Appendix C Geotechnical Evaluation

Appendices

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Geotechnical Evaluation

Beyer Community Resource Center

2312 East Beyer Boulevard
San Diego, California

San Ysidro School District
4350 Otay Mesa Road | San Ysidro, California 92173

February 6, 2025 | Project No. 109751009

Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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Geotechnical Evaluation

Beyer Community Resource Center

2312 East Beyer Boulevard
San Diego, California

Mr. Joshua Beltran
San Ysidro School District
4350 Otay Mesa Road | San Ysidro, California 92173

February 6, 2025 | Project No. 109751009

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CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

In accordance with your request and our proposal dated October 23, 2024, Ninyo & Moore has performed a geotechnical evaluation for the proposed San Ysidro School District (SYSD) Beyer Community Resource Center (CRC) project located at the former Beyer Elementary School campus site at 2312 East Beyer Boulevard in San Diego, California (Figure 1). The purpose of this study was to evaluate the geotechnical conditions at the site and provide geotechnical recommendations for the design and construction of the proposed improvements. Our geotechnical evaluation was performed in general accordance with Chapter 18A of Title 24, Part 2, Volumes 1 and 2 of the 2022 California Building Code (CBC), and California Geological Survey (CGS) Note 48.

2 SCOPE OF SERVICES

Ninyo & Moore's scope of services for this evaluation included the following:

- Reviewing readily available published and in-house geologic and geotechnical literature, topographic maps, geologic and geologic hazard maps, fault maps, flood zone maps, project plans, historical stereoscopic aerial photographs, groundwater data, and other background information.

- Performing a field reconnaissance of the site, which included marking the boring locations for utility clearance by Underground Service Alert (USA). Additionally, a private utility locator service was utilized to locate underground utilities near our exploratory boring locations.

- Performing a subsurface exploration consisting of the excavating, logging, and sampling of seven exploratory soil borings. The borings were excavated to depths up to 20 feet using a truck-mounted drill rig equipped with hollow-stem augers and manual equipment. Logging of the borings was performed by a representative from Ninyo & Moore. In-place and bulk soil samples were obtained at selected intervals from the borings. The collected samples were transported to our in-house geotechnical laboratory for testing.

- Converting one exploratory soil boring into an infiltration test and performing infiltration testing in general accordance with the City of San Diego BMP Design Manual (2024).

- Performing geotechnical laboratory testing on representative soil samples to evaluate design parameters and soil characteristics. Laboratory testing included evaluation of in-place moisture and density content, sieve (gradation) analysis, shear strength, and soil corrosivity. (pH, electrical resistivity, sulfate content and chloride content).

- Compiling and performing a geotechnical engineering analysis of the data obtained from our background review, subsurface exploration and laboratory testing.

- Preparing this geotechnical evaluation report presenting our findings, conclusions, and recommendations regarding the geotechnical aspects of the design and construction of the project.

3 SITE AND PROJECT DESCRIPTION

The project site consists of an empty lot situated on a gently sloping pad with elevations from approximately 135 feet above mean sea level (MSL) at the base of an ascending slope in the northern portion of the site to approximately 115 feet MSL at the top of a descending slope along the southern edge. Slopes inclined at 2 to 1 (horizontal to vertical) ascend up approximately 85 feet to adjacent properties along the northeastern side of the site. Approximately 20-foot-high 1.5 to 1 slopes descend from the southwest corner of the site. Vegetation generally consists of grass with some shrubs and trees. Based on our review of referenced historical photographs and plans (dated 1968) by Raymond Lee Eggers Architect, the previous Beyer Elementary School was constructed in the late 1950s and additions were made to the school in the late 1960s. As part of the additions made in the late 1960s, a portion of the slope in the southeast corner of the site was used as a borrow site to generate fill materials. In 2012, the school campus was demolished. The site has remained undeveloped since the demolition of the school campus. The approximate global coordinates of the site are 32.556501° North latitude and 117.04061°West longitude.

We understand that the redevelopment plans for the site include the construction of a new approximately 10,000 square foot, single-story, Community Resource Center (CRC) building that is anticipated to be supported on shallow foundations, tower structures attached to the CRC that may be supported on shallow or deep foundations, an outdoor event space, a natural grass or artificial turf soccer field, basketball and pickleball courts, and an asphalt paved parking lot. Ancillary improvements are anticipated to include underground utilities, concrete flatwork, site lighting, and stormwater infiltration basins.

4 PREVIOUS GEOTECHNICAL EVALUATIONS

Ninyo & Moore previously performed geotechnical evaluations at the site prior to and following the demolition of Beyer Elementary School. Our previous work prior to the demolition of the school included a limited geotechnical evaluation (Ninyo & Moore, 2011) consisting of a geologic site reconnaissance and a geotechnical evaluation (Ninyo & Moore, 2012) consisting of 16 borings (B-1 through B-16) and one infiltration test (IT-1). Following the demolition of the school, our office performed an update geotechnical evaluation (Ninyo & Moore, 2013) consisting of seven borings (B-17 through B-23) and a preliminary geotechnical evaluation (Ninyo & Moore, 2023) consisting of 14 test pits (TP-1 through TP-14). Geotechnical laboratory testing performed as part of the 2012, 2013, and 2023 evaluations included in-situ moisture and density, sieve (gradation) analysis, Atterberg limits, consolidation, shear strength, expansion index, soil corrosivity (pH, electrical resistivity, sulfates and chlorides), and R-value. The results, findings, and conclusions from these previous services have been considered and incorporated into our recent evaluation and this report. The locations of the previous subsurface soil borings and test pits from the 2012, 2013, and 2023 geotechnical evaluations are presented on Figure 2. The boring and test pit logs, along with the geotechnical laboratory testing, from these previous evaluations are included in Appendix A of this report.

5 SUBSURFACE EXPLORATION

Our subsurface exploration was conducted on December 5 and 6, 2024 and included the excavation, logging, and sampling of 7 soil borings (NM-1 through NM-6, and IT-2). The purpose of the borings was to evaluate the subsurface conditions and to collect soil samples for laboratory testing. Prior to commencing the subsurface exploration, USA was notified and a private utility locator was utilized to clear our work locations of underground utility conflicts.

The borings were excavated to depths up to approximately 20 feet using a truck-mounted drill rig equipped with hollow-stem augers and manual equipment. Ninyo & Moore personnel logged the borings in general accordance with the Unified Soil Classification System (USCS) and ASTM International (ASTM) Test Method D 2488 by observing drill cuttings and samples. Representative bulk and drive soil samples were collected at selected depths from within the exploratory borings. The approximate locations of the borings are presented on Figure 2. The borings logs are presented in Appendix B.

6 GEOTECHNICAL LABORATORY TESTING

Geotechnical laboratory testing of representative soil samples included tests to in-situ moisture and density, sieve (gradation) analysis, shear strength, and soil corrosivity (pH, electrical resistivity, sulfates and chlorides). The results of the in-situ dry density and moisture content testing are presented on the boring logs in Appendix B. Descriptions of the geotechnical laboratory test methods and results of the other geotechnical laboratory tests performed as part of our current evaluation are presented in Appendix C.

7 INFILTRATION TESTING

Our previous evaluation at the site in 2012 (i.e., prior to demolition of the school) included evaluation of infiltration characteristics of the near-surface materials near the middle of the site. As shown on Figure 2, the location of this previous infiltration test is in the vicinity of the proposed basketball court. The results from this previous infiltration testing (included in Appendix A) indicated an adjusted observed infiltration rate of less than 0.4 inches per hour. As part of our current evaluation at the site, our office performed another infiltration test (IT-2) at the site in general accordance with the current City of San Diego BMP Design Manual (2024) guidelines. The recent infiltration test is located on the south side of the proposed parking lot situated east of the basketball courts (Figure 2).

Infiltration test IT-2 was manually excavated to a depth of approximately 2 feet using a 6-inch diameter hand auger on December 5, 2024. Following the excavation, the location was prepared for infiltration testing by placing approximately 2 inches of gravel on the bottom, installing a 2-inch diameter perforated PVC pipe, and backfilling the annulus with pea gravel. As part of the test procedure, a presoak was performed on December 5, 2024 to represent adverse conditions for infiltration. The presoak consisted of maintaining approximately 1 foot of water in the test boring for approximately 4 hours. The water level was then allowed to drop overnight.

Infiltration testing at location IT-2 was then performed on December 6, 2024 in general accordance with the City of San Diego BMP Design Manual (2024). Water from the presoak remained in infiltration test IT-2 overnight. The water depth was measured in 30-minute intervals for the duration of the test. The Infiltration rate was then calculated using the Porchet method. Infiltration test IT-2 indicated an observed (i.e., unfactored) infiltration rate of approximately 0.02 inches per hour. Based on the City of San Diego BMP Design Manual (2024), reliable infiltration rates (i.e., observed infiltration rates divided by a factor of safety) of less than 0.5 inches per hour indicate a “partial infiltration condition” while reliable infiltration rates of less than 0.05 inches per hour indicate a “no infiltration condition”. Based on the results of our infiltration testing, the project site is not suitable for infiltration in accordance with the City of San Diego BMP Design Manual (2024). The City of San Diego BMP Design Manual Appendix C (Section C.3.3) and Appendix D (Section D.5.1) states that a factor of safety (FOS) of 2 is to be used for partial infiltration or for planning phase feasibility screening.

Table 1 summarizes the results of our current infiltration testing. The field measurements and calculations are included in Appendix D. A completed Worksheet C.4-1: Categorization of Infiltration Feasibility Condition Based on Geotechnical Conditions with the appropriate geotechnical aspects for current infiltration testing is presented in Appendix D. The results of our previous infiltration testing (Ninyo & Moore, 2012) are included in Appendix A. The rates presented in Table 1 are to be used for preliminary design purposes.

Table 1 – Current Infiltration Test Results Summary

Infiltration Test	Approximate Test Depth (feet)	Description	Observed Infiltration Rate (in/hr)	Factor of Safety[1]	Reliable/Factored Infiltration Rate[2] (in/hr)
IT-2	2.0	Silty SAND (Fill)	0.02	2	0.01

Notes:
in/hr = inches per hour
[1] Factor of safety of 2 used to evaluate infiltration feasibility for planning purposes. Factor of safety should be evaluated in accordance with Section D.5 and Table D.5-1 of the City of San Diego BMP Design Manual (2021b).
[2] The planning phase reliable/factored infiltration rate is for preliminary feasibility purposes. Design of stormwater BMPs should be based on the Design Infiltration Rate which is based on a factor of safety calculated in accordance with Table D.5-1 of the City of San Diego BMP Design Manual (2021b).

We note that the in-situ infiltration rate presented in Table 1 represents the infiltration rate at the specific location and depth indicated in the table. Variation in the infiltration rates can be expected at different depths and/or locations from that shown in the Table 1 and Figure 2.

8 GEOLOGY

Our findings regarding regional and site geology at the project area are provided in the following sections.

8.1 Regional Geologic Setting

The project site is situated in the western portion of the Peninsular Ranges Geomorphic Province. This geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California (Norris and Webb, 1990; Harden, 2004). The province varies in width from approximately 30 to 100 miles. In general, the province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith. The portion of the province in western San Diego County that includes the project area consists generally of uplifted and dissected coastal plain underlain by Upper Cretaceous-, Tertiary-, and Quaternary-age sedimentary rocks (Figure 3). Geologic cross sections A-A’ and B-B’ are presented on Figures 4 and 5, respectively.

The Peninsular Ranges Province is traversed by a group of sub-parallel faults and fault zones trending roughly northwest. Several of these faults are considered to be active. The Elsinore, San Jacinto, and San Andreas faults are active fault systems located east of the project area and the Newport-Inglewood, Rose Canyon, Coronado Bank, San Diego Trough, and San Clemente faults are active faults located southwest of the project area (Figure 6). Major tectonic activity associated with these and other faults within this regional tectonic framework consists primarily of right-lateral, strike-slip movement. The offshore segment of the Rose Canyon Fault, the nearest active fault, has been mapped approximately 6.3 miles west of the site. In addition, The La Nacion fault zone, which is not considered active by the State of California, has been mapped by the City of San Diego (2008) as inferred on the southeastern corner of the school property in a north-south orientation and by Kennedy and Tan (2008) along the eastern side of the site in a generally northwest-southeast orientation.

8.2 Site Geology

Geologic units encountered during our previous and recent subsurface explorations included fill, old paralic deposits, San Diego Formation, and Otay Formation (Kennedy and Tan, 2008). Generalized descriptions of the earth units encountered during our field reconnaissance and subsurface exploration are provided in the subsequent sections. Additional descriptions of the subsurface units are provided on the exploration logs in Appendix B.

8.2.1 Fill

Fill soils were encountered in each of our recent exploratory borings (NM-1 through NM-6, and IT-1) at the ground surface and in some borings and testing pits from our previous evaluations (Ninyo & Moore, 2012, 2013, and 2023). Where encountered in our recent soil borings, the fill soils extended to depths of up to 5 feet. However, recent borings NM-5, NM-6, and IT-1 were terminated in the fill materials and deeper fills may be present. Fill soils in our previous evaluations were encountered to depths up to approximately 9.5 feet. The deepest fill soils were encountered in the southwest portion of the site near the slope. Based on the original site topography, we anticipate the fill soils within the slope to be approximately 15 feet deep. These fill soils generally consisted of various shades of brown and gray, moist, loose to medium dense, silty to clayey sand, and poorly graded sand, fine to coarse sand. Abundant amounts of gravel, cobbles, and boulders between 6 to 8 inches in diameter, scattered trash, pipe, asphalt, and concrete debris up to 4 feet long were encountered in the fill soils. Cobbles and boulders up to 18 inches were encountered in previous evaluations. Documentation regarding the placement of existing fills was not available for our review.

8.2.2 Old Paralic Deposits

Materials mapped as Pleistocene-age old paralic deposits were encountered underlying the fill materials in borings NM-1 and NM-2 and in several borings and testing pits from our previous evaluations (Ninyo & Moore, 2012, 2013, and 2023).

Where encountered, the old paralic deposits extended to depths of up to 20 feet. However, some of the borings and test pits were terminated in the old paralic deposits and the old paralic deposits may extend to greater depths. The old paralic deposits generally consisted of various shades of brown, gray, and yellow, medium to very dense, clayey to silty sand, and sandy silt, with scattered caliche, stringers and blebs, scatted iron oxide stating, and scattered iron concretions. Abundant gravel, cobbles, and boulders up to 24 inches in diameter were encountered in the old paralic deposits.

8.2.3 San Diego Formation

Materials mapped as the early Pleistocene and late Pliocene-age San Diego Formation were encountered in our previous evaluation in boring B-3 (Ninyo & Moore, 2012). Our recent subsurface exploration, our 2023 evaluation, along with the other borings from our 2012 evaluation did not encounter materials of the San Diego Formation within the depths explored. Where encountered, the San Diego Formation consisted of gray, weakly to strongly cemented, silty sandstone.

8.2.4 Otay Formation

Formational materials mapped as Oligocene-aged Otay Formation were encountered underlying the fill soils in borings NM-3 and NM-4 and in some of the borings and test pits from our previous evaluations (Ninyo & Moore, 2012, 2013, and 2023), and extend to the depths explored. As observed, the Otay Formation generally consisted of various shades of brown, white, and gray, moist, moderately to strongly cemented, silty to clayey sandstone, and sandy siltstone, and gravel to boulder conglomerate with silty to clayey sand matrix, fine to medium sand. Scattered amounts of gravel, cobbles, and boulders between 3 inches to 36 inches were encountered in the Otay Formation.

8.3 Groundwater

Groundwater was not encountered during our current or previous (Ninyo & Moore, 2012, 2013, and 2023) subsurface evaluations. Based on the elevation and topography of the area and our experience at nearby sites, we anticipate that groundwater is present at a depth of more than 25 feet below the ground surface. Fluctuations in the depth to groundwater will occur due to variations in ground surface topography, subsurface geologic conditions and structure, rainfall, irrigation, and other factors.

8.4 Flood Hazard

Based on review of Federal Emergency Management Agency (FEMA) Mapping Information Platform website (2025), the site is not located within mapped floodplains, flood zones, or active floodways. The site is also not located within a mapped dam inundation area (CDWR, 2025). Based on this review and our reconnaissance, the potential for significant flooding and dam inundation at the site are not design considerations.

8.5 Landsliding

Per Tan (1995), the eastern portion of the site is mapped as “most susceptible” to landsliding, while the western portion of the site is mapped as being “generally susceptible”. Although landslides are mapped in the vicinity, based on our review of published landslide hazard maps, geologic maps, and stereoscopic aerial photographs, as well as our site reconnaissance, landslides or indications of deep-seated slope instability were not observed at the project site.

The proposed improvements are more than 100 feet away from the descending 1½ to 1 (horizontal to vertical) slope at the southwestern portion of the site and are at the base of an ascending 2 to 1 (horizontal to vertical) cut slope which extends offsite. Accordingly, the proposed improvements are not anticipated to impact or be impacted by slope stability conditions.

8.6 Geologic Hazard Map

Per the City of San Diego’s seismic safety element (2008) the majority of the site and its immediate vicinity are mapped with the hazard category 53. Category 53 is defined as “Other Terrain - Level or sloping terrain, unfavorable geologic structure, low to moderate risk”. The southeast corner of the site is mapped within Category 21, “Landslide – Confirmed, Known, or Highly Suspected”. A portion of the southeastern corner of the site is also mapped within Category 12, “Fault Zone – Potentially Active, Inactive, Presumed Inactive, or Activity Unknown” based on the location of the La Nacion Fault zone. As proposed, the planned improvements will be situated within the area mapped as Category 53 area and will not extend into the Category 12 or 21 areas. The portion of the seismic safety element depicting the site is included as Figure 7.

8.7 Faulting and Seismicity

Based on our review of the referenced geologic maps and stereoscopic aerial photographs, the site is not underlain by known active or potentially active faults (i.e., faults that exhibit evidence of ground displacement in the last 11,000 years and 2,000,000 years, respectively). The site is not located within a State of California Earthquake Fault Zone (EFZ) (formerly known as an Alquist-Priolo Special Studies Zone) (Hart and Bryant, 2007). However, Like the majority of

Southern California, the site is located in a seismically active area and the potential for strong ground motion is considered significant during the design life of the proposed structures. Figure 3 shows the approximate site location relative to the major faults in the region. The nearest known active fault is the Rose Canyon fault, located approximately 6.3 miles west of the site. Table 2 lists selected principal known active faults that may affect the site and the characteristic magnitude calculated from the United States Geological Survey (USGS) fault database (2025a). The magnitude and distance of the Rose Canyon fault are based on the Building Seismic Safety Council 2014 Event Set (UCERF3 source parameters, USGS, 2025b) and the USGS Unified Hazard Tool (2025c).

Table 2 – Principal Active Faults

Fault	Approximate Fault-to-Site Distance miles (kilometers)	Characteristic Magnitude
Rose Canyon	6.3 (10.2)	7.0
Coronado Bank	13.5 (21.7)	7.4
Elsinore (Julian Segment)	45.5 (73.2)	7.3
Newport-Inglewood (Offshore Segment)	47.2 (76.0)	7.0
Earthquake Valley	49.6 (79.8)	7.0
Elsinore (Coyote Mountain Segment)	50.1 (80.6)	6.8
Elsinore (Temecula Segment)	54.2 (87.2)	7.0

As noted and shown on Figure 7, a strand of the inactive La Nacion fault has been mapped as inferred on the southeastern corner of the school property (City of San Diego, 2008). Kennedy and Tan (2008) has mapped a strand of this fault elsewhere on this site, at a different orientation (Figure 3). Based on our site reconnaissance the La Nacion fault trends generally north-south along the eastern side.

