GEOTECHNICAL INVESTIGATION
PLEASANTON APARTMENTS
5725 West Las Positas Boulevard
Pleasanton, California

File No. 1333-057.02

Exhibit B4
PUD-81-30-87D
Received April 9, 2013

Geotechnical

Raney Geotechnical Inc

June 25, 2012

St Anton Partners
Attention: Courtney Thompson
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1801 "I" Street
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GEOTECHNICAL INVESTIGATION
PLEASANTON APARTMENTS
5725 Las Positas Boulevard
Pleasanton, California
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INTRODUCTION

This firm has completed a Geotechnical Investigation for the Pleasanton apartment complex site on West Las Positas Boulevard. The purpose of the investigation has been to investigate soil conditions at the site and to develop recommendations pertinent to earthwork construction, foundation support, earth retaining, slabs-on ground and pavements. This report presents the results of our investigation. In preparing this report we have considered the both the Phase I Environmental Site Assessment and Phase II Subsurface Environmental Investigation performed at the site by our firm.[1][2]

Field exploration for this investigation has included the drilling and sampling of five auger borings as well as surface bulk sampling. The maximum boring depth was 34 feet at Boring 1, and this boring was extended to 38.5 feet by probing. The probing was performed with a closed end standard penetration sampler driven with a 140 pound hammer falling 30 inches. The remaining borings ranged from 15 to 20 feet in depth. Reasonably undisturbed samples were obtained from the borings using a modified California sampler; the sampler was driven with a 140 pound hammer falling 30 inches. The locations of the borings are shown relative to the proposed construction and the adjacent West Las Positas Boulevard, Tassajara Creek and Valley Care Medical Plaza on Plate 1, *Plot Plan.*

[1] Raney Geotechnical, Inc; "Phase I Environmental Site Assessment, West Las Positas Boulevard, APN 941-2764-015, 5725 West Las Positas Boulevard, Pleasanton, California"; June 19, 2012; File No. 1333-057.
[2] Raney Geotechnical, Inc; "Subsurface Investigation, Area of Former Auto Service Center, West Las Positas Property, 5725 West Las Positas Boulevard, Pleasanton, California"; Julne 21, 2012; File No. 1333-057.01.

Logs of the borings/probings are shown on Plates 2 through 6, *Log of Boring*. Selected samples were subjected to laboratory testing to determine moisture, density and unconfined compressive strength; the results of this testing are presented on the boring logs at the depth of each sample tested. The nomenclature used to describe the soils on the logs is defined on Plate 7, *Unified Soil Classification System*. The results of Atterberg Limits testing performed on a sample of the heavy clay material common to the near surface are presented on Plate 8, *Atterberg Limit Data*. Guide Earthwork Specifications are attached to this report.

PROPOSED CONSTRUCTION

The proposed construction consists of an approximate 165 unit apartment complex. The units will be within a four story L-shaped building and three separate three-story rectangular buildings. A single story recreation building, leasing office and associated swimming pool will be in the center of the complex. Foundation loads associated with the apartment buildings are expected to be moderate. The construction also will include significant asphalt concrete paving for parking and access. The parking generally will be about the perimeter of the buildings but also will be internal to the complex. We assume that the pavement will be subject primarily to automobile wheel loads but will be required to sustain less frequent waste removal and moving truck traffic.

SITE CONDITIONS

SURFACE

The approximate four and one-half acre project property generally is the parking lot southwesterly of the building occupied by Valley Care Medical. The parking area is further defined by West Las Positas Boulevard on the southeast and Tassajara Creek on the west. There is an approximate 4,000 square foot single story building in the south-southwesterly most corner of the parking lot. We understand that this building was the auto service facility for the building northeasterly of the property, which was operated by Hewlett-Packard prior to Valley Care Medical. This service facility contains hydraulic auto lifts, underground fuel storage tanks, fueling facilities and a car wash. A limited portion of the site is planted in lawn and is between the parking lot and the Valley Care Medical building. The existing pavement section consists of 2.5 to three inches of asphalt concrete (AC) over six to eight inches of aggregate base (AB). The average ground surface elevation would appear to b on the order of +330 feet.

SUBSURFACE

The soil profile at the site would appear to be very uniform and dominated by silty clays of moderate to high plasticity and heavier clays of very high plasticity. The pavements are indicated to be underlain by a one to two foot thick interval of moderately plastic and expansive silty clay. These uppermost soils generally are underlain by a four to 11 foot thick stratum of dark, highly plastic and highly expansive silty clay; these highly expansive silty clays are in turn underlain by a four to six foot thick stratum of slightly less plastic silty clay of lighter color. An exception to the described profile exists at Boring 3, where the highly expansive, dark silty clays extend from the base of the uppermost moderately plastic silty clays to a depth of nearly 20 feet. In the remaining borings, the lighter, lesser plastic silty clays are in turn underlain by another interval of dark, highly plastic and expansive silty clay, which would appear to extend to depths of greater than 20 feet. At a depth of approximately 35 feet in Boring 1, an approximate four foot thick stratum of fine sandy clayey silt was found to be overlying poorly graded gravels of very dense consistency and extending to the maximum depth of our exploration. The described clayey soils are over-consolidated and exhibit at least medium stiff and more commonly stiff and very stiff consistencies.

For a better understanding of subsurface conditions, reference should be made to Plates 2 through 6, *Log of Boring*.

GROUNDWATER

Groundwater was encountered at a depth of 37.5 feet in Boring 1. The gravels at this level are thought related the adjacent Tassajara Creek. In as mush as the clayey soils overlying the gravels are of exceedingly low permeability, we would expect the groundwater within the gravels to be under artesian pressure during high stage conditions in Tassajara Creek.

BEARING CAPACITY/SETTLEMENT

As indicated above the silty clay soils engaged in our borings generally are over-consolidated and generally exhibit stiff consistency. These soils, although expansive, are considered capable of sustaining light foundation pressures without undue settlement. We would expect settlement of the largest foundations to less than one and one-half inches.

SOIL EXPANSION

The upper 30 feet of the soil is made up of soils of moderate to high plasticity and high expansion potential. Recommendations for the mitigation of this condition by the use of post-tensioned foundations/slabs are provided. Other shallow supported elements of the construction also are subject to the effects of soil expansion and in as much as there are not any non-expansive soils on the

site, use of imported non-expansive soils will be required locally. This may be appropriate beneath flatwork that cannot be kept at reasonably uniform moisture, year around, and adjacent to the pool and pool deck. Use should be made of landscape medians adjacent to flatwork that are irrigated year around and thickened flatwork edges and perimeter cutoff walls.

SEISMICITY

In design using the lateral force provisions of the 2010 California Building Code, the parameters tabulated below.

