.16	0.00	0.19	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	7.8	0.0	9.7
Lane LOS		A		A
Approach Delay (s)	0.0	0.1		9.7
Approach LOS				A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	1166	53	20	1688	43	163	30	28	9	8	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1616	1847	5307	1621		1562		1847	1944	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.68	1.00	1.00
Satd. Flow (perm)	1847	5307	1616	1847	5307	1621		1260		1319	1944	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	173	1215	55	21	1758	45	170	31	29	9	8	52
RTOR Reduction (vph)	0	0	19	0	0	22	0	5	0	0	0	40
Lane Group Flow (vph)	173	1215	36	21	1758	23	0	225	0	9	8	12
Confl. Peds. (#/hr)	3					3	1					1
Confl. Bikes (#/hr)			3			3			3			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	21.4	75.7	75.7	2.9	57.2	57.2		26.4		26.4	26.4	26.4
Effective Green, g (s)	22.4	78.7	78.7	3.9	60.2	60.2		28.4		28.4	28.4	28.4
Actuated g/C Ratio	0.19	0.66	0.66	0.03	0.50	0.50		0.24		0.24	0.24	0.24
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	344	3480	1059	60	2662	813		298		312	460	386
v/s Ratio Prot	c0.09	0.23		0.01	c0.33						0.00	
v/s Ratio Perm			0.02			0.01		c0.18		0.01		0.01
v/c Ratio	0.50	0.35	0.03	0.35	0.66	0.03		0.76		0.03	0.02	0.03
Uniform Delay, d1	43.8	9.2	7.3	56.8	22.3	15.1		42.6		35.2	35.1	35.2
Progression Factor	1.00	1.00	1.00	0.86	1.18	2.76		1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.3	0.1	3.0	1.1	0.1		10.4		0.0	0.0	0.0
Delay (s)	45.0	9.5	7.3	51.6	27.4	41.8		53.0		35.2	35.1	35.3
Level of Service	D	A	A	D	C	D		D		D	D	D
Approach Delay (s)		13.7			28.0			53.0			35.2	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	296	404	962	0	0	1500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3513	2852	5204			3622
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3513	2852	5204			3622
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	315	430	1023	0	0	1596
RTOR Reduction (vph)	0	104	0	0	0	0
Lane Group Flow (vph)	315	326	1023	0	0	1596
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	15.0	15.0	33.0			33.0
Effective Green, g (s)	18.0	18.0	36.0			36.0
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1053	855	3122			2173
v/s Ratio Prot	0.09	c0.11	0.20			c0.44
v/s Ratio Perm						
v/c Ratio	0.30	0.38	0.33			0.73
Uniform Delay, d1	16.1	16.6	6.0			8.6
Progression Factor	1.00	1.00	0.97			1.00
Incremental Delay, d2	0.3	0.6	0.3			2.2
Delay (s)	16.5	17.2	6.0			10.8
Level of Service	B	B	A			B
Approach Delay (s)	16.9		6.0			10.8
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	546	1522	0	737	1316	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	569	1585	0	768	1371	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	569	1583	0	768	1371	0
Confl. Bikes (#/hr)						1
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.16	c0.55		0.15	c0.26	
v/s Ratio Perm						
v/c Ratio	0.28	0.94		0.46	0.82	
Uniform Delay, d1	6.2	11.6		16.4	19.0	
Progression Factor	1.00	1.00		0.71	0.76	
Incremental Delay, d2	0.0	11.0		0.9	3.7	
Delay (s)	6.2	22.6		12.6	18.1	
Level of Service	A	C		B	B	
Approach Delay (s)	18.2			12.6	18.1	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	224	80	61	78	99	193	102	506	80	740	1611	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3270		1829	1829	1554	1829	5255	1614	3547	5046	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3270		1829	1829	1554	1829	5255	1614	3547	5046	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	84	64	82	104	203	107	533	84	779	1696	513
RTOR Reduction (vph)	0	28	0	0	0	116	0	0	0	0	39	0
Lane Group Flow (vph)	127	229	0	82	104	87	107	533	84	779	2170	0
Confl. Peds. (#/hr)			18	18			8		4	4		8
Confl. Bikes (#/hr)			1			5			1			1
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	16.5	16.5		6.9	6.9	36.8	9.2	44.7	120.0	29.9	65.4	
Effective Green, g (s)	19.5	19.5		9.9	9.9	42.8	10.2	47.7	120.0	30.9	68.4	
Actuated g/C Ratio	0.16	0.16		0.08	0.08	0.36	0.08	0.40	1.00	0.26	0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	270	531		150	150	554	155	2088	1614	913	2876	
v/s Ratio Prot	c0.08	0.07		0.04	c0.06	0.06	0.06	0.10		c0.22	c0.43	
v/s Ratio Perm									0.05			
v/c Ratio	0.47	0.43		0.55	0.69	0.16	0.69	0.26	0.05	0.85	0.75	
Uniform Delay, d1	45.6	45.3		52.9	53.6	26.3	53.4	24.2	0.0	42.4	19.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.70	1.56	1.00	0.99	0.87	
Incremental Delay, d2	0.5	0.2		2.2	10.6	0.0	9.9	0.3	0.1	3.8	0.9	
Delay (s)	46.0	45.5		55.1	64.2	26.4	47.3	38.1	0.1	45.6	17.9	
Level of Service	D	D		E	E	C	D	D	A	D	B	
Approach Delay (s)		45.7			42.5			35.0			25.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	4	97	24	3	7	142	242	13	8	194	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	5	110	27	3	8	161	275	15	9	220	3

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	5	110	31	8	161	290	9	224
Volume Left (vph)	0	0	27	0	161	0	9	0
Volume Right (vph)	0	110	0	8	0	15	0	3
Hadj (s)	0.09	-0.61	0.53	-0.61	0.58	0.05	0.58	0.07
Departure Headway (s)	6.3	5.6	6.8	5.7	5.8	5.2	6.0	5.5
Degree Utilization, x	0.01	0.17	0.06	0.01	0.26	0.42	0.02	0.34
Capacity (veh/h)	529	595	483	573	608	672	574	635
Control Delay (s)	8.1	8.5	9.0	7.5	9.5	10.7	7.9	10.1
Approach Delay (s)	8.5		8.7		10.3		10.0	
Approach LOS	A		A		B		A	

Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	14	15	149	86	386	10	37	33	280	55	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1793	1718		1793	1888	1586	1793	1743		1704	1729	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1793	1718		1793	1888	1586	1793	1743		1704	1729	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	15	16	157	91	406	11	39	35	295	58	2
RTOR Reduction (vph)	0	14	0	0	0	156	0	30	0	0	0	0
Lane Group Flow (vph)	1	17	0	157	91	250	11	44	0	150	205	0
Confl. Peds. (#/hr)	1		2	2		1	1					1
Confl. Bikes (#/hr)			1			3			1			1
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.7	5.1		10.2	14.6	31.3	6.4	6.4		16.7	16.7	
Effective Green, g (s)	1.7	7.1		11.2	16.6	35.3	8.4	8.4		18.7	18.7	
Actuated g/C Ratio	0.03	0.12		0.20	0.29	0.61	0.15	0.15		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	212		349	546	1058	262	255		555	563	
v/s Ratio Prot	0.00	c0.01		c0.09	0.05	c0.08	0.01	c0.03		0.09	c0.12	
v/s Ratio Perm						0.08						
v/c Ratio	0.02	0.08		0.45	0.17	0.24	0.04	0.17		0.27	0.36	
Uniform Delay, d1	27.0	22.3		20.4	15.2	5.0	21.0	21.5		14.3	14.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.9	0.1	0.1	0.1	0.3		0.3	0.4	
Delay (s)	27.2	22.4		21.3	15.4	5.1	21.1	21.8		14.6	15.2	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		22.6			10.4			21.7			14.9	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	686	283	53	970	100	632	515	110	330	676	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1622	3547	5255	1613	5157	3657	1614	3547	5255	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1622	3547	5255	1613	5157	3657	1614	3547	5255	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	119	700	289	54	990	102	645	526	112	337	690	232
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	119	700	289	54	990	102	645	526	112	337	690	232
Confl. Peds. (#/hr)	8		1	1		8	2		1	1		2
Confl. Bikes (#/hr)			3						6			2
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.4	31.8	52.8	5.2	29.6	120.0	21.0	47.6	120.0	15.4	40.0	120.0
Effective Green, g (s)	8.4	34.8	58.8	6.2	32.6	120.0	24.0	50.6	120.0	16.4	43.0	120.0
Actuated g/C Ratio	0.07	0.29	0.49	0.05	0.27	1.00	0.20	0.42	1.00	0.14	0.36	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	248	1523	794	183	1427	1613	1031	1542	1614	484	1883	1615
v/s Ratio Prot	c0.03	0.13	0.07	0.02	c0.19		c0.13	0.14		c0.09	c0.13	
v/s Ratio Perm			0.11			0.06			0.07			c0.14
v/c Ratio	0.48	0.46	0.36	0.30	0.69	0.06	0.63	0.34	0.07	0.70	0.37	0.14
Uniform Delay, d1	53.7	34.9	19.0	54.8	39.2	0.0	43.9	23.4	0.0	49.4	28.4	0.0
Progression Factor	0.84	1.05	0.86	1.29	1.10	1.00	0.66	0.34	1.00	0.68	1.09	1.00
Incremental Delay, d2	0.5	0.4	0.1	0.3	1.7	0.1	0.8	0.5	0.1	3.3	0.5	0.2
Delay (s)	45.5	37.2	16.3	71.2	44.9	0.1	29.6	8.5	0.1	36.9	31.4	0.2
Level of Service	D	D	B	E	D	A	C	A	A	D	C	A
Approach Delay (s)		32.6			42.2			18.4			27.1	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	222	338	249	228	46	330	940	272	134	696	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	236	360	265	243	49	351	1000	289	143	740	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	45
Lane Group Flow (vph)	107	236	360	265	243	49	351	1000	289	143	740	25
Confl. Peds. (#/hr)	14		4	4		14	3		2	2		3
Confl. Bikes (#/hr)			5			6			12			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.8	17.6	120.0	13.0	22.8	120.0	30.0	61.2	120.0	8.2	39.4	39.4
Effective Green, g (s)	8.8	20.6	120.0	14.0	25.8	120.0	31.0	64.2	120.0	9.2	42.4	42.4
Actuated g/C Ratio	0.07	0.17	1.00	0.12	0.22	1.00	0.26	0.54	1.00	0.08	0.35	0.35
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	262	633	1629	418	793	1623	925	2839	1627	274	1875	572
v/s Ratio Prot	c0.03	c0.06		c0.07	0.07		0.10	c0.19		c0.04	c0.14	
v/s Ratio Perm			0.22			0.03			0.18			0.02
v/c Ratio	0.41	0.37	0.22	0.63	0.31	0.03	0.38	0.35	0.18	0.52	0.39	0.04
Uniform Delay, d1	53.1	44.0	0.0	50.6	39.6	0.0	36.6	16.0	0.0	53.3	29.2	25.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.63	1.00	0.94	0.60	1.00
Incremental Delay, d2	0.4	0.8	0.3	2.3	0.5	0.0	0.1	0.3	0.2	0.8	0.6	0.1
Delay (s)	53.5	44.8	0.3	52.9	40.0	0.0	26.7	10.3	0.2	50.7	18.0	25.6
Level of Service	D	D	A	D	D	A	C	B	A	D	B	C
Approach Delay (s)		23.3			42.6			12.0			23.5	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	141	340	49	13	1081	30	22	81	12	33	195	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3582		1829	5232		3547	3579		1829	4808	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3582		1829	5232		3547	3579		1829	4808	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	145	351	51	13	1114	31	23	84	12	34	201	221
RTOR Reduction (vph)	0	6	0	0	1	0	0	10	0	0	176	0
Lane Group Flow (vph)	145	396	0	13	1144	0	23	86	0	34	246	0
Confl. Peds. (#/hr)							1		3	3		1
Confl. Bikes (#/hr)			1			1			5			
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.2	71.7		3.0	64.5		4.0	20.0		5.3	21.3	
Effective Green, g (s)	11.2	74.7		4.0	67.5		5.0	23.0		6.3	24.3	
Actuated g/C Ratio	0.09	0.62		0.03	0.56		0.04	0.19		0.05	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	331	2229		60	2943		147	685		96	973	
v/s Ratio Prot	c0.04	0.11		0.01	c0.22		0.01	0.02		c0.02	c0.05	
v/s Ratio Perm												
v/c Ratio	0.44	0.18		0.22	0.39		0.16	0.13		0.35	0.25	
Uniform Delay, d1	51.4	9.6		56.5	14.7		55.5	40.2		54.9	40.2	
Progression Factor	0.76	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		1.8	0.4		0.5	0.1		2.2	0.1	
Delay (s)	39.7	12.7		58.3	15.1		56.0	40.3		57.1	40.4	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		19.9			15.6			43.3			41.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	260	801	1736	0	0	956
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	277	852	1847	0	0	1017
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	277	848	1847	0	0	1017
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.0	29.0	31.3			31.3
Effective Green, g (s)	30.1	30.1	32.4			32.4
Actuated g/C Ratio	0.44	0.44	0.47			0.47
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1574	1277	2510			2510
v/s Ratio Prot	0.08	c0.29	c0.35			0.19
v/s Ratio Perm						
v/c Ratio	0.18	0.66	0.74			0.41
Uniform Delay, d1	11.7	15.2	14.6			11.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	1.3	1.2			0.1
Delay (s)	11.7	16.5	15.7			11.9
Level of Service	B	B	B			B
Approach Delay (s)	15.3		15.7			11.9
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	503	0	340	0	0	0	0	1846	770	0	776	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2842		3693	1616
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2842		3693	1616
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	529	0	358	0	0	0	0	1943	811	0	817	463
RTOR Reduction (vph)	0	0	198	0	0	0	0	0	120	0	0	161
Lane Group Flow (vph)	529	0	160	0	0	0	0	1943	691	0	817	302
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	16.0		16.0					42.7	42.7		42.7	42.7
Effective Green, g (s)	17.1		17.1					43.8	43.8		43.8	43.7
Actuated g/C Ratio	0.26		0.26					0.65	0.65		0.65	0.65
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	915		743					2417	1860		2417	1055
v/s Ratio Prot								c0.53			0.22	
v/s Ratio Perm	c0.15		0.06						0.24			0.19
v/c Ratio	0.58		0.22					0.80	0.37		0.34	0.29
Uniform Delay, d1	21.7		19.6					8.4	5.3		5.1	4.9
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9		0.1					2.0	0.1		0.1	0.2
Delay (s)	22.6		19.8					10.4	5.4		5.2	5.1
Level of Service	C		B					B	A		A	A
Approach Delay (s)		21.5			0.0			9.0			5.2	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	42	47	95	55	378	27	294	77	330	431	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1847	1774		1847	1944	2908	1847	5126		3583	3693	1626
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1847	1774		1847	1944	2908	1847	5126		3583	3693	1626
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	45	51	102	59	406	29	316	83	355	463	6
RTOR Reduction (vph)	0	39	0	0	0	178	0	47	0	0	0	3
Lane Group Flow (vph)	4	57	0	102	59	228	29	352	0	355	463	3
Confl. Peds. (#/hr)			4	4			1		2	2		1
Confl. Bikes (#/hr)									1			6
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.7	14.0		6.9	20.2	36.6	2.0	19.3		10.4	27.7	27.7
Effective Green, g (s)	1.7	17.0		7.9	23.2	39.6	3.0	22.3		11.4	30.7	30.7
Actuated g/C Ratio	0.02	0.24		0.11	0.33	0.56	0.04	0.32		0.16	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	44	427		206	638	1631	78	1619		578	1605	707
v/s Ratio Prot	0.00	0.03		c0.06	0.03	c0.08	0.02	0.07		c0.10	c0.13	
v/s Ratio Perm												0.00
v/c Ratio	0.09	0.13		0.50	0.09	0.14	0.37	0.22		0.61	0.29	0.00
Uniform Delay, d1	33.7	21.0		29.5	16.4	7.4	32.9	17.7		27.6	12.9	11.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1		0.7	0.0	0.0	1.1	0.1		1.4	0.2	0.0
Delay (s)	34.0	21.1		30.2	16.4	7.4	34.0	17.9		28.9	13.1	11.3
Level of Service	C	C		C	B	A	C	B		C	B	B
Approach Delay (s)		21.6			12.4			19.0			19.9	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1898	931	0	689	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	2086	1023	0	757	482
RTOR Reduction (vph)	0	0	0	0	0	118
Lane Group Flow (vph)	0	2086	1023	0	757	364
Confl. Peds. (#/hr)	2			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		32.0	32.0		16.0	16.0
Effective Green, g (s)		35.0	35.0		19.0	19.0
Actuated g/C Ratio		0.58	0.58		0.32	0.32
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3095	3095		1134	920
v/s Ratio Prot		c0.39	0.19		c0.21	
v/s Ratio Perm						0.13
v/c Ratio		0.67	0.33		0.67	0.40
Uniform Delay, d1		8.6	6.5		17.8	16.0
Progression Factor		1.00	0.86		1.00	1.00
Incremental Delay, d2		1.2	0.2		1.5	0.3
Delay (s)		9.8	5.8		19.3	16.3
Level of Service		A	A		B	B
Approach Delay (s)		9.8	5.8		18.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1826	0	0	1509	235	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1963	0	0	1623	253	367
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	1963	0	0	1623	253	357
Confl. Bikes (#/hr)		7				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	35.5			35.5	12.5	12.5
Effective Green, g (s)	38.5			38.5	15.5	15.5
Actuated g/C Ratio	0.64			0.64	0.26	0.26
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3405			2369	925	751
v/s Ratio Prot	0.37			c0.44	0.07	c0.12
v/s Ratio Perm						
v/c Ratio	0.58			0.69	0.27	0.47
Uniform Delay, d1	6.1			6.9	17.8	18.8
Progression Factor	1.12			2.39	1.00	1.00
Incremental Delay, d2	0.6			1.1	0.2	0.5
Delay (s)	7.4			17.5	17.9	19.3
Level of Service	A			B	B	B
Approach Delay (s)	7.4			17.5	18.7	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	345	1791	31	24	2108	137	19	1	19	106	4	412
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3583	5291		1847	5307	1623		1760			1854	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86			0.74	1.00
Satd. Flow (perm)	3583	5291		1847	5307	1623		1556			1434	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	375	1947	34	26	2291	149	21	1	21	115	4	448
RTOR Reduction (vph)	0	1	0	0	0	41	0	16	0	0	0	16
Lane Group Flow (vph)	375	1980	0	26	2291	108	0	27	0	0	119	432
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			7			2			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	15.4	74.4		4.2	63.2	63.2		26.4			26.4	46.8
Effective Green, g (s)	16.4	77.4		5.2	66.2	66.2		28.4			28.4	48.8
Actuated g/C Ratio	0.14	0.65		0.04	0.55	0.55		0.24			0.24	0.41
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	489	3412		80	2927	895		368			339	671
v/s Ratio Prot	c0.10	0.37		0.01	c0.43							c0.26
v/s Ratio Perm						0.07		0.02			0.08	
v/c Ratio	0.77	0.58		0.33	0.78	0.12		0.07			0.35	0.64
Uniform Delay, d1	50.0	12.1		55.7	21.2	12.9		35.6			38.1	28.6
Progression Factor	0.93	0.93		1.40	1.09	0.48		1.00			1.00	1.00
Incremental Delay, d2	6.2	0.6		2.0	1.8	0.2		0.1			0.6	2.1
Delay (s)	52.5	11.9		80.1	25.0	6.4		35.7			38.8	30.7
Level of Service	D	B		F	C	A		D			D	C
Approach Delay (s)		18.4			24.5			35.7			32.4	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	169	55	268	125	53	247
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	188	61	298	139	59	274
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	759	367			437	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	759	367			437	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	47	91			95	
cM capacity (veh/h)	355	678			1123	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	249	437	333
Volume Left	188	0	59
Volume Right	61	139	0
cSH	402	1700	1123
Volume to Capacity	0.62	0.26	0.05
Queue Length 95th (ft)	101	0	4
Control Delay (s)	27.5	0.0	1.9
Lane LOS	D		A
Approach Delay (s)	27.5	0.0	1.9
Approach LOS	D		

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	465	2	34	448	3	57
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	517	2	38	498	3	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			519		1091	518
vC1, stage 1 conf vol					518	
vC2, stage 2 conf vol					573	
vCu, unblocked vol			519		1091	518
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		99	89
cM capacity (veh/h)			1047		444	558

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	519	38	498	67
Volume Left	0	38	0	3
Volume Right	2	0	0	63
cSH	1700	1047	1700	551
Volume to Capacity	0.31	0.04	0.29	0.12
Queue Length 95th (ft)	0	3	0	10
Control Delay (s)	0.0	8.6	0.0	12.4
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		12.4
Approach LOS				B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1658	213	53	1950	10	97	18	37	48	24	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1614	1847	5307	1622		1543		1843	1944	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.80		0.65	1.00	1.00
Satd. Flow (perm)	1847	5307	1614	1847	5307	1622		1269		1255	1944	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	1802	232	58	2120	11	105	20	40	52	26	257
RTOR Reduction (vph)	0	0	61	0	0	4	0	11	0	0	0	92
Lane Group Flow (vph)	36	1802	171	58	2120	7	0	154	0	52	26	165
Confl. Peds. (#/hr)	3					3			3	3		
Confl. Bikes (#/hr)			5			2			1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	4.2	73.4	73.4	6.9	76.1	76.1		24.7		24.7	24.7	24.7
Effective Green, g (s)	5.2	76.4	76.4	7.9	79.1	79.1		26.7		26.7	26.7	26.7
Actuated g/C Ratio	0.04	0.64	0.64	0.07	0.66	0.66		0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	80	3378	1027	121	3498	1069		282		279	432	367
v/s Ratio Prot	0.02	c0.34		0.03	c0.40						0.01	
v/s Ratio Perm			0.11			0.00		c0.12		0.04		0.10
v/c Ratio	0.45	0.53	0.17	0.48	0.61	0.01		0.55		0.19	0.06	0.45
Uniform Delay, d1	56.0	12.0	8.9	54.1	11.6	7.0		41.3		37.8	36.8	40.3
Progression Factor	0.96	1.12	1.65	1.15	1.30	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	3.4	0.5	0.3	2.6	0.7	0.0		2.2		0.3	0.1	0.9
Delay (s)	57.2	14.0	14.9	64.8	15.8	7.0		43.5		38.2	36.8	41.2
Level of Service	E	B	B	E	B	A		D		D	D	D
Approach Delay (s)		14.8			17.0			43.5			40.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	256	603	2144	0	0	1252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			3693
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			3693
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	269	635	2257	0	0	1318
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	269	632	2257	0	0	1318
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	18.0	18.0	30.0			30.0
Effective Green, g (s)	21.0	21.0	33.0			33.0
Actuated g/C Ratio	0.35	0.35	0.55			0.55
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1254	1017	2918			2031
v/s Ratio Prot	0.08	c0.22	c0.43			0.36
v/s Ratio Perm						
v/c Ratio	0.21	0.62	0.77			0.65
Uniform Delay, d1	13.7	16.2	10.6			9.4
Progression Factor	1.00	1.00	1.28			1.00
Incremental Delay, d2	0.2	1.7	1.4			1.6
Delay (s)	13.9	17.9	14.9			11.1
Level of Service	B	B	B			B
Approach Delay (s)	16.7		14.9			11.1
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	955	577	0	2178	1023	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3583	2908		5307	5307	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3583	2908		5307	5307	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	974	589	0	2222	1044	0
RTOR Reduction (vph)	0	12	0	0	0	0
Lane Group Flow (vph)	974	577	0	2222	1044	0
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	23.2	23.2		24.8	24.8	
Effective Green, g (s)	26.2	26.2		27.8	27.8	
Actuated g/C Ratio	0.44	0.44		0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1564	1269		2458	2458	
v/s Ratio Prot	c0.27	0.20		c0.42	0.20	
v/s Ratio Perm						
v/c Ratio	0.62	0.45		0.90	0.42	
Uniform Delay, d1	13.1	11.9		14.9	10.8	
Progression Factor	1.00	1.00		1.00	0.58	
Incremental Delay, d2	0.6	0.1		6.0	0.5	
Delay (s)	13.6	12.0		20.9	6.7	
Level of Service	B	B		C	A	
Approach Delay (s)	13.0			20.9	6.7	
Approach LOS	B			C	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	656	157	88	140	146	670	114	1196	103	366	777	457
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3340		1847	1847	1570	1847	5307	1627	3583	4972	
Flt Permitted	0.95	0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3340		1847	1847	1570	1847	5307	1627	3583	4972	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	676	162	91	144	151	691	118	1233	106	377	801	471
RTOR Reduction (vph)	0	15	0	0	0	63	0	0	0	0	104	0
Lane Group Flow (vph)	365	549	0	144	151	628	118	1233	106	377	1168	0
Confl. Peds. (#/hr)			16	16			9		10	10		9
Confl. Bikes (#/hr)			7			1			1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	23.3	23.3		17.0	17.0	29.7	7.3	25.0	100.0	12.7	30.4	
Effective Green, g (s)	26.3	26.3		20.0	20.0	35.7	8.3	28.0	100.0	13.7	33.4	
Actuated g/C Ratio	0.26	0.26		0.20	0.20	0.36	0.08	0.28	1.00	0.14	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	441	878		369	369	560	153	1485	1627	490	1660	
v/s Ratio Prot	c0.22	0.16		0.08	0.08	c0.40	0.06	c0.23		0.11	0.23	
v/s Ratio Perm									0.07			
v/c Ratio	0.83	0.62		0.39	0.41	1.12	0.77	0.83	0.07	0.77	0.70	
Uniform Delay, d1	34.7	32.5		34.7	34.9	32.1	44.9	33.8	0.0	41.6	29.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.5	1.0		0.2	0.3	76.0	19.4	5.5	0.1	6.5	2.5	
Delay (s)	46.3	33.5		35.0	35.1	108.1	64.3	39.3	0.1	48.1	31.5	
Level of Service	D	C		C	D	F	E	D	A	D	C	
Approach Delay (s)		38.5			86.3			38.5			35.3	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	7	166	144	7	19	148	258	82	15	258	2
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	5	7	168	145	7	19	149	261	83	15	261	2

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	12	168	153	19	149	343	15	263
Volume Left (vph)	5	0	145	0	149	0	15	0
Volume Right (vph)	0	168	0	19	0	83	0	2
Hadj (s)	0.24	-0.67	0.51	-0.67	0.53	-0.13	0.53	0.03
Departure Headway (s)	7.1	6.2	7.3	6.2	6.6	5.9	6.8	6.3
Degree Utilization, x	0.02	0.29	0.31	0.03	0.27	0.56	0.03	0.46
Capacity (veh/h)	467	537	458	535	530	594	497	545
Control Delay (s)	9.1	10.5	12.4	8.2	10.8	15.0	8.8	13.4
Approach Delay (s)	10.4		11.9		13.7		13.2	
Approach LOS	B		B		B		B	

Intersection Summary			
Delay	12.8		
Level of Service	B		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	103	25	40	105	442	12	69	201	545	76	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.89		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1878		1847	1944	1638	1847	1706		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1878		1847	1944	1638	1847	1706		1754	1776	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	111	27	43	113	475	13	74	216	586	82	2
RTOR Reduction (vph)	0	9	0	0	0	206	0	110	0	0	0	0
Lane Group Flow (vph)	1	129	0	43	113	269	13	180	0	299	371	0
Confl. Peds. (#/hr)			1	1			2		2	2		2
Confl. Bikes (#/hr)			1			1			2			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	8.8		5.4	13.3	33.5	12.9	12.9		20.2	20.2	
Effective Green, g (s)	1.9	10.8		6.4	15.3	37.5	14.9	14.9		22.2	22.2	
Actuated g/C Ratio	0.03	0.16		0.10	0.23	0.57	0.22	0.22		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	305		178	448	1000	415	383		587	594	
v/s Ratio Prot	0.00	c0.07		0.02	0.06	c0.09	0.01	c0.11		0.17	c0.21	
v/s Ratio Perm						0.07						
v/c Ratio	0.02	0.42		0.24	0.25	0.27	0.03	0.47		0.51	0.62	
Uniform Delay, d1	31.3	24.9		27.7	20.8	7.4	20.1	22.3		17.7	18.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9		0.7	0.3	0.1	0.0	0.9		0.7	2.1	
Delay (s)	31.4	25.9		28.4	21.1	7.5	20.1	23.2		18.4	20.6	
Level of Service	C	C		C	C	A	C	C		B	C	
Approach Delay (s)		25.9			11.4			23.1			19.6	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	992	565	129	1080	144	663	795	76	289	704	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	173	1033	589	134	1125	150	691	828	79	301	733	196
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	173	1033	589	134	1125	150	691	828	79	301	733	196
Confl. Peds. (#/hr)	3		7	7		3	1		3	3		1
Confl. Bikes (#/hr)			1			1			6			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	28.0	55.0	6.8	27.8	120.0	27.0	51.8	120.0	13.4	36.2	120.0
Effective Green, g (s)	8.0	31.0	61.0	7.8	30.8	120.0	30.0	54.8	120.0	14.4	39.2	120.0
Actuated g/C Ratio	0.07	0.26	0.51	0.06	0.26	1.00	0.25	0.46	1.00	0.12	0.33	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	238	1370	830	232	1362	1631	1302	1686	1629	429	1733	1631
v/s Ratio Prot	c0.05	0.19	c0.18	0.04	c0.21		0.13	c0.22		c0.08	0.14	
v/s Ratio Perm			0.18			0.09			0.05			c0.12
v/c Ratio	0.73	0.75	0.71	0.58	0.83	0.09	0.53	0.49	0.05	0.70	0.42	0.12
Uniform Delay, d1	54.9	41.0	22.7	54.5	42.1	0.0	38.9	22.8	0.0	50.7	31.6	0.0
Progression Factor	0.88	0.99	0.96	1.28	1.18	1.00	0.60	0.36	1.00	0.80	0.73	1.00
Incremental Delay, d2	8.4	2.7	2.1	2.0	4.4	0.1	0.2	0.9	0.1	4.0	0.7	0.1
Delay (s)	56.5	43.3	23.8	72.0	54.2	0.1	23.6	9.2	0.1	44.8	23.6	0.1
Level of Service	E	D	C	E	D	A	C	A	A	D	C	A
Approach Delay (s)		38.2			50.1			15.0			25.1	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	195	411	513	269	132	362	822	341	87	1282	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	102	205	433	540	283	139	381	865	359	92	1349	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	102	205	433	540	283	139	381	865	359	92	1349	10
Confl. Peds. (#/hr)	3		2	2		3	1		1	1		1
Confl. Bikes (#/hr)			3			10			6			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.6	17.0	120.0	21.4	31.8	120.0	17.0	55.1	120.0	6.5	44.6	44.6
Effective Green, g (s)	7.6	20.0	120.0	22.4	34.8	120.0	18.0	58.1	120.0	7.5	47.6	47.6
Actuated g/C Ratio	0.06	0.17	1.00	0.19	0.29	1.00	0.15	0.48	1.00	0.06	0.40	0.40
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	226	615	1630	668	1070	1627	537	2569	1630	223	2105	644
v/s Ratio Prot	c0.03	c0.06		c0.15	0.08		c0.11	0.16		0.03	c0.25	
v/s Ratio Perm			0.27			0.09			0.22			0.01
v/c Ratio	0.45	0.33	0.27	0.81	0.26	0.09	0.71	0.34	0.22	0.41	0.64	0.01
Uniform Delay, d1	54.2	44.1	0.0	46.7	32.8	0.0	48.5	19.1	0.0	54.1	29.3	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.64	1.00	0.77	0.90	1.00
Incremental Delay, d2	0.5	0.7	0.4	6.7	0.3	0.1	2.9	0.3	0.3	0.5	1.5	0.0
Delay (s)	54.7	44.8	0.4	53.5	33.0	0.1	40.2	12.4	0.3	42.0	27.9	22.0
Level of Service	D	D	A	D	C	A	D	B	A	D	C	C
Approach Delay (s)		20.2			39.8			16.3			28.7	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	978	19	11	549	34	66	179	15	59	211	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3583	3682		1847	5256		3583	3645		1847	4806	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3583	3682		1847	5256		3583	3645		1847	4806	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	1029	20	12	578	36	69	188	16	62	222	297
RTOR Reduction (vph)	0	1	0	0	5	0	0	6	0	0	225	0
Lane Group Flow (vph)	226	1048	0	12	609	0	69	198	0	62	294	0
Confl. Peds. (#/hr)			3	3			1		4	4		1
Confl. Bikes (#/hr)			2			2						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.8	69.0		2.9	59.1		5.6	20.6		7.5	22.5	
Effective Green, g (s)	13.8	72.0		3.9	62.1		6.6	23.6		8.5	25.5	
Actuated g/C Ratio	0.12	0.60		0.03	0.52		0.05	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	412	2209		60	2719		197	716		130	1021	
v/s Ratio Prot	c0.06	c0.28		0.01	0.12		0.02	0.05		c0.03	c0.06	
v/s Ratio Perm												
v/c Ratio	0.55	0.47		0.20	0.22		0.35	0.28		0.48	0.29	
Uniform Delay, d1	50.2	13.4		56.5	15.8		54.6	41.0		53.6	39.6	
Progression Factor	0.76	1.32		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.7		1.6	0.2		1.1	0.2		2.7	0.2	
Delay (s)	39.3	18.4		58.2	16.0		55.7	41.2		56.4	39.8	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		22.1			16.8			44.8			41.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	917	951	0	344	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	965	1001	0	362	651
RTOR Reduction (vph)	0	0	0	0	0	93
Lane Group Flow (vph)	0	965	1001	0	362	558
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		32.1	32.1		15.9	15.9
Effective Green, g (s)		35.1	35.1		18.9	18.9
Actuated g/C Ratio		0.59	0.59		0.31	0.31
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3104	3104		1128	916
v/s Ratio Prot		0.18	c0.19		0.10	
v/s Ratio Perm						c0.19
v/c Ratio		0.31	0.32		0.32	0.61
Uniform Delay, d1		6.3	6.4		15.7	17.4
Progression Factor		1.00	0.76		1.00	1.00
Incremental Delay, d2		0.3	0.3		0.2	1.2
Delay (s)		6.6	5.1		15.8	18.6
Level of Service		A	A		B	B
Approach Delay (s)		6.6	5.1		17.6	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	747	0	0	872	304	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	778	0	0	908	317	193
RTOR Reduction (vph)	0	0	0	0	0	149
Lane Group Flow (vph)	778	0	0	908	317	44
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	37.4			37.4	10.6	10.6
Effective Green, g (s)	40.4			40.4	13.6	13.6
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3573			2486	812	659
v/s Ratio Prot	0.15			c0.25	c0.09	0.02
v/s Ratio Perm						
v/c Ratio	0.22			0.37	0.39	0.07
Uniform Delay, d1	3.8			4.2	19.7	18.2
Progression Factor	0.81			1.64	1.00	1.00
Incremental Delay, d2	0.1			0.4	0.3	0.0
Delay (s)	3.2			7.4	20.0	18.3
Level of Service	A			A	B	B
Approach Delay (s)	3.2			7.4	19.3	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	777	19	6	1102	37	25	4	10	45	2	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5285		1847	5307	1593		1804			1833	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.83			0.79	1.00
Satd. Flow (perm)	3583	5285		1847	5307	1593		1545			1525	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	143	818	20	6	1160	39	26	4	11	47	2	172
RTOR Reduction (vph)	0	1	0	0	0	12	0	9	0	0	0	41
Lane Group Flow (vph)	143	837	0	6	1160	27	0	32	0	0	49	131
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	10.1	88.0		1.4	79.3	79.3		15.6			15.6	30.7
Effective Green, g (s)	11.1	91.0		2.4	82.3	82.3		17.6			17.6	32.7
Actuated g/C Ratio	0.09	0.76		0.02	0.69	0.69		0.15			0.15	0.27
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	331	4007		36	3639	1092		226			223	450
v/s Ratio Prot	c0.04	0.16		0.00	c0.22							c0.08
v/s Ratio Perm						0.02		0.02			0.03	
v/c Ratio	0.43	0.21		0.17	0.32	0.02		0.14			0.22	0.29
Uniform Delay, d1	51.5	4.2		57.8	7.6	6.0		44.6			45.1	34.5
Progression Factor	1.01	1.17		1.26	0.27	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.9	0.1		1.9	0.2	0.0		0.3			0.5	0.4
Delay (s)	52.8	5.0		75.0	2.3	6.1		44.9			45.6	34.9
Level of Service	D	A		E	A	A		D			D	C
Approach Delay (s)		11.9			2.7			44.9			37.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	39	30	128	40	29	161
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	43	33	142	44	32	179
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	408	164			187	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408	164			187	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	96			98	
cM capacity (veh/h)	586	880			1388	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	77	187	211
Volume Left	43	0	32
Volume Right	33	44	0
cSH	685	1700	1388
Volume to Capacity	0.11	0.11	0.02
Queue Length 95th (ft)	9	0	2
Control Delay (s)	10.9	0.0	1.3
Lane LOS	B		A
Approach Delay (s)	10.9	0.0	1.3
Approach LOS	B		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	199	1	3	174	1	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	221	1	3	193	1	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			222		422	222
vC1, stage 1 conf vol					222	
vC2, stage 2 conf vol					200	
vCu, unblocked vol			222		422	222
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1347		727	818

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	222	3	193	13
Volume Left	0	3	0	1
Volume Right	1	0	0	12
cSH	1700	1347	1700	809
Volume to Capacity	0.13	0.00	0.11	0.02
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	7.7	0.0	9.5
Lane LOS		A		A
Approach Delay (s)	0.0	0.1		9.5
Approach LOS				A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	543	101	131	97	125	273	189	747	104	321	618	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3288		1847	1847	1570	1847	5307	1627	3583	4928	
Flt Permitted	0.95	0.97		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3288		1847	1847	1570	1847	5307	1627	3583	4928	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	566	105	136	101	130	284	197	778	108	334	644	475
RTOR Reduction (vph)	0	31	0	0	0	60	0	0	0	0	97	0
Lane Group Flow (vph)	306	470	0	101	130	224	197	778	108	334	1022	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	25.3	25.3		12.5	12.5	26.9	16.2	45.8	120.0	14.4	44.0	
Effective Green, g (s)	28.3	28.3		15.5	15.5	32.9	17.2	48.8	120.0	15.4	47.0	
Actuated g/C Ratio	0.24	0.24		0.13	0.13	0.27	0.14	0.41	1.00	0.13	0.39	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	396	775		238	238	430	264	2158	1627	459	1930	
v/s Ratio Prot	c0.18	0.14		0.05	c0.07	0.14	c0.11	0.15		0.09	c0.21	
v/s Ratio Perm									c0.07			
v/c Ratio	0.77	0.61		0.42	0.55	0.52	0.75	0.36	0.07	0.73	0.53	
Uniform Delay, d1	42.8	40.9		48.1	49.0	36.9	49.3	24.8	0.0	50.3	28.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.45	0.58	1.00	1.00	1.00	
Incremental Delay, d2	8.3	0.9		0.4	1.4	0.5	9.3	0.5	0.1	4.8	1.0	
Delay (s)	51.1	41.8		48.6	50.3	37.4	81.0	14.7	0.1	55.1	29.1	
Level of Service	D	D		D	D	D	F	B	A	E	C	
Approach Delay (s)		45.4			42.9			25.3			35.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	27	238	236	24	28	252	153	125	21	231	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	8	28	245	243	25	29	260	158	129	22	238	3

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	36	245	268	29	260	287	22	241
Volume Left (vph)	8	0	243	0	260	0	22	0
Volume Right (vph)	0	245	0	29	0	129	0	3
Hadj (s)	0.13	-0.68	0.47	-0.68	0.52	-0.30	0.52	0.01
Departure Headway (s)	7.6	6.8	7.8	6.7	7.5	6.7	7.9	7.4
Degree Utilization, x	0.08	0.46	0.58	0.05	0.54	0.53	0.05	0.49
Capacity (veh/h)	444	503	443	507	461	514	430	457
Control Delay (s)	10.0	14.3	20.0	8.9	17.7	15.7	10.1	16.1
Approach Delay (s)	13.8		18.9		16.6		15.6	
Approach LOS	B		C		C		C	

Intersection Summary			
Delay	16.4		
Level of Service	C		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	50	24	28	41	504	6	50	34	594	117	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1847	1834		1847	1944	1652	1847	1816		1754	1782	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1847	1834		1847	1944	1652	1847	1816		1754	1782	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	52	25	29	42	520	6	52	35	612	121	2
RTOR Reduction (vph)	0	18	0	0	0	209	0	25	0	0	0	0
Lane Group Flow (vph)	2	59	0	29	42	311	6	62	0	312	423	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.7	5.5		2.2	7.0	33.0	9.1	9.1		26.0	26.0	
Effective Green, g (s)	1.7	7.5		3.2	9.0	37.0	11.1	11.1		28.0	28.0	
Actuated g/C Ratio	0.03	0.12		0.05	0.15	0.60	0.18	0.18		0.45	0.45	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	50	222		95	283	1069	331	326		794	807	
v/s Ratio Prot	0.00	c0.03		0.02	0.02	c0.13	0.00	c0.03		0.18	c0.24	
v/s Ratio Perm						0.06						
v/c Ratio	0.04	0.26		0.31	0.15	0.29	0.02	0.19		0.39	0.52	
Uniform Delay, d1	29.3	24.6		28.2	23.1	6.0	20.9	21.5		11.2	12.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6		1.8	0.2	0.2	0.0	0.3		0.3	0.6	
Delay (s)	29.6	25.3		30.1	23.3	6.2	20.9	21.8		11.6	12.7	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		25.4			8.6			21.8			12.2	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	61.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	133	328	237	66	502	106	364	696	56	182	542	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	140	345	249	69	528	112	383	733	59	192	571	157
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	140	345	249	69	528	112	383	733	59	192	571	157
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	5.9	21.6	25.6	4.7	20.4	90.0	4.0	36.6	90.0	7.1	37.7	90.0
Effective Green, g (s)	6.9	24.6	31.6	5.7	23.4	90.0	7.0	39.6	90.0	8.1	40.7	90.0
Actuated g/C Ratio	0.08	0.27	0.35	0.06	0.26	1.00	0.08	0.44	1.00	0.09	0.45	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	274	1450	574	226	1379	1632	405	1624	1631	322	2399	1652
v/s Ratio Prot	c0.04	0.07	c0.03	0.02	0.10		c0.07	c0.20		c0.05	0.11	
v/s Ratio Perm			0.12			0.07			0.04			c0.10
v/c Ratio	0.51	0.24	0.43	0.31	0.38	0.07	0.95	0.45	0.04	0.60	0.24	0.10
Uniform Delay, d1	39.9	25.4	22.4	40.3	27.4	0.0	41.3	17.6	0.0	39.4	15.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	0.2	0.3	0.4	0.1	30.6	0.9	0.0	2.0	0.2	0.1
Delay (s)	40.6	25.6	22.5	40.5	27.7	0.1	71.9	18.5	0.0	41.4	15.4	0.1
Level of Service	D	C	C	D	C	A	E	B	A	D	B	A
Approach Delay (s)		27.4			24.6			35.0			18.2	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	701	511	767	0	0	1047
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	730	532	799	0	0	1091
RTOR Reduction (vph)	0	112	0	0	0	0
Lane Group Flow (vph)	730	420	799	0	0	1091
Confl. Peds. (#/hr)				5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	13.9	13.9	13.7			13.7
Effective Green, g (s)	15.0	15.0	14.8			14.8
Actuated g/C Ratio	0.42	0.42	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1501	1218	2193			2193
v/s Ratio Prot	c0.20	0.14	0.15			c0.21
v/s Ratio Perm						
v/c Ratio	0.49	0.34	0.36			0.50
Uniform Delay, d1	7.6	7.1	7.3			7.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.2	0.1			0.2
Delay (s)	7.8	7.2	7.4			7.9
Level of Service	A	A	A			A
Approach Delay (s)	7.6		7.4			7.9
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	0	565	0	0	0	0	531	234	0	1297	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2829		3693	1618
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2829		3693	1618
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	460	0	621	0	0	0	0	584	257	0	1425	496
RTOR Reduction (vph)	0	0	52	0	0	0	0	0	115	0	0	222
Lane Group Flow (vph)	460	0	569	0	0	0	0	584	142	0	1425	274
Confl. Peds. (#/hr)									4	4		
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	17.1		17.1					28.9	28.9		28.9	28.9
Effective Green, g (s)	18.2		18.2					30.0	30.0		30.0	29.9
Actuated g/C Ratio	0.34		0.34					0.55	0.55		0.55	0.55
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1203		976					2044	1565		2044	892
v/s Ratio Prot								0.16			c0.39	
v/s Ratio Perm	0.13		c0.20						0.05			0.17
v/c Ratio	0.38		0.58					0.29	0.09		0.70	0.31
Uniform Delay, d1	13.7		14.9					6.4	5.7		8.8	6.6
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2		0.9					0.1	0.0		1.1	0.2
Delay (s)	13.9		15.8					6.5	5.7		9.9	6.8
Level of Service	B		B					A	A		A	A
Approach Delay (s)		15.0			0.0			6.3			9.1	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	7.1
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	36	56	109	18	323	15	304	99	306	277	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1731		1829	1925	2880	1829	5036		3547	3657	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1731		1829	1925	2880	1829	5036		3547	3657	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	8	42	65	127	21	376	17	353	115	356	322	3
RTOR Reduction (vph)	0	50	0	0	0	165	0	57	0	0	0	2
Lane Group Flow (vph)	8	57	0	127	21	211	17	411	0	356	322	1
Confl. Peds. (#/hr)			6	6					9	9		
Confl. Bikes (#/hr)									1			2
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.8	14.1		7.7	21.0	37.6	1.8	19.8		10.6	28.6	28.6
Effective Green, g (s)	1.8	17.1		8.7	24.0	40.6	2.8	22.8		11.6	31.6	31.6
Actuated g/C Ratio	0.02	0.24		0.12	0.33	0.56	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	45	409		220	639	1619	70	1590		569	1600	706
v/s Ratio Prot	0.00	0.03		c0.07	0.01	c0.07	0.01	c0.08		c0.10	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.18	0.14		0.58	0.03	0.13	0.24	0.26		0.63	0.20	0.00
Uniform Delay, d1	34.5	21.7		30.0	16.3	7.5	33.7	18.4		28.3	12.5	11.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1		2.3	0.0	0.0	0.7	0.2		1.6	0.1	0.0
Delay (s)	35.2	21.8		32.3	16.3	7.5	34.3	18.6		29.8	12.6	11.4
Level of Service	D	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.7			13.8			19.1			21.6	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	658	1595	0	550	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2880
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2880
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	708	1715	0	591	777
RTOR Reduction (vph)	0	0	0	0	0	12
Lane Group Flow (vph)	0	708	1715	0	591	765
Confl. Peds. (#/hr)	8			8		
Confl. Bikes (#/hr)				5		
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		55.5	55.5		32.5	32.5
Effective Green, g (s)		58.5	58.5		35.5	35.5
Actuated g/C Ratio		0.58	0.58		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3074	3074		1259	1022
v/s Ratio Prot		0.13	c0.33		0.17	
v/s Ratio Perm						c0.27
v/c Ratio		0.23	0.56		0.47	0.75
Uniform Delay, d1		10.0	12.8		25.0	28.3
Progression Factor		1.00	0.93		1.00	1.00
Incremental Delay, d2		0.2	0.6		0.3	3.0
Delay (s)		10.1	12.5		25.2	31.4
Level of Service		B	B		C	C
Approach Delay (s)		10.1	12.5		28.7	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	981	0	0	1366	612	700
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1044	0	0	1453	651	745
RTOR Reduction (vph)	0	0	0	0	0	131
Lane Group Flow (vph)	1044	0	0	1453	651	614
Confl. Bikes (#/hr)		7				
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	62.0			62.0	26.0	26.0
Effective Green, g (s)	65.0			65.0	29.0	29.0
Actuated g/C Ratio	0.65			0.65	0.29	0.29
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3415			2377	1028	835
v/s Ratio Prot	0.20			c0.40	0.18	c0.21
v/s Ratio Perm						
v/c Ratio	0.31			0.61	0.63	0.74
Uniform Delay, d1	7.6			10.2	30.9	32.0
Progression Factor	0.99			0.44	1.00	1.00
Incremental Delay, d2	0.2			1.0	1.3	3.4
Delay (s)	7.8			5.5	32.2	35.4
Level of Service	A			A	C	D
Approach Delay (s)	7.8			5.5	33.9	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	1321	24	12	1804	155	11	2	11	93	1	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3513	5187		1811	5204	1583		1724			1816	1613
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3513	5187		1811	5204	1583		1724			1816	1613
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	359	1405	26	13	1919	165	12	2	12	99	1	335
RTOR Reduction (vph)	0	1	0	0	0	71	0	11	0	0	0	65
Lane Group Flow (vph)	359	1430	0	13	1919	94	0	15	0	0	100	270
Confl. Peds. (#/hr)	5					5			2	2		
Confl. Bikes (#/hr)			7			3			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases						6						4
Actuated Green, G (s)	15.2	67.8		1.4	54.0	54.0		3.0			7.8	23.0
Effective Green, g (s)	16.2	70.8		2.4	57.0	57.0		5.0			9.8	27.0
Actuated g/C Ratio	0.16	0.71		0.02	0.57	0.57		0.05			0.10	0.27
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	569	3672		43	2966	902		86			177	435
v/s Ratio Prot	c0.10	0.28		0.01	c0.37			c0.01			0.06	c0.11
v/s Ratio Perm						0.06						0.06
v/c Ratio	0.63	0.39		0.30	0.65	0.10		0.17			0.56	0.62
Uniform Delay, d1	39.1	5.9		48.0	14.6	9.8		45.5			43.1	32.0
Progression Factor	1.18	0.82		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.1	0.3		3.9	1.1	0.2		0.9			4.1	2.7
Delay (s)	48.1	5.1		51.9	15.8	10.1		46.5			47.2	34.8
Level of Service	D	A		D	B	B		D			D	C
Approach Delay (s)		13.7			15.5			46.5			37.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	55	70	190	98	74	154
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	61	78	211	109	82	171
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	601	266			320	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	601	266			320	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	90			93	
cM capacity (veh/h)	432	773			1240	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	139	320	253
Volume Left	61	0	82
Volume Right	78	109	0
cSH	574	1700	1240
Volume to Capacity	0.24	0.19	0.07
Queue Length 95th (ft)	24	0	5
Control Delay (s)	13.3	0.0	3.0
Lane LOS	B		A
Approach Delay (s)	13.3	0.0	3.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	402	0	5	489	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	447	0	6	543	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			447		1001	447
vC1, stage 1 conf vol					447	
vC2, stage 2 conf vol					554	
vCu, unblocked vol			447		1001	447
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1114		480	612

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	447	6	543	8
Volume Left	0	6	0	0
Volume Right	0	0	0	8
cSH	1700	1114	1700	612
Volume to Capacity	0.26	0.00	0.32	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	8.2	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.0
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	168	1198	60	20	1731	43	172	30	28	9	8	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1616	1847	5307	1621		1562		1847	1944	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.69	1.00	1.00
Satd. Flow (perm)	1847	5307	1616	1847	5307	1621		1257		1332	1944	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	175	1248	62	21	1803	45	179	31	29	9	8	55
RTOR Reduction (vph)	0	0	21	0	0	25	0	5	0	0	0	42
Lane Group Flow (vph)	175	1248	41	21	1803	20	0	234	0	9	8	13
Confl. Peds. (#/hr)	3					3	1					1
Confl. Bikes (#/hr)			3			3			3			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	28.4	76.2	76.2	2.8	50.6	50.6		26.0		26.0	26.0	26.0
Effective Green, g (s)	29.4	79.2	79.2	3.8	53.6	53.6		28.0		28.0	28.0	28.0
Actuated g/C Ratio	0.24	0.66	0.66	0.03	0.45	0.45		0.23		0.23	0.23	0.23
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	452	3502	1066	58	2370	724		293		310	453	380
v/s Ratio Prot	c0.09	0.24		0.01	c0.34						0.00	
v/s Ratio Perm			0.03			0.01		c0.19		0.01		0.01
v/c Ratio	0.39	0.36	0.04	0.36	0.76	0.03		0.80		0.03	0.02	0.03
Uniform Delay, d1	37.8	9.1	7.1	56.9	27.8	18.6		43.4		35.5	35.4	35.5
Progression Factor	1.00	1.00	1.00	0.84	1.23	2.74		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	3.3	2.1	0.1		14.4		0.0	0.0	0.0
Delay (s)	38.3	9.4	7.2	50.9	36.3	51.0		57.8		35.5	35.4	35.6
Level of Service	D	A	A	D	D	D		E		D	D	D
Approach Delay (s)		12.7			36.8			57.8			35.6	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	307	404	962	0	0	1517
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3513	2852	5204			3622
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3513	2852	5204			3622
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	327	430	1023	0	0	1614
RTOR Reduction (vph)	0	104	0	0	0	0
Lane Group Flow (vph)	327	326	1023	0	0	1614
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	15.2	15.2	32.8			32.8
Effective Green, g (s)	18.2	18.2	35.8			35.8
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1065	865	3105			2161
v/s Ratio Prot	0.09	c0.11	0.20			c0.45
v/s Ratio Perm						
v/c Ratio	0.31	0.38	0.33			0.75
Uniform Delay, d1	16.1	16.4	6.1			8.8
Progression Factor	1.00	1.00	0.97			1.00
Incremental Delay, d2	0.3	0.6	0.3			2.4
Delay (s)	16.4	17.0	6.2			11.2
Level of Service	B	B	A			B
Approach Delay (s)	16.8		6.2			11.2
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	546	1510	0	739	1344	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	569	1573	0	770	1400	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	569	1571	0	770	1400	0
Confl. Bikes (#/hr)						1
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.16	c0.55		0.15	c0.27	
v/s Ratio Perm						
v/c Ratio	0.28	0.94		0.46	0.84	
Uniform Delay, d1	6.2	11.5		16.4	19.1	
Progression Factor	1.00	1.00		0.69	0.77	
Incremental Delay, d2	0.0	10.1		0.9	4.1	
Delay (s)	6.2	21.5		12.2	18.9	
Level of Service	A	C		B	B	
Approach Delay (s)	17.5			12.2	18.9	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	101	65	78	116	196	107	496	80	750	1591	513
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3283		1829	1829	1554	1829	5255	1614	3547	5035	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3283		1829	1829	1554	1829	5255	1614	3547	5035	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	249	106	68	82	122	206	113	522	84	789	1675	540
RTOR Reduction (vph)	0	24	0	0	0	112	0	0	0	0	43	0
Lane Group Flow (vph)	134	265	0	82	122	94	113	522	84	789	2172	0
Confl. Peds. (#/hr)			18	18			8		4	4		8
Confl. Bikes (#/hr)			1			5			1			1
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.1	17.1		7.0	7.0	37.1	9.5	43.8	120.0	30.1	64.4	
Effective Green, g (s)	20.1	20.1		10.0	10.0	43.1	10.5	46.8	120.0	31.1	67.4	
Actuated g/C Ratio	0.17	0.17		0.08	0.08	0.36	0.09	0.39	1.00	0.26	0.56	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	549		152	152	558	160	2049	1614	919	2827	
v/s Ratio Prot	0.08	c0.08		0.04	c0.07	0.06	0.06	0.10		c0.22	c0.43	
v/s Ratio Perm									0.05			
v/c Ratio	0.48	0.48		0.54	0.80	0.17	0.71	0.25	0.05	0.86	0.77	
Uniform Delay, d1	45.2	45.2		52.8	54.0	26.2	53.3	24.8	0.0	42.4	20.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.70	1.55	1.00	0.99	0.87	
Incremental Delay, d2	0.5	0.2		1.8	24.2	0.1	10.6	0.3	0.1	3.9	1.0	
Delay (s)	45.7	45.5		54.6	78.2	26.3	48.1	38.8	0.1	45.9	18.6	
Level of Service	D	D		D	E	C	D	D	A	D	B	
Approach Delay (s)		45.6			47.4			35.7			25.8	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	4	97	24	3	7	142	289	13	8	232	8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	7	5	110	27	3	8	161	328	15	9	264	9

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	11	110	31	8	161	343	9	273
Volume Left (vph)	7	0	27	0	161	0	9	0
Volume Right (vph)	0	110	0	8	0	15	0	9
Hadj (s)	0.39	-0.61	0.53	-0.61	0.58	0.05	0.58	0.06
Departure Headway (s)	6.8	5.8	7.1	5.9	5.9	5.3	6.1	5.6
Degree Utilization, x	0.02	0.18	0.06	0.01	0.26	0.51	0.02	0.42
Capacity (veh/h)	487	570	463	545	598	662	564	626
Control Delay (s)	8.8	8.9	9.3	7.8	9.7	12.5	8.0	11.4
Approach Delay (s)	8.8		9.0		11.6		11.3	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.1		
Level of Service	B		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	14	15	149	86	433	10	37	33	318	55	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1793	1718		1793	1888	1587	1793	1743		1704	1727	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1793	1718		1793	1888	1587	1793	1743		1704	1727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	15	16	157	91	456	11	39	35	335	58	2
RTOR Reduction (vph)	0	14	0	0	0	174	0	30	0	0	0	0
Lane Group Flow (vph)	1	17	0	157	91	282	11	44	0	171	224	0
Confl. Peds. (#/hr)	1		2	2		1	1					1
Confl. Bikes (#/hr)			1			3			1			1
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.7	5.1		10.3	14.7	31.8	6.4	6.4		17.1	17.1	
Effective Green, g (s)	1.7	7.1		11.3	16.7	35.8	8.4	8.4		19.1	19.1	
Actuated g/C Ratio	0.03	0.12		0.20	0.29	0.62	0.15	0.15		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	210		349	544	1063	260	252		562	569	
v/s Ratio Prot	0.00	c0.01		c0.09	0.05	c0.09	0.01	c0.03		0.10	c0.13	
v/s Ratio Perm						0.09						
v/c Ratio	0.02	0.08		0.45	0.17	0.27	0.04	0.17		0.30	0.39	
Uniform Delay, d1	27.3	22.5		20.6	15.4	5.0	21.3	21.7		14.5	14.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.9	0.1	0.1	0.1	0.3		0.3	0.5	
Delay (s)	27.4	22.7		21.5	15.5	5.2	21.4	22.0		14.8	15.4	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		22.8			10.2			22.0			15.1	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	699	294	53	987	100	646	516	110	330	677	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1623	3547	5255	1613	5157	3657	1614	3547	5255	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1623	3547	5255	1613	5157	3657	1614	3547	5255	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	128	713	300	54	1007	102	659	527	112	337	691	244
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	128	713	300	54	1007	102	659	527	112	337	691	244
Confl. Peds. (#/hr)	8		1	1		8	2		1	1		2
Confl. Bikes (#/hr)			3						6			2
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.0	32.7	57.8	5.2	29.9	120.0	25.1	46.9	120.0	15.2	35.0	120.0
Effective Green, g (s)	9.0	35.7	63.8	6.2	32.9	120.0	28.1	49.9	120.0	16.2	38.0	120.0
Actuated g/C Ratio	0.08	0.30	0.53	0.05	0.27	1.00	0.23	0.42	1.00	0.13	0.32	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	266	1563	862	183	1440	1613	1207	1520	1614	478	1664	1615
v/s Ratio Prot	c0.04	0.14	0.08	0.02	c0.19		c0.13	0.14		c0.09	c0.13	
v/s Ratio Perm			0.10			0.06			0.07			c0.15
v/c Ratio	0.48	0.46	0.35	0.30	0.70	0.06	0.55	0.35	0.07	0.71	0.42	0.15
Uniform Delay, d1	53.3	34.3	16.1	54.8	39.1	0.0	40.3	23.9	0.0	49.6	32.3	0.0
Progression Factor	0.84	0.94	0.56	1.29	1.07	1.00	0.62	0.34	1.00	0.69	1.00	1.00
Incremental Delay, d2	0.5	0.4	0.1	0.3	1.8	0.1	0.2	0.6	0.1	3.7	0.7	0.2
Delay (s)	45.2	32.6	9.2	71.2	43.5	0.1	25.3	8.8	0.1	37.9	32.9	0.2
Level of Service	D	C	A	E	D	A	C	A	A	D	C	A
Approach Delay (s)		27.8			41.0			16.4			28.0	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	222	338	249	228	46	330	955	272	134	707	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	236	360	265	243	49	351	1016	289	143	752	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	45
Lane Group Flow (vph)	107	236	360	265	243	49	351	1016	289	143	752	25
Confl. Peds. (#/hr)	14		4	4		14	3		2	2		3
Confl. Bikes (#/hr)			5			6			12			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.8	17.6	120.0	13.0	22.8	120.0	30.0	61.2	120.0	8.2	39.4	39.4
Effective Green, g (s)	8.8	20.6	120.0	14.0	25.8	120.0	31.0	64.2	120.0	9.2	42.4	42.4
Actuated g/C Ratio	0.07	0.17	1.00	0.12	0.22	1.00	0.26	0.54	1.00	0.08	0.35	0.35
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	262	633	1629	418	793	1623	925	2839	1627	274	1875	572
v/s Ratio Prot	c0.03	c0.06		c0.07	0.07		0.10	c0.19		c0.04	c0.14	
v/s Ratio Perm			0.22			0.03			0.18			0.02
v/c Ratio	0.41	0.37	0.22	0.63	0.31	0.03	0.38	0.36	0.18	0.52	0.40	0.04
Uniform Delay, d1	53.1	44.0	0.0	50.6	39.6	0.0	36.6	16.0	0.0	53.3	29.2	25.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.63	1.00	0.99	0.59	1.00
Incremental Delay, d2	0.4	0.8	0.3	2.3	0.5	0.0	0.1	0.3	0.2	0.8	0.6	0.1
Delay (s)	53.5	44.8	0.3	52.9	40.0	0.0	26.7	10.3	0.2	53.4	18.0	25.6
Level of Service	D	D	A	D	D	A	C	B	A	D	B	C
Approach Delay (s)		23.3			42.6			12.0			23.8	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	352	49	13	1096	30	22	81	12	33	195	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3584		1829	5232		3547	3579		1829	4806	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3584		1829	5232		3547	3579		1829	4806	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	146	363	51	13	1130	31	23	84	12	34	201	223
RTOR Reduction (vph)	0	5	0	0	1	0	0	10	0	0	178	0
Lane Group Flow (vph)	146	409	0	13	1160	0	23	86	0	34	246	0
Confl. Peds. (#/hr)							1		3	3		1
Confl. Bikes (#/hr)			1			1			5			
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.3	71.7		3.0	64.4		4.0	20.0		5.3	21.3	
Effective Green, g (s)	11.3	74.7		4.0	67.4		5.0	23.0		6.3	24.3	
Actuated g/C Ratio	0.09	0.62		0.03	0.56		0.04	0.19		0.05	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	334	2231		60	2938		147	685		96	973	
v/s Ratio Prot	c0.04	0.11		0.01	c0.22		0.01	0.02		c0.02	c0.05	
v/s Ratio Perm												
v/c Ratio	0.44	0.18		0.22	0.39		0.16	0.13		0.35	0.25	
Uniform Delay, d1	51.3	9.7		56.5	14.8		55.5	40.2		54.9	40.2	
Progression Factor	0.76	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		1.8	0.4		0.5	0.1		2.2	0.1	
Delay (s)	39.9	12.8		58.3	15.2		56.0	40.3		57.1	40.4	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		19.9			15.7			43.3			41.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	260	801	1746	0	0	966
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	277	852	1857	0	0	1028
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	277	848	1857	0	0	1028
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.1	29.1	31.5			31.5
Effective Green, g (s)	30.2	30.2	32.6			32.6
Actuated g/C Ratio	0.44	0.44	0.47			0.47
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1572	1276	2514			2514
v/s Ratio Prot	0.08	c0.29	c0.35			0.19
v/s Ratio Perm						
v/c Ratio	0.18	0.66	0.74			0.41
Uniform Delay, d1	11.7	15.3	14.7			11.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	1.3	1.2			0.1
Delay (s)	11.8	16.6	15.8			11.9
Level of Service	B	B	B			B
Approach Delay (s)	15.4		15.8			11.9
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	503	0	363	0	0	0	0	1871	770	0	786	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2842		3693	1616
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2842		3693	1616
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	529	0	382	0	0	0	0	1969	811	0	827	463
RTOR Reduction (vph)	0	0	195	0	0	0	0	0	116	0	0	157
Lane Group Flow (vph)	529	0	187	0	0	0	0	1969	695	0	827	306
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	16.0		16.0					44.1	44.1		44.1	44.1
Effective Green, g (s)	17.1		17.1					45.2	45.2		45.2	45.1
Actuated g/C Ratio	0.25		0.25					0.66	0.66		0.66	0.66
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	897		728					2443	1880		2443	1067
v/s Ratio Prot								c0.53			0.22	
v/s Ratio Perm	c0.15		0.06						0.24			0.19
v/c Ratio	0.59		0.26					0.81	0.37		0.34	0.29
Uniform Delay, d1	22.5		20.5					8.4	5.2		5.0	4.9
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0		0.2					2.0	0.1		0.1	0.1
Delay (s)	23.5		20.7					10.4	5.3		5.1	5.0
Level of Service	C		C					B	A		A	A
Approach Delay (s)		22.3			0.0			8.9			5.1	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	7.1
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	42	47	100	55	409	27	294	82	368	431	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1847	1774		1847	1944	2908	1847	5117		3583	3693	1626
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1847	1774		1847	1944	2908	1847	5117		3583	3693	1626
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	45	51	108	59	440	29	316	88	396	463	6
RTOR Reduction (vph)	0	39	0	0	0	190	0	50	0	0	0	3
Lane Group Flow (vph)	4	57	0	108	59	250	29	354	0	396	463	3
Confl. Peds. (#/hr)			4	4			1		2	2		1
Confl. Bikes (#/hr)									1			6
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.7	14.1		7.0	20.4	37.7	2.0	19.2		11.3	28.5	28.5
Effective Green, g (s)	1.7	17.1		8.0	23.4	40.7	3.0	22.2		12.3	31.5	31.5
Actuated g/C Ratio	0.02	0.24		0.11	0.33	0.57	0.04	0.31		0.17	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	43	423		206	635	1653	77	1586		615	1624	715
v/s Ratio Prot	0.00	0.03		c0.06	0.03	c0.09	0.02	0.07		c0.11	c0.13	
v/s Ratio Perm												0.00
v/c Ratio	0.09	0.14		0.52	0.09	0.15	0.38	0.22		0.64	0.29	0.00
Uniform Delay, d1	34.2	21.4		30.0	16.7	7.3	33.4	18.3		27.6	12.8	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1		1.1	0.0	0.0	1.1	0.2		1.7	0.2	0.0
Delay (s)	34.5	21.5		31.1	16.8	7.3	34.5	18.5		29.3	13.0	11.3
Level of Service	C	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.0			12.5			19.5			20.5	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1965	992	0	795	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	2159	1090	0	874	482
RTOR Reduction (vph)	0	0	0	0	0	99
Lane Group Flow (vph)	0	2159	1090	0	874	383
Confl. Peds. (#/hr)	2			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.4	31.4		16.6	16.6
Effective Green, g (s)		34.4	34.4		19.6	19.6
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3042	3042		1170	949
v/s Ratio Prot		c0.41	0.21		c0.24	
v/s Ratio Perm						0.13
v/c Ratio		0.71	0.36		0.75	0.40
Uniform Delay, d1		9.2	6.9		18.0	15.7
Progression Factor		1.00	0.84		1.00	1.00
Incremental Delay, d2		1.4	0.2		2.6	0.3
Delay (s)		10.6	6.0		20.6	15.9
Level of Service		B	A		C	B
Approach Delay (s)		10.6	6.0		19.0	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2000	0	0	1666	235	431
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	2151	0	0	1791	253	463
RTOR Reduction (vph)	0	0	0	0	0	6
Lane Group Flow (vph)	2151	0	0	1791	253	457
Confl. Bikes (#/hr)		7				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	33.6			33.6	14.4	14.4
Effective Green, g (s)	36.6			36.6	17.4	17.4
Actuated g/C Ratio	0.61			0.61	0.29	0.29
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3237			2252	1039	843
v/s Ratio Prot	0.41			c0.48	0.07	c0.16
v/s Ratio Perm						
v/c Ratio	0.66			0.80	0.24	0.54
Uniform Delay, d1	7.7			8.9	16.3	17.9
Progression Factor	1.08			2.28	1.00	1.00
Incremental Delay, d2	0.8			0.9	0.1	0.7
Delay (s)	9.1			21.2	16.4	18.7
Level of Service	A			C	B	B
Approach Delay (s)	9.1			21.2	17.9	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	680	1720	31	24	2033	281	19	1	19	257	4	767
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3583	5290		1847	5307	1623		1754			1853	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3583	5290		1847	5307	1623		1754			1853	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	739	1870	34	26	2210	305	21	1	21	279	4	834
RTOR Reduction (vph)	0	1	0	0	0	80	0	20	0	0	0	40
Lane Group Flow (vph)	739	1903	0	26	2210	225	0	23	0	0	283	794
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			7			2			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	24.0	65.8		4.2	46.0	46.0		4.0			26.0	50.0
Effective Green, g (s)	25.0	68.8		5.2	49.0	49.0		6.0			28.0	54.0
Actuated g/C Ratio	0.21	0.57		0.04	0.41	0.41		0.05			0.23	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	746	3032		80	2167	662		87			432	743
v/s Ratio Prot	0.21	0.36		0.01	c0.42			c0.01			0.15	c0.48
v/s Ratio Perm						0.14						
v/c Ratio	0.99	0.63		0.33	1.02	0.34		0.26			0.66	1.07
Uniform Delay, d1	47.4	17.1		55.7	35.5	24.4		54.9			41.6	33.0
Progression Factor	0.94	1.06		1.40	0.85	0.55		1.00			1.00	1.00
Incremental Delay, d2	27.3	0.8		1.9	22.6	1.1		1.6			3.6	52.8
Delay (s)	71.9	18.8		79.9	52.6	14.5		56.5			45.2	85.8
Level of Service	E	B		E	D	B		E			D	F
Approach Delay (s)		33.7			48.3			56.5			75.5	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	47.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	169	135	317	125	103	318
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	188	150	352	139	114	353
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1004	422			491	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1004	422			491	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	22	76			89	
cM capacity (veh/h)	239	632			1072	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	338	491	468
Volume Left	188	0	114
Volume Right	150	139	0
cSH	331	1700	1072
Volume to Capacity	1.02	0.29	0.11
Queue Length 95th (ft)	293	0	9
Control Delay (s)	91.6	0.0	3.0
Lane LOS	F		A
Approach Delay (s)	91.6	0.0	3.0
Approach LOS	F		

Intersection Summary			
Average Delay	25.0		
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	971	2	34	928	3	57
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1079	2	38	1031	3	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1081		2187	1080
vC1, stage 1 conf vol					1080	
vC2, stage 2 conf vol					1107	
vCu, unblocked vol			1081		2187	1080
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		98	76
cM capacity (veh/h)			645		218	265

