APPENDIX H

PROJECT GEOTECHNICAL EVALUATION

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May 7, 2013
Job No: 1632.12

Alex Kashef
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RE: Report Update, Geotechnical Investigation
The Valhalla, Corner of Main and Second Streets, Sausalito, California

As requested, this letter presents an update to our February 6, 2012 Geotechnical Investigation report for the Valhalla project at the corner of Main and Second Streets, Sausalito, California. The 02/06/12 report was prepared for a different project. The current project is shown on the plan Sheet A1.2 by Michael Rex Associates, dated May 2, 2013.

Based on review of the current project, we judge that the 02/06/12 report is still valid and the recommendations provided in the report for foundation design, site grading and drainage should be followed.

We trust this provides the information you require at this time. If you have any questions, please call.
Very truly yours,

Nersi Hemati, P.E.
Geotechnical Engineer #390

Cc: Michael Rex Associates

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REPORT
GEOTECHNICAL INVESTIGATION
RENOVATION & ADDITIONS
THE VALHALLA INN ON THE BAY
SAUSALITO, CALIFORNIA

Job No.: 1632.12

Prepared for:

Alex Kashef
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By

Nersi Hemati,
Geotechnical Engineer - 390

February 6, 2012

INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed Valhalla Inn on the Bay consisting of the renovation of the existing buildings at the corner of Main and Second Streets, Sausalito, California. We understand that the project is to be constructed approximately as discussed in our 1/11/12 site meeting.

The purpose of the investigation is to evaluate the soil conditions at the site and provide geotechnical recommendations to aid the design and construction of the project.

The scope of our work included exploring and evaluating the subsurface conditions with test borings and laboratory tests, analyzing the results of the field and laboratory work, and presenting our findings in this report. Our report provides the following geotechnical information:

1. A description of the soil and geologic conditions observed.

2. An opinion of project feasibility from a geotechnical standpoint.

3. Design recommendations for new foundations and retaining walls.

4. Site grading and soil engineering drainage recommendations.

The scope of our work does not include an evaluation of soil or groundwater hazardous waste contamination, toxicity, or corrosion potential at the site. The scope of our work also does not include an evaluation of the existing foundations.

WORK PERFORMED

We performed a reconnaissance of the site and reviewed the following geological maps:

Rice, S.J., and Smith, T.C., 1976; Geology of the Tiburon Peninsula, Sausalito, and Adjacent Areas, Marin County, California: California Division of Mines and Geology, OFR 76-2 SF Plate 1E, Scale 1:12,000.

Rice, S.J., 1976; Interpretation of The Relative Stability of Upland Slopes in the Tiburon Peninsula, Sausalito, and Adjacent Areas, Marin County, California: California Division of Mines and Geology, OFR 76-2 SF Plate 2E, Scale 1:12,000.

On July 19, 2011 we explored the subsurface conditions at the site to the extent of 4 test borings. The test borings were drilled with portable augers to depths ranging from 10'6" to 15'. The approximate locations of the borings are indicated on the attached Boring Location Sketch, Plate 1. We observed the drilling, logged the conditions encountered, and obtained samples for visual examination, classification and laboratory testing.

Detailed descriptions of the materials encountered in our borings are presented on the logs of boring. The attached boring logs and related information depict subsurface conditions only at the approximate location shown on Plate 1 and on the date designated on the log; subsurface conditions at other locations and times could differ from the conditions occurring at our boring location. Details of the field and laboratory work are presented in the appendix at the end of the report.

SITE AND SOIL CONDITIONS

The property is located on relatively level to gently sloping ground on the east side of Main Street in Sausalito. The property contains two existing main structures at 206 Second Street and 201 Bridgeway with an asphalt paved parking lot. A pile-supported wood deck walkway borders the property on the east and part of south side near the Bay.

Geology and Soils

The area has been mapped as containing colluvial soils in close proximity to chert, greenstone and Franciscan mélange bedrock (Rice and Smith 1976).