TABLE

Period (seconds)	Mapped Spectral Response Accelerations (g)	Site Class	Site Coefficients	Maximum Considered Earthquake Spectral Response Accelerations (g)	Design Spectral Response Accelerations (g)
0.2	S_S 1.684	D	F_a 1.000	SM_S 1.684	SD_S 1.123
1.0	S_1 0.604		F_v 1.500	SM1 0.906	SD1 0.604

LIQUEFACTION

The clayey soils that make up the site profile are not liquefiable materials. While gravels were engaged at a depth of 37 feet in Boring 1 coincident with presence of free groundwater, the consistency and confinement of these granular materials would appear to preclude liquefaction. Therefore, we conclude that liquefaction is not a legitimate design concern on this site.

SLOPE STABILITY

We note that the side slopes of Tassajara Creek are at a configuration slightly flatter than one on three. Based upon this and the least cohesive strength we measured in the upper 15 feet of the profile, the least factor of safety for a toe circle along the bank of the adjacent creek would appear to be nearly 3.8.

RECOMMENDATIONS

EARTHWORK

General site clearance should include the removal of surface vegetation, landscape plantings, trees designated for removal and associated roots greater than one inch in diameter, lawn, curbs, the existing service building and associated slabs, recessed service bays, auto lifts, tanks and all associated fuel piping, conduit, overhead lighting, rubble and rubbish. Pavements may be pulverized and stockpiled for later use together with the underlying AB materials. In as much as the native soils are at least moderately plastic and more commonly highly plastic, the pulverized AB and AB materials are expected to be valuable materials for later use ias flatwork underlayment. Small irrigation pipes (less than two inches in diameter and within two feet of original or final grade should be removed, and larger diameter pipes should be removed regardless of depth. Excavations required for the removal of the above items, as well as any other loose or unstable soil deposits identified by our representative, should be cleaned of loose, saturated or soft materials so that firm undisturbed soils are exposed. Deep excavations required for the removal of the above items should be sloped back to a dish-shaped configuration, allowing through passage of compaction equipment. Excavations required for removal of the above items should be restored to grade with engineered fill placed and compacted in accordance with the recommendations of this report.

Areas designated to receive engineered fill as well as building pad and pavement areas left at existing grades should be scarified to a depth of eight inches, brought to uniform minimum three percent over-optimum moisture content, and re-compacted in place to at least 90 percent of the maximum dry density determined by ASTM D 1557-02 test procedure. Engineered fill should be placed in lifts not exceeding six inches in compacted thickness, brought to uniform minimum three percent over-optimum moisture condition and compacted to at least 90 percent relative compaction.

On-site soils are suitable for use as engineered fill, provided the soils do not contain significant vegetable matter, rubble, rubbish, or other undesirable substances. We would strongly recommend a least thickness of four inches of the AB and/or AC grindings and the underlying AB discussed above be used beneath flatwork that cannot be kept at relatively uniform moisture, year around. Imported

fill materials will be required for use in certain areas of the project as discussed below. All imported soils should be tested and approved by our firm prior to importation to the site.

The upper eight inches of all building pads and flatwork subgrades should be compacted to at least 90 percent of the above standard, at a minimum three percent over-optimum moisture content regardless of whether the final grade is achieved by cutting, filling, or left at existing grade. Permanent excavation and embankment slopes, if any, should not exceed an inclination of one vertical on three horizontal. A representative of this firm should be present during grading to test and observe earthwork construction.

FOUNDATIONS

Post tensioned Foundations/slabs

As indicated, the site soils are highly plastic and expansive, and extend to significant depths. Accordingly, use of PT slab/foundations is recommended for all buildings. The parameters we recommend for use in design are from earlier generation of the Post-Tension Institute data as adopted by the UBC, in as much as the current "Design of Post-Tensioned Slabs on Ground" and are under revision and judged too conservative by most designers.

Thornthwaith Index	-20
Constant Suction	3.6pF
Depth to Constant Suction	7.0'
Edge Moisture Variation	
Edge Lift Condition	2.6'
Center Lift Condition	5.0'
Diffferential Swell	
Edge Lift	1.0"
Center Lift	3.2"

Allowable soil bearing pressures of 1,200 pounds per square foot (psf) for dead load, 1,800 psf for dead plus live load and 2,400 psf for total load may be used at the base of the slab.

In order to provide a measure of moisture cutoff, we recommend that thickened edge be provided about the slab perimeter; the thickened edge should extend a minimum of 12 inches below lowest adjacent final grade. Furthermore, slabs should be underlain by a minimum four-inch-thick blanket of three-quarter inch crushed rock. A plastic membrane should be placed over the crushed rock to retard moisture vapor. The membrane may be covered with one or two inches of clean sand, if desired. Use of a heavier membrane will provide greater resistance to puncture during construction. Heavier membrane products include 15 mil Stego Wrap® and 12-mil Canvex®.

Resistance to lateral forces may be computed using either friction or passive pressure, but not both, except as recommended below. A coefficient of friction of 0.30 acting between slab bases and the supporting subgrades may be utilized in design. Passive resistance acting against appropriate faces of foundations may be considered equal to the stress exerted by a fluid weighing 300 pounds per cubic foot. A combination of both friction and passive pressure may be utilized provided that the larger mode of resistance is reduced by 50 percent. The recommended friction and passive pressure values have been modified by appropriate factors of safety, and may be applied directly in design calculations.

We also recommend that building pad be sprinkled to achieve a near saturated state to a depth of 12 inches and that the pad moisture content be field checked by our firm no more than 12 hours prior to placement of slab concrete.

Conventional Foundations

Foundations for lightly loaded ancillary structures such as trash enclosures and the like may be placed on conventional spread foundations based 18 inches below lowest adjacent final grade. Foundations for ancillary construction based at a depth of 18 inches may be designed using allowable bearing pressures of 1,500 psf for dead plus live load with a one-third increase for total load, including wind or seismic forces. Lateral load acting on footings designed according to this these recommendations may be resisted as recommended above for the post tension concrete foundation/slab support.

Drilled Cast-in-Place Piers

Drilled foundation elements for support of light poles may be designed in accordance with the procedure set forth in section 1805A.7.2 of the California Building Code (CBC). A soil/concrete adhesion value of 200 psf, and a lateral soil bearing pressure of 250 pounds per square foot per foot of depth may be used in applying this methodology.

EXTERIOR FLATWORK

We recommend moisture conditioning of flatwork subgrades as recommended above for the PT system. We also would suggest use of a minimum of four inches of AB beneath flatwork, or use of the stockpiled grindings and AB materials, reinforcing, thickened edges and as closely spaced control joints as practical. Maintenance of the soils adjacent to the flatwork at a reasonably constant moisture content, year-around, via irrigation also is recommended.