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1081	38	1031	67
Volume Left	0	38	0	3
Volume Right	2	0	0	63
cSH	1700	645	1700	262
Volume to Capacity	0.64	0.06	0.61	0.25
Queue Length 95th (ft)	0	5	0	25
Control Delay (s)	0.0	10.9	0.0	23.3
Lane LOS		B		C
Approach Delay (s)	0.0	0.4		23.3
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1717	226	53	2007	10	109	18	37	48	24	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1615	1847	5307	1622		1545		1843	1944	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1847	5307	1615	1847	5307	1622		1253		1269	1944	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	1866	246	58	2182	11	118	20	40	52	26	261
RTOR Reduction (vph)	0	0	60	0	0	4	0	10	0	0	0	93
Lane Group Flow (vph)	40	1866	186	58	2182	7	0	169	0	52	26	168
Confl. Peds. (#/hr)	3					3			3	3		
Confl. Bikes (#/hr)			5			2			1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	5.6	75.0	75.0	7.0	76.4	76.4		23.0		23.0	23.0	23.0
Effective Green, g (s)	6.6	78.0	78.0	8.0	79.4	79.4		25.0		25.0	25.0	25.0
Actuated g/C Ratio	0.05	0.65	0.65	0.07	0.66	0.66		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	101	3449	1049	123	3511	1073		261		264	405	344
v/s Ratio Prot	0.02	c0.35		0.03	c0.41						0.01	
v/s Ratio Perm			0.12			0.00		c0.13		0.04		0.10
v/c Ratio	0.40	0.54	0.18	0.47	0.62	0.01		0.65		0.20	0.06	0.49
Uniform Delay, d1	54.8	11.3	8.3	54.0	11.7	6.9		43.4		39.2	38.1	41.9
Progression Factor	0.92	1.05	1.52	1.18	1.22	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	2.0	0.5	0.3	2.5	0.7	0.0		5.4		0.4	0.1	1.1
Delay (s)	52.3	12.4	12.9	66.0	14.9	6.9		48.8		39.6	38.2	42.9
Level of Service	D	B	B	E	B	A		D		D	D	D
Approach Delay (s)		13.2			16.2			48.8			42.1	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	282	603	2144	0	0	1271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			3693
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			3693
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	297	635	2257	0	0	1338
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	297	632	2257	0	0	1338
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	18.0	18.0	30.0			30.0
Effective Green, g (s)	21.0	21.0	33.0			33.0
Actuated g/C Ratio	0.35	0.35	0.55			0.55
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1254	1017	2918			2031
v/s Ratio Prot	0.08	c0.22	c0.43			0.36
v/s Ratio Perm						
v/c Ratio	0.24	0.62	0.77			0.66
Uniform Delay, d1	13.8	16.2	10.6			9.5
Progression Factor	1.00	1.00	1.28			1.00
Incremental Delay, d2	0.2	1.7	1.4			1.7
Delay (s)	14.0	17.9	14.9			11.2
Level of Service	B	B	B			B
Approach Delay (s)	16.6		14.9			11.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	955	570	0	2185	1068	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3583	2908		5307	5307	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3583	2908		5307	5307	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	974	582	0	2230	1090	0
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	974	572	0	2230	1090	0
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	23.1	23.1		24.9	24.9	
Effective Green, g (s)	26.1	26.1		27.9	27.9	
Actuated g/C Ratio	0.44	0.44		0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1558	1264		2467	2467	
v/s Ratio Prot	c0.27	0.20		c0.42	0.21	
v/s Ratio Perm						
v/c Ratio	0.63	0.45		0.90	0.44	
Uniform Delay, d1	13.2	11.9		14.8	10.8	
Progression Factor	1.00	1.00		1.00	0.60	
Incremental Delay, d2	0.6	0.1		6.0	0.5	
Delay (s)	13.7	12.0		20.8	7.0	
Level of Service	B	B		C	A	
Approach Delay (s)	13.1			20.8	7.0	
Approach LOS	B			C	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	697	216	108	140	175	674	133	1160	103	383	734	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3345		1847	1847	1570	1847	5307	1627	3583	4931	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3345		1847	1847	1570	1847	5307	1627	3583	4931	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	719	223	111	144	180	695	137	1196	106	395	757	537
RTOR Reduction (vph)	0	16	0	0	0	64	0	0	0	0	127	0
Lane Group Flow (vph)	388	649	0	144	180	631	137	1196	106	395	1167	0
Confl. Peds. (#/hr)			16	16			9		10	10		9
Confl. Bikes (#/hr)			7			1			1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	23.9	23.9		17.0	17.0	29.1	7.5	25.0	100.0	12.1	29.6	
Effective Green, g (s)	26.9	26.9		20.0	20.0	35.1	8.5	28.0	100.0	13.1	32.6	
Actuated g/C Ratio	0.27	0.27		0.20	0.20	0.35	0.08	0.28	1.00	0.13	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	451	899		369	369	551	156	1485	1627	469	1607	
v/s Ratio Prot	c0.23	0.19		0.08	0.10	c0.40	0.07	c0.23		0.11	0.24	
v/s Ratio Perm									0.07			
v/c Ratio	0.86	0.72		0.39	0.49	1.15	0.88	0.81	0.07	0.84	0.73	
Uniform Delay, d1	34.8	33.2		34.7	35.5	32.5	45.2	33.5	0.0	42.4	29.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.9	2.4		0.2	0.4	85.4	37.7	4.8	0.1	12.4	2.9	
Delay (s)	49.6	35.6		35.0	35.8	117.8	83.0	38.2	0.1	54.9	32.7	
Level of Service	D	D		C	D	F	F	D	A	D	C	
Approach Delay (s)		40.8			91.6			39.7			37.9	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	7	166	144	7	19	148	371	82	15	378	11
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	13	7	168	145	7	19	149	375	83	15	382	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	20	168	153	19	149	458	15	393
Volume Left (vph)	13	0	145	0	149	0	15	0
Volume Right (vph)	0	168	0	19	0	83	0	11
Hadj (s)	0.36	-0.67	0.51	-0.67	0.53	-0.09	0.53	0.01
Departure Headway (s)	8.0	6.9	8.1	6.9	7.0	6.3	7.2	6.7
Degree Utilization, x	0.04	0.32	0.34	0.04	0.29	0.81	0.03	0.73
Capacity (veh/h)	421	480	413	478	501	555	476	520
Control Delay (s)	10.1	12.0	14.0	9.0	11.6	29.4	9.2	24.5
Approach Delay (s)	11.8		13.5		25.0		24.0	
Approach LOS	B		B		D		C	

Intersection Summary			
Delay	21.4		
Level of Service	C		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	103	25	40	105	555	12	69	201	665	76	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.89		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1878		1847	1944	1638	1847	1706		1754	1774	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1878		1847	1944	1638	1847	1706		1754	1774	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	111	27	43	113	597	13	74	216	715	82	2
RTOR Reduction (vph)	0	9	0	0	0	259	0	110	0	0	0	0
Lane Group Flow (vph)	1	129	0	43	113	338	13	180	0	365	434	0
Confl. Peds. (#/hr)			1	1			2		2	2		2
Confl. Bikes (#/hr)			1			1			2			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	8.8		5.4	13.3	33.5	12.9	12.9		20.2	20.2	
Effective Green, g (s)	1.9	10.8		6.4	15.3	37.5	14.9	14.9		22.2	22.2	
Actuated g/C Ratio	0.03	0.16		0.10	0.23	0.57	0.22	0.22		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	305		178	448	1000	415	383		587	594	
v/s Ratio Prot	0.00	c0.07		0.02	0.06	c0.11	0.01	c0.11		0.21	c0.24	
v/s Ratio Perm						0.09						
v/c Ratio	0.02	0.42		0.24	0.25	0.34	0.03	0.47		0.62	0.73	
Uniform Delay, d1	31.3	24.9		27.7	20.8	7.7	20.1	22.3		18.5	19.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9		0.7	0.3	0.2	0.0	0.9		2.1	4.6	
Delay (s)	31.4	25.9		28.4	21.1	7.9	20.1	23.2		20.6	24.0	
Level of Service	C	C		C	C	A	C	C		C	C	
Approach Delay (s)		25.9			11.1			23.1			22.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	182	1016	584	129	1103	144	681	796	76	289	705	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	190	1058	608	134	1149	150	709	829	79	301	734	212
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	190	1058	608	134	1149	150	709	829	79	301	734	212
Confl. Peds. (#/hr)	3		7	7		3	1		3	3		1
Confl. Bikes (#/hr)			1			1			6			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	28.1	55.1	6.8	27.9	120.0	27.0	51.7	120.0	13.4	36.1	120.0
Effective Green, g (s)	8.0	31.1	61.1	7.8	30.9	120.0	30.0	54.7	120.0	14.4	39.1	120.0
Actuated g/C Ratio	0.07	0.26	0.51	0.06	0.26	1.00	0.25	0.46	1.00	0.12	0.33	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	238	1375	831	232	1366	1631	1302	1683	1629	429	1729	1631
v/s Ratio Prot	c0.05	0.20	c0.18	0.04	c0.22		0.14	c0.22		c0.08	0.14	
v/s Ratio Perm			0.19			0.09			0.05			c0.13
v/c Ratio	0.80	0.77	0.73	0.58	0.84	0.09	0.54	0.49	0.05	0.70	0.42	0.13
Uniform Delay, d1	55.2	41.1	23.0	54.5	42.2	0.0	39.1	22.9	0.0	50.7	31.6	0.0
Progression Factor	0.87	1.02	0.99	1.28	1.18	1.00	0.61	0.37	1.00	0.80	0.73	1.00
Incremental Delay, d2	14.8	2.9	2.7	2.0	5.0	0.1	0.2	0.9	0.1	4.0	0.7	0.2
Delay (s)	63.0	44.9	25.4	72.0	54.8	0.1	24.0	9.4	0.1	44.8	23.7	0.2
Level of Service	E	D	C	E	D	A	C	A	A	D	C	A
Approach Delay (s)		40.4			50.7			15.4			24.8	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	195	411	513	269	132	362	842	341	87	1302	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	102	205	433	540	283	139	381	886	359	92	1371	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	102	205	433	540	283	139	381	886	359	92	1371	10
Confl. Peds. (#/hr)	3		2	2		3	1		1	1		1
Confl. Bikes (#/hr)			3			10			6			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.6	17.0	120.0	21.4	31.8	120.0	17.0	55.1	120.0	6.5	44.6	44.6
Effective Green, g (s)	7.6	20.0	120.0	22.4	34.8	120.0	18.0	58.1	120.0	7.5	47.6	47.6
Actuated g/C Ratio	0.06	0.17	1.00	0.19	0.29	1.00	0.15	0.48	1.00	0.06	0.40	0.40
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	226	615	1630	668	1070	1627	537	2569	1630	223	2105	644
v/s Ratio Prot	c0.03	c0.06		c0.15	0.08		c0.11	0.17		0.03	c0.26	
v/s Ratio Perm			0.27			0.09			0.22			0.01
v/c Ratio	0.45	0.33	0.27	0.81	0.26	0.09	0.71	0.34	0.22	0.41	0.65	0.01
Uniform Delay, d1	54.2	44.1	0.0	46.7	32.8	0.0	48.5	19.2	0.0	54.1	29.4	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.64	1.00	0.77	0.91	1.00
Incremental Delay, d2	0.5	0.7	0.4	6.7	0.3	0.1	2.9	0.3	0.3	0.5	1.6	0.0
Delay (s)	54.7	44.8	0.4	53.5	33.0	0.1	40.2	12.5	0.3	42.3	28.3	22.0
Level of Service	D	D	A	D	C	A	D	B	A	D	C	C
Approach Delay (s)		20.2			39.8			16.3			29.1	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	999	19	11	569	34	66	179	15	59	211	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3583	3682		1847	5258		3583	3645		1847	4804	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3583	3682		1847	5258		3583	3645		1847	4804	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	229	1052	20	12	599	36	69	188	16	62	222	300
RTOR Reduction (vph)	0	1	0	0	4	0	0	6	0	0	228	0
Lane Group Flow (vph)	229	1071	0	12	631	0	69	198	0	62	294	0
Confl. Peds. (#/hr)			3	3			1		4	4		1
Confl. Bikes (#/hr)			2			2						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.9	69.0		2.9	59.0		5.6	20.6		7.5	22.5	
Effective Green, g (s)	13.9	72.0		3.9	62.0		6.6	23.6		8.5	25.5	
Actuated g/C Ratio	0.12	0.60		0.03	0.52		0.05	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	415	2209		60	2716		197	716		130	1020	
v/s Ratio Prot	c0.06	c0.29		0.01	0.12		0.02	0.05		c0.03	c0.06	
v/s Ratio Perm												
v/c Ratio	0.55	0.48		0.20	0.23		0.35	0.28		0.48	0.29	
Uniform Delay, d1	50.1	13.5		56.5	15.9		54.6	41.0		53.6	39.6	
Progression Factor	0.76	1.32		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.7		1.6	0.2		1.1	0.2		2.7	0.2	
Delay (s)	39.5	18.6		58.2	16.1		55.7	41.2		56.4	39.8	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		22.3			16.9			44.8			41.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1030	1047	0	483	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1084	1102	0	508	651
RTOR Reduction (vph)	0	0	0	0	0	70
Lane Group Flow (vph)	0	1084	1102	0	508	581
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.5	31.5		16.5	16.5
Effective Green, g (s)		34.5	34.5		19.5	19.5
Actuated g/C Ratio		0.58	0.58		0.32	0.32
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3051	3051		1164	945
v/s Ratio Prot		0.20	c0.21		0.14	
v/s Ratio Perm						c0.20
v/c Ratio		0.36	0.36		0.44	0.62
Uniform Delay, d1		6.8	6.8		15.9	17.1
Progression Factor		1.00	0.73		1.00	1.00
Incremental Delay, d2		0.3	0.3		0.3	1.2
Delay (s)		7.1	5.3		16.2	18.3
Level of Service		A	A		B	B
Approach Delay (s)		7.1	5.3		17.4	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1000	0	0	1087	304	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1042	0	0	1132	317	323
RTOR Reduction (vph)	0	0	0	0	0	120
Lane Group Flow (vph)	1042	0	0	1132	317	203
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	37.4			37.4	10.6	10.6
Effective Green, g (s)	40.4			40.4	13.6	13.6
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3573			2486	812	659
v/s Ratio Prot	0.20			c0.31	c0.09	0.07
v/s Ratio Perm						
v/c Ratio	0.29			0.46	0.39	0.31
Uniform Delay, d1	4.0			4.6	19.7	19.3
Progression Factor	0.82			1.87	1.00	1.00
Incremental Delay, d2	0.2			0.5	0.3	0.3
Delay (s)	3.5			9.1	20.0	19.6
Level of Service	A			A	B	B
Approach Delay (s)	3.5			9.1	19.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	588	703	19	6	1031	236	25	4	10	231	2	593
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5283		1847	5307	1593		1792			1852	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5283		1847	5307	1593		1792			1852	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	619	740	20	6	1085	248	26	4	11	243	2	624
RTOR Reduction (vph)	0	1	0	0	0	98	0	10	0	0	0	247
Lane Group Flow (vph)	619	759	0	6	1085	150	0	31	0	0	245	377
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	26.4	73.1		1.4	48.1	48.1		6.5			19.0	45.4
Effective Green, g (s)	27.4	76.1		2.4	51.1	51.1		8.5			21.0	49.4
Actuated g/C Ratio	0.23	0.63		0.02	0.43	0.43		0.07			0.18	0.41
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	818	3350		36	2259	678		126			324	680
v/s Ratio Prot	c0.17	0.14		0.00	c0.20			c0.02			c0.13	0.23
v/s Ratio Perm						0.09						
v/c Ratio	0.76	0.23		0.17	0.48	0.22		0.24			0.76	0.56
Uniform Delay, d1	43.2	9.4		57.8	24.9	21.8		52.7			47.1	26.9
Progression Factor	1.06	0.80		1.04	0.99	0.95		1.00			1.00	1.00
Incremental Delay, d2	3.9	0.2		2.2	0.7	0.8		1.0			9.7	1.0
Delay (s)	49.6	7.6		62.1	25.3	21.5		53.7			56.7	27.9
Level of Service	D	A		E	C	C		D			E	C
Approach Delay (s)		26.5			24.8			53.7			36.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	39	157	179	40	125	250
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	43	174	199	44	139	278
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	777	221			243	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	777	221			243	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	79			90	
cM capacity (veh/h)	327	818			1323	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	218	243	417
Volume Left	43	0	139
Volume Right	174	44	0
cSH	630	1700	1323
Volume to Capacity	0.35	0.14	0.10
Queue Length 95th (ft)	38	0	9
Control Delay (s)	13.7	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	13.7	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	815	1	3	825	1	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	906	1	3	917	1	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			907		1829	906
vC1, stage 1 conf vol					906	
vC2, stage 2 conf vol					923	
vCu, unblocked vol			907		1829	906
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			751		281	334

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	907	3	917	13
Volume Left	0	3	0	1
Volume Right	1	0	0	12
cSH	1700	751	1700	329
Volume to Capacity	0.53	0.00	0.54	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	9.8	0.0	16.4
Lane LOS		A		C
Approach Delay (s)	0.0	0.0		16.4
Approach LOS				C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	598	186	152	97	177	279	210	701	104	341	557	549
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3313		1847	1847	1570	1847	5307	1627	3583	4865	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3313		1847	1847	1570	1847	5307	1627	3583	4865	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	623	194	158	101	184	291	219	730	108	355	580	572
RTOR Reduction (vph)	0	26	0	0	0	58	0	0	0	0	135	0
Lane Group Flow (vph)	336	613	0	101	184	233	219	730	108	355	1017	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.8	26.8		13.7	13.7	28.5	17.1	42.7	120.0	14.8	40.4	
Effective Green, g (s)	29.8	29.8		16.7	16.7	34.5	18.1	45.7	120.0	15.8	43.4	
Actuated g/C Ratio	0.25	0.25		0.14	0.14	0.29	0.15	0.38	1.00	0.13	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	417	822		257	257	451	278	2021	1627	471	1759	
v/s Ratio Prot	c0.20	0.19		0.05	c0.10	0.15	c0.12	0.14		0.10	c0.21	
v/s Ratio Perm									c0.07			
v/c Ratio	0.81	0.75		0.39	0.72	0.52	0.79	0.36	0.07	0.75	0.58	
Uniform Delay, d1	42.4	41.6		47.0	49.4	35.8	49.1	26.7	0.0	50.2	30.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.47	0.59	1.00	1.00	0.99	
Incremental Delay, d2	10.3	3.3		0.4	7.7	0.4	12.3	0.5	0.1	6.0	1.4	
Delay (s)	52.6	44.9		47.4	57.0	36.2	84.7	16.1	0.1	56.2	32.2	
Level of Service	D	D		D	E	D	F	B	A	E	C	
Approach Delay (s)		47.5			44.8			28.7			37.8	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	26	27	238	236	24	28	252	320	125	21	392	21
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	27	28	245	243	25	29	260	330	129	22	404	22

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	55	245	268	29	260	459	22	426
Volume Left (vph)	27	0	243	0	260	0	22	0
Volume Right (vph)	0	245	0	29	0	129	0	22
Hadj (s)	0.26	-0.68	0.47	-0.68	0.52	-0.18	0.52	-0.02
Departure Headway (s)	8.9	8.0	9.0	7.8	8.3	7.7	8.6	8.0
Degree Utilization, x	0.14	0.54	0.67	0.06	0.60	0.98	0.05	0.95
Capacity (veh/h)	389	426	386	438	418	459	409	437
Control Delay (s)	12.1	18.8	27.2	10.2	22.0	62.1	10.8	58.2
Approach Delay (s)	17.6		25.5		47.6		55.9	
Approach LOS	C		D		E		F	

Intersection Summary			
Delay	40.9		
Level of Service	E		
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	50	24	28	41	671	6	50	34	755	117	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1834		1847	1944	1652	1847	1815		1754	1778	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1834		1847	1944	1652	1847	1815		1754	1778	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	52	25	29	42	692	6	52	35	778	121	2
RTOR Reduction (vph)	0	18	0	0	0	256	0	26	0	0	0	0
Lane Group Flow (vph)	2	59	0	29	42	436	6	61	0	397	504	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.8	7.6		2.3	9.1	37.8	8.8	8.8		28.7	28.7	
Effective Green, g (s)	1.8	9.6		3.3	11.1	41.8	10.8	10.8		30.7	30.7	
Actuated g/C Ratio	0.03	0.14		0.05	0.17	0.63	0.16	0.16		0.46	0.46	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	50	265		91	324	1114	300	295		810	822	
v/s Ratio Prot	0.00	c0.03		0.02	0.02	c0.18	0.00	c0.03		0.23	c0.28	
v/s Ratio Perm						0.08						
v/c Ratio	0.04	0.22		0.32	0.13	0.39	0.02	0.21		0.49	0.61	
Uniform Delay, d1	31.5	25.1		30.5	23.5	6.0	23.4	24.1		12.4	13.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4		2.0	0.2	0.2	0.0	0.3		0.5	1.4	
Delay (s)	31.8	25.5		32.5	23.7	6.3	23.4	24.4		12.9	14.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		25.7			8.2			24.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	66.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	366	269	66	543	106	398	699	56	182	545	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	159	385	283	69	572	112	419	736	59	192	574	179
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	159	385	283	69	572	112	419	736	59	192	574	179
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	5.9	22.1	26.1	4.7	20.9	90.0	4.0	36.1	90.0	7.1	37.2	90.0
Effective Green, g (s)	6.9	25.1	32.1	5.7	23.9	90.0	7.0	39.1	90.0	8.1	40.2	90.0
Actuated g/C Ratio	0.08	0.28	0.36	0.06	0.27	1.00	0.08	0.43	1.00	0.09	0.45	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	274	1480	583	226	1409	1632	405	1604	1631	322	2370	1652
v/s Ratio Prot	c0.04	0.07	c0.04	0.02	0.11		c0.08	c0.20		c0.05	0.11	
v/s Ratio Perm			0.14			0.07			0.04			c0.11
v/c Ratio	0.58	0.26	0.49	0.31	0.41	0.07	1.03	0.46	0.04	0.60	0.24	0.11
Uniform Delay, d1	40.2	25.2	22.5	40.3	27.2	0.0	41.5	18.0	0.0	39.4	15.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.2	0.2	0.3	0.4	0.1	53.9	0.9	0.0	2.0	0.2	0.1
Delay (s)	42.2	25.4	22.8	40.5	27.6	0.1	95.4	18.9	0.0	41.4	15.7	0.1
Level of Service	D	C	C	D	C	A	F	B	A	D	B	A
Approach Delay (s)		27.7			24.7			44.4			18.0	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	701	511	768	0	0	1046
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	730	532	800	0	0	1090
RTOR Reduction (vph)	0	112	0	0	0	0
Lane Group Flow (vph)	730	420	800	0	0	1090
Confl. Peds. (#/hr)				5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	13.9	13.9	13.7			13.7
Effective Green, g (s)	15.0	15.0	14.8			14.8
Actuated g/C Ratio	0.42	0.42	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1501	1218	2193			2193
v/s Ratio Prot	c0.20	0.14	0.15			c0.21
v/s Ratio Perm						
v/c Ratio	0.49	0.34	0.36			0.50
Uniform Delay, d1	7.6	7.1	7.3			7.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.2	0.1			0.2
Delay (s)	7.8	7.2	7.4			7.9
Level of Service	A	A	A			A
Approach Delay (s)	7.6		7.4			7.9
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	419	0	565	0	0	0	0	532	234	0	1296	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.97		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2829		3693	1618
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2829		3693	1618
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	460	0	621	0	0	0	0	585	257	0	1424	496
RTOR Reduction (vph)	0	0	52	0	0	0	0	0	115	0	0	223
Lane Group Flow (vph)	460	0	569	0	0	0	0	585	142	0	1424	273
Confl. Peds. (#/hr)									4	4		
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	17.1		17.1					28.8	28.8		28.8	28.8
Effective Green, g (s)	18.2		18.2					29.9	29.9		29.9	29.8
Actuated g/C Ratio	0.34		0.34					0.55	0.55		0.55	0.55
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1205		978					2041	1563		2041	891
v/s Ratio Prot								0.16			c0.39	
v/s Ratio Perm	0.13		c0.20						0.05			0.17
v/c Ratio	0.38		0.58					0.29	0.09		0.70	0.31
Uniform Delay, d1	13.7		14.8					6.4	5.7		8.8	6.6
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2		0.9					0.1	0.0		1.1	0.2
Delay (s)	13.9		15.7					6.5	5.7		9.9	6.8
Level of Service	B		B					A	A		A	A
Approach Delay (s)		14.9			0.0			6.3			9.1	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	7.1
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	36	56	109	18	326	15	304	98	304	277	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1731		1829	1925	2880	1829	5037		3547	3657	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1731		1829	1925	2880	1829	5037		3547	3657	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	8	42	65	127	21	379	17	353	114	353	322	3
RTOR Reduction (vph)	0	50	0	0	0	166	0	58	0	0	0	2
Lane Group Flow (vph)	8	57	0	127	21	213	17	409	0	353	322	1
Confl. Peds. (#/hr)			6	6					9	9		
Confl. Bikes (#/hr)									1			2
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.8	14.1		7.7	21.0	37.6	1.8	19.7		10.6	28.5	28.5
Effective Green, g (s)	1.8	17.1		8.7	24.0	40.6	2.8	22.7		11.6	31.5	31.5
Actuated g/C Ratio	0.02	0.24		0.12	0.33	0.56	0.04	0.31		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	45	410		220	640	1621	71	1585		570	1597	705
v/s Ratio Prot	0.00	0.03		c0.07	0.01	c0.07	0.01	c0.08		c0.10	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.18	0.14		0.58	0.03	0.13	0.24	0.26		0.62	0.20	0.00
Uniform Delay, d1	34.4	21.7		30.0	16.2	7.4	33.6	18.4		28.2	12.5	11.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1		2.3	0.0	0.0	0.6	0.2		1.4	0.1	0.0
Delay (s)	35.1	21.8		32.2	16.2	7.4	34.3	18.6		29.6	12.7	11.4
Level of Service	D	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.7			13.8			19.2			21.5	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	72.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	652	1599	0	551	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2880
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2880
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	701	1719	0	592	777
RTOR Reduction (vph)	0	0	0	0	0	12
Lane Group Flow (vph)	0	701	1719	0	592	765
Confl. Peds. (#/hr)	8			8		
Confl. Bikes (#/hr)				5		
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		55.5	55.5		32.5	32.5
Effective Green, g (s)		58.5	58.5		35.5	35.5
Actuated g/C Ratio		0.58	0.58		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3074	3074		1259	1022
v/s Ratio Prot		0.13	c0.33		0.17	
v/s Ratio Perm						c0.27
v/c Ratio		0.23	0.56		0.47	0.75
Uniform Delay, d1		9.9	12.8		25.0	28.3
Progression Factor		1.00	0.92		1.00	1.00
Incremental Delay, d2		0.2	0.6		0.3	3.0
Delay (s)		10.1	12.4		25.2	31.4
Level of Service		B	B		C	C
Approach Delay (s)		10.1	12.4		28.7	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	976	0	0	1376	612	698
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1038	0	0	1464	651	743
RTOR Reduction (vph)	0	0	0	0	0	133
Lane Group Flow (vph)	1038	0	0	1464	651	610
Confl. Bikes (#/hr)		7				
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	62.1			62.1	25.9	25.9
Effective Green, g (s)	65.1			65.1	28.9	28.9
Actuated g/C Ratio	0.65			0.65	0.29	0.29
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3421			2380	1025	832
v/s Ratio Prot	0.20			c0.40	0.18	c0.21
v/s Ratio Perm						
v/c Ratio	0.30			0.62	0.64	0.73
Uniform Delay, d1	7.6			10.2	31.0	32.1
Progression Factor	0.99			0.43	1.00	1.00
Incremental Delay, d2	0.2			1.0	1.3	3.4
Delay (s)	7.7			5.3	32.3	35.4
Level of Service	A			A	C	D
Approach Delay (s)	7.7			5.3	34.0	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	335	1315	24	12	1800	147	11	2	11	109	1	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3513	5187		1811	5204	1583		1724			1816	1612
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3513	5187		1811	5204	1583		1724			1816	1612
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	356	1399	26	13	1915	156	12	2	12	116	1	357
RTOR Reduction (vph)	0	2	0	0	0	69	0	11	0	0	0	64
Lane Group Flow (vph)	356	1423	0	13	1915	87	0	15	0	0	117	293
Confl. Peds. (#/hr)	5					5			2	2		
Confl. Bikes (#/hr)			7			3			1			1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases						6						4
Actuated Green, G (s)	15.0	66.2		1.4	52.6	52.6		3.0			9.4	24.4
Effective Green, g (s)	16.0	69.2		2.4	55.6	55.6		5.0			11.4	28.4
Actuated g/C Ratio	0.16	0.69		0.02	0.56	0.56		0.05			0.11	0.28
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	562	3589		43	2893	880		86			207	457
v/s Ratio Prot	0.10	0.27		0.01	c0.37			c0.01			0.06	c0.11
v/s Ratio Perm						0.05						0.07
v/c Ratio	0.63	0.40		0.30	0.66	0.10		0.17			0.57	0.64
Uniform Delay, d1	39.3	6.5		48.0	15.6	10.4		45.5			42.0	31.3
Progression Factor	1.16	0.82		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.1	0.3		3.9	1.2	0.2		0.9			3.5	3.1
Delay (s)	47.7	5.6		51.9	16.8	10.7		46.5			45.5	34.4
Level of Service	D	A		D	B	B		D			D	C
Approach Delay (s)		14.0			16.6			46.5			37.1	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	58	70	191	97	68	152
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	64	78	212	108	76	169
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	586	266			320	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	586	266			320	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	90			94	
cM capacity (veh/h)	444	773			1240	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	142	320	244
Volume Left	64	0	76
Volume Right	78	108	0
cSH	578	1700	1240
Volume to Capacity	0.25	0.19	0.06
Queue Length 95th (ft)	24	0	5
Control Delay (s)	13.2	0.0	2.9
Lane LOS	B		A
Approach Delay (s)	13.2	0.0	2.9
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	439	0	5	479	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	488	0	6	532	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			488		1031	488
vC1, stage 1 conf vol					488	
vC2, stage 2 conf vol					543	
vCu, unblocked vol			488		1031	488
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1075		472	580

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	488	6	532	8
Volume Left	0	6	0	0
Volume Right	0	0	0	8
cSH	1700	1075	1700	580
Volume to Capacity	0.29	0.01	0.31	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	8.4	0.0	11.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.3
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	1209	61	20	1720	43	170	30	28	9	8	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1616	1847	5307	1621		1562		1847	1944	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.68	1.00	1.00
Satd. Flow (perm)	1847	5307	1616	1847	5307	1621		1257		1330	1944	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	176	1259	64	21	1792	45	177	31	29	9	8	56
RTOR Reduction (vph)	0	0	22	0	0	25	0	5	0	0	0	43
Lane Group Flow (vph)	176	1259	42	21	1792	20	0	232	0	9	8	13
Confl. Peds. (#/hr)	3					3	1					1
Confl. Bikes (#/hr)			3			3			3			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	28.4	76.3	76.3	2.8	50.7	50.7		25.9		25.9	25.9	25.9
Effective Green, g (s)	29.4	79.3	79.3	3.8	53.7	53.7		27.9		27.9	27.9	27.9
Actuated g/C Ratio	0.24	0.66	0.66	0.03	0.45	0.45		0.23		0.23	0.23	0.23
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	452	3507	1067	58	2374	725		292		309	451	379
v/s Ratio Prot	0.10	c0.24		0.01	c0.34						0.00	
v/s Ratio Perm			0.03			0.01		c0.18		0.01		0.01
v/c Ratio	0.39	0.36	0.04	0.36	0.75	0.03		0.80		0.03	0.02	0.03
Uniform Delay, d1	37.8	9.0	7.1	56.9	27.7	18.5		43.4		35.6	35.5	35.6
Progression Factor	1.00	1.00	1.00	0.84	1.23	2.74		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	3.3	2.0	0.1		13.9		0.0	0.0	0.0
Delay (s)	38.4	9.3	7.2	51.2	35.9	50.8		57.3		35.6	35.5	35.7
Level of Service	D	A	A	D	D	D		E		D	D	D
Approach Delay (s)		12.7			36.5			57.3			35.6	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	309	404	962	0	0	1515
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3513	2852	5204			3622
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3513	2852	5204			3622
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	329	430	1023	0	0	1612
RTOR Reduction (vph)	0	104	0	0	0	0
Lane Group Flow (vph)	329	326	1023	0	0	1612
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	15.2	15.2	32.8			32.8
Effective Green, g (s)	18.2	18.2	35.8			35.8
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1065	865	3105			2161
v/s Ratio Prot	0.09	c0.11	0.20			c0.45
v/s Ratio Perm						
v/c Ratio	0.31	0.38	0.33			0.75
Uniform Delay, d1	16.1	16.4	6.1			8.8
Progression Factor	1.00	1.00	0.97			1.00
Incremental Delay, d2	0.3	0.6	0.3			2.4
Delay (s)	16.4	17.0	6.2			11.2
Level of Service	B	B	A			B
Approach Delay (s)	16.8		6.2			11.2
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	546	1511	0	739	1344	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	569	1574	0	770	1400	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	569	1572	0	770	1400	0
Confl. Bikes (#/hr)						1
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.16	c0.55		0.15	c0.27	
v/s Ratio Perm						
v/c Ratio	0.28	0.94		0.46	0.84	
Uniform Delay, d1	6.2	11.5		16.4	19.1	
Progression Factor	1.00	1.00		0.69	0.78	
Incremental Delay, d2	0.0	10.1		0.9	4.1	
Delay (s)	6.2	21.6		12.2	18.9	
Level of Service	A	C		B	B	
Approach Delay (s)	17.5			12.2	18.9	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	238	101	65	76	112	195	108	498	80	752	1592	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3283		1829	1829	1554	1829	5255	1614	3547	5036	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3283		1829	1829	1554	1829	5255	1614	3547	5036	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	251	106	68	80	118	205	114	524	84	792	1676	538
RTOR Reduction (vph)	0	24	0	0	0	110	0	0	0	0	42	0
Lane Group Flow (vph)	136	265	0	80	118	95	114	524	84	792	2172	0
Confl. Peds. (#/hr)			18	18			8		4	4		8
Confl. Bikes (#/hr)			1			5			1			1
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.1	17.1		7.0	7.0	37.2	9.6	43.7	120.0	30.2	64.3	
Effective Green, g (s)	20.1	20.1		10.0	10.0	43.2	10.6	46.7	120.0	31.2	67.3	
Actuated g/C Ratio	0.17	0.17		0.08	0.08	0.36	0.09	0.39	1.00	0.26	0.56	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	549		152	152	559	161	2045	1614	922	2824	
v/s Ratio Prot	c0.08	0.08		0.04	c0.06	0.06	0.06	0.10		c0.22	c0.43	
v/s Ratio Perm									0.05			
v/c Ratio	0.49	0.48		0.53	0.78	0.17	0.71	0.26	0.05	0.86	0.77	
Uniform Delay, d1	45.3	45.2		52.7	53.9	26.2	53.2	24.9	0.0	42.3	20.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.70	1.55	1.00	0.99	0.87	
Incremental Delay, d2	0.5	0.2		1.5	19.9	0.1	10.7	0.3	0.1	3.9	1.0	
Delay (s)	45.8	45.5		54.2	73.8	26.2	48.0	38.9	0.1	45.9	18.6	
Level of Service	D	D		D	E	C	D	D	A	D	B	
Approach Delay (s)		45.6			45.7			35.9			25.8	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	4	97	24	3	7	142	285	13	8	233	8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	3	5	110	27	3	8	161	324	15	9	265	9

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	8	110	31	8	161	339	9	274
Volume Left (vph)	3	0	27	0	161	0	9	0
Volume Right (vph)	0	110	0	8	0	15	0	9
Hadj (s)	0.30	-0.61	0.53	-0.61	0.58	0.05	0.58	0.06
Departure Headway (s)	6.7	5.8	7.1	5.9	5.8	5.3	6.1	5.6
Degree Utilization, x	0.01	0.18	0.06	0.01	0.26	0.50	0.02	0.42
Capacity (veh/h)	494	570	464	547	600	663	566	629
Control Delay (s)	8.6	8.8	9.3	7.8	9.7	12.3	8.0	11.4
Approach Delay (s)	8.8		9.0		11.5		11.3	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.0		
Level of Service	B		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	14	15	149	86	429	10	37	33	319	55	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1793	1718		1793	1888	1587	1793	1743		1704	1727	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1793	1718		1793	1888	1587	1793	1743		1704	1727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	15	16	157	91	452	11	39	35	336	58	2
RTOR Reduction (vph)	0	14	0	0	0	173	0	30	0	0	0	0
Lane Group Flow (vph)	1	17	0	157	91	279	11	44	0	171	225	0
Confl. Peds. (#/hr)	1		2	2		1	1					1
Confl. Bikes (#/hr)			1			3			1			1
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.7	5.1		10.3	14.7	31.8	6.4	6.4		17.1	17.1	
Effective Green, g (s)	1.7	7.1		11.3	16.7	35.8	8.4	8.4		19.1	19.1	
Actuated g/C Ratio	0.03	0.12		0.20	0.29	0.62	0.15	0.15		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	210		349	544	1063	260	252		562	569	
v/s Ratio Prot	0.00	c0.01		c0.09	0.05	c0.09	0.01	c0.03		0.10	c0.13	
v/s Ratio Perm						0.09						
v/c Ratio	0.02	0.08		0.45	0.17	0.26	0.04	0.17		0.30	0.40	
Uniform Delay, d1	27.3	22.5		20.6	15.4	5.0	21.3	21.7		14.5	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.9	0.1	0.1	0.1	0.3		0.3	0.5	
Delay (s)	27.4	22.7		21.5	15.5	5.2	21.4	22.0		14.8	15.4	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		22.8			10.2			22.0			15.1	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	703	295	53	984	100	642	516	110	330	677	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1623	3547	5255	1613	5157	3657	1614	3547	5255	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1623	3547	5255	1613	5157	3657	1614	3547	5255	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	134	717	301	54	1004	102	655	527	112	337	691	241
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	134	717	301	54	1004	102	655	527	112	337	691	241
Confl. Peds. (#/hr)	8		1	1		8	2		1	1		2
Confl. Bikes (#/hr)			3						6			2
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.1	32.7	57.8	5.2	29.8	120.0	25.1	46.9	120.0	15.2	35.0	120.0
Effective Green, g (s)	9.1	35.7	63.8	6.2	32.8	120.0	28.1	49.9	120.0	16.2	38.0	120.0
Actuated g/C Ratio	0.08	0.30	0.53	0.05	0.27	1.00	0.23	0.42	1.00	0.13	0.32	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	268	1563	862	183	1436	1613	1207	1520	1614	478	1664	1615
v/s Ratio Prot	c0.04	0.14	0.08	0.02	c0.19		c0.13	0.14		c0.09	c0.13	
v/s Ratio Perm			0.10			0.06			0.07			c0.15
v/c Ratio	0.50	0.46	0.35	0.30	0.70	0.06	0.54	0.35	0.07	0.71	0.42	0.15
Uniform Delay, d1	53.3	34.3	16.2	54.8	39.2	0.0	40.3	23.9	0.0	49.6	32.3	0.0
Progression Factor	0.84	0.94	0.56	1.29	1.07	1.00	0.62	0.34	1.00	0.69	1.00	1.00
Incremental Delay, d2	0.5	0.4	0.1	0.3	1.8	0.1	0.2	0.6	0.1	3.7	0.7	0.2
Delay (s)	45.3	32.6	9.2	71.2	43.6	0.1	25.2	8.8	0.1	38.0	32.9	0.2
Level of Service	D	C	A	E	D	A	C	A	A	D	C	A
Approach Delay (s)		28.0			41.0			16.4			28.1	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	222	338	249	228	46	330	951	272	134	709	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1629	3583	3693	1623	3583	5307	1627	3583	5307	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	236	360	265	243	49	351	1012	289	143	754	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	45
Lane Group Flow (vph)	107	236	360	265	243	49	351	1012	289	143	754	25
Confl. Peds. (#/hr)	14		4	4		14	3		2	2		3
Confl. Bikes (#/hr)			5			6			12			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.8	17.6	120.0	13.0	22.8	120.0	30.0	61.2	120.0	8.2	39.4	39.4
Effective Green, g (s)	8.8	20.6	120.0	14.0	25.8	120.0	31.0	64.2	120.0	9.2	42.4	42.4
Actuated g/C Ratio	0.07	0.17	1.00	0.12	0.22	1.00	0.26	0.54	1.00	0.08	0.35	0.35
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	262	633	1629	418	793	1623	925	2839	1627	274	1875	572
v/s Ratio Prot	c0.03	c0.06		c0.07	0.07		0.10	c0.19		c0.04	c0.14	
v/s Ratio Perm			0.22			0.03			0.18			0.02
v/c Ratio	0.41	0.37	0.22	0.63	0.31	0.03	0.38	0.36	0.18	0.52	0.40	0.04
Uniform Delay, d1	53.1	44.0	0.0	50.6	39.6	0.0	36.6	16.0	0.0	53.3	29.2	25.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.63	1.00	0.99	0.59	1.00
Incremental Delay, d2	0.4	0.8	0.3	2.3	0.5	0.0	0.1	0.3	0.2	0.8	0.6	0.1
Delay (s)	53.5	44.8	0.3	52.9	40.0	0.0	26.7	10.3	0.2	53.6	18.0	25.6
Level of Service	D	D	A	D	D	A	C	B	A	D	B	C
Approach Delay (s)		23.3			42.6			12.0			23.8	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	354	49	13	1092	30	22	81	12	33	195	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3584		1829	5232		3547	3579		1829	4806	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3584		1829	5232		3547	3579		1829	4806	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	148	365	51	13	1126	31	23	84	12	34	201	223
RTOR Reduction (vph)	0	5	0	0	1	0	0	10	0	0	178	0
Lane Group Flow (vph)	148	411	0	13	1156	0	23	86	0	34	246	0
Confl. Peds. (#/hr)							1		3	3		1
Confl. Bikes (#/hr)			1			1			5			
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.3	71.7		3.0	64.4		4.0	20.0		5.3	21.3	
Effective Green, g (s)	11.3	74.7		4.0	67.4		5.0	23.0		6.3	24.3	
Actuated g/C Ratio	0.09	0.62		0.03	0.56		0.04	0.19		0.05	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	334	2231		60	2938		147	685		96	973	
v/s Ratio Prot	c0.04	0.11		0.01	c0.22		0.01	0.02		c0.02	c0.05	
v/s Ratio Perm												
v/c Ratio	0.44	0.18		0.22	0.39		0.16	0.13		0.35	0.25	
Uniform Delay, d1	51.4	9.7		56.5	14.8		55.5	40.2		54.9	40.2	
Progression Factor	0.76	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.2		1.8	0.4		0.5	0.1		2.2	0.1	
Delay (s)	39.9	12.8		58.3	15.2		56.0	40.3		57.1	40.4	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		19.9			15.7			43.3			41.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	260	801	1751	0	0	973
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			5307
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			5307
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	277	852	1863	0	0	1035
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	277	848	1863	0	0	1035
Confl. Peds. (#/hr)				1	1	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.2	29.2	31.6			31.6
Effective Green, g (s)	30.3	30.3	32.7			32.7
Actuated g/C Ratio	0.44	0.44	0.47			0.47
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1573	1276	2515			2515
v/s Ratio Prot	0.08	c0.29	c0.35			0.20
v/s Ratio Perm						
v/c Ratio	0.18	0.66	0.74			0.41
Uniform Delay, d1	11.8	15.3	14.7			11.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	1.3	1.2			0.1
Delay (s)	11.8	16.6	15.9			12.0
Level of Service	B	B	B			B
Approach Delay (s)	15.5		15.9			12.0
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	503	0	372	0	0	0	0	1881	770	0	793	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3583		2908					3693	2842		3693	1616
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3583		2908					3693	2842		3693	1616
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	529	0	392	0	0	0	0	1980	811	0	835	463
RTOR Reduction (vph)	0	0	192	0	0	0	0	0	114	0	0	155
Lane Group Flow (vph)	529	0	200	0	0	0	0	1980	697	0	835	308
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	16.0		16.0					45.0	45.0		45.0	45.0
Effective Green, g (s)	17.1		17.1					46.1	46.1		46.1	46.0
Actuated g/C Ratio	0.25		0.25					0.67	0.67		0.67	0.66
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	885		718					2460	1893		2460	1074
v/s Ratio Prot								c0.54			0.23	
v/s Ratio Perm	c0.15		0.07						0.25			0.19
v/c Ratio	0.60		0.28					0.80	0.37		0.34	0.29
Uniform Delay, d1	23.0		21.1					8.3	5.1		5.0	4.8
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1		0.2					2.0	0.1		0.1	0.1
Delay (s)	24.1		21.3					10.3	5.2		5.1	5.0
Level of Service	C		C					B	A		A	A
Approach Delay (s)		22.9			0.0			8.8			5.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	7.1
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	42	47	102	55	420	27	294	85	387	431	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1847	1774		1847	1944	2908	1847	5112		3583	3693	1626
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1847	1774		1847	1944	2908	1847	5112		3583	3693	1626
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	45	51	110	59	452	29	316	91	416	463	6
RTOR Reduction (vph)	0	39	0	0	0	193	0	51	0	0	0	3
Lane Group Flow (vph)	4	57	0	110	59	259	29	356	0	416	463	3
Confl. Peds. (#/hr)			4	4			1		2	2		1
Confl. Bikes (#/hr)									1			6
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.7	14.1		7.1	20.5	38.3	2.0	19.2		11.8	29.0	29.0
Effective Green, g (s)	1.7	17.1		8.1	23.5	41.3	3.0	22.2		12.8	32.0	32.0
Actuated g/C Ratio	0.02	0.24		0.11	0.33	0.57	0.04	0.31		0.18	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	43	420		207	632	1663	76	1571		635	1636	720
v/s Ratio Prot	0.00	0.03		c0.06	0.03	c0.09	0.02	0.07		c0.12	c0.13	
v/s Ratio Perm												0.00
v/c Ratio	0.09	0.14		0.53	0.09	0.16	0.38	0.23		0.66	0.28	0.00
Uniform Delay, d1	34.5	21.7		30.3	16.9	7.3	33.7	18.6		27.6	12.8	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1		1.3	0.0	0.0	1.2	0.2		1.9	0.2	0.0
Delay (s)	34.8	21.8		31.6	17.0	7.3	34.9	18.8		29.5	13.0	11.2
Level of Service	C	C		C	B	A	C	B		C	B	B
Approach Delay (s)		22.3			12.5			19.8			20.7	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2000	1012	0	846	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	2198	1112	0	930	482
RTOR Reduction (vph)	0	0	0	0	0	93
Lane Group Flow (vph)	0	2198	1112	0	930	389
Confl. Peds. (#/hr)	2			2		
Confl. Bikes (#/hr)				3		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.3	31.3		16.7	16.7
Effective Green, g (s)		34.3	34.3		19.7	19.7
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3033	3033		1176	954
v/s Ratio Prot		c0.41	0.21		c0.26	
v/s Ratio Perm						0.13
v/c Ratio		0.72	0.37		0.79	0.41
Uniform Delay, d1		9.4	7.0		18.3	15.6
Progression Factor		1.00	0.88		1.00	1.00
Incremental Delay, d2		1.5	0.2		3.7	0.3
Delay (s)		10.9	6.3		22.0	15.9
Level of Service		B	A		C	B
Approach Delay (s)		10.9	6.3		19.9	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	130.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2085	0	0	1717	235	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	2242	0	0	1846	253	509
RTOR Reduction (vph)	0	0	0	0	0	5
Lane Group Flow (vph)	2242	0	0	1846	253	504
Confl. Bikes (#/hr)		7				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	33.0			33.0	15.0	15.0
Effective Green, g (s)	36.0			36.0	18.0	18.0
Actuated g/C Ratio	0.60			0.60	0.30	0.30
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3184			2215	1074	872
v/s Ratio Prot	0.42			c0.50	0.07	c0.17
v/s Ratio Perm						
v/c Ratio	0.70			0.83	0.24	0.58
Uniform Delay, d1	8.3			9.6	15.8	17.8
Progression Factor	1.06			2.02	1.00	1.00
Incremental Delay, d2	0.9			0.4	0.1	0.9
Delay (s)	9.7			19.8	15.9	18.7
Level of Service	A			B	B	B
Approach Delay (s)	9.7			19.8	17.8	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	823	1704	31	24	2016	382	19	1	19	332	4	875
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3583	5290		1847	5307	1623		1754			1852	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3583	5290		1847	5307	1623		1754			1852	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	895	1852	34	26	2191	415	21	1	21	361	4	951
RTOR Reduction (vph)	0	1	0	0	0	104	0	20	0	0	0	37
Lane Group Flow (vph)	895	1885	0	26	2191	311	0	23	0	0	365	914
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			7			2			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	27.0	63.8		4.2	41.0	41.0		4.0			28.0	55.0
Effective Green, g (s)	28.0	66.8		5.2	44.0	44.0		6.0			30.0	59.0
Actuated g/C Ratio	0.23	0.56		0.04	0.37	0.37		0.05			0.25	0.49
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	836	2944		80	1945	595		87			463	812
v/s Ratio Prot	0.25	0.36		0.01	c0.41			c0.01			0.20	c0.55
v/s Ratio Perm						0.19						
v/c Ratio	1.07	0.64		0.33	1.13	0.52		0.26			0.79	1.13
Uniform Delay, d1	46.0	18.3		55.7	38.0	29.8		54.9			42.0	30.5
Progression Factor	0.96	1.09		1.38	0.84	0.67		1.00			1.00	1.00
Incremental Delay, d2	48.4	0.8		1.9	62.8	2.6		1.6			8.7	72.0
Delay (s)	92.4	20.8		78.6	94.7	22.6		56.5			50.7	102.5
Level of Service	F	C		E	F	C		E			D	F
Approach Delay (s)		43.9			83.2			56.5			88.2	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	67.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	183	133	332	137	105	332
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	203	148	369	152	117	369
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1047	445			521	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1047	445			521	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	9	76			89	
cM capacity (veh/h)	224	613			1045	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	351	521	486
Volume Left	203	0	117
Volume Right	148	152	0
cSH	306	1700	1045
Volume to Capacity	1.15	0.31	0.11
Queue Length 95th (ft)	366	0	9
Control Delay (s)	134.6	0.0	3.1
Lane LOS	F		A
Approach Delay (s)	134.6	0.0	3.1
Approach LOS	F		

Intersection Summary			
Average Delay	35.9		
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1154	2	34	1172	3	57
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1282	2	38	1302	3	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1284		2661	1283
vC1, stage 1 conf vol					1283	
vC2, stage 2 conf vol					1378	
vCu, unblocked vol			1284		2661	1283
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			93		98	69
cM capacity (veh/h)			540		161	201

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1284	38	1302	67
Volume Left	0	38	0	3
Volume Right	2	0	0	63
cSH	1700	540	1700	199
Volume to Capacity	0.76	0.07	0.77	0.33
Queue Length 95th (ft)	0	6	0	35
Control Delay (s)	0.0	12.2	0.0	31.9
Lane LOS		B		D
Approach Delay (s)	0.0	0.3		31.9
Approach LOS				D

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	1766	230	53	2080	10	117	18	37	48	24	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1847	5307	1615	1847	5307	1622		1546		1843	1944	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.66	1.00	1.00
Satd. Flow (perm)	1847	5307	1615	1847	5307	1622		1248		1279	1944	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	1920	250	58	2261	11	127	20	40	52	26	265
RTOR Reduction (vph)	0	0	60	0	0	4	0	9	0	0	0	93
Lane Group Flow (vph)	45	1920	190	58	2261	7	0	178	0	52	26	172
Confl. Peds. (#/hr)	3					3			3	3		
Confl. Bikes (#/hr)			5			2			1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	5.6	74.5	74.5	7.0	75.9	75.9		23.5		23.5	23.5	23.5
Effective Green, g (s)	6.6	77.5	77.5	8.0	78.9	78.9		25.5		25.5	25.5	25.5
Actuated g/C Ratio	0.05	0.65	0.65	0.07	0.66	0.66		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	101	3427	1043	123	3489	1066		265		271	413	351
v/s Ratio Prot	0.02	c0.36		0.03	c0.43						0.01	
v/s Ratio Perm			0.12			0.00		c0.14		0.04		0.10
v/c Ratio	0.45	0.56	0.18	0.47	0.65	0.01		0.67		0.19	0.06	0.49
Uniform Delay, d1	54.9	11.8	8.5	54.0	12.3	7.1		43.4		38.8	37.7	41.5
Progression Factor	0.96	1.11	1.67	1.17	1.21	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	0.5	0.3	2.5	0.8	0.0		6.5		0.3	0.1	1.1
Delay (s)	55.0	13.6	14.5	65.8	15.7	7.1		49.9		39.1	37.8	42.6
Level of Service	E	B	B	E	B	A		D		D	D	D
Approach Delay (s)		14.5			16.9			49.9			41.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	289	603	2144	0	0	1280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frpb, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3583	2908	5307			3693
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3583	2908	5307			3693
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	304	635	2257	0	0	1347
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	304	632	2257	0	0	1347
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	18.0	18.0	30.0			30.0
Effective Green, g (s)	21.0	21.0	33.0			33.0
Actuated g/C Ratio	0.35	0.35	0.55			0.55
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1254	1017	2918			2031
v/s Ratio Prot	0.08	c0.22	c0.43			0.36
v/s Ratio Perm						
v/c Ratio	0.24	0.62	0.77			0.66
Uniform Delay, d1	13.9	16.2	10.6			9.6
Progression Factor	1.00	1.00	1.28			1.00
Incremental Delay, d2	0.2	1.7	1.4			1.7
Delay (s)	14.1	17.9	14.9			11.3
Level of Service	B	B	B			B
Approach Delay (s)	16.6		14.9			11.3
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	955	564	0	2186	1084	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3583	2908		5307	5307	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3583	2908		5307	5307	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	974	576	0	2231	1106	0
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	974	567	0	2231	1106	0
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	23.1	23.1		24.9	24.9	
Effective Green, g (s)	26.1	26.1		27.9	27.9	
Actuated g/C Ratio	0.44	0.44		0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1558	1264		2467	2467	
v/s Ratio Prot	c0.27	0.19		c0.42	0.21	
v/s Ratio Perm						
v/c Ratio	0.63	0.45		0.90	0.45	
Uniform Delay, d1	13.2	11.9		14.8	10.8	
Progression Factor	1.00	1.00		1.00	0.60	
Incremental Delay, d2	0.6	0.1		6.0	0.5	
Delay (s)	13.7	12.0		20.9	7.0	
Level of Service	B	B		C	A	
Approach Delay (s)	13.1			20.9	7.0	
Approach LOS	B			C	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	701	213	113	148	175	684	137	1160	103	411	710	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3341		1847	1847	1570	1847	5307	1627	3583	4922	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3341		1847	1847	1570	1847	5307	1627	3583	4922	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	723	220	116	153	180	705	141	1196	106	424	732	543
RTOR Reduction (vph)	0	17	0	0	0	64	0	0	0	0	133	0
Lane Group Flow (vph)	390	652	0	153	180	641	141	1196	106	424	1142	0
Confl. Peds. (#/hr)			16	16			9		10	10		9
Confl. Bikes (#/hr)			7			1			1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	23.9	23.9		17.0	17.0	29.1	7.7	25.0	100.0	12.1	29.4	
Effective Green, g (s)	26.9	26.9		20.0	20.0	35.1	8.7	28.0	100.0	13.1	32.4	
Actuated g/C Ratio	0.27	0.27		0.20	0.20	0.35	0.09	0.28	1.00	0.13	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	451	898		369	369	551	160	1485	1627	469	1594	
v/s Ratio Prot	c0.23	0.20		0.08	0.10	c0.41	0.08	c0.23		0.12	0.23	
v/s Ratio Perm									0.07			
v/c Ratio	0.86	0.73		0.41	0.49	1.16	0.88	0.81	0.07	0.90	0.72	
Uniform Delay, d1	34.8	33.2		34.9	35.5	32.5	45.1	33.5	0.0	42.8	29.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.3	2.5		0.3	0.4	92.4	38.2	4.8	0.1	20.2	2.8	
Delay (s)	50.1	35.7		35.2	35.8	124.8	83.3	38.2	0.1	63.0	32.5	
Level of Service	D	D		D	D	F	F	D	A	E	C	
Approach Delay (s)		41.0			96.2			39.8			40.2	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	17	7	166	144	7	19	148	380	82	15	383	11
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	17	7	168	145	7	19	149	384	83	15	387	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	24	168	153	19	149	467	15	398
Volume Left (vph)	17	0	145	0	149	0	15	0
Volume Right (vph)	0	168	0	19	0	83	0	11
Hadj (s)	0.39	-0.67	0.51	-0.67	0.53	-0.09	0.53	0.01
Departure Headway (s)	8.0	7.0	8.1	7.0	7.0	6.4	7.3	6.7
Degree Utilization, x	0.05	0.32	0.35	0.04	0.29	0.83	0.03	0.74
Capacity (veh/h)	418	479	415	476	499	553	474	518
Control Delay (s)	10.3	12.1	14.2	9.0	11.7	31.7	9.3	25.6
Approach Delay (s)	11.9		13.6		26.8		25.0	
Approach LOS	B		B		D		D	

Intersection Summary			
Delay	22.6		
Level of Service	C		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	103	25	40	105	564	12	69	201	670	76	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.89		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1878		1847	1944	1638	1847	1706		1754	1774	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1878		1847	1944	1638	1847	1706		1754	1774	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	111	27	43	113	606	13	74	216	720	82	2
RTOR Reduction (vph)	0	9	0	0	0	263	0	110	0	0	0	0
Lane Group Flow (vph)	1	129	0	43	113	343	13	180	0	367	437	0
Confl. Peds. (#/hr)			1	1			2		2	2		2
Confl. Bikes (#/hr)			1			1			2			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	8.8		5.4	13.3	33.5	12.9	12.9		20.2	20.2	
Effective Green, g (s)	1.9	10.8		6.4	15.3	37.5	14.9	14.9		22.2	22.2	
Actuated g/C Ratio	0.03	0.16		0.10	0.23	0.57	0.22	0.22		0.33	0.33	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	52	305		178	448	1000	415	383		587	594	
v/s Ratio Prot	0.00	c0.07		0.02	0.06	c0.11	0.01	c0.11		0.21	c0.25	
v/s Ratio Perm						0.09						
v/c Ratio	0.02	0.42		0.24	0.25	0.34	0.03	0.47		0.63	0.74	
Uniform Delay, d1	31.3	24.9		27.7	20.8	7.8	20.1	22.3		18.6	19.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9		0.7	0.3	0.2	0.0	0.9		2.1	4.7	
Delay (s)	31.4	25.9		28.4	21.1	8.0	20.1	23.2		20.6	24.2	
Level of Service	C	C		C	C	A	C	C		C	C	
Approach Delay (s)		25.9			11.1			23.1			22.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	1032	591	129	1124	144	694	796	76	289	705	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1634	3583	5307	1631	5208	3693	1629	3583	5307	1631
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	218	1075	616	134	1171	150	723	829	79	301	734	252
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	218	1075	616	134	1171	150	723	829	79	301	734	252
Confl. Peds. (#/hr)	3		7	7		3	1		3	3		1
Confl. Bikes (#/hr)			1			1			6			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	28.2	55.2	6.8	28.0	120.0	27.0	51.6	120.0	13.4	36.0	120.0
Effective Green, g (s)	8.0	31.2	61.2	7.8	31.0	120.0	30.0	54.6	120.0	14.4	39.0	120.0
Actuated g/C Ratio	0.07	0.26	0.51	0.06	0.26	1.00	0.25	0.46	1.00	0.12	0.32	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	238	1379	833	232	1370	1631	1302	1680	1629	429	1724	1631
v/s Ratio Prot	c0.06	0.20	c0.18	0.04	c0.22		0.14	c0.22		c0.08	0.14	
v/s Ratio Perm			0.19			0.09			0.05			c0.15
v/c Ratio	0.92	0.78	0.74	0.58	0.85	0.09	0.56	0.49	0.05	0.70	0.43	0.15
Uniform Delay, d1	55.7	41.2	23.1	54.5	42.4	0.0	39.2	23.0	0.0	50.7	31.7	0.0
Progression Factor	0.87	1.03	1.01	1.28	1.18	1.00	0.61	0.37	1.00	0.80	0.73	1.00
Incremental Delay, d2	33.8	3.1	2.8	2.0	5.5	0.1	0.3	0.9	0.1	4.0	0.7	0.2
Delay (s)	82.3	45.6	26.1	71.9	55.4	0.1	24.4	9.6	0.1	44.8	23.8	0.2
Level of Service	F	D	C	E	E	A	C	A	A	D	C	A
Approach Delay (s)		43.5			51.2			15.7			24.1	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	195	411	513	269	132	362	854	341	87	1309	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	3693	1630	3583	3693	1627	3583	5307	1630	3583	5307	1626
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	102	205	433	540	283	139	381	899	359	92	1378	24
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	102	205	433	540	283	139	381	899	359	92	1378	10
Confl. Peds. (#/hr)	3		2	2		3	1		1	1		1
Confl. Bikes (#/hr)			3			10			6			4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.6	17.0	120.0	21.4	31.8	120.0	17.0	55.1	120.0	6.5	44.6	44.6
Effective Green, g (s)	7.6	20.0	120.0	22.4	34.8	120.0	18.0	58.1	120.0	7.5	47.6	47.6
Actuated g/C Ratio	0.06	0.17	1.00	0.19	0.29	1.00	0.15	0.48	1.00	0.06	0.40	0.40
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	226	615	1630	668	1070	1627	537	2569	1630	223	2105	644
v/s Ratio Prot	c0.03	c0.06		c0.15	0.08		c0.11	0.17		0.03	c0.26	
v/s Ratio Perm			0.27			0.09			0.22			0.01
v/c Ratio	0.45	0.33	0.27	0.81	0.26	0.09	0.71	0.35	0.22	0.41	0.65	0.01
Uniform Delay, d1	54.2	44.1	0.0	46.7	32.8	0.0	48.5	19.2	0.0	54.1	29.5	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.64	1.00	0.78	0.91	1.00
Incremental Delay, d2	0.5	0.7	0.4	6.7	0.3	0.1	2.9	0.3	0.3	0.5	1.6	0.0
Delay (s)	54.7	44.8	0.4	53.5	33.0	0.1	40.2	12.5	0.3	42.4	28.5	22.0
Level of Service	D	D	A	D	C	A	D	B	A	D	C	C
Approach Delay (s)		20.2			39.8			16.3			29.2	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	1009	19	11	586	34	66	179	15	59	211	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3583	3682		1847	5259		3583	3645		1847	4801	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3583	3682		1847	5259		3583	3645		1847	4801	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	1062	20	12	617	36	69	188	16	62	222	304
RTOR Reduction (vph)	0	1	0	0	4	0	0	6	0	0	231	0
Lane Group Flow (vph)	237	1081	0	12	649	0	69	198	0	62	295	0
Confl. Peds. (#/hr)			3	3			1		4	4		1
Confl. Bikes (#/hr)			2			2						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.1	69.0		2.9	58.8		5.6	20.6		7.5	22.5	
Effective Green, g (s)	14.1	72.0		3.9	61.8		6.6	23.6		8.5	25.5	
Actuated g/C Ratio	0.12	0.60		0.03	0.51		0.05	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	421	2209		60	2708		197	716		130	1020	
v/s Ratio Prot	c0.07	c0.29		0.01	0.12		0.02	0.05		c0.03	c0.06	
v/s Ratio Perm												
v/c Ratio	0.56	0.49		0.20	0.24		0.35	0.28		0.48	0.29	
Uniform Delay, d1	50.0	13.6		56.5	16.1		54.6	41.0		53.6	39.6	
Progression Factor	0.76	1.32		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.7		1.6	0.2		1.1	0.2		2.7	0.2	
Delay (s)	39.7	18.6		58.2	16.3		55.7	41.2		56.4	39.8	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		22.4			17.1			44.8			41.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1072	1087	0	552	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1128	1144	0	581	651
RTOR Reduction (vph)	0	0	0	0	0	62
Lane Group Flow (vph)	0	1128	1144	0	581	589
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.3	31.3		16.7	16.7
Effective Green, g (s)		34.3	34.3		19.7	19.7
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3033	3033		1176	954
v/s Ratio Prot		0.21	c0.22		0.16	
v/s Ratio Perm						c0.20
v/c Ratio		0.37	0.38		0.49	0.62
Uniform Delay, d1		7.0	7.0		16.2	17.0
Progression Factor		1.00	0.71		1.00	1.00
Incremental Delay, d2		0.4	0.3		0.3	1.2
Delay (s)		7.3	5.3		16.5	18.2
Level of Service		A	A		B	B
Approach Delay (s)		7.3	5.3		17.4	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1110	0	0	1181	304	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1156	0	0	1230	317	380
RTOR Reduction (vph)	0	0	0	0	0	89
Lane Group Flow (vph)	1156	0	0	1230	317	291
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	36.9			36.9	11.1	11.1
Effective Green, g (s)	39.9			39.9	14.1	14.1
Actuated g/C Ratio	0.66			0.66	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3529			2455	842	683
v/s Ratio Prot	0.22			c0.33	0.09	c0.10
v/s Ratio Perm						
v/c Ratio	0.33			0.50	0.38	0.43
Uniform Delay, d1	4.3			5.0	19.3	19.5
Progression Factor	0.82			1.12	1.00	1.00
Incremental Delay, d2	0.2			0.5	0.3	0.4
Delay (s)	3.8			6.2	19.5	19.9
Level of Service	A			A	B	B
Approach Delay (s)	3.8			6.2	19.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	775	681	19	6	1011	376	25	4	10	370	2	769
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5282		1847	5307	1592		1785			1852	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5282		1847	5307	1592		1785			1852	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	816	717	20	6	1064	396	26	4	11	389	2	809
RTOR Reduction (vph)	0	2	0	0	0	197	0	10	0	0	0	40
Lane Group Flow (vph)	816	735	0	6	1064	199	0	31	0	0	391	769
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	30.3	59.8		1.4	30.9	30.9		4.2			34.6	64.9
Effective Green, g (s)	31.3	62.8		2.4	33.9	33.9		6.2			36.6	68.9
Actuated g/C Ratio	0.26	0.52		0.02	0.28	0.28		0.05			0.31	0.57
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	934	2764		36	1499	449		92			564	948
v/s Ratio Prot	c0.23	0.14		0.00	c0.20			c0.02			0.21	c0.47
v/s Ratio Perm						0.13						
v/c Ratio	0.87	0.27		0.17	0.71	0.44		0.33			0.69	0.81
Uniform Delay, d1	42.5	15.8		57.8	38.6	35.3		54.9			36.8	20.4
Progression Factor	0.99	0.84		1.10	0.98	0.93		1.00			1.00	1.00
Incremental Delay, d2	8.8	0.2		2.2	2.9	3.2		2.1			3.7	5.3
Delay (s)	50.7	13.5		65.7	40.8	35.9		57.0			40.4	25.7
Level of Service	D	B		E	D	D		E			D	C
Approach Delay (s)		33.0			39.6			57.0			30.5	
Approach LOS		C			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	161	176	58	129	262
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	67	179	196	64	143	291
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	806	228			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	806	228			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	78			89	
cM capacity (veh/h)	313	812			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	246	260	434
Volume Left	67	0	143
Volume Right	179	64	0
cSH	566	1700	1304
Volume to Capacity	0.43	0.15	0.11
Queue Length 95th (ft)	54	0	9
Control Delay (s)	16.1	0.0	3.4
Lane LOS	C		A
Approach Delay (s)	16.1	0.0	3.4
Approach LOS	C		

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1130	1	3	1152	1	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1256	1	3	1280	1	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1257		2543	1256
vC1, stage 1 conf vol					1256	
vC2, stage 2 conf vol					1287	
vCu, unblocked vol			1257		2543	1256
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	94
cM capacity (veh/h)			553		181	209

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1257	3	1280	13
Volume Left	0	3	0	1
Volume Right	1	0	0	12
cSH	1700	553	1700	206
Volume to Capacity	0.74	0.01	0.75	0.06
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	0.0	11.5	0.0	23.6
Lane LOS		B		C
Approach Delay (s)	0.0	0.0		23.6
Approach LOS				C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	603	184	157	108	171	293	216	704	104	392	516	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3309		1847	1847	1570	1847	5307	1627	3583	4848	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3309		1847	1847	1570	1847	5307	1627	3583	4848	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	628	192	164	112	178	305	225	733	108	408	538	573
RTOR Reduction (vph)	0	27	0	0	0	58	0	0	0	0	147	0
Lane Group Flow (vph)	339	618	0	112	178	247	225	733	108	408	964	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.9	26.9		13.6	13.6	29.3	17.4	41.8	120.0	15.7	40.1	
Effective Green, g (s)	29.9	29.9		16.6	16.6	35.3	18.4	44.8	120.0	16.7	43.1	
Actuated g/C Ratio	0.25	0.25		0.14	0.14	0.29	0.15	0.37	1.00	0.14	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	418	824		255	255	461	283	1981	1627	498	1741	
v/s Ratio Prot	c0.20	0.19		0.06	c0.10	0.16	c0.12	0.14		0.11	c0.20	
v/s Ratio Perm									c0.07			
v/c Ratio	0.81	0.75		0.44	0.70	0.54	0.80	0.37	0.07	0.82	0.55	
Uniform Delay, d1	42.4	41.6		47.4	49.3	35.5	49.0	27.3	0.0	50.2	30.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.47	0.59	1.00	1.00	0.99	
Incremental Delay, d2	10.8	3.3		0.4	6.6	0.6	13.0	0.5	0.1	9.6	1.3	
Delay (s)	53.2	44.9		47.9	55.9	36.1	85.1	16.7	0.1	59.9	31.8	
Level of Service	D	D		D	E	D	F	B	A	E	C	
Approach Delay (s)		47.8			44.2			29.4			39.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	30	27	238	236	24	28	252	320	125	21	400	25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	31	28	245	243	25	29	260	330	129	22	412	26

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	59	245	268	29	260	459	22	438
Volume Left (vph)	31	0	243	0	260	0	22	0
Volume Right (vph)	0	245	0	29	0	129	0	26
Hadj (s)	0.28	-0.68	0.47	-0.68	0.52	-0.18	0.52	-0.02
Departure Headway (s)	9.0	8.0	9.1	7.9	8.4	7.7	8.6	8.1
Degree Utilization, x	0.15	0.55	0.67	0.06	0.61	0.98	0.05	0.98
Capacity (veh/h)	387	426	380	438	415	459	408	438
Control Delay (s)	12.3	19.1	27.6	10.2	22.4	64.2	10.9	65.2
Approach Delay (s)	17.8		25.9		49.1		62.6	
Approach LOS	C		D		E		F	