Our test borings encountered soft to medium stiff sandy silty clay with rock fragments (partially fill) underlain by very stiff to hard sandy clay with increased rock fragments below depths ranging from approximately 2 to 5 feet. Bedrock was encountered at 9' depth in boring 1. Medium dense gravel, loose sand and some organic matter were also encountered as shown on the boring logs. Detailed descriptions of the materials encountered are presented in the Logs of Boring, Plates 2-5.

Ground Water

Free ground water was encountered in our borings at depths ranging from 1 (boring 1 near the Bay) to 13 feet at the time of drilling. However, fluctuations in the ground water level at the site could occur due to tidal action, variations in rainfall and/or other factors. Ground water will likely be encountered during construction and water seepage should be anticipated in any proposed excavations.

CONCLUSIONS AND DISCUSSION

Based on our field, laboratory, and office studies, we judge that the project is feasible from a geotechnical engineering standpoint provided that the recommendations presented in this report are incorporated in the design and construction.

In our judgment, the proposed structural additions may be supported on drilled cast-in-place reinforced concrete piers. Spread footing foundations may only be used where level excavations extend into strong soil anticipated at 2 to 5 feet depths. Some difficult excavations and drilling may be encountered to achieve the proposed grades and required penetration.

Surface and subsurface drainage facilities should be constructed as discussed below in the "Recommendations" section of the report.

Like the entire San Francisco Bay Area, the site is subject to strong ground shaking during earthquakes. It will be necessary to design and construct the project in strict conformance with current standards for earthquake resistant construction. The U.S. Geological Survey predicts a 63% chance of a large earthquake (Richter Magnitude 6.7 or greater) occurring in the Bay Area in the next 30 years.

All conclusions and recommendations presented in this report are contingent upon Nersi Hemati being retained to: 1) Review the geotechnical engineering aspects of the final grading and foundation plans prior to construction; and 2) Observe construction of the project as outlined below in the "Supplemental Services" section of this report.

RECOMMENDATIONS

Faulting and Seismicity

The site is not within a current Alquist-Priolo Special Studies Zone, and the geologic maps reviewed indicate that active faults are not considered to exist within the site. The nearest known active faults are the San Andreas Fault, located about 8 kilometers to the southwest, and the Hayward Fault located about 18 kilometers miles to the east. Maximum credible earthquake magnitudes of 7.9 and 7.1 (Richter scale) have been postulated for these faults, respectively.

We judge that the site Class “D” may be used in seismic design of the project in accordance with the 2010 California Building Code.

Site Grading

Areas to be developed should be cleared of vegetation, debris, the existing structures, slabs, and foundations. The site should be stripped of the upper few inches of soil containing organic matter. The strippings should be removed, or if suitable, stockpiled for re-use as topsoil in landscaping.

Any loose soils in the proposed construction area should be over-excavated and reconstructed as engineered fill.

Following initial site preparation, excavation should be performed as necessary. We anticipate that, with the exception of organic matter and of rocks or lumps larger than 6 inches in diameter, the excavated material will be suitable for re-use as compacted fill.

In sloping areas a keyway should be excavated at the toe of the fill slope extending at least 2 feet into rock. A subdrain consisting of 4-inch diameter perforated pipe (SDR 35 or stronger) encased in class 2 permeable rock (Caltrans specification) should be installed in the keyway. The exposed subgrade to receive fill should be prepared by scarifying to a depth of 6 inches, moisture-conditioning as necessary, and compacting to at least 90% of the maximum dry density of the materials as determined by the ASTM D-1557 laboratory compaction test procedure. Fill material should then be spread in 8-inch thick loose lifts, moisture-conditioned as necessary, and compacted to at least 90% relative compaction. As successive layers of fill are placed they should be continually keyed into rock or strong soil and subdrains should be provided on the intermediate benches.

Imported fill should be non-expansive; that is, it should have a plasticity index of 15 or less. The imported fill material should be free of organic matter and of rocks or lumps larger than 6 inches in diameter. Not more than 15% of the rocks or lumps should exceed 2.5 inches.

Generally, grading is most economically performed during the summer months when on-site soils are usually dry of optimum moisture content. Delays should be anticipated in site grading performed during the rainy season due to excessive moisture in on-site soils. Special and relatively expensive construction procedures should be anticipated if grading must be completed during the winter.