EARTH RETAINING

In order to account for expansion and creep of the native soils, retaining walls should be designed to resist the stress exerted by a fluid weighing 50 pounds per cubic foot for the active case. Walls that are not free to yield should be designed for a pressure equivalent to the stress exerted by a fluid weighing 60 pounds per cubic foot, plus any adjacent surcharge pressures. Furthermore, we recommend that a minimum horizontal thickness of non-expansive fill of eight inches be provided behind all retaining walls.

SWIMMING POOL

We recommend that the swimming pool be designed using the contractor's heaviest reinforcing schedule. We further recommend that the upper two feet of the soil supporting the deck consist of imported non-expansive soils.

PAVEMENTS

Pavements have been designed on the basis of resistance value of five which accurately represents the subgrade quality of the site soils. Although five is the least resistance value used in design it is entirely appropriate for the site soils. The Caltrans Design Method for Flexible Pavements was used to generate the recommended pavement sections, together with and R-value of five and assumed traffic indices, which can be related to anticipated pavement loads, usage, and design life. It is common practice to use an assumed useful pavement life of 20 years for apartment complex type facilities.

The Caltrans Design Method uses traffic indices as an indication of the traffic loads and frequency. The Asphalt Institute has suggested that a traffic index of 4.5 may be reasonably representative of automobile parking lot wheel loads. It is our opinion that a traffic index of 4.5 is somewhat conservative for automobile parking stalls, and a traffic index of 4.0 may be appropriate for these locations. Entryways subject to full automobile traffic or delivery, waste removal truck traffic and infrequent fire fighting equipment and moving vans, should be designed for a traffic index of 5.0 or 5.5. Pavement section alternatives for the indicated traffic indices are tabulated on the next page. Decisions regarding pavement systems should be made on the basis of economics and the desired level of future maintenance.

TABLE
PAVEMENT SECTION ALTERNATIVES

Design Traffic Index	Type B Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
4.0	2.5	7.5
	3.0	6.5
4.5	2.5	9.0
	3.0	8.0.
5.0	3.0	9.5
	4.0	7.5
5.5	3.0	12.0
	4.0	10.0

Pavement subgrades should be prepared as recommended in the earthwork section of this report. Materials and construction within structural pavement sections should conform to the applicable provisions of the latest edition of Caltrans Standard Specifications.

The cracking of the existing pavements along the edge of the unimproved roadway contiguous with the bank of Tassajara Creek underscores the importance of confinement of free pavement edges. In this setting use of deep formed curbs, extending well below the level of the recommended AB section, will be of great importance.

LIMITATIONS

This report necessarily assumes uniform variation of soils between borings. Our recommendations are based upon this assumed uniformity and the information provided regarding the proposed construction.

We should be given an opportunity to review the drawings prior to construction to insure that the recommendations of this report have been properly incorporated in design. Further, if unusual conditions are encountered during construction, the contractor or his representative should notify this firm immediately so that alternate written recommendations can be made.

This report is applicable only to the proposed construction, as described herein, and should not be utilized for design or construction on any other site.

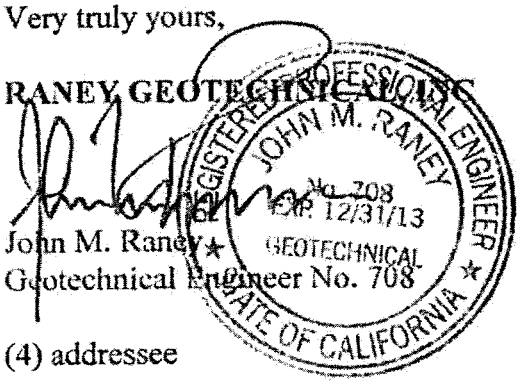
oOo

The following Plates and Appendix are attached and complete this report:

Plate 1 - Plot Plan
Plate 2 - Log of Boring, Boring 1
Plate 3 - Log of Boring, Boring 2
Plate 4 - Log of Boring, Boring 3
Plate 5 - Log of Boring, Boring 4
Plate 6 - Log of Boring, Boring 5
Plate 7 - Unified Soil Classification System
Plate 8 - Atterberg Limit Data
Guide Earthwork Specifications

