EDWARD L. PACK ASSOCIATES, INC.

1975 HAMILTON AVENUE
SUITE 26
SAN JOSE, CA 95125

Acoustical Consultants

TEL: 408-371-1195
FAX: 408-371-1196
www.packassociates.com

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VINTAGE – Auf der Maur/Rickenbach

EXHIBIT B

NOISE ASSESSMENT STUDY
FOR THE
VINTAGE SUSTAINABLE MIXED-USE VILLAGE

BERNAL AVENUE

CITY OF PLEASANTON

Prepared for
E & S Ring Management

Prepared by
Jeffrey K. Pack

April 26, 2013
Project No. 44-013-1

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I. Executive Summary

This report presents the results of a noise assessment study, in compliance with the California Environmental Quality Act, for the Vintage sustainable mixed-use village development at Bernal Avenue and Stanley Boulevard in Pleasanton. This study includes the analysis of traffic noise impacts to the proposed development site, project-generated traffic noise impacts to the existing noise sensitive receptors in the project vicinity, project construction noise and vibration impacts to nearby sensitive receptors and noise impacts to the project residences from commercial operations at the project. The results of this analysis reveal that traffic noise impacts to the project will be less than significant, project-generated traffic noise impacts to existing receptors will be less than significant, construction noise and vibration will be less than significant and commercial center noise affecting project residences will be less than significant. Noise and vibration mitigation measures will not be required.

The following report includes background information on acoustics, the noise standards applicable to the project, existing and future noise exposure impacts to the project, project-generated noise impacts to existing receptors and to project residences, and project construction noise and vibration impacts.

Table I provides the evaluation of the noise impacts to the project and from the planned project to noise sensitive receptors.

TABLE I				
CEQA Evaluation Table				
Would the Project:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
result in exposure of persons to or the generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
result in exposure of persons to or the generation of excessive ground-borne vibration or ground-borne noise levels?			X	
result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public-use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
For a project located within the vicinity of a private airstrip, would the project expose people residing or working the project area to excessive noise levels?				X

II. Background Information on Acoustics

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing.

Most of the sounds which we hear in our normal environment do not consist of a single frequency, but rather a broad range of frequencies. As humans do not have perfect hearing, environmental sound measuring instruments have an electrical filter built in so that the instrument's detector replicates human hearing. This filter is called the "A-weighting" network and filters out low and very high frequencies. All environmental noise is reported in terms of A-weighted decibels, notated as "dBA". All sound levels used in this report are A-weighted unless otherwise noted. Table II, below, shows the typical human response and noise sources for A-weighted noise levels.

TABLE II

The A-Weighted Decibel Scale, Human Response, and Common Noise Sources

Noise Level, dBA	Human Response	Noise Source
120-150+	Painfully Loud	Sonic Boom (140 dBA)
100-120	Physical Discomfort	Discotheque (115 dBA) Motorcycle at 20 ft. (110 dBA) Power Mower (100 dBA)
70-100	Annoying	Diesel Pump at 100 ft. (95 dBA) Freight Train at 50 ft. (90 dBA) Food Blender (90 dBA) Jet Plane at 1000 ft. (85 dBA) Freeway at 50 ft. (80 dBA) Alarm Clock (80 dBA)
50-70	Intrusive	Average Traffic at 100 ft. (70 dBA) Vacuum Cleaner (70 dBA) Typewriter (65 dBA) Loud Conversation (60 dBA)
0-50	Quiet	Normal Conversation (50 dBA) Light Traffic at 100 ft. (45 dBA) Refrigerator (45 dBA) Desktop Computer (40 dBA) Whispering (35 dBA) Leaves Rustling (10 dBA) Threshold of Hearing (0 dBA)

Although the A-weighted noise level may adequately indicate the level of noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a mixture of noise from distant sources that create a relatively steady background noise from which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, L_1, L_{10}, L_{50} and L_{90} are commonly used. They are the A-weighted noise levels exceeded for 1%, 10%, 50% and 90% of a stated time period. The continuous equivalent-energy level (L_{eq}) is that level of a steady state noise which has the same sound energy as a time-varying noise. It is often considered the average noise level and is used to calculate the Day-Night Levels (DNL) and the Community Noise Equivalent Level (CNEL) described below.

In determining the daily level of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes very noticeable. Further, most people sleep at night and are very sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, the Day-Night Level (DNL) noise descriptor was developed. The DNL is also called the L_{dn}. Either is acceptable, however, DNL is more popular worldwide. The DNL divides the 24-hour day into the daytime period of 7:00 a.m. to 10:00 p.m. and the nighttime period of 10:00 p.m. to 7:00 a.m. The nighttime noise levels are penalized by 10 dB to account for the greater sensitivity to noise at night. The Community Noise Equivalent Level (CNEL) is another 24-hour average which includes a 5 dB evening (7:00 p.m. - 10:00 p.m.) penalty and a 10 dB nighttime penalty. Both the DNL and the CNEL average the daytime, evening and nighttime noise levels over a 24-hour period to attain a single digit *noise exposure*. The proper notations for the Day-Night Level and the Community Noise Equivalent Level are dB DNL and dB CNEL, respectively, as they can only be calculated using A-weighted decibels. It is, therefore, considered redundant to notate dB(A) DNL or dB(A) CNEL. Noise exposures are always rounded to the nearest whole number.

The effects of noise on people can be listed in three general categories:

- subjective effects of annoyance, nuisance, dissatisfaction;
- interference with activities such as speech, sleep, learning, relaxing;
- physiological effects such as startling, hearing loss.

The levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants, airports, etc., can experience noise in the last category. Unfortunately, there is, as yet, no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily due to the wide variation in individual thresholds of annoyance and differing individual past experiences with noise.