Cut and fill slopes should be no steeper than 2:1. Where steeper banks are required, retaining walls should be used. Slopes should be planted with fast growing, deep-rooted groundcover to reduce sloughing or erosion.

Drilled Piers

Drilled piers should be at least 12 inches in diameter and should extend at least 5 feet into strong native soils below 5 foot depth (total pier depths on the order of 10 feet).

The piers should be interconnected with grade beams and tie beams that span between the piers in accordance with structural requirements. The steel from the piers should extend sufficient distance into the grade beams to develop its full bond strength.

The portion of the piers extending into strong soil below 5 feet depth may be designed using an allowable skin friction of 400 pounds per square foot (psf). End bearing should be neglected because of the difficulty of cleaning out small diameter pier holes, and the uncertainty of mobilizing end bearing and skin friction simultaneously. Lateral loads on piers will be resisted by passive pressure on the strong native soils below 5 feet depth. An equivalent fluid pressure of 250-pcf acting on 2 pier diameters should be used.

If ground water is encountered, it may be necessary to dewater the holes or place the concrete by the tremie method. If caving soils are encountered, it may be necessary to case the holes. Hard drilling may be required to achieve the required penetration.

Spread Footings

Spread footings may be used in level areas excavated into strong native soil. Spread footings should be at least 12 inches wide, and should extend at least 12 inches into strong native soil. The footings should extend at least 2 feet deep and the effects of scouring and uplift next to the Bay water should be taken into account.

The footings should be stepped as necessary to produce level tops and bottoms. Footings should be deepened as necessary to provide at least 10 feet of confinement between the footing bottoms and the face of the nearest slope.

Footings installed in accordance with these recommendations may be designed using allowable bearing pressures of 2000, 2500, and 3300 pounds per square foot (psf), for dead loads, dead plus code live loads, and total loads (including wind and seismic), respectively. The portion of spread footings extending into native strong soil may impose a passive equivalent fluid pressure and a friction factor of 250 pcf and 0.3 respectively, to resist sliding. We recommend that the footings be tied together as much as practical to create a more rigid foundation system and reduce potential differential settlement.

Retaining Walls

Retaining walls should be designed to resist lateral earth pressures plus additional lateral pressures that may be caused by surcharge loads at the ground surface behind the walls such as for surcharge from nearby foundations and walls. Retaining walls supporting a relatively level backfill should be designed to resist an active equivalent fluid pressure of 50 pcf acting in a triangular pressure distribution. Where the backfill slopes up at a 2:1 gradient, the walls should be designed for an equivalent fluid pressure of 65 pcf. Values can be interpolated for flatter gradients. Retaining walls restrained from movement at the top should be designed for pressures of 65 and 80 pcf for level and sloping backfills respectively. We recommend a uniform pressure equal to 10 times the height of the retaining walls be used as seismic surcharge.

Retaining walls should be fully backdrained. The backdrains should consist of 4-inch diameter, rigid perforated pipe embedded in drain rock. The pipe should be PVC Schedule 40, SDR 35, or equivalent, and the pipe should be sloped to drain to outlets by gravity. Drain rock should consist of clean, free-draining crushed rock or gravel. The rock should be wrapped in filter fabric such as Mirafi 140N or equivalent. Alternatively, class 2 permeable rock may be used without filter fabric. The top of the pipe should be at least 8 inches below the lowest adjacent grade. The crushed rock or gravel should extend to within 1 foot of the surface. The upper one-foot should be backfilled with compacted soil to exclude surface water. The ground surface behind retaining walls should be sloped to drain.

Where migration of moisture through retaining walls would be detrimental, retaining walls should be waterproofed. Retaining walls will yield slightly during backfilling. Therefore, walls should be backfilled prior to building on or adjacent to the walls.

Slab-on Grade

Slab-on-grade subgrade should be rolled to produce a dense, uniform surface. Loose fill and areas of soft soil should be over-excavated and recompacted as engineered fill. Slab-on-grade subgrade should be over-excavated and replaced with minimum 12-inches of non-expansive soils if expansive soils are encountered at slab subgrade.

