Appendix E Geotechnical Feasibility Report

NMG Geotechnical, Inc.

September 10, 2020

Project No. 14117-02

To: Newport Center Anacapa Associates, LLC
c/o Ridgeway Development Company
2804 Lafayette Avenue
Newport Beach, California 92663

Attention: Mr. Tod Ridgeway

Subject: Geotechnical Feasibility Report for Proposed Newport Center Condominium Site Development, 150 Newport Center Drive, City of Newport Beach, California

In accordance with your authorization, NMG Geotechnical, Inc. (NMG) has performed a feasibility study for the proposed condominium development at 150 Newport Center, in the City of Newport Beach, California. The primary purpose of our study was to provide a summary of the geologic and geotechnical conditions of the site to identify potential geotechnical issues that might impact the proposed re-development.

The project site is approximately 1.26 acres and is currently an active auto wash with surrounding asphalt parking lot. The site is located at the southwest corner of Newport Center Drive and Anacapa Drive (Figure 1). We understand the proposed development will be a condominium complex consisting of two subterranean parking levels with four-story residential building above the parking levels. We have reviewed a conceptual design package showing the current design scheme, prepared by Sterns Architecture and received by NMG on September 8, 2020. A recently flown and scribed topographic map was also provided by Fuscoe Engineering. A grading plan has not yet been prepared at this time.

NMG has worked in Newport Beach and specifically Fashion Island area for the past 25 years and is quite familiar with the geology and geotechnical issues within the area. We have performed a thorough background review of published and unpublished reports and maps, visited the City of Newport Beach to obtain available borings and trenches from this and surrounding areas, as well as the work performed by NMG over the entire Fashion Island.

The main geotechnical issues for the proposed subterranean development include:

1) The presence of varying earth units across the site; fill of varying composition, sandy marine terrace deposits, and potentially diatomaceous siltstone and sandstone bedrock.

2) The potential for presence of perched groundwater along the terrace/bedrock contact. This condition has been encountered at sites within the Fashion Island/Newport Center area (but was not reported during prior investigations in the adjacent properties, by NMG and others, in borings that were excavated to depths of 45.5 feet below ground surface).

3) The potential for presence of saturated soils at the fill/terrace contact. This was encountered across the street during the grading operations for the two restaurants.

4) The potential for presence of weathered/low density bedrock at the terrace/bedrock contact.

Based on our review, we conclude that the subject property is considered suitable for the future proposed development from a geotechnical viewpoint, provided the project is designed and constructed in accordance with the geotechnical considerations and recommendations. We do recommend site specific geotechnical investigation to address these issues during the design phase of the project.

If you have any questions regarding this report, please contact our office. We appreciate the opportunity to provide our services.

Respectfully submitted,

NMG GEOTECHNICAL, INC.

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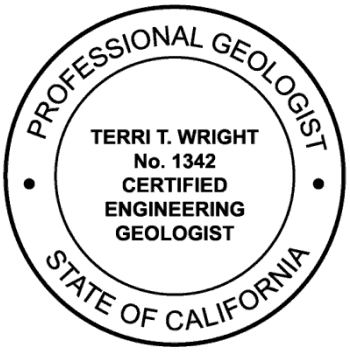

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1.0 INTRODUCTION

1.1 Purpose and Scope of Work

In accordance with your request, NMG Geotechnical, Inc. (NMG) has prepared this feasibility report for the Newport Center Condominium Development, located at 150 Newport Center Drive in the city of Newport Beach, California (Figure 1). The primary purpose of our study was to provide a summary of the geologic and geotechnical conditions of the site to identify potential geotechnical issues that might impact the proposed re-development. We have reviewed the conceptual design package prepared by Stearns Architecture, received by NMG on September 8, 2020. Fuscoe Engineering has also prepared a topographic map of the site portraying the current site conditions that was used as the base map for the Boring Location Map (Figure 4). Note this report was previously issued for the prior plan (NMG, 2015), and has been updated based on the new plan and the 2019 California Building Code.

Our scope of work was as follows:

- Acquisition, review and analysis of available geotechnical reports and maps for the subject site and surrounding area. This included prior work by NMG and a search through the city of Newport Beach archives for the prior geotechnical work performed by others at and surrounding the site. A list of references is included in Appendix A.
- Review of historic aerial photographs dating back to the late 1930's. A list of the photographs reviewed is included in Appendix A.
- Compilation of laboratory test results by NMG and others from previous geotechnical investigations (Appendix C). Laboratory testing includes in-situ moisture and density, grain-size analysis, consolidation, shear strength, Atterberg limits, maximum density and optimum moisture content, and expansion index.
- Evaluation of faulting and seismicity in accordance with the 2019 California Building Code (CBC).
- Geotechnical review of the compiled data including the geologic and soil conditions. Preliminary engineering evaluation included settlement and liquefaction potential, and remedial grading, preliminary foundation and grading considerations.
- Preparation of illustrations including: a Site and Seismic Hazard Location Map (Figure 1), a Geotechnical Map on Existing Topographic Map (Figure 2), Historic Topographic Map (Figure 3) and a Boring Location Map (Figure 4) which provides a compilation of the boring and trench locations that were excavated at the site and on adjacent sites, from previous geotechnical studies by NMG and others.
- Preparation of this report with our findings, conclusions, and preliminary considerations and recommendations for the proposed condominium site.

1.2 Site Location and Description

The project site is approximately 1.26 acres in size and is bordered to the north by Newport Center Drive, to the east by Anacapa Drive, and to the south and west by existing office buildings and

asphalt parking lots (Figure 1). The site is essentially flat, gently sloping toward the southwest. Elevations vary from a low of 158.5 feet above mean sea level (msl) in the south-southwest corner to a high elevation of 170.3 feet above msl in the northeast corner. Slopes and retaining walls are located along the northern and eastern perimeter of the site, ascending up to Newport Center Drive and Anacapa Drive, varying in height from 2 to 8 feet. Drainage at the site sheet flows towards the south-southwest. Currently, there is an active auto wash/fuel station structure in the center of the property, with asphalt paved parking lots surrounding the structure.

1.3 Site History and Prior Investigations

Based on review of historic aerial photographs dating back to the late 1930s, the prior use for the subject site was for agricultural (ranching) activities through the mid-1960s when The Irvine Company graded and developed the surrounding Fashion Island/Newport Center area. By 1972, the subject site was in its current state, Fashion Island was built, and the majority of the adjacent streets were constructed or being graded. The adjacent office buildings to the west, and theatre to the east, within the 100 and 300 blocks of Newport Center Drive, were being constructed between 1972 and 1975. By 1992, the subject site and adjacent buildings are essentially in their current state.

The aerial photos suggest the site was originally graded in the mid-1960s with the Fashion Island grading; however, we have not been able to find a report for this grading. Subsequently, in the early 1970s the subject site was re-graded to the existing conditions and the auto wash/fuel station was constructed. The latter grading was relatively minor to create a level pad; we have not been able to find a copy of this report either.

Historically the subject site was a gently sloping area located on a marine terrace/old wave-cut platform with elevations ranging from 140 feet above msl along the southwestern portion to an elevation of 160 feet above msl along the northeastern portion (Figure 3). A stream-cut draw (canyon) trending northeast lies to the west of the subject site and can be seen in early United States Geological Survey (USGS) Topographic maps (USGS, 1949, 1950 and 1951) and on aerial photographs from 1939. This canyon was in-filled with artificial fill during early grading activities and was documented during prior investigations (W.A. Wahler, 1970 and G.A. Nicoll, 1972). Documentation of the early grading mentioned in these reports was not found during our search through the city of Newport Beach files.

Prior geotechnical investigations were performed by W.A. Wahler & Associates (1970) at the subject site prior to development of the auto wash/fuel station (Figures 2 and 4). This investigation included excavation of 5 exploratory test pits (trenches) across the subject site and collection of bulk and in-situ soil samples. Test pits were excavated up to 14 feet deep and encountered fill material and native soil. Fill material generally ranged in thickness from 9 to 14+ feet. In the western portion of the property, the fill extended below a depth of 14 feet, native soil was not encountered.

Numerous geotechnical investigations have been performed by NMG and others within the vicinity of the subject site (Figure 4). NMG performed a geotechnical exploration for two restaurant pads north of the subject site, on the north side of Newport Center Drive (NMG, 2012b

and 2012c). The exploration included excavation of five hollow-stem auger borings and laboratory testing to determine the engineering characteristics of the on-site soils. In 1972, G.A. Nicoll performed a geotechnical investigation for the adjacent six office buildings, southwest of the subject site, which included excavation of 17 bucket-auger borings and laboratory testing. Moore & Taber performed a geotechnical investigation in 1975 for the bank building to the west, which included excavation of three bucket auger borings. Two geotechnical investigations were performed for expansion of the existing Edwards Theatre to the east of the site by Soils International (1988) and R.T. Frankian (1994) which included excavation of two and three hollow-stem auger borings, respectively.

The data from the prior investigations by NMG and others were reviewed for our study. Boring and trench logs are included in Appendix B and laboratory testing data are included in Appendix C.

1.4 Proposed Development

The proposed 28-unit condominium development will consist of a two-story subterranean parking garage with four-story residential condominium buildings above the parking levels. There is a planned pool area on the lowest residential level of the structure.

The lowest garage level (Level 2) finish floor will be at an elevation of 148.5 feet above msl and nearly spans the footprint of the proposed condominium structure. This level will require excavations up to 20 feet deep and is anticipated to be founded in native soils. Parking Level 1 will be primarily subterranean on the north end, but will be near existing grade at the south end for entry from the existing drive isle. The podium level of the first residential level will be at elevation 170.5 in the north portion of the building and 172.75 in the southern portion. There will be five elevators, four from the parking levels to the upper floors, and one from the parking levels to the lobby on the first residential level. At grade entry will also be provided from Anacapa Drive.

2.0 GEOTECHNICAL FINDINGS

2.1 Geologic Setting

The site is located on the Newport Mesa, approximately ¾-mile inland from the ocean. The mesa highland is covered with coastal terrace deposits and is located at the southwestern end of the San Joaquin Hills. Mapping by the State (CDMG, 1981) indicates the site is underlain by Quaternary-age marine terrace deposits which overlie Miocene-age sedimentary bedrock of the Monterey Formation.

The Fashion Island/Newport Center area exhibits a geologic configuration that is characteristic of a series of distinguishable elevated terraces and wave-cut platforms. The area has undergone regional uplift since deposition of the marine terrace deposits onto the ancient wave cut benches. These deposits were subsequently uplifted with the oldest deposits exposed along the higher, northern portion of the center and the lower/younger deposits located along the southern portion of the center. The subject site is located on the second elevated terrace deposit, mapped as Qtm2 by the State (Tan, 1976).

2.2 Earth Units

Our evaluation of the onsite data indicates that the site is underlain by native marine terrace deposits and bedrock of the Monterey Formation. Existing artificial fill overlies these native deposits and was found to be 9 to 14+ feet thick at the subject site. These units are described below, in the order of youngest to oldest.

Artificial Fill (Af): Based on review of the prior geotechnical report at the site (W.A. Wahler, 1970), there is between 9 to 14+ feet of existing artificial fill across the site. The bottom of the existing fill was not encountered in their test pits excavated in the western portion of the site. The fill materials were found to consist of brown to dark brown and reddish-brown sand, silty sand, and clayey sand that was generally damp to moist and medium dense. Gray to dark gray clay and sandy clays were also encountered and were found to be damp to moist and stiff to very stiff. Undisturbed samples of the artificial fill were collected during the investigation. In-situ dry densities for sandy fill material ranged from 108.8 pounds-per-cubic-foot (pcf) to 127.8 pcf with moisture contents ranging from 6.9 to 16.0 percent. In-situ dry densities for clayey fill material ranged from 86.3 pcf to 134.3 pcf with moisture contents ranging from 13.2 to 30.4 percent.

Based on review of the referenced reports, it appears that little to no remedial removals were performed during the original grading at the subject site. The materials below the fill, at the top of the native marine terrace deposits, were described by W.A. Wahler as dark brown silty sand with undisturbed grass. It is anticipated that the existing fill and the terrace materials will be removed under the proposed building with the subterranean excavation.

Marine Terrace Deposit (Qtm): Quaternary-age marine terrace deposits underlie the existing artificial fill and overlie the Monterey Formation bedrock. These deposits consist primarily of yellowish-brown, dark brown, reddish-brown and grayish-brown clean fine to medium sands with local zones of silty and/or clayey fine to medium sands. The terrace deposits were encountered in

two of the five test pits excavated by W.A. Wahler. The terrace material was found to be damp and medium dense. The basal portions of these deposits often contain rounded cobbles, fragments of the underlying bedrock, and sometimes shells. It is not known whether the terrace deposits underlie the fill in the southern portion of the site.

Monterey Formation (Tm): Bedrock of the Miocene-age Monterey Formation underlies the marine terrace deposits and generally consists of olive gray interbedded fine sandstone, siltstone and claystone. Bedding thickness varies from thin to laminated, with localized thin beds of cemented siltstone (or shale, up to ½ inch thick). The bedrock underlying the wave cut bench near the contact is typically found to be highly weathered. Bedrock was not encountered during the geotechnical investigations at the subject site by W.A. Wahler. The marine terrace/bedrock contact at the site is estimated to be at elevations of 152 to 160 feet above msl, based on boring data by NMG (Borings H-1, -4, -12 and -13; NMG, 2012b and 2012c). In addition, a boring by G.A. Nicoll (GA-B-1) located 170 feet south of the subject site had the terrace bedrock contact reportedly near an elevation of 133 feet msl and a boring (GA-B-2) located 170 feet southwest of the subject site encountered the contact at an elevation of 121 feet msl (Figure 2).

Some of the siltstone within the Monterey Formation has been found to be diatomaceous and was encountered during a geotechnical exploration for the nearby Edwards Cinema to the east of the subject site (Soils International, 1988). The diatomaceous bedrock was generally medium stiff to very stiff, with low dry densities (67 to 87 pcf) and high moisture content (27 to 36 percent). The bedrock encountered to the north by NMG consisted of interbedded light gray to yellow brown sandstone and olive gray siltstone. The dry densities varied from 91.5 to 112 pcf and the moisture contents varied from 7.5 to 24.8 percent.

2.3 Geotechnical Conditions

The following includes a summary of the subsurface geotechnical conditions based on the laboratory test results performed on in-situ and bulk samples from previous investigations (Appendix C). The majority of these tests are from offsite investigations, but the results are summarized below.

Prior laboratory testing by W.A. Whaler for the onsite fill materials included:

- Field resistivity tests, indicating the corrosivity of the soils to metals, found the fill to have resistivity of 1435 ohm-cm (severe) to 2200 ohm-cm (moderate);
- pH was tested to be 6.8 (slightly acidic);
- Dry densities of 86.3 to 127.8 pcf and moisture contents of 6.9 to 30.4 percent;
- USCS classification of mostly SP, SW, SM, with some SW, SC, CL and CH; and
- Shear strength test indicating an angle of internal friction of 35 degrees and cohesion of 0.75 ksf.

Test results by NMG (2012b and 2012c) north of Newport Center Drive, included very low to low expansion potential in the fill with negligible sulfate potential. USCS classifications were mostly SM and SP, with some SC. The angle of internal friction of the fill varied from 29 to 31 degrees with 0 to 350 psf cohesion. Maximum densities ranged from 125 to 128.5 psf with optimum

moistures ranging from 8.5 to 9.5 percent. The upper weathered portion of the terrace deposit was generally found to be more compressible than the fill.

As previously discussed, the composition of the bedrock underlying the site could vary between sandstone, siltstone, and diatomaceous siltstone. Since we believe portions of the building will be founded in bedrock, our proposed investigation is intended to drill to deeper depths to determine actual depths to and the conditions of the bedrock underlying the site.

2.4 Regional Faulting, Seismicity, and Seismic Hazards

Regional Faults: The site is not located within a fault-rupture hazard zone as defined by the Alquist-Priolo Special Studies Zones Act (CGS, 2018) and no evidence of active faulting was found during our background study or during our prior work at Fashion Island. Also, based on mapping by the State (CGS, 2010), there are no active faults mapped at the site.

Using the USGS Deaggregation computer program (USGS, 2020) and the site coordinates of 33.612 degrees north latitude and -117.875 degrees west longitude, the closest major active faults to the site are the Newport-Inglewood Fault located 2.7 miles (4.3 km) to the south of the site and the San Joaquin Hills Thrust Fault located 3.4 miles (5.5 km) north of the site.

Seismicity: Properties in southern California are subject to seismic hazards of varying degrees depending upon the proximity, degree of activity, and capability of nearby faults. These hazards can be primary (i.e., directly related to the energy release of an earthquake such as surface rupture and ground shaking) or secondary (i.e., related to the effect of earthquake energy on the physical world, which can cause phenomena such as liquefaction and ground lurching). Since there are no active faults at the site, the potential for primary ground rupture is considered very low. The primary seismic hazard for this site is ground shaking due to a future earthquake on one of the major regional active faults.

The maximum moment magnitude for the Controlling Fault is 7.14, which would be generated from the Newport-Inglewood Fault. The seismic design parameters are provided in Section 3.6.

Secondary Seismic Hazards: The site is not located in an area classified by the State as having soils that are potentially liquefiable, nor is it mapped as susceptible to seismically induced landslides, based on the Seismic Hazard Maps (CDMG, 1998a and 1998b, Figure 1).

The potential for secondary seismic hazards, such as tsunami and seiche are considered very low to nil, as the site is located away from the ocean at an elevation of over 140 feet above msl and outside of mapped tsunami inundation zones (CGS, 2009). The site is not located adjacent to a confined body of water; therefore, the potential for seismic hazard of a seiche (an oscillation of a body of water in an enclosed basin) is considered very low to nil.

2.5 Groundwater

The groundwater table and/or seepage were not encountered during the previous investigation by W.A. Wahler or during the investigations for the adjacent office buildings to a depth of 45 feet below ground surface. These studies were done in the 1970s prior to development at the site.

NMG also did not encounter groundwater in borings drilled to the north of the site to depths of up to 41 feet in 2012.

Perched groundwater seepage and wet soils have been found along the terrace-bedrock contact at many sites in and around Newport Center. Only wet conditions were found near this contact in the borings by NMG in 2012. The perched groundwater and/or wet soils are interpreted to be the result of infiltration and return-flow of irrigation water and rainwater into up-gradient sandy terrace deposits which becomes perched on the relatively less permeable bedrock. The water then travels laterally down gradient along the contact and down through fractures in the bedrock and through the sandstone beds, where present.

During grading to the north of the site, wet soils were encountered along the fill-terrace contact during grading observed by NMG. This material required utilization of excavators. Perched groundwater has also been found to extend into the weathered/fractured bedrock below the contact at nearby sites.

2.6 Settlement and Foundation Considerations

The site is underlain by three earth units including 1) marine terrace deposits which are primarily sandy, 2) sandstone and siltstone of the Monterey formation at depth, and 3) compacted fill near-surface. Based on the current plans, the lowest floor of the Parking Level 2 will be at 148 feet msl. Since the marine terrace bedrock contact is at 152 to 160 feet msl to the north and reportedly near an elevation of 133 feet msl to the south, we anticipate the building will, at least, partially be founded in bedrock. It is possible a portion of the building will be founded on marine terrace deposits over bedrock.

The amount of settlement expected will depend upon the type of foundation(s) selected. Our preliminary settlement analyses for this study indicate the total consolidation (static) settlement may be on the order of 1½ -inches for column loads of up to 1,000 kips and allowable bearing capacity of 4,000 psf. The differential settlement is expected to be on the order of ¾ -inch over a 30-foot span

2.7 Temporary Slope Stability

Temporary cut slopes for this project will expose varying earth materials and potential seepage. The excavation for construction of building and perimeter retaining walls will be up to 20 feet high to subgrade and another 3 feet of overexcavation. These excavations will be close to the property line along the south and west sides of the building (4 to 9 feet) and will be set back 15 feet from the adjacent road right-of-ways along the north and east sides of the building.

These temporary slopes for the garage are anticipated to expose up to 16 feet of bedrock, with an estimated 2 to 8 feet of terrace deposits and 9 to 14+ feet of artificial fill overlying the bedrock. There may be local seepage and wet sands within the fill/terrace and terrace/bedrock contacts. Locally, these slopes could slough or potentially slump along the contact. The bedding orientation in the bedrock is not known at this time. As a result, we are recommending at least one bucket auger borings at the site that will extend to at least 20 feet below the proposed subgrade. This boring should be drilled in the northeast corner and will be downhole logged to determine the geologic structure in the bedrock.

The onsite fill and terrace sands have a high potential for erosion (during rainy periods or uncontrolled runoff). These deposits are considered subject to gross instability in vertical excavations. Therefore, temporary shoring with lagging will need to be designed for the site construction. NMG will provide shoring design recommendations after the future onsite investigation. It will also be important that the excavations be mapped by an engineering geologist during excavation.

3.0 CONCLUSION AND PRELIMINARY RECOMMENDATIONS

3.1 General Conclusion and Recommendation

Based on our preliminary study, the site is geotechnically suitable for the proposed development. The most significant geotechnical constraint at the site is the presence of varying earth units and potential for perched groundwater. Geologic hazards related to regional earthquake potential (seismic shaking) are not any greater than at other comparable sites in the vicinity. The site is not located in a seismic hazard zone for potential liquefaction or seismically induced landslides.

We recommend that a site specific geotechnical investigation be performed at the site to better assess the site conditions and provide recommendations for design, grading and construction. The proposed investigation will include drilling, sampling and logging of three hollow-stem borings and drilling, sampling and downhole logging of at least one bucket auger boring. In addition to the following recommendations, General Earthwork and Grading Specifications are provided in Appendix E.

3.2 Grading Recommendations

Prior to grading, the site should be cleared of heavy vegetation and deleterious materials (including asphalt pavement, concrete and existing utility pipelines to be removed) and disposed of offsite. The proposed excavation to construct the subterranean parking structure is anticipated to remove weathered fill and near-surface soils in the vicinity of the building. The bottom level of parking is planned to cover the majority of the site, so there would be little removals around the building; the extended flatwork on grade around the building is anticipated to be placed on compacted backfill materials.

There are varying soil types anticipated to be exposed in the building excavation. The subgrade for Garage Level 2 is anticipated to expose native materials, and may span bedrock in the northern portion with marine terrace deposit in the southern portion. The composition of the terrace deposit and bedrock are anticipated to have differing expansion potential. If such condition is observed during the site investigation and/or grading operations, the subgrade soils may need to be overexcavated to a depth of 3 to 5 feet below subgrade and replaced with uniform, low expansion potential soils (i.e., the sandy fill and sandy terrace deposits). Onsite soil materials with the exception of highly expansive clays are considered suitable as fill materials below the building slabs and footings. The soils should be mixed to provide a uniform blend of material; sands and clays. Placement of soils with dissimilar expansion potential should be avoided.

The overexcavation bottom should be scarified a minimum of 6 inches, moisture-conditioned as needed, and compacted in place prior to placement of fill materials. Fill materials should be placed in maximum 8-inch-thick loose lifts, moisture-conditioned, and compacted to a minimum of 90 percent relative compaction in accordance with ASTM Test Method D1557.

3.3 Temporary Excavations

As previously discussed, the excavations around the building will vary in depth up to 20 feet along the majority of the site perimeter. If overexcavation of the subgrade soils is needed, the heights of these temporary excavations will be greater (up to 23 or 25 feet). These slopes will expose varying earth units and possibly adverse bedding and/or groundwater seepage. There are also utility trenches around the building that might have differing soil types used as backfill, including bedding and shading sands. These materials, when exposed, are considered Type C soils per Cal/OSHA regulations and should be excavated at 1.5H:1V or flatter, with no vertical excavation. Due to the depth of the excavation, it is anticipated that temporary shoring with lagging will be needed. In addition, due to the height of the shoring, it is likely that tie backs may be recommended by the shoring designer. Permission would be needed from the adjacent property owners to use these temporary tie-backs. Alternatively, shoring could be designed with rackers and braces; as cantilever shoring with deeper caissons; or other methods.

Excavations located adjacent to existing structures (roadways and utilities) should be reviewed periodically by the geotechnical consultant to evaluate the potential for failure. If evidence of instability (such as ground cracks or failures) is observed, then recommendations for additional shoring or other appropriate measures will be provided.

3.4 Building Foundations

The type of building foundations for the site will depend on the anticipated column loads for the structure and the potential compressibility of the supporting soil/bedrock materials. For preliminary design of shallow foundations, a net allowable bearing capacity of 1,800 psf may be assumed for a 12-inch-wide footing embedded 12 inches below the lowest adjacent grade. The allowable bearing pressure may be increased by 500 psf for every additional foot of embedment and by 200 psf for every additional foot of width to a maximum of 4,000 psf. The allowable bearing pressure may be increased by one-third for wind and seismic loading. We recommend that strip and isolated footings have a minimum embedment depth of 24 inches. For lateral resistance against sliding, a friction coefficient of 0.35 may be used at the soil-foundation interface. In addition, for large foundations and mat type slabs (if any), the subgrade modulus of reaction may be assumed to be 75 pci.

The foundations and slab-on-grade should be designed for a total and differential settlement presented below.

3.5 Settlement

The amount of settlement expected will depend upon the type of foundation(s) selected and the type and extent of the soil improvements. Our preliminary settlement analysis is based on the proposed excavations and remedial grading anticipated at the site, the assumed column loads of up to 1,000-kips for the proposed structure and allowable bearing capacity of 4,000 psf. The total and differential settlement for the proposed improvements at the site is expected to be on the order of 1½ - inches and ¾ - inch over a 30-foot span, respectively. For loads significantly greater than

1,000-kips, or for smaller differential settlement requirements, alternative foundations, such as deep foundations or mat slabs and foundations may be required.

3.6 Seismic Design Guidelines

The following table summarizes the seismic design criteria for the subject site. These seismic design parameters are developed in accordance with ASCE 7-16 and 2019 CBC, with the assumption that the fundamental period of the structure is within the "exceptions" included in Section 11.4.8 of ASCE 7-16. The seismic response coefficient, C_s, should be determined per the parameters provided below and using equation 12.8-2 of ASCE 7-16.