The La Nacion fault zone consists of a series of parallel to subparallel, west-dipping normal faults. Geomorphic features commonly associated with recent faulting, such as sag ponds and well-defined scarps, have not been observed along the La Nacion fault zone (Elliot and Hart, 1977). Radiocarbon dates of unfaulted alluvium overlying the fault range from approximately 7,000 years (Hart, 1974) to in excess of 10,500 years (Elliot and Hart, 1977). In addition to the active faults listed above, traces of the Quaternary-aged, San Ysidro fault segment of the La Nacion fault zone are mapped in the crossing the eastern portion of the site and in the immediate vicinity of the site (Kennedy and Tan, 2008; Jennings, 2010). However, these and other mapped faults in the vicinity are not included in the United States Geological Survey (USGS) earthquake hazards database of faults active within the Quaternary (Treiman and Lundberg, 1999).

8.7.1 Seismic Site Class

During the previous evaluation (Ninyo & Moore, 2023), we performed a ReMi survey to evaluate the shear wave velocity profile for the project site in order to select the appropriate Seismic Site Class. Shear wave data resolution generally decreases with depth, due to the loss of sensitivity of the dispersion curve to changes in shear wave velocity as depth increases. Figures showing our MAM seismic modeling results are provided in Appendix E. The layered models in Appendix E indicate our interpretation of the approximate changes in shear wave velocity vertically with depth across the surveyed location. These results are then used to calculate the V_{s30}, which is defined as the average shear wave velocity for the upper 100 feet (30 meters) of the soil, in accordance with American Society of Civil Engineers (ASCE) Publication 7-16 (2017) for the Minimum Design Loads and Associated Criteria for Building and Other Structures . The results indicate a V_{s30} value of 1,367 fps, which according to ASCE 7-16 Table 20.3-1, corresponds to Seismic Site Class C.

8.7.2 Ground Rupture

Based on our review of the referenced literature and our site reconnaissance, active faults are not known to cross the project vicinity. Therefore, the potential for ground surface rupture due to faulting at the site is considered low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

8.7.3 Strong Ground Motion

Considering the proximity of the site to active faults capable of producing a maximum moment magnitude of 6.0 or more, the project area has a high potential for experiencing strong ground motion. The 2022 California Building Code (CBC) specifies that the risk-targeted maximum considered earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures.

In accordance with ASCE 7-16, the mapped MCE_R ground motion response accelerations were determined using the 2025 ASCE seismic hazard tool (web-based). The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits. Spectral response acceleration parameters, consistent with the 2022 CBC, are provided in Section 9.2 for the evaluation of seismic loads on buildings and other structures.

ASCE 7-16 specifies that the potential for liquefaction and soil strength loss be evaluated, where applicable, for the maximum considered earthquake geometric mean (MCE_G) peak ground acceleration adjusted for site effects (PGA_M). The PGA_M is based on the geometric mean peak ground acceleration with a 2 percent probability of exceedance in 50 years. The PGA_M was calculated as 0.485g.

8.7.4 Liquefaction and Seismically Induced Settlement

Liquefaction of cohesionless soils can be caused by strong vibratory motion due to earthquakes. Research and historical data indicate that loose granular soils and non-plastic silts that are saturated by a relatively shallow groundwater table are susceptible to liquefaction. Based on the absence of shallow groundwater along with the cemented and dense nature of the underlying formational materials, it is our opinion that liquefaction and seismically induced settlement at the site are not anticipated to be design considerations.

8.8 Tsunamis

Tsunamis are long seismic sea waves (long compared to ocean depth) generated by sudden movements of the sea floor caused by submarine earthquakes, landslides, or volcanic activity. Based on review of California Department of Conservation (2025) online tsunami mapping, the site is not located within a tsunami inundation zone. Based on this review, the site’s elevation, along with the mapped distance of the site from the Pacific Ocean, the potential for a tsunami to impact the site is considered low.

9 CONCLUSIONS

Based on our review of the referenced background data, subsurface exploration, and laboratory testing, it is our opinion that the proposed redevelopment of the site is feasible from a geotechnical standpoint provided the recommendations presented in this report are incorporated into the design and construction of the project. In general, the following conclusions were made:

- The areas of the proposed improvements are underlain by varying thicknesses of fill soils, old paralic deposits, and materials of the San Diego and Otay Formations.

- The existing fill soils encountered onsite are not documented and contain gravel, cobbles, boulders, and asphalt and concrete construction debris and are variable in nature. As such, the existing fill materials are not suitable for supporting the proposed improvements in their current condition. Recommendations for remedial grading have been provided herein.

- The existing fill soils encountered onsite contain gravel, cobbles, boulders, and asphalt and concrete construction debris. Gravel and cobbles were also encountered in the old paralic deposits and Otay and San Diego Formations. Additionally, strongly cemented zones and/or concretions may be encountered in the San Diego and Otay Formations that may require the use of heavy ripping or core barrels for drilling efforts. The contractor should anticipate difficult excavation conditions and additional efforts including heavy ripping where such materials and conditions are encountered.

- Due to the presence of gravel, cobbles, and boulders, onsite excavations will generate oversize material. Additionally, large construction debris (e.g. concrete debris) up to 4 feet has been encountered during previous evaluations at the site and the contractor should anticipate such debris during site excavations. Additional processing and handling of these materials, including crushing, screening and stockpiling for processing, should be anticipated prior to reuse as engineered fill. In lieu of additional processing the oversize material may be exported off site.

- Laboratory testing from this recent evaluation and previous evaluation indicated that materials underlying the site possess a medium expansion index. Where clays exhibiting a medium to high expansion index are encountered, selective grading should be performed to segregate the unsuitable, expansive materials from the low expansive materials. Additionally, remedial grading is recommended where structures and surface improvements are sensitive to movement of the underlying materials.

- Due to the abundant gravel, cobbles, and boulders, along with the presence of expansive clayey materials, selective grading and additional processing will be needed in order to reuse the onsite materials. Materials to be reused onsite should be processed to meet the recommendations provided herein. Additionally, due to the amount of material (i.e., gravel, cobbles, and boulders) that will need to be screened out of onsite material in order to be reused, the contractor should anticipate import soil being needed for fill soils.

- Groundwater was not encountered in our borings. However, perched water conditions may be encountered in such areas as existing utility trenches and the geologic contact between fill and the old paralic deposits and/or formational materials. Seepage is anticipated to be a construction consideration.

- Current infiltration testing indicated a reliable/factored infiltration rates at the site of 0.1 inches per hour which corresponds to a “no infiltration condition” per the City of San Diego BMP Design Manual (2024).

- The site is not located within a State of California Earthquake Fault Zone (Alquist-Priolo Special Studies Zone). The closest known major active fault is the Rose Canyon Fault, which is located approximately 6.3 miles west of the project.

- Based on a comparison of our laboratory testing data presented in Appendix C and the Caltrans corrosion criteria (Caltrans, 2021), the onsite soils would be classified as corrosive. We recommend that a qualified corrosion engineer be consulted for further evaluation and mitigation recommendations of corrosion potential.

10 RECOMMENDATIONS

Based on our understanding of the project, the following recommendations are provided for the design and construction of the project. The proposed site improvements should be constructed in accordance with the requirements of the applicable governing agencies.

10.1 Earthwork

In general, earthwork should be performed in accordance with the recommendations presented in this report. Ninyo & Moore should be contacted for questions regarding the recommendations or guidelines presented herein.

10.1.1 Site Preparation

Site preparations should begin with the removal of existing site improvements, vegetation, utility lines, asphalt, concrete, and other deleterious debris from areas where excavation and/or grading is planned. Tree stumps and roots should be removed to such a depth that organic material is generally not present. Clearing and grubbing should extend to the outside of the proposed excavation and fill areas. The debris and unsuitable material generate during clearing and grubbing should be removed from areas to be graded and disposed of at a legal dumpsite away from the project area.

10.1.2 Excavation Characteristics

The results of our field exploration program indicate that the site is underlain by fill soils, old paralic deposits, and materials of the San Diego and Otay Formations. Due to the abundant gravel, cobbles, boulders, and construction debris, the contractor should anticipate difficult excavation conditions and heavy ripping may be needed. Excavations extending into formational materials may encounter cemented zones and other very difficult excavation conditions, and the contractor should be prepared to utilize heavy ripping, rock wheel/saw, and/or core barrels for drilling efforts. Screening of significant amounts of oversize material will be required during remedial grading activities. Therefore, operations for the disposal or crushing of the resulting oversized material will need to be implemented. Drilling of holes within the fill, old paralic deposits and formational materials can be expected to be difficult due to the presence of gravel, cobbles, boulders, and construction debris and the use of specialized drilling equipment (e.g., core barrels) may be needed to advance to the design depths. Caving of open excavations should be anticipated, particularly where cohesionless soils are encountered or where excavations are not promptly backfilled.

10.1.3 Temporary Excavations

For temporary excavations, we recommend that the following Occupational Safety and Health Administration (OSHA) soil classifications be used:

Fill	*Type C*
Old Paralic Deposits	*Type B*
San Diego and Otay Formations	*Type A*

Upon making excavations at the site, the soil classifications and excavation performance should be evaluated in the field by the geotechnical consultant in accordance with the OSHA regulations. Temporary excavations should be constructed in accordance with OSHA recommendations. For trenches or other excavations, OSHA requirements regarding personnel safety should be met using appropriate shoring (including trench boxes) or by laying back the slopes to no steeper than 1½ to 1 (horizontal to vertical) in fill soils, 1 to 1 (horizontal to vertical) in old paralic deposits, and ¾ to 1 (horizontal to vertical) in the formational materials. Temporary excavations that encounter seepage may be shored or stabilized by placing sandbags or gravel along the base of the seepage zone. Excavations encountering seepage should be evaluated on a case-by-case basis. Onsite safety of personnel is the responsibility of the contractor.

10.1.4 Remedial Earthwork - CRC Building

The proposed CRC building is underlain by fill materials that were encountered to depths up to approximately 4 feet within the area of the proposed building. The fill materials are in turn underlain by old paralic deposits or formational materials. We understand that shallow foundations may be used to support the new building. Due to the presence of oversize material observed within the existing fill soils and their potential compressibility and variable nature, we recommend that the existing fill soils within the planned building pad be removed down to competent old paralic deposits, formational materials, or 2 feet below the bottom of shallow footings, whichever is deeper. This over excavation should extend 5 feet beyond the horizontal limits of the structural footprint of the building (including foundations for attached overhangs, canopies, and other building appurtenances) where feasible. The lateral extents of the overexcavation may be modified in the field based on site constraints such as existing buildings and property lines. The extent and depths of removals and overexcavations should be evaluated by Ninyo & Moore's representative in the field based on the materials exposed.

Subsequent to removal, the resulting overexcavation surface should be scarified to a depth of approximately 8 inches, moisture conditioned, and recompacted to a relative compaction of 90 percent as evaluated by the ASTM D 1557 prior to placing new fill. Once the resulting removal surface has been recompacted, the overexcavation should be backfilled with generally granular soils that possess a very low to low expansion potential (i.e., an expansion index [EI] less than 50). These materials are anticipated to consist of the soils derived from onsite excavations that have been processed to meet the soils characteristics recommended in the “Materials for Fill” section of this report or from import sources due the amount of oversize material that will be encountered and screened from the onsite materials along with selective grading to remove expansive soils.

In the event a cut/fill transition is encountered within a building pad, we recommend that the cut portion of the building pad be undercut a depth of approximately one-third or more of the deepest fill depth beneath the structure or 2 feet below the bottom of footings, whichever is greater, and replaced with compacted fill. The undercut should be extended outward a horizontal distance of 5 feet or the depth of the excavation, whichever is greater. Once the building undercut has been performed, Ninyo & Moore should review the exposed materials. Depending on the characteristics of the underlying old paralic deposits and formational materials, further removals may be recommended, as necessary.

10.1.5 Remedial Grading – Retaining Walls

Based on the results of our previous and recent subsurface explorations and the gravel, cobbles, boulders, and construction debris in the near surface materials, along with the presence of expansive materials, we recommend that existing soils be overexcavated down to a depth of 2 feet below bottom of proposed retaining wall foundations. The proposed overexcavation should extend outward horizontally 2 feet from the exterior limits of the footing, where feasible. The extent and depth of removals should be evaluated by Ninyo & Moore’s representative in the field based on the material exposed.

The resulting surface should be scarified 8 inches, moisture conditioned, and recompacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. The removals should then be filled with soils that possess a low to very low potential for expansion (i.e., an EI less than 50). These compacted fill soils should be placed at a relative compaction of 90 percent as evaluated by ASTM D 1557.

10.1.6 Remedial Grading – Flatwork and Pedestrian Concrete Paving

Based on the results of our previous and recent subsurface explorations and the gravel, cobbles, boulders, and construction debris in the near surface materials, along with the presence of expansive materials, remedial grading should be performed in areas where flatwork and/or pedestrian concrete paving are proposed. In general, remedial grading in these areas should include overexcavation of the subgrade soils to a depth of 18 inches below the planned subgrade elevation. The overexcavation should extend outward horizontally 2 feet from the exterior limits of the hardscaping, where feasible. The extent and depth of removals should be evaluated by Ninyo & Moore's representative in the field based on the material exposed.

The resulting surface should be scarified 8 inches, moisture conditioned, and recompacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. The removals should then be filled with soils that possess a low to very low potential for expansion (i.e., an EI less than 50). These compacted fill soils should be placed at a relative compaction of 90 percent as evaluated by ASTM D 1557.

10.1.7 Remedial Grading – Turf Field

Due to the presence of gravel, cobbles, boulders, and construction debris in the near surface materials, we recommend that remedial grading be performed within the limits of the proposed turf field. The intent of the remedial grading is to provide suitable subgrade materials for the new turf field. The onsite soils should be overexcavated to a depth of 18 inches below the planned finish grade. The extent and depth of removals should be evaluated by Ninyo & Moore's representative in the field based on the material exposed. The resulting surface should be scarified 8 inches, moisture conditioned, and recompacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. We recommend that consideration be given by the landscape architect to mitigate surface migration of the gravels, cobbles, boulders, and construction debris within the site soils. A potential mitigation technique may include a separation filter fabric laid across the surface following the recompaction of the exposed materials. The overexcavation should then be filled with engineered fill soils that meet the recommendations presented in this report and as specified by the landscape architect.

10.1.8 Materials for Fill

Due to the abundant gravels, cobbles, boulders, and construction debris along with the presence of expansive, clayey materials, selective grading and additional processing will need to be performed in order for the onsite soils to be reused as fill that is in compliance with the follow recommendations. Fill soils should possess an organic content of less than approximately 3 percent by volume (or 1 percent by weight), be free of debris, and exhibit an EI of 50 or less (i.e., low expansion potential) as evaluated by ASTM D 4829. In general, fill material should not contain rocks or lumps over approximately 3 inches in diameter, and not more than approximately 30 percent larger than ¾ inch. Fill materials placed in accordance with the remedial grading recommendations presented herein should possess an expansion index (EI) of 50 or less. Due to the amount of material larger than 3 inches that will be screened from the onsite-materials to be reused onsite, imported fill material will likely be needed.

Imported fill material should generally be granular soils with a very low to low expansion potential (i.e., an EI of 50 or less). Import material should not be considered corrosive as defined by the Caltrans (2021) corrosion guidelines. Materials for use as fill should be evaluated by Ninyo & Moore’s representative prior to filling or importing. To reduce the potential of importing contaminated materials to the site, prior to delivery, soil materials obtained from off-site sources should be sampled and tested in accordance with standard practice (Department of Toxic Substances Control [DTSC], 2001). Soils that exhibit a known risk to human health, the environment, or both, should not be imported to the site.

10.1.9 Compacted Fill

Prior to placement of compacted fill, the contractor should request an evaluation of the exposed ground surface by Ninyo & Moore. Unless otherwise recommended, the exposed ground surface should then be scarified to a depth of approximately 8 inches and watered or dried, as needed, to achieve moisture contents generally at or slightly above the optimum moisture content. The scarified materials should then be compacted to a relative compaction of 90 percent as evaluated in accordance with ASTM D 1557. The evaluation of compaction by the geotechnical consultant should not be considered to preclude any requirements for observation or approval by governing agencies. It is the contractor's responsibility to notify this office and the appropriate governing agency when project areas are ready for observation, and to provide reasonable time for that review.

Fill materials should be moisture conditioned to generally at or slightly above the laboratory optimum moisture content prior to placement. The optimum moisture content will vary with material type and other factors. Moisture conditioning of fill soils should be generally consistent within the soil mass.

Prior to placement of additional compacted fill material following a delay in the grading operations, the exposed surface of previously compacted fill should be prepared to receive fill. Preparation may include scarification, moisture conditioning, and recompaction.

Compacted fill should be placed in horizontal lifts of approximately 8 inches in loose thickness. Prior to compaction, each lift should be watered or dried as needed to achieve a moisture content generally at or slightly above the laboratory optimum, mixed, and then compacted by mechanical methods, to a relative compaction of 90 percent as evaluated by ASTM D 1557. The upper 12 inches of the subgrade materials beneath vehicular pavements should be compacted to a relative compaction of 95 percent relative density as evaluated by ASTM D 1557. Successive lifts should be treated in a like manner until the desired finished grades are achieved

10.1.10 Pipe Bedding and Modulus of Soil Reaction (E')

It is our recommendation that new pipelines (pipes), where constructed in open excavations, be supported on 6 or more inches of granular bedding material. Granular pipe bedding should be provided to distribute vertical loads around the pipe. Bedding material and compaction requirements should be in accordance with this report. Pipe bedding typically consists of graded aggregate with a coefficient of uniformity of three or more.

The modulus of soil reaction (E') is used to characterize the stiffness of soil backfill placed at the sides of buried flexible pipes for the purpose of evaluating deflection caused by the weight of the backfill over the pipe (Hartley and Duncan, 1987). A soil reaction modulus of 1,000 pounds per square inch (psi) may be used for an excavation depth of up to approximately 5 feet when backfilled with granular soil compacted to a relative compaction of 90 percent as evaluated by the ASTM D 1557. A modulus of soil reaction of 1,400 psi may be used for trenches deeper than 5 feet.

10.1.11 Utility Pipe Zone Backfill

The pipe zone backfill should be placed on top of the pipe bedding material and extend to 1 foot or more above the top of the pipe in accordance with the recent edition of the Standard Specifications for Public Works Construction ("Greenbook"). Pipe zone backfill should have a Sand Equivalent (SE) of 30 or more, and be placed around the sides and top of the pipe. Silts and clays should not be used as pipe zone backfill. Special care should be taken not to allow voids beneath and around the pipe. Compaction of the pipe zone backfill should proceed up both sides of the pipe.

It has been our experience that the voids within a crushed rock material are sufficiently large to allow fines to migrate into the voids, thereby creating the potential for sinkholes and depressions to develop at the ground surface. If open-graded gravel is utilized as pipe zone backfill, this material should be separated from the adjacent trench sidewalls and overlying trench backfill with a geosynthetic filter fabric.