Intersection Summary			
Delay	43.4		
Level of Service	E		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	50	24	28	41	671	6	50	34	763	117	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1834		1847	1944	1652	1847	1815		1754	1778	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1834		1847	1944	1652	1847	1815		1754	1778	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	52	25	29	42	692	6	52	35	787	121	2
RTOR Reduction (vph)	0	18	0	0	0	256	0	26	0	0	0	0
Lane Group Flow (vph)	2	59	0	29	42	436	6	61	0	401	509	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.8	7.6		2.3	9.1	37.9	8.8	8.8		28.8	28.8	
Effective Green, g (s)	1.8	9.6		3.3	11.1	41.9	10.8	10.8		30.8	30.8	
Actuated g/C Ratio	0.03	0.14		0.05	0.17	0.63	0.16	0.16		0.46	0.46	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	49	264		91	324	1115	299	294		812	823	
v/s Ratio Prot	0.00	c0.03		0.02	0.02	c0.18	0.00	c0.03		0.23	c0.29	
v/s Ratio Perm						0.08						
v/c Ratio	0.04	0.22		0.32	0.13	0.39	0.02	0.21		0.49	0.62	
Uniform Delay, d1	31.5	25.2		30.5	23.6	6.0	23.4	24.1		12.4	13.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4		2.0	0.2	0.2	0.0	0.4		0.5	1.4	
Delay (s)	31.9	25.6		32.5	23.8	6.3	23.4	24.5		12.9	14.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		25.7			8.2			24.4			14.0	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	203	401	286	66	573	106	414	699	56	182	545	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	214	422	301	69	603	112	436	736	59	192	574	239
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	214	422	301	69	603	112	436	736	59	192	574	239
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	6.0	22.4	26.4	4.7	21.1	90.0	4.0	35.8	90.0	7.1	36.9	90.0
Effective Green, g (s)	7.0	25.4	32.4	5.7	24.1	90.0	7.0	38.8	90.0	8.1	39.9	90.0
Actuated g/C Ratio	0.08	0.28	0.36	0.06	0.27	1.00	0.08	0.43	1.00	0.09	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	1497	588	226	1421	1632	405	1592	1631	322	2352	1652
v/s Ratio Prot	c0.06	0.08	c0.04	0.02	0.11		c0.08	c0.20		c0.05	0.11	
v/s Ratio Perm			0.14			0.07			0.04			c0.14
v/c Ratio	0.77	0.28	0.51	0.31	0.42	0.07	1.08	0.46	0.04	0.60	0.24	0.14
Uniform Delay, d1	40.7	25.2	22.6	40.3	27.2	0.0	41.5	18.2	0.0	39.4	15.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.0	0.2	0.3	0.3	0.4	0.1	66.7	1.0	0.0	2.0	0.2	0.2
Delay (s)	51.7	25.4	22.9	40.5	27.6	0.1	108.2	19.2	0.0	41.4	15.9	0.2
Level of Service	D	C	C	D	C	A	F	B	A	D	B	A
Approach Delay (s)		30.6			24.8			49.8			17.0	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	900	810	1210	0	0	1320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	947	853	1274	0	0	1389
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	947	843	1274	0	0	1389
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	26.1	26.1	21.3			21.3
Effective Green, g (s)	27.2	27.2	22.4			22.4
Actuated g/C Ratio	0.49	0.49	0.40			0.40
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1735	1408	2117			2117
v/s Ratio Prot	0.27	c0.29	0.24			c0.26
v/s Ratio Perm						
v/c Ratio	0.55	0.60	0.60			0.66
Uniform Delay, d1	9.9	10.3	13.1			13.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	0.7	0.5			0.7
Delay (s)	10.2	11.0	13.6			14.2
Level of Service	B	B	B			B
Approach Delay (s)	10.6		13.6			14.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	500	0	780	0	0	0	0	1010	370	0	1570	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.96	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2837					5255	1576		5024	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2837					5255	1576		5024	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	526	0	821	0	0	0	0	1063	389	0	1653	684
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	168	0	70	0
Lane Group Flow (vph)	526	0	808	0	0	0	0	1063	221	0	2267	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	30.0		30.0					41.2	41.2		41.2	
Effective Green, g (s)	31.1		31.1					42.3	42.3		42.3	
Actuated g/C Ratio	0.39		0.39					0.53	0.53		0.53	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1389		1111					2799	839		2676	
v/s Ratio Prot								0.20			c0.45	
v/s Ratio Perm	0.15		c0.28						0.14			
v/c Ratio	0.38		0.73					0.38	0.26		0.85	
Uniform Delay, d1	17.2		20.5					10.9	10.1		15.8	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		2.4					0.1	0.2		2.7	
Delay (s)	17.4		23.0					11.0	10.2		18.5	
Level of Service	B		C					B	B		B	
Approach Delay (s)		20.8			0.0			10.8			18.5	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	7.1
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	200	40	500	30	560	130	340	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1750		1829	1925	2880	1829	5084		3547	3657	1577
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1750		1829	1925	2880	1829	5084		3547	3657	1577
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	211	42	526	32	589	137	358	337	11
RTOR Reduction (vph)	0	41	0	0	0	205	0	37	0	0	0	6
Lane Group Flow (vph)	11	85	0	211	42	321	32	689	0	358	337	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.9	12.2		12.4	23.7	41.0	2.2	22.0		11.3	31.1	31.1
Effective Green, g (s)	1.9	15.2		13.4	26.7	44.0	3.2	25.0		12.3	34.1	34.1
Actuated g/C Ratio	0.02	0.20		0.17	0.34	0.56	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	44	341		314	659	1626	75	1631		560	1600	690
v/s Ratio Prot	0.01	c0.05		c0.12	0.02	0.11	0.02	c0.14		c0.10	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.25	0.25		0.67	0.06	0.20	0.43	0.42		0.64	0.21	0.01
Uniform Delay, d1	37.3	26.5		30.2	17.2	8.3	36.5	20.8		30.7	13.6	12.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		4.4	0.0	0.0	1.4	0.4		1.8	0.1	0.0
Delay (s)	38.4	26.7		34.6	17.2	8.3	37.9	21.1		32.5	13.7	12.4
Level of Service	D	C		C	B	A	D	C		C	B	B
Approach Delay (s)		27.6			15.9			21.9			23.2	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	710	1750	0	540	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2789
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2789
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	747	1842	0	568	768
RTOR Reduction (vph)	0	0	0	0	0	9
Lane Group Flow (vph)	0	747	1842	0	568	759
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		29.2	29.2		18.8	18.8
Effective Green, g (s)		32.2	32.2		21.8	21.8
Actuated g/C Ratio		0.54	0.54		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2820	2820		1288	1013
v/s Ratio Prot		0.14	c0.35		0.16	
v/s Ratio Perm						c0.27
v/c Ratio		0.26	0.65		0.44	0.75
Uniform Delay, d1		7.5	9.9		14.5	16.7
Progression Factor		1.00	0.92		1.00	1.00
Incremental Delay, d2		0.2	0.8		0.2	3.1
Delay (s)		7.7	9.9		14.7	19.8
Level of Service		A	A		B	B
Approach Delay (s)		7.7	9.9		17.6	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	980	0	0	1520	660	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1032	0	0	1600	695	705
RTOR Reduction (vph)	0	0	0	0	0	108
Lane Group Flow (vph)	1032	0	0	1600	695	597
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	31.8			31.8	16.2	16.2
Effective Green, g (s)	34.8			34.8	19.2	19.2
Actuated g/C Ratio	0.58			0.58	0.32	0.32
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3047			2121	1135	921
v/s Ratio Prot	0.20			c0.44	0.20	c0.21
v/s Ratio Perm						
v/c Ratio	0.34			0.75	0.61	0.65
Uniform Delay, d1	6.6			9.4	17.3	17.5
Progression Factor	0.53			2.47	1.00	1.00
Incremental Delay, d2	0.3			2.0	1.0	1.6
Delay (s)	3.8			25.2	18.2	19.1
Level of Service	A			C	B	B
Approach Delay (s)	3.8			25.2	18.7	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	1400	20	20	2060	110	10	5	10	50	5	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			0.98	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1737			1812	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.91			0.76	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1611			1435	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	242	1474	21	21	2168	116	11	5	11	53	5	232
RTOR Reduction (vph)	0	1	0	0	0	33	0	9	0	0	0	18
Lane Group Flow (vph)	242	1494	0	21	2168	83	0	18	0	0	58	214
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	13.4	83.1		3.3	73.0	73.0		18.6			18.6	37.0
Effective Green, g (s)	14.4	86.1		4.3	76.0	76.0		20.6			20.6	39.0
Actuated g/C Ratio	0.12	0.72		0.04	0.63	0.63		0.17			0.17	0.32
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	425	3762		65	3328	1036		276			246	531
v/s Ratio Prot	c0.07	0.28		0.01	c0.41							c0.13
v/s Ratio Perm						0.05		0.01			0.04	
v/c Ratio	0.57	0.40		0.32	0.65	0.08		0.06			0.24	0.40
Uniform Delay, d1	49.9	6.7		56.4	13.7	8.5		41.6			42.9	31.5
Progression Factor	0.98	0.99		1.28	0.08	0.00		1.00			1.00	1.00
Incremental Delay, d2	1.6	0.3		1.5	0.5	0.1		0.1			0.5	0.5
Delay (s)	50.2	6.9		73.8	1.6	0.1		41.7			43.4	32.0
Level of Service	D	A		E	A	A		D			D	C
Approach Delay (s)		13.0			2.2			41.7			34.2	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	40	215	110	50	150
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	42	226	116	53	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	547	284			342	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	547	284			342	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	94			96	
cM capacity (veh/h)	476	755			1217	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	105	342	211
Volume Left	63	0	53
Volume Right	42	116	0
cSH	559	1700	1217
Volume to Capacity	0.19	0.20	0.04
Queue Length 95th (ft)	17	0	3
Control Delay (s)	12.9	0.0	2.3
Lane LOS	B		A
Approach Delay (s)	12.9	0.0	2.3
Approach LOS	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	265	0	10	335	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	279	0	11	353	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				883		
pX, platoon unblocked						
vC, conflicting volume			279		653	279
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			279		653	279
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1284		429	760

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	279	11	353	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1284	1700	760
Volume to Capacity	0.16	0.01	0.21	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	7.8	0.0	9.8
Lane LOS		A		A
Approach Delay (s)	0.0	0.2		9.8
Approach LOS				A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	1210	80	30	1960	50	180	30	40	10	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1535		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.66	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1241		1273	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	1274	84	32	2063	53	189	32	42	11	11	53
RTOR Reduction (vph)	0	0	31	0	0	30	0	6	0	0	0	40
Lane Group Flow (vph)	179	1274	53	32	2063	23	0	257	0	11	11	13
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	73.0	73.0	4.3	49.7	49.7		27.7		27.7	27.7	27.7
Effective Green, g (s)	28.6	76.0	76.0	5.3	52.7	52.7		29.7		29.7	29.7	29.7
Actuated g/C Ratio	0.24	0.63	0.63	0.04	0.44	0.44		0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3328	1010	80	2307	707		307		315	476	397
v/s Ratio Prot	0.10	c0.24		0.02	c0.39						0.01	
v/s Ratio Perm			0.03			0.01		c0.21		0.01		0.01
v/c Ratio	0.41	0.38	0.05	0.40	0.89	0.03		0.84		0.03	0.02	0.03
Uniform Delay, d1	38.6	10.6	8.3	55.8	31.1	19.1		42.9		34.3	34.2	34.3
Progression Factor	0.81	0.74	0.96	0.92	1.12	1.87		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	2.7	4.9	0.1		17.7		0.0	0.0	0.0
Delay (s)	31.7	8.2	8.1	53.8	39.6	35.8		60.5		34.3	34.2	34.3
Level of Service	C	A	A	D	D	D		E		C	C	C
Approach Delay (s)		10.9			39.8			60.5			34.3	
Approach LOS		B			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	420	440	1170	0	0	1490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	442	463	1232	0	0	1568
RTOR Reduction (vph)	0	58	0	0	0	0
Lane Group Flow (vph)	442	405	1232	0	0	1568
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	16.5	16.5	31.5			31.5
Effective Green, g (s)	19.5	19.5	34.5			34.5
Actuated g/C Ratio	0.32	0.32	0.58			0.58
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1152	936	3021			2102
v/s Ratio Prot	0.12	c0.14	0.23			c0.43
v/s Ratio Perm						
v/c Ratio	0.38	0.43	0.41			0.75
Uniform Delay, d1	15.6	15.9	7.1			9.5
Progression Factor	1.00	1.00	1.41			1.00
Incremental Delay, d2	0.4	0.7	0.4			2.5
Delay (s)	16.1	16.6	10.3			12.0
Level of Service	B	B	B			B
Approach Delay (s)	16.3		10.3			12.0
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	650	1580	0	940	1360	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	684	1663	0	989	1432	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	684	1662	0	989	1432	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	36.0	36.0		17.0	17.0	
Effective Green, g (s)	39.0	39.0		20.0	20.0	
Actuated g/C Ratio	0.60	0.60		0.31	0.31	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2128	1728		1616	1616	
v/s Ratio Prot	0.19	c0.58		0.19	c0.27	
v/s Ratio Perm						
v/c Ratio	0.32	0.96		0.61	0.89	
Uniform Delay, d1	6.4	12.3		19.2	21.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	13.6		1.7	7.6	
Delay (s)	6.5	25.9		20.9	29.0	
Level of Service	A	C		C	C	
Approach Delay (s)	20.2			20.9	29.0	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	80	70	150	100	220	110	840	160	800	1620	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3260		1829	1829	1554	1829	5255	1605	3547	5031	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3260		1829	1829	1554	1829	5255	1605	3547	5031	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	242	84	74	158	105	232	116	884	168	842	1705	547
RTOR Reduction (vph)	0	33	0	0	0	84	0	0	0	0	39	0
Lane Group Flow (vph)	128	239	0	158	105	148	116	884	168	842	2213	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	16.6	16.6		13.9	13.9	44.4	11.2	37.0	120.0	30.5	56.3	
Effective Green, g (s)	19.6	19.6		16.9	16.9	50.4	12.2	40.0	120.0	31.5	59.3	
Actuated g/C Ratio	0.16	0.16		0.14	0.14	0.42	0.10	0.33	1.00	0.26	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	271	532		257	257	652	185	1751	1605	931	2486	
v/s Ratio Prot	c0.08	0.07		c0.09	0.06	0.10	0.06	0.17		c0.24	c0.44	
v/s Ratio Perm									0.10			
v/c Ratio	0.47	0.45		0.61	0.41	0.23	0.63	0.50	0.10	0.90	0.89	
Uniform Delay, d1	45.5	45.3		48.5	47.0	22.3	51.7	32.1	0.0	42.8	27.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.28	0.50	1.00	0.97	1.00	
Incremental Delay, d2	0.5	0.2		3.1	0.4	0.1	4.6	1.0	0.1	4.1	1.7	
Delay (s)	46.0	45.6		51.5	47.4	22.4	70.7	17.1	0.1	45.5	29.1	
Level of Service	D	D		D	D	C	E	B	A	D	C	
Approach Delay (s)		45.7			37.0			20.0			33.5	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	5	100	30	10	10	150	260	20	10	210	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	5	105	32	11	11	158	274	21	11	221	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	5	105	42	11	158	295	11	232
Volume Left (vph)	0	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	11
Hadj (s)	0.03	-0.67	0.41	-0.67	0.53	-0.02	0.53	0.00
Departure Headway (s)	6.2	5.5	6.7	5.6	5.7	5.2	6.0	5.4
Degree Utilization, x	0.01	0.16	0.08	0.02	0.25	0.42	0.02	0.35
Capacity (veh/h)	528	594	491	578	609	675	575	639
Control Delay (s)	8.1	8.4	9.1	7.5	9.5	10.8	7.9	10.1
Approach Delay (s)	8.4		8.7		10.3		10.0	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	170	90	410	30	40	50	290	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1759		1829	1925	1619	1829	1750		1737	1754	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1759		1829	1925	1619	1829	1750		1737	1754	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	179	95	432	32	42	53	305	63	11
RTOR Reduction (vph)	0	18	0	0	0	176	0	44	0	0	1	0
Lane Group Flow (vph)	11	24	0	179	95	256	32	51	0	156	222	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	5.3		10.4	14.8	31.5	8.5	8.5		16.7	16.7	
Effective Green, g (s)	1.9	7.3		11.4	16.8	35.5	10.5	10.5		18.7	18.7	
Actuated g/C Ratio	0.03	0.12		0.19	0.28	0.59	0.18	0.18		0.31	0.31	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	58	214		348	539	1040	320	306		542	547	
v/s Ratio Prot	c0.01	0.01		c0.10	0.05	c0.08	0.02	c0.03		0.09	c0.13	
v/s Ratio Perm						0.08						
v/c Ratio	0.19	0.11		0.51	0.18	0.25	0.10	0.17		0.29	0.41	
Uniform Delay, d1	28.3	23.4		21.8	16.3	5.8	20.7	21.0		15.6	16.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.2		1.3	0.2	0.1	0.1	0.3		0.3	0.5	
Delay (s)	29.8	23.6		23.1	16.5	5.9	20.9	21.2		15.9	16.7	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		24.9			11.7			21.2			16.4	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	730	340	130	1130	140	640	840	130	340	700	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	200	768	358	137	1189	147	674	884	137	358	737	242
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	200	768	358	137	1189	147	674	884	137	358	737	242
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.7	31.8	56.8	8.1	31.2	120.0	25.0	44.4	120.0	15.7	33.1	120.0
Effective Green, g (s)	9.7	34.8	62.8	9.1	34.2	120.0	28.0	47.4	120.0	16.7	36.1	120.0
Actuated g/C Ratio	0.08	0.29	0.52	0.08	0.29	1.00	0.23	0.39	1.00	0.14	0.30	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	286	1523	821	268	1497	1588	1203	1444	1593	493	1580	1588
v/s Ratio Prot	c0.06	0.15	0.10	0.04	c0.23		0.13	c0.24		c0.10	0.14	
v/s Ratio Perm			0.13			0.09			0.09			c0.15
v/c Ratio	0.70	0.50	0.44	0.51	0.79	0.09	0.56	0.61	0.09	0.73	0.47	0.15
Uniform Delay, d1	53.7	35.4	17.7	53.3	39.6	0.0	40.6	29.0	0.0	49.5	34.1	0.0
Progression Factor	0.83	0.84	0.62	1.33	0.98	1.00	0.63	0.47	1.00	0.66	0.59	1.00
Incremental Delay, d2	5.6	0.5	0.1	0.6	3.2	0.1	0.3	1.8	0.1	4.4	1.0	0.2
Delay (s)	50.3	30.1	11.0	71.7	42.0	0.1	25.8	15.5	0.1	37.0	21.2	0.2
Level of Service	D	C	B	E	D	A	C	B	A	D	C	A
Approach Delay (s)		28.0			40.6			18.3			21.6	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	370	430	380	320	70	450	1200	400	160	710	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	389	453	400	337	74	474	1263	421	168	747	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	168	389	453	400	337	74	474	1263	421	168	747	28
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.5	20.2	120.0	17.2	27.9	120.0	30.0	54.1	120.0	8.5	32.6	32.6
Effective Green, g (s)	10.5	23.2	120.0	18.2	30.9	120.0	31.0	57.1	120.0	9.5	35.6	35.6
Actuated g/C Ratio	0.09	0.19	1.00	0.15	0.26	1.00	0.26	0.48	1.00	0.08	0.30	0.30
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	310	707	1603	537	941	1613	916	2500	1615	280	1558	471
v/s Ratio Prot	0.05	c0.11		c0.11	0.09		0.13	c0.24		c0.05	c0.14	
v/s Ratio Perm			0.28			0.05			0.26			0.02
v/c Ratio	0.54	0.55	0.28	0.74	0.36	0.05	0.52	0.51	0.26	0.60	0.48	0.06
Uniform Delay, d1	52.4	43.7	0.0	48.7	36.4	0.0	38.1	21.7	0.0	53.4	34.6	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.55	1.00	0.84	0.64	1.00
Incremental Delay, d2	1.0	1.6	0.4	4.9	0.5	0.1	0.2	0.6	0.3	2.3	1.0	0.2
Delay (s)	53.5	45.3	0.4	53.6	36.9	0.1	25.8	12.5	0.3	47.3	23.4	30.5
Level of Service	D	D	A	D	D	A	C	B	A	D	C	C
Approach Delay (s)		26.5			41.8			13.1			28.0	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	350	50	30	1260	60	40	140	20	40	200	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3573		1829	5206		3547	3570		1829	4414	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3573		1829	5206		3547	3570		1829	4414	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	368	53	32	1326	63	42	147	21	42	211	232
RTOR Reduction (vph)	0	6	0	0	3	0	0	11	0	0	185	0
Lane Group Flow (vph)	168	415	0	32	1386	0	42	157	0	42	258	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.0	67.5		5.2	61.7		5.8	20.2		7.1	21.5	
Effective Green, g (s)	12.0	70.5		6.2	64.7		6.8	23.2		8.1	24.5	
Actuated g/C Ratio	0.10	0.59		0.05	0.54		0.06	0.19		0.07	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354	2099		94	2806		200	690		123	901	
v/s Ratio Prot	c0.05	0.12		0.02	c0.27		0.01	0.04		c0.02	c0.06	
v/s Ratio Perm												
v/c Ratio	0.47	0.20		0.34	0.49		0.21	0.23		0.34	0.29	
Uniform Delay, d1	51.0	11.6		54.9	17.4		54.0	40.8		53.4	40.4	
Progression Factor	0.81	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.2		2.2	0.6		0.5	0.2		1.7	0.2	
Delay (s)	42.3	15.3		57.1	18.0		54.6	41.0		55.1	40.5	
Level of Service	D	B		E	B		D	D		E	D	
Approach Delay (s)		23.0			18.9			43.7			41.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	540	810	2350	0	0	1520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	568	853	2474	0	0	1600
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	568	853	2474	0	0	1600
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.5	29.5	44.5			44.5
Effective Green, g (s)	30.6	30.6	45.6			45.6
Actuated g/C Ratio	0.37	0.37	0.55			0.55
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1320	1072	2915			2915
v/s Ratio Prot	0.16	c0.30	c0.47			0.30
v/s Ratio Perm						
v/c Ratio	0.43	0.80	0.85			0.55
Uniform Delay, d1	19.3	23.0	15.4			11.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	4.2	2.5			0.2
Delay (s)	19.5	27.2	17.9			11.9
Level of Service	B	C	B			B
Approach Delay (s)	24.1		17.9			11.9
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	770	0	420	0	0	0	0	2380	850	0	1600	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.97		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2839					5255	1583		5079	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2839					5255	1583		5079	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	811	0	442	0	0	0	0	2505	895	0	1684	484
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	291	0	86	0
Lane Group Flow (vph)	811	0	417	0	0	0	0	2505	604	0	2082	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	16.7		16.7					32.0	32.0		32.0	
Effective Green, g (s)	17.8		17.8					33.1	33.1		33.1	
Actuated g/C Ratio	0.31		0.31					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1109		888					3056	920		2954	
v/s Ratio Prot								c0.48			0.41	
v/s Ratio Perm	c0.23		0.15						0.38			
v/c Ratio	0.73		0.47					0.82	0.66		0.70	
Uniform Delay, d1	17.4		15.7					9.5	8.1		8.4	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		0.4					1.8	1.7		0.8	
Delay (s)	19.9		16.1					11.3	9.8		9.2	
Level of Service	B		B					B	A		A	
Approach Delay (s)		18.6			0.0			10.9			9.2	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	80	60	100	60	460	30	460	80	480	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1776		1829	1925	2880	1829	5121		3547	3657	1578
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1776		1829	1925	2880	1829	5121		3547	3657	1578
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	84	63	105	63	484	32	484	84	505	589	32
RTOR Reduction (vph)	0	30	0	0	0	220	0	25	0	0	0	18
Lane Group Flow (vph)	32	117	0	105	63	264	32	543	0	505	589	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	2.2	14.4		6.7	18.9	36.9	2.2	20.0		12.0	29.8	29.8
Effective Green, g (s)	3.2	17.4		7.7	21.9	39.9	3.2	23.0		13.0	32.8	32.8
Actuated g/C Ratio	0.04	0.24		0.11	0.30	0.55	0.04	0.31		0.18	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	80	422		192	576	1571	80	1611		630	1640	708
v/s Ratio Prot	0.02	c0.07		c0.06	0.03	0.09	0.02	0.11		c0.14	c0.16	
v/s Ratio Perm												0.01
v/c Ratio	0.40	0.28		0.55	0.11	0.17	0.40	0.34		0.80	0.36	0.02
Uniform Delay, d1	34.0	22.7		31.0	18.5	8.3	34.0	19.2		28.8	13.2	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		1.7	0.0	0.0	1.2	0.3		6.9	0.3	0.0
Delay (s)	35.2	22.8		32.7	18.6	8.3	35.2	19.5		35.7	13.5	11.2
Level of Service	D	C		C	B	A	D	B		D	B	B
Approach Delay (s)		25.1			13.2			20.3			23.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2210	1300	0	700	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2787
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2326	1368	0	737	463
RTOR Reduction (vph)	0	0	0	0	0	20
Lane Group Flow (vph)	0	2326	1368	0	737	444
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		30.0	30.0		18.0	18.0
Effective Green, g (s)		33.0	33.0		21.0	21.0
Actuated g/C Ratio		0.55	0.55		0.35	0.35
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2890	2890		1241	975
v/s Ratio Prot		c0.44	0.26		c0.21	
v/s Ratio Perm						0.16
v/c Ratio		0.80	0.47		0.59	0.45
Uniform Delay, d1		10.9	8.2		16.0	15.1
Progression Factor		1.16	0.88		1.00	1.00
Incremental Delay, d2		1.5	0.4		0.8	0.3
Delay (s)		14.1	7.7		16.8	15.4
Level of Service		B	A		B	B
Approach Delay (s)		14.1	7.7		16.2	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	131.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2020	0	0	1680	320	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2126	0	0	1768	337	400
RTOR Reduction (vph)	0	0	0	0	0	26
Lane Group Flow (vph)	2126	0	0	1768	337	374
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	87.4			87.4	20.6	20.6
Effective Green, g (s)	90.4			90.4	23.6	23.6
Actuated g/C Ratio	0.75			0.75	0.20	0.20
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3958			2754	697	566
v/s Ratio Prot	0.40			c0.48	0.09	c0.13
v/s Ratio Perm						
v/c Ratio	0.54			0.64	0.48	0.66
Uniform Delay, d1	6.1			7.1	42.8	44.5
Progression Factor	1.14			0.40	1.00	1.00
Incremental Delay, d2	0.4			0.7	0.5	2.9
Delay (s)	7.4			3.6	43.3	47.4
Level of Service	A			A	D	D
Approach Delay (s)	7.4			3.6	45.5	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	2020	30	20	2110	140	20	5	20	120	5	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			0.98	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5243		1829	5255	1636		1724			1808	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87			0.73	1.00
Satd. Flow (perm)	3547	5243		1829	5255	1636		1534			1377	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	368	2126	32	21	2221	147	21	5	21	126	5	442
RTOR Reduction (vph)	0	1	0	0	0	44	0	16	0	0	0	15
Lane Group Flow (vph)	368	2157	0	21	2221	103	0	31	0	0	131	427
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	17.9	73.6		3.3	59.0	59.0		28.1			28.1	51.0
Effective Green, g (s)	18.9	76.6		4.3	62.0	62.0		30.1			30.1	53.0
Actuated g/C Ratio	0.16	0.64		0.04	0.52	0.52		0.25			0.25	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	558	3346		65	2715	845		384			345	722
v/s Ratio Prot	c0.10	0.41		0.01	c0.42							c0.26
v/s Ratio Perm						0.06		0.02			0.10	
v/c Ratio	0.66	0.64		0.32	0.82	0.12		0.08			0.38	0.59
Uniform Delay, d1	47.5	13.3		56.4	24.3	15.0		34.4			37.2	25.3
Progression Factor	1.06	0.87		1.40	0.57	0.10		1.00			1.00	1.00
Incremental Delay, d2	2.4	0.8		2.1	2.2	0.2		0.1			0.7	1.3
Delay (s)	53.0	12.5		81.0	16.0	1.7		34.5			37.9	26.6
Level of Service	D	B		F	B	A		C			D	C
Approach Delay (s)		18.4			15.7			34.5			29.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	60	270	130	70	270
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	63	284	137	74	284
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	784	353			421	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	784	353			421	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	44	91			94	
cM capacity (veh/h)	338	691			1138	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	253	421	358
Volume Left	189	0	74
Volume Right	63	137	0
cSH	388	1700	1138
Volume to Capacity	0.65	0.25	0.06
Queue Length 95th (ft)	111	0	5
Control Delay (s)	30.0	0.0	2.2
Lane LOS	D		A
Approach Delay (s)	30.0	0.0	2.2
Approach LOS	D		

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	485	10	35	460	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	511	11	37	484	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1025		
pX, platoon unblocked						
vC, conflicting volume			521		1074	516
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			521		1074	516
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		96	89
cM capacity (veh/h)			1045		235	559

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	521	37	484	74
Volume Left	0	37	0	11
Volume Right	11	0	0	63
cSH	1700	1045	1700	467
Volume to Capacity	0.31	0.04	0.28	0.16
Queue Length 95th (ft)	0	3	0	14
Control Delay (s)	0.0	8.6	0.0	14.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		14.1
Approach LOS				B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	1900	220	40	1930	10	100	20	40	50	30	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1521		1823	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.79		0.64	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1245		1227	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	2000	232	42	2032	11	105	21	42	53	32	253
RTOR Reduction (vph)	0	0	53	0	0	5	0	11	0	0	0	202
Lane Group Flow (vph)	42	2000	179	42	2032	6	0	157	0	53	32	51
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	77.2	77.2	5.8	62.2	62.2		22.0		22.0	22.0	22.0
Effective Green, g (s)	21.8	80.2	80.2	6.8	65.2	65.2		24.0		24.0	24.0	24.0
Actuated g/C Ratio	0.18	0.67	0.67	0.06	0.54	0.54		0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3512	1065	103	2855	874		249		245	385	321
v/s Ratio Prot	0.02	c0.38		0.02	c0.39						0.02	
v/s Ratio Perm			0.11			0.00		c0.13		0.04		0.03
v/c Ratio	0.13	0.57	0.17	0.41	0.71	0.01		0.63		0.22	0.08	0.16
Uniform Delay, d1	41.1	10.7	7.4	54.7	20.4	12.6		43.9		40.1	39.0	39.7
Progression Factor	0.71	0.69	1.01	1.21	1.34	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.5	0.3	1.9	1.1	0.0		4.9		0.4	0.1	0.2
Delay (s)	29.2	7.9	7.8	67.9	28.5	12.6		48.9		40.6	39.1	39.9
Level of Service	C	A	A	E	C	B		D		D	D	D
Approach Delay (s)		8.3			29.2			48.9			39.9	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	290	620	2240	0	0	1260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	305	653	2358	0	0	1326
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	305	650	2358	0	0	1326
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	17.6	17.6	30.4			30.4
Effective Green, g (s)	20.6	20.6	33.4			33.4
Actuated g/C Ratio	0.34	0.34	0.56			0.56
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1217	988	2925			2035
v/s Ratio Prot	0.09	c0.23	c0.45			0.36
v/s Ratio Perm						
v/c Ratio	0.25	0.66	0.81			0.65
Uniform Delay, d1	14.2	16.7	10.7			9.3
Progression Factor	1.00	1.00	0.83			1.00
Incremental Delay, d2	0.2	2.1	1.2			1.6
Delay (s)	14.4	18.8	10.1			10.9
Level of Service	B	B	B			B
Approach Delay (s)	17.4		10.1			10.9
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1130	890	0	2170	1050	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1189	937	0	2284	1105	0
RTOR Reduction (vph)	0	58	0	0	0	0
Lane Group Flow (vph)	1189	879	0	2284	1105	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	14.0	14.0		19.0	19.0	
Effective Green, g (s)	17.0	17.0		22.0	22.0	
Actuated g/C Ratio	0.38	0.38		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1339	1088		2569	2569	
v/s Ratio Prot	c0.34	0.31		c0.43	0.21	
v/s Ratio Perm						
v/c Ratio	0.89	0.81		0.89	0.43	
Uniform Delay, d1	13.1	12.5		10.4	7.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.3	4.2		5.1	0.5	
Delay (s)	20.4	16.8		15.5	8.0	
Level of Service	C	B		B	A	
Approach Delay (s)	18.8			15.5	8.0	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	660	200	120	190	150	740	140	1130	180	420	1050	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3300		1829	1677	1554	1829	5255	1605	3547	4970	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3300		1829	1677	1554	1829	5255	1605	3547	4970	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	695	211	126	200	158	779	147	1189	189	442	1105	495
RTOR Reduction (vph)	0	16	0	0	37	72	0	0	0	0	63	0
Lane Group Flow (vph)	361	655	0	200	316	512	147	1189	189	442	1537	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.1	26.1		19.0	19.0	45.0	13.3	30.9	120.0	22.0	39.6	
Effective Green, g (s)	29.1	29.1		22.0	22.0	47.0	14.3	33.9	120.0	23.0	42.6	
Actuated g/C Ratio	0.24	0.24		0.18	0.18	0.39	0.12	0.28	1.00	0.19	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	403	800		335	307	608	217	1484	1605	679	1764	
v/s Ratio Prot	c0.22	0.20		0.11	c0.19	0.33	0.08	c0.23		0.12	c0.31	
v/s Ratio Perm									0.12			
v/c Ratio	0.90	0.82		0.60	1.03	0.84	0.68	0.80	0.12	0.65	0.87	
Uniform Delay, d1	44.0	43.0		44.9	49.0	33.1	50.6	39.9	0.0	44.8	36.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.15	0.69	1.00	0.89	0.87	
Incremental Delay, d2	21.2	6.2		1.9	59.4	9.9	6.3	4.5	0.1	1.4	5.2	
Delay (s)	65.2	49.2		46.8	108.4	43.0	64.3	31.9	0.1	41.5	36.6	
Level of Service	E	D		D	F	D	E	C	A	D	D	
Approach Delay (s)		54.8			64.0			31.1			37.7	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	170	150	10	20	150	290	90	20	290	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	11	179	158	11	21	158	305	95	21	305	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	21	179	168	21	158	400	21	316
Volume Left (vph)	11	0	158	0	158	0	21	0
Volume Right (vph)	0	179	0	21	0	95	0	11
Hadj (s)	0.28	-0.67	0.50	-0.67	0.53	-0.13	0.53	0.01
Departure Headway (s)	7.6	6.6	7.7	6.6	6.9	6.2	7.2	6.6
Degree Utilization, x	0.04	0.33	0.36	0.04	0.30	0.69	0.04	0.58
Capacity (veh/h)	438	501	433	500	505	558	476	514
Control Delay (s)	9.7	11.6	13.9	8.6	11.6	20.7	9.3	17.3
Approach Delay (s)	11.4		13.3		18.1		16.8	
Approach LOS	B		B		C		C	

Intersection Summary			
Delay	16.0		
Level of Service	C		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	110	40	40	120	480	10	60	200	560	100	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1836		1829	1925	1622	1829	1684		1737	1758	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1836		1829	1925	1622	1829	1684		1737	1758	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	116	42	42	126	505	11	63	211	589	105	11
RTOR Reduction (vph)	0	13	0	0	0	216	0	133	0	0	1	0
Lane Group Flow (vph)	11	145	0	42	126	289	11	141	0	324	380	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	10.4		3.3	12.7	34.4	12.8	12.8		21.7	21.7	
Effective Green, g (s)	2.0	12.4		4.3	14.7	38.4	14.8	14.8		23.7	23.7	
Actuated g/C Ratio	0.03	0.18		0.06	0.22	0.57	0.22	0.22		0.35	0.35	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	54	338		117	421	999	402	370		612	620	
v/s Ratio Prot	0.01	c0.08		c0.02	0.07	0.10	0.01	c0.08		0.19	c0.22	
v/s Ratio Perm						0.08						
v/c Ratio	0.20	0.43		0.36	0.30	0.29	0.03	0.38		0.53	0.61	
Uniform Delay, d1	31.8	24.3		30.1	21.9	7.4	20.6	22.3		17.3	18.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.9		1.9	0.4	0.2	0.0	0.7		0.8	1.8	
Delay (s)	33.7	25.1		32.0	22.3	7.6	20.6	23.0		18.1	19.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		25.7			11.8			22.9			19.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	1200	590	180	1130	150	660	800	90	260	900	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	1263	621	189	1189	158	695	842	95	274	947	200
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	211	1263	621	189	1189	158	695	842	95	274	947	200
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	11.3	33.0	53.0	9.9	31.6	120.0	20.0	43.8	120.0	13.3	36.1	120.0
Effective Green, g (s)	12.3	36.0	57.0	10.9	34.6	120.0	22.0	46.8	120.0	14.3	39.1	120.0
Actuated g/C Ratio	0.10	0.30	0.48	0.09	0.29	1.00	0.18	0.39	1.00	0.12	0.33	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	363	1576	781	322	1515	1588	945	1426	1593	422	1712	1588
v/s Ratio Prot	0.06	c0.24	c0.15	0.05	c0.23		0.13	0.23		c0.08	c0.18	
v/s Ratio Perm			0.25			0.10			0.06			0.13
v/c Ratio	0.58	0.80	0.80	0.59	0.78	0.10	0.74	0.59	0.06	0.65	0.55	0.13
Uniform Delay, d1	51.4	38.7	26.6	52.4	39.3	0.0	46.3	29.0	0.0	50.5	33.3	0.0
Progression Factor	1.23	1.29	1.45	0.92	0.91	1.00	0.75	0.61	1.00	1.46	0.92	1.00
Incremental Delay, d2	1.3	3.0	4.6	1.7	3.1	0.1	2.5	1.8	0.1	2.5	1.3	0.2
Delay (s)	64.6	52.9	43.1	50.1	38.7	0.1	37.2	19.4	0.1	76.4	32.0	0.2
Level of Service	E	D	D	D	D	A	D	B	A	E	C	A
Approach Delay (s)		51.2			36.2			25.8			36.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	240	597	600	280	140	370	830	340	120	1350	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	253	628	632	295	147	389	874	358	126	1421	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	125	253	628	632	295	147	389	874	358	126	1421	36
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.8	17.9	120.0	23.8	34.9	120.0	16.0	51.5	120.0	6.8	42.3	42.3
Effective Green, g (s)	7.8	20.9	120.0	24.8	37.9	120.0	17.0	54.5	120.0	7.8	45.3	45.3
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.14	0.45	1.00	0.06	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	230	636	1603	733	1155	1613	502	2386	1615	230	1983	599
v/s Ratio Prot	0.04	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.27	
v/s Ratio Perm			c0.39			0.09			0.22			0.02
v/c Ratio	0.54	0.40	0.39	0.86	0.26	0.09	0.77	0.37	0.22	0.55	0.72	0.06
Uniform Delay, d1	54.4	44.0	0.0	46.0	30.5	0.0	49.7	21.4	0.0	54.4	31.9	23.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.29	1.61	1.00	1.07	0.71	1.00
Incremental Delay, d2	1.4	0.9	0.7	9.9	0.2	0.1	6.5	0.4	0.3	1.4	2.2	0.2
Delay (s)	55.8	44.8	0.7	55.9	30.8	0.1	70.4	35.0	0.3	59.6	24.9	24.0
Level of Service	E	D	A	E	C	A	E	D	A	E	C	C
Approach Delay (s)		18.7			41.3			35.9			27.5	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	1260	30	20	560	40	70	180	20	60	270	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3641		1829	5183		3547	3587		1829	4436	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3641		1829	5183		3547	3587		1829	4436	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	1326	32	21	589	42	74	189	21	63	284	295
RTOR Reduction (vph)	0	1	0	0	5	0	0	8	0	0	174	0
Lane Group Flow (vph)	253	1357	0	21	626	0	74	202	0	63	405	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	67.3		3.3	56.8		6.7	21.5		7.9	22.7	
Effective Green, g (s)	14.8	70.3		4.3	59.8		7.7	24.5		8.9	25.7	
Actuated g/C Ratio	0.12	0.59		0.04	0.50		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	437	2133		65	2582		227	732		135	950	
v/s Ratio Prot	c0.07	c0.37		0.01	0.12		0.02	0.06		c0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.58	0.64		0.32	0.24		0.33	0.28		0.47	0.43	
Uniform Delay, d1	49.7	16.4		56.4	17.2		53.7	40.3		53.3	40.8	
Progression Factor	1.26	0.40		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	1.2		2.9	0.2		0.8	0.2		2.5	0.3	
Delay (s)	64.0	7.7		59.3	17.4		54.5	40.5		55.8	41.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.5			18.7			44.1			42.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1060	1070	0	370	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1116	1126	0	389	663
RTOR Reduction (vph)	0	0	0	0	0	65
Lane Group Flow (vph)	0	1116	1126	0	389	598
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.4	31.4		16.6	16.6
Effective Green, g (s)		34.4	34.4		19.6	19.6
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3042	3042		1170	949
v/s Ratio Prot		0.21	c0.21		0.11	
v/s Ratio Perm						c0.21
v/c Ratio		0.37	0.37		0.33	0.63
Uniform Delay, d1		6.9	6.9		15.3	17.1
Progression Factor		1.00	0.83		1.00	1.00
Incremental Delay, d2		0.3	0.3		0.2	1.3
Delay (s)		7.3	6.1		15.4	18.4
Level of Service		A	A		B	B
Approach Delay (s)		7.3	6.1		17.3	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	820	0	0	1030	330	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	863	0	0	1084	347	200
RTOR Reduction (vph)	0	0	0	0	0	153
Lane Group Flow (vph)	863	0	0	1084	347	47
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	37.0			37.0	11.0	11.0
Effective Green, g (s)	40.0			40.0	14.0	14.0
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3538			2462	836	678
v/s Ratio Prot	0.16			c0.29	c0.10	0.02
v/s Ratio Perm						
v/c Ratio	0.24			0.44	0.42	0.07
Uniform Delay, d1	4.0			4.7	19.5	17.9
Progression Factor	0.92			1.77	1.00	1.00
Incremental Delay, d2	0.2			0.5	0.3	0.0
Delay (s)	3.8			8.9	19.9	18.0
Level of Service	A			A	B	B
Approach Delay (s)	3.8			8.9	19.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	830	20	10	1270	50	30	10	10	60	10	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.96	1.00
Satd. Flow (prot)	3583	5285		1847	5307	1593		1827			1846	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.82			0.77	1.00
Satd. Flow (perm)	3583	5285		1847	5307	1593		1546			1475	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	874	21	11	1337	53	32	11	11	63	11	189
RTOR Reduction (vph)	0	1	0	0	0	18	0	8	0	0	0	25
Lane Group Flow (vph)	168	894	0	11	1337	35	0	46	0	0	74	164
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	10.9	86.6		1.5	77.2	77.2		16.9			16.9	32.8
Effective Green, g (s)	11.9	89.6		2.5	80.2	80.2		18.9			18.9	34.8
Actuated g/C Ratio	0.10	0.75		0.02	0.67	0.67		0.16			0.16	0.29
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	355	3946		38	3546	1064		243			232	479
v/s Ratio Prot	c0.05	0.17		0.01	c0.25							c0.10
v/s Ratio Perm						0.02		0.03			0.05	
v/c Ratio	0.47	0.23		0.29	0.38	0.03		0.19			0.32	0.34
Uniform Delay, d1	51.1	4.6		57.9	8.8	6.8		43.9			44.8	33.6
Progression Factor	1.00	1.13		1.29	0.27	0.00		1.00			1.00	1.00
Incremental Delay, d2	1.0	0.1		3.7	0.3	0.1		0.4			0.8	0.4
Delay (s)	52.1	5.4		78.5	2.7	0.1		44.3			45.6	34.0
Level of Service	D	A		E	A	A		D			D	C
Approach Delay (s)		12.8			3.2			44.3			37.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	40	160	50	40	190
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	42	168	53	42	200
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	479	195			221	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	479	195			221	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	95			97	
cM capacity (veh/h)	528	847			1348	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	95	221	242
Volume Left	53	0	42
Volume Right	42	53	0
cSH	634	1700	1348
Volume to Capacity	0.15	0.13	0.03
Queue Length 95th (ft)	13	0	2
Control Delay (s)	11.7	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	11.7	0.0	1.6
Approach LOS	B		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	230	10	10	210	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	242	11	11	221	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			253		489	247
vC1, stage 1 conf vol					247	
vC2, stage 2 conf vol					242	
vCu, unblocked vol			253		489	247
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	97
cM capacity (veh/h)			1313		690	791

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	253	11	221	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	1313	1700	754
Volume to Capacity	0.15	0.01	0.13	0.04
Queue Length 95th (ft)	0	1	0	3
Control Delay (s)	0.0	7.8	0.0	10.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.4		10.0
Approach LOS				A

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	560	110	160	190	130	320	210	1250	210	350	630	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3274		1847	1847	1570	1847	5307	1627	3583	4917	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3274		1847	1847	1570	1847	5307	1627	3583	4917	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	589	116	168	200	137	337	221	1316	221	368	663	516
RTOR Reduction (vph)	0	38	0	0	0	57	0	0	0	0	106	0
Lane Group Flow (vph)	318	517	0	200	137	280	221	1316	221	368	1073	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	25.4	25.4		15.2	15.2	30.2	17.2	42.4	120.0	15.0	40.2	
Effective Green, g (s)	28.4	28.4		18.2	18.2	36.2	18.2	45.4	120.0	16.0	43.2	
Actuated g/C Ratio	0.24	0.24		0.15	0.15	0.30	0.15	0.38	1.00	0.13	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	397	774		280	280	473	280	2007	1627	477	1770	
v/s Ratio Prot	c0.19	0.16		c0.11	0.07	0.18	c0.12	c0.25		0.10	0.22	
v/s Ratio Perm									c0.14			
v/c Ratio	0.80	0.67		0.71	0.49	0.59	0.79	0.66	0.14	0.77	0.61	
Uniform Delay, d1	43.1	41.5		48.4	46.6	35.6	49.1	30.8	0.0	50.2	31.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.33	0.72	1.00	1.00	1.00	
Incremental Delay, d2	10.5	1.7		7.0	0.5	1.3	12.6	1.7	0.2	6.9	1.6	
Delay (s)	53.6	43.2		55.4	47.1	36.9	77.9	23.8	0.2	57.2	33.0	
Level of Service	D	D		E	D	D	E	C	A	E	C	
Approach Delay (s)		47.0			44.5			27.6			38.7	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	40	240	240	80	40	260	170	140	30	230	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	42	253	253	84	42	274	179	147	32	242	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	53	253	337	42	274	326	32	253
Volume Left (vph)	11	0	253	0	274	0	32	0
Volume Right (vph)	0	253	0	42	0	147	0	11
Hadj (s)	0.12	-0.68	0.39	-0.68	0.52	-0.30	0.52	-0.01
Departure Headway (s)	8.1	7.3	8.1	7.0	8.0	7.2	8.5	7.9
Degree Utilization, x	0.12	0.51	0.76	0.08	0.61	0.65	0.07	0.56
Capacity (veh/h)	419	462	426	487	435	484	403	429
Control Delay (s)	11.0	16.6	31.4	9.5	21.4	21.4	10.9	19.2
Approach Delay (s)	15.6		28.9		21.4		18.3	
Approach LOS	C		D		C		C	

Intersection Summary			
Delay	21.5		
Level of Service	C		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	50	540	20	60	60	620	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1847	1832		1847	1944	1652	1847	1784		1754	1779	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1847	1832		1847	1944	1652	1847	1784		1754	1779	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	53	568	21	63	63	653	137	11
RTOR Reduction (vph)	0	19	0	0	0	215	0	39	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	53	353	21	87	0	333	467	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.9	8.3		4.0	10.4	39.1	9.3	9.3		28.7	28.7	
Effective Green, g (s)	2.9	10.3		5.0	12.4	43.1	11.3	11.3		30.7	30.7	
Actuated g/C Ratio	0.04	0.15		0.07	0.18	0.62	0.16	0.16		0.44	0.44	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	77	272		133	347	1098	301	290		777	788	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.14	0.01	c0.05		0.19	c0.26	
v/s Ratio Perm						0.07						
v/c Ratio	0.27	0.39		0.32	0.15	0.32	0.07	0.30		0.43	0.59	
Uniform Delay, d1	32.2	26.7		30.5	24.0	6.2	24.6	25.5		13.3	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.9		1.4	0.2	0.2	0.1	0.6		0.4	1.2	
Delay (s)	34.1	27.6		31.9	24.2	6.4	24.6	26.1		13.7	15.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		28.5			9.4			25.9			14.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	350	290	170	590	150	370	1140	70	190	570	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	368	305	179	621	158	389	1200	74	200	600	168
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	232	368	305	179	621	158	389	1200	74	200	600	168
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	21.0	25.0	6.0	20.0	90.0	4.0	35.8	90.0	7.2	37.0	90.0
Effective Green, g (s)	8.0	24.0	31.0	7.0	23.0	90.0	7.0	38.8	90.0	8.2	40.0	90.0
Actuated g/C Ratio	0.09	0.27	0.34	0.08	0.26	1.00	0.08	0.43	1.00	0.09	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	318	1415	563	278	1356	1632	405	1592	1631	326	2358	1652
v/s Ratio Prot	c0.06	0.07	c0.04	0.05	0.12		0.07	c0.32		c0.06	0.11	
v/s Ratio Perm			0.14			0.10			0.05			c0.10
v/c Ratio	0.73	0.26	0.54	0.64	0.46	0.10	0.96	0.75	0.05	0.61	0.25	0.10
Uniform Delay, d1	39.9	26.0	23.8	40.3	28.2	0.0	41.4	21.6	0.0	39.4	15.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.2	0.6	3.8	0.5	0.1	34.3	3.4	0.1	2.4	0.3	0.1
Delay (s)	46.9	26.2	24.3	44.1	28.8	0.1	75.6	24.9	0.1	41.8	15.9	0.1
Level of Service	D	C	C	D	C	A	E	C	A	D	B	A
Approach Delay (s)		30.9			26.9			35.7			18.5	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	900	810	1216	0	0	1327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	947	853	1280	0	0	1397
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	947	844	1280	0	0	1397
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	26.2	26.2	21.7			21.7
Effective Green, g (s)	27.3	27.3	22.8			22.8
Actuated g/C Ratio	0.49	0.49	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1726	1401	2135			2135
v/s Ratio Prot	0.27	c0.29	0.24			c0.27
v/s Ratio Perm						
v/c Ratio	0.55	0.60	0.60			0.65
Uniform Delay, d1	10.1	10.5	13.1			13.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	0.7	0.5			0.7
Delay (s)	10.4	11.2	13.5			14.2
Level of Service	B	B	B			B
Approach Delay (s)	10.8		13.5			14.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	6.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	500	0	788	0	0	0	0	1020	370	0	1577	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.96	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2837					5255	1575		5025	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2837					5255	1575		5025	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	526	0	829	0	0	0	0	1074	389	0	1660	684
RTOR Reduction (vph)	0	0	12	0	0	0	0	0	167	0	69	0
Lane Group Flow (vph)	526	0	817	0	0	0	0	1074	222	0	2275	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	30.4		30.4					41.5	41.5		41.5	
Effective Green, g (s)	31.5		31.5					42.6	42.6		42.6	
Actuated g/C Ratio	0.39		0.39					0.53	0.53		0.53	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1394		1115					2794	837		2672	
v/s Ratio Prot								0.20			c0.45	
v/s Ratio Perm	0.15		c0.29						0.14			
v/c Ratio	0.38		0.73					0.38	0.27		0.85	
Uniform Delay, d1	17.3		20.7					11.0	10.2		16.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		2.5					0.1	0.2		2.8	
Delay (s)	17.5		23.2					11.1	10.4		18.9	
Level of Service	B		C					B	B		B	
Approach Delay (s)		21.0			0.0			10.9			18.9	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	80.1	Sum of lost time (s)	7.1
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	203	40	512	30	560	134	359	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1750		1829	1925	2880	1829	5080		3547	3657	1577
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1750		1829	1925	2880	1829	5080		3547	3657	1577
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	214	42	539	32	589	141	378	337	11
RTOR Reduction (vph)	0	41	0	0	0	204	0	40	0	0	0	6
Lane Group Flow (vph)	11	85	0	214	42	335	32	690	0	378	337	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.9	12.3		12.5	23.9	41.5	2.3	22.0		11.6	31.3	31.3
Effective Green, g (s)	1.9	15.3		13.5	26.9	44.5	3.3	25.0		12.6	34.3	34.3
Actuated g/C Ratio	0.02	0.20		0.17	0.34	0.57	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	44	341		314	660	1634	76	1619		570	1599	689
v/s Ratio Prot	0.01	c0.05		c0.12	0.02	0.12	0.02	c0.14		c0.11	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.25	0.25		0.68	0.06	0.20	0.42	0.43		0.66	0.21	0.01
Uniform Delay, d1	37.6	26.7		30.4	17.3	8.3	36.6	21.0		30.9	13.7	12.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		4.8	0.0	0.0	1.4	0.4		2.3	0.1	0.0
Delay (s)	38.6	26.8		35.2	17.3	8.3	38.0	21.4		33.2	13.8	12.4
Level of Service	D	C		D	B	A	D	C		C	B	B
Approach Delay (s)		27.8			16.0			22.1			23.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	751	1780	0	580	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2789
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2789
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	791	1874	0	611	768
RTOR Reduction (vph)	0	0	0	0	0	8
Lane Group Flow (vph)	0	791	1874	0	611	760
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		29.1	29.1		18.9	18.9
Effective Green, g (s)		32.1	32.1		21.9	21.9
Actuated g/C Ratio		0.54	0.54		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2811	2811		1294	1017
v/s Ratio Prot		0.15	c0.36		0.17	
v/s Ratio Perm						c0.27
v/c Ratio		0.28	0.67		0.47	0.75
Uniform Delay, d1		7.6	10.1		14.6	16.6
Progression Factor		1.00	0.92		1.00	1.00
Incremental Delay, d2		0.3	0.9		0.3	3.0
Delay (s)		7.9	10.1		14.9	19.7
Level of Service		A	B		B	B
Approach Delay (s)		7.9	10.1		17.5	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1061	0	0	1580	660	708
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1117	0	0	1663	695	745
RTOR Reduction (vph)	0	0	0	0	0	86
Lane Group Flow (vph)	1117	0	0	1663	695	659
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	31.5			31.5	16.5	16.5
Effective Green, g (s)	34.5			34.5	19.5	19.5
Actuated g/C Ratio	0.58			0.58	0.32	0.32
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3021			2102	1152	936
v/s Ratio Prot	0.21			c0.45	0.20	c0.23
v/s Ratio Perm						
v/c Ratio	0.37			0.79	0.60	0.70
Uniform Delay, d1	6.9			9.9	17.0	17.7
Progression Factor	0.53			2.31	1.00	1.00
Incremental Delay, d2	0.3			2.2	0.9	2.4
Delay (s)	4.0			25.2	17.9	20.1
Level of Service	A			C	B	C
Approach Delay (s)	4.0			25.2	19.1	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	364	1386	20	20	2049	179	10	5	10	102	5	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1712			1837	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1712			1837	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	383	1459	21	21	2157	188	11	5	11	107	5	342
RTOR Reduction (vph)	0	1	0	0	0	61	0	11	0	0	0	50
Lane Group Flow (vph)	383	1479	0	21	2157	127	0	16	0	0	112	292
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	16.8	77.0		2.8	63.0	63.0		3.0			17.2	34.0
Effective Green, g (s)	17.8	80.0		3.8	66.0	66.0		5.0			19.2	38.0
Actuated g/C Ratio	0.15	0.67		0.03	0.55	0.55		0.04			0.16	0.32
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	526	3496		57	2890	899		71			293	518
v/s Ratio Prot	c0.11	0.28		0.01	c0.41			c0.01			0.06	c0.18
v/s Ratio Perm						0.08						
v/c Ratio	0.73	0.42		0.37	0.75	0.14		0.23			0.38	0.56
Uniform Delay, d1	48.8	9.3		56.9	20.6	13.2		55.6			45.1	34.1
Progression Factor	1.03	0.76		1.19	0.10	0.01		1.00			1.00	1.00
Incremental Delay, d2	4.4	0.3		1.9	0.9	0.2		1.7			0.8	1.4
Delay (s)	54.6	7.4		69.5	2.8	0.3		57.3			45.9	35.5
Level of Service	D	A		E	A	A		E			D	D
Approach Delay (s)		17.1			3.2			57.3			38.1	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	74	225	110	82	172
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	78	237	116	86	181
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	648	295			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	648	295			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	90			93	
cM capacity (veh/h)	404	745			1206	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	141	353	267
Volume Left	63	0	86
Volume Right	78	116	0
cSH	540	1700	1206
Volume to Capacity	0.26	0.21	0.07
Queue Length 95th (ft)	26	0	6
Control Delay (s)	14.0	0.0	3.1
Lane LOS	B		A
Approach Delay (s)	14.0	0.0	3.1
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	422	0	10	538	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	444	0	11	566	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				883		
pX, platoon unblocked						
vC, conflicting volume			444		1032	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			444		1032	444
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1116		256	614

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	444	11	566	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1116	1700	614
Volume to Capacity	0.26	0.01	0.33	0.02
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.3	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		11.0
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	1242	87	30	2003	50	189	30	40	10	10	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1535		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.67	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1238		1281	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	1307	92	32	2108	53	199	32	42	11	11	56
RTOR Reduction (vph)	0	0	34	0	0	30	0	6	0	0	0	42
Lane Group Flow (vph)	181	1307	58	32	2108	23	0	267	0	11	11	14
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	72.6	72.6	4.2	49.2	49.2		28.2		28.2	28.2	28.2
Effective Green, g (s)	28.6	75.6	75.6	5.2	52.2	52.2		30.2		30.2	30.2	30.2
Actuated g/C Ratio	0.24	0.63	0.63	0.04	0.44	0.44		0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3310	1004	79	2285	700		311		322	484	404
v/s Ratio Prot	0.10	c0.25		0.02	c0.40						0.01	
v/s Ratio Perm			0.04			0.01		c0.22		0.01		0.01
v/c Ratio	0.42	0.39	0.06	0.41	0.92	0.03		0.86		0.03	0.02	0.03
Uniform Delay, d1	38.6	10.9	8.5	55.9	32.0	19.4		42.9		33.9	33.8	33.9
Progression Factor	0.87	0.71	0.78	0.92	1.12	1.87		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	2.7	6.3	0.1		20.3		0.0	0.0	0.0
Delay (s)	34.1	8.1	6.7	53.9	42.1	36.4		63.1		33.9	33.8	33.9
Level of Service	C	A	A	D	D	D		E		C	C	C
Approach Delay (s)		11.0			42.1			63.1			33.9	
Approach LOS		B			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	430	440	1170	0	0	1508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	453	463	1232	0	0	1587
RTOR Reduction (vph)	0	58	0	0	0	0
Lane Group Flow (vph)	453	405	1232	0	0	1587
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	16.6	16.6	31.4			31.4
Effective Green, g (s)	19.6	19.6	34.4			34.4
Actuated g/C Ratio	0.33	0.33	0.57			0.57
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1158	940	3012			2096
v/s Ratio Prot	0.13	c0.14	0.23			c0.43
v/s Ratio Perm						
v/c Ratio	0.39	0.43	0.41			0.76
Uniform Delay, d1	15.6	15.8	7.1			9.7
Progression Factor	1.00	1.00	1.05			1.00
Incremental Delay, d2	0.5	0.7	0.4			2.6
Delay (s)	16.1	16.5	7.8			12.3
Level of Service	B	B	A			B
Approach Delay (s)	16.3		7.8			12.3
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	650	1568	0	942	1388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	684	1651	0	992	1461	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	684	1650	0	992	1461	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.19	c0.57		0.19	c0.28	
v/s Ratio Perm						
v/c Ratio	0.33	0.98		0.60	0.88	
Uniform Delay, d1	6.5	12.2		17.3	19.4	
Progression Factor	1.00	1.00		1.07	0.81	
Incremental Delay, d2	0.0	17.7		1.4	5.3	
Delay (s)	6.5	29.9		20.0	21.0	
Level of Service	A	C		B	C	
Approach Delay (s)	23.0			20.0	21.0	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	101	74	150	117	223	115	829	160	810	1600	546
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3274		1829	1829	1554	1829	5255	1605	3547	5020	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3274		1829	1829	1554	1829	5255	1605	3547	5020	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	256	106	78	158	123	235	121	873	168	853	1684	575
RTOR Reduction (vph)	0	28	0	0	0	77	0	0	0	0	42	0
Lane Group Flow (vph)	136	276	0	158	123	158	121	873	168	853	2217	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.2	17.2		13.9	13.9	44.7	11.5	36.1	120.0	30.8	55.4	
Effective Green, g (s)	20.2	20.2		16.9	16.9	50.7	12.5	39.1	120.0	31.8	58.4	
Actuated g/C Ratio	0.17	0.17		0.14	0.14	0.42	0.10	0.33	1.00	0.27	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	280	551		257	257	656	190	1712	1605	939	2443	
v/s Ratio Prot	0.08	c0.08		c0.09	0.07	0.10	0.07	0.17		c0.24	c0.44	
v/s Ratio Perm									0.10			
v/c Ratio	0.49	0.50		0.61	0.48	0.24	0.64	0.51	0.10	0.91	0.91	
Uniform Delay, d1	45.2	45.3		48.5	47.5	22.3	51.6	32.7	0.0	42.7	28.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.28	0.51	1.00	1.00	1.01	
Incremental Delay, d2	0.5	0.3		3.1	0.5	0.1	4.9	1.1	0.1	4.9	2.4	
Delay (s)	45.7	45.6		51.5	48.0	22.4	71.2	17.8	0.1	47.6	31.0	
Level of Service	D	D		D	D	C	E	B	A	D	C	
Approach Delay (s)		45.6			37.4			20.8			35.6	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	5	100	30	10	10	150	307	20	10	248	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	5	105	32	11	11	158	323	21	11	261	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	12	105	42	11	158	344	11	277
Volume Left (vph)	6	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	16
Hadj (s)	0.31	-0.67	0.41	-0.67	0.53	-0.01	0.53	-0.01
Departure Headway (s)	6.8	5.8	7.0	5.9	5.8	5.3	6.1	5.5
Degree Utilization, x	0.02	0.17	0.08	0.02	0.26	0.51	0.02	0.43
Capacity (veh/h)	490	570	472	551	599	665	566	630
Control Delay (s)	8.7	8.7	9.4	7.8	9.6	12.4	8.0	11.4
Approach Delay (s)	8.7		9.1		11.5		11.3	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.0		
Level of Service	B		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	170	90	457	30	40	50	328	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1759		1829	1925	1619	1829	1750		1737	1753	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1759		1829	1925	1619	1829	1750		1737	1753	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	179	95	481	32	42	53	345	63	11
RTOR Reduction (vph)	0	18	0	0	0	194	0	44	0	0	1	0
Lane Group Flow (vph)	11	24	0	179	95	287	32	51	0	176	242	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	5.3		10.4	14.8	32.2	8.5	8.5		17.4	17.4	
Effective Green, g (s)	1.9	7.3		11.4	16.8	36.2	10.5	10.5		19.4	19.4	
Actuated g/C Ratio	0.03	0.12		0.19	0.28	0.60	0.17	0.17		0.32	0.32	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	57	211		344	533	1047	316	303		556	561	
v/s Ratio Prot	c0.01	0.01		c0.10	0.05	c0.09	0.02	c0.03		0.10	c0.14	
v/s Ratio Perm						0.09						
v/c Ratio	0.19	0.11		0.52	0.18	0.27	0.10	0.17		0.32	0.43	
Uniform Delay, d1	28.6	23.8		22.1	16.7	5.9	21.1	21.3		15.6	16.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2		1.4	0.2	0.1	0.1	0.3		0.3	0.5	
Delay (s)	30.3	24.0		23.6	16.8	6.0	21.2	21.6		15.9	16.8	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		25.3			11.5			21.5			16.4	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	198	743	351	130	1147	140	654	841	130	340	701	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	208	782	369	137	1207	147	688	885	137	358	738	255
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	208	782	369	137	1207	147	688	885	137	358	738	255
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.8	32.0	57.1	8.1	31.3	120.0	25.1	44.2	120.0	15.7	32.8	120.0
Effective Green, g (s)	9.8	35.0	63.1	9.1	34.3	120.0	28.1	47.2	120.0	16.7	35.8	120.0
Actuated g/C Ratio	0.08	0.29	0.53	0.08	0.29	1.00	0.23	0.39	1.00	0.14	0.30	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	289	1532	825	268	1502	1588	1207	1438	1593	493	1567	1588
v/s Ratio Prot	c0.06	0.15	0.10	0.04	c0.23		0.13	c0.24		c0.10	0.14	
v/s Ratio Perm			0.13			0.09			0.09			c0.16
v/c Ratio	0.72	0.51	0.45	0.51	0.80	0.09	0.57	0.62	0.09	0.73	0.47	0.16
Uniform Delay, d1	53.8	35.4	17.6	53.3	39.7	0.0	40.6	29.1	0.0	49.5	34.4	0.0
Progression Factor	0.76	0.90	0.50	1.33	0.98	1.00	0.63	0.48	1.00	0.65	0.59	1.00
Incremental Delay, d2	6.6	0.5	0.1	0.6	3.5	0.1	0.4	1.8	0.1	4.4	1.0	0.2
Delay (s)	47.4	32.5	9.0	71.7	42.3	0.1	26.0	15.7	0.1	36.3	21.3	0.2
Level of Service	D	C	A	E	D	A	C	B	A	D	C	A
Approach Delay (s)		28.4			40.8			18.6			21.3	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	370	430	380	320	70	450	1215	400	160	721	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	389	453	400	337	74	474	1279	421	168	759	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	168	389	453	400	337	74	474	1279	421	168	759	28
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.5	20.2	120.0	17.2	27.9	120.0	30.0	54.1	120.0	8.5	32.6	32.6
Effective Green, g (s)	10.5	23.2	120.0	18.2	30.9	120.0	31.0	57.1	120.0	9.5	35.6	35.6
Actuated g/C Ratio	0.09	0.19	1.00	0.15	0.26	1.00	0.26	0.48	1.00	0.08	0.30	0.30
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	310	707	1603	537	941	1613	916	2500	1615	280	1558	471
v/s Ratio Prot	0.05	c0.11		c0.11	0.09		0.13	c0.24		c0.05	c0.14	
v/s Ratio Perm			0.28			0.05			0.26			0.02
v/c Ratio	0.54	0.55	0.28	0.74	0.36	0.05	0.52	0.51	0.26	0.60	0.49	0.06
Uniform Delay, d1	52.4	43.7	0.0	48.7	36.4	0.0	38.1	21.8	0.0	53.4	34.7	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.55	1.00	0.85	0.65	1.00
Incremental Delay, d2	1.0	1.6	0.4	4.9	0.5	0.1	0.2	0.6	0.3	2.3	1.1	0.2
Delay (s)	53.5	45.3	0.4	53.6	36.9	0.1	25.8	12.6	0.3	47.7	23.7	30.5
Level of Service	D	D	A	D	D	A	C	B	A	D	C	C
Approach Delay (s)		26.5			41.8			13.1			28.3	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	362	50	30	1275	60	40	140	20	40	200	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3576		1829	5206		3547	3570		1829	4411	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3576		1829	5206		3547	3570		1829	4411	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	169	381	53	32	1342	63	42	147	21	42	211	234
RTOR Reduction (vph)	0	6	0	0	3	0	0	11	0	0	186	0
Lane Group Flow (vph)	169	428	0	32	1402	0	42	157	0	42	259	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.0	67.5		5.2	61.7		5.8	20.2		7.1	21.5	
Effective Green, g (s)	12.0	70.5		6.2	64.7		6.8	23.2		8.1	24.5	
Actuated g/C Ratio	0.10	0.59		0.05	0.54		0.06	0.19		0.07	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354	2100		94	2806		200	690		123	900	
v/s Ratio Prot	c0.05	0.12		0.02	c0.27		0.01	0.04		c0.02	c0.06	
v/s Ratio Perm												
v/c Ratio	0.48	0.20		0.34	0.50		0.21	0.23		0.34	0.29	
Uniform Delay, d1	51.0	11.6		54.9	17.4		54.0	40.8		53.4	40.4	
Progression Factor	0.81	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.2		2.2	0.6		0.5	0.2		1.7	0.2	
Delay (s)	42.2	15.4		57.1	18.1		54.6	41.0		55.1	40.5	
Level of Service	D	B		E	B		D	D		E	D	
Approach Delay (s)		22.9			18.9			43.7			41.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	540	810	2360	0	0	1530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	568	853	2484	0	0	1611
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	568	853	2484	0	0	1611
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.5	29.5	44.5			44.5
Effective Green, g (s)	30.6	30.6	45.6			45.6
Actuated g/C Ratio	0.37	0.37	0.55			0.55
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1320	1072	2915			2915
v/s Ratio Prot	0.16	c0.30	c0.47			0.31
v/s Ratio Perm						
v/c Ratio	0.43	0.80	0.85			0.55
Uniform Delay, d1	19.3	23.0	15.5			11.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	4.2	2.6			0.2
Delay (s)	19.5	27.2	18.1			12.0
Level of Service	B	C	B			B
Approach Delay (s)	24.1		18.1			12.0
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	770	0	443	0	0	0	0	2405	850	0	1610	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.97		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2839					5255	1583		5080	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2839					5255	1583		5080	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	811	0	466	0	0	0	0	2532	895	0	1695	484
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	289	0	85	0
Lane Group Flow (vph)	811	0	441	0	0	0	0	2532	606	0	2094	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	16.7		16.7					32.0	32.0		32.0	
Effective Green, g (s)	17.8		17.8					33.1	33.1		33.1	
Actuated g/C Ratio	0.31		0.31					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1109		888					3056	920		2955	
v/s Ratio Prot								c0.48			0.41	
v/s Ratio Perm	c0.23		0.16						0.38			
v/c Ratio	0.73		0.50					0.83	0.66		0.71	
Uniform Delay, d1	17.4		15.9					9.6	8.1		8.5	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		0.4					2.0	1.7		0.8	
Delay (s)	19.9		16.3					11.6	9.8		9.3	
Level of Service	B		B					B	A		A	
Approach Delay (s)		18.6			0.0			11.1			9.3	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	80	60	105	60	491	30	460	85	518	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1776		1829	1925	2880	1829	5115		3547	3657	1578
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1776		1829	1925	2880	1829	5115		3547	3657	1578
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	84	63	111	63	517	32	484	89	545	589	32
RTOR Reduction (vph)	0	31	0	0	0	235	0	27	0	0	0	18
Lane Group Flow (vph)	32	116	0	111	63	282	32	546	0	545	589	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	2.2	14.4		6.8	19.0	37.0	2.2	20.2		12.0	30.0	30.0
Effective Green, g (s)	3.2	17.4		7.8	22.0	40.0	3.2	23.2		13.0	33.0	33.0
Actuated g/C Ratio	0.04	0.24		0.11	0.30	0.54	0.04	0.32		0.18	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	79	421		194	576	1569	79	1616		628	1644	709
v/s Ratio Prot	0.02	c0.07		c0.06	0.03	0.10	0.02	0.11		c0.15	c0.16	
v/s Ratio Perm												0.01
v/c Ratio	0.41	0.28		0.57	0.11	0.18	0.41	0.34		0.87	0.36	0.02
Uniform Delay, d1	34.2	22.9		31.2	18.6	8.4	34.2	19.2		29.4	13.3	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		2.5	0.0	0.0	1.2	0.3		11.8	0.3	0.0
Delay (s)	35.4	23.0		33.7	18.6	8.4	35.4	19.5		41.1	13.5	11.2
Level of Service	D	C		C	B	A	D	B		D	B	B
Approach Delay (s)		25.2			13.4			20.3			26.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2277	1361	0	806	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2792
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2792
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2397	1433	0	848	463
RTOR Reduction (vph)	0	0	0	0	0	16
Lane Group Flow (vph)	0	2397	1433	0	848	448
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		28.2	28.2		19.8	19.8
Effective Green, g (s)		31.2	31.2		22.8	22.8
Actuated g/C Ratio		0.52	0.52		0.38	0.38
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2732	2732		1347	1060
v/s Ratio Prot		c0.46	0.27		c0.24	
v/s Ratio Perm						0.16
v/c Ratio		0.88	0.52		0.63	0.42
Uniform Delay, d1		12.7	9.5		15.2	13.7
Progression Factor		1.17	1.24		1.00	1.00
Incremental Delay, d2		2.7	0.5		0.9	0.3
Delay (s)		17.5	12.3		16.1	14.0
Level of Service		B	B		B	B
Approach Delay (s)		17.5	12.3		15.4	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	140.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2194	0	0	1837	320	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2309	0	0	1934	337	495
RTOR Reduction (vph)	0	0	0	0	0	17
Lane Group Flow (vph)	2309	0	0	1934	337	478
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	84.5			84.5	23.5	23.5
Effective Green, g (s)	87.5			87.5	26.5	26.5
Actuated g/C Ratio	0.73			0.73	0.22	0.22
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3831			2666	783	636
v/s Ratio Prot	0.44			c0.53	0.09	c0.17
v/s Ratio Perm						
v/c Ratio	0.60			0.73	0.43	0.75
Uniform Delay, d1	7.9			9.3	40.3	43.7
Progression Factor	1.17			2.39	1.00	1.00
Incremental Delay, d2	0.4			0.2	0.4	5.0
Delay (s)	9.6			22.5	40.6	48.7
Level of Service	A			C	D	D
Approach Delay (s)	9.6			22.5	45.4	
Approach LOS	A			C	D	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1949	30	20	2034	284	20	5	20	271	5	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5243		1829	5255	1636		1704			1835	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5243		1829	5255	1636		1704			1835	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	2052	32	21	2141	299	21	5	21	285	5	816
RTOR Reduction (vph)	0	1	0	0	0	82	0	20	0	0	0	40
Lane Group Flow (vph)	721	2083	0	21	2141	217	0	27	0	0	290	776
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	24.0	66.2		2.8	45.0	45.0		4.0			27.0	51.0
Effective Green, g (s)	25.0	69.2		3.8	48.0	48.0		6.0			29.0	55.0
Actuated g/C Ratio	0.21	0.58		0.03	0.40	0.40		0.05			0.24	0.46
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	738	3023		57	2102	654		85			443	749
v/s Ratio Prot	0.20	0.40		0.01	c0.41			c0.02			0.16	c0.47
v/s Ratio Perm						0.13						
v/c Ratio	0.98	0.69		0.37	1.02	0.33		0.32			0.65	1.04
Uniform Delay, d1	47.2	17.8		56.9	36.0	24.9		55.0			41.0	32.5
Progression Factor	0.94	1.61		0.60	1.54	2.34		1.00			1.00	1.00
Incremental Delay, d2	23.6	1.0		2.9	21.4	1.0		2.2			3.5	42.7
Delay (s)	67.9	29.7		37.1	76.8	59.4		57.2			44.5	75.2
Level of Service	E	C		D	E	E		E			D	E
Approach Delay (s)		39.5			74.4			57.2			67.2	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	57.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	140	319	130	120	341
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	147	336	137	126	359
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1016	404			473	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1016	404			473	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	19	77			88	
cM capacity (veh/h)	233	646			1089	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	337	473	485
Volume Left	189	0	126
Volume Right	147	137	0
cSH	324	1700	1089
Volume to Capacity	1.04	0.28	0.12
Queue Length 95th (ft)	302	0	10
Control Delay (s)	98.0	0.0	3.2
Lane LOS	F		A
Approach Delay (s)	98.0	0.0	3.2
Approach LOS	F		