Very truly yours,

RANEY GEOTECHNICAL



John M. Raney
Geotechnical Engineer No. 708

(4) addressee

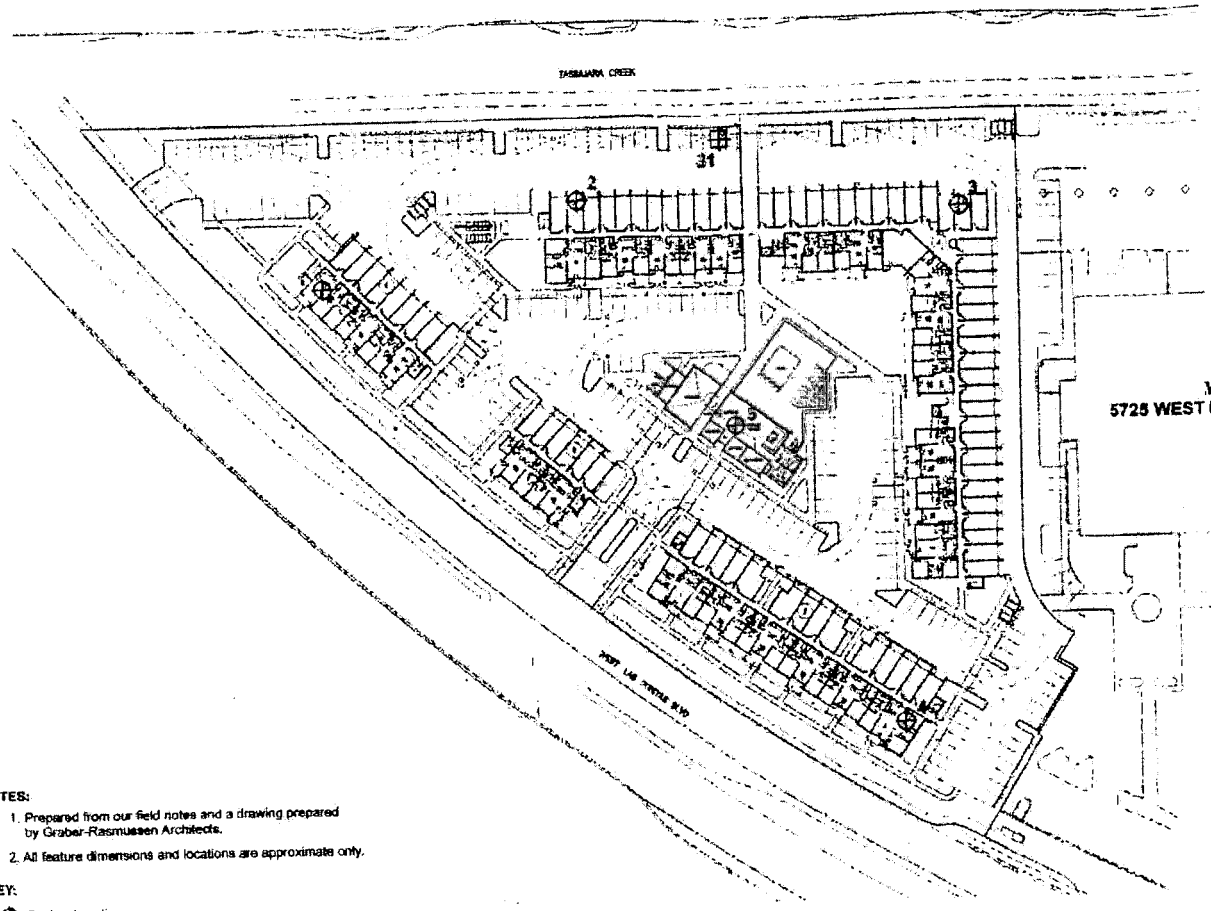

TASSAJARA CREEK
31
2
3
5
N
APPROXIMATE SCALE
0
FEET
80
VALLEY CARE
MEDICAL PLAZA
5725 WEST LAS POSITAS BOULEVARD
NOTES:
1. Prepared from our field notes and a drawing prepared by Graber-Rasmussen Architects.
2. All feature dimensions and locations are approximate only.
KEY:
Boring location.
Surface bulk sample location location
PLOT PLAN

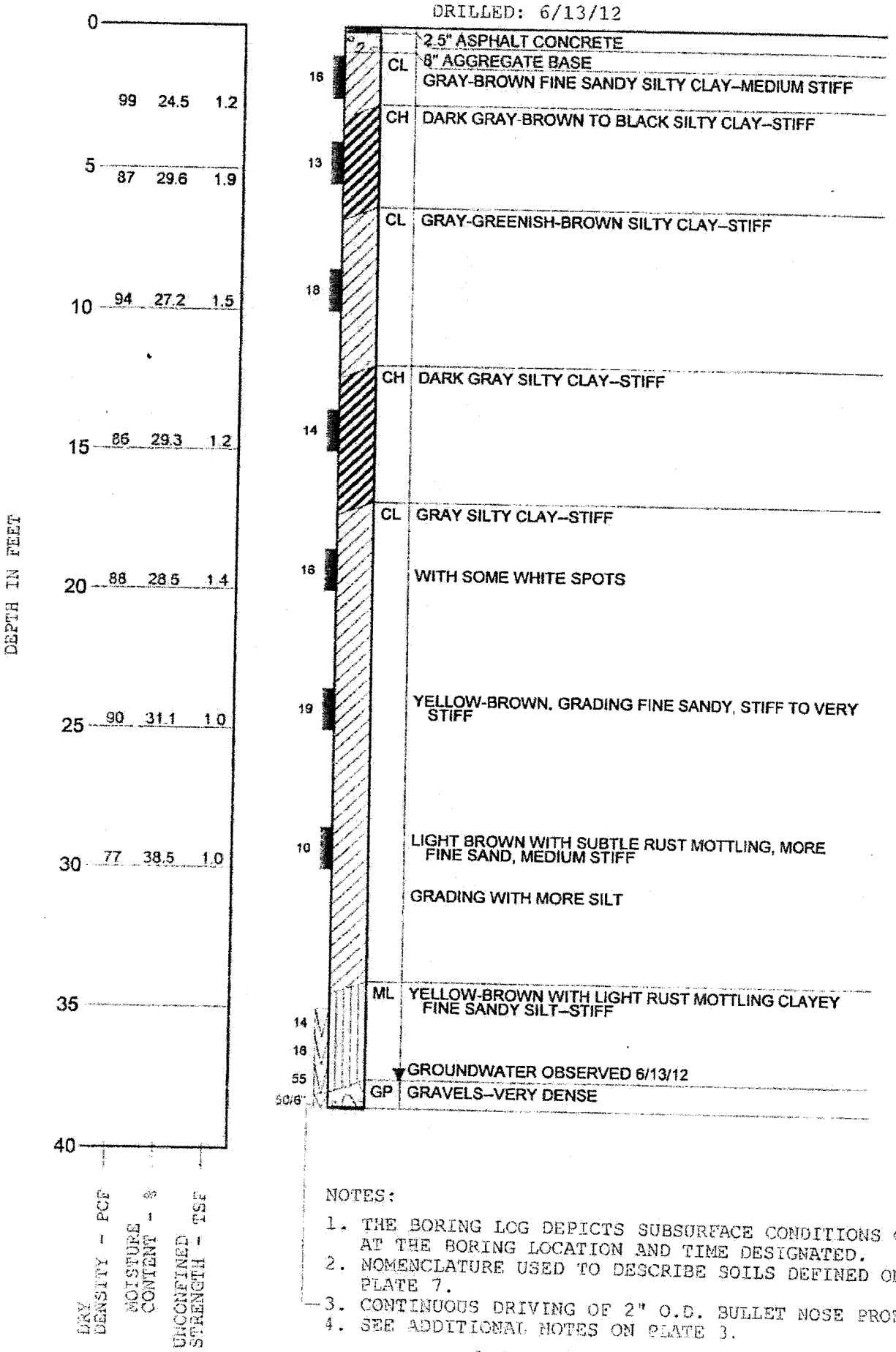
PLATE 1

BORING 1

DRILLED: 6/13/12

PROJECT NUMBER: 1333-057.02
PLATE NUMBER: 2

DRAWN BY: WCH
DATE: 6/25/12



NOTES:

1. THE BORING LOG DEPICTS SUBSURFACE CONDITIONS ONLY AT THE BORING LOCATION AND TIME DESIGNATED.
2. NOMENCLATURE USED TO DESCRIBE SOILS DEFINED ON PLATE 7.
3. CONTINUOUS DRIVING OF 2" O.D. BULLET NOSE PROBE.
4. SEE ADDITIONAL NOTES ON PLATE 3.