10.1.12 Utility Trench Zone Backfill

Some onsite excavations will generate clayey soils that possess a medium potential for expansion. These expansive clay soils are generally not considered suitable for portions of trench backfill within the footprint of proposed structures, in the upper 2 feet beneath retaining wall footings, as retaining wall backfill, or in the upper 2 feet beneath pedestrian concrete paving. Trench zone backfill material should be generally free of trash, debris, roots, vegetation, or deleterious materials. Additionally, onsite excavations may generate oversized materials. Trench zone backfill should generally be free of rocks or hard lumps of material in excess of 3 inches in diameter and generally not more than approximately 30 percent larger than ¾-inch. Rocks or hard lumps larger than about 3 inches in diameter should be broken into smaller pieces or should be removed from the site. Oversize materials should be separated from material to be used as trench backfill. Moisture conditioning (including drying and/or mixing) of existing onsite materials is anticipated if reused as trench backfill. Trench zone backfill should be moisture conditioned to generally at or slightly above the laboratory optimum. Trench zone backfill should be compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557, except for the upper 12 inches of the backfill beneath vehicular pavements that should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557. Lift thickness for backfill will depend on the type of compaction equipment utilized, but fill should generally be placed in lifts not exceeding 8 inches in loose thickness. Special care should be exercised to avoid damaging the pipe during compaction of the backfill.

10.1.13 Thrust Blocks

Thrust restraint for buried pipelines may be achieved by transferring the thrust force to the soil outside the pipe through a thrust block. Thrust blocks may be designed using the magnitude and distribution of passive lateral earth pressures presented on Figure 8.

Thrust blocks should be backfilled with granular backfill material and compacted following the recommendations presented in this report.

10.1.14 Drainage

Roof, pad, and slope drainage should be conveyed such that runoff water is diverted away from slopes and structures to suitable discharge areas by nonerodable devices (e.g., gutters, downspouts, concrete swales, etc.). Positive drainage adjacent to structures should be established and maintained. Positive drainage may be accomplished by providing drainage away from the foundations of the structure at a gradient of 2 percent or steeper for a distance of 5 feet or more outside building perimeters, and further maintained by a graded swale leading to an appropriate outlet, in accordance with the recommendations of the project civil engineer and/or landscape architect.

Surface drainage on the site should be provided so that water is not permitted to pond. A gradient of 2 percent or steeper should be maintained and drainage patterns should be established to divert and remove water from the site to appropriate outlets.

Care should be taken by the contractor during final grading to preserve any berms, drainage terraces, interceptor swales or other drainage devices of a permanent nature on or adjacent to the property. Drainage patterns established at the time of final grading should be maintained for the life of the project. The property owner and the maintenance personnel should be made aware that altering drainage patterns might be detrimental to foundation performance.

10.2 Seismic Design Considerations

Design of the proposed improvements should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 5 presents the seismic design parameters for the site in accordance with the CBC (2022) guidelines and adjusted MCE spectral response acceleration parameters (ASCE, 2025).

Table 3 – 2022 California Building Code Seismic Design Parameters

Seismic Design Factors	Value
Seismic Design Category	D
Site Class	C
Site Coefficient, F_a	1.2
Site Coefficient, F_v	1.5

Table 3 – 2022 California Building Code Seismic Design Parameters

Seismic Design Factors	Value
Mapped Spectral Acceleration at 0.2-second Period, S_S	0.915g
Mapped Spectral Acceleration at 1.0-second Period, S_1	0.319g
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	1.098g
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	0.479g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	0.732g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.319g
Maximum Considered Earthquake Geometric Mean (MCE_G) Peak Ground Acceleration (PGA_M)	0.485g

10.3 Foundations

Based on our understanding of the project, the proposed CRC building is anticipated to be supported on shallow foundations. However, the tower structures connected to the CRC may be supported on deep foundations. Recommendations for the shallow and deep foundations are presented in following sections. Foundations should be designed in accordance with structural considerations and the following recommendations. In addition, requirements of the appropriate governing jurisdictions and applicable building codes should be considered in the design of the structures.

10.3.1 Shallow Foundations

Shallow, spread or continuous footings supported on compacted fill that has been placed in accordance with the remedial grading recommendations herein may be designed using an allowable bearing capacity of 2,500 pounds per square foot (psf). These allowable bearing capacities may be increased by one-third when considering loads of short duration such as wind or seismic forces. Shallow, spread and/or continuous foundations should be founded 18 inches or more below the lowest adjacent grade and should have a width of 18 inches or more. The footings should be reinforced in accordance with the recommendations of the project structural engineer.

10.3.1.1 Lateral Resistance – Shallow Foundations

For resistance of footings to lateral loads, bearing on compacted fill, we recommend an allowable passive pressure of 350 psf per foot of depth be used with a value of up to 3,500 psf. This value assumes that the ground is horizontal for a distance of 10 feet, or three times the height generating the passive pressure, whichever is more. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance.

For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.3 be used between soil and concrete. The passive resistance values may be increased by one-third when considering loads of short duration such as wind or seismic forces.

10.3.2 Cast-in-Drilled-Hole (CIDH) Piles

We understand that the tower structures connected to the CRC may be supported on cast-in-drilled-hole (CIDH) concrete pile foundations. We anticipate that the foundation dimensions will be generally controlled by the lateral load or uplift demand. The type, depth, and size of the foundations should be evaluated by the structural engineer based on the loading conditions and these geotechnical recommendations. We recommend that the foundation plans and design submittal be reviewed by this office for general conformance to these recommendations prior to finalizing.

Although we anticipate that pile dimensions will be generally controlled by the lateral load demand, we recommend that CIDH pile foundations have a diameter of 2 feet or more. The pile dimensions (i.e., diameter and embedment) should be evaluated by the project structural engineer. We recommend that CIDH piles be designed based on the interaction between the concrete pile compacted fill placed in accordance with the remedial grading recommendations herein, old paralic deposits, and/or formational materials. Shear strength parameters were selected based on the results of shear tests performed on representative samples collected during our current and previous evaluations.

CIDH piles, embedded at least 6 feet into old paralic deposits and/or formational materials, may be designed using an allowable downward (axial) frictional resistance value of 200 pounds per square foot (psf), based on a factor of safety of 2.0 and an uplift frictional resistance value of 150 psf, based on a factor of safety of 1.5. The axial and uplift pile capacities presented are based on side friction calculated using the shear strength properties evaluated from relatively undisturbed samples at the site. We recommend that end bearing not be incorporated into the pile design capacities. The values above may be increased by one-third when considering loading of short duration such as wind or seismic forces (i.e., dynamic loads).

The drilled pile construction should be observed by the geotechnical consultant during construction to evaluate whether the piles have been extended to the design depths. The drilled holes should be cleaned of loose soil and gravel. It is the contractor's responsibility to (a) take appropriate measures for maintaining the integrity of the drilled holes, (b) see that the holes are cleaned and straight, and (c) see that sloughed loose soil is removed from the bottom of the hole prior to the placement of concrete. Drilled piles should be checked for alignment and plumbness during installation. The amount of acceptable misalignment of a pile is approximately 3 inches from the plan location. It is usually acceptable for a pile to be out of plumb by 1 percent of the depth of the pile. The center-to-center spacing of piles should be no less than three times the nominal diameter of the pile.

We recommend that special measures, such as placement of concrete by tremie method, are implemented to see that the aggregate and cement do not segregate during concrete placement.

10.3.2.1 Lateral Resistance – CIDH Piles

For the analysis of the CIDH pile foundations using lateral resistance pressures, we recommend an allowable passive pressure of 350 psf per foot of depth below ground surface be used with an upper bound value of 3,500 psf. Furthermore, this value assumes that the ground is horizontal for a distance equivalent to 10 times the pile diameter, whichever is more. Note, the horizontal ground distances as noted are as measured from the foundation face at the top of the CIDH pile foundation. The top of the CIDH pile foundation corresponds to the portion of the foundation where the top of the passive pressure development begins. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance.

For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.3 be used between old paralic deposits and/or formational materials and concrete.

The lateral resistance values presented above may be increased by one-third when considering loads of short duration such as wind or seismic forces.

10.3.3 Static Settlement

We estimate that the proposed structures, designed and constructed as recommended herein, will undergo total settlement on the order of 1 inch. Differential settlement on the order of ½-inch over a horizontal span of 40 feet should be expected

10.4 Site and/or Retaining Walls

Site retaining walls that are not a part of or are not connected to the buildings may be supported on continuous footings bearing on compacted fill. The continuous footings should have a width of 24 inches or more and be embedded a depth of 18 inches or more. An allowable bearing capacity of 2,500 psf may be used for the design of site retaining wall foundations. The allowable bearing capacity may be increased by one-third when considering loads of short duration, such as wind or seismic forces.

For the design of a yielding retaining wall that is not restrained against movement by rigid corners or structural connections, the design lateral earth pressures are presented on Figure 9. Restrained walls (non-yielding) may be designed for the lateral earth pressures presented on Figure 10. These pressures assume low-expansive backfill and free draining conditions. Measures should be taken to reduce the potential for build-up of moisture behind the retaining walls. A drain should be provided behind the retaining wall as shown on Figure 11. The drain should be connected to an appropriate outlet

10.5 Exterior Pedestrian Concrete Flatwork

We recommend that exterior pedestrian concrete flatwork be underlain by 18 inches or more of soil possessing a low to very low potential for expansion (i.e., an EI of 50 or less) per the remedial grading recommendations herein. Such flatwork is recommended to be 4 inches in thickness and should be reinforced with No. 3 reinforcing bars placed at 18 inches on-center both ways. A vapor retarder is not needed for exterior flatwork. To reduce the potential manifestation of distress to exterior concrete flatwork due to movement of the underlying soil, we recommend that such flatwork be installed with crack-control joints at appropriate spacing as designed by the civil engineer. Positive drainage should be established and maintained adjacent to flatwork.

10.6 Interior Slabs-on-Grade

We recommend that conventional, new interior concrete slab-on-grade floors be underlain by compacted fill materials of generally very low to low expansion potential (i.e. an EI of 50 or less) in accordance with the remedial grading recommendations herein. Interior concrete slabs-on-grade should be 5 inches thick. If moisture sensitive floor coverings are to be used, we recommend that slabs be underlain by a vapor retarder and capillary break system consisting of a 10-mil polyethylene (or equivalent) membrane placed over 4 inches of medium to coarse, clean sand or pea gravel. The slabs-on-grade should be reinforced with No. 4 reinforcing bars spaced 18 inches on center each way. The reinforcing bars should be placed near the middle of the slab. As a means to help reduce shrinkage cracks, we recommend that the slabs be provided with crack-control joints at intervals of approximately 12 feet each way. The slab reinforcement and expansion joint spacing should be designed by the project structural engineer

10.7 Light Pole and Canopy Foundations

Light pole and canopy structures typically impose relatively light axial loads on foundations. Although we anticipate that pile dimensions will be generally controlled by the lateral load or uplift demand, we recommend that such drilled foundations have a diameter of 12 inches or more. The pile dimensions (i.e., diameter and embedment) should be evaluated by the project structural engineer.

The drilled pile construction should be observed by Ninyo & Moore during construction to evaluate whether the piles have been extended to the design depths. It is the contractor's responsibility to (a) take appropriate measures for maintaining the integrity of the drilled holes, (b) see that the holes are cleaned and straight, and (c) see that sloughed loose soil is removed from the bottom of the hole prior to the placement of concrete. Drilled piles should be checked for alignment and plumbness during installation. The amount of acceptable misalignment of a pile is approximately 3 inches from the plan location. It is usually acceptable for a pile to be out of plumb by 1 percent of the depth of the pile. The center-to-center spacing of piles should be no less than three times the nominal diameter of the pile. If the CIDH piles extend into groundwater or seepage, the contractor should consider appropriate measures during construction to reduce the potential for caving of the drilled holes, including the use of steel casing and/or drilling mud. In addition, we recommend concrete be placed by tremie method, to see that the aggregate and cement do not segregate during concrete placement, on the same day the CIDH piles are drilled.

For resistance of CIDH piles to lateral loads, we recommend an allowable passive pressure of 600 psf per foot of depth be used, with an upper bound value of up to 6,000 psf. This value has already been increased for an effective width of three times the drilled pier foundation diameter, assumes that the light poles are designed to tolerate ½ inch of horizontal deflection at the surface, and that the ground is horizontal for a distance of 10 feet, or three times the height generating the passive pressure, whichever is greater. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance. The allowable lateral resistance values may be increased by one third during short term loading conditions, such as wind or seismic loading. We recommend that special measures, such as placement of concrete by tremie method, are implemented to see that the aggregate and cement do not segregate during concrete placement

10.8 Preliminary Flexible Pavement Design

Our previous laboratory testing (Ninyo & Moore, 2012, 2013, and 2023) of near surface soil samples at the project site indicated R-values of 15, 21, and 67. We have used an R-value of 15 for preliminary design of the pavement. This R-value, along with estimated design Traffic Indices (TI) of 5, 6, and 7 has been the basis of our preliminary flexible pavement design. Actual pavement recommendations should be based on R-value tests performed on bulk samples of the soils that are exposed at the finished subgrade elevations across the site at the completion of the grading operations. The preliminary recommended flexible pavement sections are presented in Table 2.

Table 4 – Recommended Preliminary Flexible Pavement Sections

Traffic Index (Pavement Usage)	Design R-Value	Asphalt Concrete Thickness (inches)	Aggregate Base Thickness (inches)
5 (Parking Stalls)	15	3	8
6 (Drive Aisles)	15	4	9
7 (Fire Lanes and Bus Lanes)	15	4½	13

As indicated, these values assume TIs of 7.0 or less for site pavements. If traffic loads are different from those assumed, the pavement design should be re-evaluated. We recommend that the upper 12 inches of the subgrade soils be compacted to a relative compaction of 95 percent relative density as evaluated by the current version of ASTM D 1557. Additionally, the aggregate base materials should be compacted to a relative compaction of 95 percent relative density as evaluated by the current version of ASTM D 1557. The AC materials should be compacted to 95 percent of the material's Hveem density.

10.9 Rigid Pavement Design

We suggest that consideration be given to using Portland cement concrete (PCC) pavements in areas where dumpsters will be stored and where refuse trucks will stop and load. Experience indicates that refuse truck traffic can significantly shorten the useful life of AC sections. We recommend that in these areas, 7 inches of 600 psi flexural strength Portland cement concrete reinforced with No. 3 bars, 18-inches on center, be placed over 4 inches or more of aggregate base materials compacted to a relative compaction of 95 percent. Additionally, the upper 12 inches of the subgrade beneath the aggregate base should be compacted to 95 percent of its Proctor density as evaluated by ASTM D 1557.

10.10 Corrosivity

Previous (Ninyo & Moore, 2012, 2013, and 2023) and recent laboratory testing was performed on representative samples of near-surface soil to evaluate soil pH, electrical resistivity, water-soluble chloride content, and water-soluble sulfate content. The soil pH and electrical resistivity tests were performed in general accordance with California Test Method (CT) 422. Sulfate testing was performed in general accordance with CT 417. The laboratory test results are presented in Appendix B.

The results of our corrosivity testing indicated an electrical resistivities ranging from 680 to 2,650 ohm-cm, soil pH values between 7.8 and 7.9, chloride contents ranging from 135 to 450 parts per million (ppm), and sulfate contents ranging from 0.009 percent 0.011 percent (i.e., 90 to 110 ppm). Based on the laboratory test results, ACI 318, and Caltrans (2021) corrosion criteria, soils within portions of the project alignment would be classified as corrosive. A corrosive soil environment defined as having earth materials with more than 500 ppm chlorides, more than 0.15 percent sulfates (i.e., 1,500 ppm), an electrical resistivity of 1,100 ohm-cm or less, or a pH of 5.5 or less. We recommend that a qualified corrosion engineer be consulted for further evaluation and mitigation recommendations of corrosion potential.

10.11 Concrete

Concrete in contact with soil or water that contains high concentrations of water-soluble sulfates can be subject to premature chemical and/or physical deterioration. As noted above, soil samples tested during this evaluation indicated a water-soluble sulfate contents ranging from 0.009 to 0.011 percent (i.e., 90 to 110 ppm). Based on the American Concrete Institute (ACI) 318 criteria, the site soils would correspond to exposure class S0. For this exposure class, ACI 318 recommends that normal weight concrete in contact with soil possess a compressive strength of 2,500 pounds per square inch (psi) or more. Due to the potential for variability of site soils, we recommend that normal weight concrete in contact with soil use Type II, II/V, or V cement.

10.12 Plan Review and Construction Observation

The conclusions and recommendations provided in this report are based on our understanding of the proposed project and on our evaluation of the data collected based on subsurface conditions encountered in our exploratory test pits and borings at the site. At this point our understanding of the scope of redevelopment is limited as no plans have been provided. Once plans are available, Ninyo & Moore should be notified, and additional recommendations will be provided upon request. Ninyo & Moore should review the final project drawings and specifications prior to the commencement of construction. The geotechnical consultant should perform the needed observation and testing services during construction operations.

The recommendations provided in this report are based on the assumption that Ninyo & Moore will provide geotechnical observation and testing services during construction. In the event that it is decided not to utilize the services of Ninyo & Moore during construction, we request that the selected consultant provide the client with a letter (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore's recommendations, and that they are in full agreement with the design parameters and recommendations contained in this report. Construction of proposed improvements should be performed by qualified subcontractors utilizing appropriate techniques and construction materials.

11 PERMANENT INFILTRATION DEVICES

As described earlier, results of current in-situ testing of the underlying materials indicate a preliminary reliable infiltration rate of 0.01 inches per hour, based on a factor of safety of 2. The infiltration test was performed within fill materials that consisted of silty sand. Based on the infiltration rate, the site is considered not suitable for infiltration in accordance with the City of San Diego BMP Design Manual (2024). Attempts to infiltrate will lead to mounding and lateral movement of water which can impact proposed improvements. Our testing was specific to the locations and depths documented herein. Other areas of the site may or may not accommodate infiltration of storm water. Additional infiltration testing would be needed in these other areas to evaluate whether infiltration in these areas/depths are feasible.