An important way to determine a person's subjective reaction to a new noise is to compare it to the existing environment to which one has adapted, i.e., the "ambient". In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by the receptors.

With regard to increases in A-weighted noise level, the Environmental Protection Agency has determined the following relationships that will be helpful in understanding this report.

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

The adding or subtracting of sound levels is not simple arithmetic. The sound levels, in decibels, must be converted to Bels, the anti-log's of which are then calculated. The manipulation is then performed (arithmetic addition or subtraction), the logarithm of the sum or difference is calculated. The final number is then multiplied by 10 to convert Bels to decibels. The formula for adding decibels is as follows:

$$\text{Sum} = 10\log(10^{SL/10} + 10^{SL/10}) \qquad \text{where, SL is the Sound Level in decibels.}$$

For example, 60 dB + 60 dB = 63 dB, and 60 dB + 50 dB = 60 dB. Two sound sources of the same level are barely noisier than just one of the sources by itself. When one source is 10 dB higher than the other, the less noisy source does not add to the noisier source.

III. Noise Standards, Goals & Policies

A. City of Pleasanton General Plan Noise Element

The noise assessment results presented in the findings were evaluated against the City of Pleasanton Noise Element standards, Ref. (a), which utilize the Day-Night Level (DNL) 24-hour noise descriptor, and specify an exterior limit 65 decibels (dB) DNL for multi-family common areas, such as the swimming pool. Noise standards are not applied to multi-family balconies, decks or front yards. When the noise source is a railroad, the exterior noise exposure limit is 70 dB DNL.

Residential interiors are limited to 45 dB DNL for all sources. The DNL is a 24-hour time weighted average noise descriptor commonly used to describe community noise environments.

In addition to the 24-hour noise exposure standards, when the noise source is a railroad, maximum noise level limits of 50 dBA for bedrooms and 55 dBA for other living spaces are specified.

The noise standard for business and commercial exterior areas is 70 dB DNL.

The City of Pleasanton Municipal Code, Title 9, "Health and Safety", Chapter 9.04, Ref. (b), contains noise limits for commercial use noise impacts to adjacent residences. The Noise Ordinance limits noise created between 10:00 p.m. and 6:00 a.m. to 60 dBA at the property plane separating the two uses.

Chapter 9.04 also contain limits on construction noise. These limits include that all construction is limited to 8:00 a.m. to 5:00 p.m. Monday through Saturday.

B. State of California, Title 24

The Title 24 standards, Ref. (c), also use the DNL descriptor and specify that when the exterior noise exposures exceed 60 dB DNL at planned dwelling units an acoustical analysis must be performed to limit interior noise exposures to 45 dB DNL or lower.

The Title 24 standards also specify minimum noise insulation ratings for common partitions separating different dwelling units and dwelling units from common spaces. The standards specify that common walls and floor/ceiling assemblies must have a design Sound Transmission Class (STC) rating of 50 or higher. In addition, common floor/ceiling assemblies must have a design Impact Insulation Class (IIC) rating of 50 or higher. As design details for the interior partitions of the project were not available at the time of this study, an evaluation of the interior partitions has not been made.

C. Supplemental Environmental Impact Report

In addition to regulatory noise standards related to noise impacts to the project, this study evaluates the potential project-generated noise impacts to adjacent and nearby receptors, per the Final Supplemental Environmental Impact Report mitigation measures 4.J-1 through 4.J-9, Ref. (d). Following are the noise mitigation measures from the FSEIR.

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 required 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 Pleasanton for approval prior to the issuance of building permits.

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 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 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.

Mitigation Measure 4.J-2: The City shall require developers of 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 limits established in Table 4.J-4. It is expected that vibration mitigation for all project sites will be reasonable and feasible.

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 DNL and 50/55 dBA Lmax exterior and interior noise exposure criteria, respectively, using appropriate housing site design and building construction improvements.

Mitigation Measure 4.J-5a: Prior to PUD approval, if a potential site for rezoning would add traffic noise in excess of 55 dBA as described in Table 4.J-6, the project applicant shall conduct an off-site noise study to determine the project's 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 DNL. 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 DNL/CNEL or lower.

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 DNL at these activity areas. This shall be done through site orientation (i.e., location of activity areas away from roadways or shielded by project buildings) or with the inclusion of appropriate noise barriers. Prior to PUD approval, 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 DNL within these spaces.

Mitigation Measure 4.J-6a: For all potential sites for rezoning the City shall require site-specific acoustical assessment 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: Not applicable to this project site.

Mitigation Measure 4.J-6c: For all potential sites for rezoning the City shall require noise disclosures and noise complaint procedures for new residents at the project site. The requirement shall include a) a disclosure of 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.

Mitigation Measure 4.J-7: Not applicable to this site.

Mitigation Measure 4.J-9: Prior to PUD approval, if a potential site for rezoning would add traffic noise in excess of 55 dBA as described in Table 4.J-7, the project applicant shall conduct an off-site noise study to determine the project's contribution to off-site roadway noise and contribute its fair-share to mitigate the established noise impact.

D. California Environmental Quality Act (CEQA)

The project-generated noise exposures were evaluated against the guidelines of the California Environmental Quality Act (CEQA). CEQA does not limit noise levels or noise exposures nor does it quantify noise exposure or noise level increases over the ambient to define noise impacts. CEQA evaluates a project as a significant noise impact if it "...caused a substantial increases in the ambient noise levels...". The quantification of the threshold of significance is left up to the local jurisdiction.

The City of Pleasanton, however, does not provide a threshold of significance in the General Plan. Therefore, for the purposes of this study, thresholds of significance used by many other local jurisdictions are recommended for adoption for this project. The thresholds of significance shall be applied at the existing residential area to the west and south of the site.