Selected Seismic Design Parameters from 2019 CBC/ASCE 7-16	***Seismic Design Values***	***Reference***
Latitude	33.612 North	
Longitude	117.875 West	
Controlling Seismic Source	Newport-Inglewood Fault (Offshore)	USGS, 2020
Distance to Controlling Seismic Source	2.7 mi (4.3 km)	USGS, 2020
Site Class per Table 20.3-1 of ASCE 7-16	D	SEA/OSHPD, 2020
Spectral Acceleration for Short Periods (Ss)	1.35 g	SEA/OSHPD, 2020
Spectral Accelerations for 1-Second Periods (S_1)	0.48 g	SEA/OSHPD, 2020
Site Coefficient F_a, Table 11.4-1 of ASCE 7-16	1.2	SEA/OSHPD, 2020
Site Coefficient F_v, Table 11.4-2 of ASCE 7-16	1.8	
Design Spectral Response Acceleration at Short Periods (S_{DS}) from Equation 11.4-3 of ASCE 7-16	1.08 g	SEA/OSHPD, 2020
Design Spectral Response Acceleration at 1-Second Period (S_{D1}) from Equation 11.4-4 of ASCE 7-16	0.57 g	
T_S, S_{D1}/ S_{DS}, Section 11.4.6 of ASCE 7-16	0.53 sec	
T_L, Long-Period Transition Period	8 sec	SEA/OSHPD, 2020
Peak Ground Acceleration Corrected for Site Class Effects (PGA_M) from Equation 11.8-1 of ASCE 7-16	0.70 g	SEA/OSHPD, 2020
Seismic Design Category, Section 11.6 of ASCE 7-16	D	

Please note that fundamental period of the proposed building is unknown at this time, site-specific ground-motion hazard analysis was not performed for the site. During the design phase upon conversation with the project structural engineer, we will perform ground motion hazard analysis as needed.

3.7 Expansion Potential

Based on laboratory testing, the expansion potential of onsite soils is anticipated to generally range from "Very Low" to "Medium" within the terrace and existing fill materials. Soils with "High" expansion are likely to be encountered in the siltstone/claystone of the Monterey Bedrock. Additional laboratory testing should be performed during the recommended geotechnical

investigation to determine the expansion potential of the bedrock and also following completion of grading operations around the building to determine the expansion potential of the near-surface soils.

3.8 Cement Type for Construction

Laboratory test results indicate that the soluble sulfate content of current subgrade soils are generally in the negligible range. Additional laboratory testing should be performed during the recommended geotechnical investigation and following completion of grading operations to determine the soluble sulfate content to be used for design of concrete in contact with the soil in compliance with Table 4.3.1 of ACI-318.

3.9 Surface Drainage and Irrigation

Inadequate control of run-off water, heavy irrigation after development of the site, or regional groundwater level changes may result in shallow groundwater conditions where previously none existed. Maintaining adequate surface drainage, proper disposal of run-off water, and control of irrigation will help reduce the potential for future moisture-related problems and differential movements from soil heave/settlement.

Surface drainage should be carefully taken into consideration during grading, landscaping, and building construction. Positive surface drainage should be provided to direct surface water away from structures and slopes and toward the street or suitable drainage devices. Ponding of water adjacent to the structures should not be allowed. Buildings should have roof gutter systems and the run-off should be directed to parking lot/street gutters by area drain pipes or by sheet flow over paved areas. Paved areas should be provided with adequate drainage devices, gradients, and curbing to prevent run-off flowing from paved areas onto adjacent unpaved areas.

Foundation performance is also dependent upon maintaining adequate surface drainage away from structures. The minimum gradient within 5 feet of the building will depend upon surface landscaping. In general, we suggest that unpaved lawn and landscape areas have a minimum gradient of 2 percent away from structures. Consideration should be given to concrete flatwork construction adjacent to the building.

Construction of planter areas immediately adjacent to structures should be avoided if possible. If planter boxes are constructed adjacent to or near buildings, the planters should be provided with controls to prevent excessive penetration of the irrigation water into the foundation and flatwork subgrades. Provisions should be made to drain excess irrigation water from the planters without saturating the subgrade below or adjacent to the planters. Raised planter boxes may be drained with weepholes. Deep planters (such as palm tree planters) should be drained with below-ground, water-tight drainage lines connected to a suitable outlet. Moisture barriers should also be considered.

It is also important to maintain a consistent level of soil moisture, not allowing the subgrade soils to become overly dry or overly wet. Properly designed landscaping and irrigation systems can help in that regard.

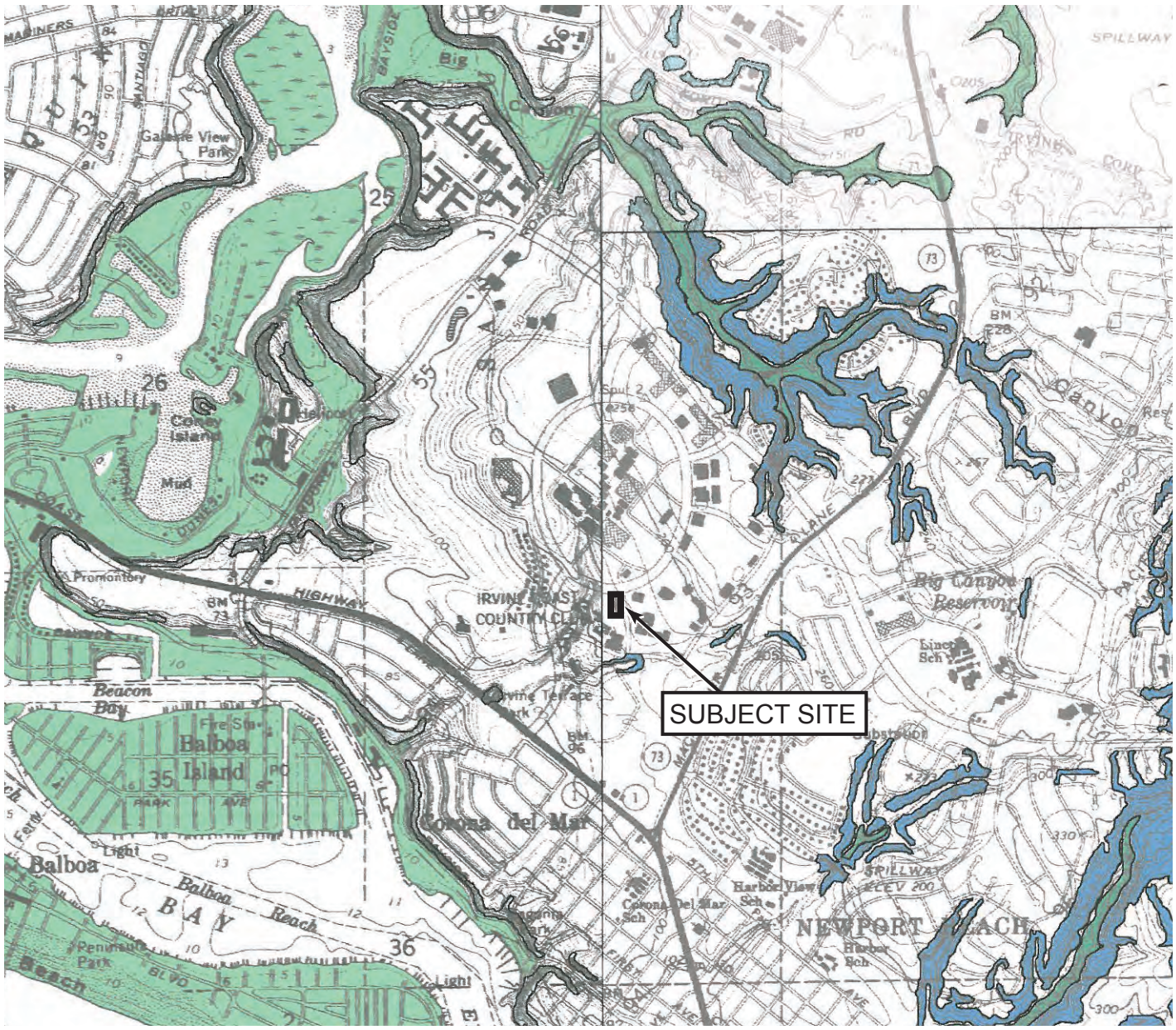
3.10 Geotechnical Investigation and Review of Future Plans

Once a grading plan becomes available, it should be reviewed by the geotechnical consultant. Additional geotechnical investigation is recommended and additional analysis will be necessary for building foundation design in relation to potential settlements and for shoring design for the subterranean structure. The geotechnical consultant will need to work closely with the structural engineer and project team during design. Once the building/grading plan is available, the final geotechnical recommendations for remedial grading and structural design will be provided. A geotechnical grading plan review report should be submitted to the city of Newport Beach for their review and approval prior to issuance of a grading and construction permit.

3.11 Geotechnical Observation and Testing During Grading and Construction

Geotechnical observation and testing should be performed by the geotechnical consultant during the following phases of grading and construction:

- During site preparation and clearing;
- During earthwork operations, including remedial removals and fill placement;
- Upon completion of any excavation for buildings or retaining walls prior to pouring concrete;
- During slab and pavement subgrade preparation (including presoaking), prior to pouring of concrete;
- During and after installation of subdrains for retaining walls and building subgrade;
- During placement of backfill for utility trenches and retaining walls; and
- When any unusual soil conditions are encountered.



Liquefaction

Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides

Areas where previous occurance of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

SITE LOCATION AND SEISMIC HAZARDS MAP

BASE: DIVISION OF MINES AND GEOLOGY SEISMIC HAZARDS MAPS,
LAGUNA BEACH, NEWPORT BEACH AND TUSTIN QUADRANGLES
Dated: April 15, 1998 and January 17, 2001

N

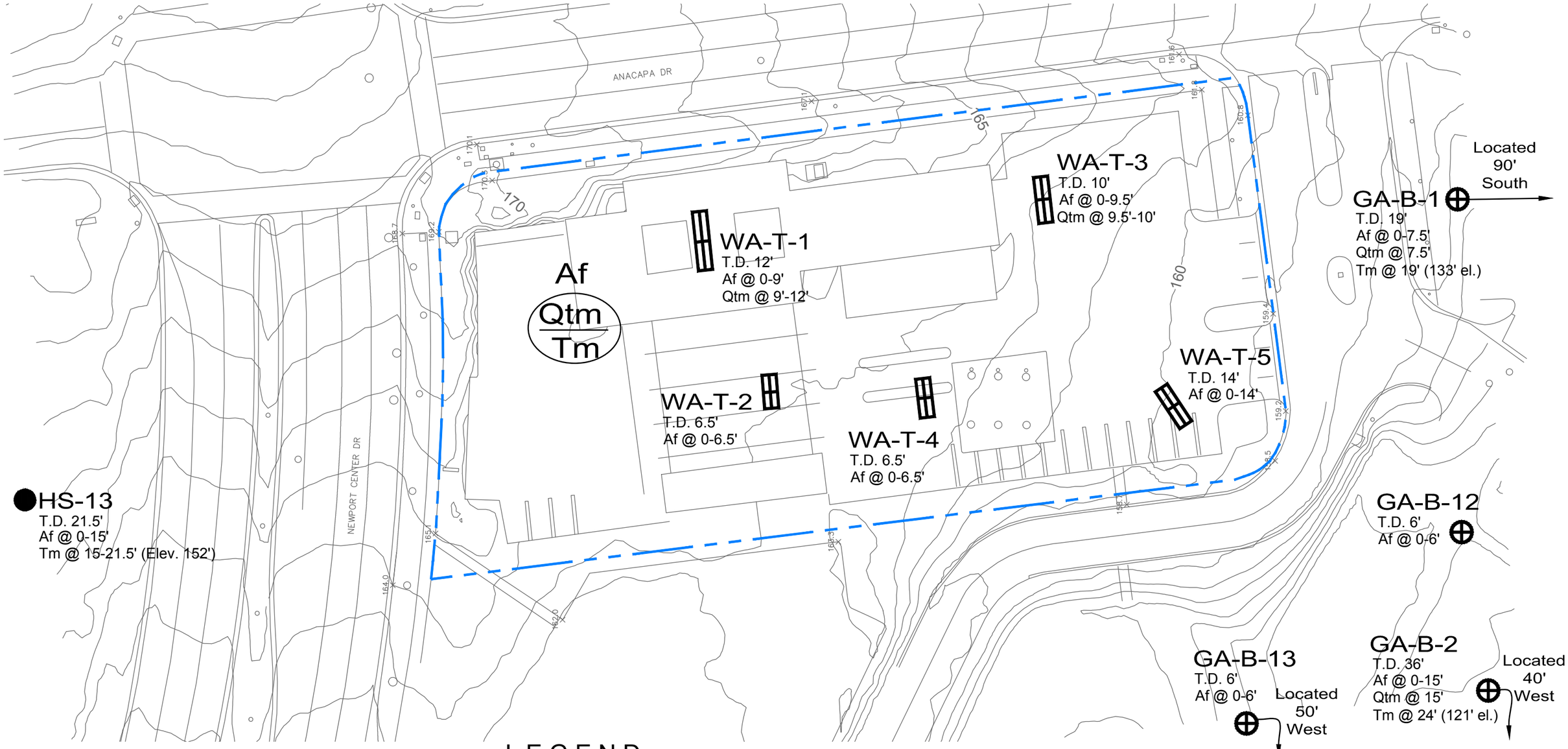
NEWPORT CENTER CONDOMINIUMS
150 NEWPORT CENTER DRIVE
CITY OF NEWPORT BEACH, CALIFORNIA

Project Number: 14117-02

Project Name: NCAA / 150 NCD

Date: 9/10/2020 Figure No. 1

NMG Geotechnical, Inc.



LEGEND

SYMBOLS - LOCATIONS ARE APPROXIMATE, QUERIED WHERE UNCERTAIN

HS-13 (T.D. 21.5', Af @ 0-15', Tm @ 15-21.5' (Elev. 152')) — HOLLOW-STEM AUGER BORING BY NMG GEOTECHNICAL, INC., SHOWING TOTAL DEPTH AND DEPTH TO EARTH UNITS

GA-B-13 (T.D. 6', Af @ 0-6') — BUCKET AUGER BORING BY G.A. NICOLL, SHOWING TOTAL DEPTH AND DEPTH TO EARTH UNITS

WA-T-5 (T.D. 14', Af @ 0-14') — TEST PIT BY W.A. WAHLER SHOWING TOTAL DEPTH AND DEPTH TO EARTH UNITS

EARTH UNITS - CIRCLED WHERE BURIED

Af	ARTIFICIAL FILL
Qtm	TERRACE DEPOSIT
Tm	MONTEREY FORMATION
	PROPERTY BOUNDARY

GRAPHIC SCALE

40 0 20 40 80

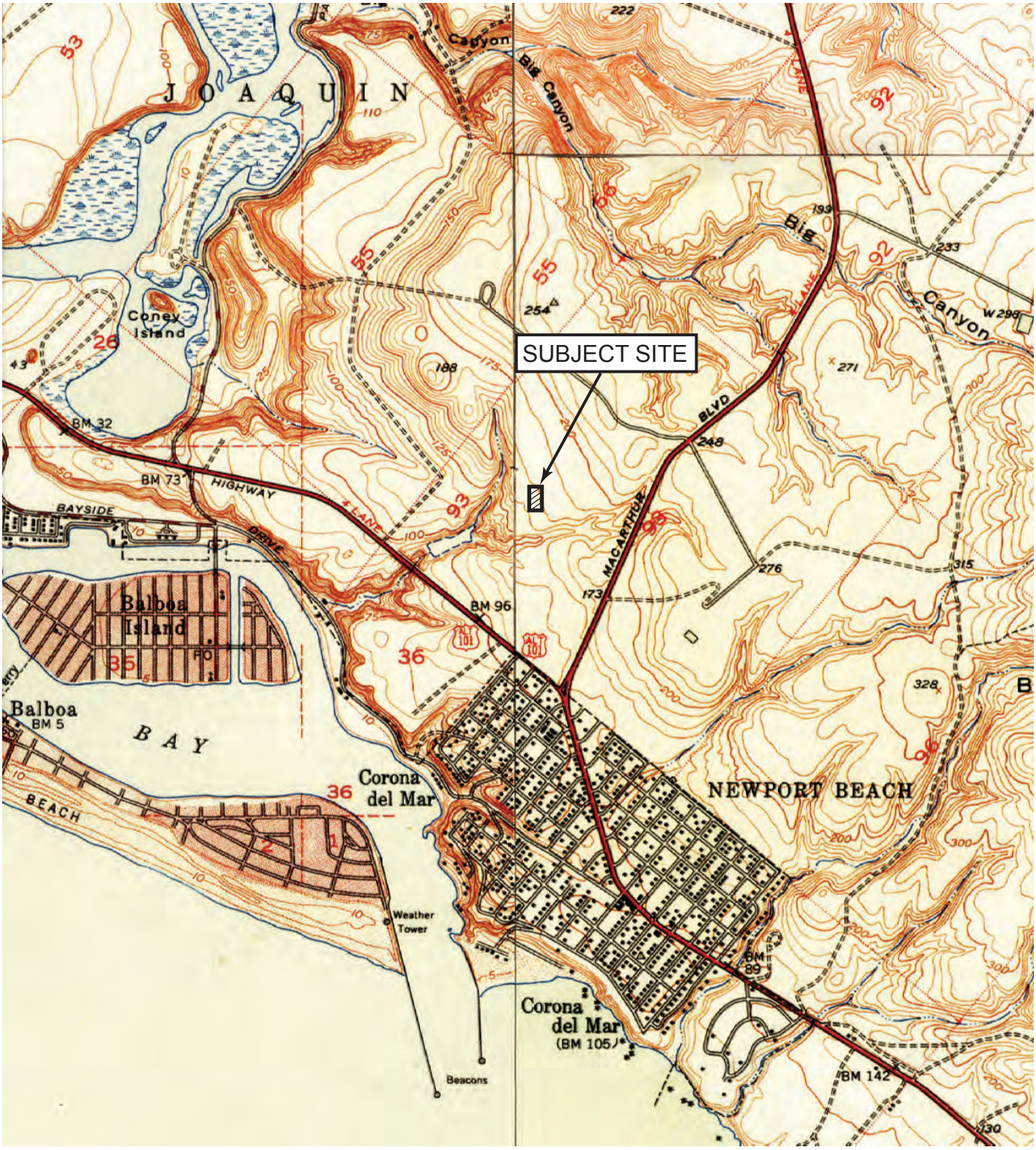
(IN FEET)
1 inch = 40 ft.

FIGURE 2

GEOTECHNICAL MAP
NEWPORT CENTER CONDOMINIUMS
150 NEWPORT CENTER DRIVE
CITY OF NEWPORT BEACH, CALIFORNIA

Project No.: 14117-02
Project Name: NCAA / 150 NCD
Date: 9/10/2020 Scale: 1" = 40'

NMG Geotechnical, Inc.



SITE LOCATION AND TOPOGRAPHIC MAP

BASE: USGS TOPOGRAPHIC MAPS,
LAGUNA BEACH, NEWPORT BEACH AND TUSTIN QUADRANGLES
Dated: 1949 Through 1951

N

NEWPORT CENTER CONDOMINIUMS
150 NEWPORT CENTER DRIVE
CITY OF NEWPORT BEACH, CALIFORNIA

Project Number: 14117-02
Project Name: NCAA / 150 NCD
Date: 9/10/2020 Figure No. 3

NMG Geotechnical, Inc.

Legend

- GAB-17 Boring by G.A. Nicoll (1972)
- HS-4 Boring by NMG Geotechnical, Inc. (2012)
- MTB-3 Boring by Moore & Taber (1975)
- RTF-B-3 Boring by R.T. Franklian (1994)
- SIB-2 Boring By Soils International, Inc. (1988)
- WAT-5 Trench by W.A. Wahler (1970)

HS-4
HS-3
HS-1
HS-12
HS-13
MTB-3
MTB-2
MTB-1
SIB-2
SIB-1
RTF-B-3
RTF-B-2
RTF-B-1
GAB-6
GAB-7
GAB-15
GAB-5
GAB-8
GAB-9
GAB-4
GAB-13
GAB-10
GAB-3
GAB-12
GAB-16
GAB-2
GAB-11
GAB-1
GAB-17
WAT-1
WAT-2
WAT-4
WAT-3
WAT-5
San Miguel Dr
Newport Center Dr
Anacapa Dr
Civic Center Dr
Avocado
Google earth
© 2015 Google
300 ft
N

Boring Location Map

Newport Center Condominiums
Newport Beach, California

Figure 4

Project Name: NCAA/150 Newport Center Drive
Project No.: 14117-02

APPENDIX A

APPENDIX A
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AERIAL PHOTOGRAPHS REVEIWED

Date	***Photograph***	***Source***
10-14-1939	5925-112	Continental Aerial Photo
11-18-1952	AXK-1K-43	Continental Aerial Photo
1-13-75	157 7-23	Continental Aerial Photo
1-20-1992	C85-13-20	Continental Aerial Photo

APPENDIX B

TEST PITS BY

W.A. WAHLER & ASSOCIATES (1970)

FOR EXISTING CARWASH

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

PRIMARY DIVISIONS				GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)		GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
				GP	POORLY GRADED GRAVELS OR GRAVEL SAND MIXTURES, LITTLE OR NO FINES.
		GRAVEL WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURE. NON-PLASTIC FINES.
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES. PLASTIC FINES.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)		SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES. NON-PLASTIC FINES.
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES. PLASTIC FINES.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE	SILTS & CLAYS — LIQUID LIMIT IS 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 SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
	SILTS & CLAYS — LIQUID LIMIT IS 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.

DEFINITION OF TERMS

GRAIN SIZES

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENINGS				
200	50	16	4	3/4"	3"	8"		
SILTS & CLAYS DISTINGUISHED ON BASIS OF PLASTICITY	SAND			GRAVEL		COBBLES	BOULDERS	
	FINE	MEDIUM	COARSE	FINE	COARSE			

MOISTURE CONDITION (INCREASING MOISTURE ——→)

DRY — SLIGHTLY DAMP — DAMP — (PL) MOIST — VERY MOIST — WET (SATURATED) (LL)

CONSISTENCY			RELATIVE DENSITY	
CLAYS & SILTS	BLOWS/FOOT*	STRENGTH ‡	SANDS & GRAVELS	BLOWS/FOOT*
Very Soft	0 – 2	0 – 1/4	Very Loose	0 – 4
Soft	2 – 4	1/4 – 1/2	Loose	4 – 10
Firm	4 – 8	1/2 – 1		
Stiff	8 – 16	1 – 2	Medium Dense	10 – 30
Very Stiff	16 – 32	2 – 4	Dense	30 – 50
Hard	Over 32	Over 4	Very Dense	Over 50

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

‡ Unconfined compressive strength in tons/sq ft. Read from a pocket penetrometer.

SOIL MECHANICS and FOUNDATION ENGINEERS Inc.

PALO ALTO • NEWPORT BEACH • CALIF.

NEWPORT CENTER CAR WASH
NEWPORT BEACH, CALIFORNIA

KEY FOR SOIL EXPLORATION LOGS

PROJECT NO.	DATE	DRAWING NO.
0461	JAN. 1970	--

LOGS OF BACKHOE PITS

TEST PIT NO.	DEPTH	DESCRIPTION	SAMPLE TYPE* AND DEPTH
1	0-4.5	FILL: SAND (SP & SW), Clayey SAND (SW-SC), and CLAY (CL) in horizontal layers 2" to 6" thick. Brown, damp, medium dense, and firm. Sparse scattered hard SHALE gravel and cobbles.	U @ 2"
	4.5-9	FILL: SAND (SP) with a few Clayey SAND (SP-SC) layers. Layers horizontal, 1" to 8" thick. Brown, slightly damp, medium dense.	U @ 4.5' U @ 6' B @ 8'
	9-10	Silty SAND (SM) and Sandy CLAY (CL), dark brown, slightly damp, stiff and medium dense. Original ground surface at 9.0 feet.	U @ 9'
	10-12	CLAY (CL), dark brown, slightly damp, very stiff.	
2	0-6.5	FILL: SAND (SP) and Clayey SAND (SC) in horizontal layers 2" to 8" thick. Red-brown, slightly damp to damp, medium dense. Sparse scattered gravel of hard SHALE.	B @ 3"-1'
3	0-5	FILL: SAND (SP) and Clayey SAND (SP-SC, SC) in horizontal layers 2" to 6" thick. Red-brown, slightly damp, medium dense.	U @ 1.5' U @ 3.5'
	5-9.5	FILL: SAND (SP) with minor Clayey SAND (SP-SC) in horizontal layers 1" to 6" thick. Red-brown, slightly damp, medium dense.	U @ 5' U @ 7.5' U @ 9'
	9.5-10	MARINE TERRACE: Silty SAND (SM), dark brown, slightly damp, medium dense. Original ground surface with undisturbed grass at 9.5 feet.	

LOGS OF BACKHOE PITS

TEST PIT NO.	DEPTH	DESCRIPTION	SAMPLE TYPE* AND DEPTH
4	0-4	FILL: SAND (SP) and Clayey SAND (SP-SC) in horizontal layers 2" to 8" thick. Red-brown, slightly damp, medium dense.	
	4-5	FILL: CLAY (CL) with scattered hard SHALE gravel and cobbles. Greenish-gray, slightly damp to damp, firm.	U @ 4.5'
	5-6.5	FILL: SAND (SP) and Clayey SAND (SP-SC) in horizontal layers 1" to 6" thick. Red-brown, slightly damp, medium dense.	
5	0-7.5	FILL: SAND (SP), Clayey SAND (SP-SC), and Sandy CLAY (CL) in horizontal layers 4" to 6" thick. Red-brown and gray, damp, medium dense and firm.	B @ 1'-4'
	7.5-10.5	FILL: SAND (SW), homogenous, slightly damp, moist at 10.0', medium dense.	
	10.5-11.5	FILL: Silty SAND (SM), dark gray, damp to moist, medium dense.	U @ 11'
	11.5-13	FILL: Sandy CLAY (CH) and Clayey SAND (SC), dark gray, moist to damp, medium dense and firm.	B @ 13'
	13-14	FILL: SAND (SP), red-brown, slightly damp, medium dense.	U @ 14'

NOTES:
1. No caving.
2. Groundwater not encountered.
3. All pits backfilled.
*4. U = undisturbed sample; B = bulk sample.

BORING LOGS BY NMG

FOR PADS B & C AT FASHION ISLAND (2012a & b)

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	*GRAVEL AND GRAVELLY SOILS* MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	*CLEAN GRAVELS* (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	*CLEAN SANDS* (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND - SILT MIXTURES
			SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	*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 SILTS 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
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Dual symbols are used to indicate gravels or sand with 5-12% fines and soils with fines classifying as CL-ML. Symbols separated by a slash indicate borderline soil classifications.