Additional recommendations and/or considerations should be provided by the project civil engineer. Such considerations may include the use of overflow controls and pavement edge drains and cutoff curbs to reduce the potential for lateral migration of irrigation and runoff both into adjacent trench backfill or subgrade soils beneath adjacent improvements. Also, the horizontal separations between the proposed basins and existing improvements should be evaluated to check whether the setback requirements presented in the City of San Diego BMP Design Manual (2024) are met. The appropriate governing agencies should be consulted and coordinated with during design of storm water BMPs

12 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report has been prepared without any redevelopment plans. Therefore, this report should be treated as a preliminary report for informational purposed only. It does not, by itself, provide sufficient data to satisfy CGS, DSA, or support design and construction. Additional field work, laboratory testing, and or additional recommendations will be needed for the specific redevelopment once plans are available.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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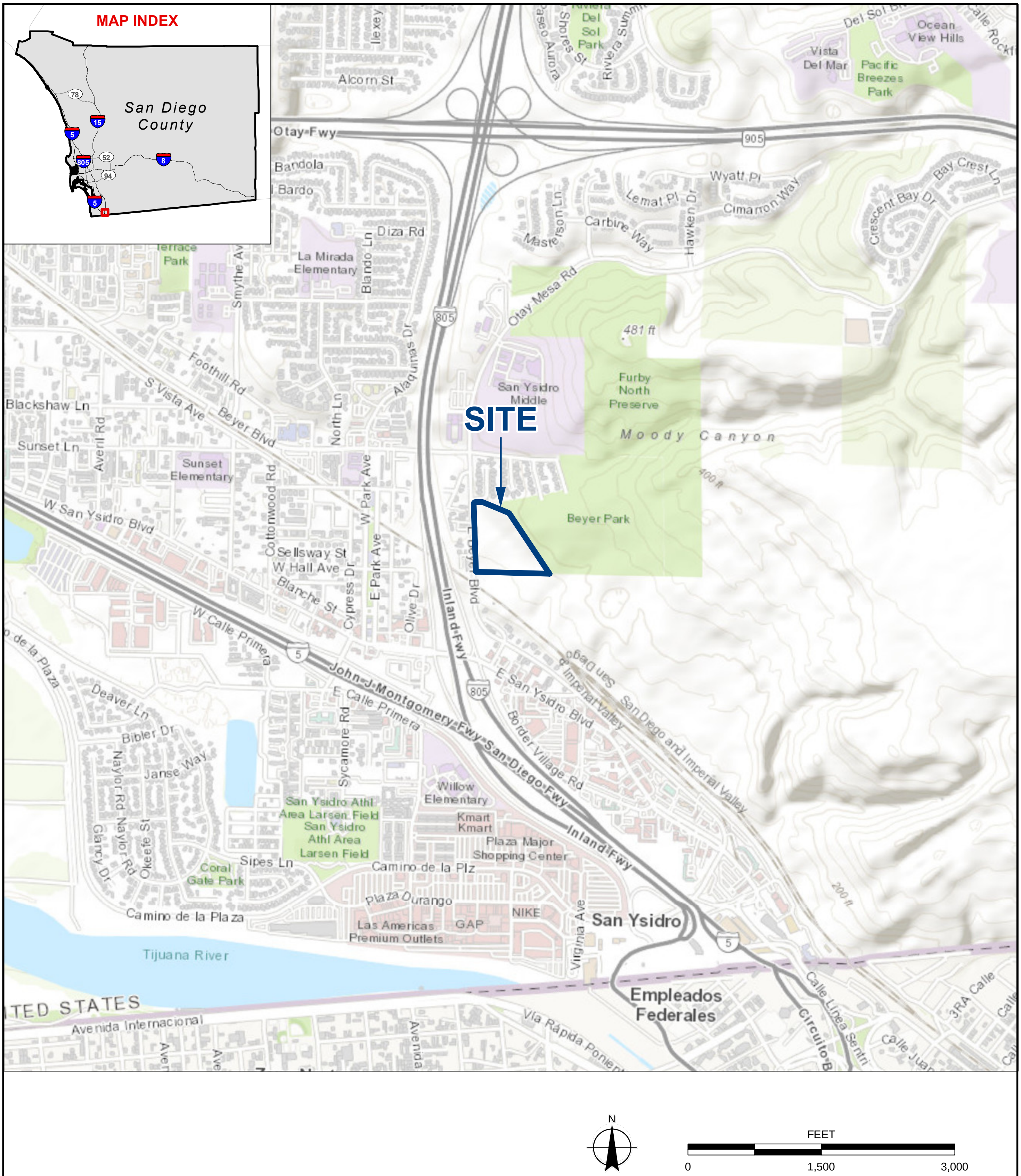
FIGURES



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NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCE: ESRI WORLD TOPO, 2025

FIGURE 1

SITE LOCATION

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA

109751009 | 2/25

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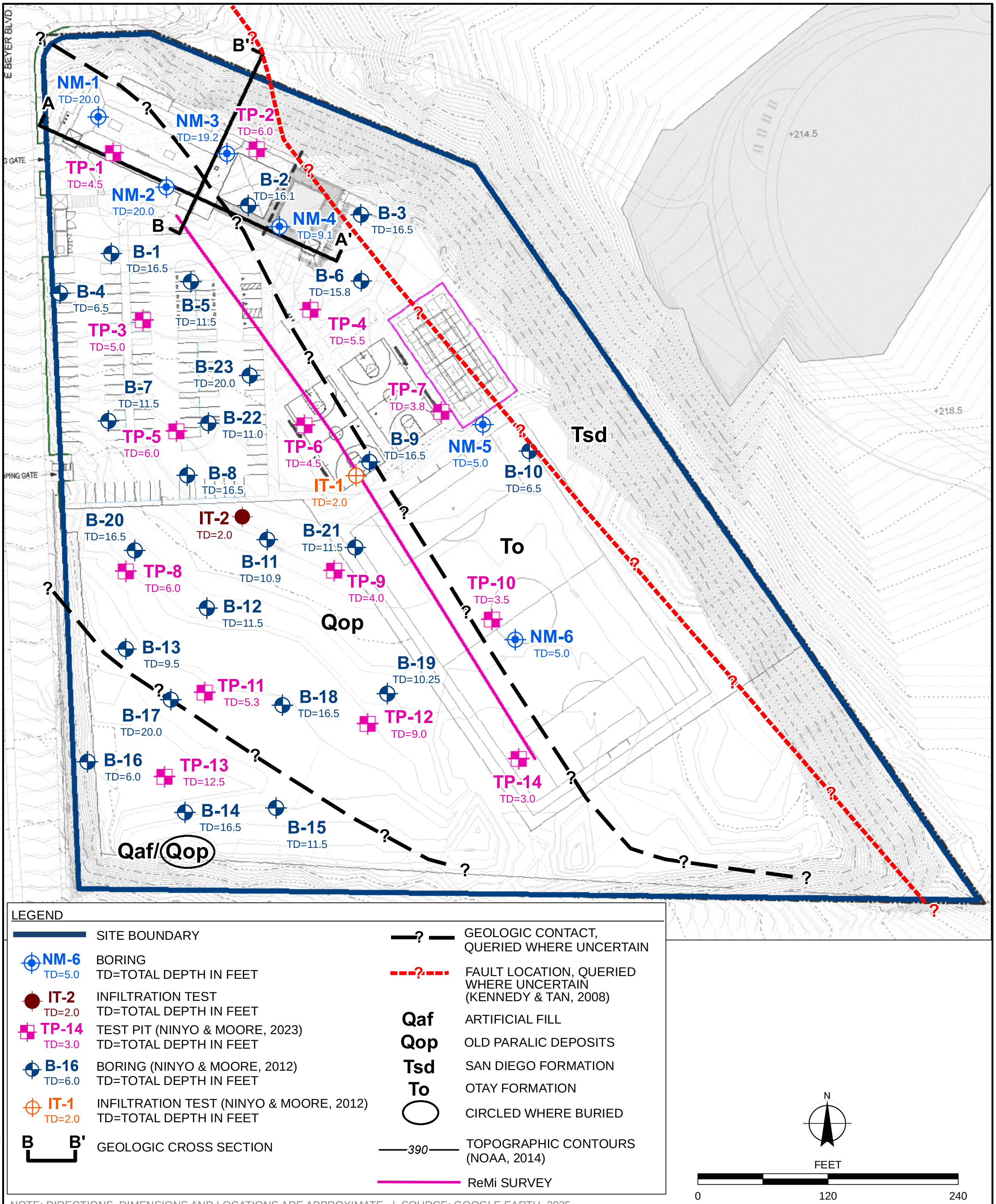
Geotechnical & Environmental Sciences Consultants



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NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCE: GOOGLE EARTH, 2025

FIGURE 2

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GEOTECHNICAL MAP

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA

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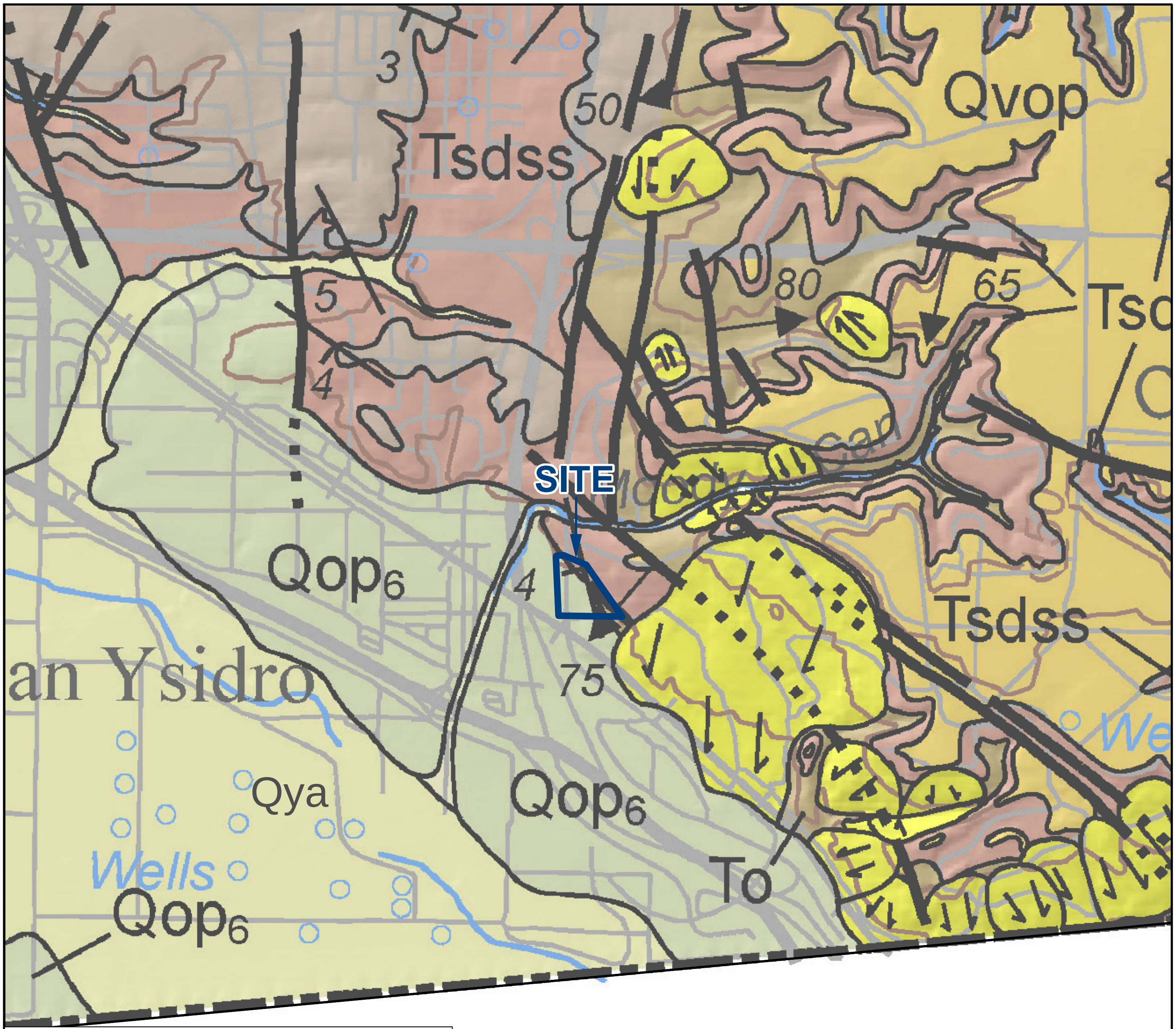

LEGEND

Qya	Young alluvial flood-plain deposits (Holocene and late Pleistocene)
Qop	Old paralic deposits, undivided (late to middle Pleistocene)
Qop_6	Unit 6
Qvop	Very old paralic deposits, undivided (middle to early Pleistocene)

San Diego Formation (early Pleistocene and late Pliocene)
Tsdcg / Tsdss — Tsd
Tsd - undivided
Tsdcg - transitional marine and nonmarine pebble and cobble conglomerate
Tsdss - marine sandstone

Qls? Landslide - Arrows indicate principal direction of movement. Queried where existence is questionable.

70 U D Fault - Solid where accurately located; dashed where approximately located; dotted where concealed. U = upthrown block, D = downthrown block. Arrow and number indicate direction and angle of dip of fault plane.

70 Strike and dip of beds

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: KENNEDY, M.P., TAN, S.S., 2008, GEOLOGIC MAP OF THE SAN DIEGO 30 X 60-MINUTE QUADRANGLE, CALIFORNIA

N

FEET
0 2,000 4,000

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FIGURE 3

GEOLOGY

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA

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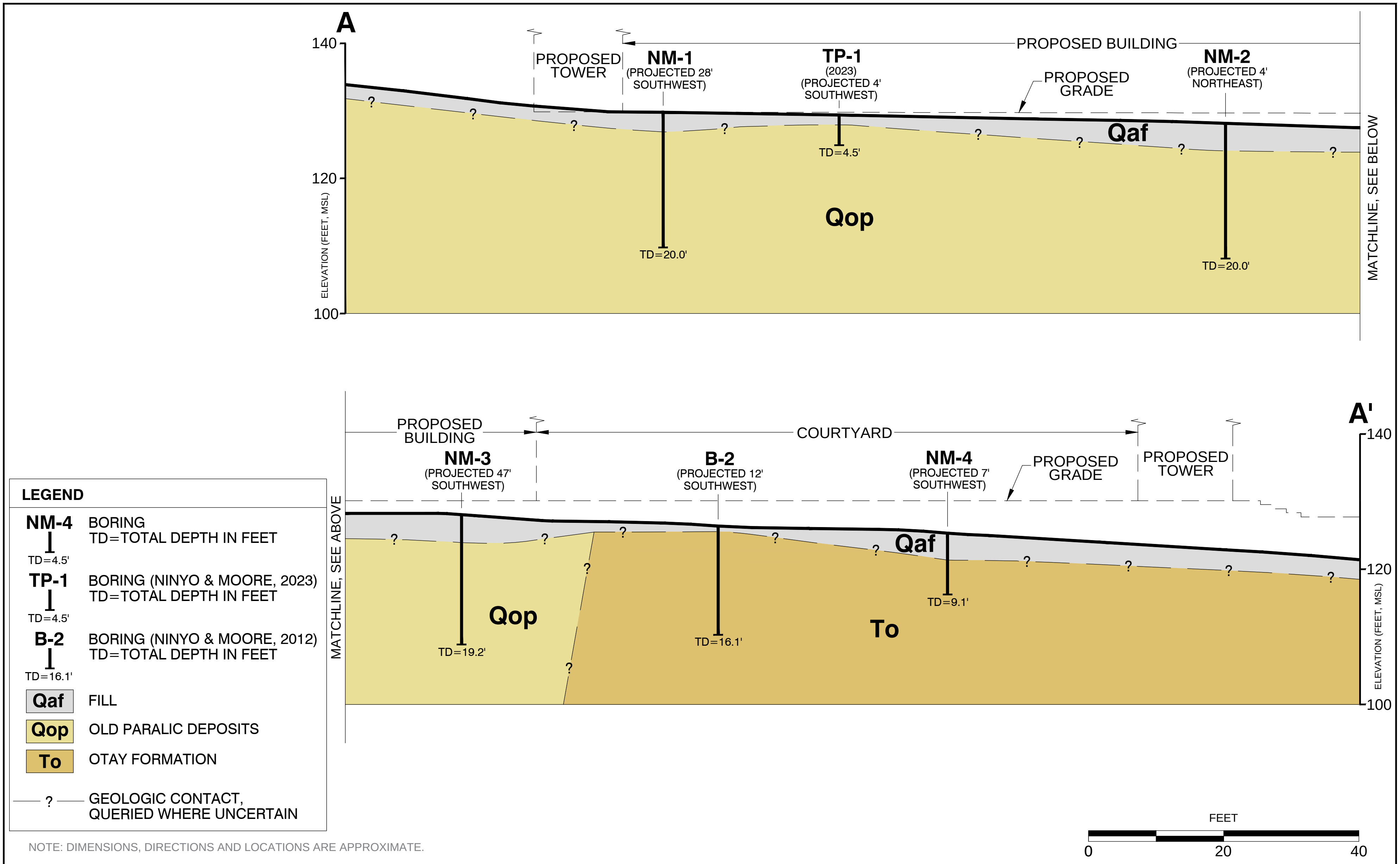

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 4

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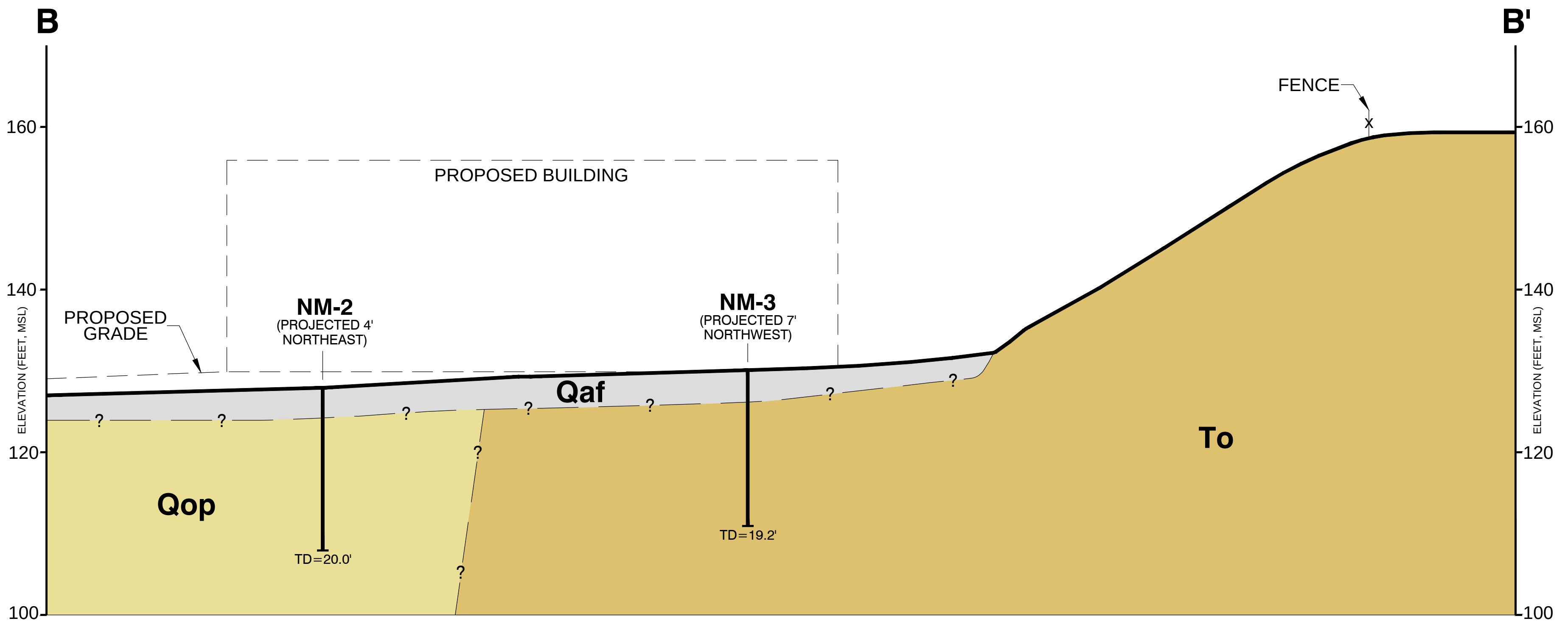
GEOLOGIC CROSS SECTION A-A'

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA

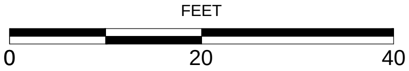
109751009 I 2/25



LEGEND

NM-3 ⊥ TD=19.2	BORING TD=TOTAL DEPTH IN FEET
Qaf	FILL
Qop	OLD PARALIC DEPOSITS
To	OTAY FORMATION
—— ? ——	GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.