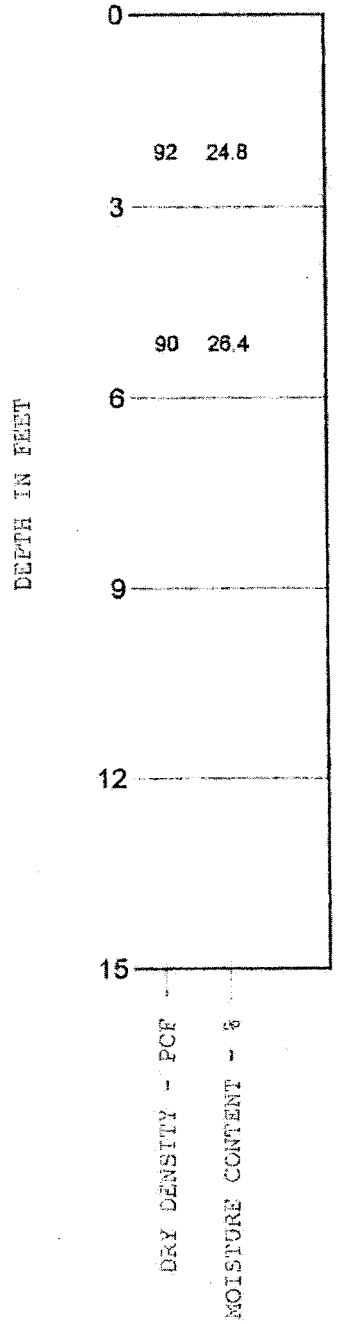
LOG OF BORING

PROJECT NUMBER: 1333-057.02
PLATE NUMBER: 3

DRAWN BY: WCB
DATE: 6/25/12

BORING 2

DRILLED: 6/13/12



		2.5" ASPHALT CONCRETE
		7" AGGREGATE BASE
24	CL	LIGHT GRAY FINE SANDY SILTY CLAY–MEDIUM STIFF, MOIST
	CH	GRAY-BROWN SILTY CLAY–STIFF
13		GRAY WITH SOME WHITE STREAKS
	CL	GRAY SILTY CLAY--STIFF
14		
	CH	DARK GRAY SILTY CLAY--STIFF
14		

NOTES:

1. THE BORING LOG DEPICTS SUBSURFACE CONDITIONS ONLY AT THE BORING LOCATION AND TIME DESIGNATED.
2. NOMENCLATURE USED TO DESCRIBE SOILS DEFINED ON PLATE 7.
3. UNDISTURBED SAMPLE OBTAINED WITH 2" I.D. MODIFIED CALIFORNIA SAMPLER.
4. SAMPLER OR PROBE PENETRATION RESISTANCE IN BLOWS PER FOOT OR FRACTION THEREOF; 140-POUND HAMMER, 30 DROP.
5. FREE GROUNDWATER NOT ENCOUNTERED IN BORING 2.

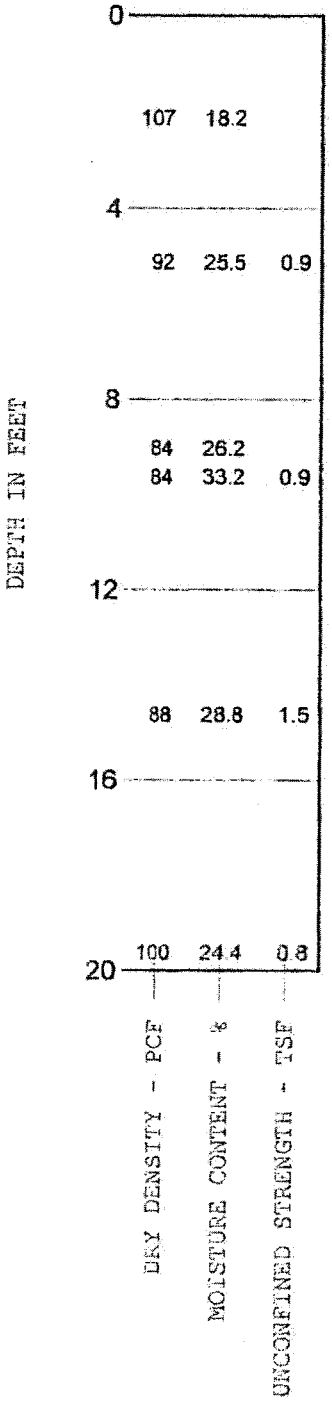
Haley & Aldrich Geotechnical Inc

LOG OF BORING

PROJECT NUMBER: 1333-057.02
PLATE NUMBER: 4
DRAWN BY: MCB
DATE: 6/25/12

BORING 3

DRILLED: 6/13/12



		2.5" ASPHALT CONCRETE
	CL	6" AGGREGATE BASE
13		MOTTLED GRAY AND YELLOW-BROWN SILTY CLAY--MEDIUM STIFF
	CH	DARK GRAY SILTY CLAY--MEDIUM STIFF TO STIFF
18		GRADING YELLOW-BROWN, LEANER, STIFF
12		LESS SILTY
18		STIFF
		GRADING TO LIGHTER COLOR
28	CL	LT. GRY-BRN W/ WHT STREAKS SL. F. SANDY SILTY CLAY

NOTES:

1. THE BORING LOG DEPICTS SUBSURFACE CONDITIONS ONLY AT THE BORING LOCATION AND TIME DESIGNATED.
2. NOMENCLATURE USED TO DESCRIBE SOILS DEFINED ON PLATE 7.
3. FREE GROUNDWATER NOT ENCOUNTERED IN BORING 3.
4. SEE PLATE 3 FOR ADDITIONAL NOTES.