Intersection Summary			
Average Delay	26.7		
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	991	10	35	939	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1043	11	37	988	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1025		
pX, platoon unblocked						
vC, conflicting volume			1054		2111	1048
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1054		2111	1048
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		80	77
cM capacity (veh/h)			661		53	277

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1054	37	988	74
Volume Left	0	37	0	11
Volume Right	11	0	0	63
cSH	1700	661	1700	173
Volume to Capacity	0.62	0.06	0.58	0.43
Queue Length 95th (ft)	0	4	0	48
Control Delay (s)	0.0	10.8	0.0	40.6
Lane LOS		B		E
Approach Delay (s)	0.0	0.4		40.6
Approach LOS				E

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1959	233	40	1987	10	112	20	40	50	30	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1523		1823	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1233		1244	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	2062	245	42	2092	11	118	21	42	53	32	257
RTOR Reduction (vph)	0	0	55	0	0	5	0	10	0	0	0	204
Lane Group Flow (vph)	46	2062	190	42	2092	6	0	171	0	53	32	53
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	76.4	76.4	5.8	61.4	61.4		22.8		22.8	22.8	22.8
Effective Green, g (s)	21.8	79.4	79.4	6.8	64.4	64.4		24.8		24.8	24.8	24.8
Actuated g/C Ratio	0.18	0.66	0.66	0.06	0.54	0.54		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3477	1055	103	2820	864		254		257	397	332
v/s Ratio Prot	0.03	c0.39		0.02	c0.40						0.02	
v/s Ratio Perm			0.12			0.00		c0.14		0.04		0.03
v/c Ratio	0.14	0.59	0.18	0.41	0.74	0.01		0.67		0.21	0.08	0.16
Uniform Delay, d1	41.2	11.3	7.8	54.7	21.4	12.9		43.9		39.4	38.4	39.1
Progression Factor	1.28	1.67	2.26	1.21	1.33	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6	0.3	1.8	1.3	0.0		6.8		0.4	0.1	0.2
Delay (s)	53.1	19.5	17.9	68.0	29.6	12.9		50.7		39.8	38.5	39.3
Level of Service	D	B	B	E	C	B		D		D	D	D
Approach Delay (s)		20.0			30.3			50.7			39.3	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	316	620	2240	0	0	1283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	333	653	2358	0	0	1351
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	333	650	2358	0	0	1351
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	17.6	17.6	30.4			30.4
Effective Green, g (s)	20.6	20.6	33.4			33.4
Actuated g/C Ratio	0.34	0.34	0.56			0.56
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1217	988	2925			2035
v/s Ratio Prot	0.09	c0.23	c0.45			0.37
v/s Ratio Perm						
v/c Ratio	0.27	0.66	0.81			0.66
Uniform Delay, d1	14.3	16.7	10.7			9.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.3	2.1	2.5			1.7
Delay (s)	14.5	18.8	13.2			11.1
Level of Service	B	B	B			B
Approach Delay (s)	17.4		13.2			11.1
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1130	879	0	2177	1099	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1189	925	0	2292	1157	0
RTOR Reduction (vph)	0	50	0	0	0	0
Lane Group Flow (vph)	1189	875	0	2292	1157	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	14.0	14.0		19.0	19.0	
Effective Green, g (s)	17.0	17.0		22.0	22.0	
Actuated g/C Ratio	0.38	0.38		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1339	1088		2569	2569	
v/s Ratio Prot	c0.34	0.30		c0.44	0.22	
v/s Ratio Perm						
v/c Ratio	0.89	0.80		0.89	0.45	
Uniform Delay, d1	13.1	12.5		10.4	7.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.3	4.2		5.2	0.6	
Delay (s)	20.4	16.7		15.7	8.1	
Level of Service	C	B		B	A	
Approach Delay (s)	18.8			15.7	8.1	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	115.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	701	259	140	190	179	744	159	1097	180	437	1007	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3305		1829	1689	1554	1829	5255	1605	3547	4936	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3305		1829	1689	1554	1829	5255	1605	3547	4936	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	738	273	147	200	188	783	167	1155	189	460	1060	562
RTOR Reduction (vph)	0	16	0	0	31	72	0	0	0	0	77	0
Lane Group Flow (vph)	384	758	0	200	353	515	167	1155	189	460	1545	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	27.0	27.0		19.0	19.0	45.0	14.2	30.0	120.0	22.0	37.8	
Effective Green, g (s)	30.0	30.0		22.0	22.0	47.0	15.2	33.0	120.0	23.0	40.8	
Actuated g/C Ratio	0.25	0.25		0.18	0.18	0.39	0.13	0.28	1.00	0.19	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	416	826		335	309	608	231	1445	1605	679	1678	
v/s Ratio Prot	c0.23	0.23		0.11	c0.21	0.33	0.09	c0.22		0.13	c0.31	
v/s Ratio Perm									0.12			
v/c Ratio	0.92	0.92		0.60	1.14	0.85	0.72	0.80	0.12	0.68	0.92	
Uniform Delay, d1	43.9	43.8		44.9	49.0	33.2	50.4	40.4	0.0	45.1	38.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.12	0.69	1.00	1.00	1.00	
Incremental Delay, d2	25.6	14.6		1.9	95.4	10.2	8.8	4.6	0.1	2.1	9.8	
Delay (s)	69.4	58.4		46.8	144.4	43.4	65.2	32.6	0.1	47.2	47.9	
Level of Service	E	E		D	F	D	E	C	A	D	D	
Approach Delay (s)		62.1			77.1			32.2			47.7	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	10	170	150	10	20	150	403	90	20	410	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	19	11	179	158	11	21	158	424	95	21	432	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	29	179	168	21	158	519	21	452
Volume Left (vph)	19	0	158	0	158	0	21	0
Volume Right (vph)	0	179	0	21	0	95	0	20
Hadj (s)	0.36	-0.67	0.50	-0.67	0.53	-0.09	0.53	0.00
Departure Headway (s)	8.4	7.4	8.6	7.4	7.4	6.7	7.6	7.1
Degree Utilization, x	0.07	0.37	0.40	0.04	0.32	0.97	0.04	0.89
Capacity (veh/h)	405	459	401	457	477	519	459	502
Control Delay (s)	10.9	13.5	16.0	9.5	12.7	56.9	9.8	42.4
Approach Delay (s)	13.1		15.3		46.6		41.0	
Approach LOS	B		C		E		E	

Intersection Summary			
Delay	36.5		
Level of Service	E		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	110	40	40	120	593	10	60	200	680	100	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1829	1836		1829	1925	1621	1829	1684		1737	1756	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1829	1836		1829	1925	1621	1829	1684		1737	1756	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	116	42	42	126	624	11	63	211	716	105	11
RTOR Reduction (vph)	0	13	0	0	0	248	0	136	0	0	1	0
Lane Group Flow (vph)	11	145	0	42	126	376	11	138	0	394	437	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	13.2		3.4	15.6	39.0	12.4	12.4		23.4	23.4	
Effective Green, g (s)	2.0	15.2		4.4	17.6	43.0	14.4	14.4		25.4	25.4	
Actuated g/C Ratio	0.03	0.21		0.06	0.25	0.60	0.20	0.20		0.36	0.36	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	390		112	474	1044	368	339		617	624	
v/s Ratio Prot	0.01	0.08		c0.02	0.07	c0.13	0.01	c0.08		0.23	c0.25	
v/s Ratio Perm						0.10						
v/c Ratio	0.22	0.37		0.38	0.27	0.36	0.03	0.41		0.64	0.70	
Uniform Delay, d1	33.9	24.0		32.2	21.7	7.2	22.9	24.8		19.2	19.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.6		2.1	0.3	0.2	0.0	0.8		2.2	3.6	
Delay (s)	36.1	24.6		34.3	22.0	7.4	22.9	25.6		21.4	23.3	
Level of Service	D	C		C	C	A	C	C		C	C	
Approach Delay (s)		25.4			11.2			25.5			22.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	1224	609	180	1153	150	678	801	90	260	901	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	227	1288	641	189	1214	158	714	843	95	274	948	217
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	227	1288	641	189	1214	158	714	843	95	274	948	217
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	11.8	33.3	53.3	9.9	31.4	120.0	20.0	43.5	120.0	13.3	35.8	120.0
Effective Green, g (s)	12.8	36.3	57.3	10.9	34.4	120.0	22.0	46.5	120.0	14.3	38.8	120.0
Actuated g/C Ratio	0.11	0.30	0.48	0.09	0.29	1.00	0.18	0.39	1.00	0.12	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	378	1589	785	322	1506	1588	945	1417	1593	422	1699	1588
v/s Ratio Prot	0.06	c0.25	c0.15	0.05	c0.23		0.14	0.23		c0.08	c0.18	
v/s Ratio Perm			0.26			0.10			0.06			0.14
v/c Ratio	0.60	0.81	0.82	0.59	0.81	0.10	0.76	0.59	0.06	0.65	0.56	0.14
Uniform Delay, d1	51.2	38.7	26.8	52.4	39.7	0.0	46.5	29.3	0.0	50.5	33.5	0.0
Progression Factor	1.44	1.07	1.25	0.92	0.90	1.00	0.75	0.61	1.00	1.46	0.93	1.00
Incremental Delay, d2	1.5	3.1	5.3	1.7	3.6	0.1	3.0	1.8	0.1	2.5	1.3	0.2
Delay (s)	75.2	44.6	38.9	50.0	39.4	0.1	38.0	19.7	0.1	76.1	32.6	0.2
Level of Service	E	D	D	D	D	A	D	B	A	E	C	A
Approach Delay (s)		46.1			36.7			26.5			36.0	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	240	597	600	280	140	370	850	340	120	1370	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	253	628	632	295	147	389	895	358	126	1442	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	125	253	628	632	295	147	389	895	358	126	1442	36
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.8	17.9	120.0	23.8	34.9	120.0	16.0	51.5	120.0	6.8	42.3	42.3
Effective Green, g (s)	7.8	20.9	120.0	24.8	37.9	120.0	17.0	54.5	120.0	7.8	45.3	45.3
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.14	0.45	1.00	0.06	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	230	636	1603	733	1155	1613	502	2386	1615	230	1983	599
v/s Ratio Prot	0.04	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.27	
v/s Ratio Perm			c0.39			0.09			0.22			0.02
v/c Ratio	0.54	0.40	0.39	0.86	0.26	0.09	0.77	0.38	0.22	0.55	0.73	0.06
Uniform Delay, d1	54.4	44.0	0.0	46.0	30.5	0.0	49.7	21.5	0.0	54.4	32.0	23.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.29	1.60	1.00	1.07	0.71	1.00
Incremental Delay, d2	1.4	0.9	0.7	9.9	0.2	0.1	6.5	0.4	0.3	1.4	2.3	0.2
Delay (s)	55.8	44.8	0.7	55.9	30.8	0.1	70.3	35.0	0.3	59.7	25.1	24.0
Level of Service	E	D	A	E	C	A	E	C	A	E	C	C
Approach Delay (s)		18.7			41.3			35.8			27.7	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	1281	30	20	580	40	70	180	20	60	270	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3642		1829	5185		3547	3587		1829	4432	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3642		1829	5185		3547	3587		1829	4432	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	256	1348	32	21	611	42	74	189	21	63	284	298
RTOR Reduction (vph)	0	1	0	0	5	0	0	8	0	0	175	0
Lane Group Flow (vph)	256	1379	0	21	648	0	74	202	0	63	407	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.9	67.3		3.3	56.7		6.7	21.5		7.9	22.7	
Effective Green, g (s)	14.9	70.3		4.3	59.7		7.7	24.5		8.9	25.7	
Actuated g/C Ratio	0.12	0.59		0.04	0.50		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	440	2133		65	2579		227	732		135	949	
v/s Ratio Prot	c0.07	c0.38		0.01	0.12		0.02	0.06		c0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.58	0.65		0.32	0.25		0.33	0.28		0.47	0.43	
Uniform Delay, d1	49.6	16.6		56.4	17.3		53.7	40.3		53.3	40.8	
Progression Factor	1.26	0.40		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.2		2.9	0.2		0.8	0.2		2.5	0.3	
Delay (s)	64.0	7.9		59.3	17.5		54.5	40.5		55.8	41.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.7			18.8			44.1			42.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1173	1166	0	509	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1235	1227	0	536	663
RTOR Reduction (vph)	0	0	0	0	0	49
Lane Group Flow (vph)	0	1235	1227	0	536	614
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.0	31.0		17.0	17.0
Effective Green, g (s)		34.0	34.0		20.0	20.0
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3007	3007		1194	969
v/s Ratio Prot		c0.23	0.23		0.15	
v/s Ratio Perm						c0.21
v/c Ratio		0.41	0.41		0.45	0.63
Uniform Delay, d1		7.3	7.3		15.7	16.9
Progression Factor		1.00	0.74		1.00	1.00
Incremental Delay, d2		0.4	0.4		0.3	1.4
Delay (s)		7.8	5.8		15.9	18.3
Level of Service		A	A		B	B
Approach Delay (s)		7.8	5.8		17.2	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1073	0	0	1245	330	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1129	0	0	1311	347	332
RTOR Reduction (vph)	0	0	0	0	0	95
Lane Group Flow (vph)	1129	0	0	1311	347	237
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	37.0			37.0	11.0	11.0
Effective Green, g (s)	40.0			40.0	14.0	14.0
Actuated g/C Ratio	0.67			0.67	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3538			2462	836	678
v/s Ratio Prot	0.21			c0.35	c0.10	0.08
v/s Ratio Perm						
v/c Ratio	0.32			0.53	0.42	0.35
Uniform Delay, d1	4.2			5.2	19.5	19.2
Progression Factor	0.96			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.8	0.3	0.3
Delay (s)	4.3			6.0	19.9	19.5
Level of Service	A			A	B	B
Approach Delay (s)	4.3			6.0	19.7	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	612	756	20	10	1199	249	30	10	10	246	10	610
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5283		1847	5307	1607		1817			1855	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5283		1847	5307	1607		1817			1855	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	644	796	21	11	1262	262	32	11	11	259	11	642
RTOR Reduction (vph)	0	3	0	0	0	176	0	10	0	0	0	76
Lane Group Flow (vph)	644	814	0	11	1262	86	0	44	0	0	270	566
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	15.1	34.7		1.4	21.0	21.0		3.0			15.9	31.0
Effective Green, g (s)	16.1	37.7		2.4	24.0	24.0		5.0			17.9	35.0
Actuated g/C Ratio	0.21	0.50		0.03	0.32	0.32		0.07			0.24	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	769	2655		59	1698	514		121			442	770
v/s Ratio Prot	c0.18	0.15		0.01	c0.24			c0.02			0.15	c0.34
v/s Ratio Perm						0.05						
v/c Ratio	0.84	0.31		0.19	0.74	0.17		0.36			0.61	0.73
Uniform Delay, d1	28.2	11.0		35.3	22.8	18.3		33.5			25.4	16.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	7.9	0.3		1.5	3.0	0.7		1.8			2.5	3.7
Delay (s)	36.1	11.3		36.9	25.7	19.0		35.3			27.9	19.9
Level of Service	D	B		D	C	B		D			C	B
Approach Delay (s)		22.2			24.7			35.3			22.3	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	167	211	50	136	279
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	176	222	53	143	294
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	828	248			275	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	828	248			275	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	78			89	
cM capacity (veh/h)	303	790			1288	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	228	275	437
Volume Left	53	0	143
Volume Right	176	53	0
cSH	577	1700	1288
Volume to Capacity	0.40	0.16	0.11
Queue Length 95th (ft)	47	0	9
Control Delay (s)	15.3	0.0	3.4
Lane LOS	C		A
Approach Delay (s)	15.3	0.0	3.4
Approach LOS	C		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	846	10	10	861	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	891	11	11	906	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			901		1823	896
vC1, stage 1 conf vol					896	
vC2, stage 2 conf vol					927	
vCu, unblocked vol			901		1823	896
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			754		280	339

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	901	11	906	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	754	1700	317
Volume to Capacity	0.53	0.01	0.53	0.10
Queue Length 95th (ft)	0	1	0	8
Control Delay (s)	0.0	9.8	0.0	17.6
Lane LOS		A		C
Approach Delay (s)	0.0	0.1		17.6
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	615	195	181	190	182	326	231	1204	210	370	569	583
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3300		1847	1847	1570	1847	5307	1627	3583	4856	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3300		1847	1847	1570	1847	5307	1627	3583	4856	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	647	205	191	200	192	343	243	1267	221	389	599	614
RTOR Reduction (vph)	0	31	0	0	0	57	0	0	0	0	145	0
Lane Group Flow (vph)	349	663	0	200	192	286	243	1267	221	389	1068	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	27.0	27.0		15.2	15.2	30.4	18.1	40.6	120.0	15.2	37.7	
Effective Green, g (s)	30.0	30.0		18.2	18.2	36.4	19.1	43.6	120.0	16.2	40.7	
Actuated g/C Ratio	0.25	0.25		0.15	0.15	0.30	0.16	0.36	1.00	0.13	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	420	825		280	280	476	293	1928	1627	483	1646	
v/s Ratio Prot	c0.21	0.20		c0.11	0.10	0.18	c0.13	c0.24		0.11	0.22	
v/s Ratio Perm									c0.14			
v/c Ratio	0.83	0.80		0.71	0.69	0.60	0.83	0.66	0.14	0.81	0.88dr	
Uniform Delay, d1	42.6	42.2		48.4	48.2	35.6	48.9	31.9	0.0	50.4	33.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.34	0.72	1.00	1.00	0.99	
Incremental Delay, d2	12.5	5.4		7.0	5.5	1.5	16.4	1.7	0.2	9.0	2.0	
Delay (s)	55.1	47.6		55.4	53.6	37.1	82.0	24.8	0.2	59.4	35.2	
Level of Service	E	D		E	D	D	F	C	A	E	D	
Approach Delay (s)		50.1			46.4			29.7			41.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	28	40	240	240	80	40	260	337	140	30	391	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	42	253	253	84	42	274	355	147	32	412	29

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	72	253	337	42	274	502	32	441
Volume Left (vph)	29	0	253	0	274	0	32	0
Volume Right (vph)	0	253	0	42	0	147	0	29
Hadj (s)	0.22	-0.68	0.39	-0.68	0.52	-0.19	0.52	-0.03
Departure Headway (s)	9.3	8.4	9.2	8.1	8.9	8.2	9.0	8.5
Degree Utilization, x	0.19	0.59	0.86	0.10	0.68	1.0	0.08	1.0
Capacity (veh/h)	378	412	385	434	397	443	389	424
Control Delay (s)	13.2	21.8	46.6	10.8	27.3	114.7	11.6	82.7
Approach Delay (s)	19.9		42.7		83.8		77.9	
Approach LOS	C		E		F		F	

Intersection Summary			
Delay	63.8		
Level of Service	F		
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	50	707	20	60	60	781	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1831		1847	1944	1652	1847	1784		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1831		1847	1944	1652	1847	1784		1754	1776	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	53	744	21	63	63	822	137	11
RTOR Reduction (vph)	0	19	0	0	0	270	0	40	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	53	474	21	86	0	419	550	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.9	8.4		3.9	10.4	42.3	9.4	9.4		31.9	31.9	
Effective Green, g (s)	2.9	10.4		4.9	12.4	46.3	11.4	11.4		33.9	33.9	
Actuated g/C Ratio	0.04	0.14		0.07	0.17	0.64	0.16	0.16		0.47	0.47	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	73	262		124	332	1121	290	280		819	829	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.20	0.01	c0.05		0.24	c0.31	
v/s Ratio Perm						0.09						
v/c Ratio	0.29	0.41		0.34	0.16	0.42	0.07	0.31		0.51	0.66	
Uniform Delay, d1	33.8	28.3		32.3	25.7	6.5	26.1	27.1		13.6	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.0		1.6	0.2	0.3	0.1	0.6		0.5	2.0	
Delay (s)	36.0	29.3		33.9	25.9	6.8	26.2	27.7		14.1	17.0	
Level of Service	D	C		C	C	A	C	C		B	B	
Approach Delay (s)		30.3			9.3			27.5			15.7	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	238	388	322	170	631	150	404	1143	70	190	573	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	251	408	339	179	664	158	425	1203	74	200	603	191
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	251	408	339	179	664	158	425	1203	74	200	603	191
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	21.4	25.4	6.0	20.4	90.0	4.0	35.4	90.0	7.2	36.6	90.0
Effective Green, g (s)	8.0	24.4	31.4	7.0	23.4	90.0	7.0	38.4	90.0	8.2	39.6	90.0
Actuated g/C Ratio	0.09	0.27	0.35	0.08	0.26	1.00	0.08	0.43	1.00	0.09	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	318	1438	570	278	1379	1632	405	1575	1631	326	2335	1652
v/s Ratio Prot	c0.07	0.08	c0.05	0.05	0.13		c0.08	c0.33		c0.06	0.11	
v/s Ratio Perm			0.16			0.10			0.05			c0.12
v/c Ratio	0.79	0.28	0.59	0.64	0.48	0.10	1.05	0.76	0.05	0.61	0.26	0.12
Uniform Delay, d1	40.2	25.9	24.1	40.3	28.2	0.0	41.5	21.9	0.0	39.4	15.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.4	0.2	1.1	3.8	0.6	0.1	58.3	3.6	0.1	2.4	0.3	0.1
Delay (s)	51.5	26.1	25.2	44.1	28.7	0.1	99.8	25.5	0.1	41.8	16.2	0.1
Level of Service	D	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		32.2			27.0			42.9			18.3	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	900	810	1217	0	0	1326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	947	853	1281	0	0	1396
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	947	844	1281	0	0	1396
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	26.2	26.2	21.6			21.6
Effective Green, g (s)	27.3	27.3	22.7			22.7
Actuated g/C Ratio	0.49	0.49	0.41			0.41
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1729	1404	2130			2130
v/s Ratio Prot	0.27	c0.29	0.24			c0.27
v/s Ratio Perm						
v/c Ratio	0.55	0.60	0.60			0.66
Uniform Delay, d1	10.0	10.4	13.1			13.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	0.7	0.5			0.7
Delay (s)	10.4	11.1	13.6			14.2
Level of Service	B	B	B			B
Approach Delay (s)	10.7		13.6			14.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	500	0	788	0	0	0	0	1021	370	0	1576	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.96	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2837					5255	1575		5025	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2837					5255	1575		5025	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	526	0	829	0	0	0	0	1075	389	0	1659	684
RTOR Reduction (vph)	0	0	12	0	0	0	0	0	166	0	70	0
Lane Group Flow (vph)	526	0	817	0	0	0	0	1075	223	0	2273	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	30.4		30.4					41.5	41.5		41.5	
Effective Green, g (s)	31.5		31.5					42.6	42.6		42.6	
Actuated g/C Ratio	0.39		0.39					0.53	0.53		0.53	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1394		1115					2794	837		2672	
v/s Ratio Prot								0.20			c0.45	
v/s Ratio Perm	0.15		c0.29						0.14			
v/c Ratio	0.38		0.73					0.38	0.27		0.85	
Uniform Delay, d1	17.3		20.7					11.0	10.2		16.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		2.5					0.1	0.2		2.8	
Delay (s)	17.5		23.2					11.1	10.4		18.8	
Level of Service	B		C					B	B		B	
Approach Delay (s)		21.0			0.0			10.9			18.8	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	80.1	Sum of lost time (s)	7.1
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	203	40	515	30	560	133	357	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1750		1829	1925	2880	1829	5081		3547	3657	1577
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1750		1829	1925	2880	1829	5081		3547	3657	1577
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	214	42	542	32	589	140	376	337	11
RTOR Reduction (vph)	0	41	0	0	0	204	0	39	0	0	0	6
Lane Group Flow (vph)	11	85	0	214	42	338	32	690	0	376	337	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	0.9	12.3		12.5	23.9	41.5	2.3	22.0		11.6	31.3	31.3
Effective Green, g (s)	1.9	15.3		13.5	26.9	44.5	3.3	25.0		12.6	34.3	34.3
Actuated g/C Ratio	0.02	0.20		0.17	0.34	0.57	0.04	0.32		0.16	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	44	341		314	660	1634	76	1620		570	1599	689
v/s Ratio Prot	0.01	c0.05		c0.12	0.02	0.12	0.02	c0.14		c0.11	0.09	
v/s Ratio Perm												0.00
v/c Ratio	0.25	0.25		0.68	0.06	0.21	0.42	0.43		0.66	0.21	0.01
Uniform Delay, d1	37.6	26.7		30.4	17.3	8.3	36.6	21.0		30.9	13.7	12.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		4.8	0.0	0.0	1.4	0.4		2.1	0.1	0.0
Delay (s)	38.6	26.8		35.2	17.3	8.3	38.0	21.4		33.0	13.8	12.4
Level of Service	D	C		D	B	A	D	C		C	B	B
Approach Delay (s)		27.8			16.0			22.1			23.8	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	745	1784	0	581	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2789
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2789
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	784	1878	0	612	768
RTOR Reduction (vph)	0	0	0	0	0	8
Lane Group Flow (vph)	0	784	1878	0	612	760
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		29.1	29.1		18.9	18.9
Effective Green, g (s)		32.1	32.1		21.9	21.9
Actuated g/C Ratio		0.54	0.54		0.36	0.36
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2811	2811		1294	1017
v/s Ratio Prot		0.15	c0.36		0.17	
v/s Ratio Perm						c0.27
v/c Ratio		0.28	0.67		0.47	0.75
Uniform Delay, d1		7.6	10.1		14.6	16.6
Progression Factor		1.00	0.94		1.00	1.00
Incremental Delay, d2		0.2	0.9		0.3	3.0
Delay (s)		7.9	10.4		14.9	19.7
Level of Service		A	B		B	B
Approach Delay (s)		7.9	10.4		17.6	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1056	0	0	1590	660	706
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1112	0	0	1674	695	743
RTOR Reduction (vph)	0	0	0	0	0	88
Lane Group Flow (vph)	1112	0	0	1674	695	655
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	31.5			31.5	16.5	16.5
Effective Green, g (s)	34.5			34.5	19.5	19.5
Actuated g/C Ratio	0.58			0.58	0.32	0.32
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3021			2102	1152	936
v/s Ratio Prot	0.21			c0.46	0.20	c0.23
v/s Ratio Perm						
v/c Ratio	0.37			0.80	0.60	0.70
Uniform Delay, d1	6.9			10.0	17.0	17.7
Progression Factor	0.52			2.29	1.00	1.00
Incremental Delay, d2	0.3			2.2	0.9	2.4
Delay (s)	3.9			25.1	17.9	20.1
Level of Service	A			C	B	C
Approach Delay (s)	3.9			25.1	19.0	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	362	1380	20	20	2045	171	10	5	10	118	5	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1712			1837	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1712			1837	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	381	1453	21	21	2153	180	11	5	11	124	5	364
RTOR Reduction (vph)	0	1	0	0	0	63	0	11	0	0	0	49
Lane Group Flow (vph)	381	1473	0	21	2153	117	0	16	0	0	129	315
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	16.7	75.2		2.8	61.3	61.3		3.0			19.0	35.7
Effective Green, g (s)	17.7	78.2		3.8	64.3	64.3		5.0			21.0	39.7
Actuated g/C Ratio	0.15	0.65		0.03	0.54	0.54		0.04			0.18	0.33
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	523	3417		57	2815	876		71			321	541
v/s Ratio Prot	c0.11	0.28		0.01	c0.41			c0.01			0.07	c0.19
v/s Ratio Perm						0.07						
v/c Ratio	0.73	0.43		0.37	0.76	0.13		0.23			0.40	0.58
Uniform Delay, d1	48.9	10.1		56.9	21.9	13.9		55.6			43.9	33.3
Progression Factor	0.99	0.77		1.21	0.10	0.01		1.00			1.00	1.00
Incremental Delay, d2	4.5	0.4		1.9	1.0	0.2		1.7			0.8	1.6
Delay (s)	52.9	8.1		70.8	3.1	0.3		57.3			44.8	34.9
Level of Service	D	A		E	A	A		E			D	C
Approach Delay (s)		17.3			3.5			57.3			37.5	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	63	74	226	109	76	170
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	66	78	238	115	80	179
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	634	295			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634	295			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	90			93	
cM capacity (veh/h)	414	744			1206	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	144	353	259
Volume Left	66	0	80
Volume Right	78	115	0
cSH	544	1700	1206
Volume to Capacity	0.26	0.21	0.07
Queue Length 95th (ft)	26	0	5
Control Delay (s)	14.0	0.0	3.0
Lane LOS	B		A
Approach Delay (s)	14.0	0.0	3.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	459	0	10	528	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	483	0	11	556	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				883		
pX, platoon unblocked						
vC, conflicting volume			483		1060	483
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			483		1060	483
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1080		246	583

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	483	11	556	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1080	1700	583
Volume to Capacity	0.28	0.01	0.33	0.02
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.4	0.0	11.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		11.3
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	1253	88	30	1992	50	187	30	40	10	10	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1535		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.67	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1239		1278	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	182	1319	93	32	2097	53	197	32	42	11	11	57
RTOR Reduction (vph)	0	0	34	0	0	30	0	6	0	0	0	43
Lane Group Flow (vph)	182	1319	59	32	2097	23	0	265	0	11	11	14
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	72.6	72.6	4.2	49.2	49.2		28.2		28.2	28.2	28.2
Effective Green, g (s)	28.6	75.6	75.6	5.2	52.2	52.2		30.2		30.2	30.2	30.2
Actuated g/C Ratio	0.24	0.63	0.63	0.04	0.44	0.44		0.25		0.25	0.25	0.25
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3310	1004	79	2285	700		311		321	484	404
v/s Ratio Prot	0.10	c0.25		0.02	c0.40						0.01	
v/s Ratio Perm			0.04			0.01		c0.21		0.01		0.01
v/c Ratio	0.42	0.40	0.06	0.41	0.92	0.03		0.85		0.03	0.02	0.04
Uniform Delay, d1	38.7	11.0	8.5	55.9	31.9	19.4		42.8		33.9	33.8	33.9
Progression Factor	0.86	0.72	0.81	0.91	1.12	1.87		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.1	2.7	6.0	0.1		19.6		0.0	0.0	0.0
Delay (s)	33.7	8.2	7.0	53.5	41.6	36.4		62.4		33.9	33.8	33.9
Level of Service	C	A	A	D	D	D		E		C	C	C
Approach Delay (s)		11.0			41.7			62.4			33.9	
Approach LOS		B			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	433	440	1170	0	0	1505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	456	463	1232	0	0	1584
RTOR Reduction (vph)	0	58	0	0	0	0
Lane Group Flow (vph)	456	405	1232	0	0	1584
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	16.6	16.6	31.4			31.4
Effective Green, g (s)	19.6	19.6	34.4			34.4
Actuated g/C Ratio	0.33	0.33	0.57			0.57
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1158	940	3012			2096
v/s Ratio Prot	0.13	c0.14	0.23			c0.43
v/s Ratio Perm						
v/c Ratio	0.39	0.43	0.41			0.76
Uniform Delay, d1	15.6	15.8	7.1			9.6
Progression Factor	1.00	1.00	1.05			1.00
Incremental Delay, d2	0.5	0.7	0.4			2.6
Delay (s)	16.1	16.5	7.8			12.2
Level of Service	B	B	A			B
Approach Delay (s)	16.3		7.8			12.2
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	650	1569	0	942	1388	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	684	1652	0	992	1461	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	684	1651	0	992	1461	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	32.0	32.0		16.0	16.0	
Effective Green, g (s)	35.0	35.0		19.0	19.0	
Actuated g/C Ratio	0.58	0.58		0.32	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2069	1680		1664	1664	
v/s Ratio Prot	0.19	c0.57		0.19	c0.28	
v/s Ratio Perm						
v/c Ratio	0.33	0.98		0.60	0.88	
Uniform Delay, d1	6.5	12.2		17.3	19.4	
Progression Factor	1.00	1.00		1.08	0.81	
Incremental Delay, d2	0.0	17.8		1.4	5.3	
Delay (s)	6.5	30.0		20.0	21.0	
Level of Service	A	C		C	C	
Approach Delay (s)	23.1			20.0	21.0	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	101	74	148	113	222	116	831	160	812	1601	544
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3274		1829	1829	1554	1829	5255	1605	3547	5021	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3274		1829	1829	1554	1829	5255	1605	3547	5021	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	257	106	78	156	119	234	122	875	168	855	1685	573
RTOR Reduction (vph)	0	28	0	0	0	76	0	0	0	0	42	0
Lane Group Flow (vph)	136	277	0	156	119	158	122	875	168	855	2216	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.3	17.3		13.8	13.8	44.7	11.5	36.0	120.0	30.9	55.4	
Effective Green, g (s)	20.3	20.3		16.8	16.8	50.7	12.5	39.0	120.0	31.9	58.4	
Actuated g/C Ratio	0.17	0.17		0.14	0.14	0.42	0.10	0.32	1.00	0.27	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	281	553		256	256	656	190	1707	1605	942	2443	
v/s Ratio Prot	0.08	c0.08		c0.09	0.07	0.10	0.07	0.17		c0.24	c0.44	
v/s Ratio Perm									0.10			
v/c Ratio	0.48	0.50		0.61	0.46	0.24	0.64	0.51	0.10	0.91	0.91	
Uniform Delay, d1	45.1	45.2		48.5	47.5	22.3	51.6	32.8	0.0	42.6	28.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.28	0.52	1.00	1.00	1.01	
Incremental Delay, d2	0.5	0.3		2.8	0.5	0.1	5.3	1.1	0.1	4.9	2.4	
Delay (s)	45.6	45.5		51.3	48.0	22.3	71.4	18.2	0.1	47.5	31.0	
Level of Service	D	D		D	D	C	E	B	A	D	C	
Approach Delay (s)		45.5			37.2			21.1			35.5	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	5	100	30	10	10	150	303	20	10	249	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	5	105	32	11	11	158	319	21	11	262	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	8	105	42	11	158	340	11	278
Volume Left (vph)	3	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	16
Hadj (s)	0.22	-0.67	0.41	-0.67	0.53	-0.01	0.53	-0.01
Departure Headway (s)	6.7	5.8	6.9	5.9	5.8	5.3	6.1	5.5
Degree Utilization, x	0.02	0.17	0.08	0.02	0.26	0.50	0.02	0.43
Capacity (veh/h)	496	571	473	553	600	666	568	633
Control Delay (s)	8.6	8.7	9.3	7.8	9.6	12.2	8.0	11.4
Approach Delay (s)	8.7		9.0		11.4		11.3	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	10.9		
Level of Service	B		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	170	90	453	30	40	50	329	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1759		1829	1925	1619	1829	1750		1737	1753	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1759		1829	1925	1619	1829	1750		1737	1753	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	179	95	477	32	42	53	346	63	11
RTOR Reduction (vph)	0	18	0	0	0	192	0	44	0	0	1	0
Lane Group Flow (vph)	11	24	0	179	95	285	32	51	0	176	243	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	5.3		10.4	14.8	32.2	8.5	8.5		17.4	17.4	
Effective Green, g (s)	1.9	7.3		11.4	16.8	36.2	10.5	10.5		19.4	19.4	
Actuated g/C Ratio	0.03	0.12		0.19	0.28	0.60	0.17	0.17		0.32	0.32	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	57	211		344	533	1047	316	303		556	561	
v/s Ratio Prot	c0.01	0.01		c0.10	0.05	c0.09	0.02	c0.03		0.10	c0.14	
v/s Ratio Perm						0.09						
v/c Ratio	0.19	0.11		0.52	0.18	0.27	0.10	0.17		0.32	0.43	
Uniform Delay, d1	28.6	23.8		22.1	16.7	5.9	21.1	21.3		15.6	16.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2		1.4	0.2	0.1	0.1	0.3		0.3	0.5	
Delay (s)	30.3	24.0		23.6	16.8	6.0	21.2	21.6		15.9	16.8	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		25.3			11.6			21.5			16.4	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	747	352	130	1144	140	650	841	130	340	701	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1570	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	215	786	371	137	1204	147	684	885	137	358	738	252
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	215	786	371	137	1204	147	684	885	137	358	738	252
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	8.8	32.0	57.0	8.1	31.3	120.0	25.0	44.2	120.0	15.7	32.9	120.0
Effective Green, g (s)	9.8	35.0	63.0	9.1	34.3	120.0	28.0	47.2	120.0	16.7	35.9	120.0
Actuated g/C Ratio	0.08	0.29	0.52	0.08	0.29	1.00	0.23	0.39	1.00	0.14	0.30	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	289	1532	824	268	1502	1588	1203	1438	1593	493	1572	1588
v/s Ratio Prot	c0.06	0.15	0.11	0.04	c0.23		0.13	c0.24		c0.10	0.14	
v/s Ratio Perm			0.13			0.09			0.09			c0.16
v/c Ratio	0.74	0.51	0.45	0.51	0.80	0.09	0.57	0.62	0.09	0.73	0.47	0.16
Uniform Delay, d1	53.9	35.4	17.7	53.3	39.7	0.0	40.7	29.1	0.0	49.5	34.3	0.0
Progression Factor	0.75	0.89	0.53	1.33	0.98	1.00	0.63	0.48	1.00	0.64	0.59	1.00
Incremental Delay, d2	8.2	0.5	0.1	0.6	3.4	0.1	0.3	1.8	0.1	4.4	1.0	0.2
Delay (s)	48.4	32.1	9.6	71.8	42.2	0.1	26.0	15.7	0.1	36.3	21.2	0.2
Level of Service	D	C	A	E	D	A	C	B	A	D	C	A
Approach Delay (s)		28.6			40.8			18.6			21.3	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	370	430	380	320	70	450	1211	400	160	723	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	389	453	400	337	74	474	1275	421	168	761	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	168	389	453	400	337	74	474	1275	421	168	761	28
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.5	20.2	120.0	17.2	27.9	120.0	30.0	54.1	120.0	8.5	32.6	32.6
Effective Green, g (s)	10.5	23.2	120.0	18.2	30.9	120.0	31.0	57.1	120.0	9.5	35.6	35.6
Actuated g/C Ratio	0.09	0.19	1.00	0.15	0.26	1.00	0.26	0.48	1.00	0.08	0.30	0.30
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	310	707	1603	537	941	1613	916	2500	1615	280	1558	471
v/s Ratio Prot	0.05	c0.11		c0.11	0.09		0.13	c0.24		c0.05	c0.14	
v/s Ratio Perm			0.28			0.05			0.26			0.02
v/c Ratio	0.54	0.55	0.28	0.74	0.36	0.05	0.52	0.51	0.26	0.60	0.49	0.06
Uniform Delay, d1	52.4	43.7	0.0	48.7	36.4	0.0	38.1	21.8	0.0	53.4	34.7	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.55	1.00	0.85	0.65	1.00
Incremental Delay, d2	1.0	1.6	0.4	4.9	0.5	0.1	0.2	0.6	0.3	2.3	1.1	0.2
Delay (s)	53.5	45.3	0.4	53.6	36.9	0.1	25.8	12.6	0.3	47.8	23.7	30.5
Level of Service	D	D	A	D	D	A	C	B	A	D	C	C
Approach Delay (s)		26.5			41.8			13.1			28.3	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	364	50	30	1271	60	40	140	20	40	200	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3576		1829	5206		3547	3570		1829	4411	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3576		1829	5206		3547	3570		1829	4411	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	383	53	32	1338	63	42	147	21	42	211	234
RTOR Reduction (vph)	0	6	0	0	3	0	0	11	0	0	186	0
Lane Group Flow (vph)	172	430	0	32	1398	0	42	157	0	42	259	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.1	67.5		5.2	61.6		5.8	20.2		7.1	21.5	
Effective Green, g (s)	12.1	70.5		6.2	64.6		6.8	23.2		8.1	24.5	
Actuated g/C Ratio	0.10	0.59		0.05	0.54		0.06	0.19		0.07	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	357	2100		94	2802		200	690		123	900	
v/s Ratio Prot	c0.05	0.12		0.02	c0.27		0.01	0.04		c0.02	c0.06	
v/s Ratio Perm												
v/c Ratio	0.48	0.20		0.34	0.50		0.21	0.23		0.34	0.29	
Uniform Delay, d1	51.0	11.6		54.9	17.5		54.0	40.8		53.4	40.4	
Progression Factor	0.81	1.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.2		2.2	0.6		0.5	0.2		1.7	0.2	
Delay (s)	42.1	15.4		57.1	18.1		54.6	41.0		55.1	40.5	
Level of Service	D	B		E	B		D	D		E	D	
Approach Delay (s)		23.0			19.0			43.7			41.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	540	810	2365	0	0	1537
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	568	853	2489	0	0	1618
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	568	853	2489	0	0	1618
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	29.5	29.5	44.5			44.5
Effective Green, g (s)	30.6	30.6	45.6			45.6
Actuated g/C Ratio	0.37	0.37	0.55			0.55
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1320	1072	2915			2915
v/s Ratio Prot	0.16	c0.30	c0.47			0.31
v/s Ratio Perm						
v/c Ratio	0.43	0.80	0.85			0.56
Uniform Delay, d1	19.3	23.0	15.5			11.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	4.2	2.6			0.2
Delay (s)	19.5	27.2	18.1			12.0
Level of Service	B	C	B			B
Approach Delay (s)	24.1		18.1			12.0
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	770	0	452	0	0	0	0	2415	850	0	1617	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.99					1.00	0.97		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2839					5255	1583		5080	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2839					5255	1583		5080	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	811	0	476	0	0	0	0	2542	895	0	1702	484
RTOR Reduction (vph)	0	0	24	0	0	0	0	0	287	0	85	0
Lane Group Flow (vph)	811	0	452	0	0	0	0	2542	608	0	2101	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	16.7		16.7					32.1	32.1		32.1	
Effective Green, g (s)	17.8		17.8					33.2	33.2		33.2	
Actuated g/C Ratio	0.31		0.31					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1107		886					3060	922		2958	
v/s Ratio Prot								c0.48			0.41	
v/s Ratio Perm	c0.23		0.16						0.38			
v/c Ratio	0.73		0.51					0.83	0.66		0.71	
Uniform Delay, d1	17.5		16.0					9.6	8.1		8.5	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		0.5					2.0	1.7		0.8	
Delay (s)	20.0		16.5					11.7	9.8		9.3	
Level of Service	C		B					B	A		A	
Approach Delay (s)		18.7			0.0			11.2			9.3	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	7.1
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	80	60	107	60	502	30	460	88	537	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1776		1829	1925	2880	1829	5109		3547	3657	1578
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1776		1829	1925	2880	1829	5109		3547	3657	1578
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	84	63	113	63	528	32	484	93	565	589	32
RTOR Reduction (vph)	0	31	0	0	0	240	0	29	0	0	0	18
Lane Group Flow (vph)	32	116	0	113	63	288	32	548	0	565	589	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	2.2	14.4		6.8	19.0	37.0	2.2	20.2		12.0	30.0	30.0
Effective Green, g (s)	3.2	17.4		7.8	22.0	40.0	3.2	23.2		13.0	33.0	33.0
Actuated g/C Ratio	0.04	0.24		0.11	0.30	0.54	0.04	0.32		0.18	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	79	421		194	576	1569	79	1614		628	1644	709
v/s Ratio Prot	0.02	c0.07		c0.06	0.03	0.10	0.02	0.11		c0.16	c0.16	
v/s Ratio Perm												0.01
v/c Ratio	0.41	0.28		0.58	0.11	0.18	0.41	0.34		0.90	0.36	0.02
Uniform Delay, d1	34.2	22.9		31.2	18.6	8.4	34.2	19.2		29.6	13.3	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		2.9	0.0	0.0	1.2	0.3		15.4	0.3	0.0
Delay (s)	35.4	23.0		34.1	18.6	8.5	35.4	19.5		44.9	13.5	11.2
Level of Service	D	C		C	B	A	D	B		D	B	B
Approach Delay (s)		25.2			13.5			20.3			28.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2312	1381	0	857	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2793
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2793
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2434	1454	0	902	463
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	0	2434	1454	0	902	449
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		27.6	27.6		20.4	20.4
Effective Green, g (s)		30.6	30.6		23.4	23.4
Actuated g/C Ratio		0.51	0.51		0.39	0.39
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2680	2680		1383	1089
v/s Ratio Prot		c0.46	0.28		c0.25	
v/s Ratio Perm						0.16
v/c Ratio		0.91	0.54		0.65	0.41
Uniform Delay, d1		13.4	10.0		15.0	13.3
Progression Factor		1.17	1.22		1.00	1.00
Incremental Delay, d2		3.6	0.6		1.1	0.3
Delay (s)		19.3	12.7		16.1	13.6
Level of Service		B	B		B	B
Approach Delay (s)		19.3	12.7		15.2	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	143.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2279	0	0	1888	320	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2399	0	0	1987	337	539
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	2399	0	0	1987	337	525
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	83.5			83.5	24.5	24.5
Effective Green, g (s)	86.5			86.5	27.5	27.5
Actuated g/C Ratio	0.72			0.72	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3787			2636	812	660
v/s Ratio Prot	0.46			c0.54	0.09	c0.18
v/s Ratio Perm						
v/c Ratio	0.63			0.75	0.42	0.80
Uniform Delay, d1	8.6			10.2	39.4	43.6
Progression Factor	1.18			2.19	1.00	1.00
Incremental Delay, d2	0.5			0.2	0.3	6.6
Delay (s)	10.6			22.6	39.7	50.2
Level of Service	B			C	D	D
Approach Delay (s)	10.6			22.6	46.2	
Approach LOS	B			C	D	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	1933	30	20	2017	385	20	5	20	346	5	883
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5243		1829	5255	1636		1704			1834	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5243		1829	5255	1636		1704			1834	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	872	2035	32	21	2123	405	21	5	21	364	5	929
RTOR Reduction (vph)	0	1	0	0	0	104	0	20	0	0	0	38
Lane Group Flow (vph)	872	2066	0	21	2123	301	0	27	0	0	369	891
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	26.0	65.2		2.8	42.0	42.0		4.0			28.0	54.0
Effective Green, g (s)	27.0	68.2		3.8	45.0	45.0		6.0			30.0	58.0
Actuated g/C Ratio	0.22	0.57		0.03	0.38	0.38		0.05			0.25	0.48
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	798	2979		57	1970	613		85			458	790
v/s Ratio Prot	0.25	0.39		0.01	c0.40			c0.02			0.20	c0.54
v/s Ratio Perm						0.18						
v/c Ratio	1.09	0.69		0.37	1.08	0.49		0.32			0.81	1.13
Uniform Delay, d1	46.5	18.5		56.9	37.5	28.7		55.0			42.3	31.0
Progression Factor	0.97	1.61		0.59	1.50	2.14		1.00			1.00	1.00
Incremental Delay, d2	56.4	1.0		2.7	42.1	1.9		2.2			9.9	73.4
Delay (s)	101.6	30.8		36.1	98.5	63.2		57.2			52.2	104.4
Level of Service	F	C		D	F	E		E			D	F
Approach Delay (s)		51.8			92.4			57.2			89.6	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	74.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	194	138	334	142	122	355
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	204	145	352	149	128	374
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1057	426			501	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1057	426			501	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	7	77			88	
cM capacity (veh/h)	219	628			1063	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	349	501	502
Volume Left	204	0	128
Volume Right	145	149	0
cSH	300	1700	1063
Volume to Capacity	1.16	0.29	0.12
Queue Length 95th (ft)	373	0	10
Control Delay (s)	141.0	0.0	3.3
Lane LOS	F		A
Approach Delay (s)	141.0	0.0	3.3
Approach LOS	F		

Intersection Summary			
Average Delay	37.6		
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1174	10	35	1183	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1236	11	37	1245	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1025		
pX, platoon unblocked						
vC, conflicting volume			1246		2560	1241
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1246		2560	1241
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		61	70
cM capacity (veh/h)			558		27	213

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1246	37	1245	74
Volume Left	0	37	0	11
Volume Right	11	0	0	63
cSH	1700	558	1700	108
Volume to Capacity	0.73	0.07	0.73	0.68
Queue Length 95th (ft)	0	5	0	89
Control Delay (s)	0.0	11.9	0.0	91.3
Lane LOS		B		F
Approach Delay (s)	0.0	0.3		91.3
Approach LOS				F

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	2008	237	40	2060	10	120	20	40	50	30	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1524		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1229		1253	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	2114	249	42	2168	11	126	21	42	53	32	261
RTOR Reduction (vph)	0	0	55	0	0	5	0	9	0	0	0	206
Lane Group Flow (vph)	51	2114	194	42	2168	6	0	180	0	53	32	55
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	75.9	75.9	5.8	60.9	60.9		23.3		23.3	23.3	23.3
Effective Green, g (s)	21.8	78.9	78.9	6.8	63.9	63.9		25.3		25.3	25.3	25.3
Actuated g/C Ratio	0.18	0.66	0.66	0.06	0.53	0.53		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3455	1048	103	2798	857		259		264	405	338
v/s Ratio Prot	0.03	c0.40		0.02	c0.41						0.02	
v/s Ratio Perm			0.12			0.00		c0.15		0.04		0.03
v/c Ratio	0.15	0.61	0.18	0.41	0.77	0.01		0.69		0.20	0.08	0.16
Uniform Delay, d1	41.3	11.8	8.0	54.7	22.3	13.2		43.8		39.0	38.0	38.7
Progression Factor	1.23	1.57	2.03	1.21	1.31	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	0.3	1.8	1.5	0.0		7.8		0.4	0.1	0.2
Delay (s)	51.0	19.1	16.6	67.9	30.6	13.2		51.6		39.4	38.1	38.9
Level of Service	D	B	B	E	C	B		D		D	D	D
Approach Delay (s)		19.5			31.2			51.6			38.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	323	620	2240	0	0	1293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	340	653	2358	0	0	1361
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	340	650	2358	0	0	1361
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	17.7	17.7	30.3			30.3
Effective Green, g (s)	20.7	20.7	33.3			33.3
Actuated g/C Ratio	0.34	0.34	0.55			0.55
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	1223	993	2916			2029
v/s Ratio Prot	0.10	c0.23	c0.45			0.37
v/s Ratio Perm						
v/c Ratio	0.28	0.65	0.81			0.67
Uniform Delay, d1	14.2	16.6	10.8			9.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.3	2.1	2.5			1.8
Delay (s)	14.5	18.7	13.3			11.2
Level of Service	B	B	B			B
Approach Delay (s)	17.3		13.3			11.2
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1130	872	0	2178	1116	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1189	918	0	2293	1175	0
RTOR Reduction (vph)	0	47	0	0	0	0
Lane Group Flow (vph)	1189	871	0	2293	1175	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	14.0	14.0		19.0	19.0	
Effective Green, g (s)	17.0	17.0		22.0	22.0	
Actuated g/C Ratio	0.38	0.38		0.49	0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1339	1088		2569	2569	
v/s Ratio Prot	c0.34	0.30		c0.44	0.22	
v/s Ratio Perm						
v/c Ratio	0.89	0.80		0.89	0.46	
Uniform Delay, d1	13.1	12.5		10.4	7.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.3	4.1		5.3	0.6	
Delay (s)	20.4	16.5		15.7	8.2	
Level of Service	C	B		B	A	
Approach Delay (s)	18.7			15.7	8.2	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	115.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	705	256	145	198	179	754	163	1097	180	465	983	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3301		1829	1688	1554	1829	5255	1605	3547	4929	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3301		1829	1688	1554	1829	5255	1605	3547	4929	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	742	269	153	208	188	794	172	1155	189	489	1035	568
RTOR Reduction (vph)	0	17	0	0	32	72	0	0	0	0	79	0
Lane Group Flow (vph)	386	762	0	208	355	523	172	1155	189	489	1524	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	27.0	27.0		19.0	19.0	45.0	14.3	30.0	120.0	22.0	37.7	
Effective Green, g (s)	30.0	30.0		22.0	22.0	47.0	15.3	33.0	120.0	23.0	40.7	
Actuated g/C Ratio	0.25	0.25		0.18	0.18	0.39	0.13	0.28	1.00	0.19	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	416	825		335	309	608	233	1445	1605	679	1671	
v/s Ratio Prot	c0.23	0.23		0.11	c0.21	0.34	0.09	c0.22		0.14	c0.31	
v/s Ratio Perm									0.12			
v/c Ratio	0.93	0.92		0.62	1.15	0.86	0.74	0.80	0.12	0.72	0.91	
Uniform Delay, d1	43.9	43.9		45.2	49.0	33.5	50.4	40.4	0.0	45.5	37.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.11	0.72	1.00	1.00	1.00	
Incremental Delay, d2	26.3	15.5		2.6	98.0	11.5	9.8	4.6	0.1	3.2	9.1	
Delay (s)	70.3	59.4		47.7	147.0	45.0	65.9	33.5	0.1	48.7	47.0	
Level of Service	E	E		D	F	D	E	C	A	D	D	
Approach Delay (s)		63.0			78.7			33.0			47.4	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	10	170	150	10	20	150	412	90	20	415	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	11	179	158	11	21	158	434	95	21	437	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	34	179	168	21	158	528	21	457
Volume Left (vph)	23	0	158	0	158	0	21	0
Volume Right (vph)	0	179	0	21	0	95	0	20
Hadj (s)	0.38	-0.67	0.50	-0.67	0.53	-0.09	0.53	0.00
Departure Headway (s)	8.5	7.5	8.6	7.5	7.4	6.8	7.7	7.1
Degree Utilization, x	0.08	0.37	0.40	0.04	0.33	1.00	0.04	0.90
Capacity (veh/h)	404	459	400	456	475	528	458	500
Control Delay (s)	11.1	13.6	16.1	9.6	12.7	62.9	9.8	45.3
Approach Delay (s)	13.2		15.4		51.4		43.7	
Approach LOS	B		C		F		E	

Intersection Summary			
Delay	39.5		
Level of Service	E		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	110	40	40	120	602	10	60	200	685	100	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1829	1836		1829	1925	1621	1829	1684		1737	1756	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1829	1836		1829	1925	1621	1829	1684		1737	1756	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	116	42	42	126	634	11	63	211	721	105	11
RTOR Reduction (vph)	0	13	0	0	0	252	0	136	0	0	1	0
Lane Group Flow (vph)	11	145	0	42	126	382	11	138	0	397	439	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	13.2		3.4	15.6	39.1	12.4	12.4		23.5	23.5	
Effective Green, g (s)	2.0	15.2		4.4	17.6	43.1	14.4	14.4		25.5	25.5	
Actuated g/C Ratio	0.03	0.21		0.06	0.25	0.60	0.20	0.20		0.36	0.36	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	390		112	473	1045	368	339		619	626	
v/s Ratio Prot	0.01	0.08		c0.02	0.07	c0.13	0.01	c0.08		0.23	c0.25	
v/s Ratio Perm						0.11						
v/c Ratio	0.22	0.37		0.38	0.27	0.37	0.03	0.41		0.64	0.70	
Uniform Delay, d1	34.0	24.1		32.2	21.7	7.2	22.9	24.8		19.2	19.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.6		2.1	0.3	0.2	0.0	0.8		2.3	3.6	
Delay (s)	36.1	24.7		34.3	22.0	7.5	23.0	25.6		21.5	23.3	
Level of Service	D	C		C	C	A	C	C		C	C	
Approach Delay (s)		25.4			11.2			25.5			22.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	71.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	1240	616	180	1174	150	691	801	90	260	901	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1563	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	256	1305	648	189	1236	158	727	843	95	274	948	257
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	256	1305	648	189	1236	158	727	843	95	274	948	257
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	12.5	33.3	53.3	10.1	30.9	120.0	20.0	43.3	120.0	13.3	35.6	120.0
Effective Green, g (s)	13.5	36.3	57.3	11.1	33.9	120.0	22.0	46.3	120.0	14.3	38.6	120.0
Actuated g/C Ratio	0.11	0.30	0.48	0.09	0.28	1.00	0.18	0.39	1.00	0.12	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	399	1589	785	328	1484	1588	945	1410	1593	422	1690	1588
v/s Ratio Prot	0.07	c0.25	c0.15	0.05	c0.24		0.14	0.23		c0.08	c0.18	
v/s Ratio Perm			0.26			0.10			0.06			0.16
v/c Ratio	0.64	0.82	0.83	0.58	0.83	0.10	0.77	0.60	0.06	0.65	0.56	0.16
Uniform Delay, d1	50.9	38.8	27.0	52.2	40.4	0.0	46.6	29.4	0.0	50.5	33.7	0.0
Progression Factor	1.45	1.09	1.27	0.92	0.90	1.00	0.75	0.62	1.00	1.44	0.94	1.00
Incremental Delay, d2	2.1	3.3	5.5	1.5	4.5	0.1	3.4	1.8	0.1	2.5	1.3	0.2
Delay (s)	75.8	45.5	39.8	49.5	40.9	0.1	38.5	20.0	0.1	75.3	32.9	0.2
Level of Service	E	D	D	D	D	A	D	B	A	E	C	A
Approach Delay (s)		47.3			37.9			26.9			35.0	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	240	597	600	280	140	370	862	340	120	1377	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	253	628	632	295	147	389	907	358	126	1449	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	125	253	628	632	295	147	389	907	358	126	1449	36
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.8	17.9	120.0	23.8	34.9	120.0	16.0	51.5	120.0	6.8	42.3	42.3
Effective Green, g (s)	7.8	20.9	120.0	24.8	37.9	120.0	17.0	54.5	120.0	7.8	45.3	45.3
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.14	0.45	1.00	0.06	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	230	636	1603	733	1155	1613	502	2386	1615	230	1983	599
v/s Ratio Prot	0.04	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.28	
v/s Ratio Perm			c0.39			0.09			0.22			0.02
v/c Ratio	0.54	0.40	0.39	0.86	0.26	0.09	0.77	0.38	0.22	0.55	0.73	0.06
Uniform Delay, d1	54.4	44.0	0.0	46.0	30.5	0.0	49.7	21.6	0.0	54.4	32.1	23.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.28	1.60	1.00	1.07	0.71	1.00
Incremental Delay, d2	1.4	0.9	0.7	9.9	0.2	0.1	6.5	0.4	0.3	1.4	2.3	0.2
Delay (s)	55.8	44.8	0.7	55.9	30.8	0.1	70.2	35.0	0.3	59.4	25.2	24.0
Level of Service	E	D	A	E	C	A	E	C	A	E	C	C
Approach Delay (s)		18.7			41.3			35.8			27.7	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	1291	30	20	597	40	70	180	20	60	270	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3642		1829	5187		3547	3587		1829	4427	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3642		1829	5187		3547	3587		1829	4427	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	1359	32	21	628	42	74	189	21	63	284	302
RTOR Reduction (vph)	0	1	0	0	5	0	0	8	0	0	178	0
Lane Group Flow (vph)	263	1390	0	21	665	0	74	202	0	63	408	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.2	67.3		3.3	56.4		6.7	21.5		7.9	22.7	
Effective Green, g (s)	15.2	70.3		4.3	59.4		7.7	24.5		8.9	25.7	
Actuated g/C Ratio	0.13	0.59		0.04	0.49		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	449	2133		65	2567		227	732		135	948	
v/s Ratio Prot	c0.07	c0.38		0.01	0.13		0.02	0.06		c0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.59	0.65		0.32	0.26		0.33	0.28		0.47	0.43	
Uniform Delay, d1	49.4	16.6		56.4	17.6		53.7	40.3		53.3	40.8	
Progression Factor	1.26	0.40		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.3		2.9	0.2		0.8	0.2		2.5	0.3	
Delay (s)	63.7	8.0		59.3	17.8		54.5	40.5		55.8	41.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.8			19.1			44.1			42.6	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1215	1206	0	578	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1279	1269	0	608	663
RTOR Reduction (vph)	0	0	0	0	0	43
Lane Group Flow (vph)	0	1279	1269	0	608	620
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		30.7	30.7		17.3	17.3
Effective Green, g (s)		33.7	33.7		20.3	20.3
Actuated g/C Ratio		0.56	0.56		0.34	0.34
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2980	2980		1212	983
v/s Ratio Prot		c0.24	0.24		0.17	
v/s Ratio Perm						c0.21
v/c Ratio		0.43	0.43		0.50	0.63
Uniform Delay, d1		7.6	7.6		15.8	16.7
Progression Factor		1.00	0.71		1.00	1.00
Incremental Delay, d2		0.5	0.4		0.3	1.3
Delay (s)		8.0	5.7		16.1	18.0
Level of Service		A	A		B	B
Approach Delay (s)		8.0	5.7		17.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1183	0	0	1339	330	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1245	0	0	1409	347	389
RTOR Reduction (vph)	0	0	0	0	0	69
Lane Group Flow (vph)	1245	0	0	1409	347	320
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	36.3			36.3	11.7	11.7
Effective Green, g (s)	39.3			39.3	14.7	14.7
Actuated g/C Ratio	0.65			0.65	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3476			2418	877	712
v/s Ratio Prot	0.23			c0.38	0.10	c0.11
v/s Ratio Perm						
v/c Ratio	0.36			0.58	0.40	0.45
Uniform Delay, d1	4.7			5.8	18.9	19.2
Progression Factor	0.94			1.00	1.00	1.00
Incremental Delay, d2	0.3			1.0	0.3	0.5
Delay (s)	4.7			6.8	19.2	19.7
Level of Service	A			A	B	B
Approach Delay (s)	4.7			6.8	19.5	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	799	734	20	10	1179	389	30	10	10	385	10	786
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5282		1847	5307	1607		1817			1854	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5282		1847	5307	1607		1817			1854	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	841	773	21	11	1241	409	32	11	11	405	11	827
RTOR Reduction (vph)	0	3	0	0	0	287	0	10	0	0	0	76
Lane Group Flow (vph)	841	791	0	11	1241	122	0	44	0	0	416	751
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	19.5	34.6		1.4	16.5	16.5		3.0			16.0	35.5
Effective Green, g (s)	20.5	37.6		2.4	19.5	19.5		5.0			18.0	39.5
Actuated g/C Ratio	0.27	0.50		0.03	0.26	0.26		0.07			0.24	0.53
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	979	2648		59	1379	417		121			444	870
v/s Ratio Prot	0.23	0.15		0.01	c0.23			c0.02			c0.22	c0.45
v/s Ratio Perm						0.08						
v/c Ratio	0.86	0.30		0.19	0.90	0.29		0.36			0.94	0.86
Uniform Delay, d1	25.9	11.0		35.3	26.8	22.2		33.5			27.9	15.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	7.6	0.3		1.5	9.7	1.8		1.8			27.3	8.8
Delay (s)	33.5	11.3		36.9	36.5	24.0		35.3			55.2	24.2
Level of Service	C	B		D	D	C		D			E	C
Approach Delay (s)		22.7			33.4			35.3			34.6	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	71	171	208	68	140	291
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	75	180	219	72	147	306
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	856	255			291	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	856	255			291	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	74	77			88	
cM capacity (veh/h)	290	784			1271	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	255	291	454
Volume Left	75	0	147
Volume Right	180	72	0
cSH	523	1700	1271
Volume to Capacity	0.49	0.17	0.12
Queue Length 95th (ft)	66	0	10
Control Delay (s)	18.2	0.0	3.4
Lane LOS	C		A
Approach Delay (s)	18.2	0.0	3.4
Approach LOS	C		

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1161	10	10	1188	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1222	11	11	1251	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1233		2499	1227
vC1, stage 1 conf vol					1227	
vC2, stage 2 conf vol					1272	
vCu, unblocked vol			1233		2499	1227
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	90
cM capacity (veh/h)			565		184	217

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1233	11	1251	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	565	1700	205
Volume to Capacity	0.73	0.02	0.74	0.15
Queue Length 95th (ft)	0	1	0	13
Control Delay (s)	0.0	11.5	0.0	25.7
Lane LOS		B		D
Approach Delay (s)	0.0	0.1		25.7
Approach LOS				D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	620	193	186	201	176	340	237	1207	210	421	528	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3297		1847	1847	1570	1847	5307	1627	3583	4839	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3297		1847	1847	1570	1847	5307	1627	3583	4839	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	653	203	196	212	185	358	249	1271	221	443	556	615
RTOR Reduction (vph)	0	32	0	0	0	56	0	0	0	0	156	0
Lane Group Flow (vph)	353	667	0	212	185	302	249	1271	221	443	1015	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	27.1	27.1		15.5	15.5	31.6	18.3	39.3	120.0	16.1	37.1	
Effective Green, g (s)	30.1	30.1		18.5	18.5	37.6	19.3	42.3	120.0	17.1	40.1	
Actuated g/C Ratio	0.25	0.25		0.15	0.15	0.31	0.16	0.35	1.00	0.14	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	421	826		284	284	491	297	1870	1627	510	1617	
v/s Ratio Prot	c0.21	0.20		c0.11	0.10	0.19	0.13	c0.24		c0.12	0.21	
v/s Ratio Perm									c0.14			
v/c Ratio	0.84	0.81		0.75	0.65	0.61	0.84	0.68	0.14	0.87	0.88dr	
Uniform Delay, d1	42.6	42.2		48.5	47.7	35.0	48.8	33.1	0.0	50.4	33.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.34	0.73	1.00	1.00	0.99	
Incremental Delay, d2	13.1	5.5		9.0	4.0	1.6	17.4	2.0	0.2	14.1	1.9	
Delay (s)	55.7	47.7		57.5	51.8	36.6	82.7	26.1	0.2	64.5	35.0	
Level of Service	E	D		E	D	D	F	C	A	E	D	
Approach Delay (s)		50.4			46.2			30.9			43.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	32	40	240	240	80	40	260	337	140	30	399	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	34	42	253	253	84	42	274	355	147	32	420	34

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	76	253	337	42	274	502	32	454
Volume Left (vph)	34	0	253	0	274	0	32	0
Volume Right (vph)	0	253	0	42	0	147	0	34
Hadj (s)	0.24	-0.68	0.39	-0.68	0.52	-0.19	0.52	-0.03
Departure Headway (s)	9.3	8.4	9.2	8.1	8.9	8.2	9.0	8.5
Degree Utilization, x	0.20	0.59	0.86	0.10	0.68	1.0	0.08	1.0
Capacity (veh/h)	378	412	384	433	396	442	388	427
Control Delay (s)	13.4	21.8	46.8	10.8	27.3	115.3	11.6	91.8
Approach Delay (s)	19.9		42.8		84.3		86.6	
Approach LOS	C		E		F		F	