These thresholds are:

(a) causing the DNL in existing residential areas to increase by 5 dB or more and remain below 60 dB DNL;

(b) causing the DNL in existing residential areas to increase by 3 dB or more and, thereby, exceed 60 dB DNL;

(c) causing the DNL in existing residential areas to increase by 1 dB or more if the current noise exposure exceeds 60 dB DNL.

If the project causes any of the above three criteria to occur, the project will be considered to have significant noise impacts to the areas where it occurs and mitigation measures will be required.

IV. Acoustical Setting

A. Site, Traffic and Railroad Descriptions

The planned development site is located on the southeast quadrant of the Stanley Boulevard and Bernal Avenue intersection in Pleasanton. The vacant site is relatively flat. Bernal Avenue is primarily at-grade with the site with the exception of the area near the intersection where the road slopes down to pass under the UPRR tracks. Stanley Boulevard likewise is at-grade with the site except near the intersection where it also slopes down to meet the Bernal Avenue grade. Surrounding land uses include the Congregation Beth Emek to the south, the Vineyard Villas mobile home park to the southeast, various commercial uses across Bernal Avenue to the west, a PG&E substation adjacent to the east and the truck rental company across Stanley Boulevard and the UPRR line to the north.

The primary noise sources at the site are traffic on Stanley Boulevard and Bernal Avenue. Stanley Boulevard carries existing (2007) Average Daily Traffic (ADT) volume of 35,000 vehicles. Bernal Avenue carries an ADT of 18,300 vehicles, as reported in the City of Pleasanton Noise Element.

A Union Pacific Railroad line runs parallel with Stanley Boulevard on the north side of the street approximately 205 ft. from the centerline of the road. The UPRR line carries 5-11 freight trains per day and the trains may run at any time as they are unscheduled. The Altamont Commuter Express (ACE) train also uses this line and operates three westbound trains in the morning between 5:00 a.m.-8:00 a.m. and three eastbound trains in the evening between 5:00 p.m. - 8:00 p.m.

B. Project Description

Upon completion of the project, the site will be occupied by 345 apartment units in 17 residential buildings, as shown on the Site Plan, Ref. (e). Cluster 1 will have eight 3-story buildings, Cluster 2 will be one 3-story building on a podium and Cluster 3 will have eight 3-story buildings. The project will also have 4 commercial/retail buildings at the portion of the site near the intersection. Ingress and egress to the development will be by way of project access streets off the Stanley Boulevard and Bernal Avenue. A copy of the Site Plan is shown on page 13.

Included in the project description are noise control measures designed to yield compliance with the City of Pleasanton Noise Element and Noise Ordinance, the FSEIR, Title 24 and CEQA, Ref. (f). These measures include;

- No loading dock deliveries or activity between 10:00 p.m. and 6:00 a.m. are rears of the retail buildings of the commercial portion of the project to comply with the Pleasanton Noise Ordinance.

- All roof top mechanical equipment at the commercial project with motors greater than ¼ hp or with fans generating air flow greater than 1,000 CFM shall be screened from view from the project residences.

- Maintain closed at all time all windows and doors for living spaces within 460 ft. of the centerline of Stanley Boulevard and with a direct or side view of the road. Install windows rated minimum Sound Transmission Class (STC) 33 at spaces within 180 ft. of the Stanley Boulevard centerline or within 140 ft. of the Bernal Avenue centerline. Install windows and doors rated minimum STC 30 these spaces between 180 ft. and 320 ft. of the Stanley Boulevard centerline.

- Construction of the project shall comply with the requirements of the City of Pleasanton Noise Ordinance.

FIGURE 1

V. Noise Impacts to the Project Residential Site

A. Analysis of the Noise Levels

To determine the existing noise environment at the site, on-site noise level measurements were made at two locations, as shown on Figure 3, below. Location 1 was 95 ft. from the centerline of Stanley Boulevard along the east property line. Location 2 was 55 ft. from the centerline of Bernal Avenue near the Nevada Court intersection. These locations were chosen for security of the sound measuring equipment. The noise level measurements were made for 48 continuous hours on June 6-8, 2012 and were recorded and analyzed using Larson-Davis Model 812 Precision Integrating Sound Level Meters. The meters yield, by direct readout, a series of descriptors of the sound levels versus time and include the L_1, L_{10}, L_{50}, and L_{90}, i.e., those levels that are exceeded 1%, 10%, 50%, and 90% of the time. Also measured were the maximum and minimum levels, and the continuous equivalent-energy levels (L_{eq}), which are used to calculate the DNL. The results of the measurements are shown in the data tables in Appendix C.

FIGURE 2

As shown in the data tables in Appendix C, the L_{eq}'s at Location 1 on Day 1 of the measurements ranged from 63.1 to 71.6 dBA during the daytime and from 50.8 to 63.4 dBA at night. On Day 2, the L_{eq}'s ranged from 62.7 to 70.9 dBA during the daytime and from 51.0 to 63.7 dBA at night.

At measurement Location 2 along Bernal Avenue, the L_{eq}'s ranged from 64.0 to 70.4 dBA during the daytime and from 53.9 to 66.6 dBA at night. On Day 2, the L_{eq}'s ranged from 63.9 to 70.5 dBA during the daytime and from 50.3 to 65.9 dBA at night.

As the rail noise levels at measurement Location 1 are well below the traffic levels, the railroad noise does not stand out, but is included in the traffic noise data. The maximum railroad noise levels are generated by the locomotive engines as there are no curves in the track to generate wheel squeal and there are no at-grade crossings to necessitate horn blowing. The maximum locomotive noise levels were measured at 68 to 75 dBA at 300 ft. from the tracks.