Sampler and Symbol Descriptions

- Modified California sample (63.5 mm diameter)
- Standard Penetration Test
- Undisturbed pushed tube sample
- Large bulk sample
- Small bulk sample
- Approximate depth of perched water or groundwater

Note: Number of blows required to advance driven sample 300 mm (or length noted) is recorded; blow count recorded for seating interval (initial 150 mm of drive) is indicated by an asterisk.

Laboratory and Field Test Abbreviations

MD	Laboratory compaction test
CN	Laboratory consolidation test
DS	Laboratory direct shear test
AL	Atterberg limits
SE	Sand Equivalent
GS	Grain Size Analysis (Sieve and/or Hydro.)
RV	R-Value
CC	Chemical Testing incl. Soluble Sulfate
EI	Expansion Index
UU	Unconsolidated Shear Strength

GENERAL NOTES

1. Station location is indicated with offset to right (R) or left (L) of centerline (CL).
2. Soil classifications are based on the Unified Soil System and include color, moisture, and relative density or consistency. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate. Bedrock descriptions are based on visual classification and include rock type, moisture, color, grain size, strength, and weathering.
3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO LOG OF BORING

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG Geotechnical, Inc.

Date(s) Drilled	6/2/08	Logged By	PA
Drilling Company	2R Drilling	Drill Bit Size/Type	8"
Drill Rig Type	CME-75	Hammer Data	140lbs/ 30" drop
Sampling Method(s)	Bulk, Modified California		
Approximate Groundwater Depth:	Groundwater Not Encountered		
Comments			

HS- 1

Sheet 1 of 2

Total Depth Drilled (ft)	41.0
Approximate Ground Surface Elevation (ft)	171.5

Elevation (ft)	Depth (ft)	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	0						@ 0' Asphalt, 4" thick over 6" base.			
170						SM	**Artificial Fill (Af)**			
			B-1							Bag B-1 (0-5')
			D-1	13			@ 2.5' Strong brown slightly silty SAND, locally slightly clayey, moist, medium dense, massive, slightly to moderatly friable, no visable roots/ pores.	10.5	109.6	
	5		D-2	5			@ 5' Strong brown slightly silty SAND, wet, loose, moderatly friable, massive, non-cemented.	8.5	108.3	
			D-3	12		SC	@ 7.5' Brown to olive brown clayey SAND, wet, medium dense, root hairs/ pores, MnO/ FeO stining.	14.6	119.2	
	10		D-4	25		SC/ ML	@ 10' Olive clayey fine SAND with abundant siltstone clasts, moist, medium dense, MnO/ FeO staining, slightly plastic.	15.6	113.6	
160										
	15		D-5	20		SM	**Terrace, Marine (Qtm)** @ 15' Brownish yellow and light olive SAND, moist, medium dense, heavy FeO staining, color banding, micaceous.	12.2	98.3	
	20		D-6	70/11.5"		SM	**Monterey Formation (Tm)** @ 20' Light olive gray silty SANDSTONE, moist, dense, heavy FeO staining, MnO lined fractures/ bedding.	19.4	97.7	
150										
	25		D-7	79/11"			@ 25' Light gray silty SANDSTONE, slightly moist, dense, locally FeO stained, micaceous.	6.3	105.2	
	30									

LOG OF BORING

Fashion Island/ Eastside
Fashion Island Retail Center
PROJECT NO. 08034-01

NMG

Elevation (ft)	Depth (ft)	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
140	30		D-8	79			@ 30' Light brownish gray silty SANDSTONE, moist, dense, micaceous, massive, FeO staining.	9.1	104.7	
	35		D-9	50/3"			@ 35' Light olive gray silty SANDSTONE, slightly moist, dense, micaceous, MnO/ FeO staining.	8.1	94.2	
130	40		D-10	78/11"		ML/ SM	@ 41' Strong brown and olive gray sandy SILTSTONE and silty SANDSTONE, moist, locally laminated, FeO/ MnO stained bedding surfaces, micaceous, gypsum along fractures.	22.7	96.8	
	45						Notes: Total Depth: 41 ft. Groundwater Not Encountered. Backfilled With Cuttings. Asphalt Patched.			
120	50									
	55									
110	60									
	65									

LOG OF BORING

Fashion Island/ Eastside
Fashion Island Retail Center

PROJECT NO. 08034-01

NMG

Date(s) Drilled	6/3/08	Logged By	PA
Drilling Company	2R Drilling	Drill Bit Size/Type	8"
Drill Rig Type	CME-75	Hammer Data	140lbs/ 30" drop
Sampling Method(s)	Bulk, Modified California		
Approximate Groundwater Depth:	Groundwater Not Encountered		
Comments			

HS-3

Sheet 1 of 1

Total Depth Drilled (ft)	26.0
Approximate Ground Surface Elevation (ft)	182.5

Elevation (ft)	Depth (ft)	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	0						@ 0' Asphalt, 4", over 4.5" base.			
						SM	**Artificial Fill (Af)**			
180			B-1					8.6	113.0	Bag B-1 (0-5')
			D-2	40		SM/ SC	@ 2.5' Upper: Brownish yellow silty SAND, moist, medium dense, micaceous. Tip: Very dark gray silty SAND, moist, dense, wood fragments, roots, micaceous.	6.0	118.9	AL, GS, MD, EI, CC, CN, DS
	5		D-3	23			@ 5' Dark brown slightly clayey SAND, moist, medium dense, mica, roots, MnO staining, slightly plastic, pores/ rootholes.	12.1	122.6	
							Terrace, Marine (Qtm)			
			D-4	50/5"		SM	@ 7.5' Olive brown silty SAND, moist, dense, -Disturbed Sample-.	12.0	109.7	
	10		D-5	72/9.5"			@ 10' Brown silty SAND, moist to very moist, dense, micaceous, FeO staining, non-friable.	12.3	110.0	
170										
	15		D-6	32		SM	**Monterey Formation (Tm)** @ 15' Pale olive fine SANDSTONE, moist, medium dense, micaceous, locally heavy FeO staining, lightly cemented.	9.3	102.7	
	20		D-7	32			@ 20' Olive silty fine to medium coarse SANDSTONE with graded beds, very moist, medium dense, scattered small pebbles, FeO/ MnO/ jarosite staining, micaceous, lightly cemented.	14.6	110.4	
160										
	25		D-8	32		ML	@ 25' Light olive gray SILTSTONE, moist, medium dense, heavy FeO/ MnO staining, micaceous, moderately fractured.	24.6	95.3	
	30						Notes: Total Depth: 26 ft. Groundwater Not Encountered. Backfilled With Cuttings. Asphalt Patched.			

LOG OF BORING

Fashion Island/ Eastside
Fashion Island Retail Center
PROJECT NO. 08034-01

NMG

Date(s) Drilled	6/2/08	Logged By	PA
Drilling Company	2R Drilling	Drill Bit Size/Type	8"
Drill Rig Type	CME-75	Hammer Data	140lbs/ 30" drop
Sampling Method(s)	Bulk, Modified California		
Approximate Groundwater Depth:	Groundwater Not Encountered		
Comments			

HS-4

Sheet 1 of 1

Total Depth Drilled (ft)	26.0
Approximate Ground Surface Elevation (ft)	178.0

Elevation (ft)	Depth (ft)	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
178	0						@ 0' Asphalt, 4", over 4" base.			
						SP/ SM	**Artificial Fill (Af)**			
			D-1	37			@ 2.5' Strong brown slightly silty SAND, medium dense, very moist, slightly micaceous.	7.9	114.0	
	5		D-2	40			@ 5' Brown slightly silty SAND, medium dense, very moist, slightly friable, no visible roots/ pores.	9.0	117.6	
170			D-3	6		SM	@ 7.5' Dark brown silty SAND, loose, saturated, root hairs, pores, slightly friable.	16.2	115.0	
	10		D-4	6		SM	**Terrace, Marine (Qtm)** @ 10' Yellowish brown slightly clayey fine to medium coarse SAND, loose, very moist, pores, root hairs.	16.1	112.1	
	15		D-5	38			@ 15' Light olive brown silty SAND, medium dense, moist, micaceous, non-friable, occasional root holes.	12.5	116.2	
160										
	20		D-6	51		ML	**Monterey Formation (Tm)** @ 20' Light olive gray slightly clayey SILTSTONE with trace sand, moist, dense, FeO/ MnO staining along joints/ bedding, micaceous.	24.8	91.5	
	25		D-7	32		SM	@ 25' Yellow to pale yellow SANDSTONE, moist, medium dense, micaceous, massive, non-friable.	7.5	102.8	
150							Notes: Total Depth: 26 ft. Groundwater Not Encountered. Backfilled With Cuttings. Asphalt Patched.			
	30									

LOG OF BORING

Fashion Island/ Eastside
Fashion Island Retail Center
PROJECT NO. 08034-01

NMG

Date(s) Drilled	6/22/12	Logged By	PA
Drilling Company	2R Drilling	Drill Bit Size/Type	8"
Drill Rig Type	CME-75 Track Rig	Hammer Data	140lbs @ 30" Drop
Sampling Method(s)	Bulk, Modified California		
Approximate Groundwater Depth:	Groundwater Not Encountered		
Comments			

HS-12

Sheet 1 of 1

Total Depth Drilled (ft)	21.5
Approximate Ground Surface Elevation (ft)	175.0

Elevation (ft)	Depth (ft)	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	0					SM	**Artificial Fill (Af)** Surface: Turf			
			B-1							
			D-1	32			@ 2.5' Reddish brown silty SAND, moist, medium dense, massive, well-sorted.	8.2	115.6	B-1 @ 0-5' MD, GS, EI, CC
170	5		D-2	28			@ 5' Reddish brown silty SAND, moist, medium dense, massive, well-sorted.	8.2	107.9	DS
			D-3	11		CL	**Weathered Marine Terrace (Qtm)** @ 7.5' Pale gray to reddish brown silty sandy CLAY, moist, medium stiff, root hairs, pores.	22.8	105.9	CN
	10		D-4	44		CL	**Marine Terrace (Qtm)** @ 10' Pale olive sandy CLAY, moist, stiff, massive, FeO staining, locally sandy.	14.5	119.1	
160	15		D-5	39		ML	**Monterey Formation (Tm)** @15' Pale gray SILTSTONE, damp, medium dense, local sandstone, heavy FeO staining.	28.2	90.5	
	20		D-6	44			@ 20' Pale gray clayey SILTSTONE, moist, stiff, FeO staining, thinly laminated, scattered sandstone beds.	15.0	98.5	
150	25						Notes: Total Depth 21.5 Feet. No Groundwater Encountered. Backfilled with Cuttings and Tamped.			
	30									

LOG OF BORING

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG

Date(s) Drilled	6/22/12	Logged By	PA
Drilling Company	2R Drilling	Drill Bit Size/Type	8"
Drill Rig Type	CME-75 Track Rig	Hammer Data	140lbs @ 30" Drop
Sampling Method(s)	Bulk, Modified California		
Approximate Groundwater Depth:	Groundwater Not Encountered		
Comments			

HS-13

Sheet 1 of 1

Total Depth Drilled (ft)	21.5
Approximate Ground Surface Elevation (ft)	167.0

Elevation (ft)	Depth (ft)	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	0					SM	**Artificial Fill (Af)** Surface: 4" AC over 6" AB.			
			B-1 D-1	29			@ 2.5' Reddish brown silty SAND, moist, medium dense, massive, slightly mottled.	12.2	118.0	DS B-1 @ 0-5' MD, EI, CC, GS, AL
160	5		D-2	38			@ 5' Reddish brown silty SAND, moist, medium dense, massive, well-sorted, uniform.	10.1	126.2	
			D-3	21			@ 7.5' Reddish brown silty SAND, moist, medium dense, massive, well-sorted, bedrock fragments in upper rings.	16.5	111.6	CN
	10		D-4	34			@ 10' Reddish brown silty SAND, moist, medium dense, massive, well-sorted.	12.1	120.6	
			D-5	17			@ 12.5' Reddish brown silty SAND, saturated, medium dense, massive.	14.6	113.2	
	15		D-6	30		ML-CL	**Monterey Formation (Tm)** @ 15' Olive gray clayey SILTSTONE, moist, stiff, massive, weathered.	22.8	98.2	
150	20		D-7	50/5"		SM	@ 20' Very pale gray silty fine-grained SANDSTONE, damp, very dense, massive, FeO staining.	11.4	112.2	
							Notes: Total Depth 21.5 Feet. No Groundwater Encountered. Backfilled with Cuttings and Tamped.			
140	25									
	30									

LOG OF BORING

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG

BORING LOGS BY

G.A. NICOLL & ASSOCIATES
(1972)

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amt. of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amt. of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	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 silts 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.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

NO. 200 NO. 40 NO. 10 NO. 4 3/4 in. 3 in. (12 in.)

U. S. STANDARD SIEVE SIZE

PLATE A

UNIFIED SOIL CLASSIFICATION SYSTEM

Reference:
The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. I, March, 1953. (Revised April, 1960)

G. A. NICOLL & ASSOCIATES
EARTH SCIENCE CONSULTANTS

DRILL RIG: Bucket Auger		HOLE ELEV.: 152 feet	LOGGED BY: CAN
GROUNDWATER DEPTH: None		HOLE DIA.: 24 inch	DATE: Nov. 3, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								CL	FILL - BROWN TO GREY SILTY CLAY, MOIST, FIRM
7		X		21.0	96.0				
								SC	- TAN CLAYEY FINE SAND, MOIST, MEDIUM DENSE
10		X		8.1	128.0	5		SM	- REDDISH BROWN SILTY FINE SAND, MOIST, MEDIUM DENSE
								SM	- TAN SILTY SAND, FINE, MOIST, MEDIUM DENSE
						10		SM	TERRACE DEPOSITS
15		X		8.1	115.9				- BROWN TO REDDISH BROWN SILTY SAND, MOIST, DENSE
								GM	- WITH COBBLES TO 8 INCHES

NOTES:

1) GROUND WATER ABSENT
2) NO CAVING
3) HOLE BACKFILLED
4) TOTAL DEPTH 14 FEET
5) DRIVING WEIGHT FOR SAMPLES IS 1500 POUND KELLY BAR
6) Boring stopped due to cobbles

Report notes cobble layer above bedrock

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILLHOLE LOG		HOLE NO. B-1
		Project no. 1010	date Nov. 1972	sheet 1 of 1

DRILL RIG: Bucket Auger | HOLE ELEV.: 150 feet | LOGGED BY: GAN

GROUNDWATER DEPTH: None | HOLE DIA.: 24 inch | DATE: Nov. 3, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - TAN SANDY SILT WITH SHALE FRAGMENTS, MOIST
									- BROWN SILTY SAND
6		X		12.6	115.2				- TAN SANDY SILT
									- BROWN SILTY FINE SAND
6		X		17.6	100.5	5			
								CL	- GREY CLAY WITH SHALE FRAGMENTS
								SM	- TAN TO REDDISH BROWN SILTY SAND, MOIST, DENSE
14		X		8.7	116.0	10			
								SM	- GREY SILTY SAND, MOIST DENSE
21		X		10.8	121.0	15		SM	SOIL - GREY SILTY SAND, MOIST, DENSE
									TERRACE DEPOSITS
								SM	- TAN SILTY SAND AND SAND, MOIST, VERY DENSE
17		X		7.7	124.5	20			- SAME BUT GREY
16		X		8.5	124.1	25			- BECOMES REDDISH BROWN
									- WITH GRAVEL OF SILICEOUS SHALE FRAGMENTS
						30		-	BEDROCK - MONTEREY FORMATION
									- GREY SHALE AND TAN SANDSTONE, INTERBEDDED BEDS 1/4 inch to paper-thin THICKNESS. CONTACT: N45W, 15°SW; BEDDING: N35W, 45SW
						35			

NOTES:

1) TOTAL DEPTH 36 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) DRIVING WEIGHT FOR SAMPLER IS 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES

Block 100
Newport Center
The Irvine Company

DRILL HOLE LOG

Project no.	date	sheet	HOLE NO.
1010	Nov. 1972	1 of 1	B-2

DRILL RIG: Bucket Auger	HOLE ELEV.: 150 feet	LOGGED BY: GAN
GROUNDWATER DEPTH: None	HOLE DIA.: 24 inch	DATE: Nov. 3, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL – TAN SILTY SAND, DRY, LOOSE
11		X		10.0	113.2			SM	– TAN SILTY SAND, MOIST, MEDIUM DENSE
6		X		13.1	110.7	5			– LOCAL LENSES OF REDDISH BROWN SILTY SAND OR POCKETS OF GREY CLAY
11		X		13.2	104.8	10			
						15			
						20		SM	SOIL – GREY SILTY SAND, MOIST, DENSE
								SM	TERRACE DEPOSITS – GREY SILTY SAND, MOIST, DENSE

NOTES:
1) TOTAL DEPTH 24 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) DRIVING WEIGHT FOR SAMPLER IS 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILLHOLE LOG			HOLE NO.
		Project no.	date	sheet	B-3
		1010	Nov. 1972	1 of 1	

DRILL RIG: Bucket Auger | HOLE ELEV.: 153 feet | LOGGED BY: GAN

GROUNDWATER DEPTH: None | HOLE DIA.: 24 inch | DATE: Nov. 3, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - TAN SILTY SAND, DRY, LOOSE
5		X		10.8	110.0			SM	- REDDISH BROWN SILTY SAND, MOIST, MEDIUM DENSE
									- LOCALLY TAN
10		X		16.5	105.3	5		CL	- GREY AND BROWN CLAY, SOME SHALE FRAGMENTS AND SAND, MOIST, HARD
									- GREY TO REDDISH BROWN
17		X		10.8	94.3	10		SM	SILTY SAND, MOIST, DENSE
						15			- OCCASIONAL CLAY LAYER OR SHALE FRAGMENTS
						20			
								SM	SOIL - GREY SILTY SAND, MOIST, DENSE
						25		SM	TERRACE DEPOSITS - REDDISH BROWN SILTY SAND, MOIST, VERY DENSE

NOTES:

1) TOTAL DEPTH 26 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) DRIVING WEIGHT FOR SAMPLER IS 1520 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES

Block 100
Newport Center
The Irvine Company

DRILLHOLE LOG

project no.	date	sheet	HOLE NO.
1010	Nov. 1972	1 of 1	B-4

DRILL RIG: Bucket Auger		HOLE ELEV.: 152 feet	LOGGED BY: GAN
GROUNDWATER DEPTH: None		HOLE DIA.: 24 inch	DATE: Nov. 3, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - TAN SILTY SAND, DRY, LOOSE
								SM	- TAN SILTY SAND, MOIST, MEDIUM DENSE
8		X		15.9	105.1			CL	- GREY CLAY, SHALE FRAGMENTS, SAND LENSES
12		X		12.9	125.2	5		SM	- REDDISH BROWN AND TAN SILTY SAND
17		X		9.7	105.9	10			- WITH GREY CLAY LAYERS
						15			
						20			
						25			
						30		GP	- COBBLES WITH DARK GREY SILTY SAND
						35		--	BEDROCK - MONTEREY FORMATION SHALE WITH INTERBEDS OF SANDSTONE. CONTACT FRACTURED. BEDDING: N84W, 24SW

NOTES:
1) TOTAL DEPTH 38 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) DRIVING WEIGHT FOR SAMPLER - 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILL HOLE LOG			HOLE NO.
		Project no.	date	sheet	B-5
		1010	Nov. 1972	1 of 1	

DRILL RIG: Bucket Auger | HOLE ELEV.: 153 feet | LOGGED BY: GAN

GROUNDWATER DEPTH: None | HOLE DIA.: 24 inch | DATE: Nov. 3, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL – TAN SILTY SAND, DRY, LOOSE
8		X		7.9	116.9			SM	– BROWN SILTY SAND, MOIST, MEDIUM DENSE
									– LOCAL REDDISH BROWN CLAYEY SAND, SCATTERED GRAVEL
12		X		10.8	109.7	5			
						10			
11		X		10.6	113.0				
						15			
						20			
								CL	– BLACK CLAY, MOIST, STIFF
								SM	– REDDISH BROWN SILTY SAND, MOIST, MEDIUM DENSE
						25			
								SM	– DARK GREY SILTY SAND, MOIST, MEDIUM DENSE, ROOTS.
						30			– BECOMES GREEN AND GREY
						35		SM	– REDDISH BROWN SILTY SAND, SOME GREY CLAY AND SHALE FRAGMENTS
						40			
								–	BEDROCK – MONTEREY FORMATION SHALE AND SANDSTONE
						45			NOTES: 1) TOTAL DEPTH 45½ FT. 2) NO CAVING 3) HOLE BACKFILLED 4) SAMPLE DRIVING WEIGHT IS 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES

Block 100
Newport Center
The Irvine Company

DRILL HOLE LOG

Project no.	date	sheet
1010	Nov. 1972	1 of 1

HOLE NO. B-6

DRILL RIG: Bucket Auger | HOLE ELEV.: 150 feet | LOGGED BY: GAN

GROUNDWATER DEPTH: None | HOLE DIA.: 24 inch | DATE: Nov. 3, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - TAN SILTY SAND, DRY, LOOSE
									- BECOMES BROWN, MOIST, MEDIUM DENSE
2		X		9.6	104.3				
6		X		10.0	107.3	5			
									- LOCALLY REDDISH BROWN
						10			
						15			
5		X		15.1	109.3	20			
						25			
						30			
								GM	- COBBLES
						35			BEDROCK - MONTEREY FORMATION SHALE, SOME SANDSTONE

NOTES:
1) TOTAL DEPTH 36 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) SAMPLE DRIVING WEIGHT 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES

Block 100
Newport Center
The Irvine Company

DRILLHOLE LOG

Project no.	date	sheet	HOLE NO.
1010	Nov. 1972	1 of 1	B-7

DRILL RIG: Bucket Auger	HOLE ELEV.: 146 feet	LOGGED BY: GAN
GROUNDWATER DEPTH: None	HOLE DIA.: 24 inch	DATE: Nov. 3, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
4		X		18.5	97.3	0		SM	FILL – TAN SILTY SAND, DRY LOOSE
									– BECOMES BROWN TO REDDISH BROWN, MOIST, MEDIUM DENSE
8		X		13.4	104.2	5			
									– LENS OF GREY CLAY
						10			
6		X		14.5	113.1	15			
						20			
						25			
						30			– GREY SILTY SAND
									– REDDISH BROWN SILTY SAND
						35			– WITH COBBLES
						40			BEDROCK – MONTEREY FORMATION SHALE AND SANDSTONE

NOTES:
1) TOTAL DEPTH 40 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) SAMPLER DRIVING WEIGHT IS 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILL HOLE LOG			HOLE NO.
		Project no.	date	sheet	B-8
		1010	Nov. 1972	1 of 1	

DRILL RIG: Bucket Auger | HOLE ELEV.: 147 | LOGGED BY: GAN

GROUNDWATER DEPTH: None | HOLE DIA.: 24 inch | DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - TAN SILTY SAND, DRY, LOOSE
									REDDISH BROWN SILTY SAND
4		X		8.0	105.5				MOIST, MEDIUM DENSE
10		X		24.0	96.9	5			
								CL	- GREY SANDY CLAY, MOIST, STIFF
								SM	- REDDISH BROWN SILTY
20		X		9.9	105.8	10			SAND, MOIST, MEDIUM DENSE
						15			
						20			
								CL	
						25		SM	
						30			
								CL	- GREY CLAY WITH SHALE
									FRAGMENTS
									BEDROCK - MONTEREY FORMATION
									SHALE & SANDSTONE

NOTES:

1) TOTAL DEPTH 39 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) DRIVING WEIGHT FOR SAMPLER: 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES

Block 100
Newport Center
The Irvine Company

DRILLHOLE LOG

project no.	date	sheet	HOLE NO.
1010	Nov. 1972	1 of 1	B-9

DRILL RIG: Bucket Auger		HOLE ELEV.: 147 feet	LOGGED BY: GAN
GROUNDWATER DEPTH: None		HOLE DIA.: 24 inch	DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
		X		21.7	97.1			SM	FILL – BROWN AND REDDISH BROWN SILTY FINE SAND, MOIST, MEDIUM DENSE
		X		22.8	98.8	5			– LAYERS OF GREY AND BROWN SILTY CLAY
		X		15.2	112.9	10			– TAN SILTY FINE SAND
						15			– REDDISH BROWN SILTY FINE SAND
						20			

NOTES:
1) TOTAL DEPTH 20 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) SAMPLER DRIVING WEIGHT IS 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILL HOLE LOG		HOLE NO.
		Project no. 1010	date Nov. 1972	sheet 1 of 1
				B-10

DRILL RIG: Bucket Auger		HOLE ELEV.: 142 feet	LOGGED BY: GAN
GROUNDWATER DEPTH: None		HOLE DIA.: 24 inch	DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL — BROWN SILTY SAND, DRY, LOOSE — MOIST BELOW 1 FOOT
6		X		11.6	100.6				
4		X		20.1	100.0	5			
								CL	— GREY SILTY CLAY
								SM	— REDDISH BROWN SILTY SAND WITH SOME GREY CLAY.
10		X		17.3	106.7	10			
								CL	— DARK GREY SILTY CLAY, SOME ROOTS, GRAVEL
						15		SM	— REDDISH BROWN SILTY SAND, MOIST, MEDIUM DENSE — BECOMES GREY WITH SOME ORGANICS
8		X		8.8	127.7	20			
								SM	— REDDISH BROWN SILTY SAND
						25			

NOTES:
1) TOTAL DEPTH 25 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) SAMPLER DRIVEN BY 1500 POUND KELLY

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILL HOLE LOG			HOLE NO.
		Project no.	date	sheet	
		1010	Nov. 1972	1 of 1	B-11

DRILL RIG: Bucket Auger	HOLE ELEV.: 154 feet	LOGGED BY: GAN
GROUNDWATER DEPTH: None	HOLE DIA.: 24 inch	DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - REDDISH BROWN SILTY SAND, DRY LOOSE
8		X		11.4	109.2				- MOIST AND MEDIUM DENSE
								CL	- SOME GREY SILTY CLAY
								SM	LAYERS
6		X		25.5	96.2	5			

NOTES:
1) TOTAL DEPTH 6 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) DRIVING WEIGHT FOR SAMPLER - 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILL HOLE LOG		HOLE NO.
		Project no.	date	sheet
		1010	Nov. 1972	1 of 1
				B-12