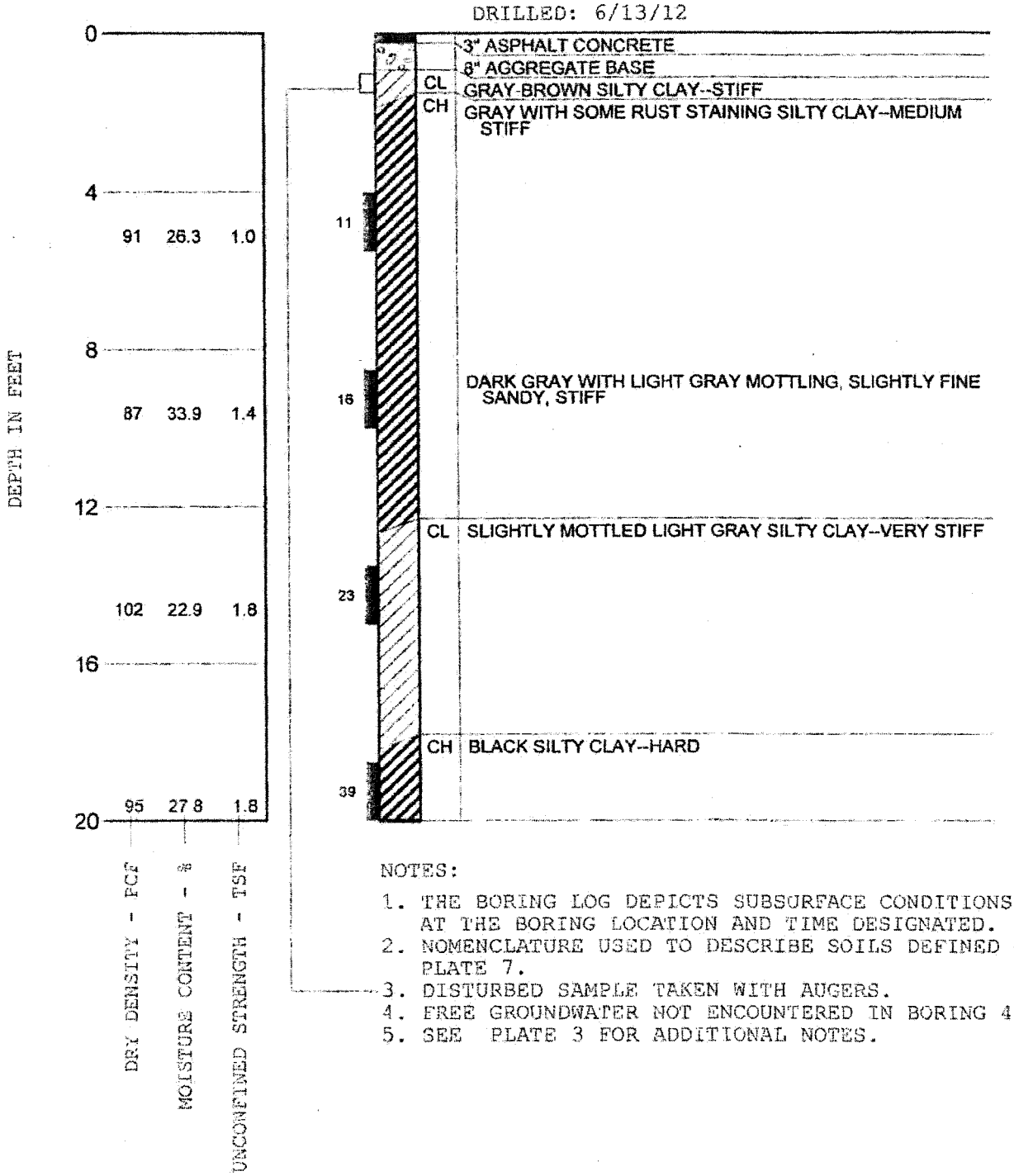
Haley & Aldrich Geotechnical Inc

LOG OF BORING

PROJECT NUMBER: 1333-057.02 DRAWN BY: MCB
PLATE NUMBER: 5 DATE: 6/25/12

BORING 4

DRILLED: 6/13/12



NOTES:

1. THE BORING LOG DEPICTS SUBSURFACE CONDITIONS ONLY AT THE BORING LOCATION AND TIME DESIGNATED.
2. NOMENCLATURE USED TO DESCRIBE SOILS DEFINED ON PLATE 7.
3. DISTURBED SAMPLE TAKEN WITH AUGERS.
4. FREE GROUNDWATER NOT ENCOUNTERED IN BORING 4.
5. SEE PLATE 3 FOR ADDITIONAL NOTES.

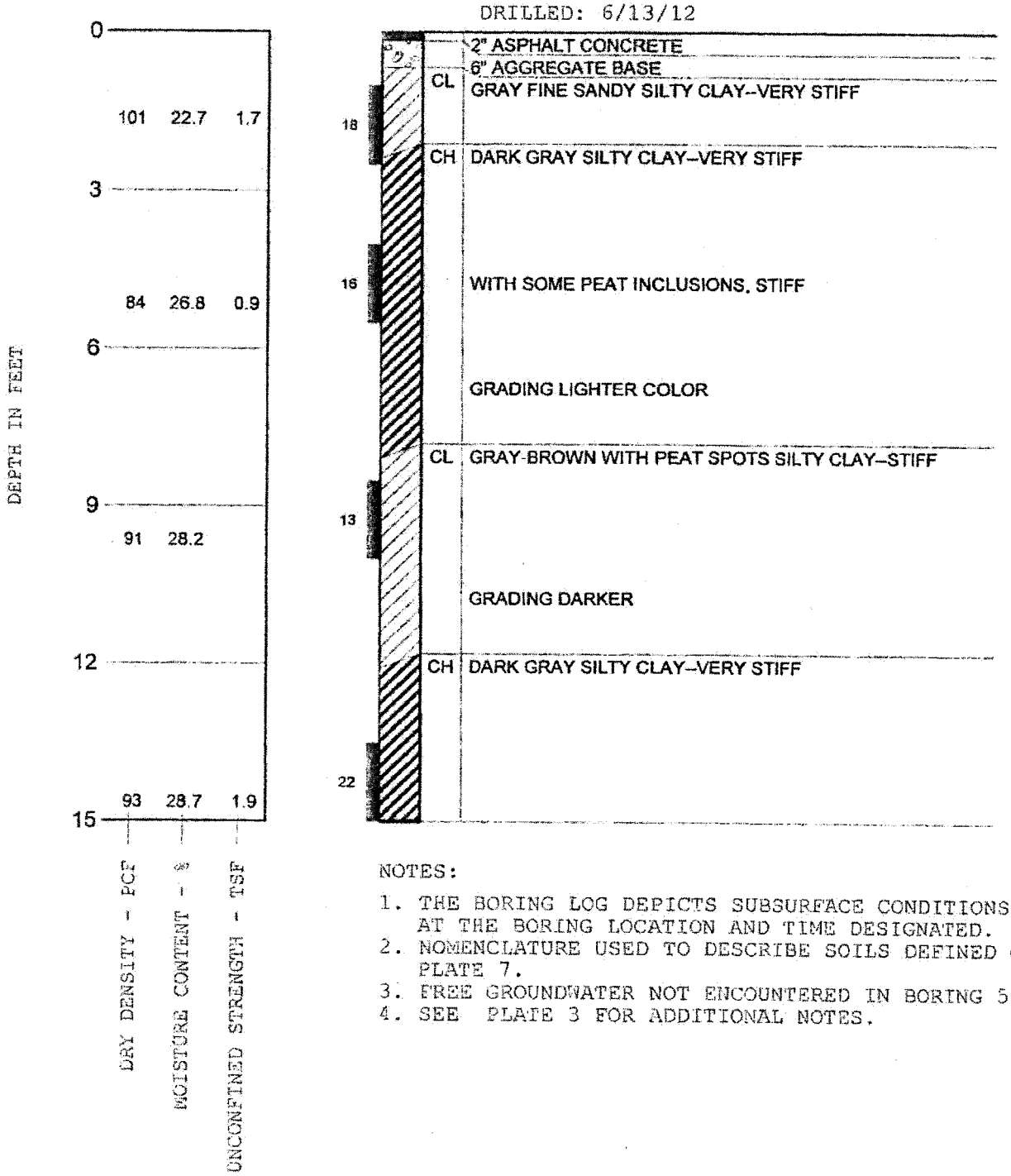
Kleinfelder Geotechnical Inc

LOG OF BORING

PROJECT NUMBER: 1333-057.02
PLATE NUMBER: 6
DRAWN BY: MCE
DATE: 6/25/12

BORING 5

DRILLED: 6/13/12



NOTES:

1. THE BORING LOG DEPICTS SUBSURFACE CONDITIONS ONLY AT THE BORING LOCATION AND TIME DESIGNATED.
2. NOMENCLATURE USED TO DESCRIBE SOILS DEFINED ON PLATE 7.
3. FREE GROUNDWATER NOT ENCOUNTERED IN BORING 5.
4. SEE PLATE 3 FOR ADDITIONAL NOTES.