A measurement of the PG&E substation transformers was also made at the property line of the site closest to the substation, 140 ft. from the nearest transformer. The sound level was measured to be a constant 53 dBA.

Traffic and rail noise dissipate at the rate of 3 to 6 dB for each doubling of distance from the source to the receiver. Noise from the PG&E transformers dissipates at a rate of 6 dB per doubling of the distance. Thus, locations on the site at greater distances from Bernal Avenue, Stanley Boulevard, the UPRR or the PG&E substation will have lower noise levels. Additional acoustical shielding will be provided by interposed buildings of the project.

Traffic and rail noise contain wide spectra of frequency components (from 63 to 10,000 Hertz), which are associated with engine, tire, drive-train, exhaust, wheel-rail interaction and other sources. The frequency components are centered primarily in the 100, 250 and 500 Hz octave bands.

The future traffic volume projected for Stanley Boulevard is predicted to increase from the existing 35,000 ADT to 50,000 ADT for year 2025. Bernal Avenue traffic volumes are predicted to increase from the existing 18,300 ADT to 26,000 ADT, as reported in the City of Pleasanton Noise Element. These increases in the traffic volumes yield a 2 dB increase in the traffic noise levels for each roadway.

Future rail operational data are not available. The ACE commuter line has been consistent over the past many years. We are assuming, for the purposes of this study, that freight service in the area will be similar to current levels. Therefore, we are expecting no significant change in rail operations in the future.

B. Exterior Noise Exposures

To evaluate the roadway traffic noise levels against the City of Pleasanton standards, the Day-Night Level (DNL) was calculated as a decibel average of the L_{eq} values for the daily time periods. Nighttime weighting factors were applied and the DNL was calculated using the standard formula shown in Appendix B. The results of the calculations are shown in Appendix C. Adjustments were made to the measured noise levels to account for the increased setback of the property line and buildings, using methods established by the Highway Research Board, Ref. (g).

At the measurement location and planned minimum building setback at 95 ft. from the centerline of Stanley Boulevard and 300 ft. from the centerline of the UPRR, the noise exposures were calculated to be 68 dB DNL on both days of measurements.

To segregate Stanley Boulevard traffic noise from UPRR/ACE train noise, computer modeling of Stanley Boulevards traffic noise was performed. The computer model yielded a result of 67 dB DNL of traffic noise at the measurement location. Subtracting 67 dB DNL of traffic noise from the total measured noise exposure of 68 dB DNL yielded a difference of 56 dB DNL, which is attributable to rail noise. This model was checked using recent railroad noise data acquired for the a project less than 1 mile to the west of the site, Ref. (h).

Decibel subtraction is performed by the following equation:

$$56 \text{ dB} = 10\log_{10}(10^{68/10} - 10^{67/10})$$

Under future traffic conditions, the traffic noise exposure is expected to increase from the existing 67 dB DNL to 69 dB DNL, while the railroad noise exposure is estimated to remain the same as current levels. The total future noise exposure was calculated to be 69 dB DNL. Note that 69 dB + 56 dB = 69 dB. Thus, the noise exposures will be up to 9 dB in excess of the Title 24 criterion.

At the measurement location at 55 ft. from the centerline of Bernal Avenue the noise exposures were calculated to be 69 dB DNL on both days of measurements. Under future traffic conditions, the noise exposure will increase to 71 dB DNL. At the most impacted building setback of 70 ft. from the centerline of Bernal Avenue, the noise exposures were calculated to be 67 and 69 dB DNL under existing and future traffic conditions, respectively. Thus, the noise exposures will be up to 9 dB in excess of the Title 24 criterion.

The noise exposures at the most impacted portion of the common recreational area/swimming pool are 52 and 54 dB DNL under existing and future traffic conditions, respectively. These noise exposures include an 8 decibel noise reduction factor for the acoustic shielding provided by the interposed project buildings. Thus, the noise exposures will be within the 65 dB DNL limit of the City of Pleasanton Noise Element standards.

At the northerly façade of the major commercial tenant closest to Stanley Boulevard, 175 ft. from the centerline, the noise exposures were calculated to be 64 dB DNL from Stanley Boulevard traffic and 55 dB DNL from rail operations. The combined noise exposure was calculated to be 64 dB DNL. Under future conditions, the noise exposure is expected to increase to 66 dB DNL. Thus, the noise exposures will be within the 70 dB DNL limit of the City of Pleasanton Noise Element standards for business/commercial uses.

At the westerly façade of the small retail pad tenant closest to Bernal Avenue, 90 ft. from the centerline, the noise exposure was calculated to be 66 dB DNL. Under future conditions, the noise exposure is expected to increase to 68 dB DNL. Thus, the noise exposures will be within the 70 dB DNL limit of the City of Pleasanton Noise Element standards for business/commercial uses.

For a continuously operating noise source, the noise exposure is 6 decibels above the measured noise source level. As the measured level of the P. G. & E. substation was 53 dBA at 140 ft., the noise exposure was calculated to be 59 dB DNL. At the minimum setback of the project buildings closest to the substation, 205 ft. from the nearest transformer, the noise exposure was calculated to be 56 dB DNL. Thus, the noise exposure from the substation is within the 60 dB DNL criterion of Title 24.

Traffic and railroad noise impacts to the outdoor activity area of the project will be less than significant. Mitigation measures 4.J-3 and 4.J-5c will be satisfied.

C. Interior Noise Exposures

To evaluate the interior noise exposures against the 45 dB DNL interior limits of the City of Pleasanton Noise Element and Title 24, a 28 dB reduction was applied to the exterior noise exposures (at the building setback) to account for the attenuation provided by the building shell under a closed window condition. The closed window condition assumes that all living space windows will be rated minimum Sound Transmission Class (STC) 33 at all living spaces within 180 ft. of the centerline of Stanley Boulevard or within 140 ft. of the centerline of Bernal Avenue, and minimum STC 30 at all living spaces between 180 ft. and 320 ft. of the centerline of Stanley Boulevard. In addition, mechanical ventilation will be provided for all living spaces with a view to either Stanley Boulevard or Bernal Avenue.