5 109751009 CS B-B'.DWG 2/5/25 AOB

FIGURE 5

GEOLOGIC CROSS SECTION B-B'

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA

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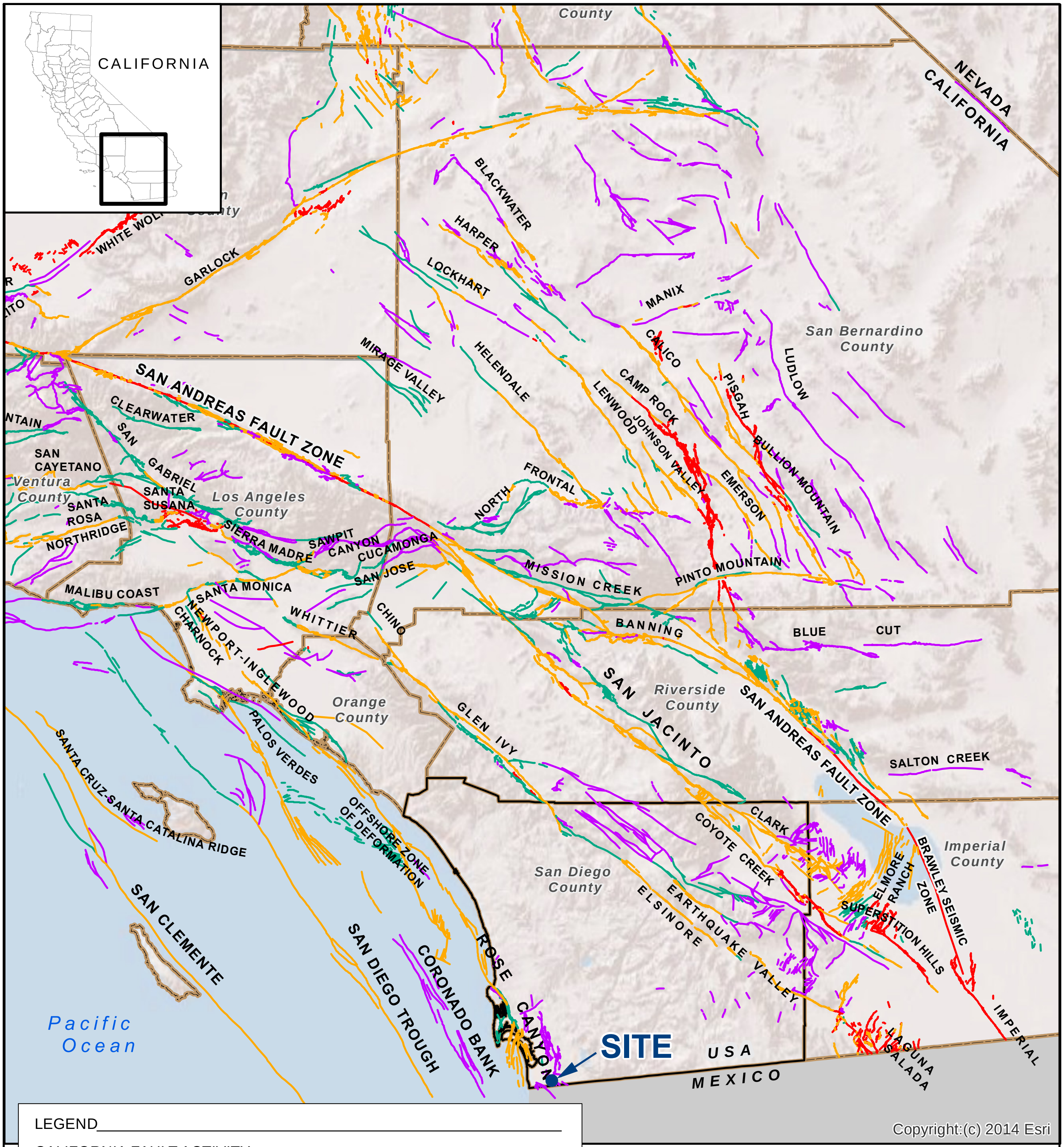

LEGEND

CALIFORNIA FAULT ACTIVITY

🟥 HISTORICALLY ACTIVE

🟧 HOLOCENE ACTIVE

🟩 LATE QUATERNARY (POTENTIALLY ACTIVE)

🟪 QUATERNARY (POTENTIALLY ACTIVE)

STATE/COUNTY BOUNDARY

SOURCE: U.S. GEOLOGICAL SURVEY AND CALIFORNIA GEOLOGICAL SURVEY, 2006, QUATERNARY FAULT AND FOLD DATABASE FOR THE UNITED STATES.

N

MILES

0 30 60

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

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FIGURE 6

FAULT LOCATIONS

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA

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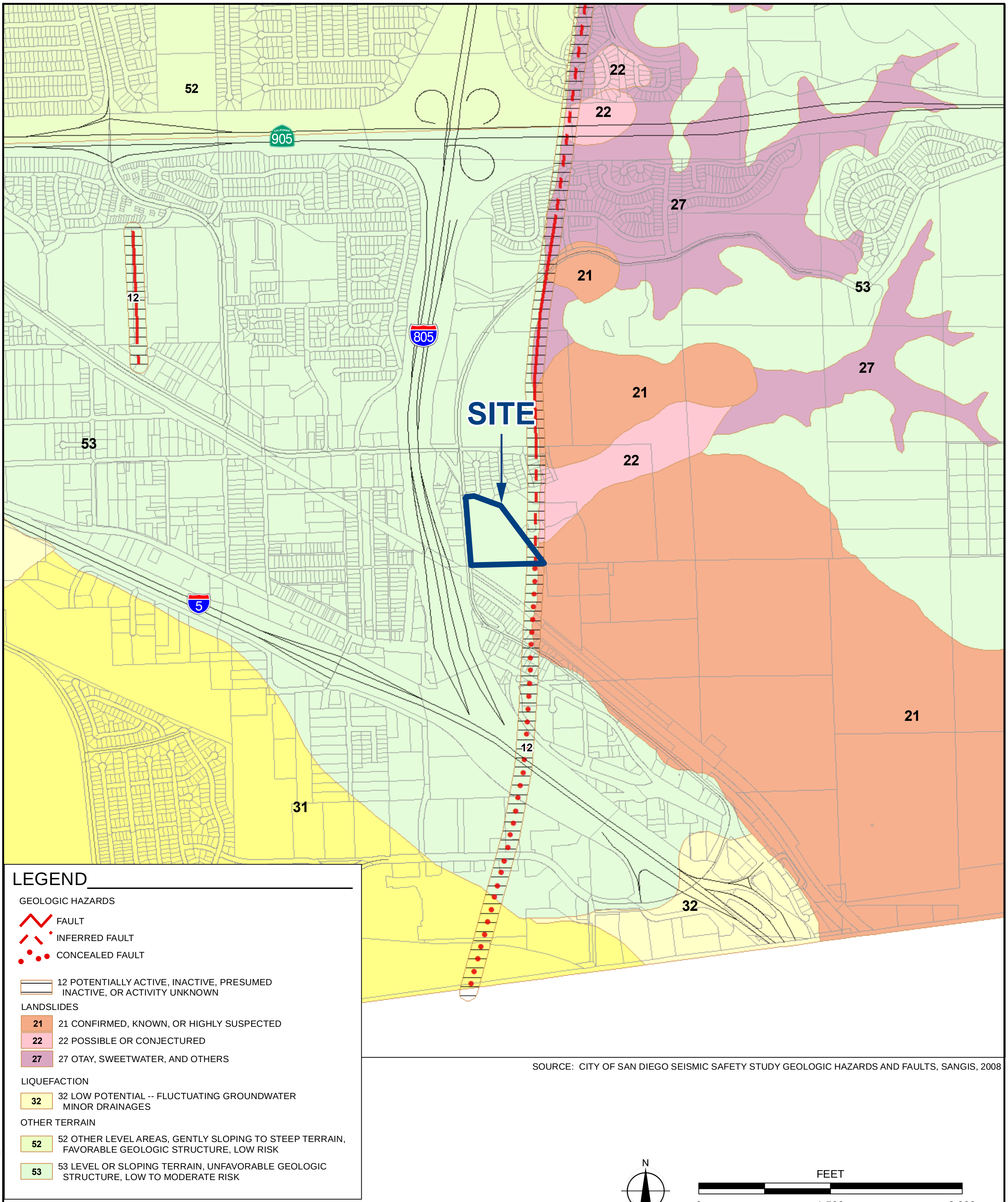

SOURCE: CITY OF SAN DIEGO SEISMIC SAFETY STUDY GEOLOGIC HAZARDS AND FAULTS, SANGIS, 2008

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

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FIGURE 7

GEOLOGIC HAZARDS

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA

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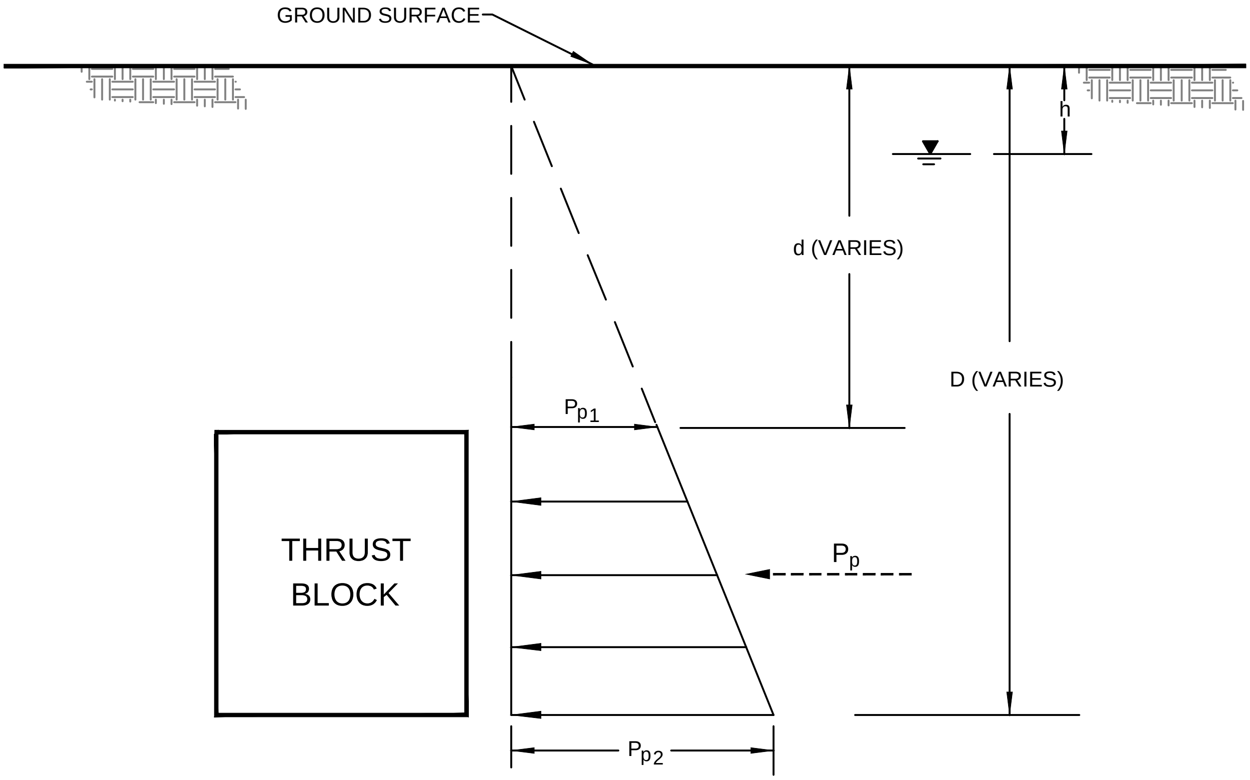

NOTES:

1. GROUNDWATER BELOW BLOCK
   $P_p = 175\ (D^2 - d^2)$ lb/ft
2. GROUNDWATER ABOVE BLOCK
   $P_p = 1.5\ (D - d)[124.8h + 57.7\ (D+d)]$ lb/ft
3. ASSUMES BACKFILL IS GRANULAR MATERIAL
4. ASSUMES THRUST BLOCK IS ADJACENT TO COMPETENT MATERIAL
5. D, d AND h ARE IN FEET
6. ▼ GROUNDWATER TABLE

NOT TO SCALE

109751009 DETAIL FIGURES.DWG AOB

FIGURE 8

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THRUST BLOCK LATERAL EARTH PRESSURE DIAGRAM

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA
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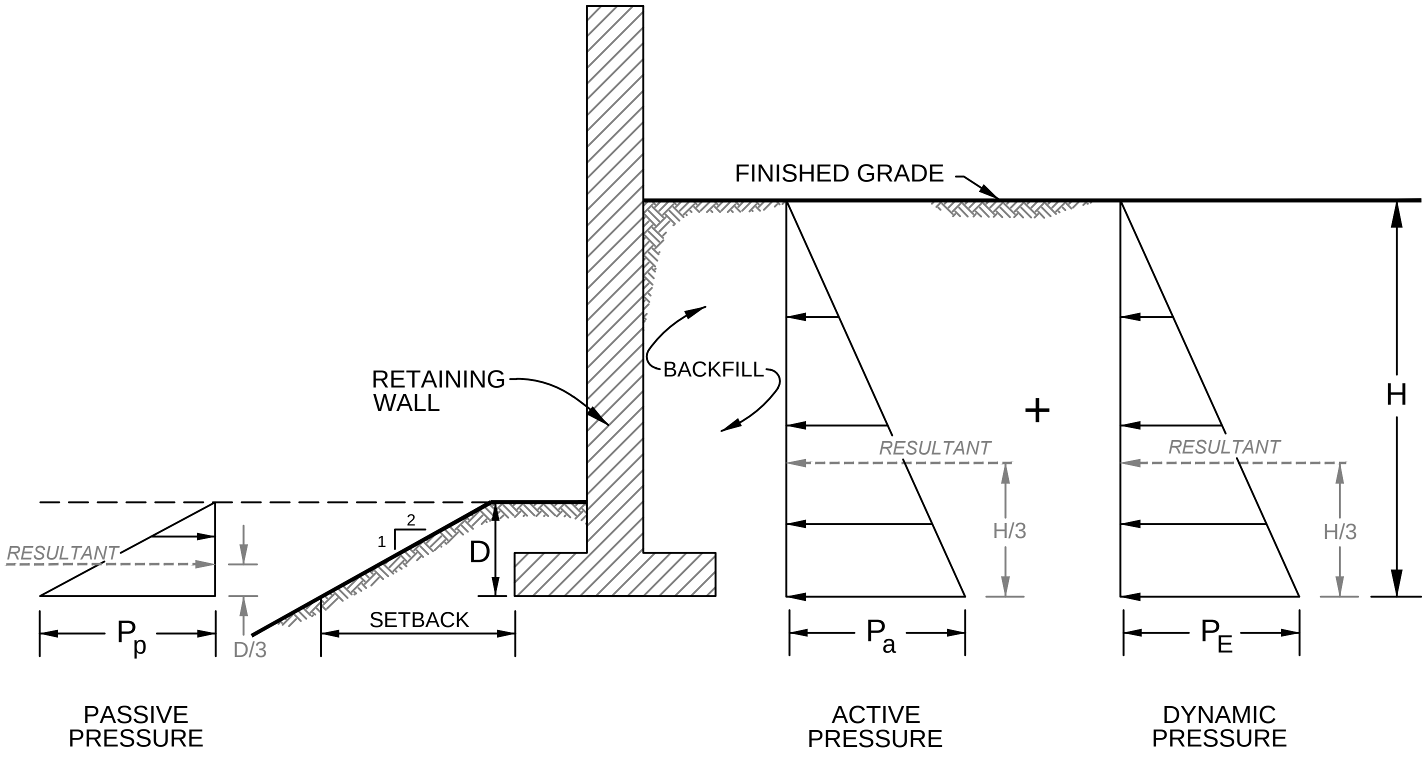

NOTES:

1. ASSUMES NO HYDROSTATIC PRESSURE BUILD-UP BEHIND THE RETAINING WALL
2. GRANULAR BACKFILL MATERIALS SHOULD BE USED FOR RETAINING WALL BACKFILL
3. DRAINS AS RECOMMENDED IN THE RETAINING WALL DRAINAGE DETAIL SHOULD BE INSTALLED BEHIND THE RETAINING WALL
4. DYNAMIC LATERAL EARTH PRESSURE IS BASED ON A MAPPED DESIGN PEAK GROUND ACCELERATION OF 0.485 g
5. P_E IS CALCULATED IN ACCORDANCE WITH THE RECOMMENDATIONS OF AGUSTI & SITAR (2013)
6. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
7. H AND D ARE IN FEET
8. SETBACK SHOULD BE IN ACCORDANCE WITH THE CURRENT VERSION OF THE APPLICABLE BUILDING CODE

RECOMMENDED GEOTECHNICAL DESIGN PARAMETERS

Lateral Earth Pressure	Equivalent Fluid Pressure ($lb/ft^2/ft$)(1)	
P_a	Level Backfill with Granular Soils (2)	2H:1V Sloping Backfill with Granular Soils (2)
	40 H	65 H
P_E	15 H	25 H
P_p	Level Ground	2H:1V Descending Ground
	350 D	130 D

NOT TO SCALE

109751009 DETAIL FIGURES.DWG AOB

FIGURE 9

LATERAL EARTH PRESSURES FOR YIELDING RETAINING WALLS

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2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA
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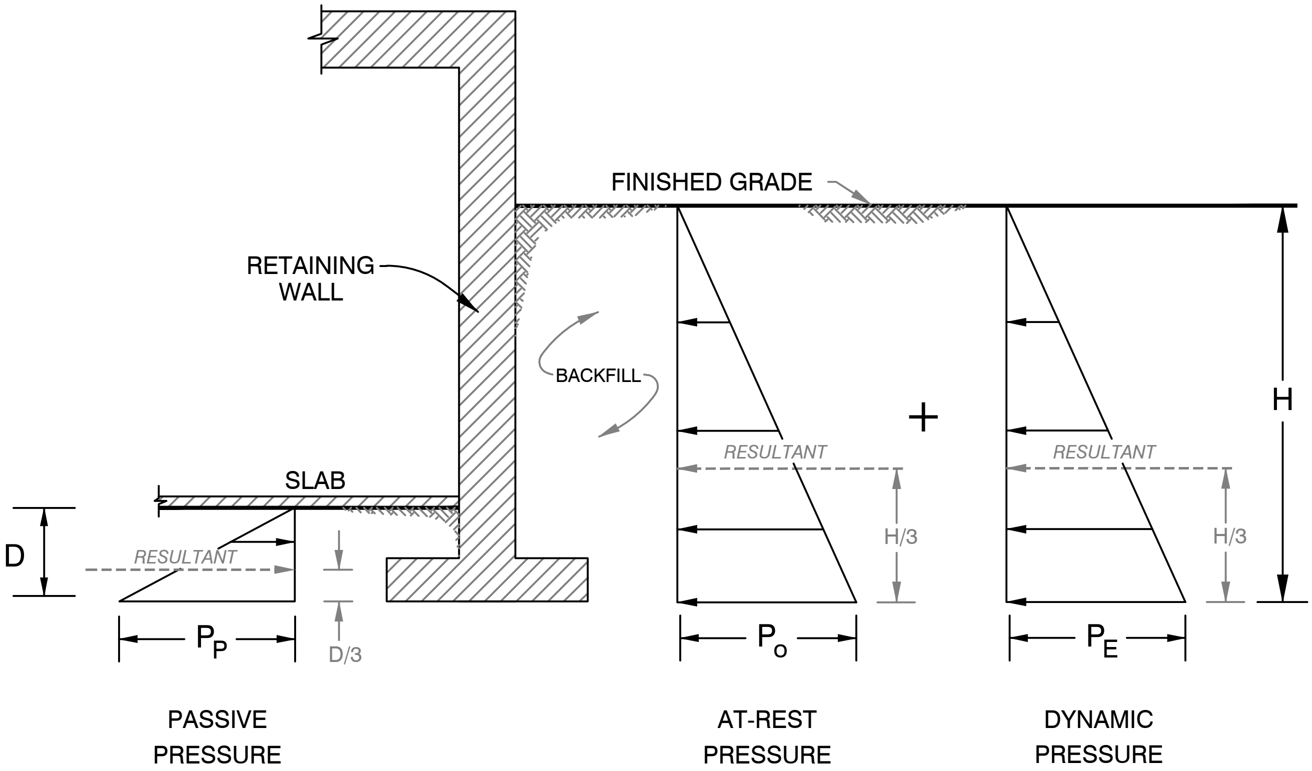