DRILL RIG: Bucket Auger		HOLE ELEV.: 154 feet	LOGGED BY: GAN
GROUNDWATER DEPTH: None		HOLE DIA.: 24 inch	DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pct)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL — TAN SILTY SAND, DRY, LOOSE
8		X		9.7	117.5				— BECOMES MOIST, MEDIUM DENSE
6		X		26.8	94.8	5		CL	— WITH GREY SILTY CLAY LAYERS
									NOTES: 1) TOTAL DEPTH 6 FEET 2) NO CAVING 3) HOLE BACKFILLED 4) SAMPLER DRIVING WEIGHT IS 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILL HOLE LOG		HOLE NO.
		Project no.	date	sheet
		1010	Nov. 1972	1 of 1
				B-13

DRILL RIG: Bucket Auger		HOLE ELEV.: 161 feet	LOGGED BY: GAN
GROUNDWATER DEPTH: None		HOLE DIA.: 24 inch	DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - TAN SILTY SAND, DRY, LOOSE
2		X		7.9	106.1				- MOIST, LOOSE
						5			- BECOMES MEDIUM DENSE
14		X		8.2	109.2				
						10			

NOTES:
1) TOTAL DEPTH 10 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) SAMPLER DRIVEN BY 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	DRILL HOLE LOG		HOLE NO.
		Project no.	date	sheet
		1010	Nov. 1972	1 of 1
				B-14

DRILL RIG: Bucket Auger | HOLE ELEV.: 145 feet | LOGGED BY: GAN

GROUNDWATER DEPTH: None | HOLE DIA.: 24 inch | DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - SILTY SAND, DRY, LOOSE
									- MOIST, MEDIUM DENSE
									- LOCAL CLAYEY SILT
16		X		16.5	109.8	5			

NOTES:
1) TOTAL DEPTH 6 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) DRIVING WEIGHT FOR SAMPLER - 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES

Block 100
Newport Center
The Irvine Company

DRILL HOLE LOG

Project no.	date	sheet	HOLE NO.
1010	Nov. 1972	1 of 1	B-15

DRILL RIG: Bucket Auger | HOLE ELEV.: 122 feet | LOGGED BY: GAN

GROUNDWATER DEPTH: None | HOLE DIA.: 24 inch | DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL - TAN SILTY SAND, DRY, LOOSE
									- MOIST, MEDIUM DENSE
8		X		10.2	110.7				- LOCAL REDDISH BROWN SANDY CLAY
						5			

NOTES:
1) TOTAL DEPTH 5 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) SAMPLE DRIVING WEIGHT - 1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES

Block 100
Newport Center
The Irvine Company

DRILLHOLE LOG

Project no.	date	sheet
1010	Nov. 1972	1 of 1

HOLE NO. B-16

DRILL RIG: Bucket Auger | HOLE ELEV.: 142 feet | LOGGED BY: GAN

GROUNDWATER DEPTH: None | HOLE DIA.: 24 inch | DATE: Nov. 4, 1972

blows/foot	sampler: bulk	sampler: split spoon	sampler: tube	moisture (%)	dry density (pcf)	depth (feet)	soil symbol	soil type	DESCRIPTION AND REMARKS
								SM	FILL – TAN SILTY SAND, DRY, LOOSE
									– MOIST, MEDIUM DENSE
								CL	– GRAY CLAY, MOIST, STIFF
20		X		7.1	109.2	5		SM	– REDDISH BROWN SILTY SAND MOIST, DENSE
								SM	– TAN SILTY SAND, MOIST, DENSE
								SM	– GREY SILTY SAND, MOIST, DENSE
								SM	– REDDISH BROWN SILTY SAND, MOIST, DENSE
						10			

NOTES:
1) TOTAL DEPTH 10 FEET
2) NO CAVING
3) HOLE BACKFILLED
4) SAMPLER DRIVING WEIGHT=1500 POUND KELLY BAR

G. A. NICOLL & ASSOCIATES

Block 100
Newport Center
The Irvine Company

DRILLHOLE LOG

Project no.	date	sheet	HOLE NO.
1010	Nov. 1972	1 of 1	B-17

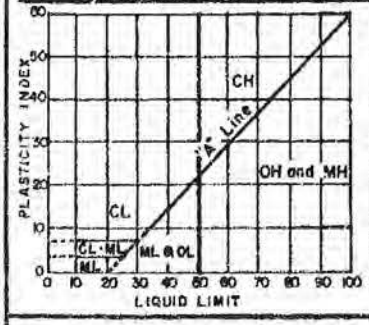
BORING LOGS BY

MOORE & TABER
(1975)

MOORE & TABER CONSULTING ENGINEERS AND GEOLOGISTS

UNIFIED SOIL CLASSIFICATION

Pt	OH	CH	MH	OL	CL	ML	SC	SM	SP	SW	GC	GM	GP	GW
Highly organic soils	Silts and clays Liquid limit greater than 50			Silts and clays Liquid limit less than 50			Sands with fines >12% fines		Clean sands <5% fines		Gravels with fines >12% fines		Clean gravels <5% fines	
							Sands - more than 50% of coarse fraction is smaller than Nº 4 sieve.				Gravels - more than 50% of coarse fraction is larger than Nº 4 sieve.			
Fine grained soils (More than 50% is smaller than Nº 200 sieve)							Coarse grained soils (More than 50% is larger than Nº 200 sieve)							



LABORATORY CLASSIFICATION CRITERIA

GW and SW - $C_u = \frac{D_{60}}{D_{10}}$ greater than 4 for GW & 6 for SW; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 & 3.

GP and SP - Clean gravel or sand not meeting requirements for GW and SW.

GM and SM - Atterberg limits below "A" line or P.I. less than 4.

GC and SC - Atterberg limits above "A" line with P.I. greater than 7.

Fines (silt or clay)	Fine sand	Medium sand	Coarse sand	Fine gravel	Coarse gravel	Cobbles	Boulders
Sieve sizes	#200	#40	#10	#4	3/4"	3"	12"

Classification of earth materials shown on this sheet is based on field inspection and should not be construed to imply laboratory analysis unless so stated

MATERIAL SYMBOLS

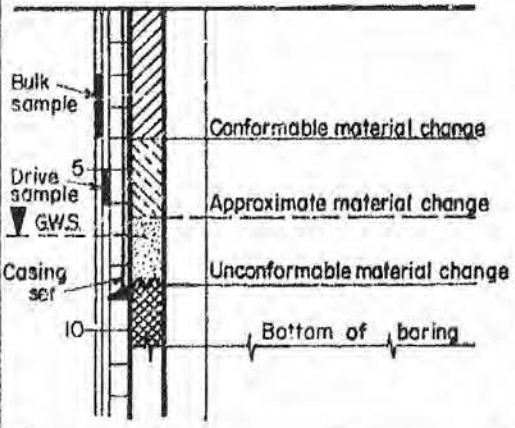
- Gravel
- Sand
- Silt
- Clay
- Sandy clay or clayey sand
- Sandy silt or silty sand
- Silty clay or clayey silt
- Peat or organic matter
- Fill material
- Shale
- Sandstone
- Limestone
- Metamorphic rock
- Igneous rock

CONSISTENCY CLASSIFICATION FOR SOILS

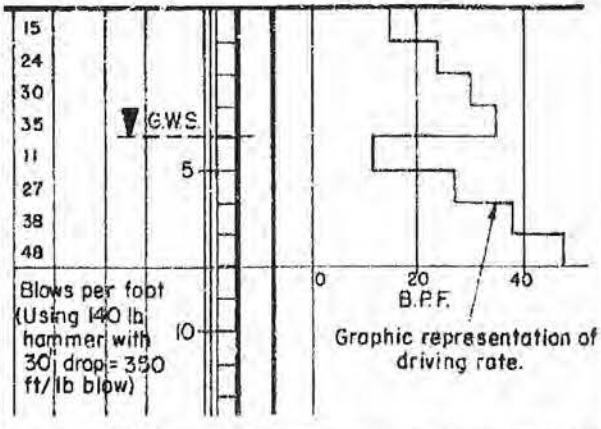
According to the Standard Penetration Test

Nº of blows	Granular	Cohesive
0-5	Very loose	Very soft
6-10	Loose	Soft
11-20	Semicompact	Stiff
21-35	Compact	Very stiff
36-70	Dense	Hard
>70	Very dense	Very hard

LEGEND OF BORING



LEGEND OF PENETRATION TEST



LF 1469

Legend

MOORE & TAYLOR CONSULTING ENGINEERS AND GEOLOGISTS

TEST BORING LOG

TYPE 18" Bucket Auger | ELEVATION ~101* | BORING 1

STRIKE / DIP	RELATIVE COMPACTION	DRY DENSITY (LBS/CU.FT.)	MOISTURE (%)	BLOWS/FOOT (300 ft.lbs.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS.	
		114	5.6	10	2.5	1			SC	Red-brown fine to medium CLAYEY SAND - FILL
					Bag	2				
		96	11.1	5	2.5	3	5		SC	Yellow-brown fine CLAYEY SAND - FILL
		111	10.4	10	2.5	4	10		SM	Light brown fine SILTY SAND - FILL
									CL	Greenish SILTY CLAY - FILL
		111	11.9	10	2.5	5	15		SM	Red-brown fine to medium SILTY SAND
									SC	Red-brown fine to medium CLAYEY SAND - FILL
		114	8.8	6	2.5	6	20		SM	Light brown fine SILTY SAND - FILL
									SM	Dark brown SILTY SAND
		118	7.4	25	2.5	7	25		SM	Red-brown fine SILTY SAND

NOTES

1. No caving
2. No water seepage encountered

* Elevations based on assumed elevation of 100 at top of curb, Newport Center Drive East.

LOGGED BY WMC | DATE 1/14/75

Job No. 175-507 - January 31, 1975

MOORE & TABER CONSULTING ENGINEERS AND GEOLOGISTS

TEST BORING LOG

TYPE 18" Bucket Auger | ELEVATION ~100.5 | BORING 2

Strike / Dip	Relative Compaction	Dry Density (lbs/cu ft)	Moisture (%)	Blows/Foot (300 ft-lbs)	Sample Size (inches)	Sample No	Depth in Feet	Material Symbol	Unified Soil Class.	
								SC		Red-brown fine CLAYEY SAND - FILL
		91	26.9	11	2.5	1	5	SM		Red-brown fine SILTY SAND - FILL
		106	11.7	5	2.5	2		CL		Greenish SILTY CLAY
								SM		Red-brown fine SILTY SAND
							10	CL		Red-brown & Greenish SILTY CLAY - FILL
		108	8.3	8	2.5	3		SM		Red-brown fine SILTY SAND - FILL
		109	13.5	8	2.5	4	15	SM		Red-brown fine SILTY SAND - FILL
								SM		Gray-brown fine to medium SILTY SAND & red-brown CLAYEY SAND - FILL
		109	5.9	6	2.5	5	20	SM		Brown fine SILTY SAND ... changing to red-brown
		109	5.4	5	2.5	6	25			
		114	7.2	15	2.5	7	30	SC		Mottled red-brown and gray CLAYEY SAND

NOTES

1. No caving
2. No water seepage encountered

LOGGED BY WMC | DATE 1/14/75

MOORE & TABER CONSULTING ENGINEERS AND GEOLOGISTS

TEST BORING LOG

TYPE 18" Bucket Auger | ELEVATION ~100.0 | BORING 1

DEPTH IN FEET	SAMPLE Nº	SAMPLE SIZE (INCHES)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (LBS/CU.FT.)	UNIFIED SOIL CLASS	MATERIAL SYMBOL	
	1	2.5	6	23.8	88	SC	SC	Red-brown fine CLAYEY SAND - FILL
	2	Bag				SC	SC	Yellow-brown fine CLAYEY SAND with SHALE - FILL
5	3	2.5	4	38.1	84	SM	SM	Red-brown fine SILTY SAND
						SC	SC	Gray-brown mottled CLAYEY SAND
						ML	ML	Gray-brown SANDY SILT
10	4	2.5	4	12.5	116	SM	SM	Red-brown fine SILTY SAND ... some fine CLAYEY SAND layers - FILL
						SC	SC	Red-brown fine to medium CLAYEY SAND
15	5	2.5	5	7.5	123	SM	SM	Mottled gray and brown fine to coarse SILTY SANDS - FILL
						SM	SM	Brown fine SILTY SAND ... changing to red-brown
20	6	2.5	10	5.3	113	SP	SP	Light brown fine SAND
25	7	2.5	18	3.1	101			

NOTES

1. No caving
2. No water seepage encountered

LOGGED BY WMC | DATE 1/14/75

Job No. 175-507 - January 31, 1975

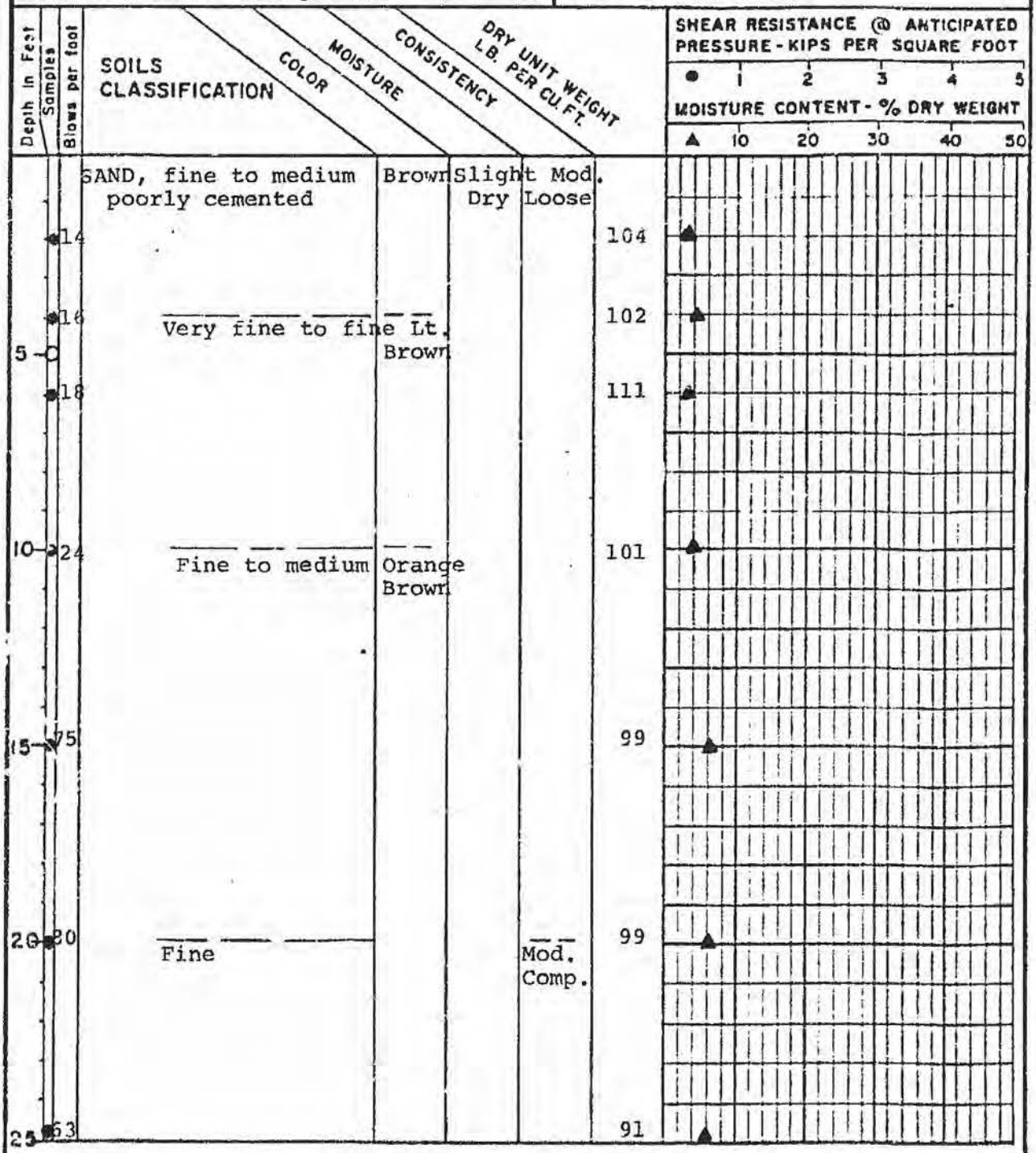
BORING LOGS BY

SOILS INTERNATIONAL
(1988)

LOG OF BORING Nº 1

DATE DRILLED 3-25-88 | DRILLING EQUIPMENT 8" Hollowstem

DRIVING WEIGHT 140 pounds - 30" drop | SURFACE ELEVATION



Edwards Theatre
300 Newport Center Drive
Newport Beach, Calif.

PROJECT No.	S-1093-F
PLATE	B

SOILS INTERNATIONAL
CONSULTING FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

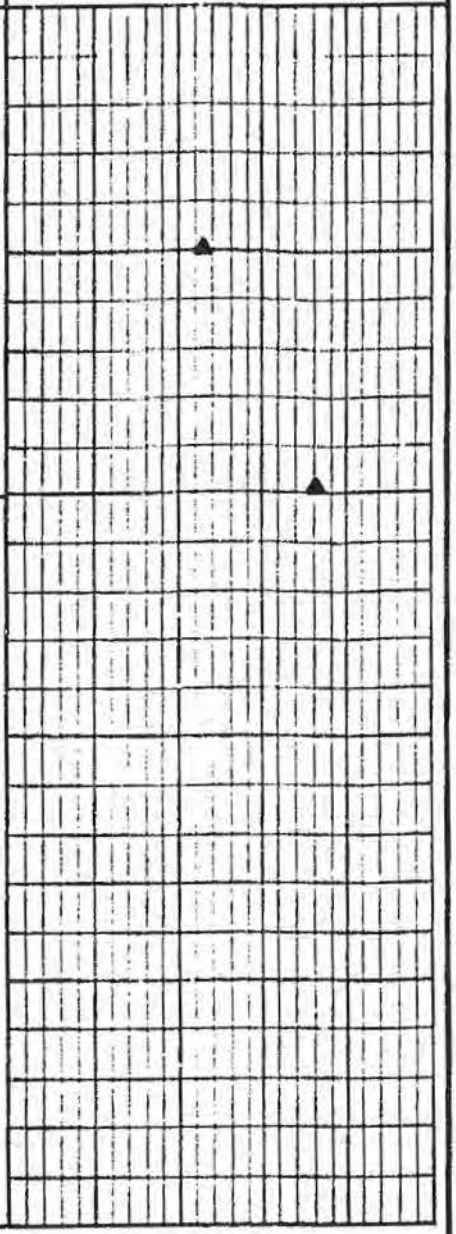
LOG OF BORING Nº 1 continued . . .

DATE DRILLED 3-25-88	DRILLING EQUIPMENT 8" Hollowstem
DRIVING WEIGHT 140 pounds - 30" drop	SURFACE ELEVATION

Depth in Feet	Samples	Blows per foot	SOILS CLASSIFICATION	COLOR	MOISTURE	CONSISTENCY	DRY UNIT WEIGHT LB. PER CU. FT.
			Sand, fine to medium		Sl. Moist	Mod. Comp.	
			Siltstone		Moist	Comp.	87
30	●	29	Sandstone with siltstone fragments				
							67
35	●	20	End of Boring @ 35 feet No caving No groundwater				
40			● Core Sample ○ Bulk Sample				
45							
50							

SHEAR RESISTANCE @ ANTICIPATED PRESSURE - KIPS PER SQUARE FOOT
● 1 2 3 4 5

MOISTURE CONTENT - % DRY WEIGHT
▲ 10 20 30 40 50



Edwards Theatre
300 Newport Center Drive
Newport Beach, CAlif.

PROJECT No.	S-1093-F
PLATE	C

SOILS INTERNATIONAL
CONSULTING FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

LOG OF BORING Nº 2

DATE DRILLED 3-25-88	DRILLING EQUIPMENT 8" Hollowstem
DRIVING WEIGHT 140 pounds - 30" drop	SURFACE ELEVATION

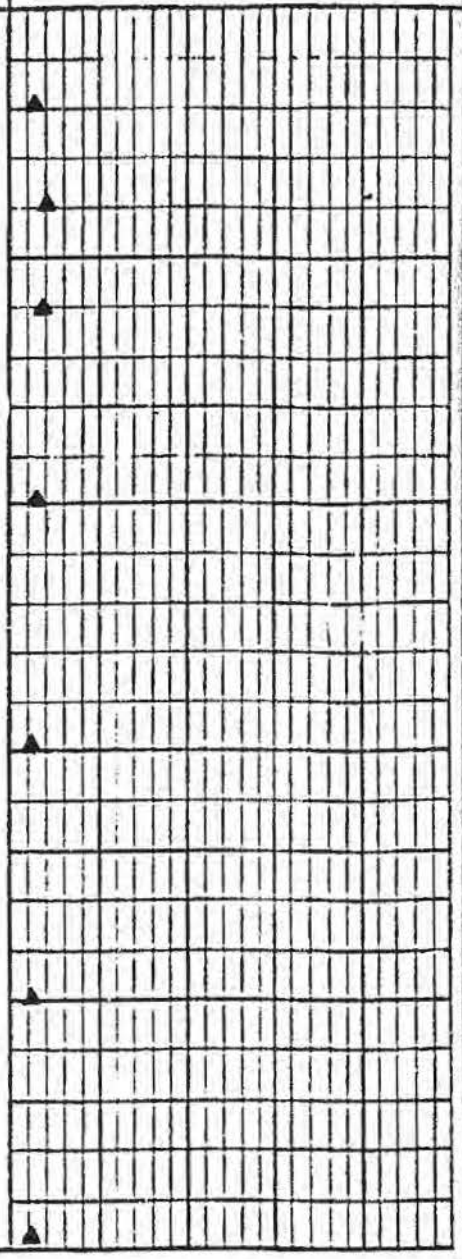
Depth in Feet	Samples	Blows per foot	SOILS CLASSIFICATION	COLOR	MOISTURE	CONSISTENCY	DRY UNIT WEIGHT L.B. PER CU. FT.
			FILL				
			Sand, fine clean	Lt Brown to Brown	SI Dry	Mod Loose	108
		6 7	Fine to medium clean				
		7 3					120
5		8 3					106
10		7 9					107
			Fine, clean	Orange Brown		Mod. Comp.	
15		3 3					99
20		7 1					99
25		3 1					90

SHEAR RESISTANCE @ ANTICIPATED PRESSURE - KIPS PER SQUARE FOOT

● 1 2 3 4 5

MOISTURE CONTENT - % DRY WEIGHT

▲ 10 20 30 40 50



Edwards Theatre
300 Newport Center Drive
Newport Beach, Calif.

PROJECT No.	S-1093-F
PLATE	D

SOILS INTERNATIONAL
CONSULTING FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

LOG OF BORING Nº 2 continued. . .

DATE DRILLED 3-25-88 | **DRILLING EQUIPMENT** 8" Hollowstem

DRIVING WEIGHT 140 pounds - 30" Drop | **SURFACE ELEVATION**

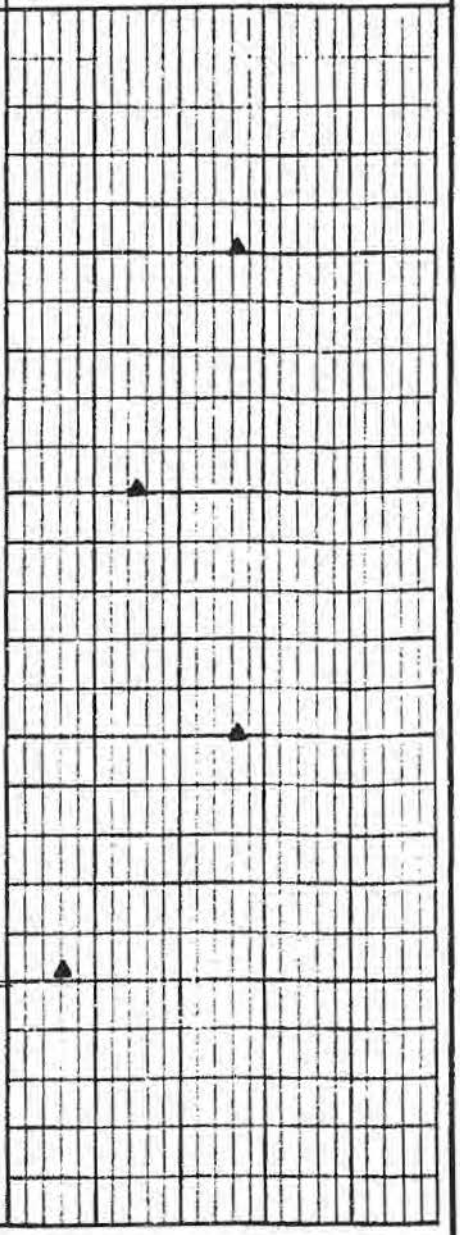
Depth in Feet	Samples	Blows per foot	SOILS CLASSIFICATION	COLOR	MOISTURE	CONSISTENCY	DRY UNIT WEIGHT LB. PER CU. FT.
			SAND, fine to medium	Orange Brown	Sl. Moist	Mod. Comp.	
30	●	36	Siltstone/sandstone	Tan	Moist	Comp.	77
35	●	52					93
40	●	79	Sandstone lense of siltstone	Grey Tan			82
45	●	95					95
			End of Boring @ 45' No caving No groundwater				
50							

SHEAR RESISTANCE @ ANTICIPATED PRESSURE - KIPS PER SQUARE FOOT

● 1 2 3 4 5

MOISTURE CONTENT - % DRY WEIGHT

▲ 10 20 30 40 50



Edwards Theatre
300 Newport Center Drive
Newport Beach, Calif.