The slabs should be underlain with a capillary moisture break consisting of at least 4 inches of clean, free draining crushed rock or gravel at least 1/4 inch and no larger than 3/4 inch in size. Where migration of moisture vapor through slabs would be detrimental, an impermeable heavy grade membrane moisture vapor barrier (such as Stego-Wrap or equivalent) should be provided between the drain rock and the slabs. However, we defer to waterproofing and flooring specialists who should be consulted regarding this item as it is not a geotechnical engineering issue.

The future expansion potential of the subgrade soils should be reduced by thoroughly presoaking the slab subgrade prior to concrete placement. Slabs should be at least 4 inches thick, and should be reinforced with at least #4 bars on 12-inch centers each way.

Slabs should be grooved at regular intervals to induce and control cracking. Outlets should be provided from the slab drain rock.

Soil Engineering Drainage

Surface water should be diverted away from slopes and foundations. Roofs should be provided with gutters, and the downspouts should be connected to closed conduits discharging well away from foundations and slopes. Roof downspouts and surface drains must be maintained entirely separate from foundation drains and retaining wall back drains. The outlets should discharge into erosion- resistant areas, and should be provided with rock rip-rap or other energy dissipators, if they discharge onto the ground.

Foundation drains should be installed against the upslope and cross slope foundations to control subsurface water. The foundation drains should extend to at least 12 inches below the level of any crawl space.

The drain should consist of 4-inch diameter, rigid perforated pipe embedded in drain rock. The pipe should be PVC Schedule 40 or SDR 35 pipe, and the pipe should be sloped to drain to outlets by gravity. Drain rock should consist of clean, free-draining crushed rock or gravel. The rock should be wrapped in filter fabric such as Mirafi 140N or equivalent. Alternatively, class 2 permeable rock may be used without the fabric. The top of the pipe should be at least 8 inches below the lowest adjacent crawl space grade. The drain rock should extend to within 6 inches of the surface. The upper 6 inches should be backfilled with compacted soil to exclude surface water.

The ground surface, including the area beneath the structure, should be sloped to drain away from foundations. Piped outlets should be provided to allow drainage through foundations.

Even with the above provisions, some water may be encountered due to the topography and geology of the area. A sump pump can be installed to remove any water that may still be encountered.

LIMITATIONS

Our services consist of professional opinions, conclusions and recommendations that are made in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

Geotechnical engineering is characterized by uncertainty. Therefore, we are unable to eliminate all risks or provide guarantees.

We judge that construction in accordance with these recommendations will be stable, and that the risk of future instability is within the range generally associated with construction near the Bay in Sausalito. Subsurface conditions are complex, and may differ from those indicated by surface features and those encountered at the test hole locations.

Due to limitations inherent in geotechnical investigations, it is not uncommon to encounter variations in the soil conditions during construction nor is it practical to determine all such variations during an acceptable program of subsurface exploration for a project of this scope.

Soil conditions and standard of practice change. Therefore, we should be consulted to update this report if construction is not performed within 18 months.

SUPPLEMENTAL SERVICES

We should review the final plans for conformance with the intent of our recommendations. During construction, we should observe the conditions encountered in construction excavations and modify our recommendations, if warranted. We should observe and test fill placement and compaction.

We should observe footing excavations or pier drilling operations to determine the actual depths required. Our services during foundation construction are limited to observation of soil and bedrock conditions, depth of excavation or drilling, and the condition of excavations or pier holes prior to concrete placement. Our services do not include observation or approval of steel, concrete, or asphalt nor do they include establishing or verifying construction lines and grades. This should be performed by the appropriate party. Upon completion of the project, we should perform a final observation. We should summarize the results of this work in a final report.

These supplemental services are performed on an as- requested basis, and we cannot accept responsibility for items that we are not notified to observe. These supplemental services are in addition to this soil investigation, and are charged for on an hourly basis in accordance with our Schedule of Charges.

MAINTENANCE

Periodic land maintenance will be required. Surface and subsurface drainage facilities should be checked frequently, and cleaned and maintained as necessary. A dense growth of deep-rooted ground cover must be maintained on all slopes to reduce sloughing and erosion. Sloughing and erosion that occurs must be repaired promptly before it can enlarge into sliding.