Intersection Summary			
Delay	66.1		
Level of Service	F		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	50	707	20	60	60	789	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.93		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1831		1847	1944	1652	1847	1784		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1831		1847	1944	1652	1847	1784		1754	1776	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	53	744	21	63	63	831	137	11
RTOR Reduction (vph)	0	19	0	0	0	269	0	40	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	53	475	21	86	0	424	554	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.9	8.4		3.9	10.4	42.5	9.4	9.4		32.1	32.1	
Effective Green, g (s)	2.9	10.4		4.9	12.4	46.5	11.4	11.4		34.1	34.1	
Actuated g/C Ratio	0.04	0.14		0.07	0.17	0.64	0.16	0.16		0.47	0.47	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	73	261		124	331	1123	289	279		821	831	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.20	0.01	c0.05		0.24	c0.31	
v/s Ratio Perm						0.09						
v/c Ratio	0.29	0.41		0.34	0.16	0.42	0.07	0.31		0.52	0.67	
Uniform Delay, d1	33.9	28.4		32.4	25.8	6.5	26.2	27.2		13.6	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.1		1.6	0.2	0.3	0.1	0.6		0.6	2.0	
Delay (s)	36.1	29.5		34.0	26.0	6.8	26.3	27.8		14.1	17.0	
Level of Service	D	C		C	C	A	C	C		B	B	
Approach Delay (s)		30.4			9.3			27.6			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	423	339	170	661	150	420	1143	70	190	573	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1636	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	305	445	357	179	696	158	442	1203	74	200	603	251
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	305	445	357	179	696	158	442	1203	74	200	603	251
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	7.0	21.7	25.7	6.0	20.7	90.0	4.0	35.1	90.0	7.2	36.3	90.0
Effective Green, g (s)	8.0	24.7	31.7	7.0	23.7	90.0	7.0	38.1	90.0	8.2	39.3	90.0
Actuated g/C Ratio	0.09	0.27	0.35	0.08	0.26	1.00	0.08	0.42	1.00	0.09	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	318	1456	576	278	1397	1632	405	1563	1631	326	2317	1652
v/s Ratio Prot	c0.09	0.08	c0.05	0.05	0.13		c0.08	c0.33		c0.06	0.11	
v/s Ratio Perm			0.17			0.10			0.05			c0.15
v/c Ratio	0.96	0.31	0.62	0.64	0.50	0.10	1.09	0.77	0.05	0.61	0.26	0.15
Uniform Delay, d1	40.8	25.9	24.2	40.3	28.1	0.0	41.5	22.2	0.0	39.4	16.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.8	0.3	1.4	3.8	0.6	0.1	71.6	3.7	0.1	2.4	0.3	0.2
Delay (s)	79.7	26.1	25.6	44.1	28.7	0.1	113.1	25.9	0.1	41.8	16.4	0.2
Level of Service	E	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		40.7			27.0			47.2			17.3	
Approach LOS		D			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	910	860	1510	0	0	1650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	958	905	1589	0	0	1737
RTOR Reduction (vph)	0	8	0	0	0	0
Lane Group Flow (vph)	958	897	1589	0	0	1737
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	21.4	21.4	22.1			22.1
Effective Green, g (s)	22.5	22.5	23.2			23.2
Actuated g/C Ratio	0.44	0.44	0.45			0.45
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1543	1253	2358			2358
v/s Ratio Prot	0.27	c0.31	0.30			c0.33
v/s Ratio Perm						
v/c Ratio	0.62	0.72	0.67			0.74
Uniform Delay, d1	11.3	12.0	11.3			11.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.8	2.0	0.8			1.2
Delay (s)	12.1	13.9	12.0			13.0
Level of Service	B	B	B			B
Approach Delay (s)	13.0		12.0			13.0
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	6.0
Intersection Capacity Utilization	108.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	590	0	960	0	0	0	0	1210	380	0	1570	880
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	3.1
Lane Util. Factor	0.97		0.88					0.95	0.88		0.95	1.00
Frpb, ped/bikes	1.00		0.99					1.00	0.97		1.00	1.00
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	3547		2839					3657	2786		3657	1636
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	3547		2839					3657	2786		3657	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	621	0	1011	0	0	0	0	1274	400	0	1653	926
RTOR Reduction (vph)	0	0	15	0	0	0	0	0	181	0	0	454
Lane Group Flow (vph)	621	0	996	0	0	0	0	1274	219	0	1653	472
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4						2			6
Actuated Green, G (s)	21.6		21.6					29.0	29.0		29.0	29.0
Effective Green, g (s)	22.7		22.7					30.1	30.1		30.1	30.0
Actuated g/C Ratio	0.39		0.39					0.51	0.51		0.51	0.51
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	1369		1096					1872	1426		1872	834
v/s Ratio Prot								0.35			c0.45	
v/s Ratio Perm	0.18		c0.35						0.08			0.29
v/c Ratio	0.45		0.91					0.68	0.15		0.88	0.57
Uniform Delay, d1	13.4		17.1					10.7	7.6		12.8	9.9
Progression Factor	1.00		1.00					1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2		10.9					1.0	0.1		5.3	0.9
Delay (s)	13.7		28.0					11.8	7.7		18.1	10.8
Level of Service	B		C					B	A		B	B
Approach Delay (s)		22.5			0.0			10.8			15.5	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	7.1
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	200	40	510	50	730	150	470	510	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1748		1829	1925	2880	1829	5099		3547	3657	1576
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1748		1829	1925	2880	1829	5099		3547	3657	1576
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	211	42	537	53	768	158	495	537	11
RTOR Reduction (vph)	0	39	0	0	0	156	0	31	0	0	0	6
Lane Group Flow (vph)	11	87	0	211	42	381	53	895	0	495	537	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	1.0	16.1		11.9	27.0	47.7	3.7	22.8		14.7	33.8	33.8
Effective Green, g (s)	2.0	19.1		12.9	30.0	50.7	4.7	25.8		15.7	36.8	36.8
Actuated g/C Ratio	0.02	0.22		0.15	0.35	0.59	0.05	0.30		0.18	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	42	390		275	675	1707	100	1538		651	1574	678
v/s Ratio Prot	0.01	0.05		c0.12	0.02	c0.13	0.03	c0.18		c0.14	0.15	
v/s Ratio Perm												0.00
v/c Ratio	0.26	0.22		0.77	0.06	0.22	0.53	0.58		0.76	0.34	0.01
Uniform Delay, d1	41.0	27.1		34.9	18.4	8.2	39.3	25.3		33.1	16.3	13.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		10.9	0.0	0.0	2.7	0.9		4.7	0.3	0.0
Delay (s)	42.2	27.2		45.8	18.4	8.2	42.0	26.2		37.8	16.5	13.9
Level of Service	D	C		D	B	A	D	C		D	B	B
Approach Delay (s)		28.4			18.8			27.0			26.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	850	1660	0	600	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2792
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2792
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	895	1747	0	632	789
RTOR Reduction (vph)	0	0	0	0	0	8
Lane Group Flow (vph)	0	895	1747	0	632	781
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		27.8	27.8		20.2	20.2
Effective Green, g (s)		30.8	30.8		23.2	23.2
Actuated g/C Ratio		0.51	0.51		0.39	0.39
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2697	2697		1371	1079
v/s Ratio Prot		0.17	c0.33		0.18	
v/s Ratio Perm						c0.28
v/c Ratio		0.33	0.65		0.46	0.72
Uniform Delay, d1		8.6	10.6		13.7	15.7
Progression Factor		1.00	0.88		1.00	1.00
Incremental Delay, d2		0.3	0.9		0.2	2.4
Delay (s)		8.9	10.3		14.0	18.1
Level of Service		A	B		B	B
Approach Delay (s)		8.9	10.3		16.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1160	0	0	1460	660	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1221	0	0	1537	695	705
RTOR Reduction (vph)	0	0	0	0	0	90
Lane Group Flow (vph)	1221	0	0	1537	695	615
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	33.5			33.5	14.5	14.5
Effective Green, g (s)	36.5			36.5	17.5	17.5
Actuated g/C Ratio	0.61			0.61	0.29	0.29
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3196			2224	1034	840
v/s Ratio Prot	0.23			c0.42	0.20	c0.21
v/s Ratio Perm						
v/c Ratio	0.38			0.69	0.67	0.73
Uniform Delay, d1	6.0			7.9	18.7	19.1
Progression Factor	0.68			1.15	1.00	1.00
Incremental Delay, d2	0.3			1.4	1.7	3.3
Delay (s)	4.4			10.6	20.5	22.5
Level of Service	A			B	C	C
Approach Delay (s)	4.4			10.6	21.5	
Approach LOS	A			B	C	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	1500	20	20	2030	210	10	5	10	50	10	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1738			1822	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.90			0.77	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1602			1460	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	326	1579	21	21	2137	221	11	5	11	53	11	232
RTOR Reduction (vph)	0	1	0	0	0	41	0	9	0	0	0	55
Lane Group Flow (vph)	326	1599	0	21	2137	180	0	18	0	0	64	177
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	16.3	84.8		3.6	72.1	72.1		16.6			16.6	37.9
Effective Green, g (s)	17.3	87.8		4.6	75.1	75.1		18.6			18.6	39.9
Actuated g/C Ratio	0.14	0.73		0.04	0.63	0.63		0.16			0.16	0.33
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	511	3836		70	3288	1023		248			226	543
v/s Ratio Prot	c0.09	0.30		0.01	c0.41							c0.11
v/s Ratio Perm						0.11		0.01			0.04	
v/c Ratio	0.64	0.42		0.30	0.65	0.18		0.07			0.28	0.33
Uniform Delay, d1	48.4	6.2		56.1	14.2	9.4		43.3			44.8	30.0
Progression Factor	0.98	0.96		0.59	0.28	0.30		1.00			1.00	1.00
Incremental Delay, d2	2.3	0.3		1.5	0.6	0.2		0.1			0.7	0.4
Delay (s)	49.8	6.2		34.6	4.6	3.0		43.4			45.5	30.3
Level of Service	D	A		C	A	A		D			D	C
Approach Delay (s)		13.6			4.7			43.4			33.6	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	40	225	110	50	160
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	42	237	116	53	168
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	568	295			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	568	295			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	94			96	
cM capacity (veh/h)	463	745			1206	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	105	353	221
Volume Left	63	0	53
Volume Right	42	116	0
cSH	545	1700	1206
Volume to Capacity	0.19	0.21	0.04
Queue Length 95th (ft)	18	0	3
Control Delay (s)	13.2	0.0	2.2
Lane LOS	B		A
Approach Delay (s)	13.2	0.0	2.2
Approach LOS	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	270	0	10	515	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	284	0	11	542	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				982		
pX, platoon unblocked						
vC, conflicting volume			284		847	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			284		847	284
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1278		329	755

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	284	11	542	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1278	1700	755
Volume to Capacity	0.17	0.01	0.32	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	7.8	0.0	9.8
Lane LOS		A		A
Approach Delay (s)	0.0	0.1		9.8
Approach LOS				A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	1310	80	30	2000	50	210	30	40	10	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1536		1825	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.77		0.66	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1232		1266	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	1379	84	32	2105	53	221	32	42	11	11	53
RTOR Reduction (vph)	0	0	28	0	0	27	0	6	0	0	0	37
Lane Group Flow (vph)	179	1379	56	32	2105	26	0	289	0	11	11	16
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	15.6	67.2	67.2	4.6	56.2	56.2		33.2		33.2	33.2	33.2
Effective Green, g (s)	16.6	70.2	70.2	5.6	59.2	59.2		35.2		35.2	35.2	35.2
Actuated g/C Ratio	0.14	0.59	0.59	0.05	0.49	0.49		0.29		0.29	0.29	0.29
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	253	3074	933	85	2592	794		361		371	564	471
v/s Ratio Prot	c0.10	0.26		0.02	c0.40						0.01	
v/s Ratio Perm			0.03			0.02		c0.23		0.01		0.01
v/c Ratio	0.71	0.45	0.06	0.38	0.81	0.03		0.80		0.03	0.02	0.03
Uniform Delay, d1	49.4	14.0	10.7	55.5	25.7	15.7		39.2		30.2	30.1	30.3
Progression Factor	0.76	0.40	0.09	1.21	0.55	1.25		1.00		1.00	1.00	1.00
Incremental Delay, d2	8.2	0.4	0.1	1.8	1.9	0.0		12.1		0.0	0.0	0.0
Delay (s)	45.6	6.0	1.1	69.0	15.9	19.6		51.2		30.3	30.1	30.3
Level of Service	D	A	A	E	B	B		D		C	C	C
Approach Delay (s)		10.1			16.8			51.2			30.3	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	440	560	1330	0	0	1640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	463	589	1400	0	0	1726
RTOR Reduction (vph)	0	73	0	0	0	0
Lane Group Flow (vph)	463	516	1400	0	0	1726
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	13.0	13.0	35.0			35.0
Effective Green, g (s)	16.0	16.0	38.0			38.0
Actuated g/C Ratio	0.27	0.27	0.63			0.63
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	945	768	3328			2316
v/s Ratio Prot	0.13	c0.18	0.27			c0.47
v/s Ratio Perm						
v/c Ratio	0.49	0.67	0.42			0.75
Uniform Delay, d1	18.6	19.7	5.5			7.6
Progression Factor	1.00	1.00	0.40			1.00
Incremental Delay, d2	0.8	3.0	0.3			2.2
Delay (s)	19.4	22.7	2.6			9.9
Level of Service	B	C	A			A
Approach Delay (s)	21.2		2.6			9.9
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	750	1670	0	1020	1480	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	789	1758	0	1074	1558	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	789	1757	0	1074	1558	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	39.0	39.0		19.0	19.0	
Effective Green, g (s)	42.0	42.0		22.0	22.0	
Actuated g/C Ratio	0.60	0.60		0.31	0.31	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2128	1728		1651	1651	
v/s Ratio Prot	0.22	c0.61		0.20	c0.30	
v/s Ratio Perm						
v/c Ratio	0.37	1.02		0.65	0.94	
Uniform Delay, d1	7.2	14.0		20.7	23.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	26.0		2.0	12.3	
Delay (s)	7.2	40.0		22.7	35.7	
Level of Service	A	D		C	D	
Approach Delay (s)	29.8			22.7	35.7	
Approach LOS	C			C	D	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	90	80	180	100	240	120	990	180	860	1740	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3257		1829	1829	1554	1829	5255	1605	3547	5033	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3257		1829	1829	1554	1829	5255	1605	3547	5033	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	95	84	189	105	253	126	1042	189	905	1832	579
RTOR Reduction (vph)	0	36	0	0	0	95	0	0	0	0	40	0
Lane Group Flow (vph)	137	259	0	189	105	158	126	1042	189	905	2371	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.0	17.0		9.0	9.0	42.5	8.0	38.5	120.0	33.5	64.0	
Effective Green, g (s)	20.0	20.0		12.0	12.0	48.5	9.0	41.5	120.0	34.5	67.0	
Actuated g/C Ratio	0.17	0.17		0.10	0.10	0.40	0.08	0.35	1.00	0.29	0.56	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	277	542		182	182	628	137	1817	1605	1019	2810	
v/s Ratio Prot	c0.08	0.08		c0.10	0.06	0.10	c0.07	0.20		c0.26	c0.47	
v/s Ratio Perm									0.12			
v/c Ratio	0.49	0.48		1.04	0.58	0.25	0.92	0.57	0.12	0.89	0.84	
Uniform Delay, d1	45.4	45.3		54.0	51.6	23.7	55.1	32.0	0.0	40.9	22.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.68	0.49	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.2		77.2	2.7	0.1	51.0	1.3	0.1	9.3	3.3	
Delay (s)	45.9	45.5		131.2	54.3	23.8	88.3	16.9	0.1	50.2	25.4	
Level of Service	D	D		F	D	C	F	B	A	D	C	
Approach Delay (s)		45.6			66.8			21.2			32.2	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	5	100	30	10	10	150	300	20	10	220	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	5	105	32	11	11	158	316	21	11	232	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	5	105	42	11	158	337	11	242
Volume Left (vph)	0	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	11
Hadj (s)	0.03	-0.67	0.41	-0.67	0.53	-0.01	0.53	0.00
Departure Headway (s)	6.4	5.7	6.8	5.8	5.8	5.2	6.0	5.5
Degree Utilization, x	0.01	0.17	0.08	0.02	0.25	0.49	0.02	0.37
Capacity (veh/h)	518	581	481	564	607	673	570	633
Control Delay (s)	8.2	8.6	9.2	7.7	9.5	11.9	7.9	10.5
Approach Delay (s)	8.6		8.9		11.2		10.4	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	10.5		
Level of Service	B		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	180	80	480	40	40	70	300	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.90		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1759		1829	1925	1616	1829	1725		1737	1754	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1759		1829	1925	1616	1829	1725		1737	1754	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	189	84	505	42	42	74	316	63	11
RTOR Reduction (vph)	0	19	0	0	0	196	0	61	0	0	2	0
Lane Group Flow (vph)	11	23	0	189	84	309	42	55	0	161	227	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	5.5		14.2	18.8	35.0	8.9	8.9		16.2	16.2	
Effective Green, g (s)	1.9	7.5		15.2	20.8	39.0	10.9	10.9		18.2	18.2	
Actuated g/C Ratio	0.03	0.12		0.24	0.33	0.61	0.17	0.17		0.29	0.29	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	54	206		435	627	1063	312	294		495	500	
v/s Ratio Prot	c0.01	0.01		c0.10	0.04	c0.08	0.02	c0.03		0.09	c0.13	
v/s Ratio Perm						0.11						
v/c Ratio	0.20	0.11		0.43	0.13	0.29	0.13	0.19		0.33	0.45	
Uniform Delay, d1	30.2	25.2		20.6	15.2	5.9	22.4	22.7		18.0	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.2		0.7	0.1	0.2	0.2	0.3		0.4	0.7	
Delay (s)	32.1	25.4		21.3	15.3	6.0	22.6	23.0		18.3	19.4	
Level of Service	C	C		C	B	A	C	C		B	B	
Approach Delay (s)		26.8			10.7			22.9			19.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	790	360	150	1170	170	680	900	140	410	800	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1566	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1566	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	832	379	158	1232	179	716	947	147	432	842	242
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	221	832	379	158	1232	179	716	947	147	432	842	242
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	9.6	25.6	42.6	12.3	28.3	120.0	17.0	43.9	120.0	18.2	43.1	120.0
Effective Green, g (s)	10.6	28.6	48.6	13.3	31.3	120.0	20.0	46.9	120.0	19.2	46.1	120.0
Actuated g/C Ratio	0.09	0.24	0.41	0.11	0.26	1.00	0.17	0.39	1.00	0.16	0.38	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	313	1252	673	393	1370	1588	859	1429	1593	567	2018	1588
v/s Ratio Prot	0.06	0.16	c0.09	0.04	c0.23		c0.14	c0.26		c0.12	0.16	
v/s Ratio Perm			0.15			0.11			0.09			0.15
v/c Ratio	0.71	0.66	0.56	0.40	0.90	0.11	0.83	0.66	0.09	0.76	0.42	0.15
Uniform Delay, d1	53.2	41.4	27.5	49.6	42.8	0.0	48.4	30.0	0.0	48.2	27.1	0.0
Progression Factor	0.70	1.00	0.94	0.71	0.66	1.00	0.80	0.67	1.00	0.69	1.11	1.00
Incremental Delay, d2	5.4	1.6	0.6	0.2	8.2	0.1	6.3	2.3	0.1	5.2	0.6	0.2
Delay (s)	42.9	43.1	26.6	35.5	36.4	0.1	45.1	22.5	0.1	38.5	30.7	0.2
Level of Service	D	D	C	D	D	A	D	C	A	D	C	A
Approach Delay (s)		38.7			32.2			29.6			28.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	380	450	500	410	70	480	1260	440	170	760	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	400	474	526	432	74	505	1326	463	179	800	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	168	400	474	526	432	74	505	1326	463	179	800	28
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	8.5	20.4	120.0	21.7	33.6	120.0	26.0	48.7	120.0	9.2	31.9	31.9
Effective Green, g (s)	9.5	23.4	120.0	22.7	36.6	120.0	27.0	51.7	120.0	10.2	34.9	34.9
Actuated g/C Ratio	0.08	0.19	1.00	0.19	0.31	1.00	0.22	0.43	1.00	0.08	0.29	0.29
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	280	713	1603	670	1115	1613	798	2264	1615	301	1528	462
v/s Ratio Prot	c0.05	c0.11		c0.15	0.12		0.14	c0.25		c0.05	0.15	
v/s Ratio Perm			0.30			0.05			0.29			0.02
v/c Ratio	0.60	0.56	0.30	0.79	0.39	0.05	0.63	0.59	0.29	0.59	0.52	0.06
Uniform Delay, d1	53.4	43.7	0.0	46.3	32.9	0.0	42.0	26.0	0.0	52.9	35.6	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.61	1.00	1.05	0.62	1.00
Incremental Delay, d2	2.3	1.7	0.5	5.6	0.5	0.1	1.0	0.9	0.4	2.1	1.3	0.2
Delay (s)	55.7	45.3	0.5	51.9	33.3	0.1	30.6	16.8	0.4	57.4	23.3	31.0
Level of Service	E	D	A	D	C	A	C	B	A	E	C	C
Approach Delay (s)		26.6			40.4			16.5			29.6	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	540	70	40	1410	60	50	140	20	50	240	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3580		1829	5211		3547	3570		1829	4484	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3580		1829	5211		3547	3570		1829	4484	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	200	568	74	42	1484	63	53	147	21	53	253	232
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	151	0
Lane Group Flow (vph)	200	635	0	42	1544	0	53	158	0	53	334	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	11.5	67.3		5.6	61.4		5.5	20.8		6.3	21.6	
Effective Green, g (s)	12.5	70.3		6.6	64.4		6.5	23.8		7.3	24.6	
Actuated g/C Ratio	0.10	0.59		0.05	0.54		0.05	0.20		0.06	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	369	2097		100	2796		192	708		111	919	
v/s Ratio Prot	c0.06	0.18		0.02	c0.30		0.01	0.04		c0.03	c0.07	
v/s Ratio Perm												
v/c Ratio	0.54	0.30		0.42	0.55		0.28	0.22		0.48	0.36	
Uniform Delay, d1	51.0	12.5		54.8	18.3		54.5	40.3		54.5	41.0	
Progression Factor	0.81	1.30		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.3		2.8	0.8		0.8	0.2		3.2	0.2	
Delay (s)	43.0	16.6		57.7	19.1		55.3	40.5		57.7	41.2	
Level of Service	D	B		E	B		E	D		E	D	
Approach Delay (s)		22.9			20.1			44.0			42.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	270	610	2390	0	0	1640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	642	2516	0	0	1726
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	284	642	2516	0	0	1726
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	21.3	21.3	44.4			44.4
Effective Green, g (s)	22.4	22.4	45.5			45.5
Actuated g/C Ratio	0.30	0.30	0.62			0.62
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1075	872	3235			3235
v/s Ratio Prot	0.08	c0.22	c0.48			0.33
v/s Ratio Perm						
v/c Ratio	0.26	0.74	0.78			0.53
Uniform Delay, d1	19.5	23.1	10.5			8.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	3.3	1.2			0.2
Delay (s)	19.6	26.4	11.7			8.3
Level of Service	B	C	B			A
Approach Delay (s)	24.3		11.7			8.3
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	890	0	710	0	0	0	0	2280	850	0	1510	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2835					5255	1570		5090	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2835					5255	1570		5090	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	937	0	747	0	0	0	0	2400	895	0	1589	421
RTOR Reduction (vph)	0	0	33	0	0	0	0	0	156	0	41	0
Lane Group Flow (vph)	937	0	714	0	0	0	0	2400	739	0	1969	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	32.4		32.4					54.2	54.2		54.2	
Effective Green, g (s)	33.5		33.5					55.3	55.3		55.3	
Actuated g/C Ratio	0.35		0.35					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1253		1001					3065	915		2969	
v/s Ratio Prot								0.46			0.39	
v/s Ratio Perm	c0.26		0.25						c0.47			
v/c Ratio	0.75		0.71					0.78	0.81		0.66	
Uniform Delay, d1	26.9		26.5					15.1	15.6		13.4	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		2.4					1.4	5.3		0.6	
Delay (s)	29.4		28.9					16.5	20.9		14.0	
Level of Service	C		C					B	C		B	
Approach Delay (s)		29.2			0.0			17.7			14.0	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	94.8	Sum of lost time (s)	7.1
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	120	100	110	60	470	50	470	110	490	580	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1765		1829	1925	2880	1829	5082		3547	3657	1578
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1765		1829	1925	2880	1829	5082		3547	3657	1578
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	126	105	116	63	495	53	495	116	516	611	32
RTOR Reduction (vph)	0	25	0	0	0	142	0	32	0	0	0	18
Lane Group Flow (vph)	32	206	0	116	63	353	53	579	0	516	611	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	3.3	16.7		8.1	21.5	44.5	3.8	21.1		17.0	34.3	34.3
Effective Green, g (s)	4.3	19.7		9.1	24.5	47.5	4.8	24.1		18.0	37.3	37.3
Actuated g/C Ratio	0.05	0.24		0.11	0.30	0.57	0.06	0.29		0.22	0.45	0.45
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	94	419		200	568	1650	105	1477		770	1645	710
v/s Ratio Prot	0.02	c0.12		c0.06	0.03	0.12	0.03	0.11		c0.15	c0.17	
v/s Ratio Perm												0.01
v/c Ratio	0.34	0.49		0.58	0.11	0.21	0.50	0.39		0.67	0.37	0.02
Uniform Delay, d1	37.9	27.3		35.1	21.3	8.6	37.9	23.5		29.7	15.1	12.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3		2.5	0.0	0.0	1.4	0.4		1.8	0.3	0.0
Delay (s)	38.7	27.6		37.6	21.3	8.6	39.3	23.9		31.5	15.4	12.7
Level of Service	D	C		D	C	A	D	C		C	B	B
Approach Delay (s)		29.0			14.8			25.1			22.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	82.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1980	1150	0	600	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2763
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2763
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2084	1211	0	632	495
RTOR Reduction (vph)	0	0	0	0	0	126
Lane Group Flow (vph)	0	2084	1211	0	632	369
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		81.4	81.4		26.6	26.6
Effective Green, g (s)		84.4	84.4		29.6	29.6
Actuated g/C Ratio		0.70	0.70		0.25	0.25
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3696	3696		874	681
v/s Ratio Prot		c0.40	0.23		c0.18	
v/s Ratio Perm						0.13
v/c Ratio		0.56	0.33		0.72	0.54
Uniform Delay, d1		8.8	6.9		41.4	39.3
Progression Factor		1.07	0.67		1.00	1.00
Incremental Delay, d2		0.4	0.2		3.0	0.9
Delay (s)		9.8	4.8		44.4	40.2
Level of Service		A	A		D	D
Approach Delay (s)		9.8	4.8		42.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1830	0	0	1530	330	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1926	0	0	1611	347	411
RTOR Reduction (vph)	0	0	0	0	0	39
Lane Group Flow (vph)	1926	0	0	1611	347	372
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	87.5			87.5	20.5	20.5
Effective Green, g (s)	90.5			90.5	23.5	23.5
Actuated g/C Ratio	0.75			0.75	0.20	0.20
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3963			2757	694	564
v/s Ratio Prot	0.37			c0.44	0.10	c0.13
v/s Ratio Perm						
v/c Ratio	0.49			0.58	0.50	0.66
Uniform Delay, d1	5.7			6.5	43.0	44.6
Progression Factor	0.66			0.41	1.00	1.00
Incremental Delay, d2	0.4			0.6	0.6	2.9
Delay (s)	4.1			3.3	43.6	47.5
Level of Service	A			A	D	D
Approach Delay (s)	4.1			3.3	45.7	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	1830	40	20	1960	150	30	10	20	130	10	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5238		1829	5255	1636		1754			1814	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.83			0.70	1.00
Satd. Flow (perm)	3547	5238		1829	5255	1636		1496			1328	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	368	1926	42	21	2063	158	32	11	21	137	11	442
RTOR Reduction (vph)	0	1	0	0	0	44	0	15	0	0	0	15
Lane Group Flow (vph)	368	1967	0	21	2063	114	0	49	0	0	148	427
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	17.9	73.6		3.3	59.0	59.0		28.1			28.1	51.0
Effective Green, g (s)	18.9	76.6		4.3	62.0	62.0		30.1			30.1	53.0
Actuated g/C Ratio	0.16	0.64		0.04	0.52	0.52		0.25			0.25	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	558	3343		65	2715	845		375			333	722
v/s Ratio Prot	c0.10	0.38		0.01	c0.39							c0.26
v/s Ratio Perm						0.07		0.03			0.11	
v/c Ratio	0.66	0.59		0.32	0.76	0.13		0.13			0.44	0.59
Uniform Delay, d1	47.5	12.6		56.4	23.1	15.1		34.8			37.9	25.3
Progression Factor	1.02	1.12		1.42	0.61	0.14		1.00			1.00	1.00
Incremental Delay, d2	2.5	0.7		2.3	1.6	0.3		0.2			0.9	1.3
Delay (s)	50.8	14.8		82.2	15.8	2.3		35.0			38.8	26.6
Level of Service	D	B		F	B	A		C			D	C
Approach Delay (s)		20.4			15.4			35.0			29.7	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	60	290	130	70	290
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	63	305	137	74	305
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	826	374			442	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	826	374			442	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	41	91			93	
cM capacity (veh/h)	319	672			1118	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	253	442	379
Volume Left	189	0	74
Volume Right	63	137	0
cSH	367	1700	1118
Volume to Capacity	0.69	0.26	0.07
Queue Length 95th (ft)	123	0	5
Control Delay (s)	33.8	0.0	2.2
Lane LOS	D		A
Approach Delay (s)	33.8	0.0	2.2
Approach LOS	D		

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	500	10	40	470	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	526	11	42	495	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			537		1111	532
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			537		1111	532
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		95	88
cM capacity (veh/h)			1031		222	548

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	537	42	495	74
Volume Left	0	42	0	11
Volume Right	11	0	0	63
cSH	1700	1031	1700	453
Volume to Capacity	0.32	0.04	0.29	0.16
Queue Length 95th (ft)	0	3	0	14
Control Delay (s)	0.0	8.6	0.0	14.5
Lane LOS		A		B
Approach Delay (s)	0.0	0.7		14.5
Approach LOS				B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	1720	220	40	1790	10	100	20	40	50	30	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1521		1823	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.79		0.64	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1245		1227	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	1811	232	42	1884	11	105	21	42	53	32	253
RTOR Reduction (vph)	0	0	58	0	0	5	0	11	0	0	0	202
Lane Group Flow (vph)	42	1811	174	42	1884	6	0	157	0	53	32	51
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	77.2	77.2	5.8	62.2	62.2		22.0		22.0	22.0	22.0
Effective Green, g (s)	21.8	80.2	80.2	6.8	65.2	65.2		24.0		24.0	24.0	24.0
Actuated g/C Ratio	0.18	0.67	0.67	0.06	0.54	0.54		0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3512	1065	103	2855	874		249		245	385	321
v/s Ratio Prot	0.02	c0.34		0.02	c0.36						0.02	
v/s Ratio Perm			0.11			0.00		c0.13		0.04		0.03
v/c Ratio	0.13	0.52	0.16	0.41	0.66	0.01		0.63		0.22	0.08	0.16
Uniform Delay, d1	41.1	10.1	7.4	54.7	19.5	12.6		43.9		40.1	39.0	39.7
Progression Factor	0.67	0.65	0.68	1.17	1.41	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.5	0.3	2.1	1.0	0.0		4.9		0.4	0.1	0.2
Delay (s)	27.9	7.0	5.3	66.2	28.4	12.6		48.9		40.6	39.1	39.9
Level of Service	C	A	A	E	C	B		D		D	D	D
Approach Delay (s)		7.2			29.2			48.9			39.9	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	330	650	2360	0	0	1300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	347	684	2484	0	0	1368
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	347	674	2484	0	0	1368
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.10	c0.23	c0.47			0.37
v/s Ratio Perm						
v/c Ratio	0.45	1.08	0.69			0.55
Uniform Delay, d1	20.4	23.5	5.7			4.8
Progression Factor	1.00	1.00	1.06			1.00
Incremental Delay, d2	0.9	59.5	0.4			0.9
Delay (s)	21.3	83.0	6.4			5.7
Level of Service	C	F	A			A
Approach Delay (s)	62.2		6.4			5.7
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1270	1020	0	2180	1110	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1337	1074	0	2295	1168	0
RTOR Reduction (vph)	0	43	0	0	0	0
Lane Group Flow (vph)	1337	1031	0	2295	1168	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	22.0	22.0		26.0	26.0	
Effective Green, g (s)	25.0	25.0		29.0	29.0	
Actuated g/C Ratio	0.42	0.42		0.48	0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1477	1200		2539	2539	
v/s Ratio Prot	c0.38	0.36		c0.44	0.22	
v/s Ratio Perm						
v/c Ratio	0.91	0.86		0.90	0.46	
Uniform Delay, d1	16.4	15.9		14.2	10.3	
Progression Factor	1.00	1.00		1.00	0.96	
Incremental Delay, d2	8.0	6.1		5.9	0.5	
Delay (s)	24.4	22.0		20.1	10.4	
Level of Service	C	C		C	B	
Approach Delay (s)	23.3			20.1	10.4	
Approach LOS	C			C	B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	670	210	140	210	150	760	150	1300	200	590	1070	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3291		1829	1678	1554	1829	5255	1605	3547	4975	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3291		1829	1678	1554	1829	5255	1605	3547	4975	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	705	221	147	221	158	800	158	1368	211	621	1126	495
RTOR Reduction (vph)	0	21	0	0	40	80	0	0	0	0	71	0
Lane Group Flow (vph)	381	671	0	221	310	528	158	1368	211	621	1550	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	25.8	25.8		18.0	18.0	40.0	10.6	26.2	110.0	18.0	33.6	
Effective Green, g (s)	28.8	28.8		21.0	21.0	42.0	11.6	29.2	110.0	19.0	36.6	
Actuated g/C Ratio	0.26	0.26		0.19	0.19	0.38	0.11	0.27	1.00	0.17	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	435	861		349	320	593	192	1394	1605	612	1655	
v/s Ratio Prot	c0.23	0.20		0.12	c0.18	0.34	0.09	c0.26		0.18	c0.31	
v/s Ratio Perm									0.13			
v/c Ratio	0.88	0.78		0.63	0.97	0.89	0.82	0.98	0.13	1.01	0.94	
Uniform Delay, d1	38.9	37.7		41.0	44.2	31.9	48.2	40.1	0.0	45.5	35.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.1	4.1		2.8	41.4	15.2	22.9	20.0	0.2	40.1	11.5	
Delay (s)	56.0	41.8		43.7	85.6	47.0	71.1	60.2	0.2	85.6	47.1	
Level of Service	E	D		D	F	D	E	E	A	F	D	
Approach Delay (s)		46.8			57.9			53.9			57.7	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	54.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	190	160	10	20	160	300	90	20	320	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	11	200	168	11	21	168	316	95	21	337	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	21	200	179	21	168	411	21	347
Volume Left (vph)	11	0	168	0	168	0	21	0
Volume Right (vph)	0	200	0	21	0	95	0	11
Hadj (s)	0.28	-0.67	0.50	-0.67	0.53	-0.13	0.53	0.01
Departure Headway (s)	7.8	6.9	8.0	6.9	7.1	6.5	7.4	6.9
Degree Utilization, x	0.05	0.38	0.40	0.04	0.33	0.74	0.04	0.66
Capacity (veh/h)	427	478	420	483	489	539	463	501
Control Delay (s)	10.0	12.9	15.1	8.9	12.5	24.4	9.5	21.3
Approach Delay (s)	12.6		14.4		21.0		20.6	
Approach LOS	B		B		C		C	

Intersection Summary			
Delay	18.6		
Level of Service	C		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	120	40	30	40	500	10	60	210	600	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1841		1829	1925	1621	1829	1682		1737	1759	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1841		1829	1925	1621	1829	1682		1737	1759	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	126	42	32	42	526	11	63	221	632	116	11
RTOR Reduction (vph)	0	12	0	0	0	220	0	140	0	0	1	0
Lane Group Flow (vph)	11	156	0	32	42	306	11	144	0	348	410	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	12.7		2.0	13.7	35.6	12.4	12.4		21.9	21.9	
Effective Green, g (s)	2.0	14.7		3.0	15.7	39.6	14.4	14.4		23.9	23.9	
Actuated g/C Ratio	0.03	0.22		0.04	0.23	0.58	0.21	0.21		0.35	0.35	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	397		80	444	1015	387	356		610	618	
v/s Ratio Prot	0.01	c0.08		c0.02	0.02	0.11	0.01	c0.09		0.20	c0.23	
v/s Ratio Perm						0.08						
v/c Ratio	0.21	0.39		0.40	0.09	0.30	0.03	0.40		0.57	0.66	
Uniform Delay, d1	32.2	22.8		31.6	20.6	7.2	21.3	23.1		17.9	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.6		3.3	0.1	0.2	0.0	0.8		1.3	2.7	
Delay (s)	34.2	23.5		34.9	20.7	7.4	21.3	23.8		19.2	21.3	
Level of Service	C	C		C	C	A	C	C		B	C	
Approach Delay (s)		24.1			9.8			23.8			20.4	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	980	580	120	1120	210	480	840	40	340	910	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1566	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1566	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	1032	611	126	1179	221	505	884	42	358	958	253
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	263	1032	611	126	1179	221	505	884	42	358	958	253
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	12.7	30.0	50.1	13.0	30.3	120.0	20.1	41.7	120.0	15.3	35.9	120.0
Effective Green, g (s)	13.7	33.0	54.1	14.0	33.3	120.0	22.1	44.7	120.0	16.3	38.9	120.0
Actuated g/C Ratio	0.11	0.28	0.45	0.12	0.28	1.00	0.18	0.37	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	404	1445	745	413	1458	1588	949	1362	1593	481	1703	1588
v/s Ratio Prot	0.07	0.20	c0.15	0.04	c0.22		0.10	c0.24		c0.10	0.18	
v/s Ratio Perm			0.24			0.14			0.03			0.16
v/c Ratio	0.65	0.71	0.82	0.31	0.81	0.14	0.53	0.65	0.03	0.74	0.56	0.16
Uniform Delay, d1	50.9	39.2	28.7	48.5	40.4	0.0	44.3	31.2	0.0	49.8	33.5	0.0
Progression Factor	1.23	1.14	1.23	0.83	0.83	1.00	0.71	0.60	1.00	1.55	1.13	1.00
Incremental Delay, d2	2.6	1.9	6.2	0.1	3.6	0.2	0.3	2.3	0.0	5.1	1.3	0.2
Delay (s)	64.9	46.6	41.5	40.4	37.2	0.2	31.8	21.1	0.0	82.6	39.1	0.2
Level of Service	E	D	D	D	D	A	C	C	A	F	D	A
Approach Delay (s)		47.5			32.1			24.3			42.8	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	240	600	610	290	140	380	840	350	130	1370	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	253	632	642	305	147	400	884	368	137	1442	105
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	65
Lane Group Flow (vph)	116	253	632	642	305	147	400	884	368	137	1442	40
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.7	17.9	120.0	24.0	35.2	120.0	15.1	50.5	120.0	7.6	43.0	43.0
Effective Green, g (s)	7.7	20.9	120.0	25.0	38.2	120.0	16.1	53.5	120.0	8.6	46.0	46.0
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.13	0.45	1.00	0.07	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	227	636	1603	738	1164	1613	475	2342	1615	254	2014	609
v/s Ratio Prot	0.03	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.27	
v/s Ratio Perm			c0.39			0.09			0.23			0.03
v/c Ratio	0.51	0.40	0.39	0.87	0.26	0.09	0.84	0.38	0.23	0.54	0.72	0.07
Uniform Delay, d1	54.3	44.0	0.0	45.9	30.4	0.0	50.7	22.2	0.0	53.8	31.4	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.55	1.00	1.08	0.70	3.30
Incremental Delay, d2	0.8	0.9	0.7	10.4	0.3	0.1	11.9	0.5	0.3	1.1	2.1	0.2
Delay (s)	55.1	44.8	0.7	56.3	30.7	0.1	75.5	34.8	0.3	59.2	24.3	77.5
Level of Service	E	D	A	E	C	A	E	C	A	E	C	E
Approach Delay (s)		18.2			41.6			37.0			30.4	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	1230	30	20	560	50	70	210	30	80	220	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3641		1829	5165		3547	3569		1829	4359	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3641		1829	5165		3547	3569		1829	4359	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	1295	32	21	589	53	74	221	32	84	232	295
RTOR Reduction (vph)	0	1	0	0	7	0	0	10	0	0	210	0
Lane Group Flow (vph)	263	1326	0	21	635	0	74	243	0	84	317	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.2	67.2		3.3	56.3		6.7	21.1		8.4	22.8	
Effective Green, g (s)	15.2	70.2		4.3	59.3		7.7	24.1		9.4	25.8	
Actuated g/C Ratio	0.13	0.59		0.04	0.49		0.06	0.20		0.08	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	449	2129		65	2552		227	716		143	937	
v/s Ratio Prot	c0.07	c0.36		0.01	0.12		0.02	0.07		c0.05	c0.07	
v/s Ratio Perm												
v/c Ratio	0.59	0.62		0.32	0.25		0.33	0.34		0.59	0.34	
Uniform Delay, d1	49.4	16.3		56.4	17.5		53.7	41.1		53.4	39.9	
Progression Factor	1.22	0.39		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.1		2.9	0.2		0.8	0.3		6.0	0.2	
Delay (s)	61.7	7.4		59.3	17.7		54.5	41.4		59.5	40.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.4			19.1			44.4			42.8	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1270	1010	0	410	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1337	1063	0	432	684
RTOR Reduction (vph)	0	0	0	0	0	77
Lane Group Flow (vph)	0	1337	1063	0	432	607
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		31.1	31.1		16.9	16.9
Effective Green, g (s)		34.1	34.1		19.9	19.9
Actuated g/C Ratio		0.57	0.57		0.33	0.33
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3016	3016		1188	964
v/s Ratio Prot		c0.25	0.20		0.12	
v/s Ratio Perm						c0.21
v/c Ratio		0.44	0.35		0.36	0.63
Uniform Delay, d1		7.5	7.0		15.2	16.9
Progression Factor		1.00	0.81		1.00	1.00
Incremental Delay, d2		0.5	0.3		0.2	1.3
Delay (s)		7.9	6.0		15.4	18.2
Level of Service		A	A		B	B
Approach Delay (s)		7.9	6.0		17.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1030	0	0	970	350	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1084	0	0	1021	368	221
RTOR Reduction (vph)	0	0	0	0	0	106
Lane Group Flow (vph)	1084	0	0	1021	368	115
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	36.6			36.6	11.4	11.4
Effective Green, g (s)	39.6			39.6	14.4	14.4
Actuated g/C Ratio	0.66			0.66	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3502			2437	859	697
v/s Ratio Prot	0.20			c0.28	c0.10	0.04
v/s Ratio Perm						
v/c Ratio	0.31			0.42	0.43	0.17
Uniform Delay, d1	4.4			4.8	19.3	18.0
Progression Factor	1.12			1.71	1.00	1.00
Incremental Delay, d2	0.2			0.5	0.3	0.1
Delay (s)	5.1			8.7	19.7	18.2
Level of Service	A			A	B	B
Approach Delay (s)	5.1			8.7	19.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	1020	20	10	1240	50	30	10	10	60	10	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			0.99	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.96	1.00
Satd. Flow (prot)	3583	5289		1847	5307	1593		1827			1846	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.82			0.77	1.00
Satd. Flow (perm)	3583	5289		1847	5307	1593		1545			1474	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	1074	21	11	1305	53	32	11	11	63	11	189
RTOR Reduction (vph)	0	1	0	0	0	18	0	8	0	0	0	27
Lane Group Flow (vph)	211	1094	0	11	1305	35	0	46	0	0	74	162
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	5	2		1	6			8			4	4 5
Permitted Phases						6	8			4		
Actuated Green, G (s)	12.4	86.7		1.5	75.8	75.8		16.8			16.8	34.2
Effective Green, g (s)	13.4	89.7		2.5	78.8	78.8		18.8			18.8	36.2
Actuated g/C Ratio	0.11	0.75		0.02	0.66	0.66		0.16			0.16	0.30
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	400	3953		38	3484	1046		242			230	498
v/s Ratio Prot	c0.06	0.21		0.01	c0.25							c0.10
v/s Ratio Perm						0.02		0.03			0.05	
v/c Ratio	0.53	0.28		0.29	0.37	0.03		0.19			0.32	0.33
Uniform Delay, d1	50.3	4.8		57.9	9.4	7.2		44.0			44.9	32.5
Progression Factor	0.96	1.04		1.29	0.27	0.00		1.00			1.00	1.00
Incremental Delay, d2	1.2	0.2		3.7	0.3	0.1		0.4			0.8	0.4
Delay (s)	49.6	5.2		78.4	2.8	0.1		44.3			45.8	32.8
Level of Service	D	A		E	A	A		D			D	C
Approach Delay (s)		12.4			3.3			44.3			36.5	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	40	200	50	40	190
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	42	211	53	42	200
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	521	237			263	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	521	237			263	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	95			97	
cM capacity (veh/h)	499	802			1301	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	95	263	242
Volume Left	53	0	42
Volume Right	42	53	0
cSH	600	1700	1301
Volume to Capacity	0.16	0.15	0.03
Queue Length 95th (ft)	14	0	3
Control Delay (s)	12.1	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	12.1	0.0	1.6
Approach LOS	B		

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	230	10	10	250	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	242	11	11	263	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			253		532	247
vC1, stage 1 conf vol					247	
vC2, stage 2 conf vol					284	
vCu, unblocked vol			253		532	247
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	97
cM capacity (veh/h)			1313		668	791

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	253	11	263	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	1313	1700	745
Volume to Capacity	0.15	0.01	0.15	0.04
Queue Length 95th (ft)	0	1	0	3
Control Delay (s)	0.0	7.8	0.0	10.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.3		10.0
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	580	130	170	130	160	350	220	950	140	410	780	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3281		1847	1847	1570	1847	5307	1627	3583	4961	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3281		1847	1847	1570	1847	5307	1627	3583	4961	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	611	137	179	137	168	368	232	1000	147	432	821	526
RTOR Reduction (vph)	0	51	0	0	0	80	0	0	0	0	129	0
Lane Group Flow (vph)	330	546	0	137	168	288	232	1000	147	432	1218	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	21.2	21.2		5.0	5.0	17.7	11.8	29.1	90.0	12.7	30.0	
Effective Green, g (s)	24.2	24.2		8.0	8.0	23.7	12.8	32.1	90.0	13.7	33.0	
Actuated g/C Ratio	0.27	0.27		0.09	0.09	0.26	0.14	0.36	1.00	0.15	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	451	882		164	164	413	262	1892	1627	545	1819	
v/s Ratio Prot	c0.20	0.17		0.07	c0.09	0.18	c0.13	0.19		0.12	c0.25	
v/s Ratio Perm									c0.09			
v/c Ratio	0.73	0.62		0.84	1.02	0.70	0.89	0.53	0.09	0.79	0.67	
Uniform Delay, d1	29.9	28.9		40.4	41.0	29.9	37.9	23.0	0.0	36.8	23.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.2	0.9		28.0	76.8	4.1	27.2	1.1	0.1	7.3	2.0	
Delay (s)	35.2	29.8		68.4	117.8	34.0	65.1	24.0	0.1	44.0	25.9	
Level of Service	D	C		E	F	C	E	C	A	D	C	
Approach Delay (s)		31.7			61.9			28.4			30.3	
Approach LOS		C			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	40	250	250	80	40	270	190	150	30	240	10
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	42	263	263	84	42	284	200	158	32	253	11

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	53	263	347	42	284	358	32	263
Volume Left (vph)	11	0	263	0	284	0	32	0
Volume Right (vph)	0	263	0	42	0	158	0	11
Hadj (s)	0.12	-0.68	0.40	-0.68	0.52	-0.29	0.52	-0.01
Departure Headway (s)	8.3	7.5	8.3	7.2	8.2	7.4	8.7	8.1
Degree Utilization, x	0.12	0.55	0.80	0.08	0.64	0.73	0.08	0.59
Capacity (veh/h)	410	450	419	476	427	476	395	419
Control Delay (s)	11.3	18.1	36.2	9.7	23.6	26.7	11.2	21.1
Approach Delay (s)	17.0		33.3		25.3		20.1	
Approach LOS	C		D		D		C	

Intersection Summary			
Delay	24.7		
Level of Service	C		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	60	580	30	60	80	640	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.91		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1847	1832		1847	1944	1652	1847	1762		1754	1779	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1847	1832		1847	1944	1652	1847	1762		1754	1779	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	63	611	32	63	84	674	137	11
RTOR Reduction (vph)	0	19	0	0	0	229	0	52	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	63	382	32	95	0	344	477	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.9	8.3		4.0	10.4	39.8	9.4	9.4		29.4	29.4	
Effective Green, g (s)	2.9	10.3		5.0	12.4	43.8	11.4	11.4		31.4	31.4	
Actuated g/C Ratio	0.04	0.15		0.07	0.18	0.62	0.16	0.16		0.45	0.45	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	76	269		131	343	1102	300	286		785	796	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.16	0.02	c0.05		0.20	c0.27	
v/s Ratio Perm						0.08						
v/c Ratio	0.28	0.40		0.32	0.18	0.35	0.11	0.33		0.44	0.60	
Uniform Delay, d1	32.6	27.1		30.9	24.5	6.3	25.0	26.0		13.3	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.0		1.4	0.3	0.2	0.2	0.7		0.4	1.2	
Delay (s)	34.6	28.1		32.4	24.8	6.5	25.2	26.7		13.7	15.8	
Level of Service	C	C		C	C	A	C	C		B	B	
Approach Delay (s)		29.0			9.6			26.4			14.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	420	310	90	650	140	400	900	80	240	700	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	442	326	95	684	147	421	947	84	253	737	211
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	189	442	326	95	684	147	421	947	84	253	737	211
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	6.0	23.0	27.0	4.8	21.8	90.0	4.0	33.5	90.0	8.7	36.2	90.0
Effective Green, g (s)	7.0	26.0	33.0	5.8	24.8	90.0	7.0	36.5	90.0	9.7	39.2	90.0
Actuated g/C Ratio	0.08	0.29	0.37	0.06	0.28	1.00	0.08	0.41	1.00	0.11	0.44	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	1533	599	230	1462	1632	405	1497	1631	386	2311	1652
v/s Ratio Prot	c0.05	0.08	c0.04	0.03	0.13		c0.08	c0.26		c0.07	0.14	
v/s Ratio Perm			0.16			0.09			0.05			c0.13
v/c Ratio	0.68	0.29	0.54	0.41	0.47	0.09	1.04	0.63	0.05	0.66	0.32	0.13
Uniform Delay, d1	40.4	24.8	22.5	40.5	27.1	0.0	41.5	21.4	0.0	38.5	16.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.2	0.5	0.4	0.5	0.1	55.3	2.0	0.1	3.0	0.4	0.2
Delay (s)	45.5	25.0	23.1	40.9	27.6	0.1	96.8	23.4	0.1	41.6	17.0	0.2
Level of Service	D	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		28.4			24.6			43.4			19.2	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	910	860	1517	0	0	1656
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	958	905	1597	0	0	1743
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	958	902	1597	0	0	1743
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	31.7	31.7	29.2			29.2
Effective Green, g (s)	32.8	32.8	30.3			30.3
Actuated g/C Ratio	0.47	0.47	0.44			0.44
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1683	1367	2304			2304
v/s Ratio Prot	0.27	c0.31	0.30			c0.33
v/s Ratio Perm						
v/c Ratio	0.57	0.66	0.69			0.76
Uniform Delay, d1	13.1	13.9	15.6			16.3
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	1.2	0.9			1.5
Delay (s)	13.5	15.1	16.6			17.8
Level of Service	B	B	B			B
Approach Delay (s)	14.3		16.6			17.8
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	6.0
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	590	0	968	0	0	0	0	1221	380	0	1576	880
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.95	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2833					5255	1565		4972	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2833					5255	1565		4972	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	621	0	1019	0	0	0	0	1285	400	0	1659	926
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	136	0	90	0
Lane Group Flow (vph)	621	0	992	0	0	0	0	1285	264	0	2495	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	40.8		40.8					60.8	60.8		60.8	
Effective Green, g (s)	41.9		41.9					61.9	61.9		61.9	
Actuated g/C Ratio	0.38		0.38					0.56	0.56		0.56	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1353		1081					2962	882		2802	
v/s Ratio Prot								0.24			c0.50	
v/s Ratio Perm	0.18		c0.35						0.17			
v/c Ratio	0.46		0.92					0.43	0.30		0.89	
Uniform Delay, d1	25.5		32.3					13.8	12.6		21.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		12.0					0.1	0.2		4.0	
Delay (s)	25.7		44.4					13.9	12.8		25.0	
Level of Service	C		D					B	B		C	
Approach Delay (s)		37.3			0.0			13.7			25.0	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	109.8	Sum of lost time (s)	7.1
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	203	40	525	50	730	153	487	510	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1746		1829	1925	2880	1829	5096		3547	3657	1576
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1746		1829	1925	2880	1829	5096		3547	3657	1576
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	214	42	553	53	768	161	513	537	11
RTOR Reduction (vph)	0	32	0	0	0	126	0	27	0	0	0	6
Lane Group Flow (vph)	11	94	0	214	42	427	53	902	0	513	537	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	1.0	16.6		14.5	30.1	53.7	5.4	25.0		17.6	37.2	37.2
Effective Green, g (s)	2.0	19.6		15.5	33.1	56.7	6.4	28.0		18.6	40.2	40.2
Actuated g/C Ratio	0.02	0.21		0.17	0.35	0.61	0.07	0.30		0.20	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	39	365		302	680	1742	124	1522		704	1568	676
v/s Ratio Prot	0.01	0.05		c0.12	0.02	c0.15	0.03	c0.18		c0.14	0.15	
v/s Ratio Perm												0.00
v/c Ratio	0.28	0.26		0.71	0.06	0.25	0.43	0.59		0.73	0.34	0.01
Uniform Delay, d1	45.1	31.0		37.0	20.0	8.6	41.9	28.0		35.2	17.9	15.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1		6.1	0.0	0.0	0.9	0.9		3.2	0.3	0.0
Delay (s)	46.6	31.1		43.1	20.0	8.6	42.8	28.9		38.4	18.2	15.3
Level of Service	D	C		D	C	A	D	C		D	B	B
Approach Delay (s)		32.4			18.3			29.7			27.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	93.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	885	1694	0	641	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2775
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2775
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	932	1783	0	675	789
RTOR Reduction (vph)	0	0	0	0	0	35
Lane Group Flow (vph)	0	932	1783	0	675	754
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		76.1	76.1		31.9	31.9
Effective Green, g (s)		79.1	79.1		34.9	34.9
Actuated g/C Ratio		0.66	0.66		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3463	3463		1031	807
v/s Ratio Prot		0.18	c0.34		0.19	
v/s Ratio Perm						c0.27
v/c Ratio		0.27	0.51		0.65	0.93
Uniform Delay, d1		8.5	10.6		37.3	41.4
Progression Factor		1.05	1.26		1.00	1.00
Incremental Delay, d2		0.1	0.4		1.5	17.7
Delay (s)		9.0	13.7		38.8	59.1
Level of Service		A	B		D	E
Approach Delay (s)		9.0	13.7		49.7	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1236	0	0	1530	660	706
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1301	0	0	1611	695	743
RTOR Reduction (vph)	0	0	0	0	0	128
Lane Group Flow (vph)	1301	0	0	1611	695	615
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	82.5			82.5	25.5	25.5
Effective Green, g (s)	85.5			85.5	28.5	28.5
Actuated g/C Ratio	0.71			0.71	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3744			2605	842	684
v/s Ratio Prot	0.25			c0.44	0.20	c0.21
v/s Ratio Perm						
v/c Ratio	0.35			0.62	0.83	0.90
Uniform Delay, d1	6.6			8.9	43.4	44.4
Progression Factor	0.23			2.43	1.00	1.00
Incremental Delay, d2	0.2			0.8	6.6	14.6
Delay (s)	1.7			22.3	50.0	59.0
Level of Service	A			C	D	E
Approach Delay (s)	1.7			22.3	54.6	
Approach LOS	A			C	D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	442	1480	20	20	2015	271	10	5	10	118	10	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1712			1840	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1712			1840	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	465	1558	21	21	2121	285	11	5	11	124	11	364
RTOR Reduction (vph)	0	1	0	0	0	68	0	11	0	0	0	48
Lane Group Flow (vph)	465	1578	0	21	2121	217	0	16	0	0	135	316
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	19.5	76.8		2.8	60.1	60.1		3.0			17.4	36.9
Effective Green, g (s)	20.5	79.8		3.8	63.1	63.1		5.0			19.4	40.9
Actuated g/C Ratio	0.17	0.66		0.03	0.53	0.53		0.04			0.16	0.34
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	605	3487		57	2763	860		71			297	557
v/s Ratio Prot	c0.13	0.30		0.01	c0.40			c0.01			0.07	c0.19
v/s Ratio Perm						0.13						
v/c Ratio	0.77	0.45		0.37	0.77	0.25		0.23			0.45	0.57
Uniform Delay, d1	47.5	9.6		56.9	22.6	15.6		55.6			45.5	32.3
Progression Factor	0.97	0.94		0.79	1.88	2.73		1.00			1.00	1.00
Incremental Delay, d2	5.0	0.4		1.6	0.8	0.3		1.7			1.1	1.3
Delay (s)	51.2	9.4		46.8	43.3	42.7		57.3			46.6	33.6
Level of Service	D	A		D	D	D		E			D	C
Approach Delay (s)		18.9			43.3			57.3			37.2	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	63	74	236	109	76	180
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	66	78	248	115	80	189
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	655	306			363	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	655	306			363	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	89			93	
cM capacity (veh/h)	402	734			1195	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	144	363	269
Volume Left	66	0	80
Volume Right	78	115	0
cSH	532	1700	1195
Volume to Capacity	0.27	0.21	0.07
Queue Length 95th (ft)	27	0	5
Control Delay (s)	14.3	0.0	2.9
Lane LOS	B		A
Approach Delay (s)	14.3	0.0	2.9
Approach LOS	B		

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	464	0	10	708	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	488	0	11	745	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			488		1255	488
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			488		1255	488
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1075		188	579

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	488	11	745	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1075	1700	579
Volume to Capacity	0.29	0.01	0.44	0.02
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.4	0.0	11.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.3
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	1353	88	30	2032	50	217	30	40	10	10	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1537		1825	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.77		0.68	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1231		1298	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	182	1424	93	32	2139	53	228	32	42	11	11	57
RTOR Reduction (vph)	0	0	35	0	0	31	0	5	0	0	0	42
Lane Group Flow (vph)	182	1424	59	32	2139	22	0	297	0	11	11	15
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	71.0	71.0	4.2	47.6	47.6		29.8		29.8	29.8	29.8
Effective Green, g (s)	28.6	74.0	74.0	5.2	50.6	50.6		31.8		31.8	31.8	31.8
Actuated g/C Ratio	0.24	0.62	0.62	0.04	0.42	0.42		0.27		0.27	0.27	0.27
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3240	983	79	2215	678		326		343	510	425
v/s Ratio Prot	0.10	c0.27		0.02	c0.41						0.01	
v/s Ratio Perm			0.04			0.01		c0.24		0.01		0.01
v/c Ratio	0.42	0.44	0.06	0.41	0.97	0.03		0.91		0.03	0.02	0.04
Uniform Delay, d1	38.7	12.1	9.2	55.9	33.9	20.4		42.7		32.7	32.6	32.7
Progression Factor	1.31	1.67	4.08	1.25	1.30	3.78		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.4	0.1	2.5	10.1	0.1		28.3		0.0	0.0	0.0
Delay (s)	51.3	20.6	37.4	72.2	54.3	77.0		71.0		32.7	32.6	32.8
Level of Service	D	C	D	E	D	E		E		C	C	C
Approach Delay (s)		24.8			55.1			71.0			32.7	
Approach LOS		C			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	453	560	1330	0	0	1655
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	477	589	1400	0	0	1742
RTOR Reduction (vph)	0	98	0	0	0	0
Lane Group Flow (vph)	477	491	1400	0	0	1742
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.13	c0.17	0.27			c0.48
v/s Ratio Perm						
v/c Ratio	0.62	0.79	0.39			0.70
Uniform Delay, d1	21.3	22.2	4.1			5.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	2.2	7.5	0.3			1.6
Delay (s)	23.5	29.7	4.4			7.4
Level of Service	C	C	A			A
Approach Delay (s)	26.9		4.4			7.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	750	1659	0	1022	1508	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	789	1746	0	1076	1587	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	789	1746	0	1076	1587	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	39.0	39.0		19.0	19.0	
Effective Green, g (s)	42.0	42.0		22.0	22.0	
Actuated g/C Ratio	0.60	0.60		0.31	0.31	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2128	1728		1651	1651	
v/s Ratio Prot	0.22	c0.61		0.20	c0.30	
v/s Ratio Perm						
v/c Ratio	0.37	1.01		0.65	0.96	
Uniform Delay, d1	7.2	14.0		20.7	23.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	24.2		2.0	14.7	
Delay (s)	7.2	38.2		22.7	38.3	
Level of Service	A	D		C	D	
Approach Delay (s)	28.5			22.7	38.3	
Approach LOS	C			C	D	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	254	111	84	178	113	242	126	981	180	872	1721	574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.95	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3270		1829	1736	1554	1829	5255	1605	3547	5024	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3270		1829	1736	1554	1829	5255	1605	3547	5024	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	267	117	88	187	119	255	133	1033	189	918	1812	604
RTOR Reduction (vph)	0	31	0	0	15	86	0	0	0	0	46	0
Lane Group Flow (vph)	144	297	0	187	165	108	133	1033	189	918	2370	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.7	17.7		9.0	9.0	46.0	12.2	38.3	120.0	33.0	59.1	
Effective Green, g (s)	20.7	20.7		12.0	12.0	48.0	13.2	41.3	120.0	34.0	62.1	
Actuated g/C Ratio	0.17	0.17		0.10	0.10	0.40	0.11	0.34	1.00	0.28	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	287	564		182	173	621	201	1808	1605	1004	2599	
v/s Ratio Prot	0.09	c0.09		c0.10	0.09	0.07	c0.07	0.20		0.26	c0.47	
v/s Ratio Perm									0.12			
v/c Ratio	0.50	0.53		1.03	0.95	0.17	0.66	0.57	0.12	0.91	0.91	
Uniform Delay, d1	45.0	45.2		54.0	53.7	23.2	51.3	32.1	0.0	41.6	26.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.43	1.09	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.4		74.1	53.8	0.0	5.9	1.3	0.1	12.2	6.2	
Delay (s)	45.5	45.6		128.1	107.5	23.3	79.2	36.4	0.1	53.8	32.7	
Level of Service	D	D		F	F	C	E	D	A	D	C	
Approach Delay (s)		45.6			85.2			35.5			38.5	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	5	100	30	10	10	150	343	20	10	259	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	5	105	32	11	11	158	361	21	11	273	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	8	105	42	11	158	382	11	288
Volume Left (vph)	3	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	16
Hadj (s)	0.22	-0.67	0.41	-0.67	0.53	0.00	0.53	0.00
Departure Headway (s)	6.8	5.9	7.1	6.0	5.9	5.3	6.1	5.6
Degree Utilization, x	0.02	0.17	0.08	0.02	0.26	0.56	0.02	0.45
Capacity (veh/h)	487	559	464	540	598	664	562	626
Control Delay (s)	8.7	8.9	9.5	7.9	9.7	13.8	8.0	11.8
Approach Delay (s)	8.9		9.2		12.6		11.7	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.7		
Level of Service	B		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	180	80	523	40	40	70	339	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.90		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1760		1829	1925	1618	1829	1726		1737	1754	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1760		1829	1925	1618	1829	1726		1737	1754	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	189	84	551	42	42	74	357	63	11
RTOR Reduction (vph)	0	18	0	0	0	236	0	60	0	0	2	0
Lane Group Flow (vph)	11	24	0	189	84	315	42	56	0	196	233	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	6.2		9.0	14.3	29.2	8.9	8.9		14.9	14.9	
Effective Green, g (s)	1.9	8.2		10.0	16.3	33.2	10.9	10.9		16.9	16.9	
Actuated g/C Ratio	0.03	0.14		0.17	0.28	0.57	0.19	0.19		0.29	0.29	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	248		315	540	1009	343	324		506	511	
v/s Ratio Prot	0.01	0.01		c0.10	0.04	c0.09	0.02	c0.03		0.11	c0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.19	0.10		0.60	0.16	0.31	0.12	0.17		0.39	0.46	
Uniform Delay, d1	27.3	21.7		22.2	15.7	6.5	19.6	19.8		16.4	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.2		3.1	0.1	0.2	0.2	0.3		0.5	0.6	
Delay (s)	28.8	21.8		25.2	15.8	6.6	19.7	20.0		16.9	17.4	
Level of Service	C	C		C	B	A	B	C		B	B	
Approach Delay (s)		23.3			11.8			19.9			17.2	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	224	807	372	150	1184	170	690	901	140	410	801	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1569	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1569	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	849	392	158	1246	179	726	948	147	432	843	252
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	236	849	392	158	1246	179	726	948	147	432	843	252
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	12.0	26.3	46.3	17.0	31.3	120.0	20.0	40.3	120.0	16.4	35.7	120.0
Effective Green, g (s)	13.0	29.3	50.3	18.0	34.3	120.0	22.0	43.3	120.0	17.4	38.7	120.0
Actuated g/C Ratio	0.11	0.24	0.42	0.15	0.29	1.00	0.18	0.36	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	384	1283	696	532	1502	1588	945	1319	1593	514	1694	1588
v/s Ratio Prot	0.07	0.16	c0.10	0.04	c0.24		0.14	c0.26		c0.12	0.16	
v/s Ratio Perm			0.15			0.11			0.09			0.16
v/c Ratio	0.61	0.66	0.56	0.30	0.83	0.11	0.77	0.72	0.09	0.84	0.50	0.16
Uniform Delay, d1	51.1	40.9	26.5	45.4	40.1	0.0	46.6	33.1	0.0	49.9	32.8	0.0
Progression Factor	1.39	1.22	1.44	0.76	0.76	1.00	0.78	0.69	1.00	1.41	1.14	1.00
Incremental Delay, d2	2.0	1.7	0.6	0.1	4.2	0.1	3.4	3.3	0.1	10.7	1.0	0.2
Delay (s)	73.2	51.4	38.8	34.8	34.8	0.1	39.7	26.3	0.1	81.0	38.2	0.2
Level of Service	E	D	D	C	C	A	D	C	A	F	D	A
Approach Delay (s)		51.6			30.9			29.5			44.0	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	380	450	500	410	70	480	1271	440	170	773	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	400	474	526	432	74	505	1338	463	179	814	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	168	400	474	526	432	74	505	1338	463	179	814	37
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.0	20.4	120.0	21.4	34.8	120.0	15.0	50.4	120.0	7.8	43.2	43.2
Effective Green, g (s)	8.0	23.4	120.0	22.4	37.8	120.0	16.0	53.4	120.0	8.8	46.2	46.2
Actuated g/C Ratio	0.07	0.19	1.00	0.19	0.31	1.00	0.13	0.44	1.00	0.07	0.39	0.39
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	236	713	1603	662	1151	1613	472	2338	1615	260	2023	611
v/s Ratio Prot	c0.05	c0.11		c0.15	0.12		c0.14	c0.25		c0.05	0.15	
v/s Ratio Perm			0.30			0.05			0.29			0.02
v/c Ratio	0.71	0.56	0.30	0.79	0.38	0.05	1.07	0.57	0.29	0.69	0.40	0.06
Uniform Delay, d1	54.9	43.7	0.0	46.6	31.9	0.0	52.0	24.8	0.0	54.3	26.9	23.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.15	1.35	1.00	1.09	0.68	1.00
Incremental Delay, d2	8.2	1.7	0.5	6.1	0.4	0.1	61.1	1.0	0.4	5.7	0.6	0.2
Delay (s)	63.0	45.3	0.5	52.7	32.4	0.1	121.0	34.5	0.4	64.7	18.9	23.4
Level of Service	E	D	A	D	C	A	F	C	A	E	B	C
Approach Delay (s)		27.8			40.4			46.6			26.8	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	193	554	70	40	1421	60	50	140	20	50	240	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3582		1829	5211		3547	3570		1829	4481	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3582		1829	5211		3547	3570		1829	4481	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	203	583	74	42	1496	63	53	147	21	53	253	234
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	155	0
Lane Group Flow (vph)	203	651	0	42	1556	0	53	158	0	53	332	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.2	65.0		6.7	59.5		6.1	20.8		7.5	22.2	
Effective Green, g (s)	13.2	68.0		7.7	62.5		7.1	23.8		8.5	25.2	
Actuated g/C Ratio	0.11	0.57		0.06	0.52		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	390	2029		117	2714		209	708		129	941	
v/s Ratio Prot	c0.06	0.18		0.02	c0.30		0.01	0.04		c0.03	c0.07	
v/s Ratio Perm												
v/c Ratio	0.52	0.32		0.36	0.57		0.25	0.22		0.41	0.35	
Uniform Delay, d1	50.4	13.8		53.8	19.6		53.9	40.3		53.4	40.4	
Progression Factor	1.21	0.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.3		1.9	0.9		0.6	0.2		2.1	0.2	
Delay (s)	62.3	4.6		55.7	20.5		54.6	40.5		55.5	40.7	
Level of Service	E	A		E	C		D	D		E	D	
Approach Delay (s)		18.2			21.5			43.9			42.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	270	610	2405	0	0	1657
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	642	2532	0	0	1744
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	284	642	2532	0	0	1744
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	21.3	21.3	44.4			44.4
Effective Green, g (s)	22.4	22.4	45.5			45.5
Actuated g/C Ratio	0.30	0.30	0.62			0.62
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1075	872	3235			3235
v/s Ratio Prot	0.08	c0.22	c0.48			0.33
v/s Ratio Perm						
v/c Ratio	0.26	0.74	0.78			0.54
Uniform Delay, d1	19.5	23.1	10.5			8.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	3.3	1.3			0.2
Delay (s)	19.6	26.4	11.8			8.3
Level of Service	B	C	B			A
Approach Delay (s)	24.3		11.8			8.3
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	890	0	742	0	0	0	0	2315	850	0	1527	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2835					5255	1570		5091	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2835					5255	1570		5091	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	937	0	781	0	0	0	0	2437	895	0	1607	421
RTOR Reduction (vph)	0	0	31	0	0	0	0	0	153	0	40	0
Lane Group Flow (vph)	937	0	750	0	0	0	0	2437	742	0	1988	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	32.7		32.7					55.0	55.0		55.0	
Effective Green, g (s)	33.8		33.8					56.1	56.1		56.1	
Actuated g/C Ratio	0.35		0.35					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1250		999					3074	918		2978	
v/s Ratio Prot								0.46			0.39	
v/s Ratio Perm	0.26		c0.26						c0.47			
v/c Ratio	0.75		0.75					0.79	0.81		0.67	
Uniform Delay, d1	27.3		27.3					15.4	15.7		13.6	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		3.2					1.5	5.3		0.6	
Delay (s)	29.8		30.6					16.9	21.0		14.1	
Level of Service	C		C					B	C		B	
Approach Delay (s)		30.2			0.0			18.0			14.1	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	120	100	117	60	512	50	470	118	547	580	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1764		1829	1925	2880	1829	5072		3547	3657	1577
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1764		1829	1925	2880	1829	5072		3547	3657	1577
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	126	105	123	63	539	53	495	124	576	611	32
RTOR Reduction (vph)	0	25	0	0	0	134	0	37	0	0	0	18
Lane Group Flow (vph)	32	206	0	123	63	405	53	582	0	576	611	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	3.4	18.0		10.4	25.0	49.1	4.0	20.9		18.1	35.0	35.0
Effective Green, g (s)	4.4	21.0		11.4	28.0	52.1	5.0	23.9		19.1	38.0	38.0
Actuated g/C Ratio	0.05	0.24		0.13	0.32	0.60	0.06	0.27		0.22	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	92	423		238	616	1716	104	1386		775	1590	685
v/s Ratio Prot	0.02	c0.12		c0.07	0.03	0.14	0.03	0.11		c0.16	c0.17	
v/s Ratio Perm												0.01
v/c Ratio	0.35	0.49		0.52	0.10	0.24	0.51	0.42		0.74	0.38	0.02
Uniform Delay, d1	40.1	28.6		35.4	20.9	8.3	40.0	26.1		31.9	16.8	14.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3		0.8	0.0	0.0	1.4	0.4		3.4	0.3	0.0
Delay (s)	40.9	28.9		36.2	20.9	8.3	41.4	26.5		35.3	17.1	14.1
Level of Service	D	C		D	C	A	D	C		D	B	B
Approach Delay (s)		30.4			14.1			27.7			25.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2082	1231	0	757	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2772
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2772
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2192	1296	0	797	495
RTOR Reduction (vph)	0	0	0	0	0	101
Lane Group Flow (vph)	0	2192	1296	0	797	394
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		77.8	77.8		30.2	30.2
Effective Green, g (s)		80.8	80.8		33.2	33.2
Actuated g/C Ratio		0.67	0.67		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3538	3538		981	766
v/s Ratio Prot		c0.42	0.25		c0.22	
v/s Ratio Perm						0.14
v/c Ratio		0.62	0.37		0.81	0.51
Uniform Delay, d1		11.0	8.5		40.5	36.6
Progression Factor		1.04	1.50		1.00	1.00
Incremental Delay, d2		0.6	0.2		5.2	0.6
Delay (s)		12.0	13.0		45.7	37.2
Level of Service		B	B		D	D
Approach Delay (s)		12.0	13.0		42.4	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	132.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2089	0	0	1738	330	522
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2199	0	0	1829	347	549
RTOR Reduction (vph)	0	0	0	0	0	22
Lane Group Flow (vph)	2199	0	0	1829	347	527
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	83.5			83.5	24.5	24.5
Effective Green, g (s)	86.5			86.5	27.5	27.5
Actuated g/C Ratio	0.72			0.72	0.23	0.23
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3787			2636	812	660
v/s Ratio Prot	0.42			c0.50	0.10	c0.18
v/s Ratio Perm						
v/c Ratio	0.58			0.69	0.43	0.80
Uniform Delay, d1	8.0			9.4	39.5	43.6
Progression Factor	0.74			2.11	1.00	1.00
Incremental Delay, d2	0.5			0.1	0.4	6.7
Delay (s)	6.5			19.8	39.9	50.4
Level of Service	A			B	D	D
Approach Delay (s)	6.5			19.8	46.3	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	1743	40	20	1867	395	30	10	20	356	10	883
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5237		1829	5255	1636		1746			1836	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5237		1829	5255	1636		1746			1836	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	872	1835	42	21	1965	416	32	11	21	375	11	929
RTOR Reduction (vph)	0	2	0	0	0	116	0	15	0	0	0	36
Lane Group Flow (vph)	872	1875	0	21	1965	300	0	49	0	0	386	893
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	28.0	64.2		2.8	39.0	39.0		4.0			29.0	57.0
Effective Green, g (s)	29.0	67.2		3.8	42.0	42.0		6.0			31.0	61.0
Actuated g/C Ratio	0.24	0.56		0.03	0.35	0.35		0.05			0.26	0.51
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	857	2932		57	1839	572		87			474	831
v/s Ratio Prot	0.25	0.36		0.01	c0.37			c0.03			0.21	c0.55
v/s Ratio Perm						0.18						
v/c Ratio	1.02	0.64		0.37	1.07	0.53		0.56			0.81	1.07
Uniform Delay, d1	45.5	18.1		56.9	39.0	31.1		55.7			41.8	29.5
Progression Factor	1.03	1.38		0.57	1.48	2.10		1.00			1.00	1.00
Incremental Delay, d2	31.7	0.9		2.9	39.5	2.5		8.0			10.3	53.3
Delay (s)	78.7	25.9		35.2	97.4	67.8		63.7			52.1	82.8
Level of Service	E	C		D	F	E		E			D	F
Approach Delay (s)		42.6			91.7			63.7			73.8	
Approach LOS		D			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	67.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	194	138	354	142	122	375
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	204	145	373	149	128	395
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1099	447			522	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1099	447			522	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	1	76			88	
cM capacity (veh/h)	206	611			1044	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	349	522	523
Volume Left	204	0	128
Volume Right	145	149	0
cSH	285	1700	1044
Volume to Capacity	1.23	0.31	0.12
Queue Length 95th (ft)	405	0	10
Control Delay (s)	166.9	0.0	3.3
Lane LOS	F		A
Approach Delay (s)	166.9	0.0	3.3
Approach LOS	F		