PROJECT No.	S-1093-F
PLATE	E

SOILS INTERNATIONAL
CONSULTING FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

BORING LOGS BY

R.T. FRANKIAN & ASSOCIATES
(1994)

LOG OF BORINGS 94-029-A BORING NUMBER 1

CLIENT _____ JOB NO. _____

ELEVATION 69½±

Sample Depth	Blows Per Foot	Moisture Content (%)	Dry Unit Weight Lbs. Per Cu. Ft.	Depth In Feet	DESCRIPTION Surface Conditions: Asphalt 6" thick - no base
				0	SAND: Tan-brown, silty, fine to medium moist, dense to very dense mottled tan-brown and medium brown
1½	5	11	120		
3	8	11	113		SANDSTONE? Mottled rust-brown-gray, fine sandstone, moist, hard
				5	
6	10	9	109		
					mottled rust-brown-olive-gray with olive-gray shale bedrock, root fragment
10	6	23	92	10	
					mottled rust-brown-white, and olive-gray, fine sandstone with olive-gray siltstone bedding, moist, firm to medium hard
14	7	28	87		
				15	grades olive-buff colored fine sandstone, less moist
					lenses of very hard hsale
				20	End of boring at 20 feet No water - no caving

R.T. FRANKIAN & ASSOCIATES
Theoretical and Applied Earth Mechanics

LOG OF BORINGS 94-029-A BORING NUMBER 2

CLIENT _____ JOB NO. _____

ELEVATION: 72½±

Sample Depth	Blows Per Foot	Moisture Content (%)	Dry Unit Weight Lbs. Per Cu. Ft.	Depth In Feet	DESCRIPTION
				0	Surface Conditions: Asphalt 7" thick - no base
					SAND: Tan-brown silty fine sand, damp to moist, dense to very dense
2	9/ 10"	9	118		
4	10	5	110		SANDSTONE: Mottled tan-brown to dark-brown, fine, damp to moist, hard to very hard
				Ss	
				5	
7	12	6	112		grades tan to medium brown sandstone, damp to moist, very hard
					grades olive-gray, moist
10½	6	26	92	10	olive to light green fine sandstone
					SILTSTONE: Mottled rust-brown and gray siltstone, moist, very firm
				S_i	
				15	
16	12/ 7"	3	107		SANDSTONE: Buff-gray fine sandstone, damp, very hard
				Ss	
					occasional layers of hard shale bedding
20	10/ 8"	26	87	20	
					End of boring at 20 feet No water - no caving

R.T. FRANKIAN & ASSOCIATES

LOG OF BORINGS 94-029-A BORING NUMBER 3

CLIENT _____ JOB NO. _____

ELEVATION: 76±

Sample Depth	Blows Per Foot	Moisture Content (%)	Dry Unit Weight Lbs. Per Cu. Ft.	Depth In Feet	DESCRIPTION
					Surface Conditions: Concrete 5" thick (+/-) reinforced
				0	
					Af
					FILL: Gray silty clay, moist to very moist
					grades red-brown almoost clean sand, very moist, loose
2	Push &Tap	15	112		
					grades dark olive-brown to black slightly silty sand with lenses of olive colored silty clay, very moist, loose
				5	
8	6	11	114		SAND: Mottled light brown, medium brown, and rust brown, silty, fine, moist, dense to very dense
					SM
				10	
11	10	10	114		SANDSTONE: Mottled rust-brown and gray, fine sandstone, moist, very hard
					S_s
					occasional lense of silty clay
15	12	7	107	15	mottled rust-brown, olive, tan colored fine sandstone, moist
					occasional lense of hard shale
20	15	26	93	20	

R.T. FRANKIAN & ASSOCIATES

APPENDIX C

LABORATORY TEST RESULTS BY

W.A. WAHLER
(1970)

FOR EXISTING CARWASH SITE

TABLE A-1

FIELD RESISTIVITY TEST RESULTS

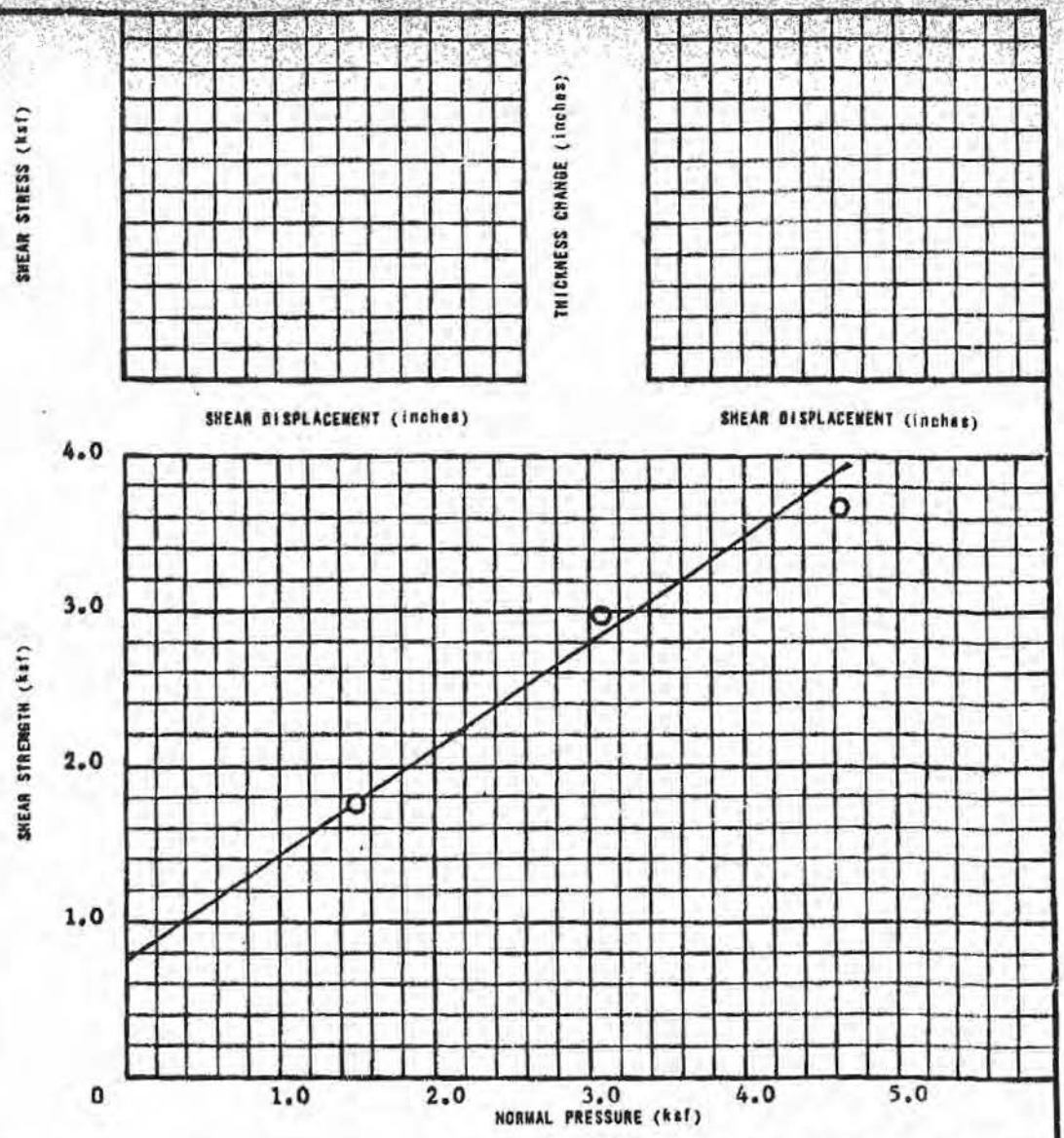
Alignment No.	Test Depth	Soil Classification	Resistivity (ohm-cm)	Corrosivity	Service Life
1	2.5'	Clayey SAND	1435	Severe	10-15
	4.5'	Clayey SAND	1700	Moderate	15-20
	9.0'	SAND	2552	Moderate	15-20
2	2.5'	Clayey SAND	1558	Moderate	15-20
	4.5'	Clayey SAND	1530	Moderate	15-20
	9.0'	SAND	2200	Moderate	15-20
3	10.0'	SAND	1495	Moderate to Severe	12-20
	11.5'	Sandy CLAY	1632	Moderate	15-20

NOTE: pH's were determined for samples from depths of 1', 4.5', 11', 13', and 14'. The pH of each sample was 6.8.

TABLE B-1

DETERMINATION OF NATURAL WATER CONTENT, DRY DENSITY, AND pH

Pit No.	Depth (Ft.)	Sample Description	Unified Soil Classification	Natural Water Content (%)	Natural Dry Density (pcf)	pH
1	0.25	SAND	SP	6.9	112.1	-
	4.5	Clayey SAND	SW-SC	9.1	119.2	6.8
	6	Silty SAND	SP-SM	7.1	108.8	-
	8	Silty SAND	SM	9.7	-	-
	9	Sandy CLAY	CL	13.2	134.3	-
3	1.5	Clayey SAND	SC	16.0	109.8	-
	3.5	Clayey SAND	SP-SC	9.0	119.3	-
4	4.5	Sandy CLAY	CL	30.4	86.3	-
5	1-4	Sandy CLAY	SC	-	-	6.8
	11	Silty SAND	SM	7.2	127.8	6.8
	13	Sandy CLAY	CH	-	-	6.8
	14	SAND	SP	7.1	116.8	6.8



HOLE NO. 1
DEPTH (ft) 4.5
SAMPLE DESCRIPTION Light Brown Clayey SAND
TEST DESIGNATION Q Sat
RATE OF STRAIN .025 in/min.

SPECIMEN NUMBER	1	2	3	
NORMAL PRESSURE (ksf)	1.56	3.09	4.63	
SHEAR STRENGTH (ksf)	1.75	2.99	3.65	
INITIAL WATER CONTENT (%)	9.1	9.1	9.1	
FINAL WATER CONTENT (%)	15.6	14.3	13.4	
DRY DENSITY (pcf)	119.2	119.2	119.2	

NOTE: $\phi = 35^{\circ}$ C = 0.75 ksf

811-2 Rev. 2/69

SOIL MECHANICS and FOUNDATION ENGINEERS Inc.
PALO ALTO • NEWPORT BEACH • CALIF.

NEWPORT CENTER CAR WASH
NEWPORT BEACH, CALIFORNIA

DIRECT SHEAR TEST

PROJECT NO.	DATE	DRAWING NO.
0461	JAN. 1970	FIGURE B-1

LABORATORY TEST RESULTS BY

NMG
(2012a & b)

FOR PADS B & C AT FASHION ISLAND

Sample	Compacted Moisture (%)	Compacted Dry Density (pcf)	Final Moisture (%)	Volumetric Swell (%)	Expansion Index[1] Value/Method		Expansive Classification[2]	Soluble Sulfate (%)	Sulfate Exposure[3]
HS-3 B-1 0-5'	8.6	114.8	13.1	2.8	28	B	Low	.05	Negligible
HS-12 B-1 0-5'	7.5	113.4	12.3	0	0	B	Very Low	0.05	Negligible
HS-13 B-1 0-5'	10.6	112.1	15.7	0.2	5	B	Very Low	0.05	Negligible

Test Method:

ASTM D4829 / UBC Standard 18-2

HACH SF-1 (Turbidimetric)

Notes:

1. Expansion Index (EI) method of determination:
   [A] E.I. determined by adjusting water content to achieve a 50 ±1% degree of saturation
   [B] E.I. calculated based on measured saturation within the range of 40% and 60%
2. 1997 UBC Table 18-1-B *(Classification of Expansive Soil)*
3. 1997 UBC Table 19-A-4 *(Requirement for Concrete Exposed to Sulfate-Containing Solutions)*

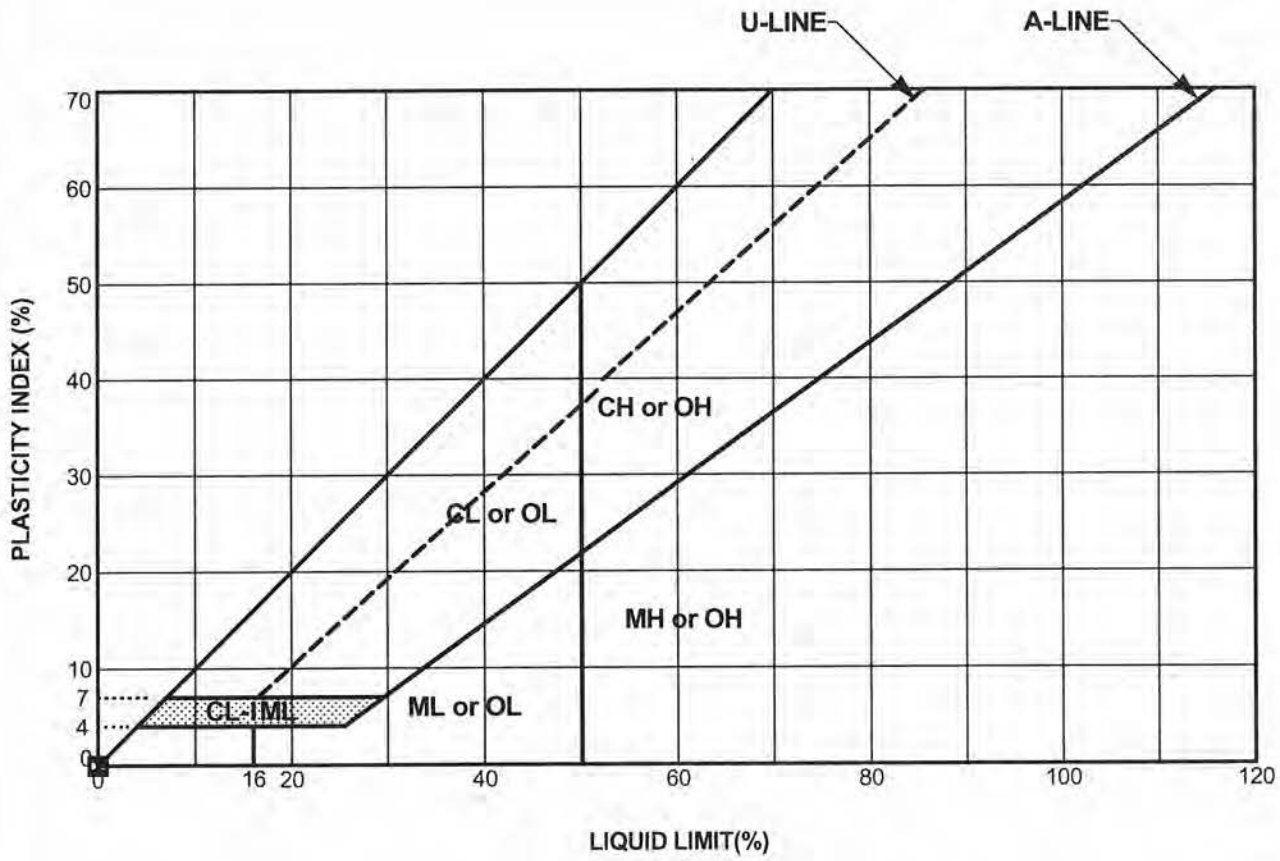
Expansion Index and Soluble Sulfate Test Results

(FRM001 Rev.5)

Project No. 08034-01 and -03

Project Name: FI Eastside

NMG



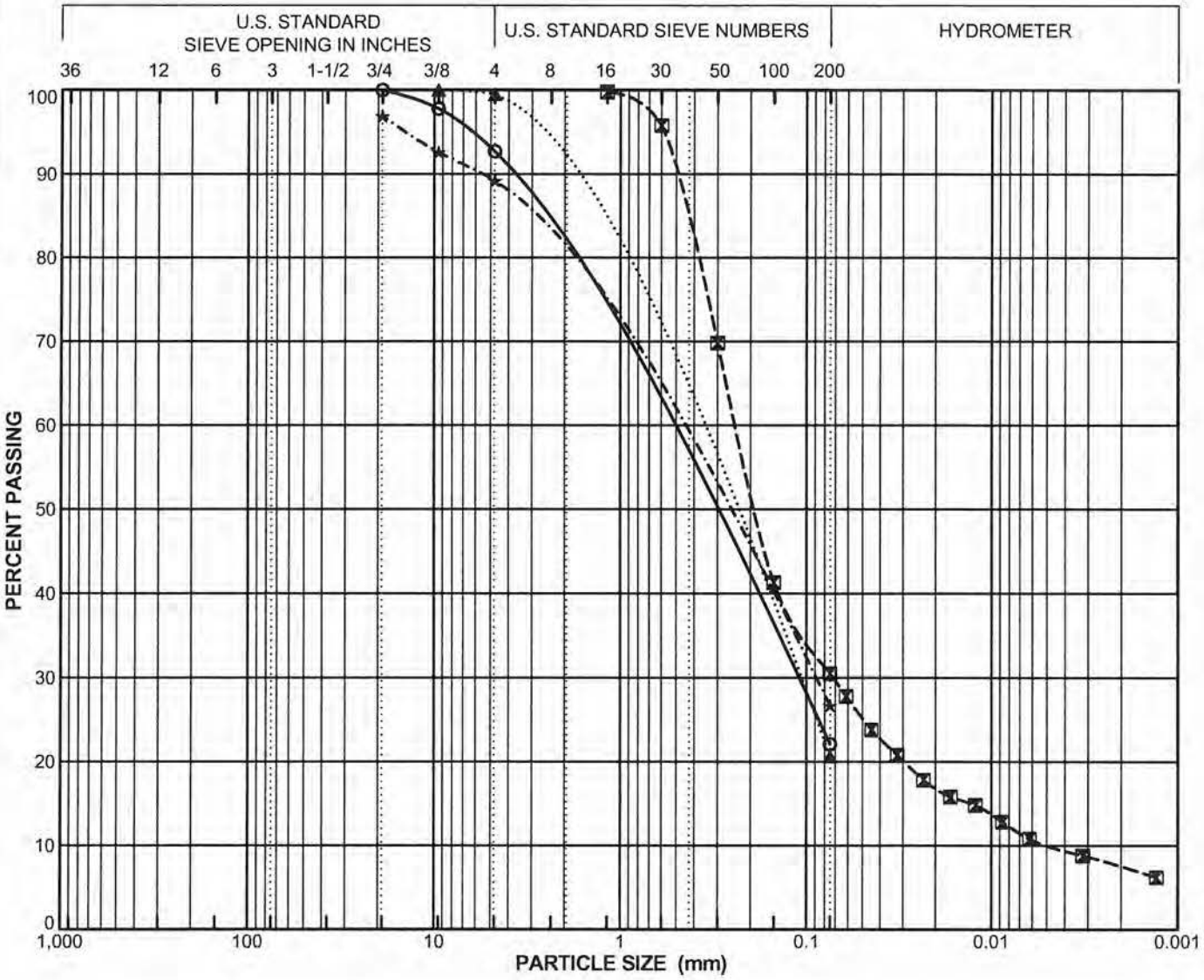
Symbol	Boring Number	Depth (feet)	Sample Number	Passing No. 200 Sieve (%)	LL	PI	USCS	Description
O	HS- 3	2.0	B-1	31	NP	NP	SM	(Af) Dark Brown Silty SAND
⊠	HS-13	2.0	B-1	27	NP	NP	SM	(Af) Brown Silty SAND

PLASTICITY CHART

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG Geotechnical, Inc.

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

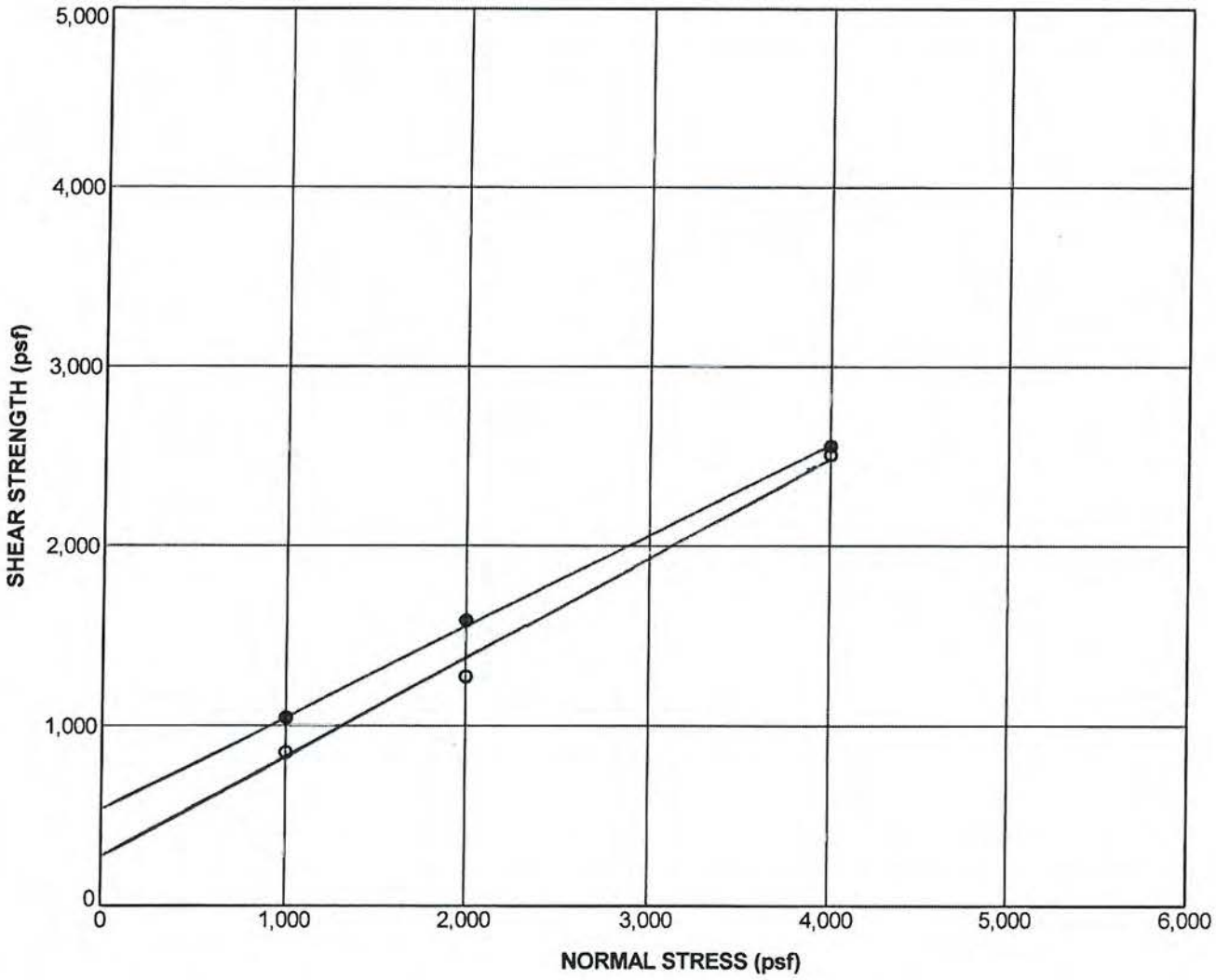


Symbol	Boring Number	Sample Number	Depth (feet)	Field Moisture (%)	LL	PI	Activity PI/-2μ	C_u	C_c	Passing No. 200 Sieve (%)	Passing 2μ (%)	USCS
O	HS- 1	B-1	2.0							22		SP
⊠	HS- 3	B-1	2.0	9	NP	NP				31	7	SM
▲	HS-12	B-1	2.0							21		SM
★	HS-13	B-1	2.0		NP	NP				27		SM

PARTICLE SIZE DISTRIBUTION

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG Geotechnical, Inc.



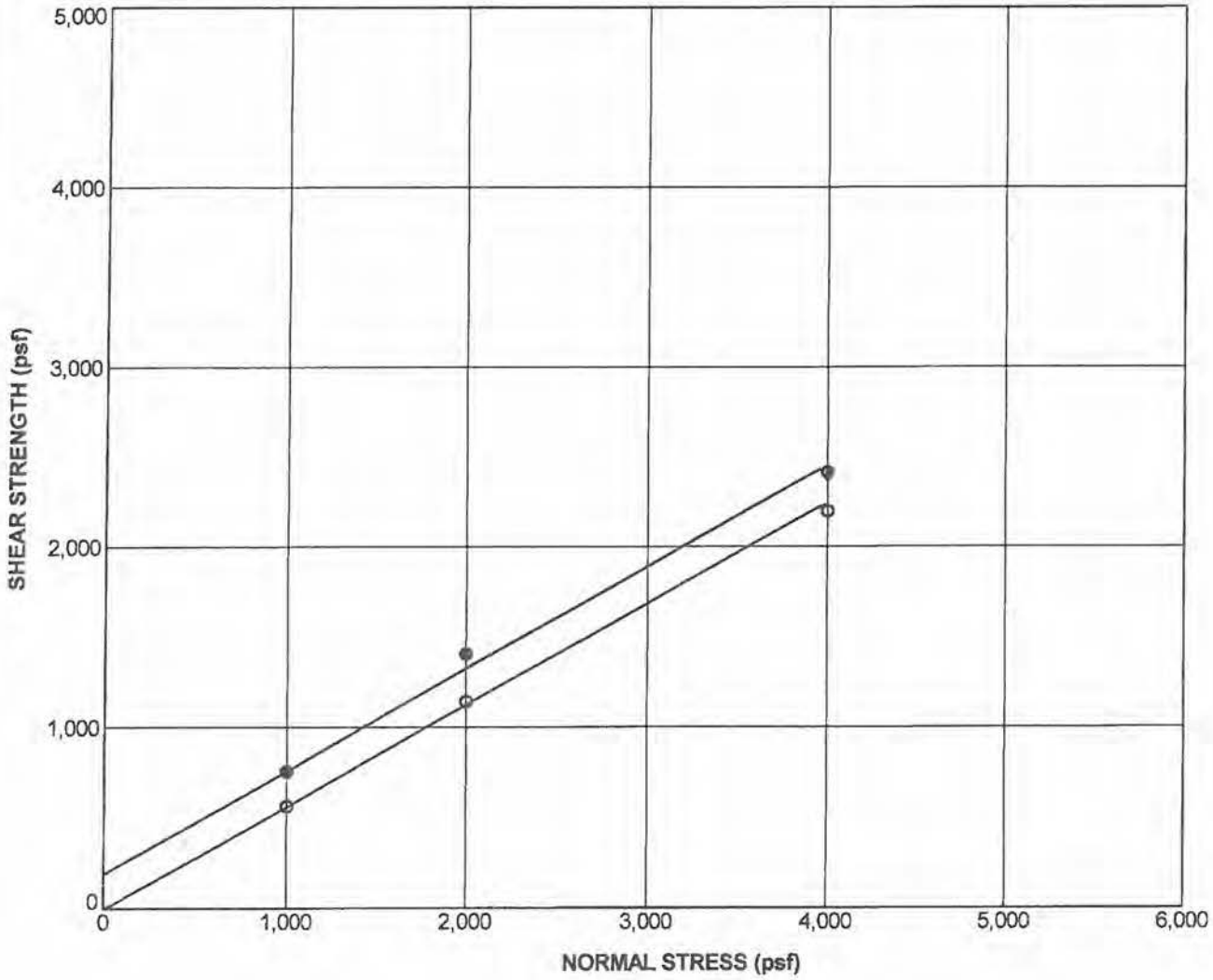
Boring No. HS-3		Sample No. B-1		Depth: 2.0 ft	
Sample Description:	(Af) Dark Brown Silty SAND				
Liquid Limit:	NP	Plasticity Index:	NP	Percent Passing No. 200 Sieve:	31
Moisture Content (%):	16.4	Dry Density (pcf):	112.7	Degree of Saturation (%):	93
Sample Type:	Remolded to 90% RC	Rate of Shear (in./min.):	0.05		

SHEAR STRENGTH PARAMETERS		
Parameter	Peak ●	Ultimate ○
Cohesion (psf)	500	250
Friction Angle (degrees)	27	29.0

DIRECT SHEAR TEST RESULTS

Fashion Island/ Eastside
Fashion Island Retail Center
PROJECT NO. 08034-01

NMG Geotechnical, Inc.