APPENDIX - FIELD EXPLORATION AND LABORATORY TESTING

Field Exploration

Our field investigation consisted of a site reconnaissance and subsurface exploration. Due to site inaccessibility, we drilled 4-inch diameter exploratory borings with portable power auger equipment at the approximate locations shown on the Boring Location Sketch, Plate 1.

The materials encountered in the test borings were continuously logged in the field. Logs of our borings are included as Plates 2-5. The soils encountered in our exploratory borings are classified in accordance with the Unified Soils Classification System presented on Plate 6.

Relatively undisturbed soil samples were obtained from the exploratory borings at selected depths appropriate to the subsurface investigation. The samples were obtained with the 2.4" inside diameter Modified California Sampler as well as the Standard Penetration Test (SPT) sampler.

The blow counts were obtained by dropping a 70- pound hammer through a 30-inch free fall. The sampler was driven 18 inches, or a shorter distance where hard resistance was encountered, and the number of blows were recorded for each 6 inches of penetration. The blow per foot recorded on the boring logs represent the accumulated number of blows that were required to drive the sampler the last 12 inches or the number of inches indicated where the sampler did not penetrate the full 18 inches.

The blows per foot recorded on the boring log have been adjusted to represent the standard penetration test. The approximate location of the exploratory borings was established in the field by pacing and tape methods. Boring locations were not established by surveying methods and the approximate locations indicated on the Boring Location Sketch should be assumed accurate only to the degree implied by the method used.

The boring logs show our interpretation of the subsurface conditions on the dates and at the locations indicated and it is not warranted that they are representative of the subsurface conditions at other locations and times. The stratification lines on the borings represent the approximate boundaries between the material types; actual transitions may be gradual.

Laboratory Testing

Water Content And Dry Density

The natural water content and dry density were determined on several samples of the materials recovered from the borings respectively; these are recorded on the boring logs at the appropriate sample depths.