NOTES:

1. ASSUMES NO HYDROSTATIC PRESSURE BUILD-UP BEHIND THE RETAINING WALL
2. GRANULAR BACKFILL MATERIALS SHOULD BE USED FOR RETAINING WALL BACKFILL
3. DRAINS AS RECOMMENDED IN THE RETAINING WALL DRAINAGE DETAIL SHOULD BE INSTALLED BEHIND THE RETAINING WALL
4. DYNAMIC LATERAL EARTH PRESSURE IS BASED ON A MAPPED DESIGN PEAK GROUND ACCELERATION OF 0.485 g
5. P_E IS CALCULATED IN ACCORDANCE WITH THE RECOMMENDATIONS OF AGUSTI & SITAR (2013).
6. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
7. H AND D ARE IN FEET

RECOMMENDED GEOTECHNICAL DESIGN PARAMETERS

Lateral Earth Pressure	Equivalent Fluid Pressure (lb/ft^2/ft)$^{(1)}$	
P_O	Level Backfill with Granular Soils $^{(2)}$	2H:1V Sloping Backfill with Granular Soils $^{(2)}$
	60 H	87 H
P_E	24 H	25 H
P_p	Level Ground	2H:1V Descending Ground
	350 D	130 D

NOT TO SCALE

FIGURE 10

LATERAL EARTH PRESSURES FOR RESTRAINED RETAINING WALLS

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA
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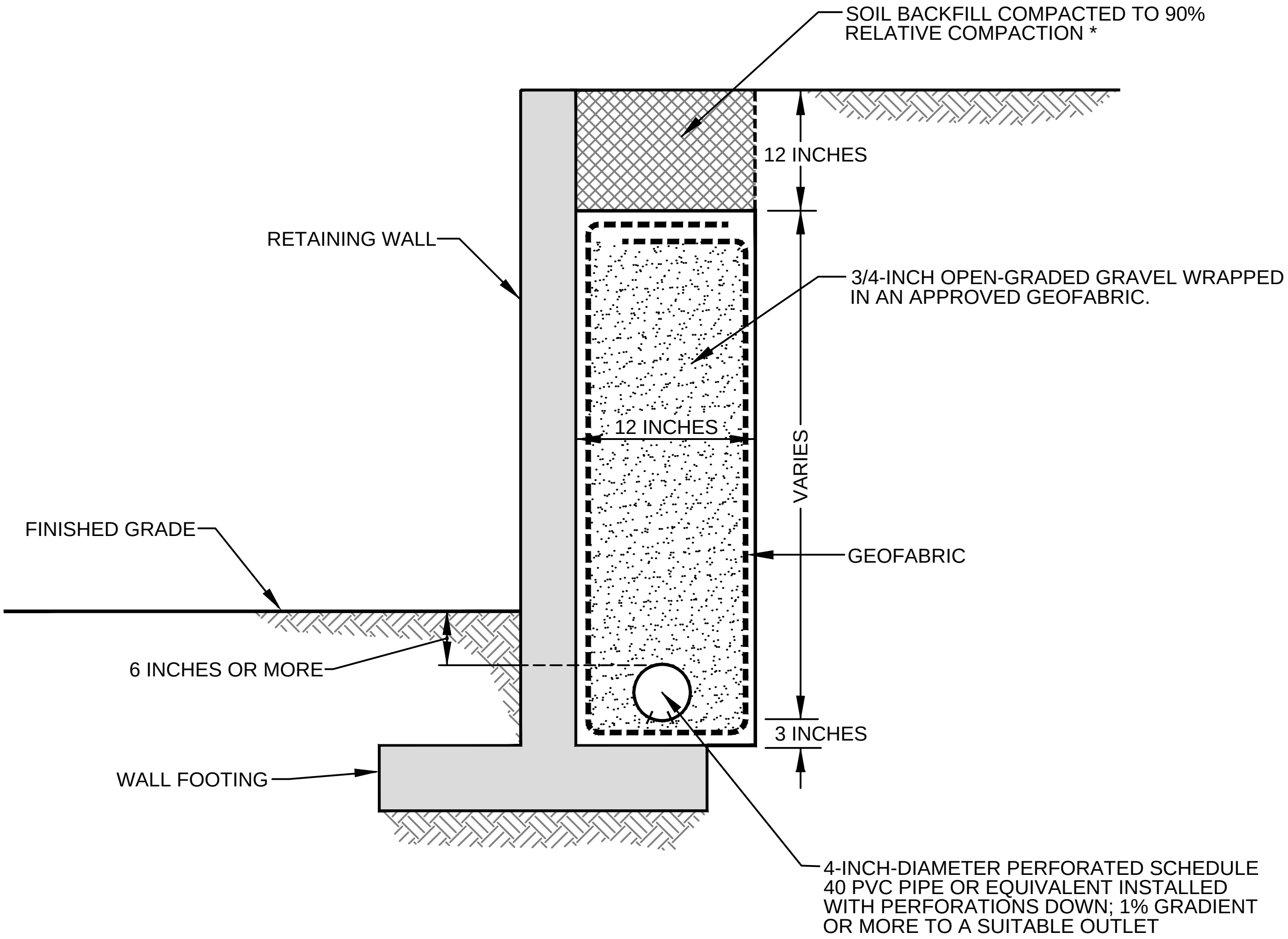

*BASED ON ASTM D1557

109751009 DETAIL FIGURES.DWG AOB

NOT TO SCALE

FIGURE 11

RETAINING WALL DRAINAGE DETAIL

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2312 EAST BEYER BOULEVARD
SAN DIEGO, CALIFORNIA
109751009 I 2/25

APPENDIX A

Previous Exploration Logs, Laboratory Testing, and Infiltration Testing (Ninyo & Moore, 2012, 2013, and 2023)

DATE DRILLED 1/05/12 BORING NO. B-1
GROUND ELEVATION 128' ± (MSL) SHEET 1 OF 1
METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)
DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"
SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■							<u>ASPHALT CONCRETE:</u> Approximately 3 inches thick.
	■						SM	<u>FILL:</u> Brown, medium dense, damp, silty fine SAND; trace clay and gravel.
	■						SM	<u>OLD PARALIC DEPOSITS:</u> Brown to reddish brown, medium dense, damp, silty fine SAND; trace to few clay.
5		■	28	9.4	119.0			
10		◣	41					Very dense.
								<u>OTAY FORMATION:</u> Brown to light brown, damp, moderately cemented, silty fine to medium-grained SANDSTONE; trace gravel; iron staining.
15		■	59	10.3	118.5			
								Total Depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20								

Ninyo & Moore

BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-1

DATE DRILLED 1/05/12 BORING NO. B-2

GROUND ELEVATION 127' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								ASPHALT CONCRETE: Approximately 3.5 inches thick.
								OTAY FORMATION: Brown to light brown, damp, moderately cemented, clayey SANDSTONE with gravel (up to 2 inches in diameter).
5			45	8.7	116.3			
10			55					Moderately to strongly cemented.
								Light brown, damp, moderately cemented, clayey CONGLOMERATE with sand and trace cobbles.
15			50/2"					Strongly cemented.
								Total Depth = 16.1 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20								

Ninyo & Moore

BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-2

DATE DRILLED 1/05/12 BORING NO. B-3

GROUND ELEVATION 122' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						■		<u>ASPHALT CONCRETE:</u> Approximately 4.5 inches thick.
	■					▒		<u>SAN DIEGO FORMATION:</u> Yellowish gray to light gray, damp, moderately cemented, silty fine-grained SANDSTONE; trace gravel; friable.
5		■	50/3"	9.8	99.1	▒		Strongly cemented.
						▒		@ 7.5' to 9': Cobble layer.
						▒		Yellowish brown, weakly to moderately cemented, silty medium-grained SANDSTONE; friable.
10		◣	51			▒		Moderately cemented.
15		◣	70			▒		Moderately to strongly cemented; trace gravel.
								Total Depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20								

Ninyo & Moore

BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-3

DATE DRILLED 1/05/12 BORING NO. B-4

GROUND ELEVATION 124' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						■		ASPHALT CONCRETE: Approximately 3 inches thick.
	■					▨	SC	FILL: Brown, moist to damp, medium dense, clayey SAND; trace gravel.
	■					▨	SC	OLD PARALIC DEPOSITS: Brown, damp, medium dense, clayey fine SAND; trace gravel; few silt.
5		■	28			▨		Dense.
								Total Depth = 6.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
10								
15								
20								

Ninyo & Moore

BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-4

DATE DRILLED 1/05/12 BORING NO. B-5

GROUND ELEVATION 124' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								ASPHALT CONCRETE: Approximately 5 inches thick.
							SM	FILL: Brown, moist to damp, medium dense, silty fine to medium SAND; trace roots and gravel.
							SM	OLD PARALIC DEPOSITS: Reddish brown, moist, silty fine SAND; trace clay.
								OTAY FORMATION: Brown to light brown, damp, moderately cemented, silty fine-grained SANDSTONE; trace gravel and clay.
5								
			50/6"					Moderately to strongly cemented.
10								Trace to few gravel.
			62					
								Total Depth = 11.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-5

DATE DRILLED 1/05/12 BORING NO. B-6

GROUND ELEVATION 122' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						■		ASPHALT CONCRETE: Approximately 4 inches thick.
						⁞		OTAY FORMATION: Brown to light brown, moist, moderately cemented, clayey fine-grained SANDSTONE with gravel; trace cobble at 2 feet.
5		☒	50/2"					No recovery due to cobble.
10		■	39					Light gray; silty; trace gravel; friable.
15		■	50/3"	8.0	95.2			Strongly cemented.
								Total Depth = 15.8 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-6

DATE DRILLED 1/06/12 BORING NO. B-7

GROUND ELEVATION 122' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						■		CONCRETE: Approximately 2 inches thick.
	■					▨	SC	OLD PARALIC DEPOSITS: Reddish brown, moist, loose to medium dense, clayey fine to medium SAND.
	■					▨		@ 2.5': Cobbles (up to 5.5 inches in diameter).
	■					▨		@ 3' to 4': Wet; minor seepage.
	■					▨		Brown to reddish brown; medium dense; little silt.
5		◣	15			▨		
10		■	22	11.3	116.6	▨		Trace gravel.
								Total Depth = 11.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/06/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-7

DATE DRILLED 1/06/12 BORING NO. B-8
GROUND ELEVATION 120' ± (MSL) SHEET 1 OF 1
METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)
DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"
SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■					▨	SM	FILL: Brown to dark brown, moist, medium dense, silty fine SAND; trace clay; few roots.
	■					▨	SC	OLD PARALIC DEPOSITS: Brown to reddish brown, moist, medium dense, clayey fine SAND; trace gravel.
5		▼	19			▨		
10		■	47	19.1	110.1	▨		Dense; more clay.
						▨	SM+ML	Brown, moist, loose to medium dense, silty fine SAND interlayered with sandy SILT; fine sand; friable.
15		▼	10			▨		
								Total Depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/06/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-8

DATE DRILLED 1/05/12 BORING NO. B-9

GROUND ELEVATION 122' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						▥	SM	FILL: Brown, moist, loose to medium dense, silty SAND; few roots; trace gravel.
	■					▨	SC	OLD PARALIC DEPOSITS: Reddish brown, moist, medium dense, clayey SAND; few gravel to cobbles (up to to 4 inches in diameter).
	■					▦		OTAY FORMATION: Light reddish brown to gray, damp, moderately cemented, silty to clayey SANDSTONE.
5		■	50/5"	15.3	111.0	▦		
10		◣	72			▦		Fewer gravel.
						▦		Few cobbles.
15		◣	63			▦		
								Total Depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-9

DATE DRILLED 1/05/12 BORING NO. B-10

GROUND ELEVATION 120' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■					▨		OTAY FORMATION: Light gray and yellow, damp, moderately cemented, silty fine-grained SANDSTONE; trace fine gravel. Cobbles from 2 to 5 feet.
5		◣	56			▨		
								Total Depth = 6.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-10

DATE DRILLED 1/06/12 BORING NO. B-11

GROUND ELEVATION 120' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						■		<u>ASPHALT CONCRETE:</u> Approximately 4.5 inches thick.
						▨	SC	<u>OLD PARALIC DEPOSITS:</u> Brown to reddish brown, moist, medium dense, clayey fine to medium SAND; trace gravel and cobble.
						▨		Damp.
5		◣	23			▨		Black mottling; dense.
						▥	SM	Brown, damp, dense, silty fine SAND; trace gravel; scattered black mottling and iron staining.
10		■	50/5"	12.5	106.4	▥		Very dense.
								Total Depth = 10.9 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/06/12. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-11

DATE DRILLED 1/06/12 BORING NO. B-12

GROUND ELEVATION 118' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	PLAYGROUND SAND: Approximately 1 inch.
								OLD PARALIC DEPOSITS: Reddish brown, moist, medium dense, clayey fine to medium SAND; trace to few gravel; trace cobble.
5			16					Some fine to coarse gravel.
							SM	Brown, damp, medium dense, silty SAND; trace clay.
10			16					
								Total Depth = 11.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/06/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-12

DATE DRILLED 1/06/12 BORING NO. B-13
GROUND ELEVATION 116' ± (MSL) SHEET 1 OF 1
METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)
DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"
SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	<u>OLD PARALIC DEPOSITS:</u> Brown to reddish brown, moist, medium dense, clayey SAND; few gravel; trace cobble.
5								Fine gravel.
			17					
								Damp; trace gravel.
								Very dense.
			42					
							SM	Reddish brown, damp, very dense, silty medium SAND.
								Total Depth = 9.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/06/12. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-13

DATE DRILLED 1/06/12 BORING NO. B-14

GROUND ELEVATION 116' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						▨	SC	<u>FILL:</u> Reddish brown and brown, moist, loose to medium dense, clayey SAND; trace to few gravel; trace roots.
5		◣	11			▨		Medium dense.
10	■	■	18	16.0	104.4	▨	SC	<u>OLD PARALIC DEPOSITS:</u> Brown, damp, medium dense, clayey SAND; trace gravel.
						▥	SM	Reddish brown, damp, medium dense, silty medium SAND; trace gravel.
15		◣	26			▥		Dense.
								Total Depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/06/12. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-14

DATE DRILLED 1/06/12 BORING NO. B-15

GROUND ELEVATION 116' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■					▨	SC	FILL: Reddish brown, brown, and light brown, moist, medium dense, clayey fine SAND; trace to few gravel.
5		■	22			▨		Fine to coarse gravel (up to 1.5 inches in diameter).
						▨	SC	OLD PARALIC DEPOSITS: Brown, damp, medium dense, clayey SAND.
						▥	SM	Reddish brown, damp, dense, silty medium SAND; trace gravel.
10		■	42			▥		Very dense.
								Total Depth = 11.5 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/06/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-15

DATE DRILLED 2/09/12 BORING NO. B-16

GROUND ELEVATION 114' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING Hand Auger

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, moist, loose, silty SAND.
								ASPHALT CONCRETE: Approximately 3 inches thick.
	■						SC	FILL: Brown, moist, stiff, clayey SAND; scattered gravel and cobbles.
5							SM	Brown, moist to wet, medium dense, silty SAND with clay; scattered gravel and cobbles. Hand auger refusal on gravel/cobbles.
								Total Depth = 6 feet. Groundwater not encountered during drilling. Backfilled with soil shortly after drilling on 2/09/12. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-16

DATE DRILLED 1/05/12 BORING NO. IT-1

GROUND ELEVATION 116' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (CME-75) (Baja Exploration)

DRIVE WEIGHT 140 lbs. (Auto-Trip) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, moist, loose to medium dense, silty SAND; few roots.
							SC	OLD PARALIC DEPOSITS: Reddish brown, moist, medium dense, clayey SAND; few coarse gravel (up to 3 inches in diameter).
								Total Depth = 2 feet. Groundwater not encountered during drilling. Backfilled with bentonite and patched with black-dyed concrete shortly after drilling on 1/05/12. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254001	3/12	A-17

DATE DRILLED 2/4/13 BORING NO. B-17
GROUND ELEVATION 116' ± (MSL) SHEET 1 OF 2
METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)
DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"
SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						▨	SC	FILL: Reddish brown and grayish brown, moist, loose to medium dense, clayey SAND; few gravel, trace cobble.
5		■	22			▨	SC	OLD PARALIC DEPOSITS: Reddish brown, moist, medium dense, clayey SAND; few gravel; trace carbonate deposits.
10		◤	32			▨		Dense.
						▤	SM	Reddish brown, damp, medium dense, silty, medium to coarse SAND.
15		■	38	3.6	113.5	▤		
						▤		OTAY FORMATION: Grayish brown, moist, weakly indurated, silty CLAYSTONE; few fine sand; scattered carbonate deposits.
		◤	22			▤		
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BORING LOG
BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254002	3/13	A-18

DATE DRILLED 2/4/13 BORING NO. B-17

GROUND ELEVATION 116' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20								Total Depth = 20.0 feet. No groundwater encountered. Backfilled with soil cuttings and bentonite chips shortly after drilling on 2/4/13. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254002	3/13	A-19

DATE DRILLED 2/4/13 BORING NO. B-18

GROUND ELEVATION 116' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■					▨	SC	FILL: Grayish brown, damp to moist, medium dense, clayey SAND; few gravel.
	■					▨		Reddish brown.
	■					▨	SC	OLD PARALIC DEPOSITS: Reddish brown, damp, medium dense, clayey SAND; scattered gravel.
5		■	30			▦	SM	Brown, damp, medium dense, silty fine SAND.
10		◥	17			▦		Reddish brown; fine to coarse sand; scattered gravel.
15		◥	30			▦		Dense; friable.
								Total Depth = 16.5 feet. No groundwater encountered. Backfilled with soil cuttings and bentonite chips shortly after drilling on 2/4/13. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254002	3/13	A-20

DATE DRILLED 2/4/13 BORING NO. B-19

GROUND ELEVATION 117' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	FILL: Grayish brown and reddish brown, moist, medium dense, clayey SAND; few gravel; trace cobble; scattered asphalt debris.
							SC	OLD PARALIC DEPOSITS: Reddish brown, damp to moist, medium dense to dense, clayey SAND; scattered gravel.
5		▼	43				SM	Reddish brown, damp, very dense, silty SAND; trace clay; black mottling.
10		☒	50/3"					
								Total Depth = 10.25 feet. No groundwater encountered. Backfilled with soil cuttings and bentonite chips shortly after drilling on 2/4/13. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254002	3/13	A-21