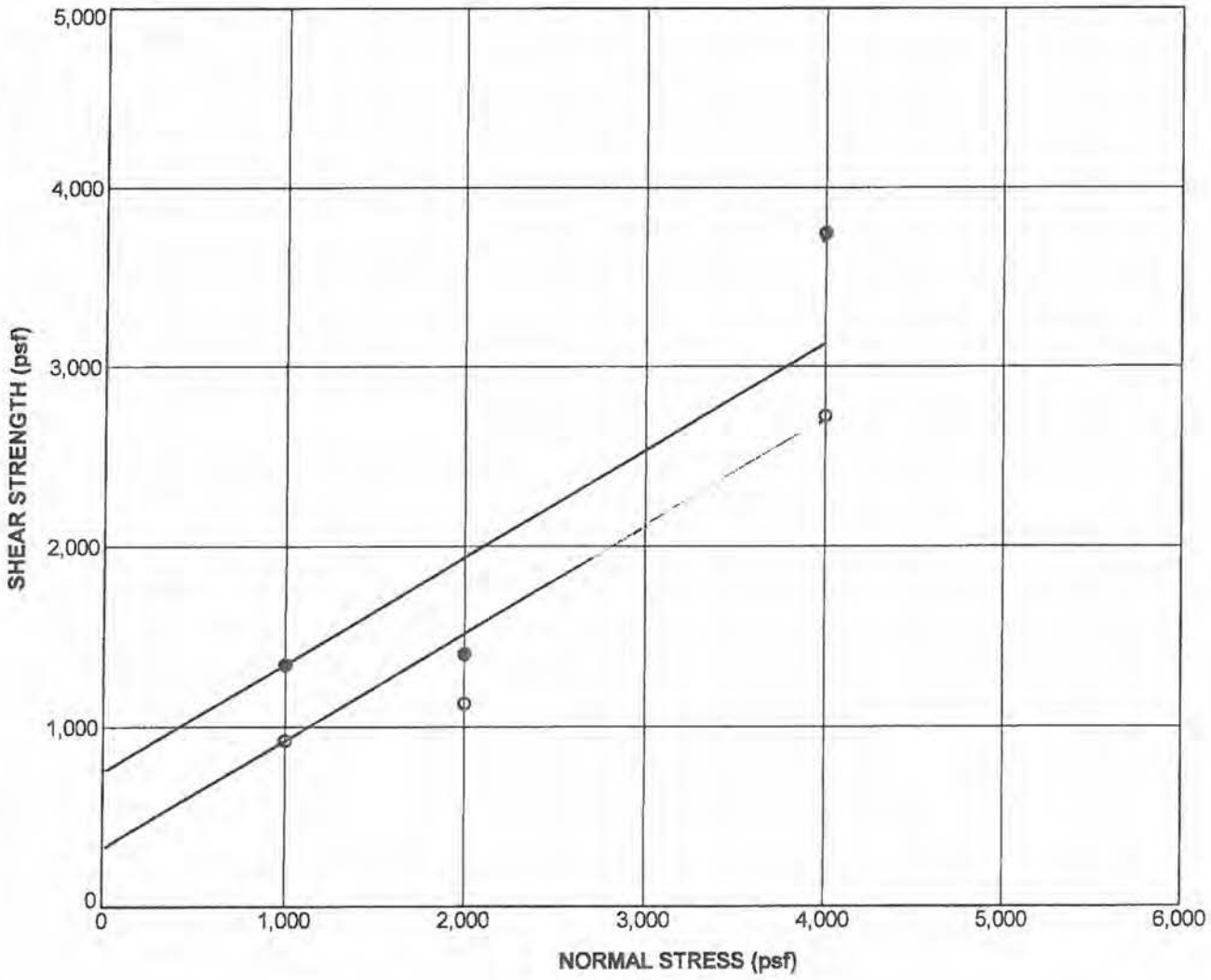
Boring No. HS-12	Sample No. D-2	Depth: 5.0 ft
Sample Description: (Af) Brown Clayey SAND		
Liquid Limit:	Plasticity Index:	Percent Passing No. 200 Sieve:
Moisture Content (%): 20.6	Dry Density (pcf): 105.0	Degree of Saturation (%): 95
Sample Type: Undisturbed	Rate of Shear (in./min.): 0.05	

SHEAR STRENGTH PARAMETERS		
Parameter	Peak ●	Ultimate ○
Cohesion (psf)	200	0
Friction Angle (degrees)	30	30.0

DIRECT SHEAR TEST RESULTS

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG Geotechnical, Inc.



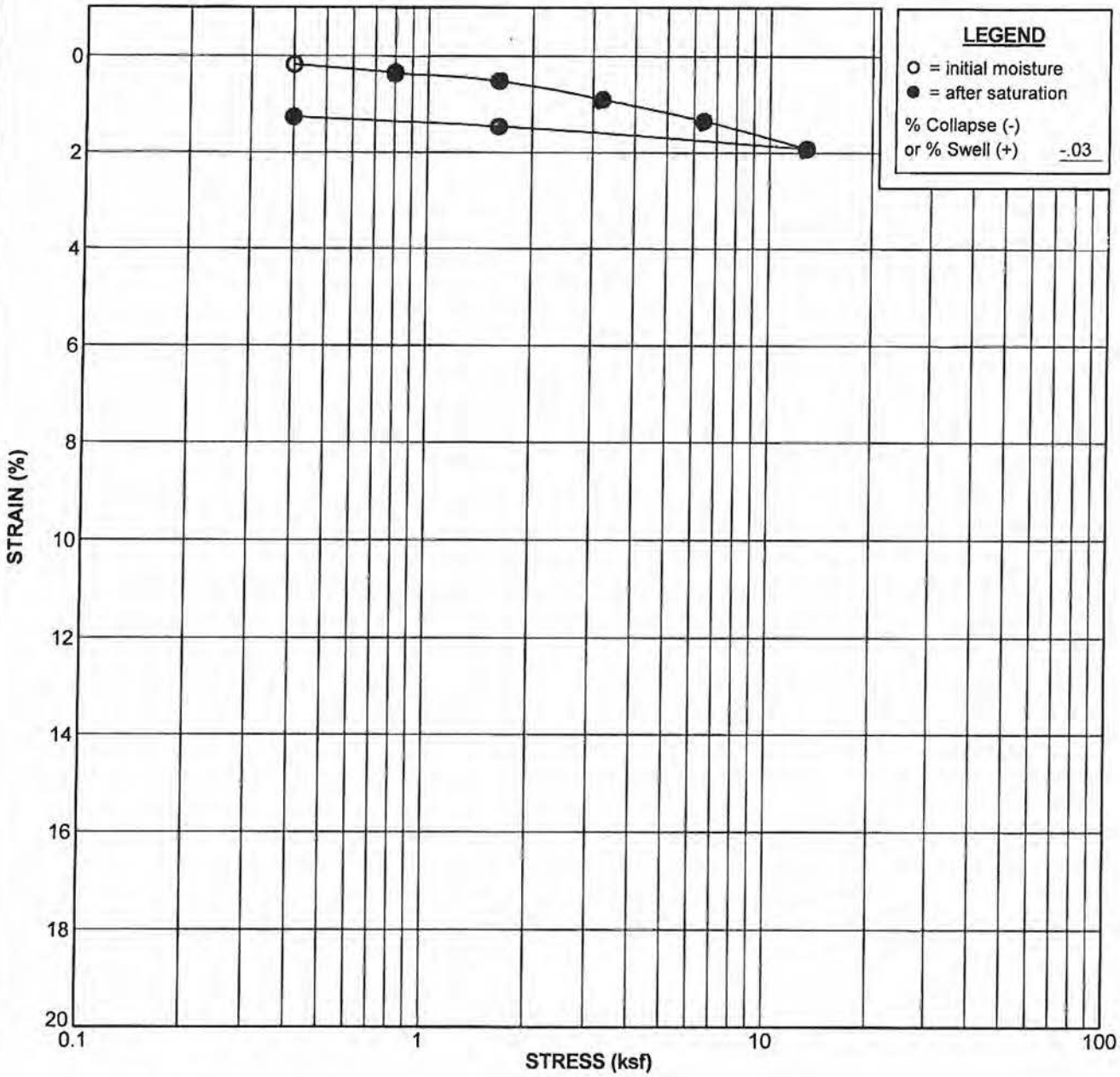
Boring No. HS-13	Sample No. D-1	Depth: 2.5 ft
Sample Description:	(Af) Brown Silty SAND	
Liquid Limit:	Plasticity Index:	Percent Passing No. 200 Sieve:
Moisture Content (%): 15.5	Dry Density (pcf): 114.5	Degree of Saturation (%): 92
Sample Type: Undisturbed	Rate of Shear (in./min.): 0.05	

SHEAR STRENGTH PARAMETERS		
Parameter	Peak ⊕	Ultimate O
Cohesion (psf)	750	350
Friction Angle (degrees)	31	31.0

DIRECT SHEAR TEST RESULTS

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG Geotechnical, Inc.



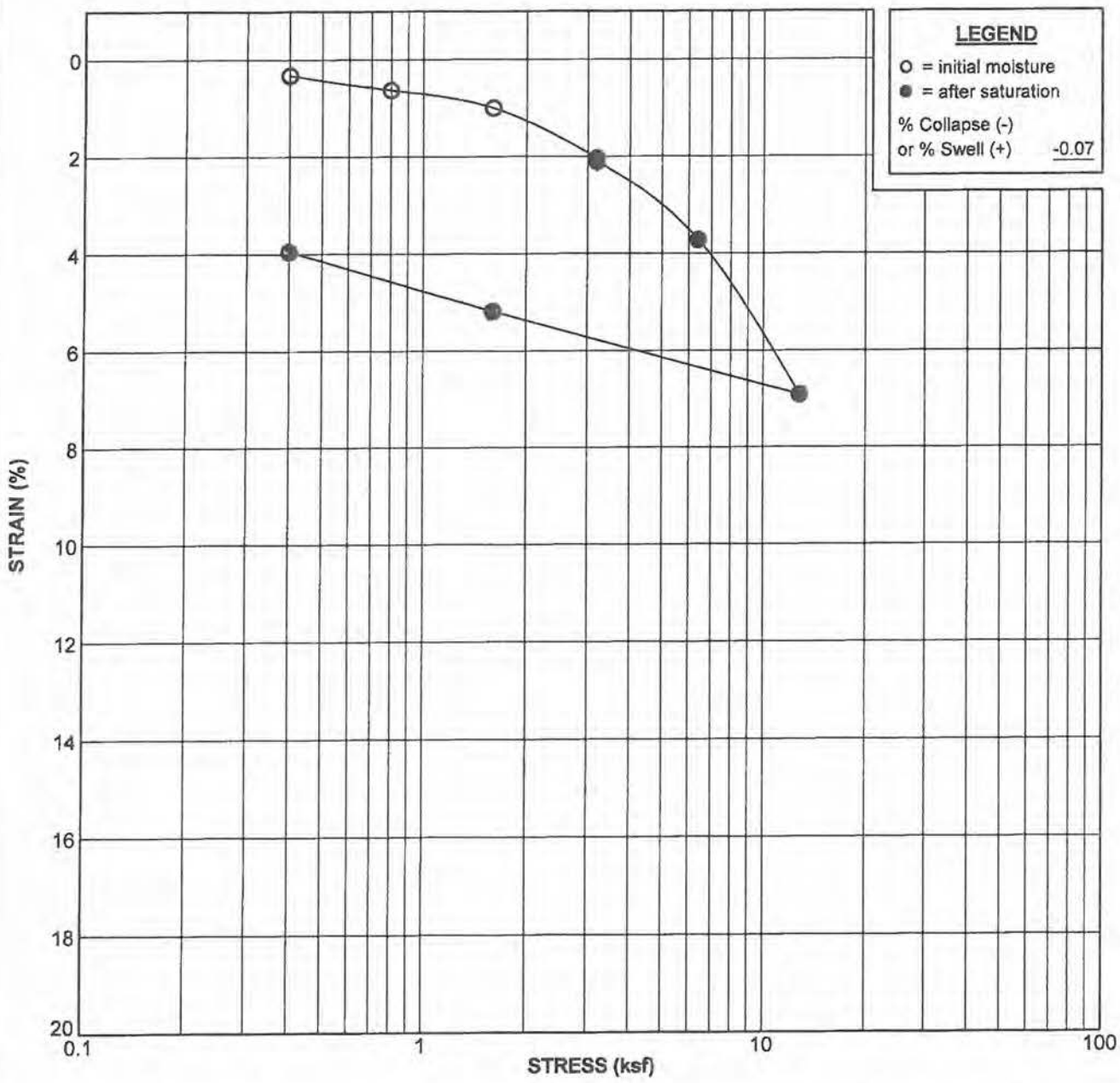
Boring No. HS-3	Sample No. B-1	Depth: 2.0 ft
Sample Description:	(Af) Dark Brown Silty SAND (Remolded to 90%RC)	
Liquid Limit: NP	Plasticity Index: NP	Percent Passing No. 200 Sieve: 31

Test Stage	Moisture Content (%)	Dry Density (pcf)	Degree of Saturation (%)	Void Ratio
Initial	8.6	113.0	49.2	0.463
Final	15.4	114.4	91.6	0.445

CONSOLIDATION TEST RESULTS

Fashion Island/ Eastside
Fashion Island Retail Center
PROJECT NO. 08034-01

NMG Geotechnical, Inc.



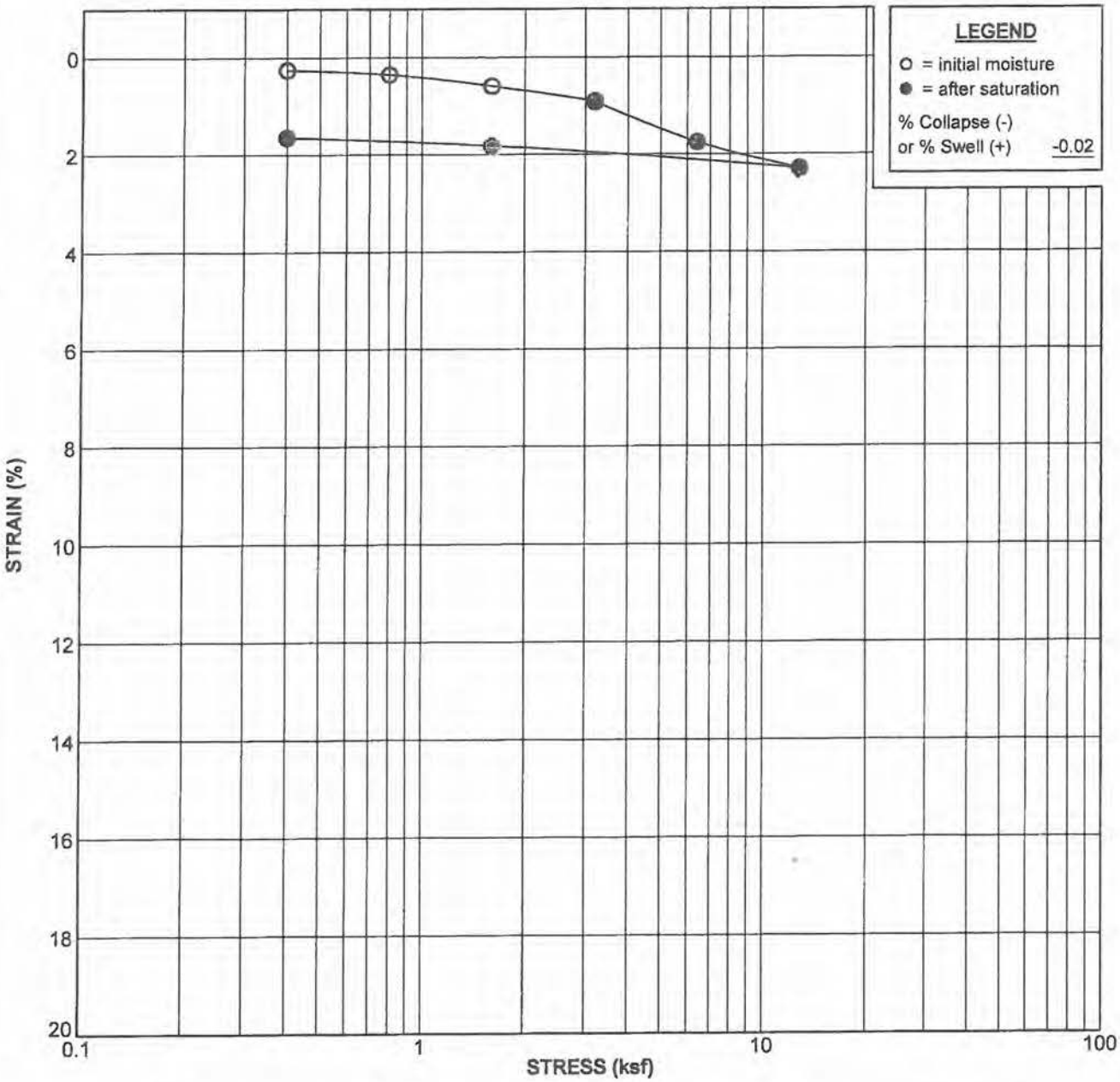
Boring No. HS-12	Sample No. D-3	Depth: 7.5 ft
Sample Description:	(Qal) Pale Gray to Reddish Brown Silty Sandy CLAY	
Liquid Limit:	Plasticity Index:	Percent Passing No. 200 Sieve:

Test Stage	Moisture Content (%)	Dry Density (pcf)	Degree of Saturation (%)	Void Ratio
Initial	22.0	102.3	94.6	0.616
Final	22.2	106.4	106.2	0.554

CONSOLIDATION TEST RESULTS

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG Geotechnical, Inc.



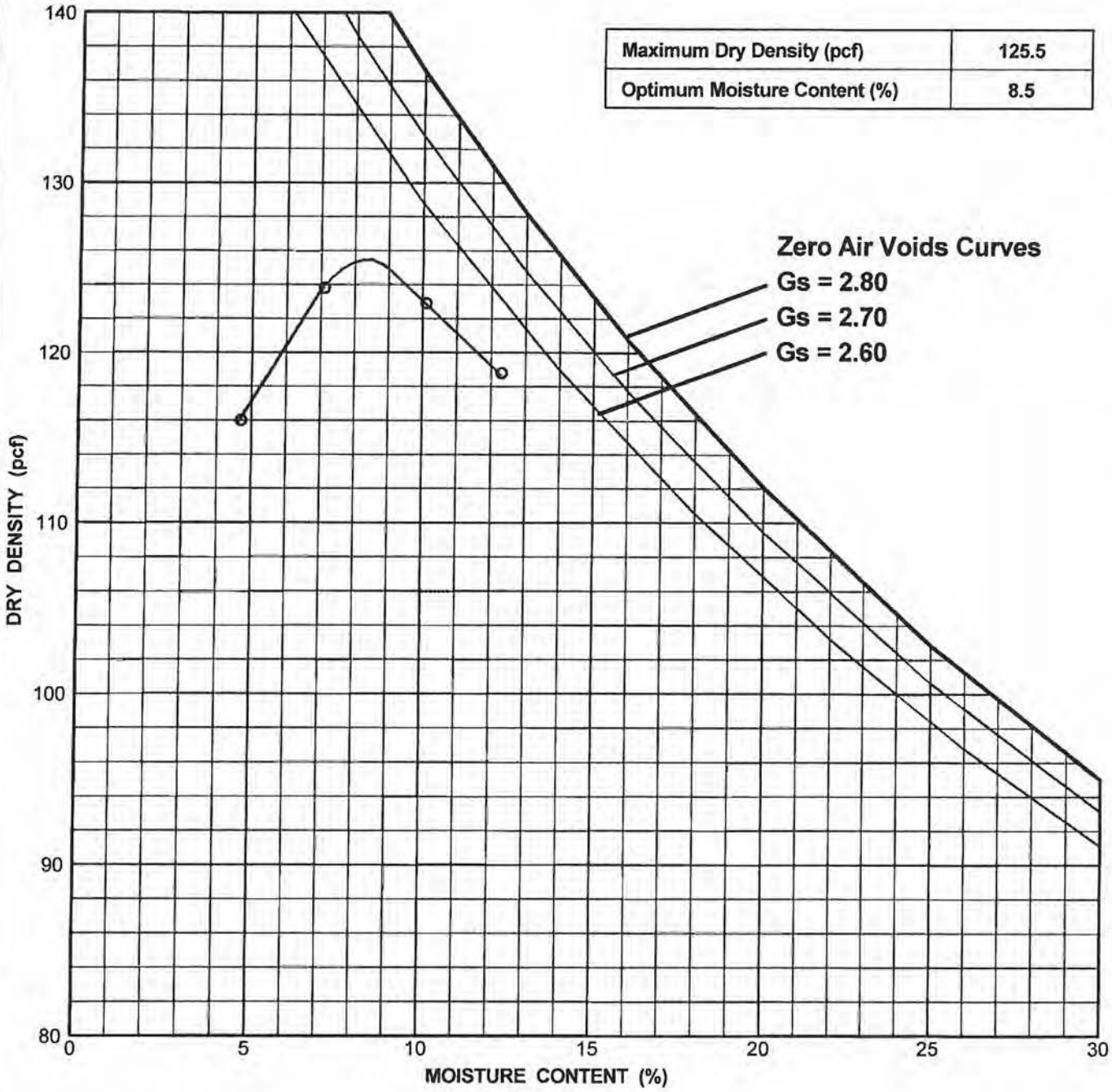
Boring No. HS-13	Sample No. D-3	Depth: 7.5 ft
Sample Description:	(Af) Reddish Brown Silty SAND	
Liquid Limit:	Plasticity Index:	Percent Passing No. 200 Sieve:

Test Stage	Moisture Content (%)	Dry Density (pcf)	Degree of Saturation (%)	Void Ratio
Initial	9.9	113.2	56.9	0.461
Final	13.1	115.1	79.5	0.437

CONSOLIDATION TEST RESULTS

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG Geotechnical, Inc.



Maximum Dry Density (pcf)	125.5
Optimum Moisture Content (%)	8.5

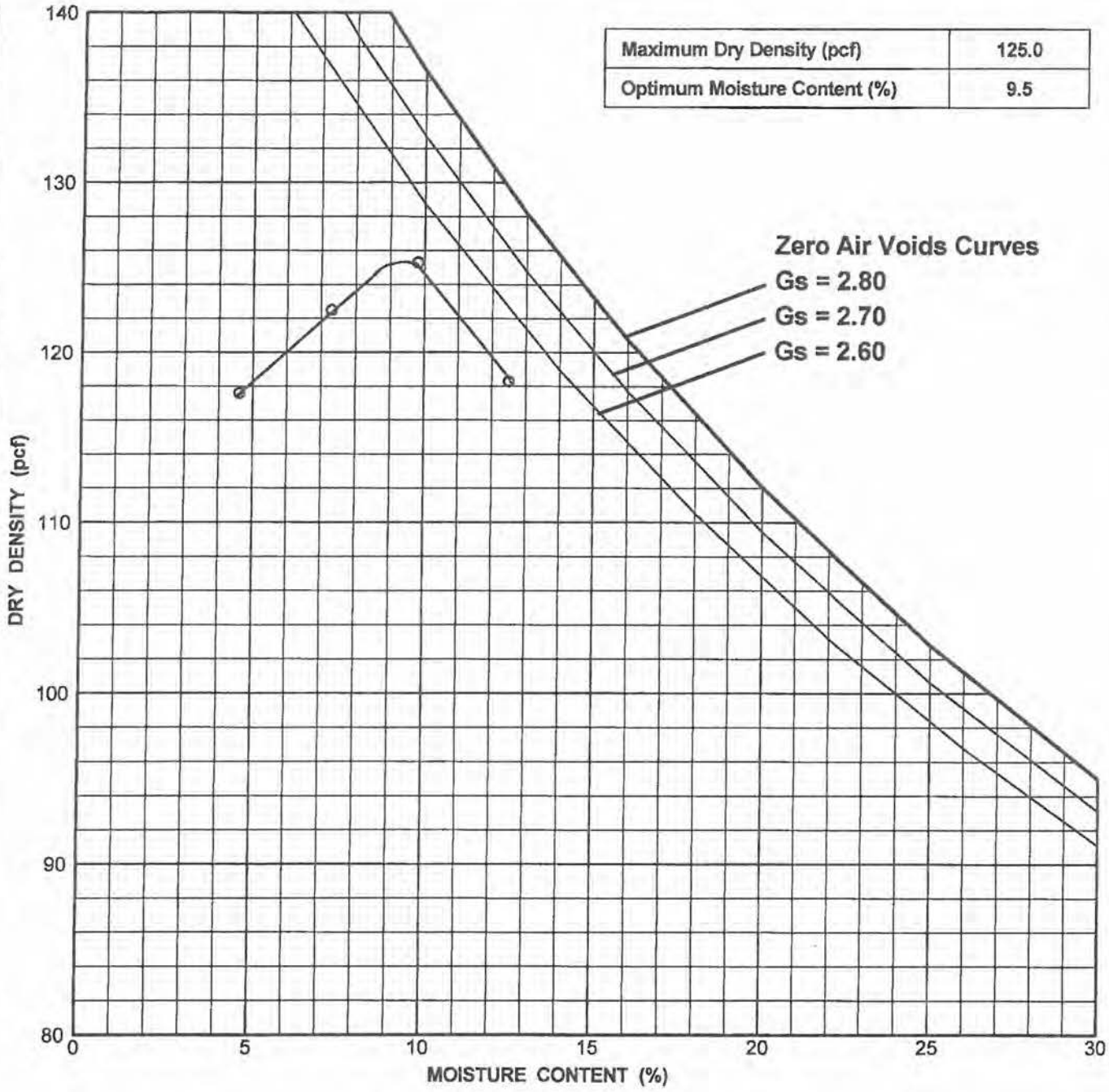
Boring No. HS-3	Sample No. B-1	Depth: 2.0 ft
Sample Description: (Af) Dark Brown Silty SAND		
Liquid Limit: NP	Plasticity Index: NP	Percent Passing No. 200 Sieve: 31
Comments: 1557A		

COMPACTION TEST RESULTS

Fashion Island/ Eastside
Fashion Island Retail Center
PROJECT NO. 08034-01

NMG Geotechnical, Inc.