Ramey Geotechnical Inc

LOG OF BORING

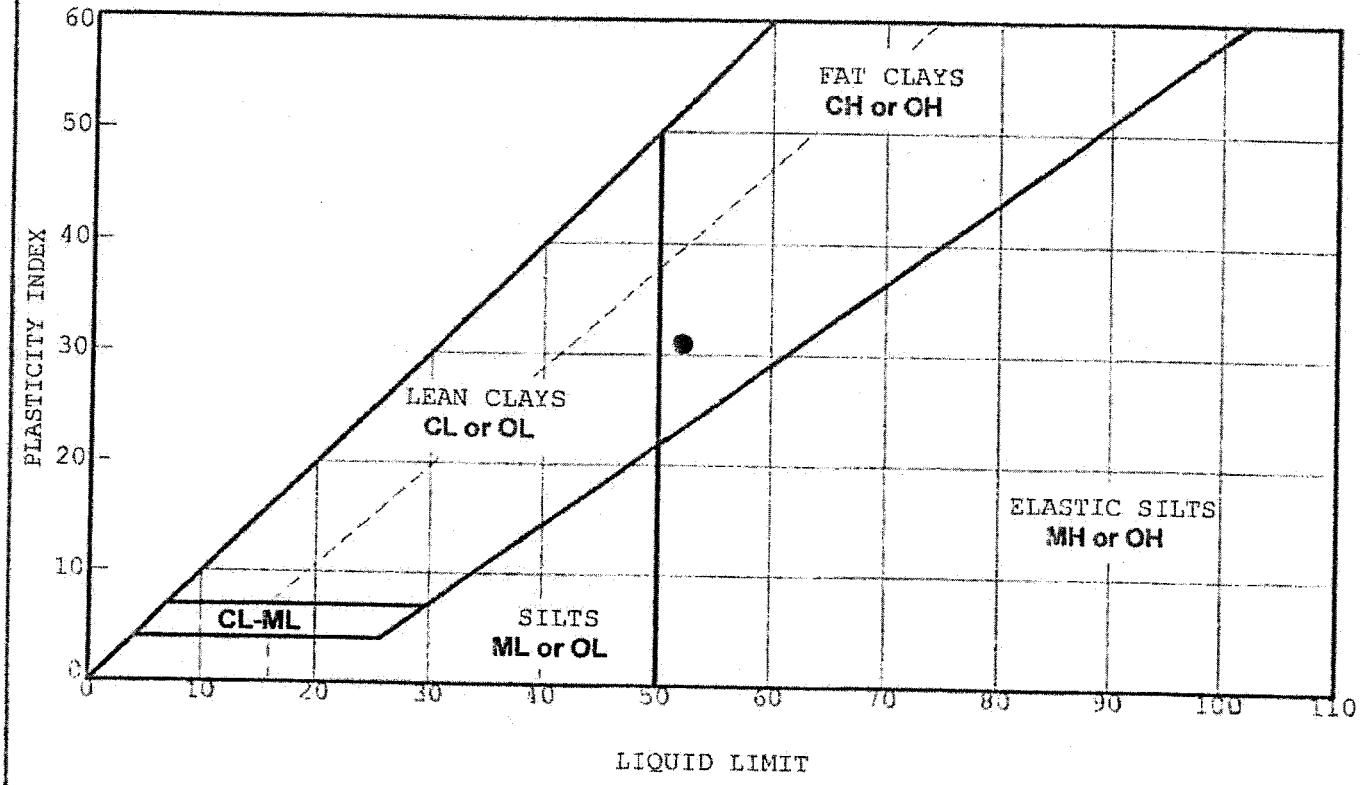
PROJECT NUMBER: 1333-057.02
PLATE NUMBER: 7

GRAPH	SYMBOL	DESCRIPTION	MAJOR DIVISIONS		
	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES	CLEAN GRAVELS WITH LESS THAN 5% FINES	GRAVEL AND GRAVELLY SOILS	COARSE GRAINED SOILS MORE THAN 50% LARGER THAN NO. 200 SIEVE
	GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES			
	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	GRAVELS WITH MORE THAN 12% FINES	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES			
	SW	WELL GRADED SANDS, GRAVELLY SANDS	CLEAN SANDS WITH LESS THAN 5% FINES	SANDS AND SANDY SOILS	
	SP	POORLY GRADED SANDS, GRAVELLY SANDS			
	SM	SILTY SANDS, SAND-SILT MIXTURES	SANDS WITH MORE THAN 12% FINES	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES			
	ML	INORGANIC SILTS, ROCK FLOUR, OR CLAYEY SILTS WITH SLIGHT PLASTICITY	LIQUID LIMIT LESS THAN 50	SILTS AND CLAYS	FINE GRAINED SOILS MORE THAN 50% SMALLER THAN NO. 200 SIEVE
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTS, ELASTIC SILTS	LIQUID LIMIT GREATER THAN 50	SILTS AND CLAYS	
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	OH	ORGANIC CLAYS AND ORGANIC SILTS OF MEDIUM TO HIGH PLASTICITY			
	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT	HIGHLY ORGANIC SOILS		

UNIFIED SOIL CLASSIFICATION SYSTEM

Ramey Geotechnical Inc

PROJECT NUMBER: 1333-057.02
PLATE NUMBER: 8



CLASSIFICATION TEST RESULTS						
SYMBOL	SAMPLE LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	SOIL CLASSIFICATION
●	BORING 5	4.0	52	21	31	CH

ATTERBERG LIMIT DATA

Geotechnical Inc

GUIDE EARTHWORK SPECIFICATIONS
PLEASANTON APARTMENTS
5725 West Las Positas Boulevard
Pleasanton, California

GENERAL

SCOPE OF WORK

These specifications and applicable plans pertain to and include all site earthwork including, but not limited to, the furnishing of all labor, tools, and equipment necessary for site preparation, disposal of waste materials, excavation, preparation of foundation materials for receiving fill, and placement and compaction of fill and backfill to the lines and grades shown on the project grading plan.