In the most impacted living spaces of residences closest to Stanley Boulevard and the UPRR, the interior noise exposures will be 40 and 42 dB DNL under existing and future traffic conditions, respectively. Thus, the noise exposures will be within the 45 dB DNL limit of the City of Pleasanton Noise Element and Title 24 standards.

The interior maximum noise levels were calculated using the same methodology as described above. Therefore, the interior maximum noise levels due to rail operations in the most impacted living spaces were calculated to range from 40-47 dBA. Thus, the noise levels will be within the 50 dBA L_{max} limit for bedrooms and the 55 dBA L_{max} limit for other living spaces.

In the most impacted living spaces closest to Bernal Avenue, the noise exposures will be 40 and 42 dB DNL under existing and future traffic conditions, respectively. Thus, the interior noise exposures will be within the 45 dB DNL limit of the City of Pleasanton Noise Element and Title 24 standards.

Traffic and railroad noise impacts to the interior spaces of the project will be less than significant. Mitigation measures 4.J-3 and 4.J-5b will be satisfied.

VI. Project-Generated Noise Impacts

A. Traffic Noise Impact to Existing and Project Residences

To determine the levels of noise generated by project traffic for an evaluation against the criterion specified by Mitigation Measure 4.J-5a and Mitigation Measure 4.J-9, project traffic volume data were provided in the Vintage Sustainable Mixed-Use Project Traffic Impact Analysis, Ref. (i). The FSEIR mitigation measures apply a limit of 55 dB DNL for project traffic.

Table III, below, provides the project traffic volume data (converted to ADT from the peak hour counts) for the local roadways. The noise exposures for each road segment were calculated for a distance of 100 ft. from the centerline of the road, per Tables 4.J-6 and 4.J-7 of the FSEIR. The traffic noise model was calibrated for existing road and speed conditions using the on-site noise level measurement data.

TABLE III

Project Traffic Noise Analysis

Road Segment	Between		TIA Intersection	Intersection Leg	AM Peak	PM Peak	ADT	DNL @ 100 ft.
Bernal	Stanley	Utah	3	South	113	148	1480	54
Bernal	Utah	Nevada	4	South	54	108	1080	53
Bernal	So. Of Nevada		5	South	36	50	500	49
Stanley	E. of Valley/Bernal		3	East	12	37	370	49
Stanley	E. of Valley/Bernal		7	East	29	42	420	50
Stanley	W. of Valley/Bernal		3	West	48	71	710	52
Stanley	W. of Reflection		2	West	50	71	710	52
Valley	N. of Stanley		3	North	77	114	1140	54
Stanley	W. of Valley/Bernal		6	South	38	57	570	50

Traffic volume data for other streets in the vicinity of the site were not provided in the TIA. Therefore, we are assuming that project traffic on other streets is negligible.

As shown in Table III, project traffic will generate noise exposures lower than 55 dB DNL. In addition, project traffic noise will not add significantly to the existing/future traffic noise levels along these roadways.

For project traffic to add significantly to existing volumes, the project traffic needs to double the traffic volume to cause a 3 decibel increase. For existing roadways where the noise exposures currently exceed 60 dB DNL, such as along Stanley Boulevard and Bernal Avenue, project traffic needs to exceed 15% of the existing volume. Project-generated ADT's are a fraction of existing traffic volumes in the area.

Project-generated traffic noise impacts to existing and project residences will be less than significant. Mitigation measures 4.J-5a and 4.J-9 will be satisfied.

B. Commercial Center Noise Impacts to Project Residences

Noise from the planned commercial center that could impact the project residences is restricted to roof-top mechanical equipment and noise associated with the loading dock of the major tenant facing Stanley Boulevard.

The project description includes screening of all roof-top mechanical equipment with motors greater than ¼ hp or with fans generating an air flow greater than 1,000 CFM. As the City of Pleasanton Noise Ordinance requires that all equipment shall be no louder than 70 dBA at a distance of 25 ft., the loudest allowable equipment noise level will be up to 62 dBA at the property plane between the commercial use and the residential use (65 ft. from the roof-top equipment). With the incorporation of the planned roof-top screens, a 6 decibel noise reduction will be realized, to yield a noise level of 56 dBA at the property plane. Thus, the roof-top mechanical equipment noise levels will be within the 60 dBA limit of the City of Pleasanton Noise Ordinance standards for noise generated between 10:00 p.m. and 6:00 a.m. where commercial uses are adjacent to residential uses.

The project description also indicates that all loading dock activity will take place between 6:00 a.m. and 10:00 p.m. to comply with the requirements of the City of Pleasanton Noise Ordinance. As the major commercial tenant will likely be a boutique style grocery store, large truck deliveries will likely be no more than one per day. One large truck pulling into the loading dock, unloading over a 2 hour period, then exiting the dock area, typically generates an average sound level of 51 dBA L_{eq} at a distance of 35 ft. from the side of the truck (distance to property plane). This noise level assumes that the truck is parked with its engine off. For daytime operations, 2 hours of 51 dBA L_{eq} yield a noise exposure of 40 dB DNL.

There are no other noise sensitive receptors in the vicinity of the project site that would be affected by the commercial center noise.

Non-transportation related noise from the project will be less than significant. Mitigation measure 4.J-6a will be satisfied.

C. Construction Phase Impacts

Short-term construction noise will be generated during construction of the development. Construction equipment generates noise levels in the range of 70 to 90 dBA at a 50 ft. distance from the source.