Intersection Summary			
Average Delay	43.1		
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1189	10	40	1193	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1252	11	42	1256	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			1262		2597	1257
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1262		2597	1257
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		59	70
cM capacity (veh/h)			551		25	209

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1262	42	1256	74
Volume Left	0	42	0	11
Volume Right	11	0	0	63
cSH	1700	551	1700	103
Volume to Capacity	0.74	0.08	0.74	0.72
Queue Length 95th (ft)	0	6	0	94
Control Delay (s)	0.0	12.1	0.0	100.3
Lane LOS		B		F
Approach Delay (s)	0.0	0.4		100.3
Approach LOS				F

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	1828	237	40	1920	10	120	20	40	50	30	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1524		1824	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1229		1253	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	1924	249	42	2021	11	126	21	42	53	32	261
RTOR Reduction (vph)	0	0	61	0	0	5	0	9	0	0	0	206
Lane Group Flow (vph)	51	1924	188	42	2021	6	0	180	0	53	32	55
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	75.9	75.9	5.8	60.9	60.9		23.3		23.3	23.3	23.3
Effective Green, g (s)	21.8	78.9	78.9	6.8	63.9	63.9		25.3		25.3	25.3	25.3
Actuated g/C Ratio	0.18	0.66	0.66	0.06	0.53	0.53		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3455	1048	103	2798	857		259		264	405	338
v/s Ratio Prot	0.03	c0.37		0.02	c0.38						0.02	
v/s Ratio Perm			0.12			0.00		c0.15		0.04		0.03
v/c Ratio	0.15	0.56	0.18	0.41	0.72	0.01		0.69		0.20	0.08	0.16
Uniform Delay, d1	41.3	11.1	8.0	54.7	21.3	13.2		43.8		39.0	38.0	38.7
Progression Factor	1.22	1.54	2.34	1.18	1.37	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.3	2.0	1.2	0.0		7.8		0.4	0.1	0.2
Delay (s)	50.5	17.6	19.0	66.3	30.4	13.2		51.6		39.4	38.1	38.9
Level of Service	D	B	B	E	C	B		D		D	D	D
Approach Delay (s)		18.5			31.0			51.6			38.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	363	650	2360	0	0	1335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	382	684	2484	0	0	1405
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	382	674	2484	0	0	1405
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.11	c0.23	c0.47			0.38
v/s Ratio Perm						
v/c Ratio	0.50	1.08	0.69			0.56
Uniform Delay, d1	20.6	23.5	5.7			4.9
Progression Factor	1.00	1.00	0.79			1.00
Incremental Delay, d2	1.1	59.5	0.5			0.9
Delay (s)	21.7	83.0	4.9			5.8
Level of Service	C	F	A			A
Approach Delay (s)	61.0		4.9			5.8
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1270	1000	0	2188	1178	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1337	1053	0	2303	1240	0
RTOR Reduction (vph)	0	35	0	0	0	0
Lane Group Flow (vph)	1337	1018	0	2303	1240	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	22.0	22.0		26.0	26.0	
Effective Green, g (s)	25.0	25.0		29.0	29.0	
Actuated g/C Ratio	0.42	0.42		0.48	0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1477	1200		2539	2539	
v/s Ratio Prot	c0.38	0.35		c0.44	0.24	
v/s Ratio Perm						
v/c Ratio	0.91	0.85		0.91	0.49	
Uniform Delay, d1	16.4	15.8		14.3	10.5	
Progression Factor	1.00	1.00		1.00	0.96	
Incremental Delay, d2	8.0	5.5		6.0	0.6	
Delay (s)	24.4	21.3		20.3	10.7	
Level of Service	C	C		C	B	
Approach Delay (s)	23.1			20.3	10.7	
Approach LOS	C			C	B	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	715	266	165	218	179	774	173	1267	200	635	1003	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3294		1829	1689	1554	1829	5255	1605	3547	4935	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3294		1829	1689	1554	1829	5255	1605	3547	4935	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	753	280	174	229	188	815	182	1334	211	668	1056	568
RTOR Reduction (vph)	0	21	0	0	34	80	0	0	0	0	88	0
Lane Group Flow (vph)	407	779	0	229	350	539	182	1334	211	668	1536	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.5	26.5		18.0	18.0	40.0	11.2	25.5	110.0	18.0	32.3	
Effective Green, g (s)	29.5	29.5		21.0	21.0	42.0	12.2	28.5	110.0	19.0	35.3	
Actuated g/C Ratio	0.27	0.27		0.19	0.19	0.38	0.11	0.26	1.00	0.17	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	446	883		349	322	593	202	1361	1605	612	1583	
v/s Ratio Prot	c0.24	0.24		0.13	c0.21	0.35	0.10	c0.25		0.19	c0.31	
v/s Ratio Perm									0.13			
v/c Ratio	0.91	0.88		0.66	1.09	0.91	0.90	0.98	0.13	1.09	0.97	
Uniform Delay, d1	39.0	38.6		41.2	44.5	32.2	48.3	40.5	0.0	45.5	36.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.5	10.0		3.4	75.4	17.5	36.5	20.1	0.2	63.8	16.6	
Delay (s)	61.5	48.6		44.5	119.9	49.7	84.8	60.6	0.2	109.3	53.5	
Level of Service	E	D		D	F	D	F	E	A	F	D	
Approach Delay (s)		53.0			70.6			55.7			69.7	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	63.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	10	190	160	10	20	160	422	90	20	445	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	11	200	168	11	21	168	444	95	21	468	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	34	200	179	21	168	539	21	488
Volume Left (vph)	23	0	168	0	168	0	21	0
Volume Right (vph)	0	200	0	21	0	95	0	20
Hadj (s)	0.38	-0.67	0.50	-0.67	0.53	-0.09	0.53	0.01
Departure Headway (s)	8.6	7.6	8.7	7.6	7.7	7.0	7.8	7.3
Degree Utilization, x	0.08	0.42	0.43	0.04	0.36	1.0	0.05	0.99
Capacity (veh/h)	400	456	396	451	462	514	449	488
Control Delay (s)	11.2	14.8	17.1	9.8	13.7	80.4	10.0	63.7
Approach Delay (s)	14.3		16.3		64.5		61.5	
Approach LOS	B		C		F		F	

Intersection Summary			
Delay	50.6		
Level of Service	F		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	120	40	30	40	622	10	60	210	725	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1829	1841		1829	1925	1622	1829	1682		1737	1757	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1829	1841		1829	1925	1622	1829	1682		1737	1757	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	126	42	32	42	655	11	63	221	763	116	11
RTOR Reduction (vph)	0	12	0	0	0	262	0	142	0	0	1	0
Lane Group Flow (vph)	11	156	0	32	42	393	11	142	0	420	469	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	12.6		2.1	13.7	38.7	12.4	12.4		25.0	25.0	
Effective Green, g (s)	2.0	14.6		3.1	15.7	42.7	14.4	14.4		27.0	27.0	
Actuated g/C Ratio	0.03	0.21		0.04	0.22	0.60	0.20	0.20		0.38	0.38	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	378		79	425	1042	370	340		659	667	
v/s Ratio Prot	0.01	0.08		c0.02	0.02	c0.14	0.01	c0.08		0.24	c0.27	
v/s Ratio Perm						0.10						
v/c Ratio	0.22	0.41		0.41	0.10	0.38	0.03	0.42		0.64	0.70	
Uniform Delay, d1	33.8	24.5		33.1	22.1	7.3	22.7	24.7		18.0	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.7		3.4	0.1	0.2	0.0	0.8		2.0	3.4	
Delay (s)	35.9	25.3		36.5	22.2	7.6	22.8	25.5		20.1	22.0	
Level of Service	D	C		D	C	A	C	C		C	C	
Approach Delay (s)		25.9			9.7			25.4			21.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	293	1020	606	120	1164	210	511	841	40	340	911	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1565	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1565	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	308	1074	638	126	1225	221	538	885	42	358	959	309
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	308	1074	638	126	1225	221	538	885	42	358	959	309
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	13.6	30.7	50.7	13.2	30.3	120.0	20.0	40.8	120.0	15.3	35.1	120.0
Effective Green, g (s)	14.6	33.7	54.7	14.2	33.3	120.0	22.0	43.8	120.0	16.3	38.1	120.0
Actuated g/C Ratio	0.12	0.28	0.46	0.12	0.28	1.00	0.18	0.36	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	431	1475	752	419	1458	1588	945	1334	1593	481	1668	1588
v/s Ratio Prot	0.09	0.20	c0.16	0.04	c0.23		0.10	c0.24		c0.10	0.18	
v/s Ratio Perm			0.25			0.14			0.03			0.19
v/c Ratio	0.71	0.73	0.85	0.30	0.84	0.14	0.57	0.66	0.03	0.74	0.57	0.19
Uniform Delay, d1	50.7	39.0	29.0	48.4	40.8	0.0	44.7	31.9	0.0	49.8	34.2	0.0
Progression Factor	1.44	1.12	1.32	0.84	0.85	1.00	0.72	0.62	1.00	1.45	1.22	1.00
Incremental Delay, d2	4.0	1.9	7.3	0.1	4.7	0.2	0.5	2.5	0.0	5.1	1.4	0.3
Delay (s)	76.9	45.5	45.6	40.6	39.3	0.2	32.7	22.3	0.0	77.5	43.1	0.3
Level of Service	E	D	D	D	D	A	C	C	A	E	D	A
Approach Delay (s)		50.3			33.9			25.5			42.6	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	240	600	610	290	140	380	872	350	130	1397	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	253	632	642	305	147	400	918	368	137	1471	105
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	65
Lane Group Flow (vph)	116	253	632	642	305	147	400	918	368	137	1471	40
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.7	17.9	120.0	24.0	35.2	120.0	15.1	50.5	120.0	7.6	43.0	43.0
Effective Green, g (s)	7.7	20.9	120.0	25.0	38.2	120.0	16.1	53.5	120.0	8.6	46.0	46.0
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.13	0.45	1.00	0.07	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	227	636	1603	738	1164	1613	475	2342	1615	254	2014	609
v/s Ratio Prot	0.03	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.28	
v/s Ratio Perm			c0.39			0.09			0.23			0.03
v/c Ratio	0.51	0.40	0.39	0.87	0.26	0.09	0.84	0.39	0.23	0.54	0.73	0.07
Uniform Delay, d1	54.3	44.0	0.0	45.9	30.4	0.0	50.7	22.3	0.0	53.8	31.7	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.53	1.00	1.07	0.71	3.28
Incremental Delay, d2	0.8	0.9	0.7	10.4	0.3	0.1	12.0	0.5	0.3	1.1	2.3	0.2
Delay (s)	55.1	44.8	0.7	56.3	30.7	0.1	75.3	34.7	0.3	58.8	24.7	76.9
Level of Service	E	D	A	E	C	A	E	C	A	E	C	E
Approach Delay (s)		18.2			41.6			36.8			30.6	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	1261	30	20	597	50	70	210	30	80	220	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.90	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3641		1829	5171		3547	3569		1829	4350	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3641		1829	5171		3547	3569		1829	4350	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	1327	32	21	628	53	74	221	32	84	232	302
RTOR Reduction (vph)	0	1	0	0	6	0	0	10	0	0	216	0
Lane Group Flow (vph)	274	1358	0	21	675	0	74	243	0	84	318	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.5	67.2		3.3	56.0		6.7	21.1		8.4	22.8	
Effective Green, g (s)	15.5	70.2		4.3	59.0		7.7	24.1		9.4	25.8	
Actuated g/C Ratio	0.13	0.59		0.04	0.49		0.06	0.20		0.08	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	458	2129		65	2542		227	716		143	935	
v/s Ratio Prot	c0.08	c0.37		0.01	0.13		0.02	0.07		c0.05	c0.07	
v/s Ratio Perm												
v/c Ratio	0.60	0.64		0.32	0.27		0.33	0.34		0.59	0.34	
Uniform Delay, d1	49.3	16.5		56.4	17.8		53.7	41.1		53.4	39.9	
Progression Factor	1.21	0.41		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	1.2		2.9	0.3		0.8	0.3		6.0	0.2	
Delay (s)	61.2	8.0		59.3	18.1		54.5	41.4		59.5	40.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.9			19.3			44.4			42.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1425	1146	0	618	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1500	1206	0	651	684
RTOR Reduction (vph)	0	0	0	0	0	51
Lane Group Flow (vph)	0	1500	1206	0	651	633
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		30.6	30.6		17.4	17.4
Effective Green, g (s)		33.6	33.6		20.4	20.4
Actuated g/C Ratio		0.56	0.56		0.34	0.34
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2971	2971		1218	988
v/s Ratio Prot		c0.28	0.23		0.18	
v/s Ratio Perm						c0.22
v/c Ratio		0.50	0.41		0.53	0.64
Uniform Delay, d1		8.1	7.5		16.0	16.7
Progression Factor		1.00	0.71		1.00	1.00
Incremental Delay, d2		0.6	0.4		0.5	1.4
Delay (s)		8.7	5.7		16.4	18.1
Level of Service		A	A		B	B
Approach Delay (s)		8.7	5.7		17.3	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1393	0	0	1279	350	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1466	0	0	1346	368	411
RTOR Reduction (vph)	0	0	0	0	0	38
Lane Group Flow (vph)	1466	0	0	1346	368	373
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	35.3			35.3	12.7	12.7
Effective Green, g (s)	38.3			38.3	15.7	15.7
Actuated g/C Ratio	0.64			0.64	0.26	0.26
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3387			2357	937	760
v/s Ratio Prot	0.28			c0.36	0.10	c0.13
v/s Ratio Perm						
v/c Ratio	0.43			0.57	0.39	0.49
Uniform Delay, d1	5.4			6.2	18.2	18.8
Progression Factor	1.09			1.27	1.00	1.00
Incremental Delay, d2	0.4			0.6	0.3	0.5
Delay (s)	6.3			8.4	18.5	19.3
Level of Service	A			A	B	B
Approach Delay (s)	6.3			8.4	18.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	839	924	20	10	1149	389	30	10	10	385	10	786
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5287		1847	5307	1592		1812			1854	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5287		1847	5307	1592		1812			1854	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	883	973	21	11	1209	409	32	11	11	405	11	827
RTOR Reduction (vph)	0	2	0	0	0	180	0	8	0	0	0	33
Lane Group Flow (vph)	883	992	0	11	1209	229	0	46	0	0	416	794
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	31.5	61.6		1.4	31.5	31.5		4.0			33.0	64.5
Effective Green, g (s)	32.5	64.6		2.4	34.5	34.5		6.0			35.0	68.5
Actuated g/C Ratio	0.27	0.54		0.02	0.29	0.29		0.05			0.29	0.57
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	970	2846		36	1525	457		90			540	943
v/s Ratio Prot	c0.25	0.19		0.01	c0.23			c0.03			0.22	c0.48
v/s Ratio Perm						0.14						
v/c Ratio	0.91	0.35		0.31	0.79	0.50		0.52			0.77	0.84
Uniform Delay, d1	42.3	15.7		58.0	39.5	35.6		55.6			38.8	21.3
Progression Factor	1.00	0.88		1.07	0.98	0.95		1.00			1.00	1.00
Incremental Delay, d2	11.6	0.3		4.8	4.3	3.9		4.9			6.7	6.9
Delay (s)	53.9	14.2		67.0	43.1	37.7		60.5			45.5	28.1
Level of Service	D	B		E	D	D		E			D	C
Approach Delay (s)		32.9			41.9			60.5			34.0	
Approach LOS		C			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	71	171	248	68	140	291
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	75	180	261	72	147	306
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	898	297			333	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	898	297			333	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	76			88	
cM capacity (veh/h)	273	743			1227	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	255	333	454
Volume Left	75	0	147
Volume Right	180	72	0
cSH	493	1700	1227
Volume to Capacity	0.52	0.20	0.12
Queue Length 95th (ft)	73	0	10
Control Delay (s)	19.8	0.0	3.5
Lane LOS	C		A
Approach Delay (s)	19.8	0.0	3.5
Approach LOS	C		

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1161	10	10	1228	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1222	11	11	1293	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			1233		2541	1227
vC1, stage 1 conf vol					1227	
vC2, stage 2 conf vol					1314	
vCu, unblocked vol			1233		2541	1227
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	90
cM capacity (veh/h)			565		179	217

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1233	11	1293	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	565	1700	203
Volume to Capacity	0.73	0.02	0.76	0.16
Queue Length 95th (ft)	0	1	0	13
Control Delay (s)	0.0	11.5	0.0	26.0
Lane LOS		B		D
Approach Delay (s)	0.0	0.1		26.0
Approach LOS				D

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	640	213	196	141	206	370	247	907	140	481	678	594
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3302		1847	1847	1570	1847	5307	1627	3583	4894	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3302		1847	1847	1570	1847	5307	1627	3583	4894	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	674	224	206	148	217	389	260	955	147	506	714	625
RTOR Reduction (vph)	0	43	0	0	0	79	0	0	0	0	176	0
Lane Group Flow (vph)	364	697	0	148	217	310	260	955	147	506	1163	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	22.6	22.6		5.0	5.0	18.5	10.4	26.9	90.0	13.5	30.0	
Effective Green, g (s)	25.6	25.6		8.0	8.0	24.5	11.4	29.9	90.0	14.5	33.0	
Actuated g/C Ratio	0.28	0.28		0.09	0.09	0.27	0.13	0.33	1.00	0.16	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	477	939		164	164	427	233	1763	1627	577	1794	
v/s Ratio Prot	c0.22	0.21		0.08	c0.12	0.20	c0.14	0.18		c0.14	c0.24	
v/s Ratio Perm									0.09			
v/c Ratio	0.76	0.74		0.90	1.32	0.73	1.12	0.54	0.09	0.88	0.65	
Uniform Delay, d1	29.4	29.2		40.6	41.0	29.7	39.3	24.5	0.0	36.9	23.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.4	2.8		42.4	181.4	5.1	93.6	1.2	0.1	13.7	1.8	
Delay (s)	35.8	32.0		83.0	222.4	34.8	132.9	25.7	0.1	50.5	25.5	
Level of Service	D	C		F	F	C	F	C	A	D	C	
Approach Delay (s)		33.3			98.3			43.4			32.4	
Approach LOS		C			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	32	40	250	250	80	40	270	357	150	30	409	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	34	42	263	263	84	42	284	376	158	32	431	34

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	76	263	347	42	284	534	32	464
Volume Left (vph)	34	0	263	0	284	0	32	0
Volume Right (vph)	0	263	0	42	0	158	0	34
Hadj (s)	0.24	-0.68	0.40	-0.68	0.52	-0.19	0.52	-0.03
Departure Headway (s)	9.4	8.5	9.2	8.2	9.0	8.3	9.1	8.6
Degree Utilization, x	0.20	0.62	0.89	0.10	0.71	1.0	0.08	1.0
Capacity (veh/h)	375	410	383	431	393	440	384	426
Control Delay (s)	13.5	23.3	52.1	10.9	30.0	147.9	11.7	104.3
Approach Delay (s)	21.1		47.7		106.9		98.4	
Approach LOS	C		E		F		F	

Intersection Summary			
Delay	79.3		
Level of Service	F		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	60	747	30	60	80	809	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.91		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1831		1847	1944	1652	1847	1762		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1831		1847	1944	1652	1847	1762		1754	1776	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	63	786	32	63	84	852	137	11
RTOR Reduction (vph)	0	19	0	0	0	297	0	50	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	63	489	32	97	0	435	564	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	2.0	8.7		4.0	10.7	41.4	12.3	12.3		30.7	30.7	
Effective Green, g (s)	3.0	10.7		5.0	12.7	45.4	14.3	14.3		32.7	32.7	
Actuated g/C Ratio	0.04	0.14		0.07	0.17	0.61	0.19	0.19		0.44	0.44	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	74	262		123	330	1070	353	337		767	777	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.20	0.02	c0.05		0.25	c0.32	
v/s Ratio Perm						0.10						
v/c Ratio	0.28	0.41		0.34	0.19	0.46	0.09	0.29		0.57	0.73	
Uniform Delay, d1	34.8	29.1		33.3	26.6	8.0	24.8	25.8		15.7	17.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.0		1.7	0.3	0.3	0.1	0.5		1.0	3.4	
Delay (s)	36.9	30.2		34.9	26.9	8.3	25.0	26.3		16.7	20.7	
Level of Service	D	C		C	C	A	C	C		B	C	
Approach Delay (s)		31.1			10.8			26.1			19.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	493	359	90	721	140	450	903	80	240	703	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	519	378	95	759	147	474	951	84	253	740	293
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	263	519	378	95	759	147	474	951	84	253	740	293
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	6.0	23.7	27.8	4.8	22.5	90.0	4.1	32.8	90.0	8.7	35.4	90.0
Effective Green, g (s)	7.0	26.7	33.8	5.8	25.5	90.0	7.1	35.8	90.0	9.7	38.4	90.0
Actuated g/C Ratio	0.08	0.30	0.38	0.06	0.28	1.00	0.08	0.40	1.00	0.11	0.43	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	1574	614	230	1503	1632	410	1468	1631	386	2264	1652
v/s Ratio Prot	c0.07	0.10	c0.05	0.03	0.14		c0.09	c0.26		c0.07	0.14	
v/s Ratio Perm			0.18			0.09			0.05			c0.18
v/c Ratio	0.95	0.33	0.62	0.41	0.50	0.09	1.16	0.65	0.05	0.66	0.33	0.18
Uniform Delay, d1	41.3	24.7	22.8	40.5	27.0	0.0	41.5	22.0	0.0	38.5	17.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.9	0.3	1.3	0.4	0.6	0.1	94.4	2.2	0.1	3.0	0.4	0.2
Delay (s)	80.2	24.9	24.1	40.9	27.5	0.1	135.9	24.2	0.1	41.6	17.6	0.2
Level of Service	F	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		37.2			24.8			57.9			18.3	
Approach LOS		D			C			E			B	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	910	860	1516	0	0	1657
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	958	905	1596	0	0	1744
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	958	902	1596	0	0	1744
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	31.7	31.7	29.3			29.3
Effective Green, g (s)	32.8	32.8	30.4			30.4
Actuated g/C Ratio	0.47	0.47	0.44			0.44
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1681	1365	2308			2308
v/s Ratio Prot	0.27	c0.31	0.30			c0.33
v/s Ratio Perm						
v/c Ratio	0.57	0.66	0.69			0.76
Uniform Delay, d1	13.1	13.9	15.6			16.3
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	1.2	0.9			1.5
Delay (s)	13.6	15.2	16.5			17.7
Level of Service	B	B	B			B
Approach Delay (s)	14.3		16.5			17.7
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	6.0
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	590	0	968	0	0	0	0	1220	380	0	1577	880
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.95	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2833					5255	1565		4973	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2833					5255	1565		4973	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	621	0	1019	0	0	0	0	1284	400	0	1660	926
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	136	0	89	0
Lane Group Flow (vph)	621	0	992	0	0	0	0	1284	264	0	2497	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	40.8		40.8					60.9	60.9		60.9	
Effective Green, g (s)	41.9		41.9					62.0	62.0		62.0	
Actuated g/C Ratio	0.38		0.38					0.56	0.56		0.56	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1352		1080					2964	882		2805	
v/s Ratio Prot								0.24			c0.50	
v/s Ratio Perm	0.18		c0.35						0.17			
v/c Ratio	0.46		0.92					0.43	0.30		0.89	
Uniform Delay, d1	25.5		32.4					13.8	12.6		21.0	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	0.2		12.1					0.1	0.2		4.0	
Delay (s)	25.8		44.5					13.9	12.7		24.9	
Level of Service	C		D					B	B		C	
Approach Delay (s)		37.4			0.0			13.6			24.9	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	109.9	Sum of lost time (s)	7.1
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	60	203	40	522	50	730	154	489	510	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1746		1829	1925	2880	1829	5095		3547	3657	1576
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1746		1829	1925	2880	1829	5095		3547	3657	1576
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	63	63	214	42	549	53	768	162	515	537	11
RTOR Reduction (vph)	0	32	0	0	0	126	0	27	0	0	0	6
Lane Group Flow (vph)	11	94	0	214	42	423	53	903	0	515	537	5
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	1.0	16.5		14.6	30.1	53.7	5.4	25.1		17.6	37.3	37.3
Effective Green, g (s)	2.0	19.5		15.6	33.1	56.7	6.4	28.1		18.6	40.3	40.3
Actuated g/C Ratio	0.02	0.21		0.17	0.35	0.60	0.07	0.30		0.20	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	38	362		304	679	1740	124	1526		703	1571	677
v/s Ratio Prot	0.01	0.05		c0.12	0.02	c0.15	0.03	c0.18		c0.15	0.15	
v/s Ratio Perm												0.00
v/c Ratio	0.29	0.26		0.70	0.06	0.24	0.43	0.59		0.73	0.34	0.01
Uniform Delay, d1	45.2	31.1		36.9	20.1	8.6	41.9	28.0		35.3	17.9	15.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1		5.9	0.0	0.0	0.9	0.9		3.4	0.3	0.0
Delay (s)	46.7	31.3		42.9	20.1	8.6	42.8	28.9		38.7	18.2	15.3
Level of Service	D	C		D	C	A	D	C		D	B	B
Approach Delay (s)		32.5			18.3			29.7			28.1	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	891	1690	0	640	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2775
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2775
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	938	1779	0	674	789
RTOR Reduction (vph)	0	0	0	0	0	35
Lane Group Flow (vph)	0	938	1779	0	674	754
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		76.1	76.1		31.9	31.9
Effective Green, g (s)		79.1	79.1		34.9	34.9
Actuated g/C Ratio		0.66	0.66		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3463	3463		1031	807
v/s Ratio Prot		0.18	c0.34		0.19	
v/s Ratio Perm						c0.27
v/c Ratio		0.27	0.51		0.65	0.93
Uniform Delay, d1		8.5	10.5		37.3	41.4
Progression Factor		1.05	1.25		1.00	1.00
Incremental Delay, d2		0.1	0.4		1.5	17.7
Delay (s)		9.0	13.5		38.8	59.1
Level of Service		A	B		D	E
Approach Delay (s)		9.0	13.5		49.7	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1241	0	0	1520	660	708
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1306	0	0	1600	695	745
RTOR Reduction (vph)	0	0	0	0	0	126
Lane Group Flow (vph)	1306	0	0	1600	695	619
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	82.4			82.4	25.6	25.6
Effective Green, g (s)	85.4			85.4	28.6	28.6
Actuated g/C Ratio	0.71			0.71	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3739			2602	845	686
v/s Ratio Prot	0.25			c0.44	0.20	c0.21
v/s Ratio Perm						
v/c Ratio	0.35			0.61	0.82	0.90
Uniform Delay, d1	6.6			8.9	43.3	44.3
Progression Factor	0.23			2.38	1.00	1.00
Incremental Delay, d2	0.2			0.8	6.5	15.1
Delay (s)	1.8			21.9	49.8	59.4
Level of Service	A			C	D	E
Approach Delay (s)	1.8			21.9	54.8	
Approach LOS	A			C	D	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	444	1486	20	20	2019	279	10	5	10	102	10	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	3547	5244		1829	5255	1636		1712			1841	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (perm)	3547	5244		1829	5255	1636		1712			1841	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	467	1564	21	21	2125	294	11	5	11	107	11	342
RTOR Reduction (vph)	0	1	0	0	0	70	0	11	0	0	0	49
Lane Group Flow (vph)	467	1584	0	21	2125	224	0	16	0	0	118	293
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	19.5	77.8		2.8	61.1	61.1		3.0			16.4	35.9
Effective Green, g (s)	20.5	80.8		3.8	64.1	64.1		5.0			18.4	39.9
Actuated g/C Ratio	0.17	0.67		0.03	0.53	0.53		0.04			0.15	0.33
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	605	3530		57	2807	873		71			282	543
v/s Ratio Prot	c0.13	0.30		0.01	c0.40			c0.01			0.06	c0.18
v/s Ratio Perm						0.14						
v/c Ratio	0.77	0.45		0.37	0.76	0.26		0.23			0.42	0.54
Uniform Delay, d1	47.5	9.2		56.9	21.9	15.1		55.6			46.0	32.6
Progression Factor	0.97	0.94		0.82	1.89	2.77		1.00			1.00	1.00
Incremental Delay, d2	5.2	0.3		1.5	0.8	0.3		1.7			1.0	1.1
Delay (s)	51.2	9.0		48.1	42.1	42.1		57.3			47.0	33.7
Level of Service	D	A		D	D	D		E			D	C
Approach Delay (s)		18.6			42.2			57.3			37.1	
Approach LOS		B			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	60	74	235	110	82	182
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	63	78	247	116	86	192
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	669	305			363	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	669	305			363	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	89			93	
cM capacity (veh/h)	392	735			1195	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	141	363	278
Volume Left	63	0	86
Volume Right	78	116	0
cSH	528	1700	1195
Volume to Capacity	0.27	0.21	0.07
Queue Length 95th (ft)	27	0	6
Control Delay (s)	14.3	0.0	3.0
Lane LOS	B		A
Approach Delay (s)	14.3	0.0	3.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	427	0	10	718	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	449	0	11	756	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			449		1226	449
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			449		1226	449
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1111		195	610

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	449	11	756	11
Volume Left	0	11	0	0
Volume Right	0	0	0	11
cSH	1700	1111	1700	610
Volume to Capacity	0.26	0.01	0.44	0.02
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	0.0	8.3	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		11.0
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	1342	87	30	2043	50	219	30	40	10	10	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1537		1825	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.77		0.68	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1230		1300	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	1413	92	32	2151	53	231	32	42	11	11	56
RTOR Reduction (vph)	0	0	35	0	0	31	0	5	0	0	0	41
Lane Group Flow (vph)	181	1413	57	32	2151	22	0	300	0	11	11	15
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	27.6	70.9	70.9	4.2	47.5	47.5		29.9		29.9	29.9	29.9
Effective Green, g (s)	28.6	73.9	73.9	5.2	50.5	50.5		31.9		31.9	31.9	31.9
Actuated g/C Ratio	0.24	0.62	0.62	0.04	0.42	0.42		0.27		0.27	0.27	0.27
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	435	3236	982	79	2211	677		326		345	511	427
v/s Ratio Prot	0.10	c0.27		0.02	c0.41						0.01	
v/s Ratio Perm			0.04			0.01		c0.24		0.01		0.01
v/c Ratio	0.42	0.44	0.06	0.41	0.97	0.03		0.92		0.03	0.02	0.03
Uniform Delay, d1	38.6	12.1	9.2	55.9	34.1	20.4		42.8		32.6	32.5	32.6
Progression Factor	1.32	1.68	4.19	1.24	1.30	3.70		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.4	0.1	2.5	11.2	0.1		29.7		0.0	0.0	0.0
Delay (s)	51.5	20.7	38.6	72.1	55.5	75.6		72.5		32.7	32.5	32.7
Level of Service	D	C	D	E	E	E		E		C	C	C
Approach Delay (s)		25.0			56.2			72.5			32.7	
Approach LOS		C			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	450	560	1330	0	0	1658
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	474	589	1400	0	0	1745
RTOR Reduction (vph)	0	98	0	0	0	0
Lane Group Flow (vph)	474	491	1400	0	0	1745
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.13	c0.17	0.27			c0.48
v/s Ratio Perm						
v/c Ratio	0.62	0.79	0.39			0.70
Uniform Delay, d1	21.2	22.2	4.1			5.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	2.1	7.5	0.3			1.6
Delay (s)	23.4	29.7	4.4			7.4
Level of Service	C	C	A			A
Approach Delay (s)	26.9		4.4			7.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	750	1658	0	1022	1508	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	789	1745	0	1076	1587	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	789	1745	0	1076	1587	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	39.0	39.0		19.0	19.0	
Effective Green, g (s)	42.0	42.0		22.0	22.0	
Actuated g/C Ratio	0.60	0.60		0.31	0.31	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	2128	1728		1651	1651	
v/s Ratio Prot	0.22	c0.61		0.20	c0.30	
v/s Ratio Perm						
v/c Ratio	0.37	1.01		0.65	0.96	
Uniform Delay, d1	7.2	14.0		20.7	23.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	24.0		2.0	14.7	
Delay (s)	7.2	38.0		22.7	38.3	
Level of Service	A	D		C	D	
Approach Delay (s)	28.4			22.7	38.3	
Approach LOS	C			C	D	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	111	84	180	117	243	125	979	180	870	1720	576
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.95	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3270		1829	1738	1554	1829	5255	1605	3547	5023	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3270		1829	1738	1554	1829	5255	1605	3547	5023	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	266	117	88	189	123	256	132	1031	189	916	1811	606
RTOR Reduction (vph)	0	31	0	0	15	86	0	0	0	0	46	0
Lane Group Flow (vph)	144	296	0	189	169	109	132	1031	189	916	2371	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	17.6	17.6		9.0	9.0	46.0	12.1	38.4	120.0	33.0	59.3	
Effective Green, g (s)	20.6	20.6		12.0	12.0	48.0	13.1	41.4	120.0	34.0	62.3	
Actuated g/C Ratio	0.17	0.17		0.10	0.10	0.40	0.11	0.34	1.00	0.28	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	285	561		182	173	621	199	1812	1605	1004	2607	
v/s Ratio Prot	0.09	c0.09		c0.10	0.10	0.07	c0.07	0.20		0.26	c0.47	
v/s Ratio Perm									0.12			
v/c Ratio	0.51	0.53		1.04	0.98	0.17	0.66	0.57	0.12	0.91	0.91	
Uniform Delay, d1	45.1	45.3		54.0	53.9	23.2	51.3	32.0	0.0	41.6	26.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.43	1.09	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.4		77.2	60.4	0.0	6.0	1.2	0.1	12.0	6.0	
Delay (s)	45.6	45.7		131.2	114.2	23.3	79.4	36.3	0.1	53.6	32.3	
Level of Service	D	D		F	F	C	E	D	A	D	C	
Approach Delay (s)		45.6			88.6			35.4			38.2	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	5	100	30	10	10	150	347	20	10	258	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	5	105	32	11	11	158	365	21	11	272	16

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	12	105	42	11	158	386	11	287
Volume Left (vph)	6	0	32	0	158	0	11	0
Volume Right (vph)	0	105	0	11	0	21	0	16
Hadj (s)	0.31	-0.67	0.41	-0.67	0.53	0.00	0.53	0.00
Departure Headway (s)	6.9	5.9	7.1	6.0	5.9	5.3	6.1	5.6
Degree Utilization, x	0.02	0.17	0.08	0.02	0.26	0.57	0.02	0.45
Capacity (veh/h)	481	558	463	539	597	663	560	624
Control Delay (s)	8.8	8.9	9.5	7.9	9.7	14.0	8.1	11.9
Approach Delay (s)	8.9		9.2		12.7		11.7	
Approach LOS	A		A		B		B	

Intersection Summary			
Delay	11.8		
Level of Service	B		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	20	20	180	80	527	40	40	70	338	60	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.90		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1829	1760		1829	1925	1618	1829	1726		1737	1754	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1829	1760		1829	1925	1618	1829	1726		1737	1754	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	21	189	84	555	42	42	74	356	63	11
RTOR Reduction (vph)	0	18	0	0	0	237	0	60	0	0	2	0
Lane Group Flow (vph)	11	24	0	189	84	318	42	56	0	196	232	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	0.9	6.2		9.0	14.3	29.2	8.9	8.9		14.9	14.9	
Effective Green, g (s)	1.9	8.2		10.0	16.3	33.2	10.9	10.9		16.9	16.9	
Actuated g/C Ratio	0.03	0.14		0.17	0.28	0.57	0.19	0.19		0.29	0.29	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	248		315	540	1009	343	324		506	511	
v/s Ratio Prot	0.01	0.01		c0.10	0.04	c0.09	0.02	c0.03		0.11	c0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.19	0.10		0.60	0.16	0.31	0.12	0.17		0.39	0.45	
Uniform Delay, d1	27.3	21.7		22.2	15.7	6.5	19.6	19.8		16.4	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.2		3.1	0.1	0.2	0.2	0.3		0.5	0.6	
Delay (s)	28.8	21.8		25.2	15.8	6.6	19.7	20.0		16.9	17.4	
Level of Service	C	C		C	B	A	B	C		B	B	
Approach Delay (s)		23.3			11.8			19.9			17.2	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	803	371	150	1187	170	694	901	140	410	801	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1569	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1569	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	229	845	391	158	1249	179	731	948	147	432	843	255
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	229	845	391	158	1249	179	731	948	147	432	843	255
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	11.8	26.2	46.2	17.0	31.4	120.0	20.0	40.4	120.0	16.4	35.8	120.0
Effective Green, g (s)	12.8	29.2	50.2	18.0	34.4	120.0	22.0	43.4	120.0	17.4	38.8	120.0
Actuated g/C Ratio	0.11	0.24	0.42	0.15	0.29	1.00	0.18	0.36	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	378	1278	695	532	1506	1588	945	1322	1593	514	1699	1588
v/s Ratio Prot	0.06	0.16	c0.10	0.04	c0.24		0.14	c0.26		c0.12	0.16	
v/s Ratio Perm			0.15			0.11			0.09			0.16
v/c Ratio	0.61	0.66	0.56	0.30	0.83	0.11	0.77	0.72	0.09	0.84	0.50	0.16
Uniform Delay, d1	51.2	40.9	26.5	45.4	40.1	0.0	46.6	33.0	0.0	49.9	32.7	0.0
Progression Factor	1.40	1.21	1.44	0.76	0.76	1.00	0.78	0.69	1.00	1.41	1.14	1.00
Incremental Delay, d2	1.8	1.7	0.6	0.1	4.2	0.1	3.6	3.3	0.1	10.7	1.0	0.2
Delay (s)	73.3	51.4	38.7	34.8	34.8	0.1	40.0	26.2	0.1	80.9	38.2	0.2
Level of Service	E	D	D	C	C	A	D	C	A	F	D	A
Approach Delay (s)		51.4			30.9			29.6			43.9	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	380	450	500	410	70	480	1275	440	170	771	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	400	474	526	432	74	505	1342	463	179	812	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	168	400	474	526	432	74	505	1342	463	179	812	37
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.0	20.4	120.0	21.4	34.8	120.0	15.0	50.4	120.0	7.8	43.2	43.2
Effective Green, g (s)	8.0	23.4	120.0	22.4	37.8	120.0	16.0	53.4	120.0	8.8	46.2	46.2
Actuated g/C Ratio	0.07	0.19	1.00	0.19	0.31	1.00	0.13	0.44	1.00	0.07	0.39	0.39
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	236	713	1603	662	1151	1613	472	2338	1615	260	2023	611
v/s Ratio Prot	c0.05	c0.11		c0.15	0.12		c0.14	c0.26		c0.05	0.15	
v/s Ratio Perm			0.30			0.05			0.29			0.02
v/c Ratio	0.71	0.56	0.30	0.79	0.38	0.05	1.07	0.57	0.29	0.69	0.40	0.06
Uniform Delay, d1	54.9	43.7	0.0	46.6	31.9	0.0	52.0	24.8	0.0	54.3	26.8	23.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.15	1.35	1.00	1.09	0.68	1.00
Incremental Delay, d2	8.2	1.7	0.5	6.1	0.4	0.1	61.1	1.0	0.4	5.7	0.6	0.2
Delay (s)	63.0	45.3	0.5	52.7	32.4	0.1	121.0	34.6	0.4	64.6	18.9	23.4
Level of Service	E	D	A	D	C	A	F	C	A	E	B	C
Approach Delay (s)		27.8			40.4			46.6			26.8	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	191	552	70	40	1425	60	50	140	20	50	240	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3582		1829	5211		3547	3570		1829	4481	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3582		1829	5211		3547	3570		1829	4481	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	201	581	74	42	1500	63	53	147	21	53	253	234
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	155	0
Lane Group Flow (vph)	201	649	0	42	1560	0	53	158	0	53	332	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.1	65.0		6.7	59.6		6.1	20.8		7.5	22.2	
Effective Green, g (s)	13.1	68.0		7.7	62.6		7.1	23.8		8.5	25.2	
Actuated g/C Ratio	0.11	0.57		0.06	0.52		0.06	0.20		0.07	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	387	2029		117	2718		209	708		129	941	
v/s Ratio Prot	c0.06	0.18		0.02	c0.30		0.01	0.04		c0.03	c0.07	
v/s Ratio Perm												
v/c Ratio	0.52	0.32		0.36	0.57		0.25	0.22		0.41	0.35	
Uniform Delay, d1	50.5	13.8		53.8	19.6		53.9	40.3		53.4	40.4	
Progression Factor	1.21	0.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.3		1.9	0.9		0.6	0.2		2.1	0.2	
Delay (s)	62.3	4.6		55.7	20.5		54.6	40.5		55.5	40.7	
Level of Service	E	A		E	C		D	D		E	D	
Approach Delay (s)		18.1			21.4			43.9			42.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	270	610	2400	0	0	1650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.91
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			5255
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			5255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	642	2526	0	0	1737
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	284	642	2526	0	0	1737
Turn Type	Prot	Prot	NA			NA
Protected Phases	8	8	2			6
Permitted Phases						
Actuated Green, G (s)	21.3	21.3	44.4			44.4
Effective Green, g (s)	22.4	22.4	45.5			45.5
Actuated g/C Ratio	0.30	0.30	0.62			0.62
Clearance Time (s)	4.1	4.1	4.1			4.1
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1075	872	3235			3235
v/s Ratio Prot	0.08	c0.22	c0.48			0.33
v/s Ratio Perm						
v/c Ratio	0.26	0.74	0.78			0.54
Uniform Delay, d1	19.5	23.1	10.5			8.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	3.3	1.3			0.2
Delay (s)	19.6	26.4	11.8			8.3
Level of Service	B	C	B			A
Approach Delay (s)	24.3		11.8			8.3
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	890	0	733	0	0	0	0	2305	850	0	1520	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0					3.0	3.0		3.0	
Lane Util. Factor	0.97		0.88					0.91	1.00		0.91	
Frpb, ped/bikes	1.00		0.98					1.00	0.96		1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	
Frt	1.00		0.85					1.00	0.85		0.97	
Flt Protected	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (prot)	3547		2835					5255	1570		5091	
Flt Permitted	0.95		1.00					1.00	1.00		1.00	
Satd. Flow (perm)	3547		2835					5255	1570		5091	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	937	0	772	0	0	0	0	2426	895	0	1600	421
RTOR Reduction (vph)	0	0	32	0	0	0	0	0	154	0	40	0
Lane Group Flow (vph)	937	0	740	0	0	0	0	2426	741	0	1981	0
Confl. Peds. (#/hr)			2						7			
Turn Type	Perm		Perm					NA	Perm		NA	
Protected Phases								2			6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	32.6		32.6					54.8	54.8		54.8	
Effective Green, g (s)	33.7		33.7					55.9	55.9		55.9	
Actuated g/C Ratio	0.35		0.35					0.58	0.58		0.58	
Clearance Time (s)	4.1		4.1					4.1	4.1		4.1	
Vehicle Extension (s)	3.0		3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)	1250		999					3072	918		2976	
v/s Ratio Prot								0.46			0.39	
v/s Ratio Perm	c0.26		0.26						c0.47			
v/c Ratio	0.75		0.74					0.79	0.81		0.67	
Uniform Delay, d1	27.2		27.1					15.3	15.6		13.5	
Progression Factor	1.00		1.00					1.00	1.00		1.00	
Incremental Delay, d2	2.5		3.0					1.4	5.3		0.6	
Delay (s)	29.8		30.1					16.7	20.9		14.1	
Level of Service	C		C					B	C		B	
Approach Delay (s)		29.9			0.0			17.9			14.1	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	7.1
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	120	100	115	60	501	50	470	115	528	580	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00		1.00	1.00	0.88	1.00	0.91		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1764		1829	1925	2880	1829	5076		3547	3657	1576
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1764		1829	1925	2880	1829	5076		3547	3657	1576
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	126	105	121	63	527	53	495	121	556	611	32
RTOR Reduction (vph)	0	25	0	0	0	135	0	36	0	0	0	18
Lane Group Flow (vph)	32	206	0	121	63	392	53	580	0	556	611	14
Confl. Peds. (#/hr)			24			24			12			36
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4	4 1	5	2		1	6	
Permitted Phases		8										6
Actuated Green, G (s)	3.4	17.9		10.3	24.8	48.5	3.9	20.6		17.7	34.4	34.4
Effective Green, g (s)	4.4	20.9		11.3	27.8	51.5	4.9	23.6		18.7	37.4	37.4
Actuated g/C Ratio	0.05	0.24		0.13	0.32	0.60	0.06	0.27		0.22	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	93	426		238	618	1714	103	1384		766	1581	681
v/s Ratio Prot	0.02	c0.12		c0.07	0.03	0.14	0.03	0.11		c0.16	c0.17	
v/s Ratio Perm												0.01
v/c Ratio	0.34	0.48		0.51	0.10	0.23	0.51	0.42		0.73	0.39	0.02
Uniform Delay, d1	39.7	28.2		35.0	20.6	8.2	39.6	25.8		31.5	16.7	14.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3		0.6	0.0	0.0	1.8	0.4		2.9	0.3	0.0
Delay (s)	40.5	28.5		35.6	20.6	8.2	41.4	26.3		34.4	17.1	14.1
Level of Service	D	C		D	C	A	D	C		C	B	B
Approach Delay (s)		29.9			14.0			27.5			25.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	2047	1211	0	706	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5255	5255		3547	2769
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5255	5255		3547	2769
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2155	1275	0	743	495
RTOR Reduction (vph)	0	0	0	0	0	107
Lane Group Flow (vph)	0	2155	1275	0	743	388
Confl. Peds. (#/hr)						24
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		78.9	78.9		29.1	29.1
Effective Green, g (s)		81.9	81.9		32.1	32.1
Actuated g/C Ratio		0.68	0.68		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3586	3586		948	740
v/s Ratio Prot		c0.41	0.24		c0.21	
v/s Ratio Perm						0.14
v/c Ratio		0.60	0.36		0.78	0.52
Uniform Delay, d1		10.3	8.0		40.7	37.4
Progression Factor		1.05	1.60		1.00	1.00
Incremental Delay, d2		0.5	0.2		4.3	0.7
Delay (s)		11.3	13.0		45.0	38.1
Level of Service		B	B		D	D
Approach Delay (s)		11.3	13.0		42.3	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	129.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2004	0	0	1687	330	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5255			3657	3547	2880
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5255			3657	3547	2880
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2109	0	0	1776	347	505
RTOR Reduction (vph)	0	0	0	0	0	26
Lane Group Flow (vph)	2109	0	0	1776	347	479
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	84.5			84.5	23.5	23.5
Effective Green, g (s)	87.5			87.5	26.5	26.5
Actuated g/C Ratio	0.73			0.73	0.22	0.22
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3831			2666	783	636
v/s Ratio Prot	0.40			c0.49	0.10	c0.17
v/s Ratio Perm						
v/c Ratio	0.55			0.67	0.44	0.75
Uniform Delay, d1	7.4			8.6	40.4	43.7
Progression Factor	0.72			2.34	1.00	1.00
Incremental Delay, d2	0.4			0.4	0.4	5.1
Delay (s)	5.7			20.4	40.8	48.7
Level of Service	A			C	D	D
Approach Delay (s)	5.7			20.4	45.5	
Approach LOS	A			C	D	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1759	40	20	1884	294	30	10	20	281	10	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	3547	5237		1829	5255	1636		1746			1836	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	3547	5237		1829	5255	1636		1746			1836	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	1852	42	21	1983	309	32	11	21	296	11	816
RTOR Reduction (vph)	0	2	0	0	0	85	0	15	0	0	0	39
Lane Group Flow (vph)	721	1892	0	21	1983	224	0	49	0	0	307	777
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	25.0	66.2		2.8	44.0	44.0		4.0			27.0	52.0
Effective Green, g (s)	26.0	69.2		3.8	47.0	47.0		6.0			29.0	56.0
Actuated g/C Ratio	0.22	0.58		0.03	0.39	0.39		0.05			0.24	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	768	3020		57	2058	640		87			443	763
v/s Ratio Prot	0.20	0.36		0.01	c0.38			c0.03			0.17	c0.47
v/s Ratio Perm						0.14						
v/c Ratio	0.94	0.63		0.37	0.96	0.35		0.56			0.69	1.02
Uniform Delay, d1	46.2	16.8		56.9	35.7	25.7		55.7			41.4	32.0
Progression Factor	1.07	1.38		0.59	1.54	2.32		1.00			1.00	1.00
Incremental Delay, d2	16.4	0.8		3.1	10.7	1.1		8.0			4.6	37.3
Delay (s)	65.9	24.0		36.6	65.6	60.9		63.7			46.1	69.3
Level of Service	E	C		D	E	E		E			D	E
Approach Delay (s)		35.6			64.7			63.7			62.9	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	180	140	339	130	120	361
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	189	147	357	137	126	380
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1058	425			494	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1058	425			494	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	14	77			88	
cM capacity (veh/h)	219	629			1070	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	337	494	506
Volume Left	189	0	126
Volume Right	147	137	0
cSH	307	1700	1070
Volume to Capacity	1.10	0.29	0.12
Queue Length 95th (ft)	332	0	10
Control Delay (s)	117.9	0.0	3.2
Lane LOS	F		A
Approach Delay (s)	117.9	0.0	3.2
Approach LOS	F		

Intersection Summary			
Average Delay	30.9		
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1006	10	40	949	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1059	11	42	999	11	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				878		
pX, platoon unblocked						
vC, conflicting volume			1069		2147	1064
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1069		2147	1064
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		79	77
cM capacity (veh/h)			652		50	271

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1069	42	999	74
Volume Left	0	42	0	11
Volume Right	11	0	0	63
cSH	1700	652	1700	166
Volume to Capacity	0.63	0.06	0.59	0.44
Queue Length 95th (ft)	0	5	0	51
Control Delay (s)	0.0	10.9	0.0	43.1
Lane LOS		B		E
Approach Delay (s)	0.0	0.4		43.1
Approach LOS				E

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1779	233	40	1847	10	112	20	40	50	30	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97		0.95	1.00	1.00
Satd. Flow (prot)	1829	5255	1595	1829	5255	1610		1523		1823	1925	1607
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78		0.65	1.00	1.00
Satd. Flow (perm)	1829	5255	1595	1829	5255	1610		1233		1244	1925	1607
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	1873	245	42	1944	11	118	21	42	53	32	257
RTOR Reduction (vph)	0	0	61	0	0	5	0	10	0	0	0	204
Lane Group Flow (vph)	46	1873	184	42	1944	6	0	171	0	53	32	53
Confl. Peds. (#/hr)			1			2	5		4	4		5
Parking (#/hr)							10	10	10			
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2			6	4			8		8
Actuated Green, G (s)	20.8	76.4	76.4	5.8	61.4	61.4		22.8		22.8	22.8	22.8
Effective Green, g (s)	21.8	79.4	79.4	6.8	64.4	64.4		24.8		24.8	24.8	24.8
Actuated g/C Ratio	0.18	0.66	0.66	0.06	0.54	0.54		0.21		0.21	0.21	0.21
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	332	3477	1055	103	2820	864		254		257	397	332
v/s Ratio Prot	0.03	c0.36		0.02	c0.37						0.02	
v/s Ratio Perm			0.12			0.00		c0.14		0.04		0.03
v/c Ratio	0.14	0.54	0.17	0.41	0.69	0.01		0.67		0.21	0.08	0.16
Uniform Delay, d1	41.2	10.7	7.8	54.7	20.4	12.9		43.9		39.4	38.4	39.1
Progression Factor	1.29	1.70	2.75	1.18	1.40	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.3	2.0	1.1	0.0		6.8		0.4	0.1	0.2
Delay (s)	53.4	18.6	21.6	66.5	29.6	12.9		50.7		39.8	38.5	39.3
Level of Service	D	B	C	E	C	B		D		D	D	D
Approach Delay (s)		19.7			30.3			50.7			39.3	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	356	650	2360	0	0	1324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	0.88	0.91			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3547	2880	5255			3657
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3547	2880	5255			3657
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	375	684	2484	0	0	1394
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	375	674	2484	0	0	1394
Turn Type	Prot	Prot	NA			NA
Protected Phases	4	4	2			6
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	38.0			38.0
Effective Green, g (s)	13.0	13.0	41.0			41.0
Actuated g/C Ratio	0.22	0.22	0.68			0.68
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	5.0	5.0	5.0			1.8
Lane Grp Cap (vph)	768	624	3590			2498
v/s Ratio Prot	0.11	c0.23	c0.47			0.38
v/s Ratio Perm						
v/c Ratio	0.49	1.08	0.69			0.56
Uniform Delay, d1	20.6	23.5	5.7			4.9
Progression Factor	1.00	1.00	0.79			1.00
Incremental Delay, d2	1.0	59.5	0.5			0.9
Delay (s)	21.6	83.0	4.9			5.8
Level of Service	C	F	A			A
Approach Delay (s)	61.3		4.9			5.8
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1270	1008	0	2187	1160	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3547	2880		5255	5255	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3547	2880		5255	5255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1337	1061	0	2302	1221	0
RTOR Reduction (vph)	0	37	0	0	0	0
Lane Group Flow (vph)	1337	1024	0	2302	1221	0
Turn Type	Prot	Prot		NA	NA	
Protected Phases	4	4		2	6	
Permitted Phases	4			2		
Actuated Green, G (s)	22.0	22.0		26.0	26.0	
Effective Green, g (s)	25.0	25.0		29.0	29.0	
Actuated g/C Ratio	0.42	0.42		0.48	0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.8	1.8		5.0	5.0	
Lane Grp Cap (vph)	1477	1200		2539	2539	
v/s Ratio Prot	c0.38	0.36		c0.44	0.23	
v/s Ratio Perm						
v/c Ratio	0.91	0.85		0.91	0.48	
Uniform Delay, d1	16.4	15.8		14.3	10.4	
Progression Factor	1.00	1.00		1.00	0.96	
Incremental Delay, d2	8.0	5.8		6.0	0.6	
Delay (s)	24.4	21.7		20.3	10.6	
Level of Service	C	C		C	B	
Approach Delay (s)	23.2			20.3	10.6	
Approach LOS	C			C	B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	120.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	711	269	160	210	179	764	169	1267	200	607	1027	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.92	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	3297		1829	1690	1554	1829	5255	1605	3547	4942	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1664	3297		1829	1690	1554	1829	5255	1605	3547	4942	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	748	283	168	221	188	804	178	1334	211	639	1081	562
RTOR Reduction (vph)	0	20	0	0	34	80	0	0	0	0	85	0
Lane Group Flow (vph)	404	775	0	221	347	531	178	1334	211	639	1558	0
Confl. Peds. (#/hr)			16						24			12
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	26.5	26.5		18.0	18.0	40.0	11.0	25.5	110.0	18.0	32.5	
Effective Green, g (s)	29.5	29.5		21.0	21.0	42.0	12.0	28.5	110.0	19.0	35.5	
Actuated g/C Ratio	0.27	0.27		0.19	0.19	0.38	0.11	0.26	1.00	0.17	0.32	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	446	884		349	322	593	199	1361	1605	612	1594	
v/s Ratio Prot	c0.24	0.23		0.12	c0.21	0.34	0.10	c0.25		0.18	c0.32	
v/s Ratio Perm									0.13			
v/c Ratio	0.91	0.88		0.63	1.08	0.90	0.89	0.98	0.13	1.04	0.98	
Uniform Delay, d1	38.9	38.5		41.0	44.5	31.9	48.4	40.5	0.0	45.5	36.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.2	9.4		2.8	72.4	15.7	35.3	20.1	0.2	48.4	17.8	
Delay (s)	60.1	47.9		43.7	116.9	47.6	83.7	60.6	0.2	93.9	54.7	
Level of Service	E	D		D	F	D	F	E	A	F	D	
Approach Delay (s)		52.0			68.7			55.6			65.7	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	61.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	10	190	160	10	20	160	413	90	20	440	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	19	11	200	168	11	21	168	435	95	21	463	20

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	29	200	179	21	168	529	21	483
Volume Left (vph)	19	0	168	0	168	0	21	0
Volume Right (vph)	0	200	0	21	0	95	0	20
Hadj (s)	0.36	-0.67	0.50	-0.67	0.53	-0.09	0.53	0.01
Departure Headway (s)	8.6	7.6	8.7	7.6	7.6	7.0	7.8	7.3
Degree Utilization, x	0.07	0.42	0.43	0.04	0.36	1.0	0.05	0.98
Capacity (veh/h)	402	456	396	452	463	513	450	483
Control Delay (s)	11.0	14.8	17.0	9.7	13.6	73.3	10.0	60.5
Approach Delay (s)	14.3		16.2		58.9		58.4	
Approach LOS	B		C		F		F	

Intersection Summary			
Delay	47.2		
Level of Service	E		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	120	40	30	40	613	10	60	210	720	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1829	1841		1829	1925	1622	1829	1682		1737	1757	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1829	1841		1829	1925	1622	1829	1682		1737	1757	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	126	42	32	42	645	11	63	221	758	116	11
RTOR Reduction (vph)	0	12	0	0	0	258	0	142	0	0	1	0
Lane Group Flow (vph)	11	156	0	32	42	387	11	142	0	417	467	0
Confl. Peds. (#/hr)			2			1			2			2
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	1.0	12.6		2.1	13.7	38.6	12.4	12.4		24.9	24.9	
Effective Green, g (s)	2.0	14.6		3.1	15.7	42.6	14.4	14.4		26.9	26.9	
Actuated g/C Ratio	0.03	0.21		0.04	0.22	0.60	0.20	0.20		0.38	0.38	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	51	378		79	425	1041	370	341		658	665	
v/s Ratio Prot	0.01	c0.08		c0.02	0.02	0.14	0.01	c0.08		0.24	c0.27	
v/s Ratio Perm						0.10						
v/c Ratio	0.22	0.41		0.41	0.10	0.37	0.03	0.42		0.63	0.70	
Uniform Delay, d1	33.7	24.5		33.1	22.0	7.3	22.7	24.6		18.0	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.7		3.4	0.1	0.2	0.0	0.8		2.0	3.4	
Delay (s)	35.9	25.2		36.4	22.1	7.5	22.7	25.5		20.0	22.0	
Level of Service	D	C		D	C	A	C	C		C	C	
Approach Delay (s)		25.9			9.7			25.4			21.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	71.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	266	1004	599	120	1143	210	498	841	40	340	911	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	5255	1565	3547	5255	1588	5157	3657	1593	3547	5255	1588
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	5255	1565	3547	5255	1588	5157	3657	1593	3547	5255	1588
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	280	1057	631	126	1203	221	524	885	42	358	959	269
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	280	1057	631	126	1203	221	524	885	42	358	959	269
Confl. Peds. (#/hr)			48			60			48			60
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	13.1	30.4	50.4	13.0	30.3	120.0	20.0	41.3	120.0	15.3	35.6	120.0
Effective Green, g (s)	14.1	33.4	54.4	14.0	33.3	120.0	22.0	44.3	120.0	16.3	38.6	120.0
Actuated g/C Ratio	0.12	0.28	0.45	0.12	0.28	1.00	0.18	0.37	1.00	0.14	0.32	1.00
Clearance Time (s)	4.0	6.0	5.0	4.0	6.0		5.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	416	1462	748	413	1458	1588	945	1350	1593	481	1690	1588
v/s Ratio Prot	0.08	0.20	c0.15	0.04	c0.23		0.10	c0.24		c0.10	0.18	
v/s Ratio Perm			0.25			0.14			0.03			0.17
v/c Ratio	0.67	0.72	0.84	0.31	0.83	0.14	0.55	0.66	0.03	0.74	0.57	0.17
Uniform Delay, d1	50.7	39.1	29.0	48.5	40.6	0.0	44.5	31.5	0.0	49.8	33.8	0.0
Progression Factor	1.45	1.12	1.33	0.83	0.84	1.00	0.72	0.61	1.00	1.47	1.23	1.00
Incremental Delay, d2	2.9	1.9	7.3	0.1	4.2	0.2	0.4	2.4	0.0	5.1	1.3	0.2
Delay (s)	76.4	45.7	45.8	40.6	38.2	0.2	32.4	21.7	0.0	78.1	42.8	0.2
Level of Service	E	D	D	D	D	A	C	C	A	E	D	A
Approach Delay (s)		50.1			32.9			24.9			43.6	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	240	600	610	290	140	380	860	350	130	1390	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	253	632	642	305	147	400	905	368	137	1463	105
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	65
Lane Group Flow (vph)	116	253	632	642	305	147	400	905	368	137	1463	40
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	6.7	17.9	120.0	24.0	35.2	120.0	15.1	50.5	120.0	7.6	43.0	43.0
Effective Green, g (s)	7.7	20.9	120.0	25.0	38.2	120.0	16.1	53.5	120.0	8.6	46.0	46.0
Actuated g/C Ratio	0.06	0.17	1.00	0.21	0.32	1.00	0.13	0.45	1.00	0.07	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	227	636	1603	738	1164	1613	475	2342	1615	254	2014	609
v/s Ratio Prot	0.03	0.07		c0.18	0.08		c0.11	0.17		0.04	c0.28	
v/s Ratio Perm			c0.39			0.09			0.23			0.03
v/c Ratio	0.51	0.40	0.39	0.87	0.26	0.09	0.84	0.39	0.23	0.54	0.73	0.07
Uniform Delay, d1	54.3	44.0	0.0	45.9	30.4	0.0	50.7	22.3	0.0	53.8	31.6	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.54	1.00	1.08	0.71	3.29
Incremental Delay, d2	0.8	0.9	0.7	10.4	0.3	0.1	12.0	0.5	0.3	1.1	2.2	0.2
Delay (s)	55.1	44.8	0.7	56.3	30.7	0.1	75.4	34.7	0.3	59.1	24.6	77.3
Level of Service	E	D	A	E	C	A	E	C	A	E	C	E
Approach Delay (s)		18.2			41.6			36.9			30.6	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	1251	30	20	580	50	70	210	30	80	220	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3641		1829	5168		3547	3569		1829	4355	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3641		1829	5168		3547	3569		1829	4355	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	266	1317	32	21	611	53	74	221	32	84	232	298
RTOR Reduction (vph)	0	1	0	0	7	0	0	10	0	0	213	0
Lane Group Flow (vph)	266	1348	0	21	657	0	74	243	0	84	317	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.3	67.2		3.3	56.2		6.7	21.1		8.4	22.8	
Effective Green, g (s)	15.3	70.2		4.3	59.2		7.7	24.1		9.4	25.8	
Actuated g/C Ratio	0.13	0.59		0.04	0.49		0.06	0.20		0.08	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	452	2129		65	2549		227	716		143	936	
v/s Ratio Prot	c0.07	c0.37		0.01	0.13		0.02	0.07		c0.05	c0.07	
v/s Ratio Perm												
v/c Ratio	0.59	0.63		0.32	0.26		0.33	0.34		0.59	0.34	
Uniform Delay, d1	49.4	16.4		56.4	17.6		53.7	41.1		53.4	39.9	
Progression Factor	1.21	0.41		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.2		2.9	0.2		0.8	0.3		6.0	0.2	
Delay (s)	61.3	7.9		59.3	17.9		54.5	41.4		59.5	40.1	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.7			19.2			44.4			42.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1383	1106	0	549	650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5307	5307		3583	2908
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5307	5307		3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1456	1164	0	578	684
RTOR Reduction (vph)	0	0	0	0	0	58
Lane Group Flow (vph)	0	1456	1164	0	578	626
Confl. Peds. (#/hr)	12			12		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases					4	4
Actuated Green, G (s)		30.7	30.7		17.3	17.3
Effective Green, g (s)		33.7	33.7		20.3	20.3
Actuated g/C Ratio		0.56	0.56		0.34	0.34
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2980	2980		1212	983
v/s Ratio Prot		c0.27	0.22		0.16	
v/s Ratio Perm						c0.22
v/c Ratio		0.49	0.39		0.48	0.64
Uniform Delay, d1		7.9	7.4		15.7	16.7
Progression Factor		1.00	0.74		1.00	1.00
Incremental Delay, d2		0.6	0.3		0.3	1.4
Delay (s)		8.5	5.8		16.0	18.1
Level of Service		A	A		B	B
Approach Delay (s)		8.5	5.8		17.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1283	0	0	1185	350	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.91			0.95	0.97	0.88
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	5307			3693	3583	2908
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	5307			3693	3583	2908
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1351	0	0	1247	368	353
RTOR Reduction (vph)	0	0	0	0	0	53
Lane Group Flow (vph)	1351	0	0	1247	368	300
Confl. Bikes (#/hr)		5				
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA			NA	Prot	Prot
Protected Phases	2			6	8	8
Permitted Phases					8	8
Actuated Green, G (s)	36.5			36.5	11.5	11.5
Effective Green, g (s)	39.5			39.5	14.5	14.5
Actuated g/C Ratio	0.66			0.66	0.24	0.24
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	3493			2431	865	702
v/s Ratio Prot	0.25			c0.34	0.10	c0.10
v/s Ratio Perm						
v/c Ratio	0.39			0.51	0.43	0.43
Uniform Delay, d1	4.7			5.3	19.2	19.2
Progression Factor	1.12			1.51	1.00	1.00
Incremental Delay, d2	0.3			0.6	0.3	0.4
Delay (s)	5.6			8.6	19.6	19.7
Level of Service	A			A	B	B
Approach Delay (s)	5.6			8.6	19.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	652	946	20	10	1169	249	30	10	10	246	10	610
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	3583	5288		1847	5307	1593		1814			1855	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	3583	5288		1847	5307	1593		1814			1855	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	686	996	21	11	1231	262	32	11	11	259	11	642
RTOR Reduction (vph)	0	2	0	0	0	110	0	8	0	0	0	36
Lane Group Flow (vph)	686	1015	0	11	1231	152	0	46	0	0	270	606
Confl. Peds. (#/hr)	10					10			9	9		
Confl. Bikes (#/hr)			5			1						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	26.5	63.4		1.4	38.3	38.3		4.8			30.4	56.9
Effective Green, g (s)	27.5	66.4		2.4	41.3	41.3		6.8			32.4	60.9
Actuated g/C Ratio	0.23	0.55		0.02	0.34	0.34		0.06			0.27	0.51
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	821	2926		36	1826	548		102			500	838
v/s Ratio Prot	c0.19	0.19		0.01	c0.23			c0.03			0.15	c0.37
v/s Ratio Perm						0.10						
v/c Ratio	0.84	0.35		0.31	0.67	0.28		0.46			0.54	0.72
Uniform Delay, d1	44.1	14.8		58.0	33.6	28.5		54.8			37.4	23.0
Progression Factor	1.08	0.82		1.04	0.99	0.97		1.00			1.00	1.00
Incremental Delay, d2	7.0	0.3		4.8	2.0	1.3		3.2			1.2	3.1
Delay (s)	54.5	12.4		65.4	35.4	28.9		58.0			38.6	26.1
Level of Service	D	B		E	D	C		E			D	C
Approach Delay (s)		29.4			34.5			58.0			29.8	
Approach LOS		C			C			E			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	167	251	50	136	279
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	176	264	53	143	294
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	871	291			317	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	871	291			317	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	77			88	
cM capacity (veh/h)	285	749			1243	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	228	317	437
Volume Left	53	0	143
Volume Right	176	53	0
cSH	544	1700	1243
Volume to Capacity	0.42	0.19	0.12
Queue Length 95th (ft)	52	0	10
Control Delay (s)	16.3	0.0	3.5
Lane LOS	C		A
Approach Delay (s)	16.3	0.0	3.5
Approach LOS	C		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	846	10	10	901	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	891	11	11	948	11	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)				720		
pX, platoon unblocked						
vC, conflicting volume			901		1865	896
vC1, stage 1 conf vol					896	
vC2, stage 2 conf vol					969	
vCu, unblocked vol			901		1865	896
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	94
cM capacity (veh/h)			754		272	339

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	901	11	948	32
Volume Left	0	11	0	11
Volume Right	11	0	0	21
cSH	1700	754	1700	314
Volume to Capacity	0.53	0.01	0.56	0.10
Queue Length 95th (ft)	0	1	0	8
Control Delay (s)	0.0	9.8	0.0	17.8
Lane LOS		A		C
Approach Delay (s)	0.0	0.1		17.8
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	635	215	191	130	212	356	241	904	140	430	719	593
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.91	0.91		1.00	0.95	0.95	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1680	3305		1847	1847	1570	1847	5307	1627	3583	4907	
Flt Permitted	0.95	0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1680	3305		1847	1847	1570	1847	5307	1627	3583	4907	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	668	226	201	137	223	375	254	952	147	453	757	624
RTOR Reduction (vph)	0	42	0	0	0	80	0	0	0	0	165	0
Lane Group Flow (vph)	361	692	0	137	223	295	254	952	147	453	1216	0
Confl. Peds. (#/hr)			7	7			5		9	9		5
Confl. Bikes (#/hr)			1			1			2			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Free	Prot	NA	
Protected Phases	3	3		4	4	4 1	5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	22.6	22.6		5.0	5.0	17.6	10.4	27.8	90.0	12.6	30.0	
Effective Green, g (s)	25.6	25.6		8.0	8.0	23.6	11.4	30.8	90.0	13.6	33.0	
Actuated g/C Ratio	0.28	0.28		0.09	0.09	0.26	0.13	0.34	1.00	0.15	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	1.8		1.8	1.8		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	477	940		164	164	411	233	1816	1627	541	1799	
v/s Ratio Prot	c0.21	0.21		0.07	c0.12	c0.19	c0.14	0.18		0.13	c0.25	
v/s Ratio Perm									0.09			
v/c Ratio	0.76	0.74		0.84	1.36	0.72	1.09	0.52	0.09	0.84	0.68	
Uniform Delay, d1	29.4	29.1		40.4	41.0	30.2	39.3	23.7	0.0	37.1	24.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.0	2.6		28.0	196.1	4.9	85.1	1.1	0.1	10.4	2.1	
Delay (s)	35.4	31.8		68.4	237.1	35.1	124.4	24.8	0.1	47.5	26.1	
Level of Service	D	C		E	F	D	F	C	A	D	C	
Approach Delay (s)		33.0			102.6			40.8			31.4	
Approach LOS		C			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	28	40	250	250	80	40	270	357	150	30	401	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	42	263	263	84	42	284	376	158	32	422	29

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	72	263	347	42	284	534	32	452
Volume Left (vph)	29	0	263	0	284	0	32	0
Volume Right (vph)	0	263	0	42	0	158	0	29
Hadj (s)	0.22	-0.68	0.40	-0.68	0.52	-0.19	0.52	-0.03
Departure Headway (s)	9.4	8.5	9.2	8.2	9.0	8.3	9.1	8.6
Degree Utilization, x	0.19	0.62	0.89	0.10	0.71	1.0	0.08	1.0
Capacity (veh/h)	376	411	384	431	393	440	385	423
Control Delay (s)	13.3	23.2	51.9	10.8	29.9	146.9	11.7	94.1
Approach Delay (s)	21.1		47.4		106.2		88.7	
Approach LOS	C		E		F		F	