Maximum Dry Density (pcf)	125.0
Optimum Moisture Content (%)	9.5

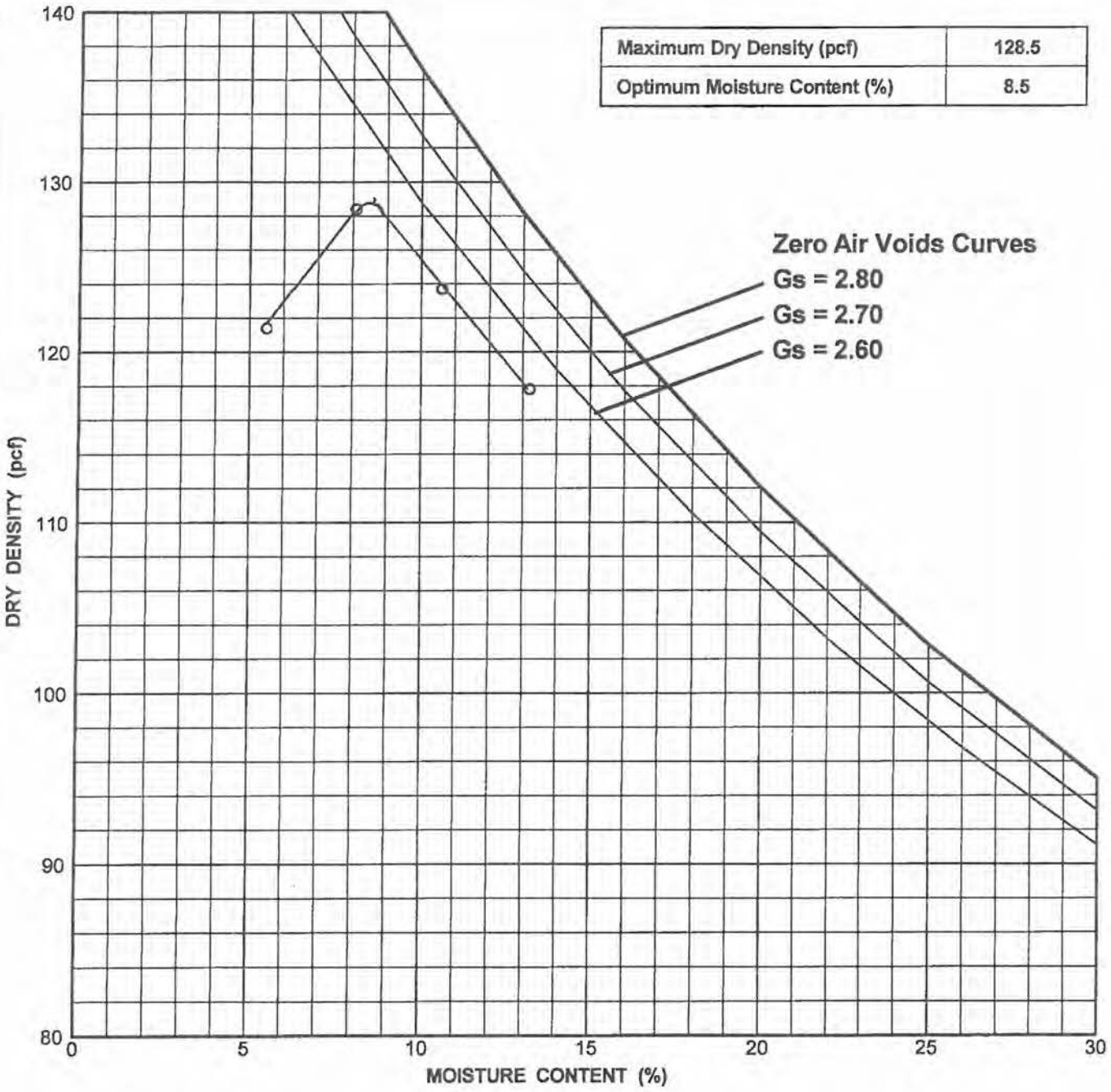


Boring No. HS-12	**Sample No. B-1**	**Depth: 2.0 ft**
Sample Description:	(Af) Reddish Brown Silty SAND	
Liquid Limit:	**Plasticity Index:**	**Percent Passing No. 200 Sieve:** 21
Comments:	1557A	

COMPACTION TEST RESULTS

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

NMG Geotechnical, Inc.



Maximum Dry Density (pcf)	128.5
Optimum Moisture Content (%)	8.5

Boring No. HS-13		**Sample No. B-1**		**Depth: 2.0 ft**	
Sample Description:	(Af) Brown Silty SAND				
Liquid Limit:	NP	**Plasticity Index:**	NP	**Percent Passing No. 200 Sieve:**	27
Comments:	1557A				

COMPACTION TEST RESULTS

Fashion Island/Eastside
Newport Beach, California
PROJECT NO. 08034-01

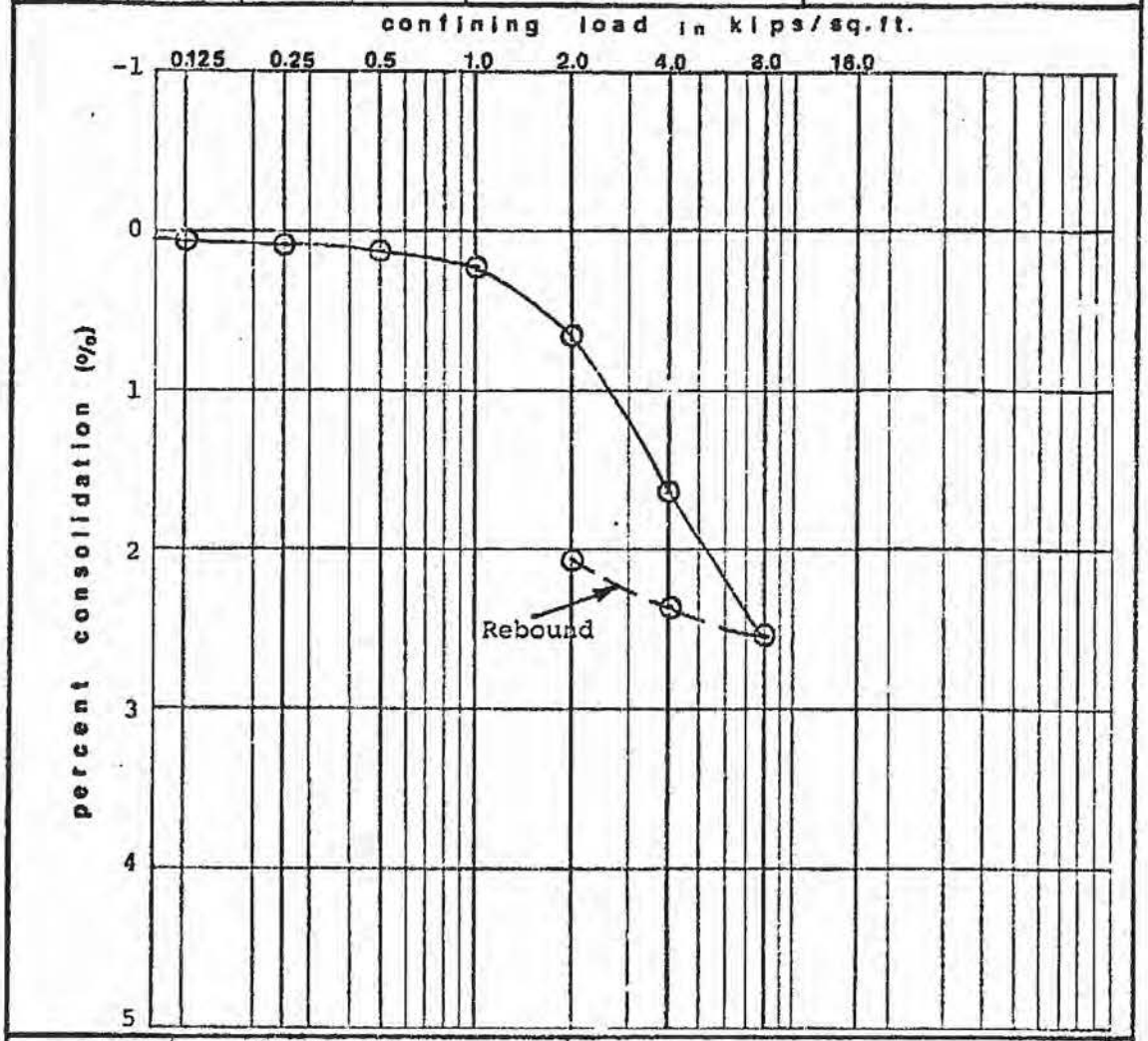
NMG Geotechnical, Inc.

LABORATORY TEST RESULTS BY

G.A. NICOLL & ASSOCIATES (1972)

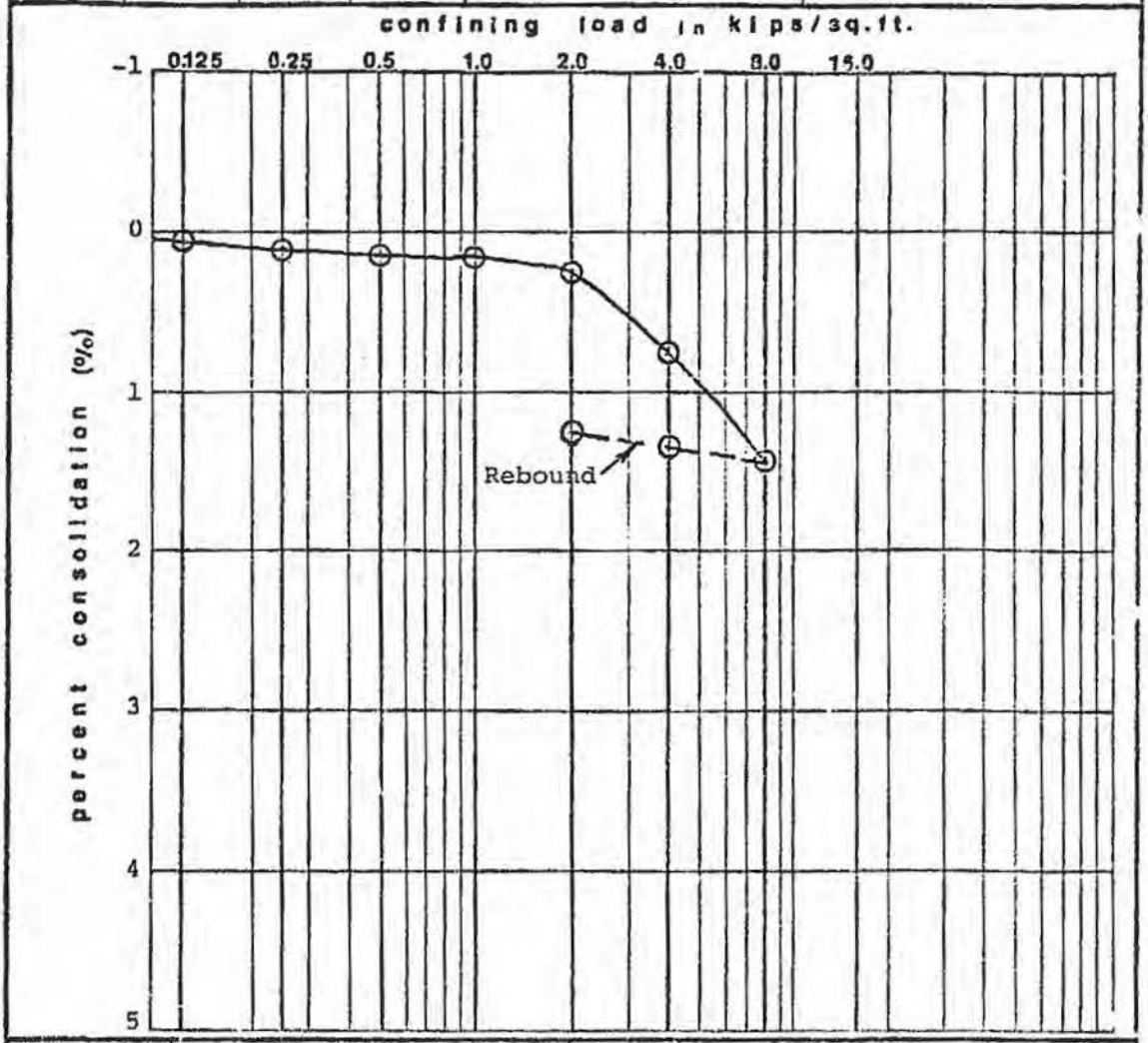
FOR SIX PROPOSED OFFICE BUILDINGS

symbol	specimen	boring no.	sample depth	sample condition	moisture condition
○	A	B-3	2.0 ft	Silty Sand, med/den.	Moist
◔	A				
⬡	B				
◔	B				
▽	C				
▽	C				



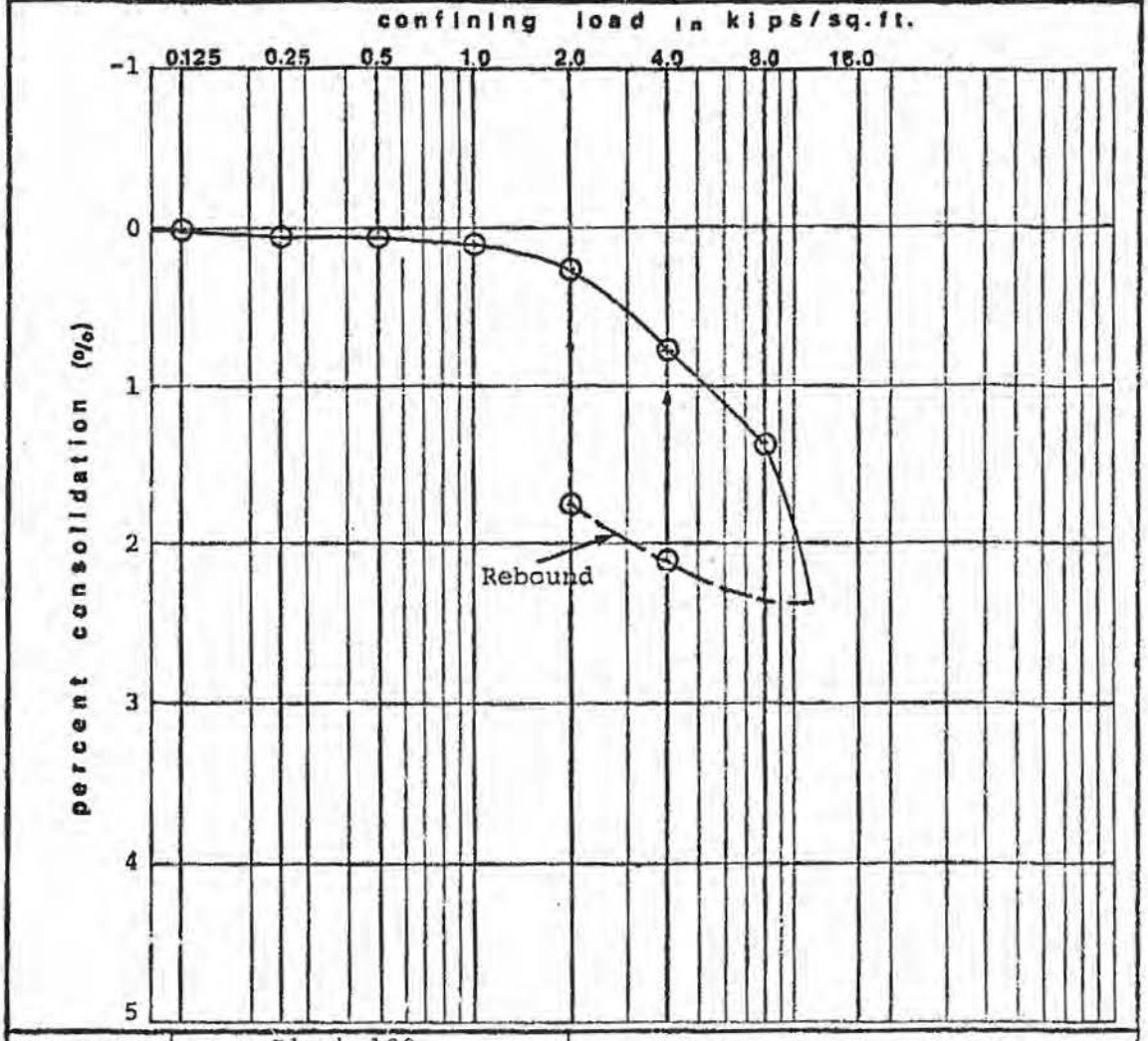
G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	CONSOLIDATION TEST	
		Project no. 1010	date Nov. 1972
			figure no. 2

symbol	specimen	boring no.	sample depth	sample condition	moisture condition
○	A	B-6	2.0 Ft.	Silty SAND, med/den.	Moist
◔	A				
⬡	B				
◑	B				
▽	C				
▽	C				



G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	CONSOLIDATION TEST	
		Project no. 1010	date Nov. 1972
			figure no. 3

symbol	specimen	boring no.	sample depth	sample condition	moisture condition
○	A	B-10	5.0 Ft.	Silty SAND, Med/den. Silty CLAY, Stiff	Moist
◐	A				
⬡	B				
◑	B				
▽	C				
◬	C				



G. A. NICOLL & ASSOCIATES	Block 100 Newport Center The Irvine Company	CONSOLIDATION TEST	
		Project no. 1010	date Nov. 1972
		figure no. 4	

Project 1010

DIRECT SHEAR TEST RESULTS

Boring Number	B-3	B-6	B-10
Sample Depth, Feet	2	2	5
Soil Classification	SM	SM	CL/SM
Normal Stress 1000 PSF Shear Stress, PSF	1016	508	508
Normal Stress 3000 PSF Shear Stress, PSF	2016	1760	1251
Normal Stress 8000 PSF Shear Stress, PSF	563	4653	3461
Angle of Internal Friction, Degrees	27-1/2	30-1/2	23
Apparent Cohesion, PSF	500	0	75

Table 1

LABORATORY TEST RESULTS BY

MOORE & TABER
(1975)

FOR GLENDALE FEDERAL BANK

MOORE & TABER-*Engineers-Geologists*

SOIL TEST RESULTS

BORING Nº / SAMPLE Nº	1/2	3/1	3/2		
DESCRIPTION	Light Brown fine SILTY SAND	Yellow-brown SANDY SILT	Light Brown SANDY SILT		
UNIFIED SOIL CLASSIFICATION	SM	ML	ML		
MECHANICAL ANALYSIS					
Passing Nº 200 sieve %					
ATTERBERG LIMITS					
Liquid Limit %					
Plastic Limit %					
Plastic Index %					
COMPACTION TEST *(ASTM D1557-66T)*					
Maximum Density (lbs/cu.ft)					
Optimum Moisture %					
EXPANSION TEST *(type)*	INDEX		INDEX		
Initial Dry Density (lbs./cu.ft.)	109.2		101.9		
Initial Moisture %	10.0		12.0		
Confining Pressure (lbs./sq.ft.)	144		144		
Expansion Index	0		21		
DIRECT SHEAR TEST *(type)*		UNDISTURBED			
Initial Moisture Content %		23.8 23.8 23.8			
Test Moisture Content %		SATURATED			
Normal Stress (lbs./sq.ft.)		990 1980 2970			
Peak Shear Stress (lbs./sq.ft.)		1610 2260 3680			
Ultimate Shear Stress (lbs./sq.ft.)		960 2090 2810			
Angle of Internal Friction (degrees)		40 (ult.)			
Cohesion (lbs/sq.ft.)		250 (ult.)			

Job No. 175-507 - January 31, 1975

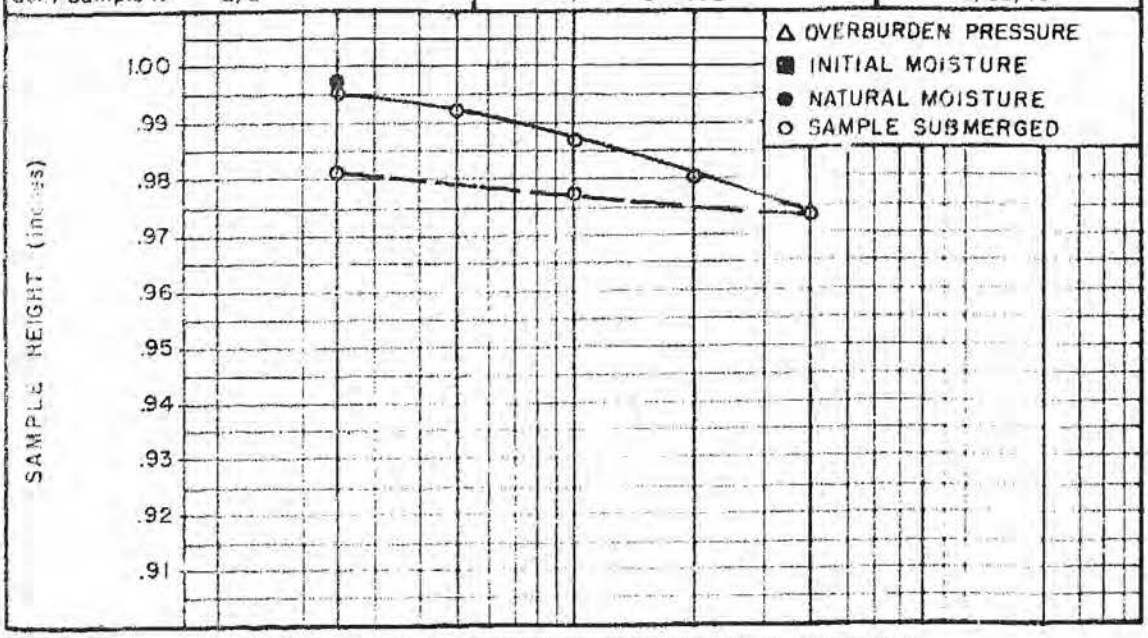
A-5

UP 8769

MOORE & TABER CONSULTING ENGINEERS AND GEOLOGISTS

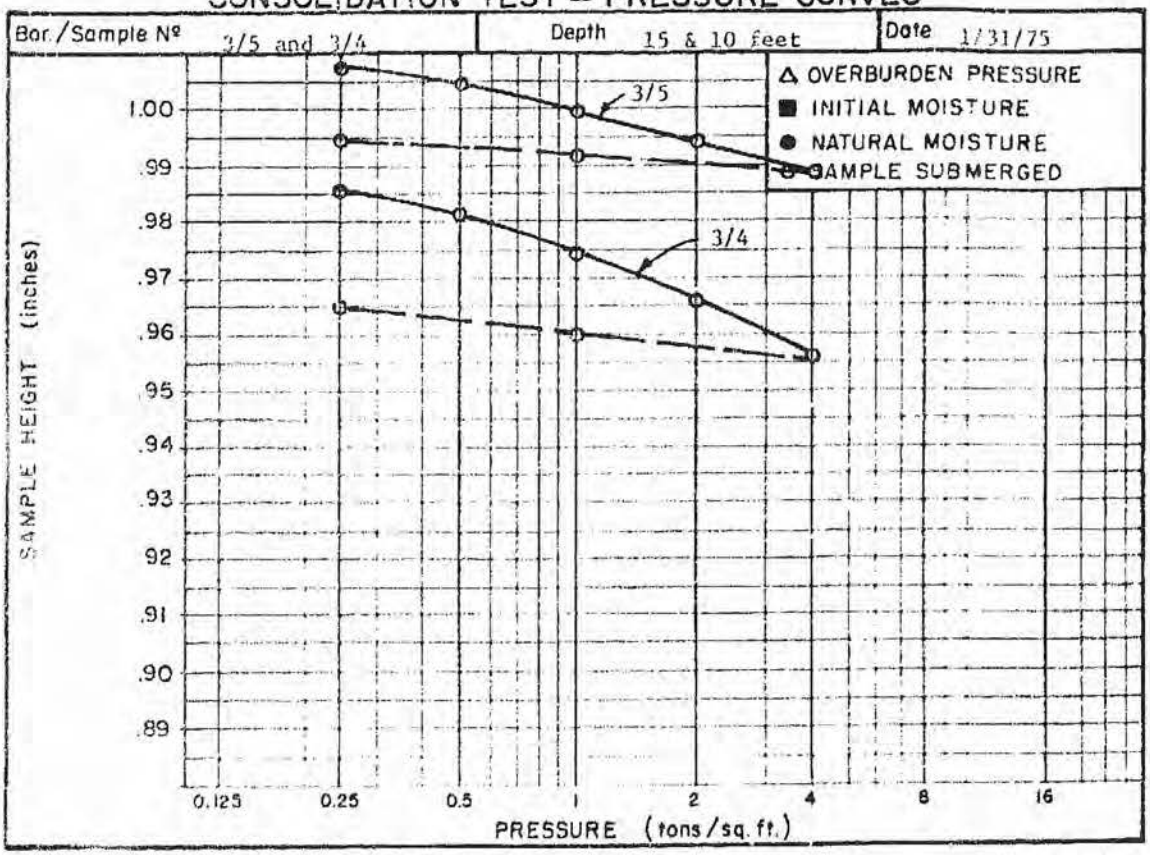
CONSOLIDATION TEST – PRESSURE CURVES

Bor./Sample Nº 2/2 | Depth 5 feet | Date 1/31/75



CONSOLIDATION TEST – PRESSURE CURVES

Bor./Sample Nº 3/5 and 3/4 | Depth 15 & 10 feet | Date 1/31/75



RESISTANCE VALUES

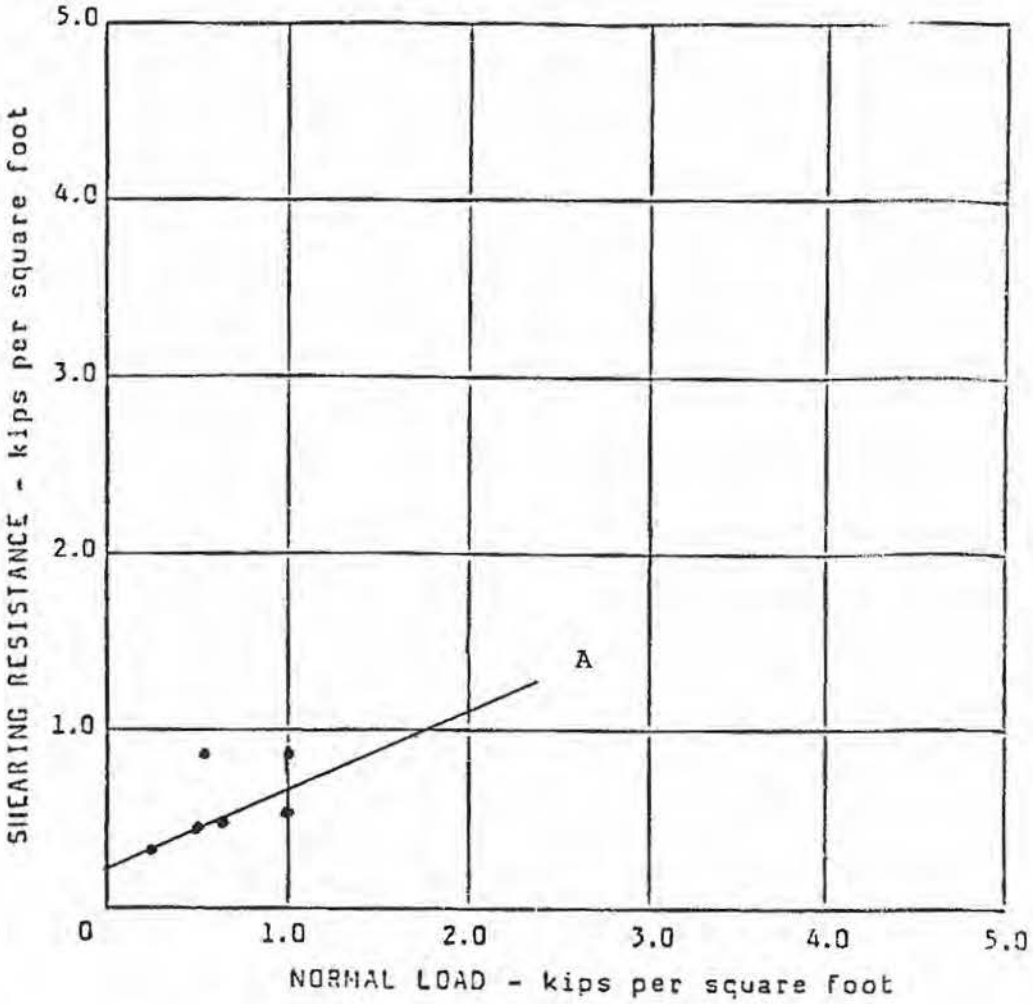
Moisture Content (%)	Dry Density (p.c.f.)	Exudation Pressure (p.s.i.)	Expansion Dial ($x10^{-4}$)	Stabilometer 'R' Value
12.8	121.1	400	0	45
13.7	118.6	215	0	38
14.6	116.5	175	0	28