Table IV on page 23 provides typical construction equipment noise levels at a reference distance of 50 ft. Also provided are the noise level and ground-borne vibration level of the Rapid Impact Compaction (RIC) system soil compaction equipment that may be used at the site. Included in the Table are the maximum and hourly average sound levels for each item of equipment for the nearest receptors: Congregation Beth Emek, the Vineyard Villas Mobile Home Park, the Pleasanton Fire Station and the commercial uses across Bernal Avenue to the west.

All construction operations on the site will be limited to 8:00 a.m. to 5:00 p.m. to comply with the requirements of the City of Pleasanton Noise Ordinance, 9.04.100. Construction noise levels will be temporary and will be similar to the existing noise levels in the vicinity of the site.

TABLE IV

Construction Noise Analysis

	Reference		Vinyard Villas MHP			Congregation Beth Emek			Fire Station			Commercial		
Equipment	Level	Dist., ft.	Dist.	Lmax	Leq(h)	Dist.	Lmax	Leq(h)	Dist.	Lmax	Leq(h)	Dist.	Lmax	Leq(h)
Paving Machine	89	50	325	**73**	55	95	**83**	66	230	**76**	58	150	**79**	62
Water Truck	84	50	325	**68**	50	95	**78**	61	230	**71**	53	150	**74**	57
Compactive Rollers	85	50	325	**69**	51	95	**79**	62	230	**72**	54	150	**75**	58
Scrapers	86	50	325	**70**	52	95	**80**	63	230	**73**	55	150	**76**	59
Graders	83	50	325	**67**	49	95	**77**	60	230	**70**	52	150	**73**	56
Wheel Loader	82	50	325	**66**	48	95	**76**	59	230	**69**	51	150	**72**	55
Track Loader	85	50	325	**69**	51	95	**79**	62	230	**72**	54	150	**75**	58
Backhoe	82	50	325	**66**	48	95	**76**	59	230	**69**	51	150	**72**	55
Bulldozer	85	50	325	**69**	51	95	**79**	62	230	**72**	54	150	**75**	58
Haul Trucks	84	50	325	**68**	50	95	**78**	61	230	**71**	53	150	**74**	57
Crane	82	50	325	**66**	48	95	**76**	59	230	**69**	51	150	**72**	55
Excavator	85	50	325	**69**	51	95	**79**	62	230	**72**	54	150	**75**	58
RIC System	80	50	325	**64**	46	95	**74**	57	230	**67**	49	150	**70**	53
Air Compressor	90	50	325	**74**	56	95	**84**	67	230	**77**	59	150	**80**	63
Generator	81	50	325	**65**	47	95	**75**	58	230	**68**	50	150	**71**	54
Skid Steer	78	50	325	**62**	44	95	**72**	55	230	**65**	47	150	**68**	51

Construction Equipment Vibration		
RIC System Compactor	0.18 in/sec.	95 ft.

Vibration levels produced by the RIC system, if used on the project, generates a vibration value of 10 mm/sec at 20 meters. This equates to 0.9 in./sec. at 66 ft. The RIC system will generate a vibration level of 0.18 in./sec. at the Congregation Beth Emek building setback of 95 ft. from nearest point where the RIC system could be used. Thus, the RIC system vibration levels will be within the 0.24 in/sec. PPV criterion of transient vibration annoyance criterion established in Table 4.J-4 of the FSEIR for the nearest and most impacted sensitive receptor at the Congregation Beth Emek.

Construction noise and vibration will be less than significant. Mitigation measures 4.J-1 and 4.J-2 will be satisfied.

VIII. Conclusions

In conclusion, traffic noise impacts to the project, project-generated traffic noise impacts, non-transportation noise impacts and construction noise impacts will be in compliance with the City of Pleasanton Noise Element, Noise Ordinance and the Title 24 California Building Code, as applicable. The noise exposures and noise levels will be less than significant. The mitigation measures presented in the Final Supplemental Environmental Impact Report will be satisfied. Noise mitigation measures will not be required.

The study findings for existing conditions are based on field measurements and other data and are correct to the best of our knowledge. Future noise projections are based on information provided by the consulting traffic engineer. Significant deviations in the predicted traffic volumes, site planning, noise regulations or other future changes beyond our control may produce long-range noise results different from our estimates.

Report Prepared By:

Jeffrey K. Pack
President

APPENDIX A

References

(a) Noise Element of the General Plan, City of Pleasanton, July 21, 2009

(b) City of Pleasanton Municipal Code, Title 9, Chapter 9.04, "Noise Regulations", Current Through the 2013 Code Supplement

(c) California Code of Regulations, Title 24, Part II, "Sound Transmission Control", Revised 2010

(d) "City of Pleasanton General Plan Amendment and Rezonings Final Supplemental Environmental Impact Report" by ESA, January 2012

(e) Overall Site Plan, Sustainable Mixed-Use Village Conceptual Draft, Auf der Maur/Rickenbach Site 8, by Steinberg Architects, February 16, 2012

(f) "Vintage Sustainable Mixed-Use Village Project Description", April 15, 2013", Provided by Mr. Ken Busch via email to Edward L. Pack Associates, Inc., April 17, 2013

(g) Highway Research Board, "Highway Noise – A Design Guide for Highway Engineers", Report, 117, 1971

(h) "Revised Noise and Vibration Assessment Study for the Planned Single-Family Development, Stanley Boulevard, Pleasanton", by Edward L. Pack Associates, Inc., Project No. 41-011-R, December 10, 2009

(i) "Traffic Impact Analysis for the Vintage Sustainable Mixed-Use Village Project", by Whitlock & Weinberger Transportation, Inc., March 27, 2013

APPENDIX B

Noise Standards, Terminology, Instrumentation,

1. City of Pleasanton Noise Standards

The City of Pleasanton Noise Element, Chapter VIII, Adopted July 21, 2009 specifies exterior and interior noise exposure standards.