DATE DRILLED 2/4/13 BORING NO. B-20

GROUND ELEVATION 118' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
	Bulk	Driven						
0						▨	SC	OLD PARALIC DEPOSITS: Reddish brown, moist, medium dense, clayey SAND; some gravel; trace cobble; upper 1 foot disturbed.
5		■	39					Grayish brown; scattered carbonate deposits.
10		◢	60					Reddish brown; damp; very dense; black mottling.
						▦	SM	Reddish brown to grayish brown, damp, very dense, silty medium to coarse SAND; scattered gravel.
15		■	79	7.8	113.8			
								Total Depth = 16.5 feet. No groundwater encountered. Backfilled with soil cuttings and bentonite chips shortly after drilling on 2/4/13. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254002	3/13	A-22

DATE DRILLED 2/4/13 BORING NO. B-21
GROUND ELEVATION 119' ± (MSL) SHEET 1 OF 1
METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)
DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"
SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						▨	SC	FILL: Grayish brown, moist, loose to medium dense, clayey SAND; scattered gravel and asphalt debris.
						▦	SM	OLD PARALIC DEPOSITS: Reddish brown to grayish brown, damp to moist, medium dense to dense, silty SAND; little clay; scattered fine gravel.
5		■	50/4"					Very dense.
10		◣	78					Brown to light brown; damp; very dense; scattered carbonate deposits; black mottling.
								Total Depth = 11.5 feet. No groundwater encountered. Backfilled with soil cuttings and bentonite chips shortly after drilling on 2/4/13. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15								
20								

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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254002	3/13	A-23

DATE DRILLED 2/4/13 BORING NO. B-22

GROUND ELEVATION 122' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						▨	SC	<u>OLD PARALIC DEPOSITS:</u> Reddish brown to grayish brown, moist, medium dense to dense, clayey fine SAND; trace gravel; upper 1 foot disturbed.
5	■	■	27			▨		
10		■	50/6"	13.1	120.3	▨		Very dense; scattered carbonate deposits.
								Total Depth = 11.0 feet. No groundwater encountered. Backfilled with soil cuttings and bentonite chips shortly after drilling on 2/4/13. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15								
20								

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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254002	3/13	A-24

DATE DRILLED 2/4/13 BORING NO. B-23

GROUND ELEVATION 122' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk / Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	<u>OLD PARALIC DEPOSITS:</u> Light brown to brown, damp to moist, medium dense, silty fine SAND; trace gravel and clay.
						SC	Brown to reddish brown, damp, very dense, clayey SAND; scattered gravel.
5		50/2"					
10		50/2"					Cobble.
15		50/4"					<u>OTAY FORMATION:</u> Brown, damp to moist, moderately cemented, silty to clayey SANDSTONE; scattered gravel.
		92					
20							

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BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107254002	3/13	A-25

DATE DRILLED 2/4/13 BORING NO. B-23

GROUND ELEVATION 122' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (Baja Exploration) (CME 75)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY NMM LOGGED BY NMM REVIEWED BY RDH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20								Total Depth = 20.0 feet. No groundwater encountered. Backfilled with soil cuttings and bentonite chips shortly after drilling on 2/4/13. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
25								
30								
35								
40								

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C-76

BORING LOG

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

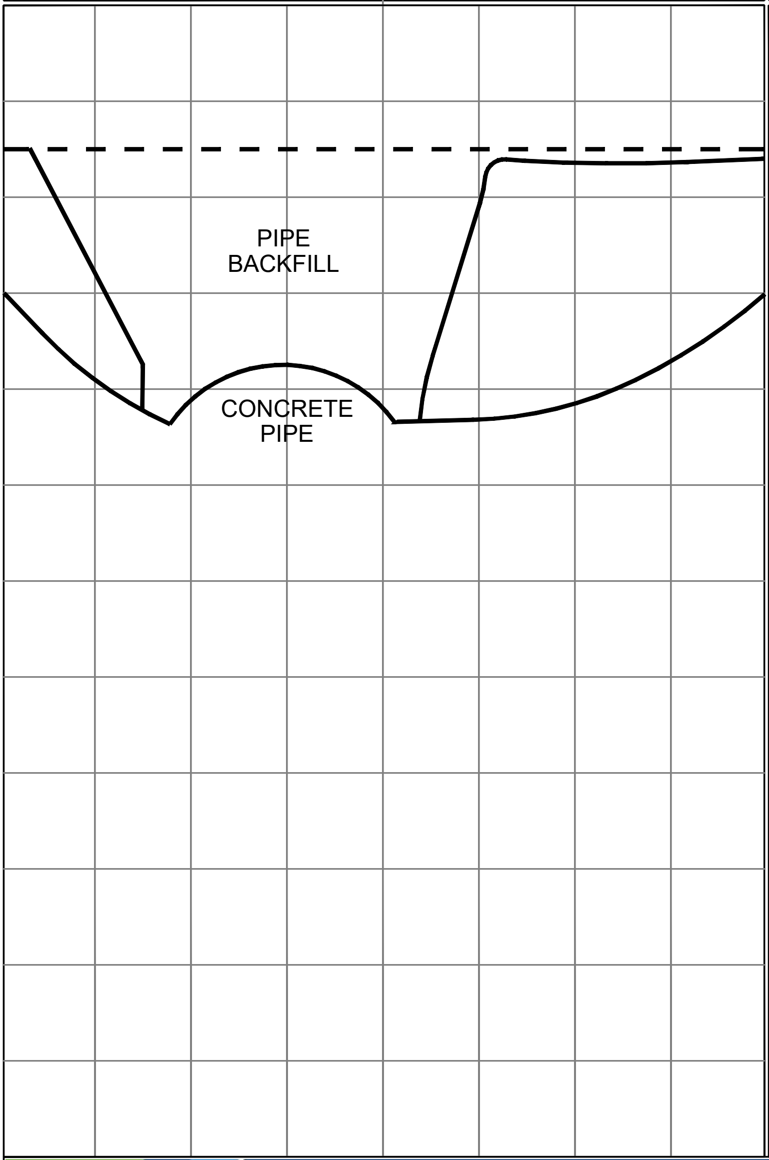
PROJECT NO.	DATE	FIGURE
107254002	3/13	A-26

TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/20/23 TEST PIT NO. TP-1
GROUND ELEVATION 130' ± (MSL) LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	<u>FILL:</u> Light brown, moist, medium dense, silty fine to medium SAND, few to little rounded to subrounded gravel and cobble up to 12 inches in diameter, scattered concrete and asphalt construction debris.
						SC	Reddish brown, moist, medium dense, clayey fine to medium SAND, trace rounded to subrounded gravel and cobble up to 4.5 inches in diameter.
2						SC	<u>OLD PARALIC DEPOSITS:</u> Reddish brown, moist, dense to very dense, clayey fine to medium SAND, few to little rounded to subrounded gravel and cobble up to 4.5 inches in diameter.
4							
							Total Depth = 4.5 feet. Groundwater not encountered. Backfilled on 10/20/23. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
6							
8							
10							
12							

SCALE = 1 in./2 ft.

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TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

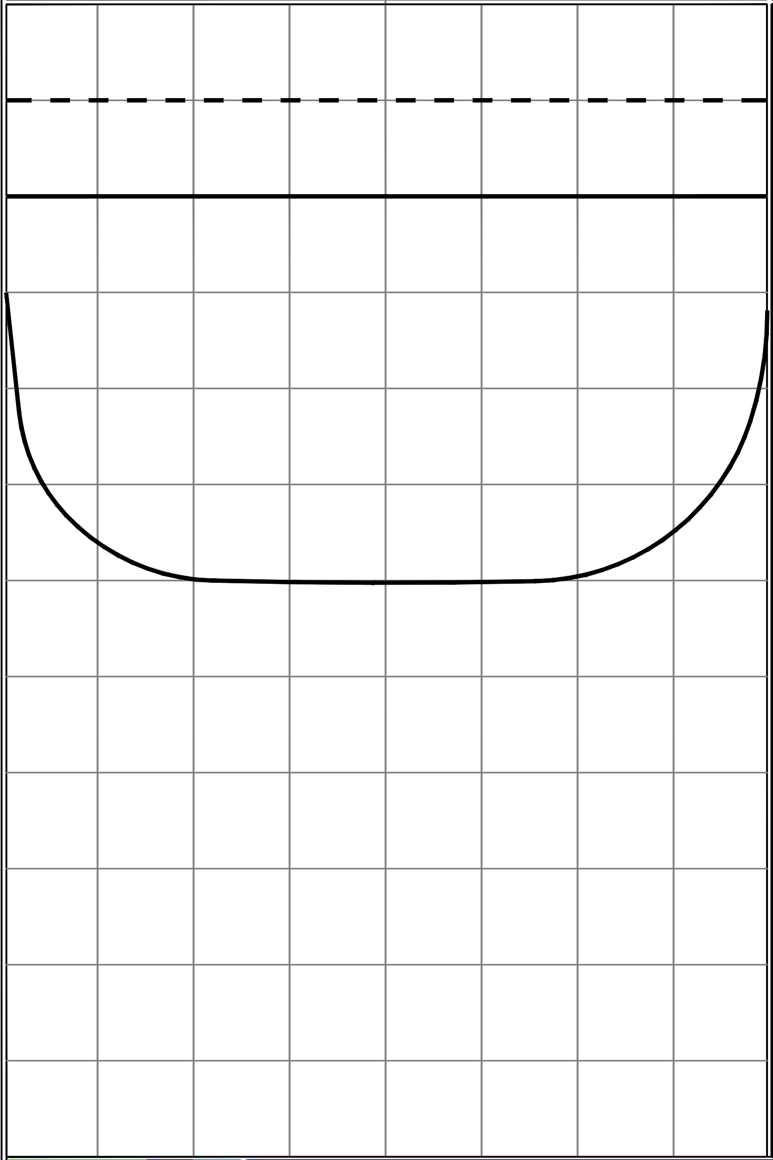
PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/20/23 TEST PIT NO. TP-2

GROUND ELEVATION 131' ± (MSL) LOGGED BY KWK

METHOD OF EXCAVATION Excavator

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL: Light brown, moist, medium dense, silty fine to medium SAND, few to little angular gravel, scattered cobble up to 6 inches in diameter, scattered concrete construction debris.
						SC	Reddish brown, moist, medium dense, clayey fine to medium SAND, few to little rounded to subrounded gravel and cobble up to 6 inches in diameter, scattered roots and rootlets.
2							OTAY FORMATION: Very light grayish brown, moist, moderately to strongly cemented, gravel to boulder CONGLOMERATE with fine to medium grained silty sand matrix, rounded to subrounded gravel, cobbles, and boulders up to 36 inches in diameter.
4							
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 10/20/23. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
8							
10							
12							

SCALE = 1 in./2 ft.

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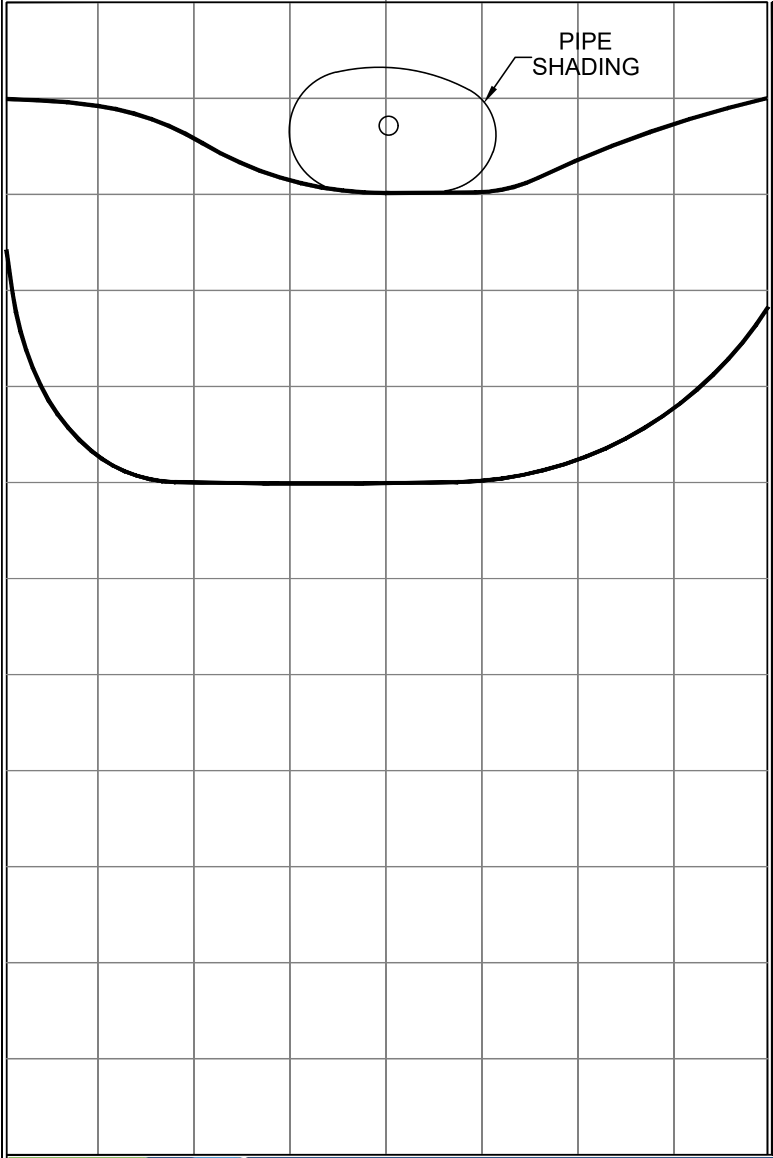
TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/20/23
TEST PIT NO. TP-3
GROUND ELEVATION 124' ± (MSL)
LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL: Yellowish brown, moist, medium dense, silty fine to medium SAND, scattered rounded to subrounded gravel and cobble up to 4 inches in diameter, scattered concrete construction debris, steel utility line present with light gray, moist, medium dense, poorly graded SAND bedding.
2						SC	OLD PARALIC DEPOSITS: Brown, moist, medium dense, clayey fine to medium SAND, scattered caliche blebs.
4							
							Total Depth = 5 feet. Groundwater not encountered. Backfilled on 10/20/23. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
6							
8							
10							
12							

SCALE = 1 in./2 ft.

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TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

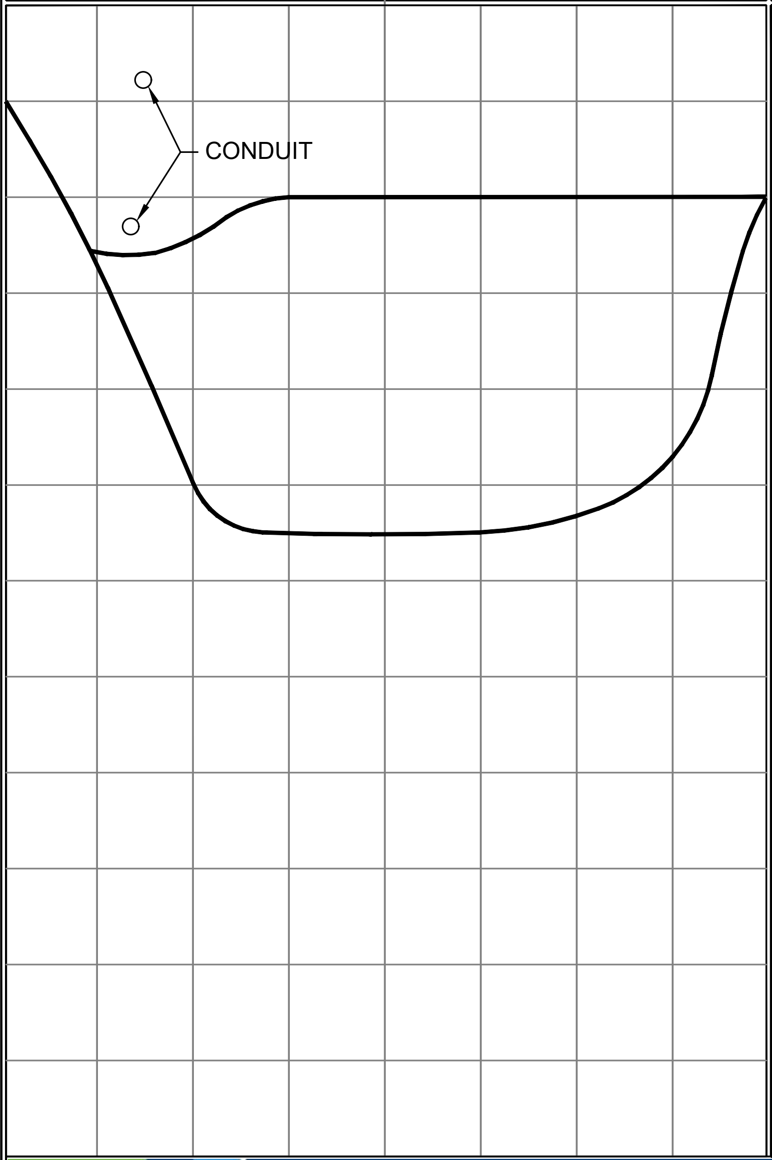
PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/19/23 TEST PIT NO. TP-4

GROUND ELEVATION 125' ± (MSL) LOGGED BY KWK

METHOD OF EXCAVATION Excavator

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SC	FILL: Light brown, moist, medium dense, clayey fine to medium SAND, few to little rounded to subrounded gravel, cobbles, and boulders up to 18 inches in diameter, scattered concrete construction debris.
2						GW	OLD PARALIC DEPOSITS: Yellowish brown, moist, dense, sandy fine to medium GRAVEL, rounded to subrounded gravel, scattered rounded to subrounded cobbles and boulders up to 24 inches in diameter.
4							
6							Total Depth = 5.5 feet. Groundwater not encountered. Backfilled on 10/19/23. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
8							
10							
12							

SCALE = 1 in./2 ft.