PERFORMANCE

The Contractor shall be responsible for the satisfactory completion of all site earthwork in accordance with the project plans and specifications. This work shall be observed and tested by a representative of Raney Geotechnical, hereinafter known as the Soil Engineer. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by the Soil Engineer. No deviation from the specifications shall be made except upon written approval of the Soil Engineer.

No site earthwork shall be performed without the physical presence or approval of the Soil Engineer. The Contractor shall notify the Soil Engineer at least twenty-four hours prior to commencement of any aspect of the site earthwork. The Soil Engineer shall be the Owner's representative to observe the grading operations during the site preparation work and placement and compaction of fills. He shall make enough visits to the site to familiarize himself generally with the progress and quality of the work. He shall make a sufficient number of tests and/or observations to enable him to form an opinion regarding the adequacy of the site preparation, the acceptability of the fill material, and the extent to which the compaction of the fill, as placed, meets the specification requirements. Any fill that does not meet the specification requirements shall be removed and/or re-compacted until the requirements are satisfied.

In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal work hours.

Any construction review of the Contractor's performance conducted by the Soil Engineer is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the construction site.

Upon completion of the construction work, the Contractor shall certify that all compacted fills are in place at the correct locations, have the correct dimensions, and have been constructed in accordance with sound construction practice.

SITE AND FOUNDATION CONDITIONS

The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the soil report titled, "Geotechnical Investigation, Pleasanton Apartments 5725 West Las Positas Boulevard, Pleasanton, California"; June 25, 2012; File No. 1333-057.02.

The Contractor shall not be relieved of liability under the contract for any loss sustained as a result of any variance between conditions indicated by or deduced from the Geotechnical Investigation, and the actual conditions encountered during the course of the work.

The Contractor shall, upon becoming aware of surface and/or subsurface conditions differing from those disclosed by the Geotechnical Investigation, promptly notify the Owner as to the nature and extent of the differing conditions, first verbally to permit verification of the conditions, and then in writing. No claim by the Contractor for any conditions differing from those anticipated in the plans and specifications and disclosed by the Geotechnical Investigation will be allowed unless the Contractor has so notified the Owner's representative verbally and in writing, as required above, of such changed conditions.

DUST

The Contractor shall assume responsibility for the alleviation and prevention of any dust nuisance on or about the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or wind-blown materials attributable to his work.

STREET CLEANING

The Contractor shall assume responsibility for cleaning streets or other adjacent property of soil, mud or debris.

PROTECTION

The contractor shall barricade and protect all trees and associated root systems that are to remain.

DEFINITION OF TERMS

ENGINEERED FILL - All soil placed at the site in order to raise grades or to backfill excavations and upon which the Soil Engineer has made sufficient tests and/or observations to

enable him to issue a written statement that, in his opinion, the fill has been placed and compacted in accordance with the specification requirements.

ON-SITE MATERIAL - Material obtained from the required site excavations.

IMPORT MATERIAL - Material obtained from off-site borrow areas.

ASTM SPECIFICATIONS - The 2002 Edition of the American Society for Testing and Materials Standards.

RELATIVE COMPACTION - The ratio, expressed as a percentage, of the in-place dry density of the structural fill material to the maximum density of the same material as determined by ASTM Test Designation D1557-02.

OPTIMUM MOISTURE CONTENT - The water content as determined by ASTM D2216-02 test method that corresponds to the maximum dry density.

CLEARING AND PREPARATION OF BUILDING PAD AND PAVEMENT AREAS

General site clearance shall include the removal of existing construction, surface vegetation, trees designated for removal and associated roots greater than one inch (1") in diameter, rubble, auto lifts, tanks curbs, rubbish, and any other debris; these materials shall be wasted off site. Existing pavement may be pulverized and stockpiled together with underlying aggregate base (AB) for later use as non expansive soils. Small diameter (less than one inch diameter) underground pipes within two feet of original or final grade shall be removed. All fuel piping and piping greater than one inch in diameter shall be removed regardless of depth. Excavations resulting from the removal of the above items, as well as any loose and or saturated soil deposits designated by the Soil Engineer, shall be sloped back to allow through passage of earthwork equipment, cleaned out to firm undisturbed soils, and backfilled with engineered fill in accordance with these specifications.

Following clearance and removal of unsuitable materials, building pads shall be observed by the Soil Engineer. Any remaining unsuitable materials designated by the Soil Engineer shall be removed. Areas designated to receive engineered fill shall be scarified to a depth of eight inches, moisture conditioned to a minimum three percent (3") over-optimum condition and re-compacted in place. A minimum degree of relative compaction of ninety percent (90%) shall be provided.

REQUIREMENTS FOR FILL MATERIAL

All fill materials must be approved by the Soil Engineer. These materials shall be soil or soil/rock mixtures which contain less than three percent (3%) organic matter or other deleterious substances by weight. The fill material shall not contain rocks or rubble fragments over three inches (3") in greatest dimension. On-site soils, excluding three inch (3") material, are suitable for use as Engineered Fill. All imported shall have a plasticity index less than fifteen (15) and shall be tested and approved by the Soil Engineer prior to importation to the site.

Engineered Fill shall be placed in layers which when compacted shall not exceed six inches (6") in thickness. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to promote uniformity of the material in each layer. When the moisture content of the Engineered Fill is below a minimum three percent over-optimum condition, water shall be added until a three percent over-optimum moisture content is achieved. When the moisture content of the Engineered Fill is too high to permit the specified compaction, the fill shall be aerated by manipulation with a motor grader or other methods until satisfactory moisture is achieved.

All Engineered Fill shall be compacted by mechanical means to produce a minimum degree of compaction of ninety percent (90%) in building pad and pavement areas. Compaction shall be undertaken with equipment capable of achieving the specified relative density. Each layer shall be compacted over its entire area until the specified density has been obtained.

Field density tests shall be made by the Soil Engineer in accordance with ASTM Test Designations D2922-96 and D3017-96 (Nuclear Probe Method). Where compaction equipment has disturbed the surface to a depth of several inches, density tests shall be taken in the compacted material below the disturbed surface. Additional layers of the fill shall not be spread until the field density tests indicate the specified densities have been obtained.

FINAL SUBGRADE PREPARATION

The upper eight inches (8") of all building pad and pavement subgrades shall be compacted to a minimum degree of relative compaction of ninety percent (90%), regardless of whether the finished surface is in cut or fill.

TESTING

Observation and testing by the Soil Engineer shall be provided during all filling and compacting operations. The grading contractor shall give at least twenty-four (24) hours notice prior to beginning such operations to allow proper scheduling of the work.