LABORATORY TEST RESULTS BY

SOILS INTERNATIONAL
(1988)

FOR EDWARDS THEATER

DIRECT SHEAR TEST



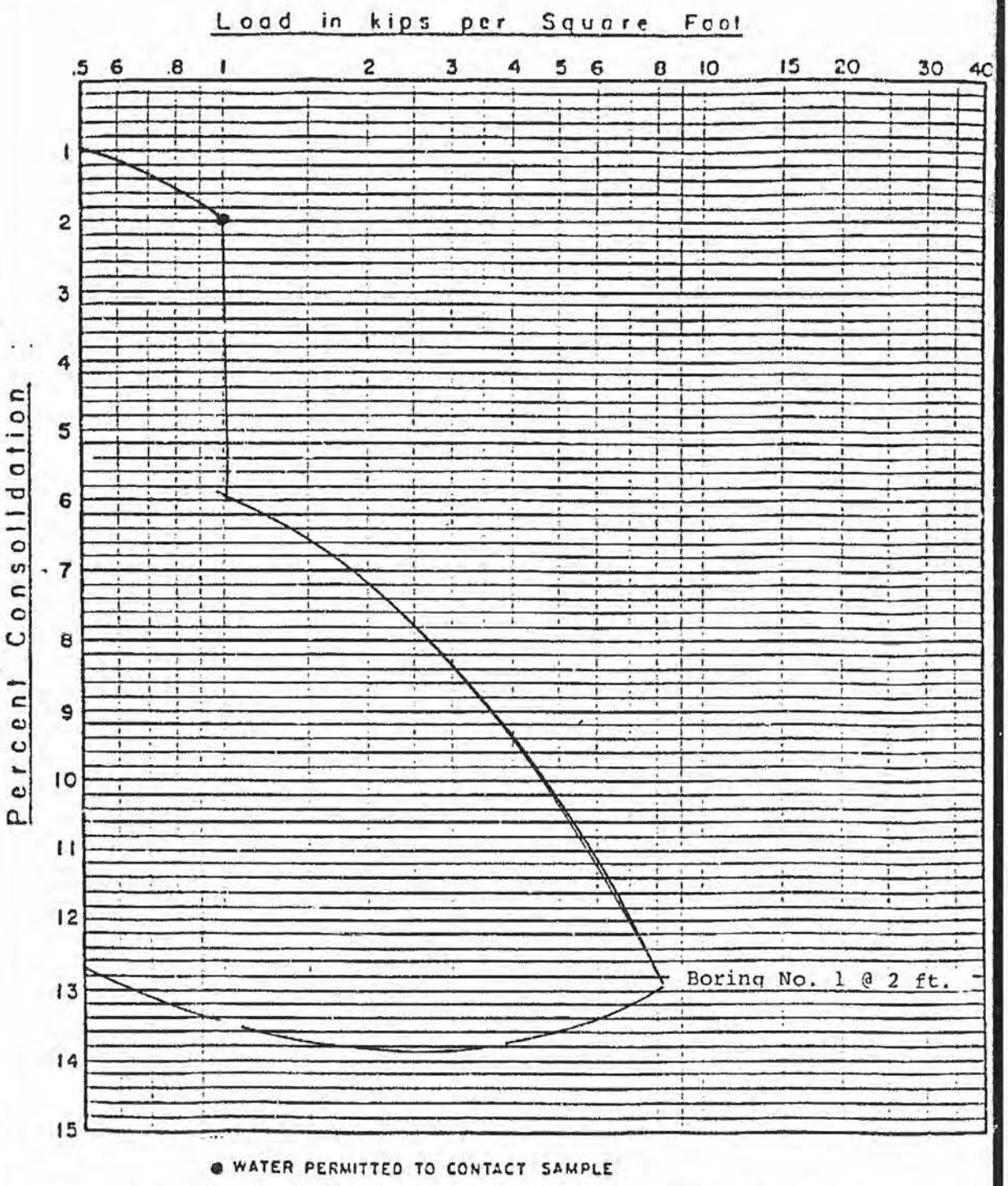
SYMBOL	LOCATION	DEPTH (FT.)	TEST CONDITION	COHESION (P.S.F.)	FRICTION (DEG.)
A	Boring No. 1	2-4	Saturated and Drained	200	20

Edwards Theatre
300 Newport Center Drive
Newport Beach, Calif.

PROJECT NO.	S1-093-F
PLATE	F

SOILS INTERNATIONAL
CONSULTING FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

CONSOLIDATION TESTS



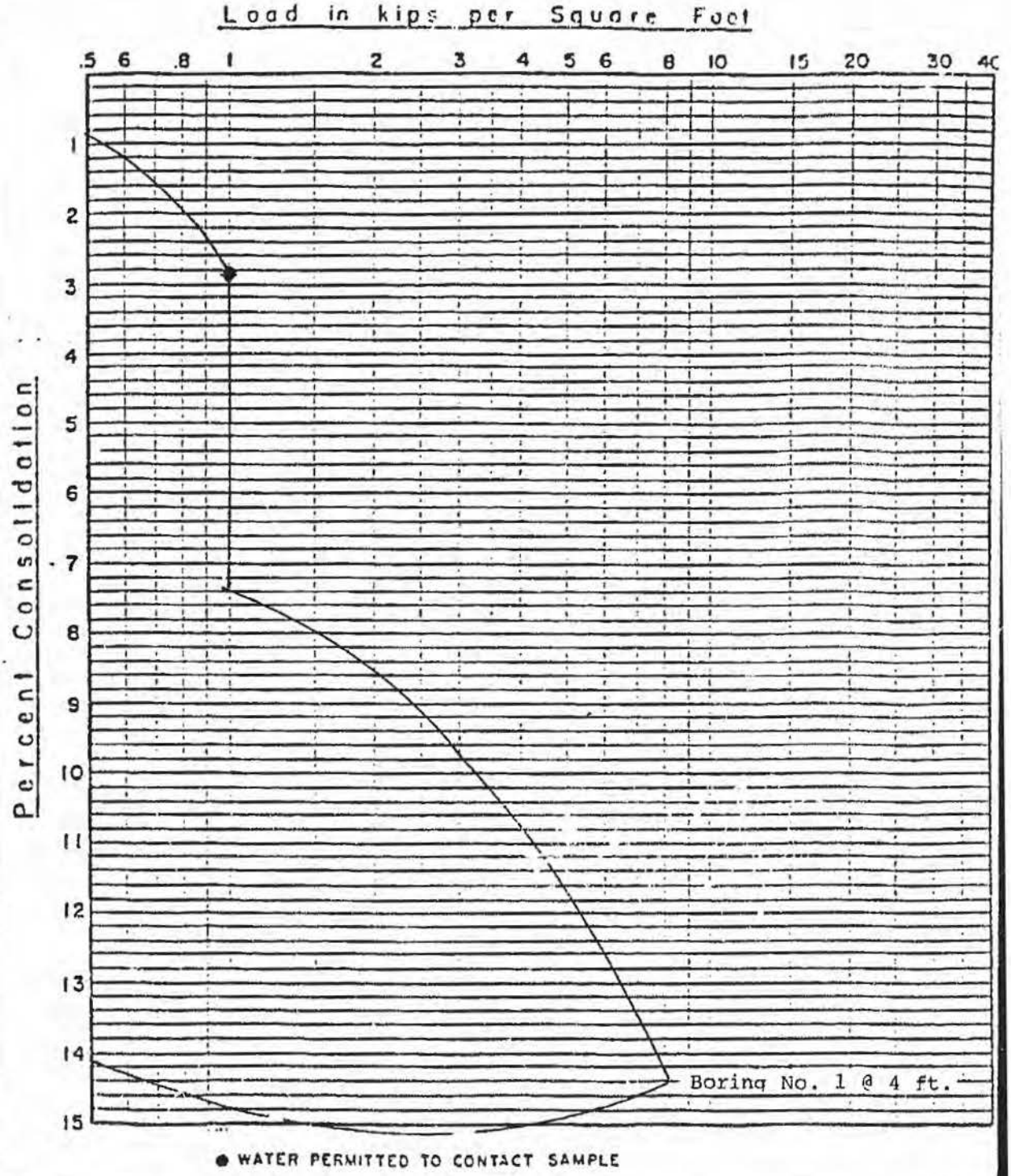
● WATER PERMITTED TO CONTACT SAMPLE

Edwards Theatre 300 Newport Center Drive Newport Beach, Calif.	PROJECT No.	S-1093-F
	PLATE	G

SOILS INTERNATIONAL

CONSULTING FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

CONSOLIDATION TESTS



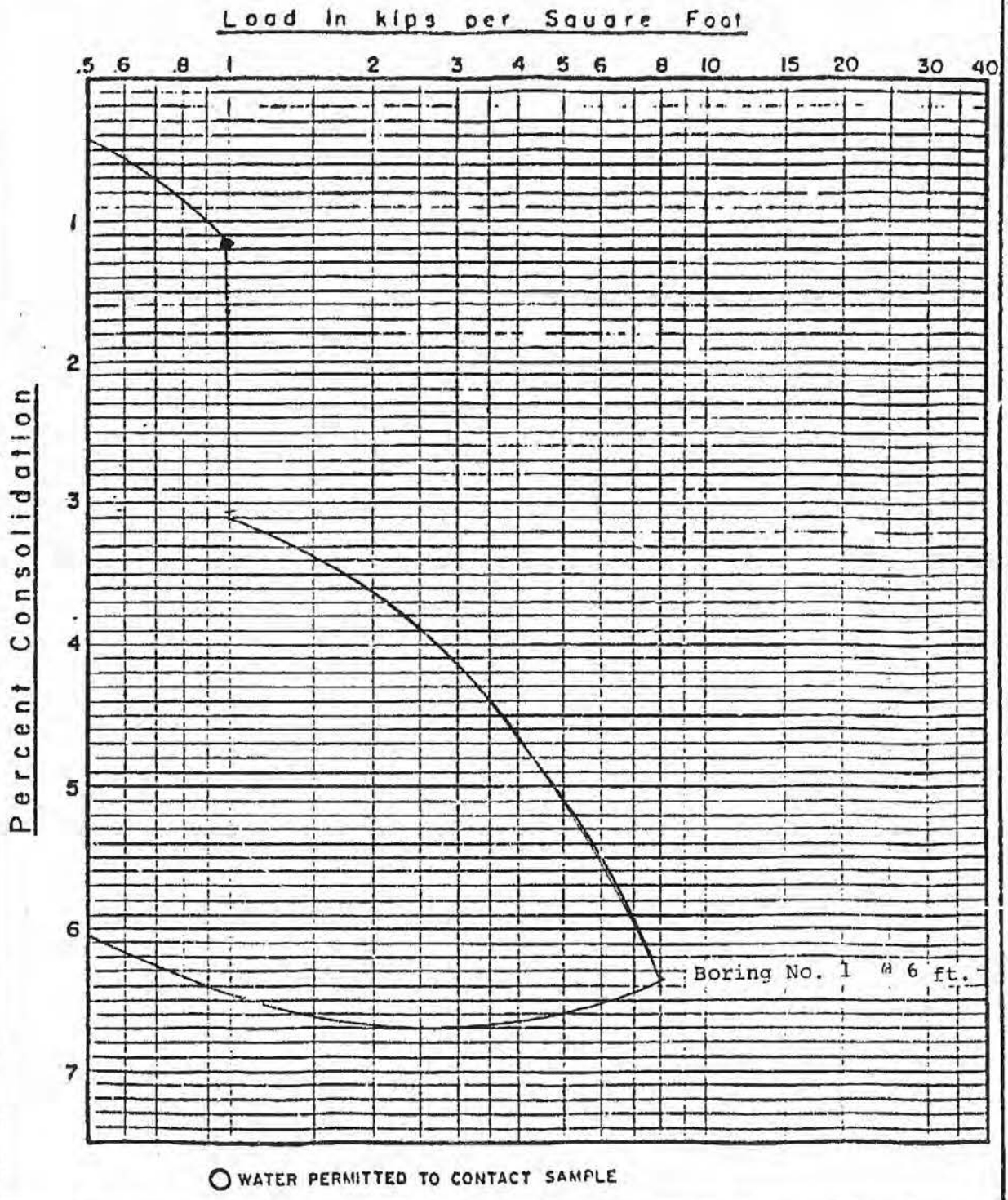
● WATER PERMITTED TO CONTACT SAMPLE

Edwards Theatre 300 Newport Center Drive Newport Beach, Calif.	PROJECT No	S-1093-F
	PLATE	H

SOILS INTERNATIONAL

CONSULTING FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

CONSOLIDATION TESTS



○ WATER PERMITTED TO CONTACT SAMPLE

Edwards Theatre 300 Newport Center Drive Newport Beach, Calif.	PROJECT No S-1093-F
	PLATE I

SOILS INTERNATIONAL

CONSULTING FOUNDATION ENGINEERS & ENGINEERING GEOLOGISTS

APPENDIX D

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (u…

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.612

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

-117.875

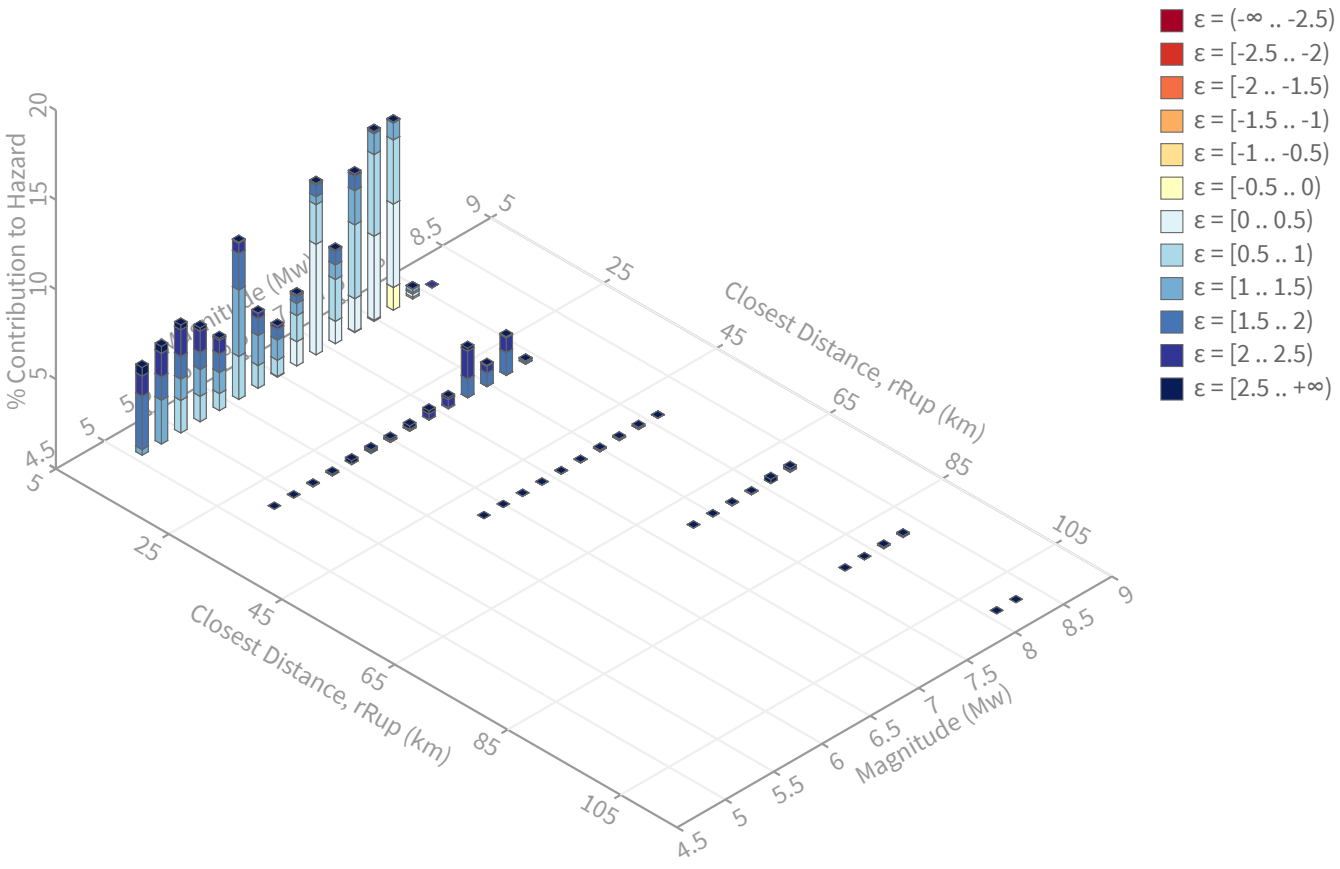
Site Class

259 m/s (Site class D)

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.66058675 g

Recovered targets

Return period: 2868.4347 yrs
Exceedance rate: 0.0003486222 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.08 %

Mean (over all sources)

m: 6.66
r: 9.47 km
ε_0: 1.14 σ

Mode (largest m-r bin)

m: 7.5
r: 5.29 km
ε_0: 0.58 σ
Contribution: 10.58 %

Mode (largest m-r-ε_0 bin)

m: 6.89
r: 5.44 km
ε_0: 0.25 σ
Contribution: 6.16 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM32	System							33.52
Newport-Inglewood (Offshore) [0]		4.29	7.14	0.74	117.907°W	33.585°N	224.94	11.50
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Compton [0]		19.56	7.37	1.52	118.043°W	33.702°N	302.92	1.87
San Joaquin Hills [1]		5.49	6.92	0.34	117.845°W	33.669°N	23.57	1.49
UC33brAvg_FM31	System							28.92
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Compton [0]		19.56	7.29	1.56	118.043°W	33.702°N	302.92	1.75
UC33brAvg_FM32 (opt)	Grid							18.93
PointSourceFinite: -117.875, 33.634		5.74	5.58	1.22	117.875°W	33.634°N	0.00	4.46
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OSHPD

Latitude, Longitude: 33.612, -117.875

Date	9/9/2020, 11:53:19 AM
Design Code Reference Document	ASCE7-16
Risk Category	III
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	1.347	MCE_R ground motion. (for 0.2 second period)
S_1	0.478	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.616	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.077	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.586	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.703	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.347	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.476	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.614	Factored deterministic acceleration value. (0.2 second)
S1RT	0.478	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.518	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.826	Factored deterministic acceleration value. (1.0 second)
PGAd	1.056	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.912	Mapped value of the risk coefficient at short periods
C_{R1}	0.923	Mapped value of the risk coefficient at a period of 1 s

DISCLAIMER

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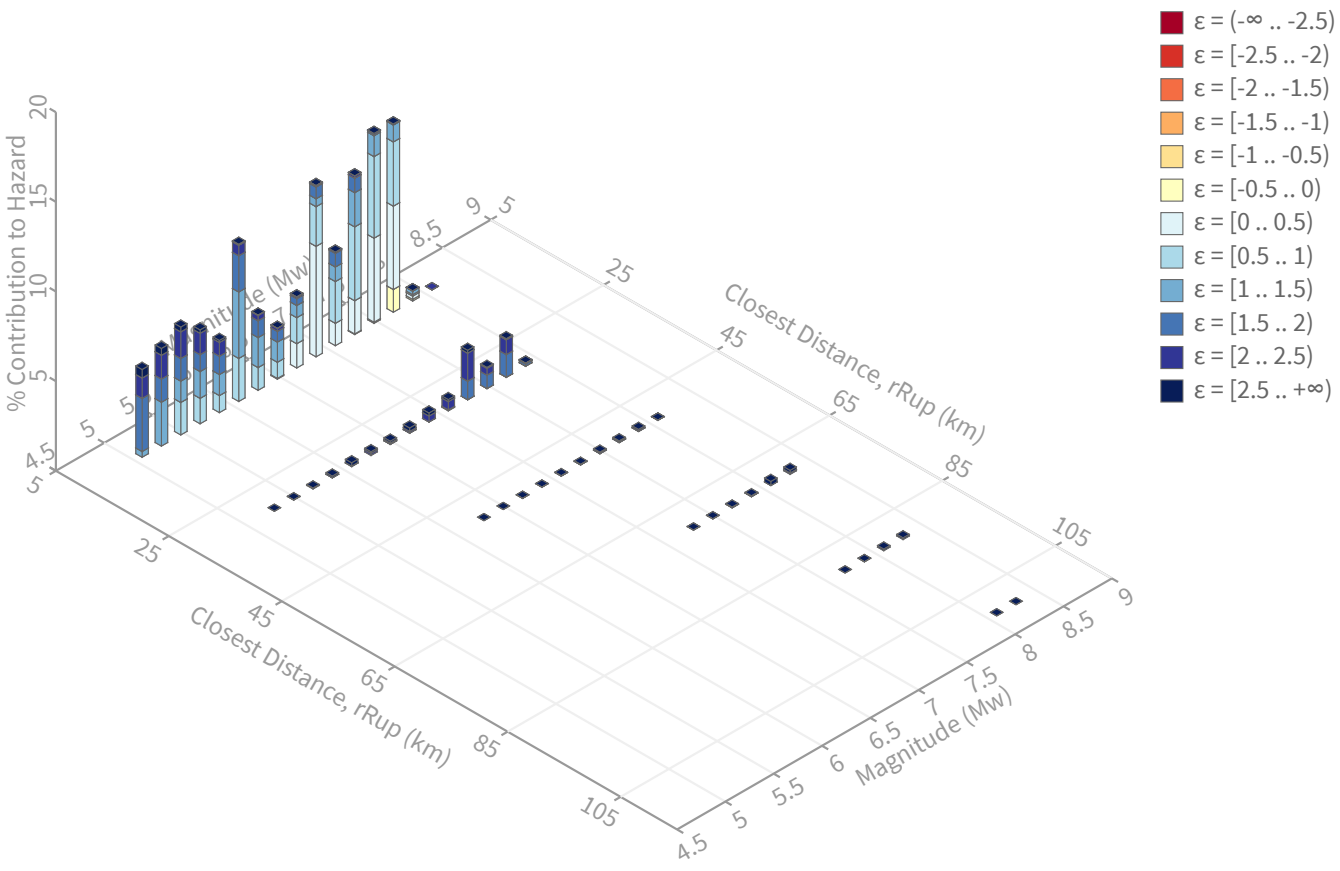

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APPENDIX E

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GENERAL EARTHWORK AND GRADING SPECIFICATIONS

1.0 General

1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 Geotechnical Consultant: Prior to commencement of work, the owner shall employ a geotechnical consultant. The geotechnical consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed

immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

2.2 Processing: Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Overexcavation: In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas: All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General: Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 12 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import: If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning: Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-91).

4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-91). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-91.

4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing: Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 Bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum 90 percent of maximum from 1 foot above the top of the conduit to the surface, except in traveled ways (see Section 7.6 below).

7.3 Jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

7.4 Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

7.6 Trench backfill in the upper foot measured from finish grade within existing or future traveled way, shoulder, and other paved areas (or areas to receive pavement) should be placed to a minimum 95 percent relative compaction.