Residential Exterior

Source	Standard
Traffic	
Single-Family	60 dB DNL
Multi-Family (common areas)	65 dB DNL
Railroad	70 dB DNL
Aircraft	55 dB DNL 50 dBA L_{max} Bedrooms 55 dBA L_{max} Living Spaces

Residential Interior

	45 dB DNL
For railroad sources:	50 dBA L_{max} Bedrooms 55 dBA L_{max} Other Interior Spaces
If more than 4 trains daytime or any trains nighttime	
Aircraft	50 dBA L_{max} Bedrooms 55 dBA L_{max} Living Spaces

Business/Commercial Exterior 70 dB DNL

B. Title 24 Noise Standards

The California Code of Regulations, "Sound Transmission Control", Title 24, Part II, applies to all new multi-family dwellings including condominiums, apartments, hotels and motels. The standards, which utilize the Day-Night Level (DNL) descriptor, establish an exterior reference or criterion level of 60 dB DNL, and specify that multi-family buildings to be located within an annual DNL zone of 60 dB or greater require an acoustical analysis. The analysis report must show that the planned buildings provide adequate attenuation to limit intruding noise from exterior sources to an annual DNL of 45 dB or less in any habitable space. The Community Noise Equivalent Level (DNL) descriptor, which is similar to the DNL, may also be used, as the CNEL and DNL are considered to be equivalent, typically.

The Title 24 standards also establish minimum sound insulation requirements for interior partitions separating different dwelling units from each other and dwelling units from common spaces such as garages, corridors, equipment rooms, etc. The common interior walls and floor/ceiling assemblies must achieve a minimum Sound Transmission Class (STC) rating of 50 for airborne noise. Common floor/ceiling assemblies must achieve an Impact Insulation Class (IIC) rating of 50 for impact noise. These ratings are based on laboratory tested partitions. Field tested partitions must achieve ratings of NIC and FIIC 45.

2. Terminology

A. Statistical Noise Levels

Due to the fluctuating character of urban traffic noise, statistical procedures are needed to provide an adequate description of the environment. A series of statistical descriptors have been developed which represent the noise levels exceeded a given percentage of the time. These descriptors are obtained by direct readout of the Community Noise Analyzer. Some of the statistical levels used to describe community noise are defined as follows:

L_1 - A noise level exceeded for 1% of the time.

L_{10} - A noise level exceeded for 10% of the time, considered to be an "intrusive" level.

L_{50} - The noise level exceeded 50% of the time representing an "average" sound level.

L_{90} - The noise level exceeded 90 % of the time, designated as a "background" noise level.

L_{eq} - The continuous equivalent-energy level is that level of a steady-state noise having the same sound energy as a given time-varying noise. The L_{eq} represents the decibel level of the time-averaged value of sound energy or sound pressure squared and is used to calculate the DNL and CNEL.

B. Day-Night Level (DNL)

Noise levels utilized in the standards are described in terms of the Day-Night Level (DNL). The DNL rating is determined by the cumulative noise exposures occurring over a 24-hour day in terms of A-Weighted sound energy. The 24-hour day is divided into two subperiods for the DNL index, i.e., the daytime period from 7:00 a.m. to 10:00 p.m., and the nighttime period from 10:00 p.m. to 7:00 a.m. A 10 dB weighting factor is applied (added) to the noise levels occurring during the nighttime period to account for the greater sensitivity of people to noise during these hours. The DNL is calculated from the measured L_{eq} in accordance with the following mathematical formula:

$$DNL = [(L_d+10\log_{10}15) \,\&\, (L_n+10+10\log_{10}9)] - 10\log_{10}24$$

Where:

L_d = L_{eq} for the daytime (7:00 a.m. to 10:00 p.m.)
L_n = L_{eq} for the nighttime (10:00 p.m. to 7:00 a.m.)
24 - indicates the 24-hour period
& - denotes decibel addition.

C. A-Weighted Sound Level

The decibel measure of the sound level utilizing the "A" weighted network of a sound level meter is referred to as "dBA". The "A" weighting is the accepted standard weighting system used when noise is measured and recorded for the purpose of determining total noise levels and conducting statistical analyses of the environment so that the output correlates well with the response of the human ear.

3. Instrumentation

The on-site field measurement data were acquired by the use of one or more of the precision acoustical instruments shown below. The acoustical instrumentation provides a direct readout of the L exceedance statistical levels including the equivalent-energy level (L_{eq}). Input to the meters was provided by a microphone extended to a height of 5 ft. above the ground. The meter conforms to ANSI S1.4 for Type 1 instruments. The "A" weighting network and the "Fast" response setting of the meter were used in conformance with the applicable ISO and IEC standards. All instrumentation was acoustically calibrated before and after field tests to assure accuracy.

Bruel & Kjaer 2231 Precision Integrating Sound Level Meter
Larson Davis LDL 812 Precision Integrating Sound Level Meter
Larson Davis 2900 Real Time Analyzer

APPENDIX C

Noise Measurement Data and Calculation Tables

DNL CALCULATIONS

CLIENT: E&S RING MANAGEMENT
FILE: 44-013
PROJECT: AUF DER MAUR PROPERTY
DATE: 6/6-8/2012
SOURCE: STANLEY BLVD, BERNAL AVE.