Intersection Summary			
Delay	76.7		
Level of Service	F		
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	80	40	40	60	747	30	60	80	801	130	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.91		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (prot)	1847	1831		1847	1944	1652	1847	1762		1754	1776	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	
Satd. Flow (perm)	1847	1831		1847	1944	1652	1847	1762		1754	1776	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	84	42	42	63	786	32	63	84	843	137	11
RTOR Reduction (vph)	0	19	0	0	0	298	0	50	0	0	1	0
Lane Group Flow (vph)	21	107	0	42	63	488	32	97	0	430	560	0
Confl. Peds. (#/hr)			1	1					2	2		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	
Protected Phases	5	2		1	6	3	4	4		3	3	
Permitted Phases						6						
Actuated Green, G (s)	2.0	8.7		4.0	10.7	41.2	12.4	12.4		30.5	30.5	
Effective Green, g (s)	3.0	10.7		5.0	12.7	45.2	14.4	14.4		32.5	32.5	
Actuated g/C Ratio	0.04	0.14		0.07	0.17	0.61	0.19	0.19		0.44	0.44	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	74	262		123	330	1067	356	340		764	773	
v/s Ratio Prot	0.01	c0.06		0.02	0.03	c0.20	0.02	c0.06		0.25	c0.32	
v/s Ratio Perm						0.10						
v/c Ratio	0.28	0.41		0.34	0.19	0.46	0.09	0.29		0.56	0.73	
Uniform Delay, d1	34.8	29.1		33.2	26.5	8.0	24.7	25.7		15.7	17.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.0		1.7	0.3	0.3	0.1	0.5		1.0	3.4	
Delay (s)	36.9	30.1		34.9	26.8	8.3	24.8	26.2		16.7	20.8	
Level of Service	D	C		C	C	A	C	C		B	C	
Approach Delay (s)		31.1			10.9			25.9			19.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	198	458	342	90	691	140	434	903	80	240	703	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3583	5307	1635	3583	5307	1632	5208	3693	1631	3583	5307	1652
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	208	482	360	95	727	147	457	951	84	253	740	233
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	208	482	360	95	727	147	457	951	84	253	740	233
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4			Free			Free			Free
Actuated Green, G (s)	6.0	23.4	27.5	4.8	22.2	90.0	4.1	33.1	90.0	8.7	35.7	90.0
Effective Green, g (s)	7.0	26.4	33.5	5.8	25.2	90.0	7.1	36.1	90.0	9.7	38.7	90.0
Actuated g/C Ratio	0.08	0.29	0.37	0.06	0.28	1.00	0.08	0.40	1.00	0.11	0.43	1.00
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	1.8	5.0	1.8	1.8	5.0		1.8	5.0		1.8	5.0	
Lane Grp Cap (vph)	278	1556	608	230	1485	1632	410	1481	1631	386	2282	1652
v/s Ratio Prot	c0.06	0.09	c0.05	0.03	0.14		c0.09	c0.26		c0.07	0.14	
v/s Ratio Perm			0.17			0.09			0.05			c0.14
v/c Ratio	0.75	0.31	0.59	0.41	0.49	0.09	1.11	0.64	0.05	0.66	0.32	0.14
Uniform Delay, d1	40.6	24.7	22.7	40.5	27.0	0.0	41.5	21.7	0.0	38.5	17.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.2	0.2	1.0	0.4	0.5	0.1	79.3	2.2	0.1	3.0	0.4	0.2
Delay (s)	49.9	25.0	23.8	40.9	27.6	0.1	120.8	23.9	0.1	41.6	17.4	0.2
Level of Service	D	C	C	D	C	A	F	C	A	D	B	A
Approach Delay (s)		29.5			24.7			52.2			19.1	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX C: SIGNAL WARRANT ANALYSIS AND LOS WORKSHEETS

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

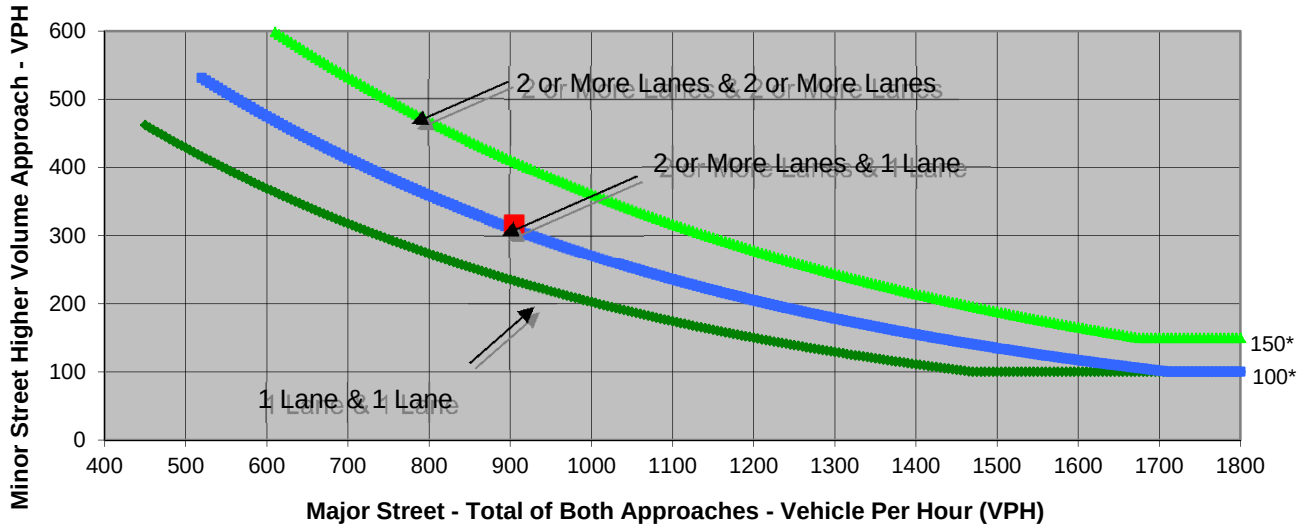
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	105	0	183
Through	332	332	0	0
Right	137	0	0	133
Total	469	437	0	316

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**906**	**316**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

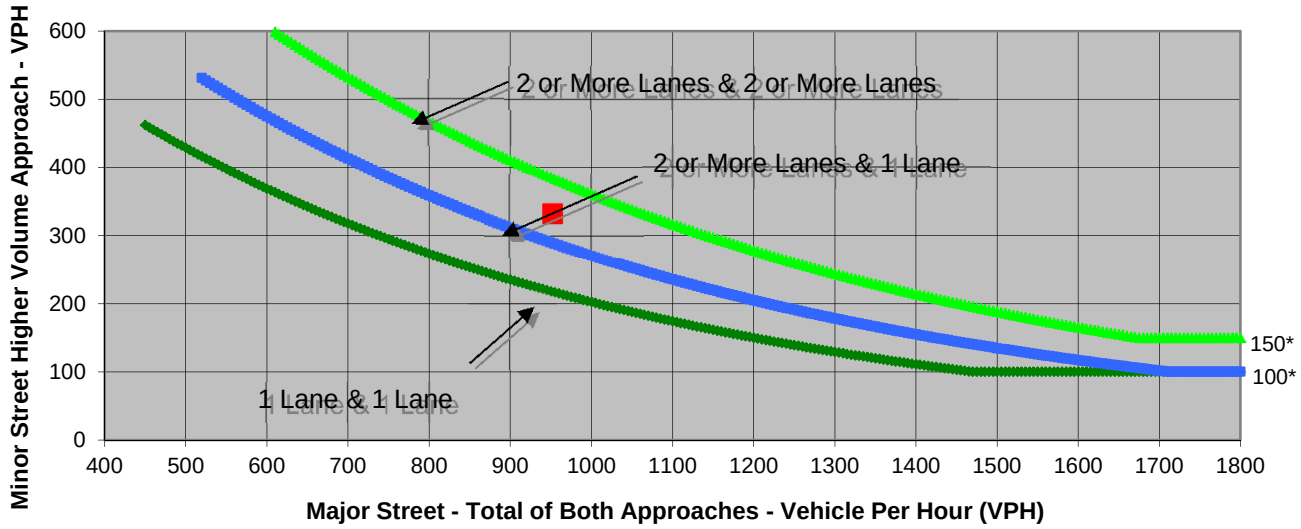
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	122	0	194
Through	334	355	0	0
Right	142	0	0	138
Total	476	477	0	332

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**953**	**332**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

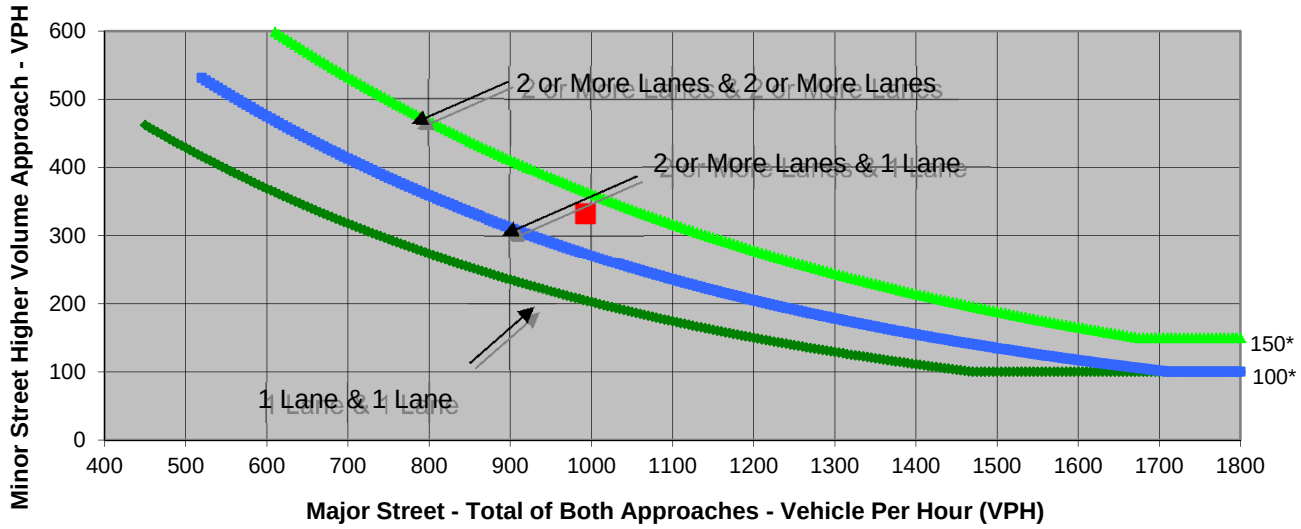
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	122	0	194
Through	354	375	0	0
Right	142	0	0	138
Total	496	497	0	332

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



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Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**993**	**332**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

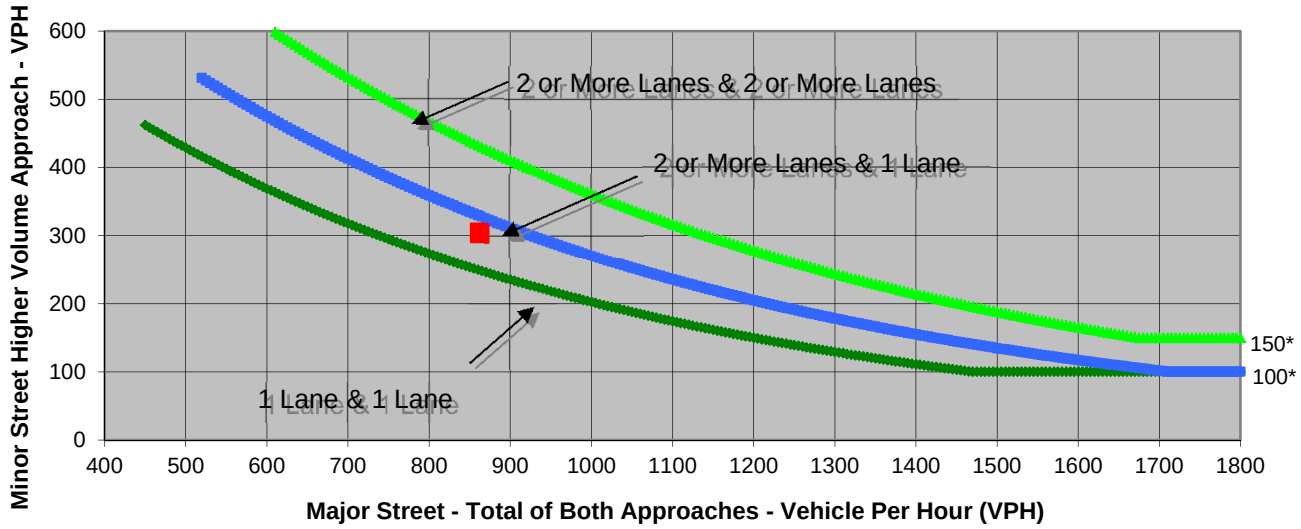
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	103	0	169
Through	317	318	0	0
Right	125	0	0	135
Total	442	421	0	304

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**863**	**304**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

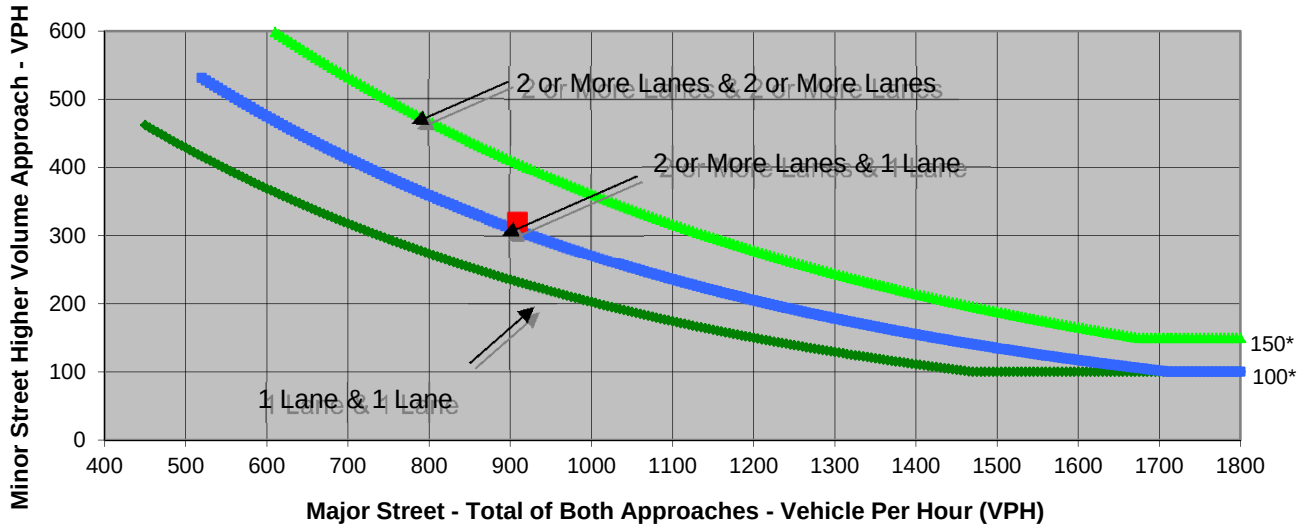
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	120	0	180
Through	319	341	0	0
Right	130	0	0	140
Total	449	461	0	320

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**910**	**320**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Commerce Drive

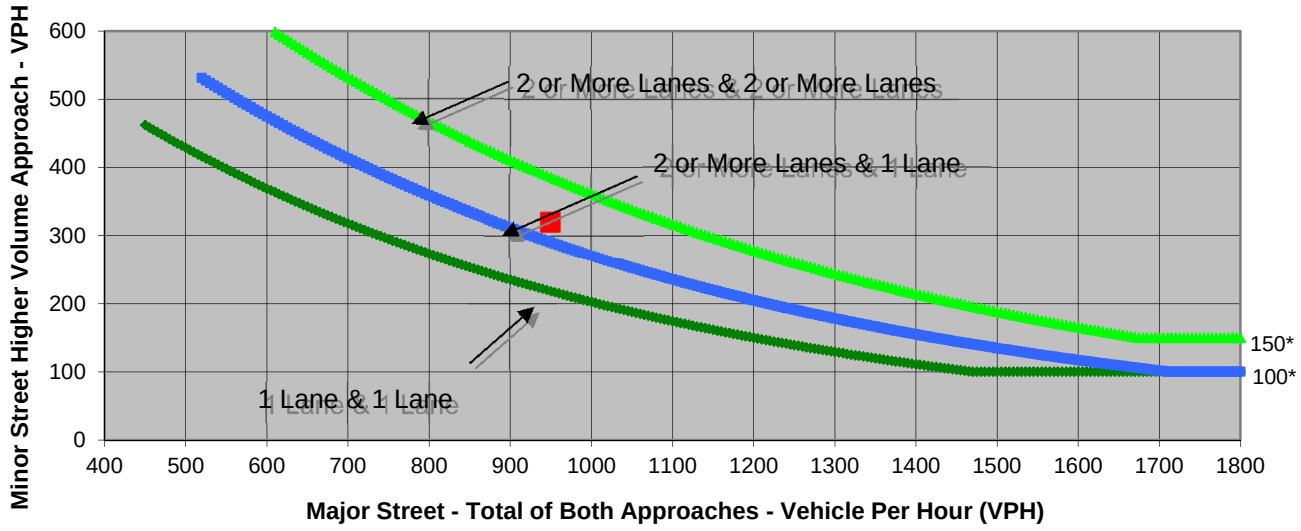
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	120	0	180
Through	339	361	0	0
Right	130	0	0	140
Total	469	481	0	320

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Commerce Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**950**	**320**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2 - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive (North)

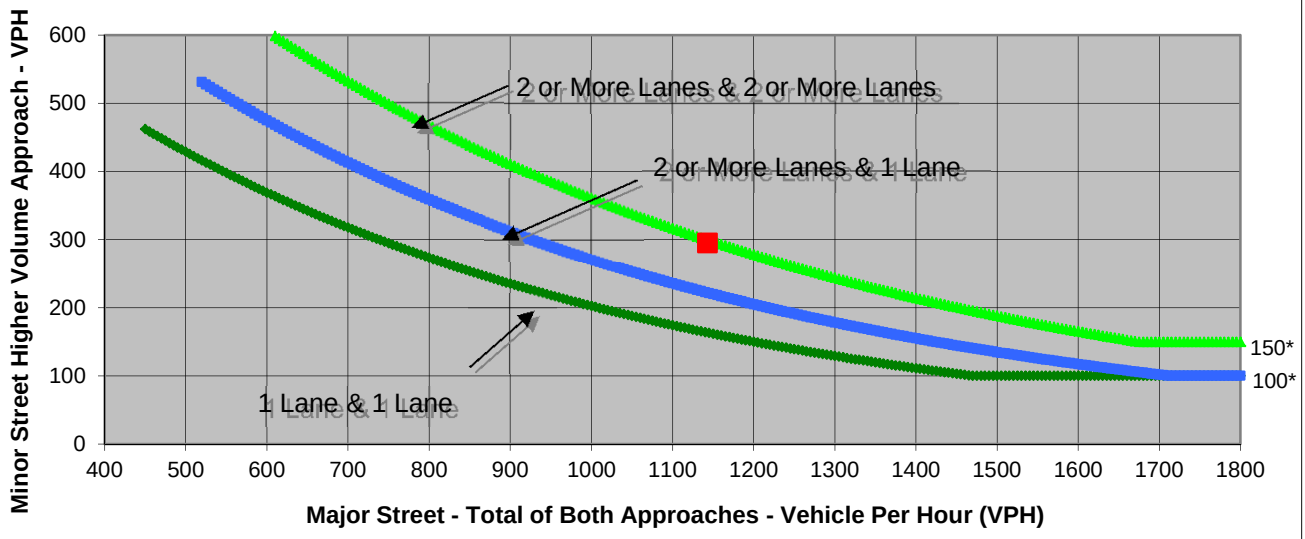
Turn Movement Volumes

	NB	SB	EB	WB
Left	252	21	30	236
Through	320	400	27	24
Right	125	25	238	28
Total	697	446	295	288

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive (North)	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,143**	**295**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near-Term with Project
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Owens Drive (North)

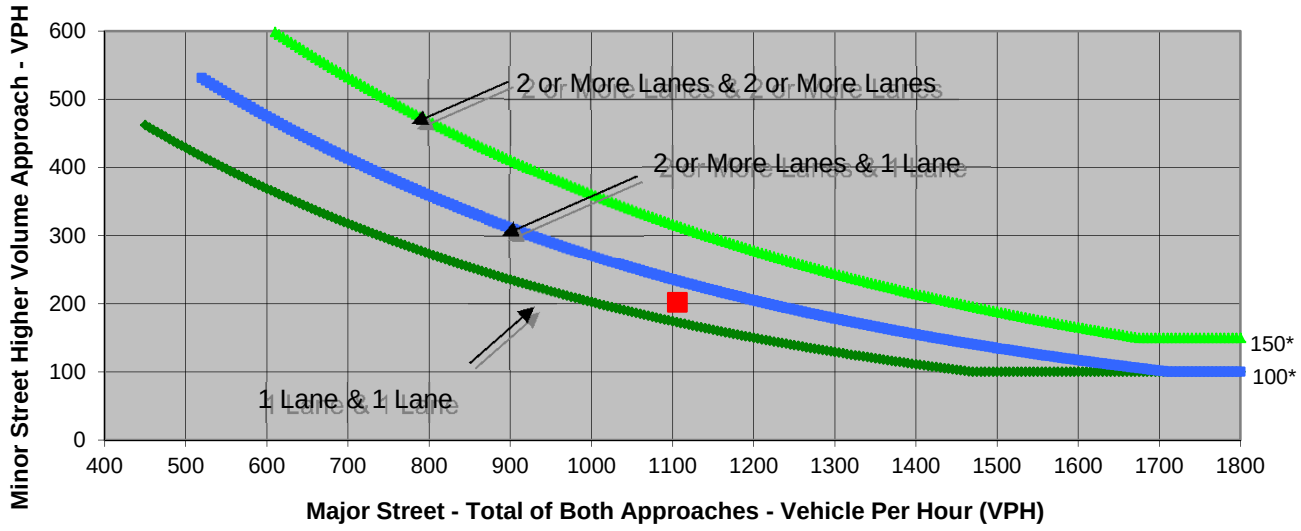
Turn Movement Volumes

	NB	SB	EB	WB
Left	150	20	22	150
Through	412	415	10	10
Right	90	19	170	20
Total	652	454	202	180

Major Street Direction

X	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive (North)	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,106**	**202**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2 - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive

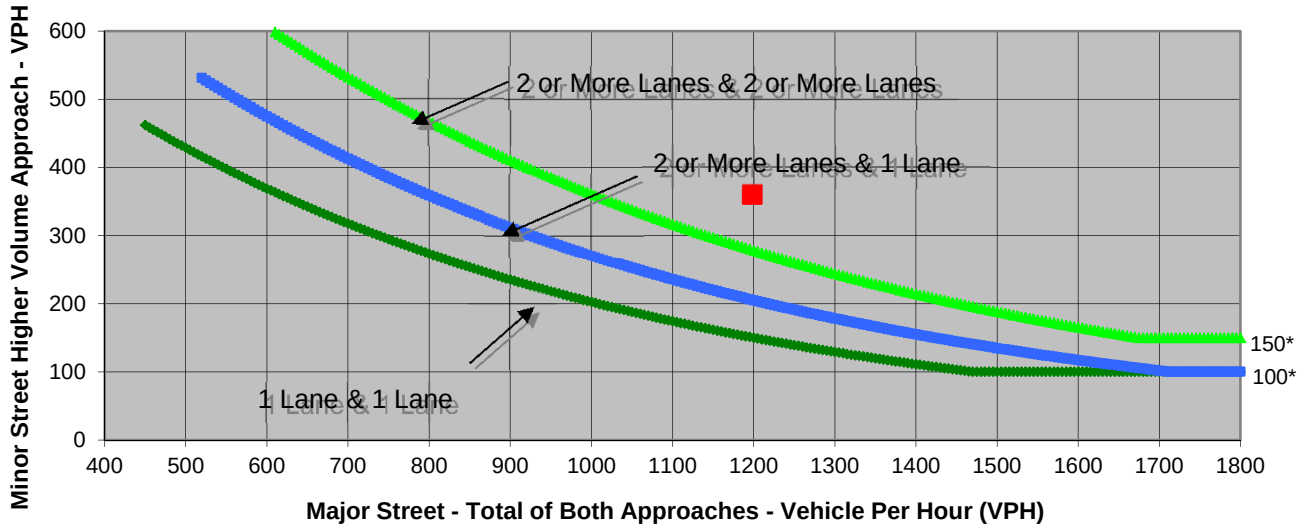
Turn Movement Volumes

	NB	SB	EB	WB
Left	260	30	32	240
Through	337	399	40	80
Right	140	32	240	40
Total	737	461	312	360

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,198**	**360**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Owens Drive

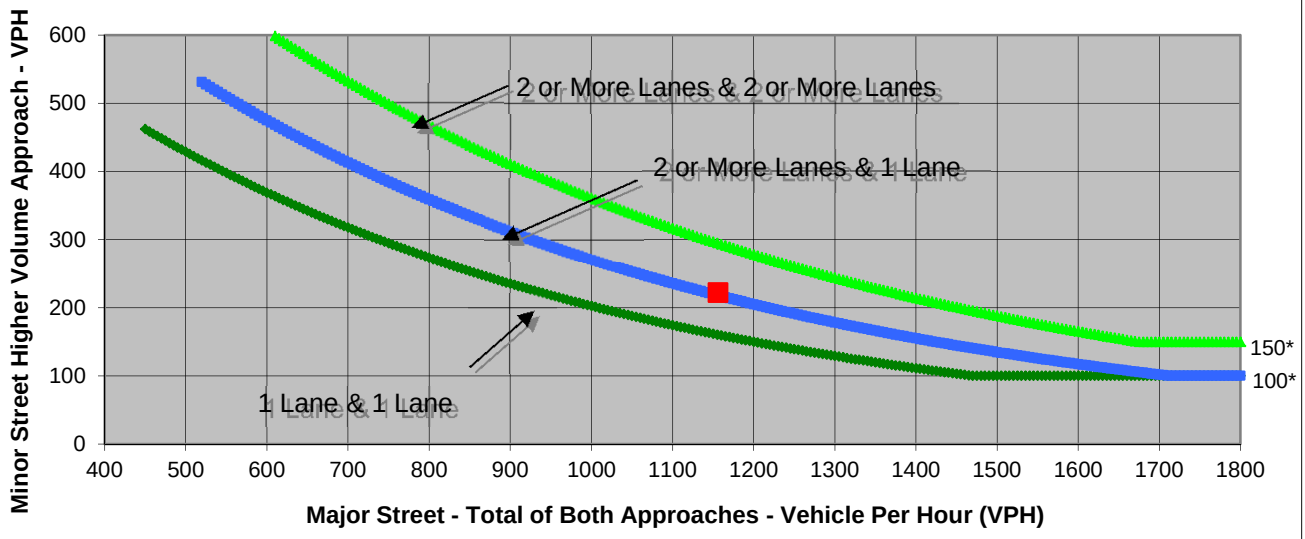
Turn Movement Volumes

	NB	SB	EB	WB
Left	160	20	22	160
Through	422	445	10	10
Right	90	19	190	20
Total	672	484	222	190

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,156**	**222**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2 - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive

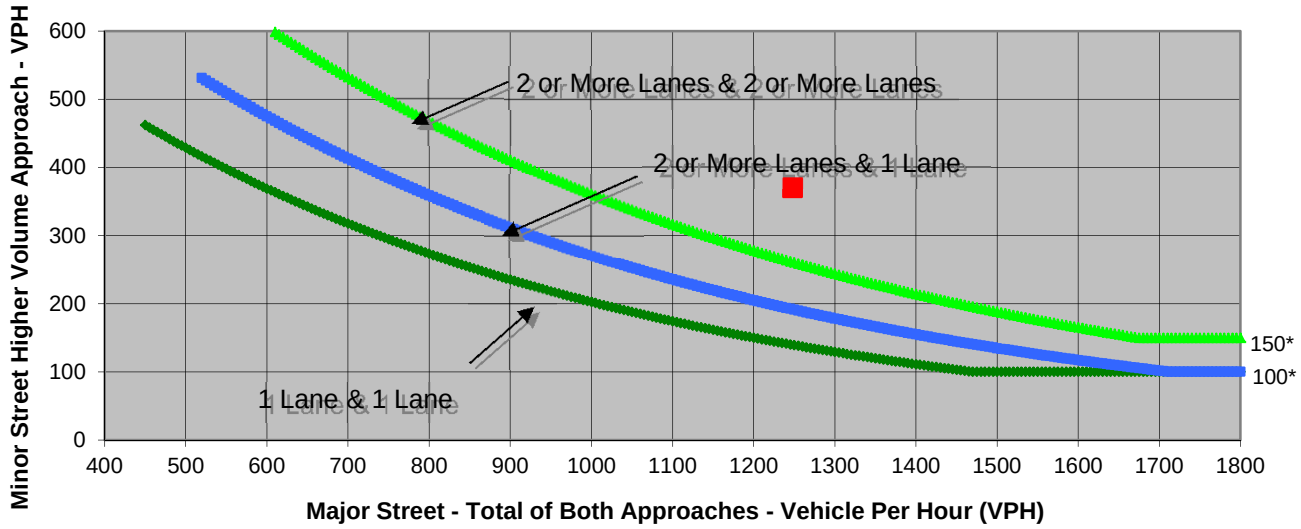
Turn Movement Volumes

	NB	SB	EB	WB
Left	270	30	32	250
Through	357	409	40	80
Right	150	32	250	40
Total	777	471	322	370

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,248**	**370**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2a - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive (North)

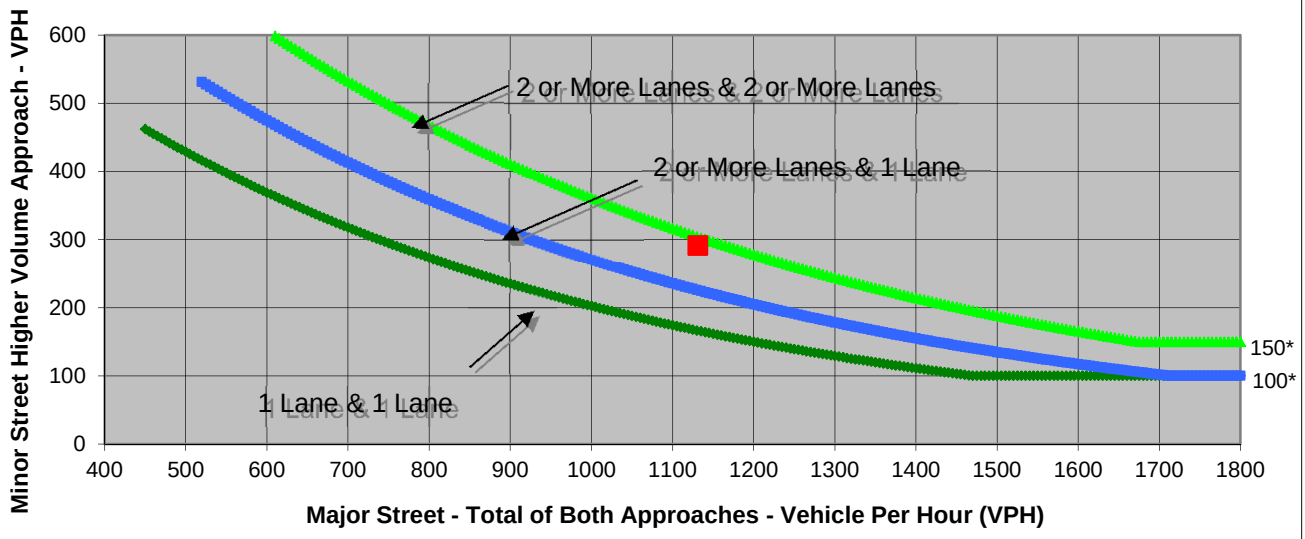
Turn Movement Volumes

	NB	SB	EB	WB
Left	252	21	26	236
Through	320	392	27	24
Right	125	21	238	28
Total	697	434	291	288

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive (North)	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,131**	**291**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near-Term with Project
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Owens Drive (North)

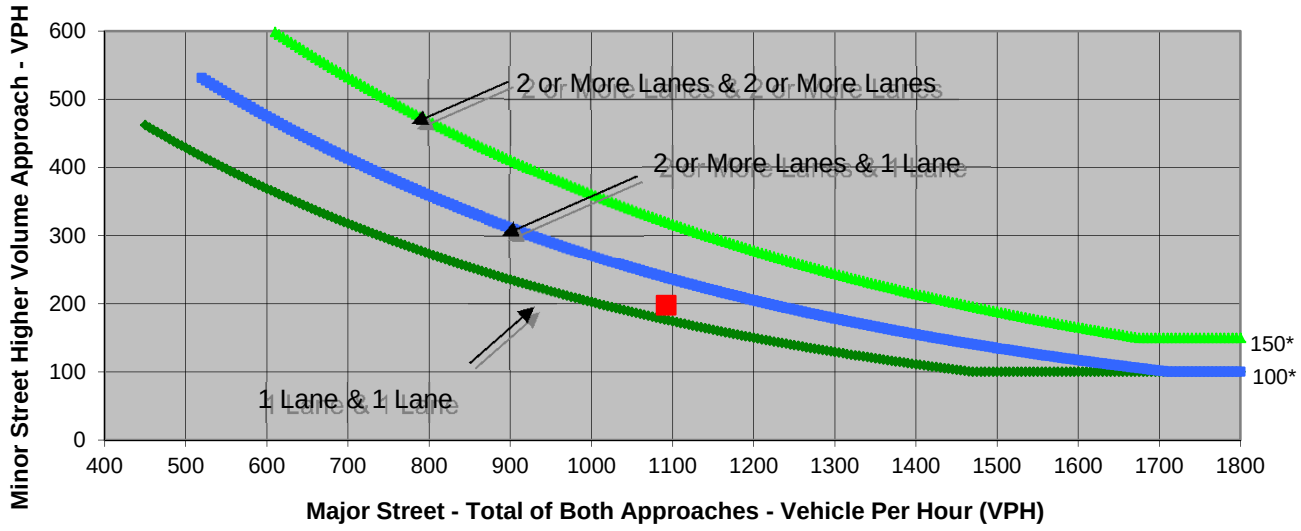
Turn Movement Volumes

	NB	SB	EB	WB
Left	150	20	18	150
Through	403	410	10	10
Right	90	19	170	20
Total	643	449	198	180

Major Street Direction

X	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive (North)	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,092**	**198**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scencario 2a - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive

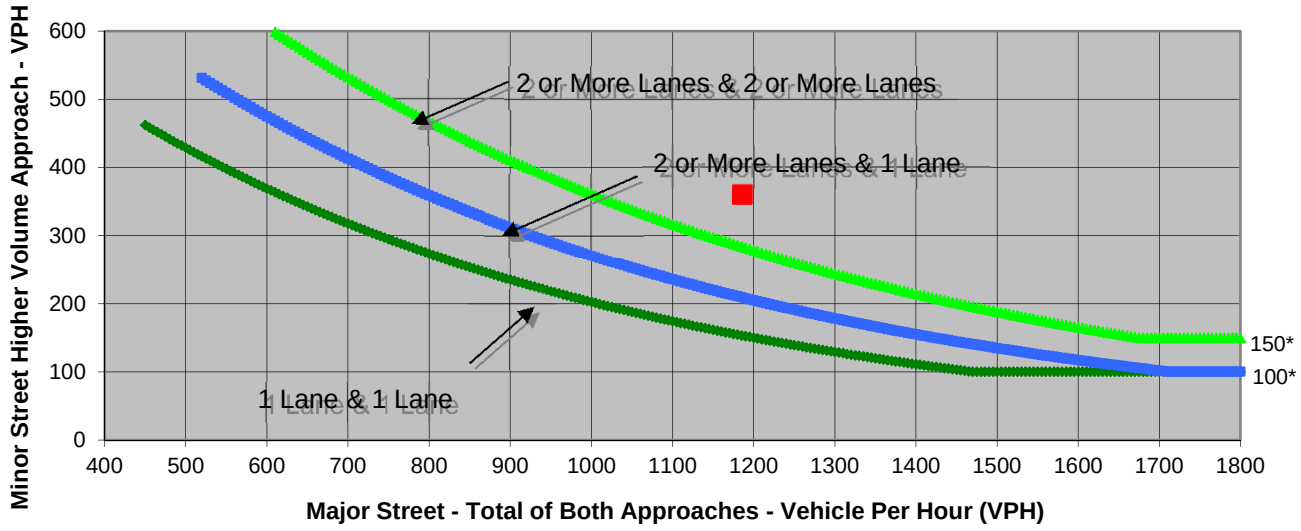
Turn Movement Volumes

	NB	SB	EB	WB
Left	260	30	28	240
Through	337	391	40	80
Right	140	28	240	40
Total	737	449	308	360

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,186**	**360**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Owens Drive

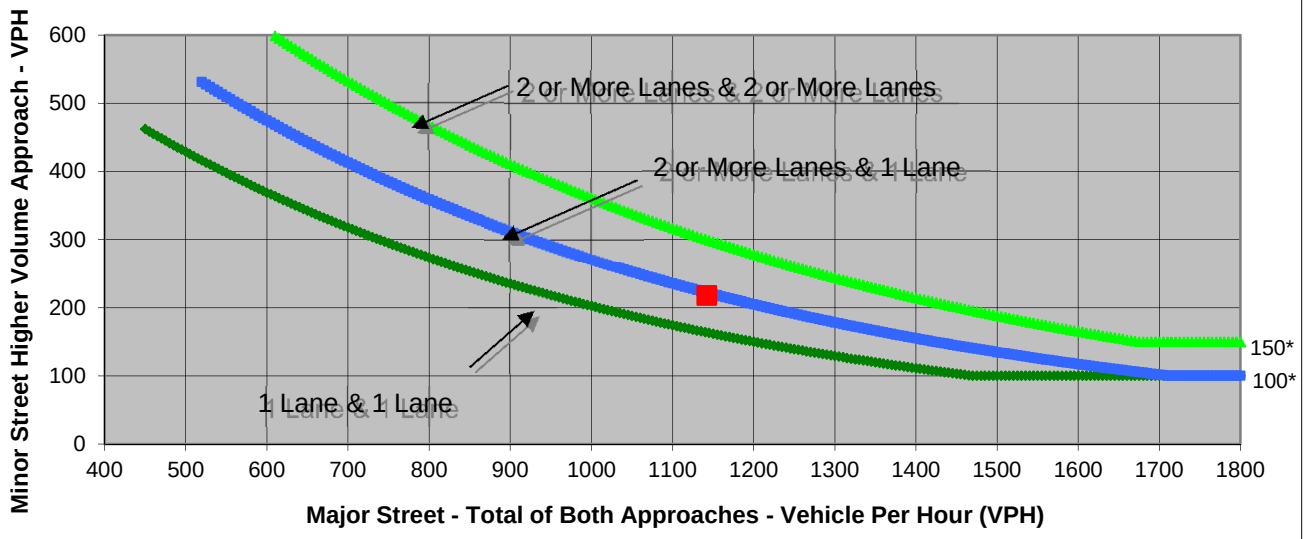
Turn Movement Volumes

	NB	SB	EB	WB
Left	160	20	18	160
Through	413	440	10	10
Right	90	19	190	20
Total	663	479	218	190

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,142**	**218**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2a - Saturday

Major Street	Johnson Drive
Minor Street	Owens Drive

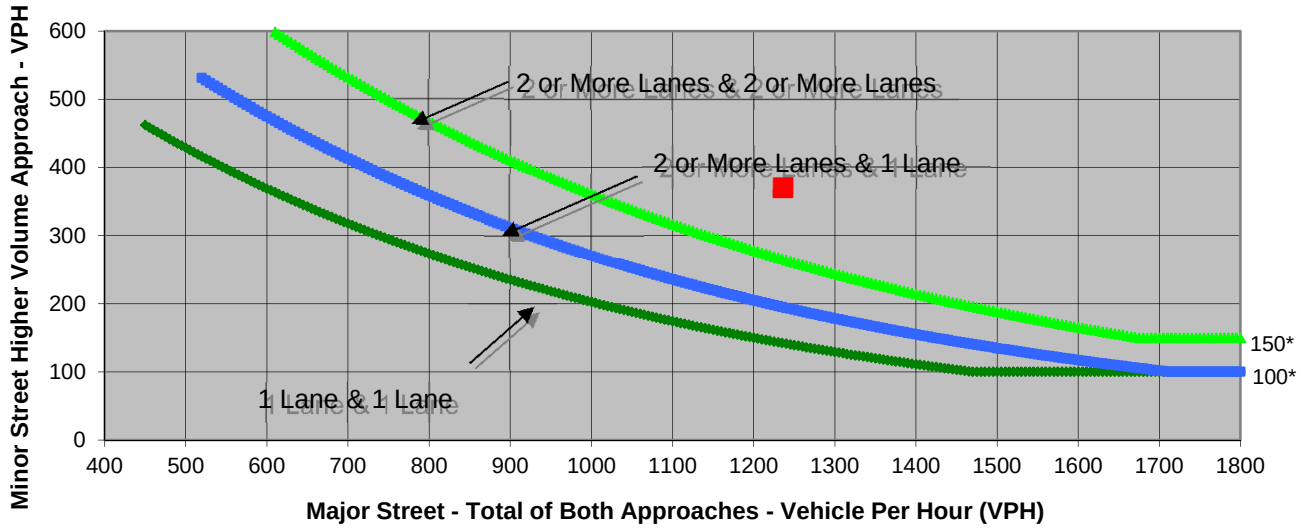
Turn Movement Volumes

	NB	SB	EB	WB
Left	270	30	28	250
Through	357	401	40	80
Right	150	28	250	40
Total	777	459	318	370

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Owens Drive	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,236**	**370**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

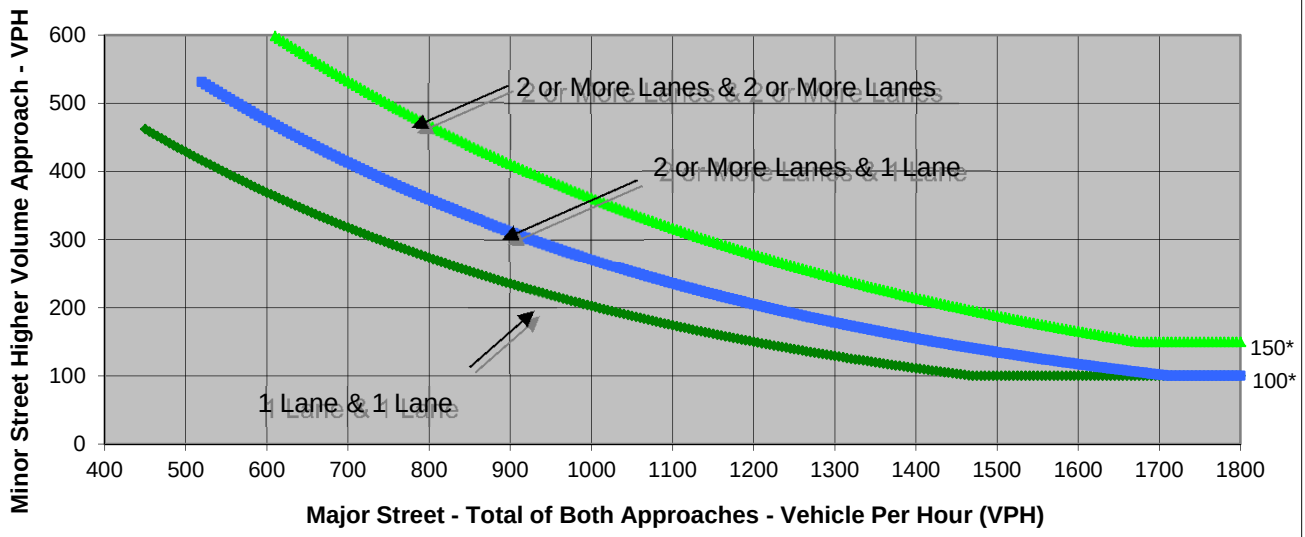
Turn Movement Volumes

	NB	SB	EB	WB
Left	3	0	0	34
Through	0	0	1,554	1,171
Right	57	0	2	0
Total	60	0	1,556	1,205

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**2,761**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

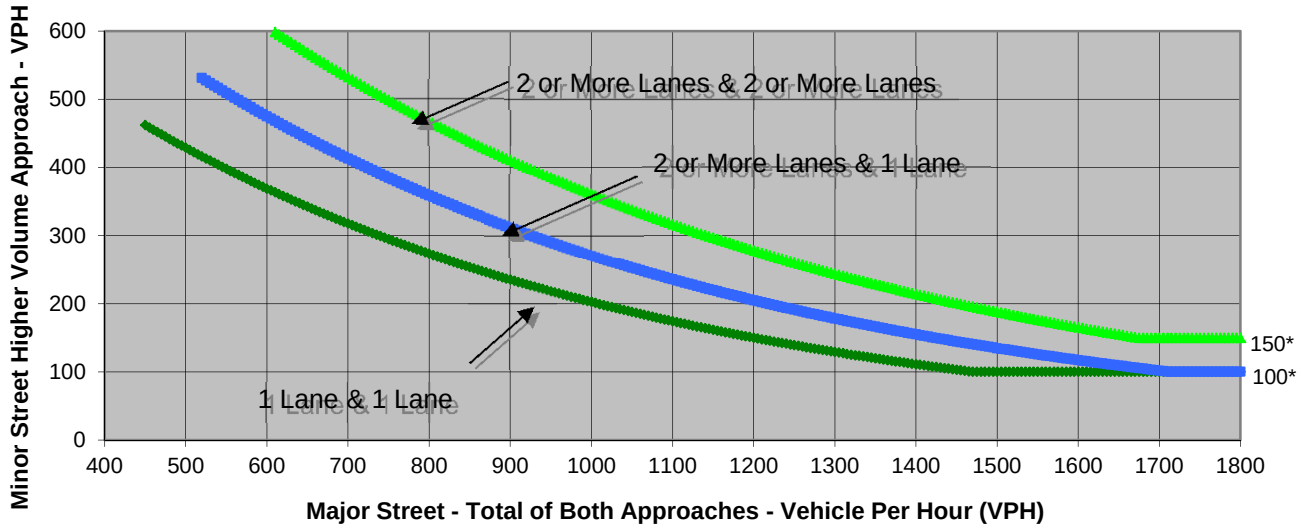
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	35
Through	0	0	1,174	1,183
Right	60	0	10	0
Total	70	0	1,184	1,218

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**2,402**	**70**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2 - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

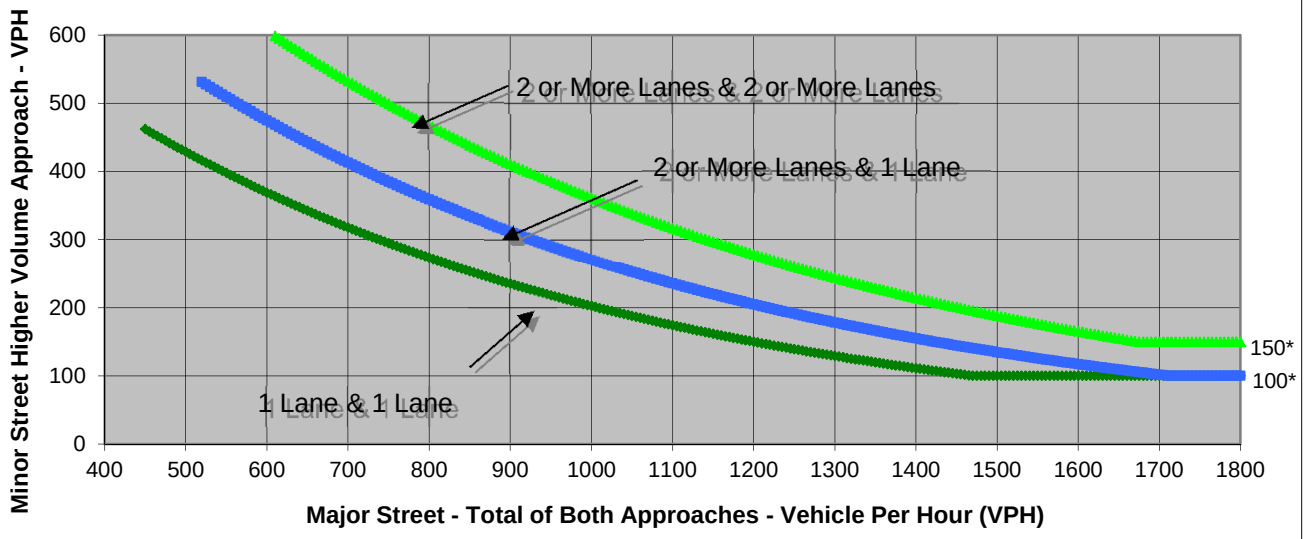
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	40
Through	0	0	1,189	1,193
Right	60	0	10	0
Total	70	0	1,199	1,233

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**2,432**	**70**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Existing Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

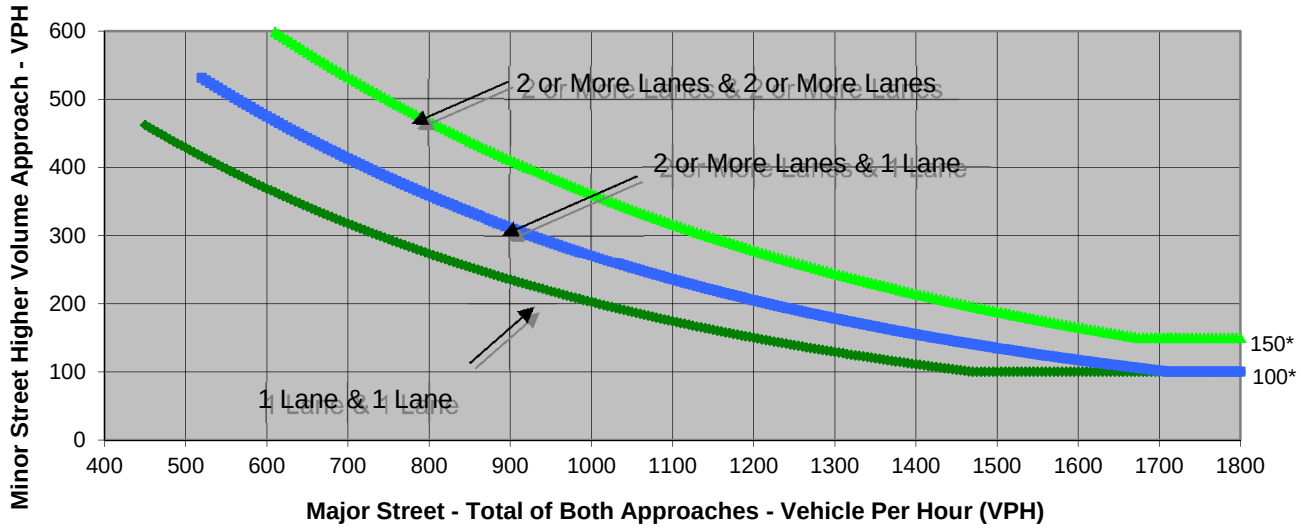
Turn Movement Volumes

	NB	SB	EB	WB
Left	3	0	0	34
Through	0	0	971	928
Right	57	0	2	0
Total	60	0	973	962

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,935**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Near Term Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

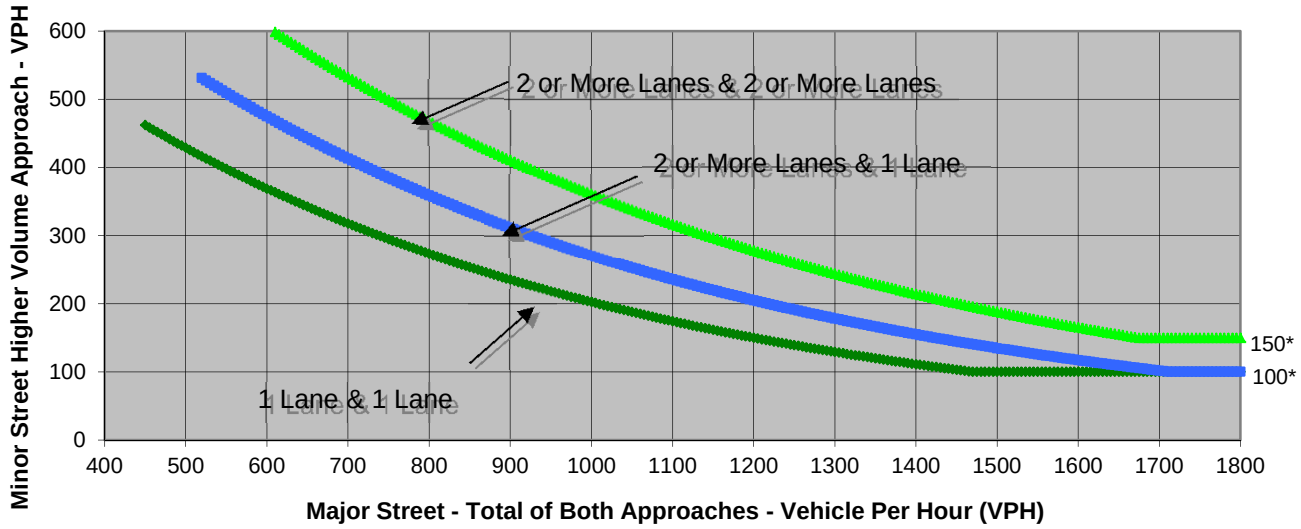
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	35
Through	0	0	991	939
Right	60	0	10	0
Total	70	0	1,001	974

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,975**	**70**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No	1	of	1

Project	Johnson Drive EDZ
Scenario	Cumulative Plus Project Conditions
Peak Hour	Scenario 2a - PM

Major Street	Johnson Drive
Minor Street	Park and Ride Lot

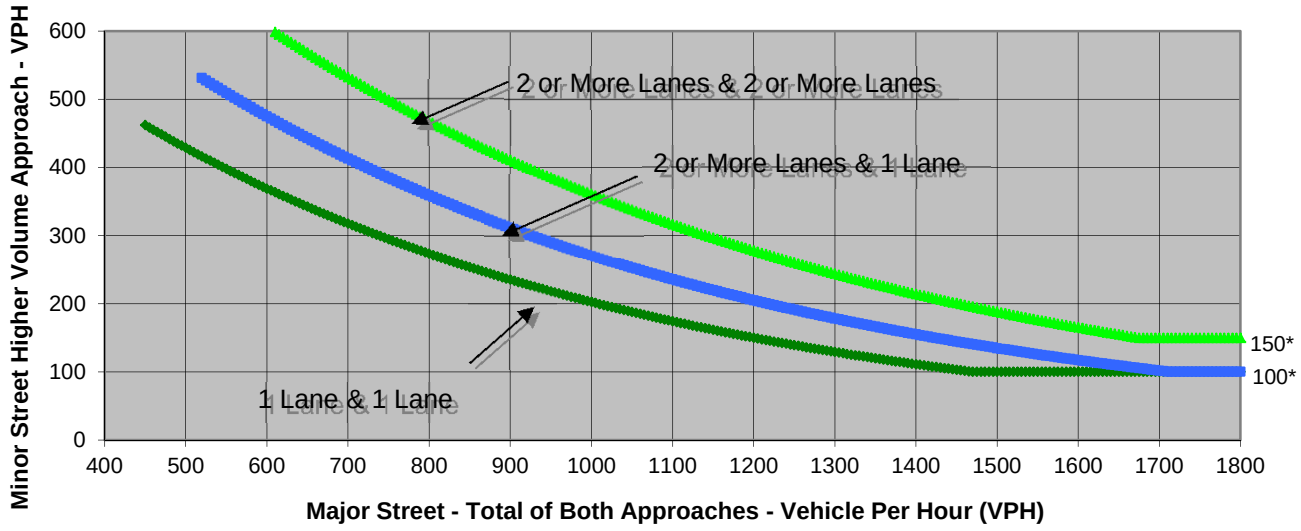
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	40
Through	0	0	1,006	949
Right	60	0	10	0
Total	70	0	1,016	989

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Johnson Drive	Park and Ride Lot	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**2,005**	**70**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	680	1720	31	24	2033	281	19	1	19	257	4	767
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5208	5290		1847	5307	1623		1754			1853	1652
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5208	5290		1847	5307	1623		1754			1853	1652
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	739	1870	34	26	2210	305	21	1	21	279	4	834
RTOR Reduction (vph)	0	1	0	0	0	83	0	20	0	0	0	39
Lane Group Flow (vph)	739	1903	0	26	2210	222	0	23	0	0	283	795
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			7			2			2			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	57.8		4.2	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	60.8		5.2	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.51		0.04	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	824	2680		80	2078	635		87			555	770
v/s Ratio Prot	0.14	0.36		0.01	c0.42			c0.01			0.15	c0.48
v/s Ratio Perm						0.14						
v/c Ratio	0.90	0.71		0.33	1.06	0.35		0.26			0.51	1.03
Uniform Delay, d1	49.5	22.8		55.7	36.5	25.7		54.9			34.7	32.0
Progression Factor	0.95	1.04		1.28	0.85	0.59		1.00			1.00	1.00
Incremental Delay, d2	10.4	1.3		1.9	37.5	1.2		1.6			0.7	41.1
Delay (s)	57.3	25.1		73.0	68.7	16.4		56.5			35.4	73.1
Level of Service	E	C		E	E	B		E			D	E
Approach Delay (s)		34.1			62.5			56.5			63.6	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	50.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	169	135	317	125	103	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1761		1851		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1761		1851		1829	1925
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	188	150	352	139	114	353
RTOR Reduction (vph)	50	0	24	0	0	0
Lane Group Flow (vph)	288	0	467	0	114	353
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		18.5		5.1	27.7
Effective Green, g (s)	12.6		18.5		5.1	27.7
Actuated g/C Ratio	0.26		0.38		0.11	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	457		706		192	1099
v/s Ratio Prot	c0.16		c0.25		c0.06	0.18
v/s Ratio Perm						
v/c Ratio	0.63		0.66		0.59	0.32
Uniform Delay, d1	15.9		12.4		20.7	5.5
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.8		2.3		4.9	0.2
Delay (s)	18.7		14.7		25.6	5.6
Level of Service	B		B		C	A
Approach Delay (s)	18.7		14.7			10.5
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	48.5	Sum of lost time (s)	12.3
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
13: Johnson & Owens Dr (N)

3/20/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	27	238	236	24	28	252	320	125	21	392	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1884	1652		1860	1580	1847	1847		1847	1927	
Flt Permitted		0.82	1.00		0.71	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1575	1652		1373	1580	1847	1847		1847	1927	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	27	28	245	243	25	29	260	330	129	22	404	22
RTOR Reduction (vph)	0	0	179	0	0	21	0	19	0	0	3	0
Lane Group Flow (vph)	0	55	66	0	268	8	260	440	0	22	423	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		14.0	14.0		14.0	14.0	10.4	28.6		1.2	19.4	
Effective Green, g (s)		15.0	15.0		15.0	15.0	11.4	29.6		2.2	20.4	
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.20	0.53		0.04	0.36	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		421	441		367	422	375	974		72	700	
v/s Ratio Prot							c0.14	0.24		0.01	c0.22	
v/s Ratio Perm		0.03	0.04		c0.20	0.00						
v/c Ratio		0.13	0.15		0.73	0.02	0.69	0.45		0.31	0.60	
Uniform Delay, d1		15.6	15.7		18.7	15.1	20.7	8.2		26.2	14.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.2		7.3	0.0	5.5	0.3		2.4	1.5	
Delay (s)		15.7	15.8		26.0	15.1	26.2	8.6		28.6	16.0	
Level of Service		B	B		C	B	C	A		C	B	
Approach Delay (s)		15.8			24.9			14.9			16.7	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	9.3
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Johnson & Stoneridge

3/20/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	823	1704	31	24	2016	382	19	1	19	332	4	875
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5241		1829	5255	1636		1685			1834	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5241		1829	5255	1636		1685			1834	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	866	1794	33	25	2122	402	20	1	20	349	4	921
RTOR Reduction (vph)	0	1	0	0	0	104	0	19	0	0	0	39
Lane Group Flow (vph)	866	1826	0	25	2122	298	0	22	0	0	353	882
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	57.8		4.2	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	60.8		5.2	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.51		0.04	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2655		79	2058	640		84			550	763
v/s Ratio Prot	0.17	0.35		0.01	c0.40			c0.01			0.19	c0.54
v/s Ratio Perm						0.18						
v/c Ratio	1.06	0.69		0.32	1.03	0.47		0.26			0.64	1.16
Uniform Delay, d1	50.5	22.4		55.7	36.5	27.2		54.9			36.4	32.0
Progression Factor	0.95	1.08		1.27	0.84	0.64		1.00			1.00	1.00
Incremental Delay, d2	45.1	1.1		1.8	26.3	1.9		1.7			2.6	84.7
Delay (s)	93.1	25.2		72.8	57.1	19.4		56.5			39.0	116.7
Level of Service	F	C		E	E	B		E			D	F
Approach Delay (s)		47.1			51.3			56.5			95.2	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	58.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	183	133	332	137	105	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1764		1849		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1764		1849		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	193	140	349	144	111	349
RTOR Reduction (vph)	45	0	25	0	0	0
Lane Group Flow (vph)	288	0	468	0	111	349
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		18.6		5.1	27.8
Effective Green, g (s)	12.6		18.6		5.1	27.8
Actuated g/C Ratio	0.26		0.38		0.10	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	457		707		191	1101
v/s Ratio Prot	c0.16		c0.25		c0.06	0.18
v/s Ratio Perm						
v/c Ratio	0.63		0.66		0.58	0.32
Uniform Delay, d1	15.9		12.4		20.7	5.4
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.7		2.3		4.4	0.2
Delay (s)	18.7		14.7		25.2	5.6
Level of Service	B		B		C	A
Approach Delay (s)	18.7		14.7			10.3
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	48.6	Sum of lost time (s)	12.3
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	27	238	236	24	28	252	320	125	21	400	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1879	1652		1860	1579	1847	1847		1847	1924	
Flt Permitted		0.80	1.00		0.70	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1543	1652		1368	1579	1847	1847		1847	1924	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	31	28	245	243	25	29	260	330	129	22	412	26
RTOR Reduction (vph)	0	0	179	0	0	21	0	19	0	0	4	0
Lane Group Flow (vph)	0	59	66	0	268	8	260	440	0	22	434	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		14.1	14.1		14.1	14.1	10.4	28.7		1.2	19.5	
Effective Green, g (s)		15.1	15.1		15.1	15.1	11.4	29.7		2.2	20.5	
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.20	0.53		0.04	0.36	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		413	443		366	423	373	974		72	700	
v/s Ratio Prot							c0.14	0.24		0.01	c0.23	
v/s Ratio Perm		0.04	0.04		c0.20	0.00						
v/c Ratio		0.14	0.15		0.73	0.02	0.70	0.45		0.31	0.62	
Uniform Delay, d1		15.7	15.7		18.8	15.1	20.8	8.3		26.3	14.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		7.4	0.0	5.6	0.3		2.4	1.7	
Delay (s)		15.8	15.9		26.1	15.2	26.4	8.6		28.7	16.4	
Level of Service		B	B		C	B	C	A		C	B	
Approach Delay (s)		15.9			25.1			15.0			17.0	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	9.3
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1949	30	20	2034	284	20	5	20	271	5	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5243		1829	5255	1636		1704			1835	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5243		1829	5255	1636		1704			1835	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	2052	32	21	2141	299	21	5	21	285	5	816
RTOR Reduction (vph)	0	1	0	0	0	83	0	20	0	0	0	39
Lane Group Flow (vph)	721	2083	0	21	2141	216	0	27	0	0	290	777
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	59.2		2.8	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	62.2		3.8	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.52		0.03	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2717		57	2058	640		85			550	763
v/s Ratio Prot	0.14	0.40		0.01	c0.41			c0.02			0.16	c0.47
v/s Ratio Perm						0.13						
v/c Ratio	0.88	0.77		0.37	1.04	0.34		0.32			0.53	1.02
Uniform Delay, d1	49.4	23.1		56.9	36.5	25.6		55.0			34.9	32.0
Progression Factor	0.95	1.09		1.29	0.87	0.61		1.00			1.00	1.00
Incremental Delay, d2	8.3	1.5		3.3	29.5	1.2		2.2			0.9	37.3
Delay (s)	55.3	26.7		77.0	61.3	16.8		57.2			35.8	69.3
Level of Service	E	C		E	E	B		E			D	E
Approach Delay (s)		34.1			56.0			57.2			60.5	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	47.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	180	140	319	130	120	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1762		1850		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1762		1850		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	147	336	137	126	359
RTOR Reduction (vph)	48	0	26	0	0	0
Lane Group Flow (vph)	288	0	447	0	126	359
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.5		17.9		5.1	27.1
Effective Green, g (s)	12.5		17.9		5.1	27.1
Actuated g/C Ratio	0.26		0.37		0.11	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	460		692		195	1091
v/s Ratio Prot	c0.16		c0.24		c0.07	0.19
v/s Ratio Perm						
v/c Ratio	0.63		0.65		0.65	0.33
Uniform Delay, d1	15.6		12.3		20.5	5.5
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.7		2.1		7.2	0.2
Delay (s)	18.2		14.4		27.6	5.7
Level of Service	B		B		C	A
Approach Delay (s)	18.2		14.4			11.4
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	10	170	150	10	20	150	403	90	20	410	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1866	1636		1839	1636	1829	1872		1829	1912	
Flt Permitted		0.81	1.00		0.72	1.00	0.44	1.00		0.39	1.00	
Satd. Flow (perm)		1550	1636		1382	1636	855	1872		749	1912	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	19	11	179	158	11	21	158	424	95	21	432	20
RTOR Reduction (vph)	0	0	130	0	0	15	0	16	0	0	3	0
Lane Group Flow (vph)	0	30	49	0	169	6	158	503	0	21	449	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.1	8.1		8.1	8.1	16.7	16.7		16.7	16.7	
Effective Green, g (s)		9.1	9.1		9.1	9.1	17.7	17.7		17.7	17.7	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.54	0.54		0.54	0.54	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		427	451		381	451	458	1004		401	1025	
v/s Ratio Prot								c0.27			0.23	
v/s Ratio Perm		0.02	0.03		c0.12	0.00	0.18			0.03		
v/c Ratio		0.07	0.11		0.44	0.01	0.34	0.50		0.05	0.44	
Uniform Delay, d1		8.8	8.9		9.9	8.7	4.4	4.8		3.6	4.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.8	0.0	0.5	0.4		0.1	0.3	
Delay (s)		8.9	9.0		10.7	8.7	4.8	5.2		3.7	4.9	
Level of Service		A	A		B	A	A	A		A	A	
Approach Delay (s)		9.0			10.5			5.1			4.9	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	33.0	Sum of lost time (s)	6.2
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	40	240	240	80	40	260	337	140	30	391	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1895	1652		1874	1579	1847	1842		1847	1922	
Flt Permitted		0.81	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1568	1652		1426	1579	1847	1842		1847	1922	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	42	253	253	84	42	274	355	147	32	412	29
RTOR Reduction (vph)	0	0	180	0	0	30	0	21	0	0	4	0
Lane Group Flow (vph)	0	71	73	0	337	12	274	481	0	32	437	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		15.5	15.5		15.5	15.5	10.5	27.0		2.5	19.0	
Effective Green, g (s)		16.5	16.5		16.5	16.5	11.5	28.0		3.5	20.0	
Actuated g/C Ratio		0.29	0.29		0.29	0.29	0.20	0.49		0.06	0.35	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		451	475		410	454	370	900		112	670	
v/s Ratio Prot							c0.15	0.26		0.02	c0.23	
v/s Ratio Perm		0.05	0.04		c0.24	0.01						
v/c Ratio		0.16	0.15		0.82	0.03	0.74	0.53		0.29	0.65	
Uniform Delay, d1		15.2	15.2		19.0	14.6	21.5	10.1		25.7	15.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		12.5	0.0	7.8	0.6		1.4	2.3	
Delay (s)		15.4	15.3		31.5	14.7	29.3	10.7		27.1	18.0	
Level of Service		B	B		C	B	C	B		C	B	
Approach Delay (s)		15.4			29.6			17.3			18.6	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	9.3
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis Alternative 2: Near-Term With Project Mitigated
6: Johnson & Stoneridge

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	1933	30	20	2017	385	20	5	20	346	5	883
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.96			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5243		1829	5255	1636		1704			1834	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5243		1829	5255	1636		1704			1834	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	872	2035	32	21	2123	405	21	5	21	364	5	929
RTOR Reduction (vph)	0	1	0	0	0	105	0	20	0	0	0	39
Lane Group Flow (vph)	872	2066	0	21	2123	300	0	27	0	0	369	890
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	59.2		2.8	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	62.2		3.8	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.52		0.03	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2717		57	2058	640		85			550	763
v/s Ratio Prot	0.17	0.39		0.01	c0.40			c0.02			0.20	c0.54
v/s Ratio Perm						0.18						
v/c Ratio	1.07	0.76		0.37	1.03	0.47		0.32			0.67	1.17
Uniform Delay, d1	50.5	23.0		56.9	36.5	27.2		55.0			36.8	32.0
Progression Factor	0.96	1.11		1.30	0.84	0.64		1.00			1.00	1.00
Incremental Delay, d2	46.2	1.4		3.2	26.5	2.0		2.2			3.2	88.9
Delay (s)	94.7	27.0		77.2	57.3	19.5		57.2			40.0	120.9
Level of Service	F	C		E	E	B		E			D	F
Approach Delay (s)		47.1			51.5			57.2			97.9	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	194	138	334	142	122	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1765		1848		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1765		1848		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	145	352	149	128	374
RTOR Reduction (vph)	43	0	26	0	0	0
Lane Group Flow (vph)	306	0	475	0	128	374
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.9		18.5		5.1	27.7
Effective Green, g (s)	12.9		18.5		5.1	27.7
Actuated g/C Ratio	0.26		0.38		0.10	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	466		700		191	1092
v/s Ratio Prot	c0.17		c0.26		c0.07	0.19
v/s Ratio Perm						
v/c Ratio	0.66		0.68		0.67	0.34
Uniform Delay, d1	16.0		12.7		21.0	5.7
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	3.3		2.6		8.9	0.2
Delay (s)	19.3		15.3		29.9	5.9
Level of Service	B		B		C	A
Approach Delay (s)	19.3		15.3			12.0
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	48.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	10	170	150	10	20	150	412	90	20	415	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1862	1636		1839	1636	1829	1873		1829	1912	
Flt Permitted		0.79	1.00		0.72	1.00	0.44	1.00		0.38	1.00	
Satd. Flow (perm)		1517	1636		1376	1636	848	1873		736	1912	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	11	179	158	11	21	158	434	95	21	437	20
RTOR Reduction (vph)	0	0	130	0	0	15	0	16	0	0	3	0
Lane Group Flow (vph)	0	34	49	0	169	6	158	513	0	21	454	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.1	8.1		8.1	8.1	16.9	16.9		16.9	16.9	
Effective Green, g (s)		9.1	9.1		9.1	9.1	17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.54	0.54		0.54	0.54	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		415	448		377	448	457	1009		396	1030	
v/s Ratio Prot								c0.27			0.24	
v/s Ratio Perm		0.02	0.03		c0.12	0.00	0.19			0.03		
v/c Ratio		0.08	0.11		0.45	0.01	0.35	0.51		0.05	0.44	
Uniform Delay, d1		8.9	9.0		10.0	8.8	4.3	4.9		3.6	4.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.9	0.0	0.5	0.4		0.1	0.3	
Delay (s)		9.0	9.1		10.8	8.8	4.8	5.3		3.7	4.9	
Level of Service		A	A		B	A	A	A		A	A	
Approach Delay (s)		9.1			10.6			5.2			4.9	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	33.2	Sum of lost time (s)	6.2
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis Alternative 2: Near-Term With Project Mitigated
13: Johnson & Owens Dr (N)