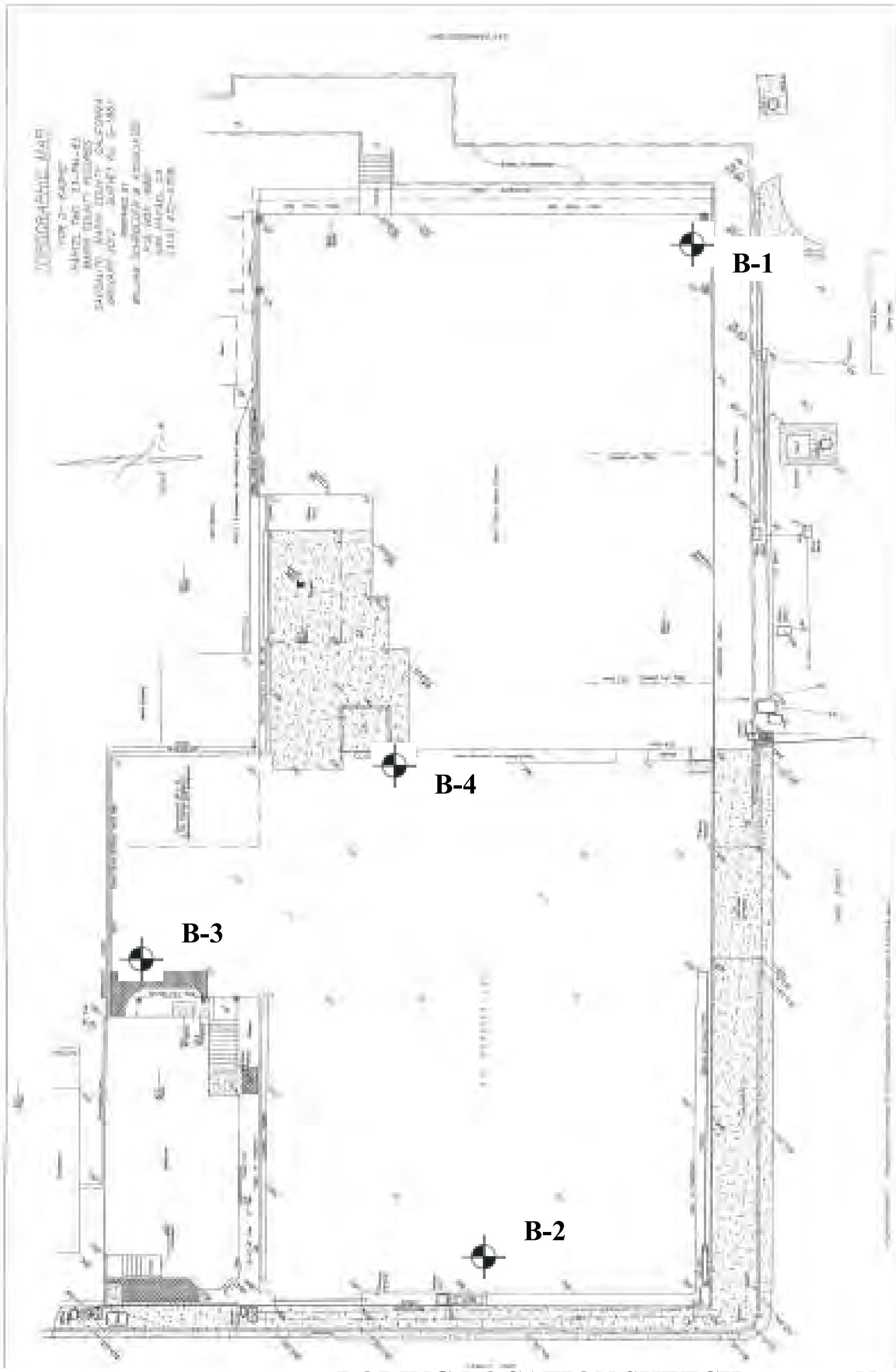
<u>Minus #200</u>

The percentage of particles passing the No. 200 sieve was determined on a representative sample of the subsurface materials to assist in the classification of the soils. The result of the test is shown on the logs of borings and denoted (-200).

LIST OF PLATES

Plate 1	Boring Location Sketch
Plates 2-5	Boring Logs
Plate 6	Soil Classification Chart & Key to Test Data

Cc: Michael Rex Associates



BORING LOCATION SKETCH **Not to Scale**
The Valhalla Inn on the Bay, Sausalito, California

Nersi Hemati, P.E., G.E. **Consulting Soil Engineer**	**JOB NO: 1632.12**	**PLATE 1**

PROJECT	The Valhalla Inn on the Bay, Sausalito	BORING NO: 1
DATE OF BORING	1/25/12	
TYPE OF BORING	4" Augers	
HAMMER WEIGHT	#70	

DESCRIPTION OF MATERIALS	DEPTH IN FEET	*BLOWS PER FOOT	DRY DENSITY (PCF)	WATER CONTENT (%)	OTHER TESTS
BROWN SAND (SP) loose, wet		▼ (groundwater)			
BROWN CLAYEY SANDY GRAVEL (GP) medium dense, saturated		20	112	18.2	
			hard drilling		
grades with wood fragments	5	20		11.3	
OLIVE GREEN SILTY CLAY (CL), stiff, saturated			drilling refusal at 8.5'		
DARK GRAY BROWN SHALE/CHERT BEDROCK weathered		29			
	10	28/6"		18	
	15				
Bottom of Boring 10.5' * Blow counts have been converted to SPT Groundwater Encountered at 1'					

NERSI HEMATI, P.E., G.E. Consulting Soil Engineer	JOB NO: 1632.12	PLATE 2

PROJECT	The Valhalla Inn on the Bay, Sausalito	**BORING NO: 2**
DATE OF BORING	1/25/12	
TYPE OF BORING	4" Augers	
HAMMER WEIGHT	#70	