LOCATION 1	Stanley Blvd	UPRR		
Dist. To Source	95 ft.	300 ft.		
TIME	Leq	10^Leq/10		
7:00 AM	65.1	3235936.6		
8:00 AM	65.0	3162277.7		
9:00 AM	64.8	3019951.7		
10:00 AM	64.5	2818382.9		
11:00 AM	64.6	2884031.5		
12:00 PM	65.4	3467368.5		
1:00 PM	65.1	3235936.6		
2:00 PM	66.8	4786300.9		
3:00 PM	68.6	7244359.6		
4:00 PM	70.4	10964782.0		
5:00 PM	71.6	14454397.7		
6:00 PM	68.5	7079457.8		
7:00 PM	65.4	3467368.5		
8:00 PM	64.2	2630268.0		
9:00 PM	63.1	2041737.9	SUM=	74492558
10:00 PM	61.6	1445439.8	Ld=	67.0
11:00 PM	57.9	616595.0		
12:00 AM	54.7	295120.9		
1:00 AM	54.9	309029.5		
2:00 AM	51.6	144544.0		
3:00 AM	50.8	120226.4		
4:00 AM	56.9	489778.8		
5:00 AM	59.0	794328.2		
6:00 AM	63.4	2187761.6	SUM=	6402824
		1.0	Ln=	58.5
		1.0		
		78.8		
	Nighttime Level=	78.0		
	DNL=	**68**		
	24-Hour Leq=	65.3		

LOCATION 1	Stanley Blvd	UPRR		
Dist. To Source	95 ft.	300 ft.		
TIME	Leq	10^Leq/10		
7:00 AM	64.9	3090295.4		
8:00 AM	65.0	3162277.7		
9:00 AM	64.2	2630268.0		
10:00 AM	65.1	3235936.6		
11:00 AM	65.5	3548133.9		
12:00 PM	66.4	4365158.3		
1:00 PM	66.1	4073802.8		
2:00 PM	66.3	4265795.2		
3:00 PM	67.9	6165950.0		
4:00 PM	69.8	9549925.9		
5:00 PM	70.9	12302687.7		
6:00 PM	70.6	11481536.2		
7:00 PM	67.3	5370318.0		
8:00 PM	65.4	3467368.5		
9:00 PM	62.7	1862087.1	SUM=	78571541
10:00 PM	59.2	831763.8	Ld=	67.2
11:00 PM	56.9	489778.8		
12:00 AM	54.2	263026.8		
1:00 AM	53.8	239883.3		
2:00 AM	52.7	186208.7		
3:00 AM	51.0	125892.5		
4:00 AM	55.6	363078.1		
5:00 AM	58.9	776247.1		
6:00 AM	63.7	2344228.8	SUM=	5620108
		1.0	Ln=	58.0
	Daytime Level=	79.0		
	Nighttime Level=	77.5		
	DNL=	**68**		
	24-Hour Leq=	65.5		

DNL CALCULATIONS

CLIENT: E&S RING MANAGEMENT
FILE: 44-013
PROJECT: AUF DER MAUR PROPERTY
DATE: 6/6-8/2012
SOURCE: STANLEY BLVD, BERNAL AVE.

LOCATION 2	Bernal Ave.			
Dist. To Source	55 ft.			
TIME		10^Leq/10		
7:00 AM	68.9	7762471.2		
8:00 AM	70.4	10964782.0		
9:00 AM	68.5	7079457.8		
10:00 AM	68.5	7079457.8		
11:00 AM	67.6	5754399.4		
12:00 PM	67.5	5623413.3		
1:00 PM	67.4	5495408.7		
2:00 PM	68.1	6456542.3		
3:00 PM	67.6	5754399.4		
4:00 PM	68.4	6918309.7		
5:00 PM	69.7	9332543.0		
6:00 PM	68.5	7079457.8		
7:00 PM	67.1	5128613.8		
8:00 PM	66.2	4168693.8		
9:00 PM	64.0	2511886.4	SUM=	97109837
10:00 PM	62.4	1737800.8	Ld=	68.1
11:00 PM	61.3	1348962.9		
12:00 AM	56.0	398107.2		
1:00 AM	53.9	245470.9		
2:00 AM	55.8	380189.4		
3:00 AM	54.6	288403.2		
4:00 AM	57.4	549540.9		
5:00 AM	61.5	1412537.5		
6:00 AM	66.6	4570881.9	SUM=	10931895
			Ln=	60.8
	Daytime Level=	79.9		
	Nighttime Level=	80.3		
	DNL=	**69**		
	24-Hour Leq=	66.5		

LOCATION 2	Bernal Ave.			
Dist. To Source	55 ft.			
TIME		10^Leq/10		
7:00 AM	70.5	11220184.5		
8:00 AM	69.6	9120108.4		
9:00 AM	68.0	6309573.4		
10:00 AM	67.2	5248074.6		
11:00 AM	67.6	5754399.4		
12:00 PM	67.5	5623413.3		
1:00 PM	67.8	6025595.9		
2:00 PM	67.8	6025595.9		
3:00 PM	68.5	7112135.1		
4:00 PM	68.4	6918309.7		
5:00 PM	68.5	7079457.8		
6:00 PM	68.1	6456542.3		
7:00 PM	66.9	4897788.2		
8:00 PM	66.2	4168693.8		
9:00 PM	63.9	2454708.9	SUM=	94414581
10:00 PM	62.5	1778279.4	Ld=	68.0
11:00 PM	61.1	1288249.6		
12:00 AM	57.1	512861.4		
1:00 AM	54.8	301995.2		
2:00 AM	50.3	107151.9		
3:00 AM	50.7	117489.8		
4:00 AM	57.1	512861.4		
5:00 AM	61.6	1445439.8		
6:00 AM	65.9	3890451.4	SUM=	9954780
			Ln=	60.4
	Daytime Level=	79.8		
	Nighttime Level=	79.9		
	DNL=	**69**		
	24-Hour Leq=	66.4		