Saturday AF Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	40	240	240	80	40	260	337	140	30	399	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1891	1652		1874	1579	1847	1842		1847	1919	
Flt Permitted		0.75	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1458	1652		1420	1579	1847	1842		1847	1919	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	42	253	253	84	42	274	355	147	32	420	34
RTOR Reduction (vph)	0	0	182	0	0	30	0	22	0	0	5	0
Lane Group Flow (vph)	0	76	71	0	337	12	274	480	0	32	449	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		15.2	15.2		15.2	15.2	10.5	27.5		2.5	19.5	
Effective Green, g (s)		16.2	16.2		16.2	16.2	11.5	28.5		3.5	20.5	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.20	0.50		0.06	0.36	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		410	465		400	444	369	912		112	684	
v/s Ratio Prot							c0.15	0.26		0.02	c0.23	
v/s Ratio Perm		0.05	0.04		c0.24	0.01						
v/c Ratio		0.19	0.15		0.84	0.03	0.74	0.53		0.29	0.66	
Uniform Delay, d1		15.6	15.5		19.4	14.9	21.6	9.9		25.8	15.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		14.8	0.0	7.9	0.6		1.4	2.3	
Delay (s)		15.9	15.7		34.3	15.0	29.5	10.4		27.2	17.8	
Level of Service		B	B		C	B	C	B		C	B	
Approach Delay (s)		15.7			32.1			17.2			18.4	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	9.3
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1759	40	20	1884	294	30	10	20	281	10	775
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5237		1829	5255	1636		1746			1836	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5237		1829	5255	1636		1746			1836	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	1852	42	21	1983	309	32	11	21	296	11	816
RTOR Reduction (vph)	0	2	0	0	0	85	0	15	0	0	0	39
Lane Group Flow (vph)	721	1892	0	21	1983	224	0	49	0	0	307	777
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	59.2		2.8	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	62.2		3.8	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.52		0.03	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2714		57	2058	640		87			550	763
v/s Ratio Prot	0.14	0.36		0.01	c0.38			c0.03			0.17	c0.47
v/s Ratio Perm						0.14						
v/c Ratio	0.88	0.70		0.37	0.96	0.35		0.56			0.56	1.02
Uniform Delay, d1	49.4	21.8		56.9	35.7	25.7		55.7			35.3	32.0
Progression Factor	0.96	1.05		1.29	0.88	0.65		1.00			1.00	1.00
Incremental Delay, d2	8.9	1.2		3.4	11.5	1.3		8.0			1.2	37.3
Delay (s)	56.1	24.1		76.8	42.8	18.1		63.7			36.5	69.3
Level of Service	E	C		E	D	B		E			D	E
Approach Delay (s)		33.0			39.8			63.7			60.3	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	180	140	339	130	120	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1762		1853		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1762		1853		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	147	357	137	126	380
RTOR Reduction (vph)	48	0	24	0	0	0
Lane Group Flow (vph)	288	0	470	0	126	380
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	12.6		18.4		5.1	27.6
Effective Green, g (s)	12.6		18.4		5.1	27.6
Actuated g/C Ratio	0.26		0.38		0.11	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	458		704		192	1097
v/s Ratio Prot	c0.16		c0.25		c0.07	0.20
v/s Ratio Perm						
v/c Ratio	0.63		0.67		0.66	0.35
Uniform Delay, d1	15.8		12.5		20.8	5.6
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.7		2.4		7.8	0.2
Delay (s)	18.5		14.9		28.6	5.8
Level of Service	B		B		C	A
Approach Delay (s)	18.5		14.9			11.5
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	12.3
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	10	190	160	10	20	160	413	90	20	440	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1866	1636		1839	1636	1829	1873		1829	1913	
Flt Permitted		0.80	1.00		0.72	1.00	0.42	1.00		0.38	1.00	
Satd. Flow (perm)		1545	1636		1381	1636	805	1873		732	1913	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	19	11	200	168	11	21	168	435	95	21	463	20
RTOR Reduction (vph)	0	0	145	0	0	15	0	16	0	0	3	0
Lane Group Flow (vph)	0	30	55	0	179	6	168	514	0	21	480	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.2	8.2		8.2	8.2	16.9	16.9		16.9	16.9	
Effective Green, g (s)		9.2	9.2		9.2	9.2	17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.54	0.54		0.54	0.54	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		426	451		381	451	432	1006		393	1028	
v/s Ratio Prot								c0.27			0.25	
v/s Ratio Perm		0.02	0.03		c0.13	0.00	0.21			0.03		
v/c Ratio		0.07	0.12		0.47	0.01	0.39	0.51		0.05	0.47	
Uniform Delay, d1		8.9	9.0		10.0	8.8	4.5	4.9		3.7	4.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.9	0.0	0.6	0.4		0.1	0.3	
Delay (s)		9.0	9.1		10.9	8.8	5.1	5.4		3.7	5.1	
Level of Service		A	A		B	A	A	A		A	A	
Approach Delay (s)		9.1			10.7			5.3			5.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	33.3	Sum of lost time (s)	6.2
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	40	250	250	80	40	270	357	150	30	401	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1895	1652		1873	1578	1847	1841		1847	1922	
Flt Permitted		0.80	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1539	1652		1423	1578	1847	1841		1847	1922	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	42	263	263	84	42	284	376	158	32	422	29
RTOR Reduction (vph)	0	0	187	0	0	30	0	22	0	0	4	0
Lane Group Flow (vph)	0	71	76	0	347	12	284	512	0	32	447	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		15.8	15.8		15.8	15.8	10.5	27.3		2.6	19.4	
Effective Green, g (s)		16.8	16.8		16.8	16.8	11.5	28.3		3.6	20.4	
Actuated g/C Ratio		0.29	0.29		0.29	0.29	0.20	0.49		0.06	0.35	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		445	478		412	457	366	898		114	676	
v/s Ratio Prot							c0.15	0.28		0.02	c0.23	
v/s Ratio Perm		0.05	0.05		c0.24	0.01						
v/c Ratio		0.16	0.16		0.84	0.03	0.78	0.57		0.28	0.66	
Uniform Delay, d1		15.3	15.3		19.4	14.7	22.0	10.5		26.0	15.9	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		14.4	0.0	9.9	0.9		1.3	2.4	
Delay (s)		15.5	15.5		33.8	14.8	31.9	11.4		27.3	18.3	
Level of Service		B	B		C	B	C	B		C	B	
Approach Delay (s)		15.5			31.7			18.5			18.9	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	9.3
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	828	1743	40	20	1867	395	30	10	20	356	10	883
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Util. Factor	0.94	0.91		1.00	0.91	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.97			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	5157	5237		1829	5255	1636		1746			1836	1636
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	5157	5237		1829	5255	1636		1746			1836	1636
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	872	1835	42	21	1965	416	32	11	21	375	11	929
RTOR Reduction (vph)	0	2	0	0	0	116	0	15	0	0	0	39
Lane Group Flow (vph)	872	1875	0	21	1965	300	0	49	0	0	386	890
Confl. Peds. (#/hr)							24		12	12		24
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pt+ov
Protected Phases	5	2		1	6		8	8		4	4	4 5
Permitted Phases						6						
Actuated Green, G (s)	18.0	59.2		2.8	44.0	44.0		4.0			34.0	52.0
Effective Green, g (s)	19.0	62.2		3.8	47.0	47.0		6.0			36.0	56.0
Actuated g/C Ratio	0.16	0.52		0.03	0.39	0.39		0.05			0.30	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	816	2714		57	2058	640		87			550	763
v/s Ratio Prot	0.17	0.36		0.01	c0.37			c0.03			0.21	c0.54
v/s Ratio Perm						0.18						
v/c Ratio	1.07	0.69		0.37	0.95	0.47		0.56			0.70	1.17
Uniform Delay, d1	50.5	21.7		56.9	35.5	27.2		55.7			37.2	32.0
Progression Factor	0.96	1.09		1.30	0.86	0.71		1.00			1.00	1.00
Incremental Delay, d2	47.2	1.1		3.3	10.2	2.0		8.0			4.0	88.9
Delay (s)	95.6	24.8		77.2	40.7	21.5		63.7			41.3	120.9
Level of Service	F	C		E	D	C		E			D	F
Approach Delay (s)		47.2			37.7			63.7			97.5	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	194	138	354	142	122	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.1		4.1		4.1	4.1
Lane Util. Factor	1.00		1.00		1.00	1.00
Frt	0.94		0.96		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1765		1851		1829	1925
Flt Permitted	0.97		1.00		0.95	1.00
Satd. Flow (perm)	1765		1851		1829	1925
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	145	373	149	128	395
RTOR Reduction (vph)	43	0	25	0	0	0
Lane Group Flow (vph)	306	0	497	0	128	395
Turn Type	Prot		NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	13.0		19.0		5.1	28.2
Effective Green, g (s)	13.0		19.0		5.1	28.2
Actuated g/C Ratio	0.26		0.38		0.10	0.57
Clearance Time (s)	4.1		4.1		4.1	4.1
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	464		711		188	1098
v/s Ratio Prot	c0.17		c0.27		c0.07	0.21
v/s Ratio Perm						
v/c Ratio	0.66		0.70		0.68	0.36
Uniform Delay, d1	16.2		12.8		21.4	5.7
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	3.4		3.0		9.7	0.2
Delay (s)	19.6		15.8		31.1	5.9
Level of Service	B		B		C	A
Approach Delay (s)	19.6		15.8			12.1
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	12.3
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	10	190	160	10	20	160	422	90	20	445	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1862	1636		1839	1636	1829	1874		1829	1913	
Flt Permitted		0.79	1.00		0.71	1.00	0.41	1.00		0.37	1.00	
Satd. Flow (perm)		1514	1636		1375	1636	797	1874		718	1913	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	11	200	168	11	21	168	444	95	21	468	20
RTOR Reduction (vph)	0	0	145	0	0	15	0	15	0	0	3	0
Lane Group Flow (vph)	0	34	55	0	179	6	168	524	0	21	485	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		8.3	8.3		8.3	8.3	17.1	17.1		17.1	17.1	
Effective Green, g (s)		9.3	9.3		9.3	9.3	18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.54	0.54		0.54	0.54	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		419	452		380	452	429	1009		386	1030	
v/s Ratio Prot								c0.28			0.25	
v/s Ratio Perm		0.02	0.03		c0.13	0.00	0.21			0.03		
v/c Ratio		0.08	0.12		0.47	0.01	0.39	0.52		0.05	0.47	
Uniform Delay, d1		9.0	9.1		10.1	8.8	4.5	5.0		3.7	4.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.9	0.0	0.6	0.5		0.1	0.3	
Delay (s)		9.1	9.2		11.0	8.8	5.1	5.4		3.7	5.1	
Level of Service		A	A		B	A	A	A		A	A	
Approach Delay (s)		9.2			10.8			5.3			5.1	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	33.6	Sum of lost time (s)	6.2
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	40	250	250	80	40	270	357	150	30	409	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.1	3.1		3.1	3.1	3.1	3.1		3.1	3.1	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	0.96	1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1891	1652		1873	1578	1847	1841		1847	1920	
Flt Permitted		0.73	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1419	1652		1416	1578	1847	1841		1847	1920	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	42	263	263	84	42	284	376	158	32	431	34
RTOR Reduction (vph)	0	0	189	0	0	30	0	22	0	0	4	0
Lane Group Flow (vph)	0	76	74	0	347	12	284	512	0	32	461	0
Confl. Peds. (#/hr)	14					14	1		5	5		1
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		15.3	15.3		15.3	15.3	10.6	27.8		2.6	19.8	
Effective Green, g (s)		16.3	16.3		16.3	16.3	11.6	28.8		3.6	20.8	
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.20	0.50		0.06	0.36	
Clearance Time (s)		4.1	4.1		4.1	4.1	4.1	4.1		4.1	4.1	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		398	464		397	443	369	914		114	688	
v/s Ratio Prot							c0.15	0.28		0.02	c0.24	
v/s Ratio Perm		0.05	0.04		c0.25	0.01						
v/c Ratio		0.19	0.16		0.87	0.03	0.77	0.56		0.28	0.67	
Uniform Delay, d1		15.8	15.7		19.9	15.1	21.9	10.2		26.0	15.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.2		18.7	0.0	9.3	0.8		1.3	2.5	
Delay (s)		16.1	15.9		38.6	15.1	31.3	11.0		27.3	18.2	
Level of Service		B	B		D	B	C	B		C	B	
Approach Delay (s)		15.9			36.1			18.0			18.8	
Approach LOS		B			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	9.3
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX D: FREEWAY MAINLINE & RAMP MERGE/DIVERGE ANALYSIS WORKSHEETS

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing Without Project
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	5,600	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,095	70.0	62.8	**33.3**	**D**
B-2	I-680 SB	North of Stoneridge Drive	AM	6,700	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,506	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	5,500	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,082	70.0	63.1	**33.0**	**D**
B-4	I-680 SB	South of Stoneridge Drive	AM	5,600	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,120	70.0	62.2	**34.1**	**D**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	6,900	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,581	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	4,800	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	1,796	70.0	67.9	**26.4**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	5,700	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,158	70.0	61.3	**35.2**	**E**
B-8	I-680 SB	South of Stoneridge Drive	PM	4,900	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	1,855	70.0	67.2	**27.6**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Existing Without Project
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	5,600	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,300	6,300
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	5,600	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,300	6,300
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	5,600	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,361	6,361
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	5,600	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,361	6,361
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	6,900	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,763	7,763
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	6,900	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,763	7,763
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	4,900	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,566	5,566
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	4,900	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,566	5,566

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	228	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	730	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	801
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	170	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	187
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	338	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	371
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	761	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,031	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,132
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	579	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	636
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	813	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	893

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	228	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	338	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	371
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	761	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	813	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	893
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	3,776
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,755		0.595			0.595	3,751
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,601		0.593			0.593	3,773
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,741
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,652
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,139		0.595			0.595	4,622
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,527		0.593			0.593	3,301
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,273

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,300	7,200	No	6,550	7,200	No	2,524	No	No	3,776	4,026	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,300	7,200	No	7,101	7,200	No	2,549	No	No	3,751	4,553	4,600	No
M-3	I-680 SB	Eastbound Stoneridge Drive	6,361	7,200	No	6,548	7,200	No	2,588	No	No	3,773	3,960	4,600	No
M-4	I-680 SB	Westbound Stoneridge Drive	6,361	7,200	No	6,732	7,200	No	2,620	No	No	3,741	4,112	4,600	No
M-5	I-680 NB	Eastbound Stoneridge Drive	7,763	7,200	**Yes**	8,598	7,200	**Yes**	3,110	Yes	No	5,063	5,898	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	7,763	7,200	**Yes**	8,894	7,200	**Yes**	3,141	Yes	No	5,063	6,194	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	5,566	7,200	No	6,201	7,200	No	2,264	No	No	3,301	3,937	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	5,566	7,200	No	6,458	7,200	No	2,292	No	No	3,273	4,166	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	250	2,100	No	**31.9**	**D**	0.469	56.9	62.1	58.8
M-2	I-680 NB	Westbound Stoneridge Drive	801	2,100	No	**36.6**	**E**	0.633	52.3	62.0	55.4
M-3	I-680 SB	Eastbound Stoneridge Drive	187	2,100	No	**32.8**	**D**	0.475	56.7	61.7	58.6
M-4	I-680 SB	Westbound Stoneridge Drive	371	2,100	No	**35.0**	**D**	0.525	55.3	0.0	55.3
M-5	I-680 NB	Eastbound Stoneridge Drive	835	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,132	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	636	2,100	No	**32.4**	**D**	0.471	56.8	0.0	56.8
M-8	I-680 SB	Westbound Stoneridge Drive	893	2,100	No	**35.2**	**E**	0.538	54.9	0.0	54.9

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing Without Project
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	5,500	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,038	6,038
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	6,700	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	7,355	7,355
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	5,700	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,258	6,258
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	4,800	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,270	5,270

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,274	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,399
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,233	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,354
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	576	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	632
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,128	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,238

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.545			0.545
D-2	I-680 SB	Stoneridge Drive	No														0.514			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.574			0.574
D-4	I-680 SB	Stoneridge Drive	No														0.571			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	3,926
D-2	I-680 SB	Stoneridge Drive	4,054
D-3	I-680 NB	Stoneridge Drive	3,864
D-4	I-680 SB	Stoneridge Drive	3,052

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,038	7,200	No	2,112	No	No	3,926	4,400	No	4,639	7,200	No
D-2	I-680 SB	Stoneridge Drive	7,355	7,200	**Yes**	3,301	Yes	Yes	4,655	4,400	**Yes**	6,002	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,258	7,200	No	2,394	No	No	3,864	4,400	No	5,625	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,270	7,200	No	2,217	No	No	3,052	4,400	No	4,031	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,399	2,100	No	**28.1**	**D**	0.424	58.1	72.5	62.4
D-2	I-680 SB	Stoneridge Drive	1,354	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	632	2,100	No	**27.6**	**C**	0.355	60.1	71.4	63.9
D-4	I-680 SB	Stoneridge Drive	1,238	4,100	No	**8.2**	**A**	0.409	58.5	72.0	63.5

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing Wth Alternative 2a
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	5,634	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,108	70.0	62.5	**33.7**	**D**
B-2	I-680 SB	North of Stoneridge Drive	AM	6,740	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,521	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	5,538	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,097	70.0	62.8	**33.4**	**D**
B-4	I-680 SB	South of Stoneridge Drive	AM	5,630	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,132	70.0	61.9	**34.4**	**D**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,022	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,627	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	4,906	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	1,835	70.0	67.4	**27.2**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	5,790	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,192	70.0	60.3	**36.3**	**E**
B-8	I-680 SB	South of Stoneridge Drive	PM	4,995	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	1,891	70.0	66.7	**28.4**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Existing Wth Alternative 2a
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	5,634	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,338	6,338
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	5,634	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,338	6,338
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	5,630	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,395	6,395
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	5,630	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,395	6,395
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,022	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,900	7,900
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,022	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,900	7,900
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	4,995	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,674	5,674
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	4,995	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,674	5,674

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	228	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	764	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	839
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	170	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	187
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	368	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	404
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	761	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,153	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,266
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	579	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	636
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	908	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	997

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	228	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	368	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	404
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	761	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	908	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	997
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	3,799
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,771		0.595			0.595	3,774
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,608		0.593			0.593	3,793
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,761
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,735
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,197		0.595			0.595	4,704
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,550		0.593			0.593	3,366
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,337

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,338	7,200	No	6,589	7,200	No	2,539	No	No	3,799	4,049	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,338	7,200	No	7,177	7,200	No	2,564	No	No	3,774	4,613	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	6,395	7,200	No	6,582	7,200	No	2,602	No	No	3,793	3,980	4,600	No
M-4	I-680 SB	Westbound Stoneridge Drive	6,395	7,200	No	6,799	7,200	No	2,634	No	No	3,761	4,165	4,600	No
M-5	I-680 NB	Eastbound Stoneridge Drive	7,900	7,200	**Yes**	8,735	7,200	**Yes**	3,165	Yes	No	5,200	6,035	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	7,900	7,200	**Yes**	9,166	7,200	**Yes**	3,196	Yes	No	5,200	6,466	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	5,674	7,200	No	6,309	7,200	No	2,308	No	No	3,366	4,001	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	5,674	7,200	No	6,670	7,200	No	2,337	No	No	3,337	4,334	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	250	2,100	No	**32.1**	**D**	0.474	56.7	62.0	58.7
M-2	I-680 NB	Westbound Stoneridge Drive	839	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	187	2,100	No	**32.9**	**D**	0.479	56.6	61.7	58.5
M-4	I-680 SB	Westbound Stoneridge Drive	404	2,100	No	**35.4**	**E**	0.538	54.9	0.0	54.9
M-5	I-680 NB	Eastbound Stoneridge Drive	835	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,266	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	636	2,100	No	**32.9**	**D**	0.484	56.5	0.0	56.5
M-8	I-680 SB	Westbound Stoneridge Drive	997	2,100	No	**36.4**	**E**	0.584	53.6	0.0	53.6

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing Wth Alternative 2a
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	5,538	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,080	6,080
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	6,740	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	7,399	7,399
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	5,790	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,356	6,356
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	4,906	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,386	5,386

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,312	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,440
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,273	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,398
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	999	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,097
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,234	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,355

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.542			0.542
D-2	I-680 SB	Stoneridge Drive	No														0.511			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.551			0.551
D-4	I-680 SB	Stoneridge Drive	No														0.563			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	3,954
D-2	I-680 SB	Stoneridge Drive	4,098
D-3	I-680 NB	Stoneridge Drive	3,993
D-4	I-680 SB	Stoneridge Drive	3,169

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,080	7,200	No	2,126	No	No	3,954	4,400	No	4,639	7,200	No
D-2	I-680 SB	Stoneridge Drive	7,399	7,200	**Yes**	3,301	Yes	Yes	4,699	4,400	**Yes**	6,002	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,356	7,200	No	2,363	No	No	3,993	4,400	No	5,260	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,386	7,200	No	2,217	No	No	3,169	4,400	No	4,031	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,440	2,100	No	**28.4**	**D**	0.428	58.0	72.4	62.4
D-2	I-680 SB	Stoneridge Drive	1,398	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	1,097	2,100	No	**28.7**	**D**	0.397	58.9	71.5	63.0
D-4	I-680 SB	Stoneridge Drive	1,355	4,100	No	**9.2**	**A**	0.420	58.2	72.0	63.2

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing With Alternative 2
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	5,641	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,110	70.0	62.5	**33.8**	**D**
B-2	I-680 SB	North of Stoneridge Drive	AM	6,741	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,522	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	5,536	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,096	70.0	62.8	**33.4**	**D**
B-4	I-680 SB	South of Stoneridge Drive	AM	5,636	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,134	70.0	61.9	**34.5**	**D**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,062	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,642	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	4,957	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	1,854	70.0	67.2	**27.6**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	5,832	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,208	70.0	59.9	**36.9**	**E**
B-8	I-680 SB	South of Stoneridge Drive	PM	5,027	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	1,903	70.0	66.5	**28.6**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Existing With Alternative 2
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	5,641	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,346	6,346
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	5,641	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,346	6,346
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	5,636	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,402	6,402
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	5,636	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,402	6,402
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,062	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,945	7,945
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,062	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	7,945	7,945
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	5,027	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,710	5,710
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	5,027	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	5,710	5,710

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	228	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	771	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	846
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	170	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	187
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	374	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	411
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	761	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,193	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,310
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	579	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	636
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	940	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,032

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	228	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	250
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	374	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	411
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	761	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	835
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	940	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,032
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	3,803
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,775		0.595			0.595	3,779
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,610		0.593			0.593	3,797
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,765
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,762
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,216		0.595			0.595	4,730
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,558		0.593			0.593	3,387
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,358

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,346	7,200	No	6,596	7,200	No	2,543	No	No	3,803	4,054	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,346	7,200	No	7,193	7,200	No	2,568	No	No	3,779	4,625	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	6,402	7,200	No	6,588	7,200	No	2,604	No	No	3,797	3,984	4,600	No
M-4	I-680 SB	Westbound Stoneridge Drive	6,402	7,200	No	6,812	7,200	No	2,637	No	No	3,765	4,176	4,600	No
M-5	I-680 NB	Eastbound Stoneridge Drive	7,945	7,200	**Yes**	8,780	7,200	**Yes**	3,183	Yes	No	5,245	6,080	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	7,945	7,200	**Yes**	9,254	7,200	**Yes**	3,214	Yes	No	5,245	6,554	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	5,710	7,200	No	6,346	7,200	No	2,323	No	No	3,387	4,023	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	5,710	7,200	No	6,742	7,200	No	2,352	No	No	3,358	4,390	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	250	2,100	No	**32.1**	**D**	0.476	56.7	62.0	58.6
M-2	I-680 NB	Westbound Stoneridge Drive	846	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	187	2,100	No	**33.0**	**D**	0.480	56.6	61.6	58.5
M-4	I-680 SB	Westbound Stoneridge Drive	411	2,100	No	**35.5**	**E**	0.541	54.9	0.0	54.9
M-5	I-680 NB	Eastbound Stoneridge Drive	835	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,310	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	636	2,100	No	**33.0**	**D**	0.488	56.3	0.0	56.3
M-8	I-680 SB	Westbound Stoneridge Drive	1,032	2,100	No	**36.9**	**E**	0.601	53.2	0.0	53.2

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Existing With Alternative 2
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	5,536	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,078	6,078
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	6,741	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	7,400	7,400
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	5,832	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,403	6,403
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	4,957	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,442	5,442

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,310	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,438
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,274	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,399
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	708	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	777
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,285	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,411

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.542			0.542
D-2	I-680 SB	Stoneridge Drive	No														0.511			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.564			0.564
D-4	I-680 SB	Stoneridge Drive	No														0.559			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	3,952
D-2	I-680 SB	Stoneridge Drive	4,099
D-3	I-680 NB	Stoneridge Drive	3,951
D-4	I-680 SB	Stoneridge Drive	3,225

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,078	7,200	No	2,125	No	No	3,952	4,400	No	4,639	7,200	No
D-2	I-680 SB	Stoneridge Drive	7,400	7,200	**Yes**	3,301	Yes	Yes	4,700	4,400	**Yes**	6,002	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,403	7,200	No	2,452	No	No	3,951	4,400	No	5,625	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,442	7,200	No	2,217	No	No	3,225	4,400	No	4,031	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,438	2,100	No	**28.3**	**D**	0.427	58.0	72.4	62.4
D-2	I-680 SB	Stoneridge Drive	1,399	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	777	2,100	No	**28.3**	**D**	0.368	59.7	71.1	63.6
D-4	I-680 SB	Stoneridge Drive	1,411	4,100	No	**9.7**	**A**	0.425	58.1	72.0	63.1

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Cumulative Without Project
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	6,160	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,304	70.0	56.8	**40.5**	**E**
B-2	I-680 SB	North of Stoneridge Drive	AM	7,370	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,757	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	6,050	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,291	70.0	57.3	**40.0**	**E**
B-4	I-680 SB	South of Stoneridge Drive	AM	6,160	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,332	70.0	55.9	**41.7**	**E**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,590	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,839	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	5,280	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	1,975	70.0	65.3	**30.2**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	6,270	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,374	70.0	54.3	**43.7**	**E**
B-8	I-680 SB	South of Stoneridge Drive	PM	5,390	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,041	70.0	64.0	**31.9**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Cumulative Without Project
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	6,160	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,930	6,930
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	6,160	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,930	6,930
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	6,160	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,997	6,997
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	6,160	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,997	6,997
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,590	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,539	8,539
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,590	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,539	8,539
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	5,390	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,122	6,122
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	5,390	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,122	6,122

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	290	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	800	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	878
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	340	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	373
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	460	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	505
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	750	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	880	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	966
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	560	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	615
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	710	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	779

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	290	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	460	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	505
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	750	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	710	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	779
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,153
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,907		0.595			0.595	4,126
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,777		0.593			0.593	4,150
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	4,115
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	5,118
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,270		0.595			0.595	5,084
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,642		0.593			0.593	3,632
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,601

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,930	7,200	No	7,248	7,200	**Yes**	2,777	Yes	No	4,230	4,548	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,930	7,200	No	7,808	7,200	**Yes**	2,804	Yes	No	4,230	5,108	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	6,997	7,200	No	7,370	7,200	**Yes**	2,847	Yes	No	4,297	4,670	4,600	**Yes**
M-4	I-680 SB	Westbound Stoneridge Drive	6,997	7,200	No	7,502	7,200	**Yes**	2,882	Yes	No	4,297	4,802	4,600	**Yes**
M-5	I-680 NB	Eastbound Stoneridge Drive	8,539	7,200	**Yes**	9,362	7,200	**Yes**	3,421	Yes	No	5,839	6,662	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	8,539	7,200	**Yes**	9,505	7,200	**Yes**	3,455	Yes	No	5,839	6,805	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	6,122	7,200	No	6,737	7,200	No	2,491	No	No	3,632	4,246	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	6,122	7,200	No	6,902	7,200	No	2,522	No	No	3,601	4,380	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	318	2,100	No	**-**	**F**	-	-	-	-
M-2	I-680 NB	Westbound Stoneridge Drive	878	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	373	2,100	No	**-**	**F**	-	-	-	-
M-4	I-680 SB	Westbound Stoneridge Drive	505	2,100	No	**-**	**F**	-	-	-	-
M-5	I-680 NB	Eastbound Stoneridge Drive	823	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	966	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	615	2,100	No	**34.8**	**D**	0.543	54.8	0.0	54.8
M-8	I-680 SB	Westbound Stoneridge Drive	779	2,100	No	**36.9**	**E**	0.598	53.2	0.0	53.2

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Cumulative Without Project
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	6,050	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,642	6,642
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	7,370	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	8,091	8,091
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	6,270	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,883	6,883
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	5,280	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,797	5,797

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,330	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,460
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,350	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,482
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	720	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	790
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,070	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,175

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.527			0.527
D-2	I-680 SB	Stoneridge Drive	No														0.490			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.552			0.552
D-4	I-680 SB	Stoneridge Drive	No														0.561			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	4,190
D-2	I-680 SB	Stoneridge Drive	4,456
D-3	I-680 NB	Stoneridge Drive	4,151
D-4	I-680 SB	Stoneridge Drive	3,255

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,642	7,200	No	2,452	No	No	4,190	4,400	No	5,182	7,200	No
D-2	I-680 SB	Stoneridge Drive	8,091	7,200	**Yes**	3,635	Yes	Yes	5,391	4,400	**Yes**	6,609	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,883	7,200	No	2,732	Yes	No	4,183	4,400	No	6,093	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,797	7,200	No	2,542	No	Yes	3,312	4,400	No	4,622	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,460	2,100	No	**30.4**	**D**	0.429	58.0	71.1	62.2
D-2	I-680 SB	Stoneridge Drive	1,482	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	790	2,100	No	**30.3**	**D**	0.369	59.7	70.2	63.4
D-4	I-680 SB	Stoneridge Drive	1,175	4,100	No	**10.5**	**B**	0.404	58.7	71.0	63.4

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA | Agency or Company City of Pleasanton
Analysis Year Cumulative With Alternative 2a | Date 3/18/2015
Analyst Fehr and Peers | Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	6,194	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,317	70.0	56.4	**41.1**	**E**
B-2	I-680 SB	North of Stoneridge Drive	AM	7,410	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,772	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	6,088	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,305	70.0	56.8	**40.6**	**E**
B-4	I-680 SB	South of Stoneridge Drive	AM	6,190	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,344	70.0	55.5	**42.3**	**E**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,712	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,885	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	5,386	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,015	70.0	64.6	**31.2**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	6,360	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,408	70.0	-	**-**	**F**
B-8	I-680 SB	South of Stoneridge Drive	PM	5,485	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,077	70.0	63.3	**32.8**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Cumulative With Alternative 2a
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	6,194	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,968	6,968
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	6,194	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,968	6,968
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	6,190	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	7,031	7,031
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	6,190	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	7,031	7,031
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,712	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,676	8,676
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,712	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,676	8,676
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	5,485	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,230	6,230
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	5,485	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,230	6,230

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	290	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	834	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	916
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	340	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	373
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	490	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	538
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	750	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,002	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,100
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	560	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	615
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	805	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	884

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	290	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	490	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	538
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	750	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	805	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	884
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,176
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,923		0.595			0.595	4,149
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,785		0.593			0.593	4,171
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	4,135
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	5,200
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,328		0.595			0.595	5,166
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,665		0.593			0.593	3,696
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,664

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,968	7,200	No	7,287	7,200	**Yes**	2,792	Yes	No	4,268	4,587	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,968	7,200	No	7,884	7,200	**Yes**	2,819	Yes	No	4,268	5,184	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	7,031	7,200	No	7,404	7,200	**Yes**	2,860	Yes	No	4,331	4,704	4,600	**Yes**
M-4	I-680 SB	Westbound Stoneridge Drive	7,031	7,200	No	7,569	7,200	**Yes**	2,896	Yes	No	4,331	4,869	4,600	**Yes**
M-5	I-680 NB	Eastbound Stoneridge Drive	8,676	7,200	**Yes**	9,499	7,200	**Yes**	3,476	Yes	No	5,976	6,799	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	8,676	7,200	**Yes**	9,776	7,200	**Yes**	3,510	Yes	No	5,976	7,076	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	6,230	7,200	No	6,845	7,200	No	2,535	No	No	3,696	4,310	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	6,230	7,200	No	7,114	7,200	No	2,566	No	No	3,664	4,548	4,600	No

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	318	2,100	No	**-**	**F**	-	-	-	-
M-2	I-680 NB	Westbound Stoneridge Drive	916	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	373	2,100	No	**-**	**F**	-	-	-	-
M-4	I-680 SB	Westbound Stoneridge Drive	538	2,100	No	**-**	**F**	-	-	-	-
M-5	I-680 NB	Eastbound Stoneridge Drive	823	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,100	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	615	2,100	No	**35.3**	**E**	0.561	54.3	0.0	54.3
M-8	I-680 SB	Westbound Stoneridge Drive	884	2,100	No	**38.2**	**E**	0.655	51.7	0.0	51.7

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Cumulative With Alternative 2a
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	6,088	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,684	6,684
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	7,410	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	8,135	8,135
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	6,360	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,982	6,982
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	5,386	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,913	5,913

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,368	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,502
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,390	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,526
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	810	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	889
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,176	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,291

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.524			0.524
D-2	I-680 SB	Stoneridge Drive	No														0.486			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.545			0.545
D-4	I-680 SB	Stoneridge Drive	No														0.553			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	4,216
D-2	I-680 SB	Stoneridge Drive	4,500
D-3	I-680 NB	Stoneridge Drive	4,207
D-4	I-680 SB	Stoneridge Drive	3,371

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,684	7,200	No	2,467	No	No	4,216	4,400	No	5,182	7,200	No
D-2	I-680 SB	Stoneridge Drive	8,135	7,200	**Yes**	3,635	Yes	Yes	5,435	4,400	**Yes**	6,609	7,200	No
D-3	I-680 NB	Stoneridge Drive	6,982	7,200	No	2,775	Yes	No	4,282	4,400	No	6,093	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,913	7,200	No	2,542	No	Yes	3,379	4,400	No	4,622	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,502	2,100	No	**30.6**	**D**	0.433	57.9	71.1	62.1
D-2	I-680 SB	Stoneridge Drive	1,526	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	889	2,100	No	**31.2**	**D**	0.378	59.4	70.2	63.2
D-4	I-680 SB	Stoneridge Drive	1,291	4,100	No	**11.0**	**B**	0.414	58.4	70.8	63.1

HCM 2000
Basic Freeway Segments
Capacity Analysis

Jurisdiction Pleasanton, CA | Agency or Company City of Pleasanton
Analysis Year Cumulative With Alternative 2 | Date 3/18/2015
Analyst Fehr and Peers | Project Description Johnson Drive EDZ

General Information				*Flow Rate Calculation*											*Speed Calculation*		*Results*	
	Freeway/ Direction	From/To	Analysis Time Period	Volume (vph)	PHF	Lanes	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcphpl)	Measured FFS (mph)	S (mph)	Density, D (pcplpm)	Level of Service
B-1	I-680 NB	North of Stoneridge Drive	AM	6,201	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,320	70.0	56.3	**41.2**	**E**
B-2	I-680 SB	North of Stoneridge Drive	AM	7,411	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,772	70.0	-	**-**	**F**
B-3	I-680 NB	South of Stoneridge Drive	AM	6,086	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,304	70.0	56.8	**40.5**	**E**
B-4	I-680 SB	South of Stoneridge Drive	AM	6,196	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,346	70.0	55.4	**42.4**	**E**
															70.0			
B-5	I-680 NB	North of Stoneridge Drive	PM	7,752	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,900	70.0	-	**-**	**F**
B-6	I-680 SB	North of Stoneridge Drive	PM	5,437	0.92	3	Level	7%	0%	1.5	1.2	0.969	1.00	2,034	70.0	64.2	**31.7**	**D**
B-7	I-680 NB	South of Stoneridge Drive	PM	6,402	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,424	70.0	-	**-**	**F**
B-8	I-680 SB	South of Stoneridge Drive	PM	5,517	0.92	3	Level	9%	0%	1.5	1.2	0.957	1.00	2,089	70.0	63.0	**33.2**	**D**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

Jurisdiction: Pleasanton, CA
Analysis Year: Cumulative With Alternative 2
Analyst: Fehr and Peers

Agency or Company: City of Pleasanton
Date: 3/18/2015
Project Description: Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	On-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	AM	3	70.0	6,201	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,976	6,976
M-2	I-680 NB	Westbound Stoneridge Drive	AM	3	70.0	6,201	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	6,976	6,976
M-3	I-680 SB	Eastbound Stoneridge Drive	AM	3	70.0	6,196	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	7,038	7,038
M-4	I-680 SB	Westbound Stoneridge Drive	AM	3	70.0	6,196	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	7,038	7,038
M-5	I-680 NB	Eastbound Stoneridge Drive	PM	3	70.0	7,752	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,721	8,721
M-6	I-680 NB	Westbound Stoneridge Drive	PM	3	70.0	7,752	No		0.92	Level	7%	0%	1.5	1.20	0.966	1.00	8,721	8,721
M-7	I-680 SB	Eastbound Stoneridge Drive	PM	3	70.0	5,517	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,267	6,267
M-8	I-680 SB	Westbound Stoneridge Drive	PM	3	70.0	5,517	No		0.92	Level	9%	0%	1.5	1.20	0.957	1.00	6,267	6,267

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*On-Ramp Data*								*On-Ramp Volume Adjustment*								
	Freeway/ Direction	On-ramp	Type	Lanes	Lane Add?	S_{FR} (mph)	V_R (vph)	Accel Lane (ft) L_{A1}	L_{A2}	L_{Aeff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	290	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-2	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	841	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	923
M-3	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	340	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	373
M-4	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	496	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	545
M-5	I-680 NB	Eastbound Stoneridge Drive	Right	1	No	45.0	750	780		780	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-6	I-680 NB	Westbound Stoneridge Drive	Right	1	No	45.0	1,042	640		640	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,144
M-7	I-680 SB	Eastbound Stoneridge Drive	Right	1	No	45.0	560	560		560	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	615
M-8	I-680 SB	Westbound Stoneridge Drive	Right	1	No	45.0	837	380		380	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	919

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	On-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No											
M-2	I-680 NB	Westbound Stoneridge Drive	On	520	290	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	318
M-3	I-680 SB	Eastbound Stoneridge Drive	On	1,000	496	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	545
M-4	I-680 SB	Westbound Stoneridge Drive	No											
M-5	I-680 NB	Eastbound Stoneridge Drive	No											
M-6	I-680 NB	Westbound Stoneridge Drive	On	520	750	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	823
M-7	I-680 SB	Eastbound Stoneridge Drive	On	1,000	837	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	919
M-8	I-680 SB	Westbound Stoneridge Drive	No											

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*						
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FM} Equations				v_{12}
	Direction	On-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-2	25-3	1	2	3	P_{FM}	(pcph)
M-1	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	4,181
M-2	I-680 NB	Westbound Stoneridge Drive	No												1,926		0.595			0.595	4,154
M-3	I-680 SB	Eastbound Stoneridge Drive	No												1,786		0.593			0.593	4,175
M-4	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	4,139
M-5	I-680 NB	Eastbound Stoneridge Drive	No														0.599			0.599	5,227
M-6	I-680 NB	Westbound Stoneridge Drive	No												2,347		0.595			0.595	5,193
M-7	I-680 SB	Eastbound Stoneridge Drive	No												1,673		0.593			0.593	3,717
M-8	I-680 SB	Westbound Stoneridge Drive	No														0.588			0.588	3,686

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*												
	Freeway/ Direction	On-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	v_{R12a} (pcph)	Max v_{R12a} (pcph)	LOS F?
M-1	I-680 NB	Eastbound Stoneridge Drive	6,976	7,200	No	7,294	7,200	**Yes**	2,795	Yes	No	4,276	4,594	4,600	No
M-2	I-680 NB	Westbound Stoneridge Drive	6,976	7,200	No	7,899	7,200	**Yes**	2,822	Yes	No	4,276	5,199	4,600	**Yes**
M-3	I-680 SB	Eastbound Stoneridge Drive	7,038	7,200	No	7,411	7,200	**Yes**	2,863	Yes	No	4,338	4,711	4,600	**Yes**
M-4	I-680 SB	Westbound Stoneridge Drive	7,038	7,200	No	7,582	7,200	**Yes**	2,899	Yes	No	4,338	4,882	4,600	**Yes**
M-5	I-680 NB	Eastbound Stoneridge Drive	8,721	7,200	**Yes**	9,544	7,200	**Yes**	3,494	Yes	No	6,021	6,844	4,600	**Yes**
M-6	I-680 NB	Westbound Stoneridge Drive	8,721	7,200	**Yes**	9,865	7,200	**Yes**	3,528	Yes	No	6,021	7,165	4,600	**Yes**
M-7	I-680 SB	Eastbound Stoneridge Drive	6,267	7,200	No	6,881	7,200	No	2,549	No	No	3,717	4,332	4,600	No
M-8	I-680 SB	Westbound Stoneridge Drive	6,267	7,200	No	7,185	7,200	No	2,581	No	No	3,686	4,605	4,600	**Yes**

HCM 2000
Merge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	On-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. M_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
M-1	I-680 NB	Eastbound Stoneridge Drive	318	2,100	No	**-**	**F**	-	-	-	-
M-2	I-680 NB	Westbound Stoneridge Drive	923	2,100	No	**-**	**F**	-	-	-	-
M-3	I-680 SB	Eastbound Stoneridge Drive	373	2,100	No	**-**	**F**	-	-	-	-
M-4	I-680 SB	Westbound Stoneridge Drive	545	2,100	No	**-**	**F**	-	-	-	-
M-5	I-680 NB	Eastbound Stoneridge Drive	823	2,100	No	**-**	**F**	-	-	-	-
M-6	I-680 NB	Westbound Stoneridge Drive	1,144	2,100	No	**-**	**F**	-	-	-	-
M-7	I-680 SB	Eastbound Stoneridge Drive	615	2,100	No	**35.5**	**E**	0.567	54.1	0.0	54.1
M-8	I-680 SB	Westbound Stoneridge Drive	919	2,100	No	**-**	**F**	-	-	-	-

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

Jurisdiction Pleasanton, CA
Analysis Year Cumulative With Alternative 2
Analyst Fehr and Peers

Agency or Company City of Pleasanton
Date 3/18/2015
Project Description Johnson Drive EDZ

General Information				*Freeway Data*					*Freeway Volume Adjustment*									Effective
	Freeway/ Direction	Off-ramp	Analysis Time Period	Lanes	S_{FF} (mph)	V (vph)	HOV Lane?	HOV Lane Volume	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	AM	3	70.0	6,086	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	6,681	6,681
D-2	I-680 SB	Stoneridge Drive	AM	3	70.0	7,411	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	8,136	8,136
D-3	I-680 NB	Stoneridge Drive	PM	3	70.0	6,402	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	7,028	7,028
D-4	I-680 SB	Stoneridge Drive	PM	3	70.0	5,437	No		0.92	Level	2%	0%	1.5	1.20	0.990	1.00	5,969	5,969

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Off-Ramp Data*								*Off-Ramp Volume Adjustment*								
	Freeway/ Direction	Off-ramp	Type	Lanes	Lane Drop?	S_{FR} (mph)	V_R (vph)	Decel Lane (ft) L_{D1}	L_{D2}	L_{Deff}	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	Right	1	No	45.0	1,366	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,500
D-2	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,391	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,527
											0.92		2%						
D-3	I-680 NB	Stoneridge Drive	Right	1	No	45.0	852	1,100		1,100	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	935
D-4	I-680 SB	Stoneridge Drive	Right	2	No	45.0	1,227	850	775	2,475	0.92	Level	2%	0%	1.5	1.2	0.990	1.00	1,347

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Upstream Ramp Data*											
	Freeway/ Direction	Off-ramp	Exists?	Distance	Volume (vph)	PHF	Terrain	Truck/ Bus %	RV %	E_T	E_R	f_{HV}	f_P	Flow Rate v_p (pcph)
D-1	I-680 NB	Stoneridge Drive	No											
D-2	I-680 SB	Stoneridge Drive	No											
D-3	I-680 NB	Stoneridge Drive	No											
D-4	I-680 SB	Stoneridge Drive	No											

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Adjacent Downstream Ramp Data*												*v_{12} Estimation*					
	Freeway/				Volume			Truck/						Flow Rate	L_{EQ}		P_{FD} Equations			
	Direction	Off-ramp	Exists?	Distance	(vph)	PHF	Terrain	Bus %	RV %	E_T	E_R	f_{HV}	f_P	v_p (pcph)	25-13	25-14	5	6	7	P_{FD}
D-1	I-680 NB	Stoneridge Drive	No														0.524			0.524
D-2	I-680 SB	Stoneridge Drive	No														0.486			0.450
D-3	I-680 NB	Stoneridge Drive	No														0.541			0.541
D-4	I-680 SB	Stoneridge Drive	No														0.549			0.450

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information

	Freeway/ Direction	Off-ramp	v_{12} (pcph)
D-1	I-680 NB	Stoneridge Drive	4,215
D-2	I-680 SB	Stoneridge Drive	4,501
D-3	I-680 NB	Stoneridge Drive	4,233
D-4	I-680 SB	Stoneridge Drive	3,427

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information			*Capacity Checks*											
	Freeway/ Direction	Off-ramp	v_{Fi} (pcph)	Max v_{Fi} (pcph)	LOS F?	v_3, v_{av34} (pcphpl)	v_3, v_{av34} > 2,700?	v_3, v_{av34} >1.5*v_{12}/2?	v_{12a} (pcph)	Max v_{12} (pcph)	LOS F?	v_{FO} (pcph)	Max v_{FO} (pcph)	LOS F?
D-1	I-680 NB	Stoneridge Drive	6,681	7,200	No	2,467	No	No	4,215	4,400	No	5,182	7,200	No
D-2	I-680 SB	Stoneridge Drive	8,136	7,200	**Yes**	3,635	Yes	Yes	5,436	4,400	**Yes**	6,609	7,200	No
D-3	I-680 NB	Stoneridge Drive	7,028	7,200	No	2,795	Yes	No	4,328	4,400	No	6,093	7,200	No
D-4	I-680 SB	Stoneridge Drive	5,969	7,200	No	2,542	No	No	3,427	4,400	No	4,622	7,200	No

HCM 2000
Diverge Ramp Junctions
Capacity Analysis

General Information						*Results*		*Speed Estimation*			
	Freeway/ Direction	Off-ramp	v_R (pcph)	Max v_R (pcph)	LOS F?	Density, D (pcplpm)	Level of Service	Int. Var. D_S	Inf. Area S_R (mph)	Out Lns. S_O (mph)	All vehs. S (mph)
D-1	I-680 NB	Stoneridge Drive	1,500	2,100	No	**30.6**	**D**	0.433	57.9	71.1	62.1
D-2	I-680 SB	Stoneridge Drive	1,527	4,100	No	**-**	**F**	-	-	-	-
D-3	I-680 NB	Stoneridge Drive	935	2,100	No	**31.6**	**D**	0.382	59.3	70.2	63.0
D-4	I-680 SB	Stoneridge Drive	1,347	4,100	No	**11.4**	**B**	0.419	58.3	70.8	63.0

APPENDIX E: ALAMEDA CTC MTS ROADWAY ANALYSIS WORKSHEETS

Johnson Drive Economic Development Zone - Alternative 2
Alameda CTC Roadway System Analysis Summary - 2020 PM

Link Location	Segment Limits		A node	B node	# Lanes	Model Volume	Project Trips	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Freeway Segments															
I-580 Eastbound															
Between	Palo Verde Road	Foothill Road	29016	29013	4	8,458	68	8,458	8,526	1.06	1.07	F	F	-	No
Between	Foothill Road	I-680	29015	29030	5	7,656	35	7,656	7,691	0.77	0.77	D	D	No	-
Between	I-680	Hopyard Road	29002	31885	4	6,393	21	6,393	6,414	0.80	0.80	D	D	No	-
Between	Hopyard Road	Hacienda Drive	28992	29047	7	10,828	31	10,828	10,859	0.77	0.78	D	D	No	-
Between	Hacienda Drive	Tassajara Road	29045	28995	6	8,832	85	8,832	8,917	0.74	0.74	C	C	No	-
I-580 Westbound															
Between	Tassajara Road	Hacienda Drive	28986	29046	5	5,275	88	5,275	5,363	0.53	0.54	B	B	No	-
Between	Hacienda Drive	Hopyard Road	29048	28974	5	5,545	58	5,545	5,603	0.55	0.56	B	B	No	-
Between	Hopyard Road	I-680	28976	28982	5	5,793	26	5,793	5,819	0.58	0.58	B	B	No	-
Between	I-680	Foothill Road	28970	28961	5	5,765	47	5,765	5,812	0.58	0.58	B	B	No	-
Between	Foothill Road	Palo Verde Road	28960	28959	4	5,387	68	5,387	5,455	0.67	0.68	C	C	No	-
I-680 Southbound															
Between	Alcosta Boulevard	I-580	28973	29011	5	6,971	112	6,971	7,083	0.70	0.71	C	C	No	-
Between	I-580	Stoneridge Drive	29029	29134	4	4,685	157	4,685	4,842	0.59	0.61	C	C	No	-
Between	Stoneridge Drive	Bernal Ave	31925	29000	3	4,367	127	4,367	4,494	0.73	0.75	C	C	No	-
I-680 Northbound															
Between	Bernal Avenue	Stoneridge Drive	29001	31926	3	4,655	132	4,655	4,787	0.78	0.80	D	D	No	-
Between	Stoneridge Drive	I-580	29135	29003	4	5,190	162	5,190	5,352	0.65	0.67	C	C	No	-
Between	I-580	Alcosta Boulevard	29019	28972	4	5,603	110	5,603	5,713	0.70	0.71	C	C	No	-
Arterials															
Foothill Road/San Ramon Road Southbound															
Between	Amador Valley Boule	Dublin Boulevard	28966	33829	2	667	17	667	684	0.42	0.43	B	B	No	-
Between	Dublin Boulevard	I-580	28962	28964	3	2,842	17	2,842	2,859	1.18	1.19	F	F	-	No
Between	I-580	Stoneridge Drive	28038	33836	2	982	59	982	1,041	0.61	0.65	C	C	No	-
Between	Stoneridge Drive	West Las Positas Bou	31859	31900	1	507	7	507	514	0.63	0.64	C	C	No	-
Foothill Road/San Ramon Road Northbound															
Between	West Las Positas Bou	Stoneridge Drive	31900	31859	1	874	8	874	882	1.09	1.10	F	F	-	No
Between	Stoneridge Drive	I-580	33836	28038	3	565	42	565	607	0.24	0.25	A	A	No	-
Between	I-580	Dublin Boulevard	28964	28962	3	918	15	918	933	0.38	0.39	B	B	No	-
Between	Dublin Boulevard	Amador Valley Boulev	33826	28966	3	2,106	15	2,106	2,121	0.88	0.88	D	D	No	-

Johnson Drive Economic Development Zone - Alternative 2
Alameda CTC Roadway System Analysis Summary - 2020 PM

Link Location	Segment Limits		A node	B node	# Lanes	Model Volume	Project Trips	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Stoneridge Drive Eastbound															
Between	Foothill Road	Springdale Avenue	31797	29008	3	216	65	216	281	0.09	0.12	A	A	No	-
Between	Springdale Avenue	I-680	33839	29007	3	802	102	802	904	0.33	0.38	A	B	No	-
Between	I-680	Johnson Drive	29137	28991	3	1,186	478	1,186	1,664	0.49	0.69	B	C	No	-
Between	Johnson Drive	Franklin Drive	28991	27981	3	1,270	133	1,270	1,403	0.53	0.58	B	B	No	-
Between	Franklin Drive	Hopyard Road	33849	28990	3	1,001	226	1,001	1,227	0.42	0.51	B	B	No	-
Between	Hopyard Road	Hacienda Drive	33865	29071	2	417	40	417	457	0.26	0.29	A	A	No	-
Between	Hacienda Drive	West Las Positas Bou	33927	31913	3	265	31	265	296	0.11	0.12	A	A	No	-
Between	West Las Positas Bou	Santa Rita Road	33924	31920	3	310	17	310	327	0.13	0.14	A	A	No	-
Stoneridge Drive Westbound															
Between	Santa Rita Road	West Las Positas Bou	31920	33924	3	252	20	252	272	0.11	0.11	A	A	No	-
Between	West Las Positas Bou	Hacienda Drive	31913	33927	2	362	37	362	399	0.23	0.25	A	A	No	-
Between	Hacienda Drive	Hopyard Road	33853	33892	3	449	44	449	493	0.19	0.21	A	A	No	-
Between	Hopyard Road	Franklin Drive	28990	33849	3	1,003	130	1,003	1,133	0.42	0.47	B	B	No	-
Between	Franklin Drive	Johnson Drive	27981	28991	3	1,192	245	1,192	1,437	0.50	0.60	B	C	No	-
Between	Johnson Drive	I-680	28991	29137	3	1,353	463	1,353	1,816	0.56	0.76	B	D	No	-
Between	I-680	Springdale Avenue	29007	33839	3	930	81	930	1,011	0.39	0.42	B	B	No	-
Between	Springdale Avenue	Foothill Road	29008	31797	3	280	49	280	329	0.12	0.14	A	A	No	-
Hopyard Road/Dougherty Road Southbound															
Between	Amador Valley Boulev	Dublin Boulevard	28984	33947	3	513	28	513	541	0.21	0.23	A	A	No	-
Between	Dublin Boulevard	I-580	28975	28977	3	2,718	32	2,718	2,750	1.13	1.15	F	F	-	No
Between	I-580	Owens Drive	28993	33846	3	1,022	97	1,022	1,119	0.43	0.47	B	B	No	-
Between	Owens Drive	Stoneridge Drive	28981	31809	3	822	79	822	901	0.34	0.38	A	B	No	-
Between	Stoneridge Drive	West Las Positas Bou	33855	33856	3	1,076	27	1,076	1,103	0.45	0.46	B	B	No	-
Between	West Las Positas Bou	Valley Avenue	29004	33872	3	995	27	995	1,022	0.41	0.43	B	B	No	-
Hopyard Road/Dougherty Road Northbound															
Between	Valley Avenue	West Las Positas Bou	33872	29004	3	1,715	32	1,715	1,747	0.71	0.73	C	C	No	-
Between	West Las Positas Bou	Stoneridge Drive	33856	33855	3	811	32	811	843	0.34	0.35	A	B	No	-
Between	Stoneridge Drive	Owens Drive	31809	28981	3	1,029	74	1,029	1,103	0.43	0.46	B	B	No	-
Between	Owens Drive	I-580	33846	28993	3	1,885	77	1,885	1,962	0.79	0.82	D	D	No	-
Between	I-580	Dublin Boulevard	28977	28975	4	1,456	27	1,456	1,483	0.45	0.46	B	B	No	-
Between	Dublin Boulevard	Amador Valley Boulev	33947	28984	3	1,750	24	1,750	1,774	0.73	0.74	C	C	No	-

Fehr & Peers, 2015.

Johnson Drive Economic Development Zone - Alternative 2
Alameda CTC Roadway System Analysis Summary - 2040 PM

Link Location	Segment Limits		A node	B node	# Lanes	Model Volume	Project Trips	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Freeway Segments															
I-580 Eastbound															
Between	Palo Verde Road	Foothill Road	29016	29013	4	9,172	68	9,172	9,240	1.15	1.16	F	F	-	No
Between	Foothill Road	I-680	29015	29030	5	8,258	35	8,258	8,293	0.83	0.83	D	D	No	-
Between	I-680	Hopyard Road	29002	31885	4	6,925	21	6,925	6,946	0.87	0.87	D	D	No	-
Between	Hopyard Road	Hacienda Drive	28992	29047	7	10,594	31	10,594	10,625	0.76	0.76	D	D	No	-
Between	Hacienda Drive	Tassajara Road	29045	28995	6	9,459	85	9,459	9,544	0.79	0.80	D	D	No	-
I-580 Westbound															
Between	Tassajara Road	Hacienda Drive	28986	29046	5	6,228	88	6,228	6,316	0.62	0.63	C	C	No	-
Between	Hacienda Drive	Hopyard Road	29048	28974	5	6,302	58	6,302	6,360	0.63	0.64	C	C	No	-
Between	Hopyard Road	I-680	28976	28982	5	5,990	26	5,990	6,016	0.60	0.60	C	C	No	-
Between	I-680	Foothill Road	28970	28961	5	6,084	47	6,084	6,131	0.61	0.61	C	C	No	-
Between	Foothill Road	Palo Verde Road	28960	28959	4	6,011	68	6,011	6,079	0.75	0.76	C	D	No	-
I-680 Southbound															
Between	Alcosta Boulevard	I-580	28973	29011	5	6,555	112	6,555	6,667	0.66	0.67	C	C	No	-
Between	I-580	Stoneridge Drive	29029	29134	4	4,574	157	4,574	4,731	0.57	0.59	B	C	No	-
Between	Stoneridge Drive	Bernal Ave	31925	29000	3	4,173	127	4,173	4,300	0.70	0.72	C	C	No	-
I-680 Northbound															
Between	Bernal Avenue	Stoneridge Drive	29001	31926	3	4,141	132	4,141	4,273	0.69	0.71	C	C	No	-
Between	Stoneridge Drive	I-580	29135	29003	4	4,626	162	4,626	4,788	0.58	0.60	B	C	No	-
Between	I-580	Alcosta Boulevard	29019	28972	4	5,830	110	5,830	5,940	0.73	0.74	C	C	No	-
Arterials															
Foothill Road/San Ramon Road Southbound															
Between	Amador Valley Boulev	Dublin Boulevard	28966	33829	2	674	17	674	691	0.42	0.43	B	B	No	-
Between	Dublin Boulevard	I-580	28962	28964	3	3,283	17	3,283	3,300	1.37	1.38	F	F	-	No
Between	I-580	Stoneridge Drive	28038	33836	2	948	59	948	1,007	0.59	0.63	C	C	No	-
Between	Stoneridge Drive	West Las Positas Bou	31859	31900	1	567	7	567	574	0.71	0.72	C	C	No	-
Foothill Road/San Ramon Road Northbound															
Between	West Las Positas Bou	Stoneridge Drive	31900	31859	1	874	8	874	882	1.09	1.10	F	F	-	No
Between	Stoneridge Drive	I-580	33836	28038	3	672	42	672	714	0.28	0.30	A	A	No	-
Between	I-580	Dublin Boulevard	28964	28962	3	1,147	15	1,147	1,162	0.48	0.48	B	B	No	-
Between	Dublin Boulevard	Amador Valley Boulev	33826	28966	3	2,147	15	2,147	2,162	0.89	0.90	D	D	No	-

Johnson Drive Economic Development Zone - Alternative 2
Alameda CTC Roadway System Analysis Summary - 2040 PM

Link Location	Segment Limits		A node	B node	# Lanes	Model Volume	Project Trips	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change from LOS E or better to LOS F	LOS F and Change in V/C >3%
Stoneridge Drive Eastbound															
Between	Foothill Road	Springdale Avenue	31797	29008	3	273	65	273	338	0.11	0.14	A	A	No	-
Between	Springdale Avenue	I-680	33839	29007	3	975	102	975	1,077	0.41	0.45	B	B	No	-
Between	I-680	Johnson Drive	29137	28991	3	1,576	478	1,576	2,054	0.66	0.86	C	D	No	-
Between	Johnson Drive	Franklin Drive	28991	27981	3	1,664	133	1,664	1,797	0.69	0.75	C	C	No	-
Between	Franklin Drive	Hopyard Road	33849	28990	3	1,403	226	1,403	1,629	0.58	0.68	B	C	No	-
Between	Hopyard Road	Hacienda Drive	33892	33853	3	662	40	662	702	0.28	0.29	A	A	No	-
Between	Hacienda Drive	West Las Positas Bou	33927	31913	3	325	31	325	356	0.14	0.15	A	A	No	-
Between	West Las Positas Bou	Santa Rita Road	33924	31920	3	513	17	513	530	0.21	0.22	A	A	No	-
Stoneridge Drive Westbound															
Between	Santa Rita Road	West Las Positas Bou	31920	33924	3	310	20	310	330	0.13	0.14	A	A	No	-
Between	West Las Positas Bou	Hacienda Drive	31913	33927	2	564	37	564	601	0.35	0.38	B	B	No	-
Between	Hacienda Drive	Hopyard Road	29071	33865	3	467	44	467	511	0.19	0.21	A	A	No	-
Between	Hopyard Road	Franklin Drive	28990	33849	3	1,189	130	1,189	1,319	0.50	0.55	B	B	No	-
Between	Franklin Drive	Johnson Drive	27981	28991	3	1,368	245	1,368	1,613	0.57	0.67	B	C	No	-
Between	Johnson Drive	I-680	28991	29137	3	1,523	463	1,523	1,986	0.63	0.83	C	D	No	-
Between	I-680	Springdale Avenue	29007	33839	3	1,173	81	1,173	1,254	0.49	0.52	B	B	No	-
Between	Springdale Avenue	Foothill Road	29008	31797	3	275	49	275	324	0.11	0.14	A	A	No	-
Hopyard Road/Dougherty Road Southbound															
Between	Amador Valley Boulev	Dublin Boulevard	28984	33947	3	616	28	616	644	0.26	0.27	A	A	No	-
Between	Dublin Boulevard	I-580	28975	28977	3	3,266	32	3,266	3,298	1.36	1.37	F	F	-	No
Between	I-580	Owens Drive	28993	33846	3	1,204	97	1,204	1,301	0.50	0.54	B	B	No	-
Between	Owens Drive	Stoneridge Drive	28981	31809	3	845	79	845	924	0.35	0.39	B	B	No	-
Between	Stoneridge Drive	West Las Positas Bou	33855	33856	3	1,244	27	1,244	1,271	0.52	0.53	B	B	No	-
Between	West Las Positas Bou	Valley Avenue	29004	33872	3	1,064	27	1,064	1,091	0.44	0.45	B	B	No	-
Hopyard Road/Dougherty Road Northbound															
Between	Valley Avenue	West Las Positas Bou	33872	29004	3	1,885	32	1,885	1,917	0.79	0.80	D	D	No	-
Between	West Las Positas Bou	Stoneridge Drive	33856	33855	3	860	32	860	892	0.36	0.37	B	B	No	-
Between	Stoneridge Drive	Owens Drive	31809	28981	3	1,086	74	1,086	1,160	0.45	0.48	B	B	No	-
Between	Owens Drive	I-580	33846	28993	3	2,237	77	2,237	2,314	0.93	0.96	E	E	No	-
Between	I-580	Dublin Boulevard	28977	28975	4	1,662	27	1,662	1,689	0.52	0.53	B	B	No	-
Between	Dublin Boulevard	Amador Valley Boulev	33947	28984	3	2,335	24	2,335	2,359	0.97	0.98	E	E	No	-

Fehr & Peers, 2015.

APPENDIX F: LAND USE STUDY
(see SEIR Appendix C)

Appendix H

Trip Generation Estimate Supporting Documentation (Kittelson & Associates, Inc., 2014)

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
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MEMORANDUM

Date:	October 3, 2014	Project #: 18305.0
To:	Adam Weinstein, Planning Manager/Deputy Director of Community Development City of Pleasanton	
From:	Casey Bergh and Joe Bessman	
Project:	Potential Costco Wholesale Development – Pleasanton, California	
Subject:	Trip Generation Estimate Supporting Documentation	
cc:	Jenifer Murillo, Costco Wholesale Mike Tassano, City of Pleasanton Kathrin Tellez, Fehr & Peers	

As requested, this memorandum provides trip generation data associated with Costco Wholesale to support the traffic analysis for the Johnson Drive Economic Development Zone (EDZ) Draft Environment Impact Report (EIR).

As discussed during a meeting with the City on September 29, 2014, Kittelson & Associates, Inc. (KAI) maintains a detailed transportation database of travel characteristics for Costco. The database includes trip generation data collected at Costco warehouses throughout the United States. Based on Costco-specific trip generation data, we recommend the EIR use trip generation estimates shown in Table 1. These trip estimates exceed peak hour trip generation estimates for discount club land use based on trip generation data in the Institute of Transportation Engineers' (ITE) *Trip Generation, 9th Edition*. This memorandum provides background information to support the recommended trip generation rate.

Table 1 - Estimated Pleasanton Costco Trip Generation Potential

Land Use	Size (SF)	Weekday Daily Trips	Weekday AM Peak Hour of Adjacent Traffic			Weekday PM Peak Hour of Adjacent Traffic			Saturday Peak Hour of Adjacent Traffic		
			Total	In	Out	Total	In	Out	Total	In	Out
Costco Warehouse with Fuel[1]	148,000	10,713	353	195	158	1,058	512	546	1,409	717	692
Pass-by Trips		*(3,750)*	*(120)*	*(66)*	*(54)*	*(372)*	*(180)*	*(192)*	(415)	(211)	(204)
Diverted Trips		*Limited Data Available*				*(334)*	*(162)*	*(172)*	(278)	(141)	(137)
Net New Trips		**6,963**	**233**	**129**	**104**	**352**	**170**	**182**	**716**	**365**	**351**

[1]Costco daily trip data was based on 9 site surveys, weekday a.m. trip data is based on 1 site survey, weekday p.m. data is based on 27 site surveys, and Saturday trip data is based on 18 site surveys. All sites assessed were Costco warehouses with fuel centers (12 to 20 fueling positions) located throughout the US. Diverted trip data was only available for the weekday evening commute hour based on patron surveys.

Costco Transportation Database

For the past 15 years, KAI has maintained a database of traffic data and travel characteristics for Costco Wholesale. The database contains transportation information such as trip rates, trip type percentages, and parking demand for Costco locations in the United States. A large portion of the data is from existing Costco sites in California. The database is updated and refined each time new Costco traffic counts or information become available to KAI.

In order to evaluate the anticipated transportation characteristics of the potential "Discount Club" we recommend the Costco database information be used since it provides use-specific data that most accurately represents the anticipated traffic characteristics of the unique development type. Using the information from the database results in a higher trip generation estimate for the site, thus providing a more conservative analysis than is achieved using the standard ITE trip generation rates. Costco trip characteristics data helps to show that while the access roadway/intersection sizing needs to accommodate this higher trip intensity, the impacts beyond the major accessways have lower impacts owing to the pass-by and diverted trips.

Costco has invested significant effort into developing this use-specific trip generation database for both their warehouses and their fuel stations because of the unique characteristics of Costco customer travel that exist due to membership requirements and the nature of Costco sales. These unique elements apply to the trip generation for Costco warehouses, Costco Gasoline fuel stations, and the interaction of trips between the two.

Costco Trip Characteristics

In addition to total trips, the Costco database also contains detailed information regarding trip type based on customer surveys collected at existing Costco locations. The unique nature of Costco operations and its membership requirements result in particular trip characteristics. Key findings from trip type studies conducted at Costco locations are discussed below.

INTERNAL CAPTURE

There is a significant proportion of internal capture trips between the Costco fuel stations and the warehouses. Internal capture trips account for those members who patronize both the warehouse and the gasoline pumps during a single visit to the Costco site. As such, although they account for a trip to both the warehouse and the fuel station, they only account for one overall vehicle trip to the site and on the surrounding transportation system.

PASS-BY AND DIVERTED TRIP CAPTURE

Pass-by and diverted trips represent members (and trips) that are currently traveling on the surrounding street network for some other primary purpose (such as a trip from work to home) and stop into the site during their normal travel. Typically, pass-by trips would have an impact only at the site-access driveways, whereas the impact of diverted trips could extend throughout all or portions of the study area intersections (these would be modeled similar to net new trips at many or all of the study area intersections in the operations models). The key difference between inclusion and omission of the diverted trips is related to the overall vehicle miles traveled (VMT), as diverted trips do not create the same system impacts (air quality, noise, and freeway impacts) that entirely new trips to the system could create.

On average, 67% of customer surveyed at Costco locations were identified as either a pass-by or diverted trip from the surrounding street system (or, said another way, only 33% of the trips were identified as primary trips to Costco). The specific breakdown of pass-by and diverted trips within this overall percentage will vary by site, depending on its location.

The previously surveyed Costco buildings are sited in a variety of locations, some adjacent to freeways/arterials, others are located a couple blocks away. This variation in store locations results in differences in diverted and pass-by trips from store to store. For example, sites adjacent to major arterial roadways tend to exhibit a high percentage of pass-by trips and a lower percentage of diverted trips. Similarly, Costco facilities located a block or two away from a freeway (such as the Pleasanton site) tend to experience a higher percentage of diverted trips. Given these factors, diverted and pass-by trips should be considered together, with engineering judgment used to identify how these two trip characteristics should be applied.

In the case of the potential Pleasanton site on Johnson Road, the proportion of pass-by trips will be very low and it is likely that the majority of the 67% will be diverted trip capture from Stoneridge Drive, Hopyard Road, and adjacent interstates facilities (I-580 and I-680).

FUEL CENTER CHARACTERISTICS

The Costco Wholesale trip generation rates shown in Table 1 inherently account for fuel station trips within the overall rate. However, supplemental information on isolated fuel centers is provided in Appendix A to highlight the trip characteristics that can apply to the Pleasanton site during the weekday a.m. peak hour, when the Costco warehouse is closed.

Similar to the warehouse data, trip generation data for Costco fuel centers has been collected by manual or tube vehicle counts at existing Costco Gasoline facilities. Information related to internal trip capture and pass-by trip percentages was collected by interviewing Costco Gasoline customers about their trip patterns as they are purchasing fuel. Because Costco member cards are also scanned as part of fuel center and Costco purchases, transaction data was also matched up to identify internalization rates.

We trust this provides you with sufficient detail on the recommended trip generation estimate to be used to evaluate the "Discount Club" scenarios as part of the Johnson Drive EDZ Draft EIR. If you have any questions or require additional detail, please contact us at cbergh@kittelson.com or (541) 312-8300.

Appendix A Fuel Center Trip Characteristics

COSTCO FUEL STATION TRIP CHARACTERISTICS

Data collected at existing Costco Fuel Stations does not reflect the combined warehouse and fuel center trip characteristics. The surveys indicate the following general trip generation characteristics:

- Costco Gasoline fuel stations are an ancillary use for the warehouse and there is a large proportion of shared trips between the two.
- The fuel stations are member-only and require a membership card for pump activation.
- Credit/debit card is the only method of payment at the fuel stations and they do not provide any other services (automotive or convenience) besides gas.
- The fuel stations are staffed by a minimum of one attendant who is trained to help members operate the pumps and direct waiting vehicles to open pumps to manage on-site queuing and circulation.

The peak activity time on-site at Costco Fuel Stations occurs during the weekend (Saturday) midday peak (between noon and 2 p.m.), as shown in Table A1.

Table A1 - Costco Fuel Center Trip Characteristics

Trip Characteristics	Weekday Daily	Weekday AM Peak Hour	Weekday PM Peak Hour	Weekend Peak Hour
Total Trip Rate	157.3 trips/ fuel position	22.8 trips/ fuel position	28.6 trips/ fuel position	29.4 trips/ fuel position
Internal Trip Percentage	53%	0%*	50%	59%
Pass-by Trip Percentage**	N/A	97%***	28%	40%

* Warehouse not open during weekday a.m. peak period
** Percentage of External Trips
*** Small sample size - recommended use General ITE rate (58%) in lieu of the 97% observed at Costco in order to ensure a conservative analysis.

Table A1 summarizes the trip generation characteristic observed by traffic counts and customer surveys at other Costco Gasoline facilities for total gas station trip generation rates, internal trip capture between the fuel station and the warehouse, and pass-by trip capture from the surrounding street system.

As indicated in the table, the unique nature of Costco operations and its membership requirements result in different trip characteristics than those observed at the standard fuel stations summarized in ITE *Trip Generation*. The percentage of pass-by trips at Costco fuel stations is considerably lower than that reported in ITE *Trip Generation* for typical fuel stations. Correspondingly, membership requirements also have a significant effect on trip internalization (or sharing of trips) between the warehouse and the fuel station. Fewer people exclusively visit a Costco fuel station during the

evening commute period (in comparison to a typical stand-alone station) because they have another primary purpose for visiting the site (that being a trip to the warehouse).

Internal Fuel Station Trips

A key finding from the studies conducted at Costco facilities is that approximately 50 percent of the weekday p.m. peak hour trips to and from Costco fueling stations are internal capture trips. Internal capture trips account for those customers who patronize both the warehouse and the gasoline pumps during a single visit to the Costco site. As such, although they account for a trip to both the warehouse and the fuel station, they only result in one overall vehicle trip to the site and on the surrounding transportation system. Table A1 shows that, based on studies including customer surveys at Costco fuel stations and membership card transaction data, on average 50 percent of the customers buying gas during the weekday p.m. peak hour are customers whose main purpose to the site is to visit the Costco warehouse. At some sites this number ranges as high as 75 percent but for the purposes of analysis a conservative average estimate is typically used.

Pass-by Fuel Center Trips

Table A1 shows that on average 28 percent of the customers buying gas during the weekday p.m. peak hour can be classified as pass-by trips from the surrounding street system. This is lower than the average quoted in the ITE *Trip Generation, 9th Edition* for typical service stations and, again, is attributable to the unique travel characteristics that result from Costco's membership requirements.