DESCRIPTION OF MATERIALS	**SAMPLES**				
	DEPTH IN FEET	***BLOWS PER FOOT**	**DRY DENSITY (PCF)**	**WATER CONTENT (%)**	**OTHER TESTS**
ASPHALT, 2" layer BROWN SANDY CLAY WITH GRAVEL (CL) medium stiff, moist, with brick fragments (FILL)					
BROWN SANDY CLAY (CL) stiff, moist		20	103	19.1	
	5-				
MOTTLED BROWN AND DARK GRAY SANDY CLAY WITH GRAVEL (CL) hard, moist		40		26	
MOTTLED BROWN SILTY SANDY CLAY WITH ROCK FRAGMENTS (CL) very stiff to hard, moist, with roots	10-	27		23.3	-200=48%
grades with increased rock fragments		27		16.9	
LIGHT BROWN AND BLUISH GRAY SANDSTONE ROCK FRAGMENTS		30		19.5	
	15-				
Bottom of Boring 15' * Blow counts have been converted to SPT Groundwater Encountered at 13'					

NERSI HEMATI, P.E., G.E. **Consulting Soil Engineer**	**JOB NO:** 1632.12	**PLATE 3**

PROJECT	The Valhalla Inn on the Bay, Sausalito					BORING NO: 3
DATE OF BORING	1/25/12	SAMPLES				
TYPE OF BORING	4" Augers					
HAMMER WEIGHT	#70					

DESCRIPTION OF MATERIALS	DEPTH IN FEET	*BLOWS PER FOOT	DRY DENSITY (PCF)	WATER CONTENT (%)	OTHER TESTS
ASPHALT - 2" layer BROWN TO DARK BROWN SANDY CLAY (CL) medium stiff to stiff, moist, with gravel (PARTIALLY FILL)		13	106	20.1	
			firm drilling		
	5-				
grades mottled brown with more gravel		15	96	26.3	
		▼ (groundwater)			
MOTTLED BROWN CLAYEY ROCK FRAGMENTS	10-	35	102	16.3	
	15-				
Bottom of Boring 11.5' * Blow counts have been converted to SPT Groundwater Encountered at 7.5'					

NERSI HEMATI, P.E., G.E. **Consulting Soil Engineer**	**JOB NO:** 1632.12	**PLATE 4**

PROJECT	The Valhalla Inn on the Bay, Sausalito	BORING NO: 4
DATE OF BORING	1/25/12	
TYPE OF BORING	4" Augers	
HAMMER WEIGHT	#70	

DESCRIPTION OF MATERIALS	DEPTH IN FEET	*BLOWS PER FOOT	DRY DENSITY (PCF)	WATER CONTENT (%)	OTHER TESTS
ASPHALT - 2" layer BASE ROCK BLACK SANDY CLAY (CL) soft to medium stiff, moist, with organic matter (PARTIALLY FILL)		5			
			80	33.6	
MOTTLED BROWN SANDY CLAY WITH ROCK FRAGMENTS (CL)	5-				
		30			
			104	17.6	
		20			
				24.3	
		28			
grades with increased rock fragments	10-			20.9	
	15-				
Bottom of Boring 10.5' * Blow counts have been converted to SPT Groundwater Encountered at 7'					

NERSI HEMATI, P.E., G.E. Consulting Soil Engineer	JOB NO: 1632.12	PLATE 5

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12 % FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12 % FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

Shear Strength, psf
Confining Pressure, psf

Consol	- Consolidation	Tx	320	(2600)	Unconsolidated Undrained Triaxial
LL	- Liquid Limit (in %)	Tx CU	320	(2600)	Consolidated Undrained Triaxial
PL	- Plastic Limit (in %)	DS	2750	(2000)	Consolidated Drained Direct Shear
PI	- Plasticity Index	FVS	470		Field Vane Shear
G_s	- Specific Gravity	UC	2000		Unconfined Compression
SA	Sieve Analysis	LVS	700		Laboratory Vane Shear
	"Undisturbed" Sample	SS	- Shrink Swell		
	Bulk or Disturbed Sample	EXP	- Expansion		
	Standard Penetration Test	P	- Permeability		
	Sample Attempt with No Recovery				

Note: All strength tests on 2.8" or 2.4" diameter sample unless otherwise indicated

KEY TO TEST DATA

SOIL CLASSIFICATION AND KEY TO TEST DATA The Valhalla Inn on the Bay Sausalito, California		
Nersi Hemati, P.E., G.E. Consulting Soil Engineer	JOB NO: 1632.12	PLATE 6