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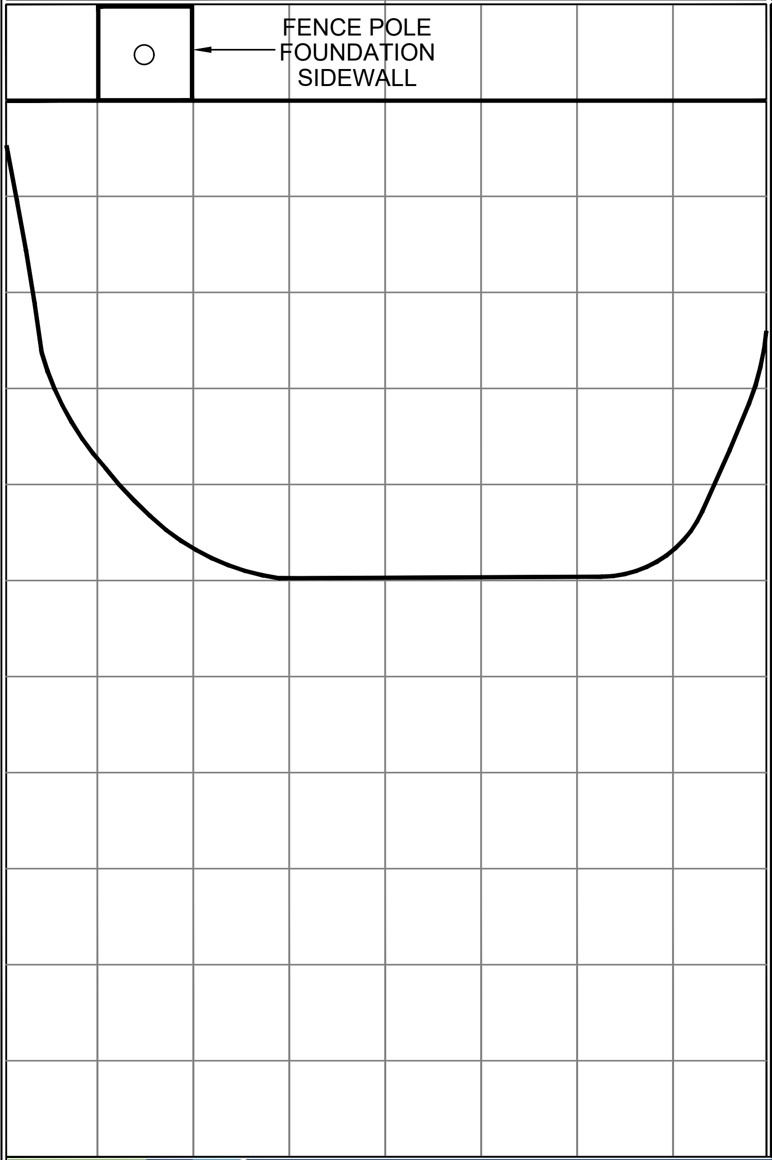
TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/20/23
TEST PIT NO. TP-5
GROUND ELEVATION 125' ± (MSL)
LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	<u>FILL:</u> Light brown, moist, medium dense, silty fine to medium SAND, few to little rounded to subrounded gravel and cobble up to 4 inches in diameter, scattered fence post concrete construction debris up to 4 feet long and 1 foot wide.
						SC	<u>OLD PARALIC DEPOSITS:</u> Light and yellowish brown, moist, medium dense to dense, clayey fine to medium SAND, scattered rounded to subrounded gravel and cobble up to 6 inches in diameter, scattered caliche stringers and blebs.
2							
4							
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 10/20/23. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
8							
10							
12							

SCALE = 1 in./2 ft.

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TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

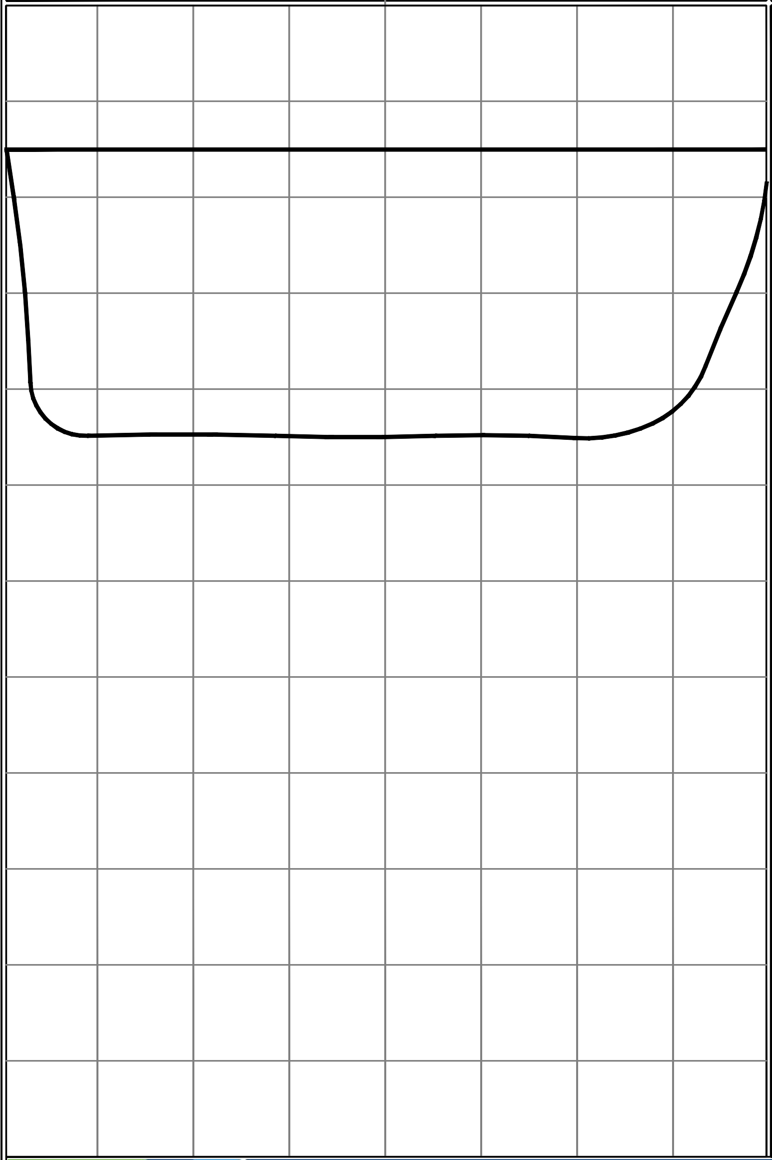
PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/20/23 TEST PIT NO. TP-6

GROUND ELEVATION 125' ± (MSL) LOGGED BY KWK

METHOD OF EXCAVATION Excavator

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL: Light brown, moist, medium dense, silty fine to medium SAND, few to little angular gravel and cobble up to 8 inches in diameter, scattered trash debris.
						SM	OLD PARALIC DEPOSITS: Reddish brown, moist, dense, silty fine to medium SAND, few to little rounded gravel and cobble up to 6 inches in diameter, trace iron oxide laminations and staining.
2							
4							
							Total Depth = 4.5 feet. Groundwater not encountered. Backfilled on 10/19/23. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
6							
8							
10							
12							

SCALE = 1 in./2 ft.

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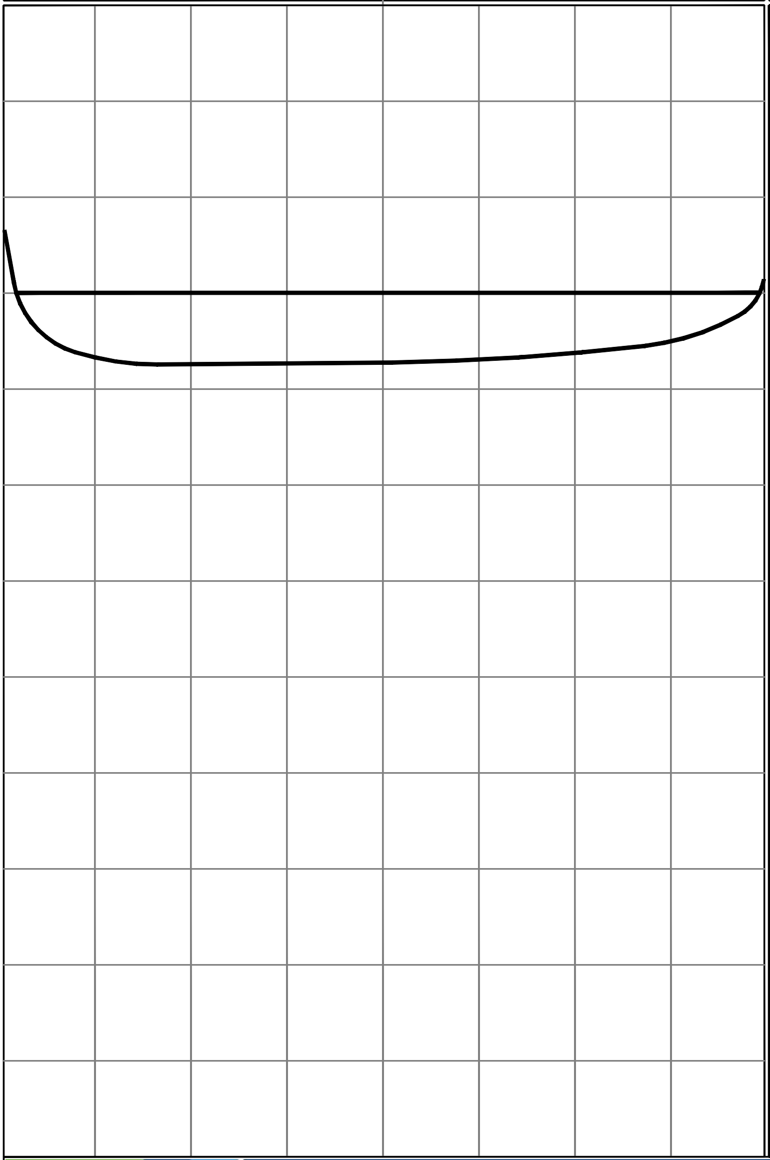
TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/19/23
TEST PIT NO. TP-7
GROUND ELEVATION 124' ± (MSL)
LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL: Light brown, moist, medium dense, silty fine to medium SAND, few to little angular gravel and cobble up to 6 inches in diameter.
2	■						
							OTAY FORMATION: White, moist, moderately cemented, silty fine to medium grained SANDSTONE with rounded to subrounded gravel and cobbles up to 7 inches in diameter.
4							Total Depth = 3.75 feet. Groundwater not encountered. Backfilled on 10/19/23.
6							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
8							
10							
12							

SCALE = 1 in./2 ft.

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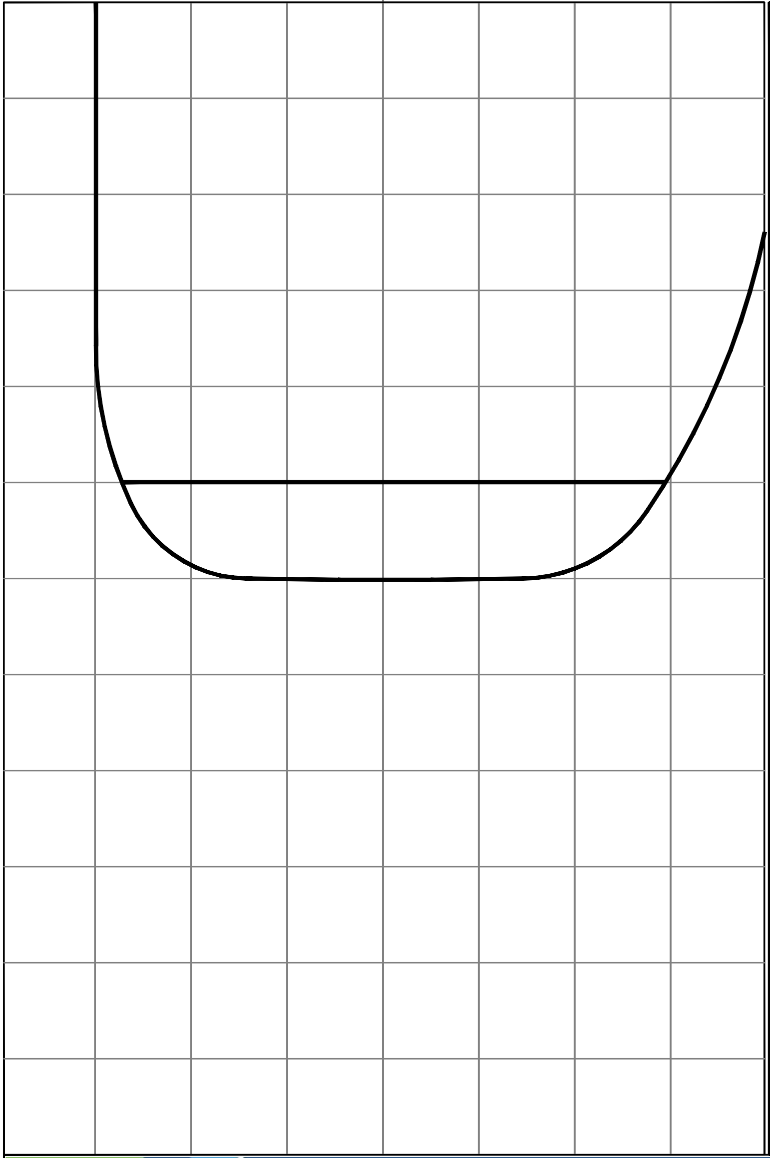
TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/19/23
TEST PIT NO. TP-8
GROUND ELEVATION 121' ± (MSL)
LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	<u>FILL:</u> Light brown, moist, medium dense, silty fine to medium SAND, few to little angular gravel and cobble up to 8 inches in diameter, scattered concrete construction debris up to 1 foot in diameter.
2	■						
4	■						
						SM	<u>OLD PARALIC DEPOSITS:</u> Reddish brown, moist, medium dense, silty fine to medium SAND, few to little rounded gravel, cobbles, and boulders up to 18 inches in diameter, scattered clay pockets.
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 10/19/23. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
8							
10							
12							

SCALE = 1 in./2 ft.

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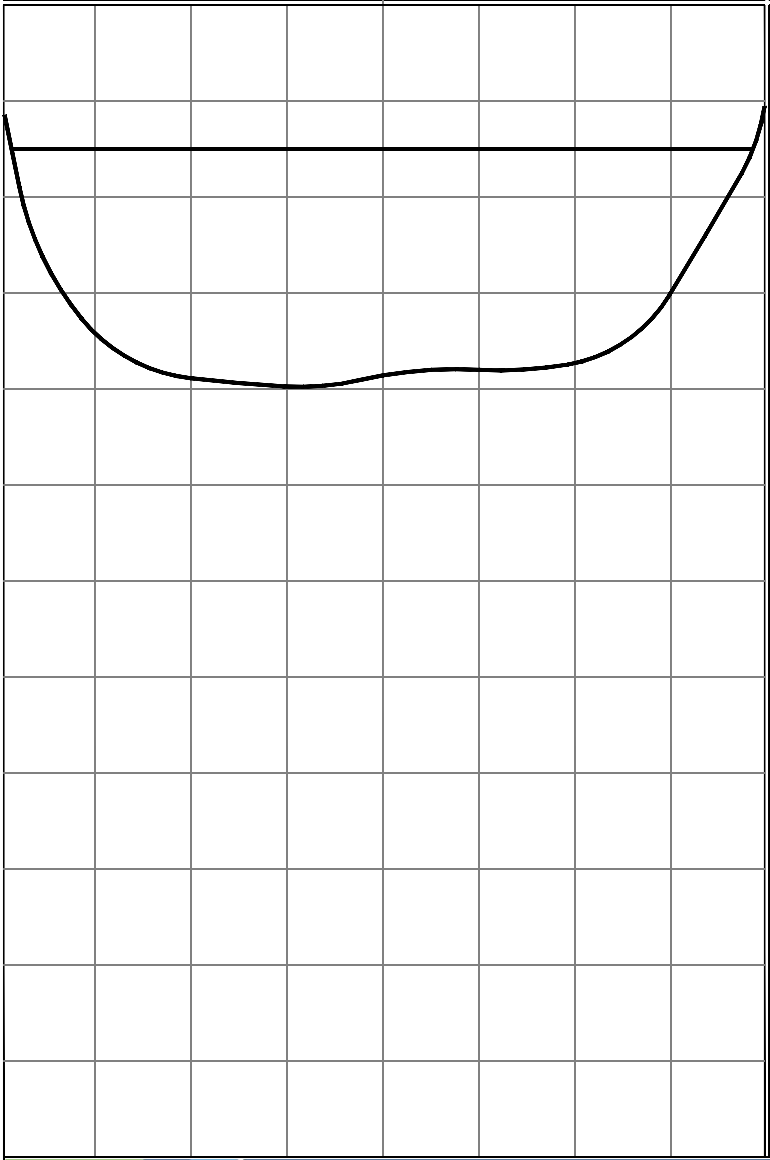
TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/20/23
TEST PIT NO. TP-9
GROUND ELEVATION 122' ± (MSL)
LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	<u>FILL:</u> Yellowish brown, moist, medium dense, silty fine to medium SAND, few to little angular gravel and cobble up to 12 inches in diameter.
2						GW	<u>OLD PARALIC DEPOSITS:</u> Yellow, moist, medium dense to dense, poorly graded GRAVEL with silt, with rounded to subrounded cobbles and boulders up to 18 inches in diameter.
4							Total Depth = 4 feet. Groundwater not encountered. Backfilled on 10/19/23. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
6							
8							
10							
12							

SCALE = 1 in./2 ft.

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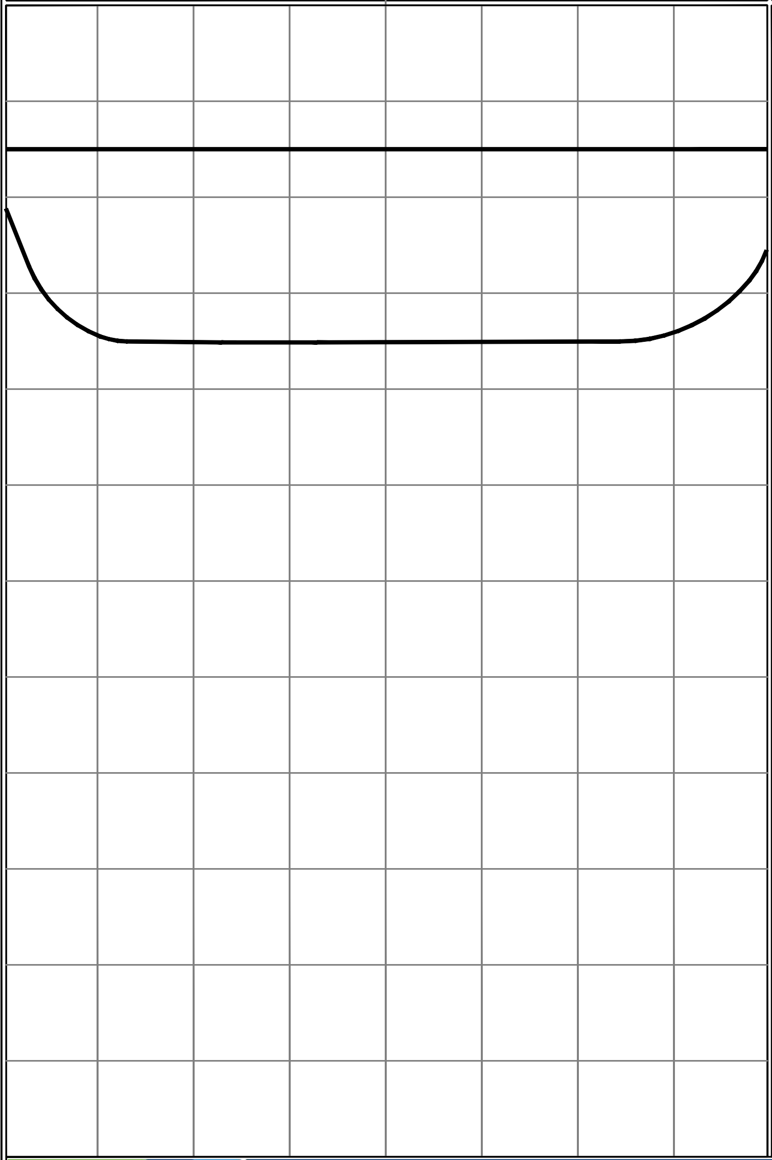
TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/19/23
TEST PIT NO. TP-10
GROUND ELEVATION 122' ± (MSL)
LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	<u>FILL:</u> Light brown, moist, medium dense, silty fine to coarse SAND, few to little angular to rounded gravel and cobble up to 8 inches in diameter, scattered asphalt and concrete construction debris up to 18 inches in diameter.
2						SC	<u>OLD PARALIC DEPOSITS:</u> Reddish brown, moist, medium dense, clayey fine to medium SAND, few to little rounded gravel and cobble up to 8 inches in diameter, scattered iron oxides laminations.
4							Total Depth = 3.5 feet. Groundwater not encountered. Backfilled on 10/19/23. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
6							
8							
10							
12							

SCALE = 1 in./2 ft.

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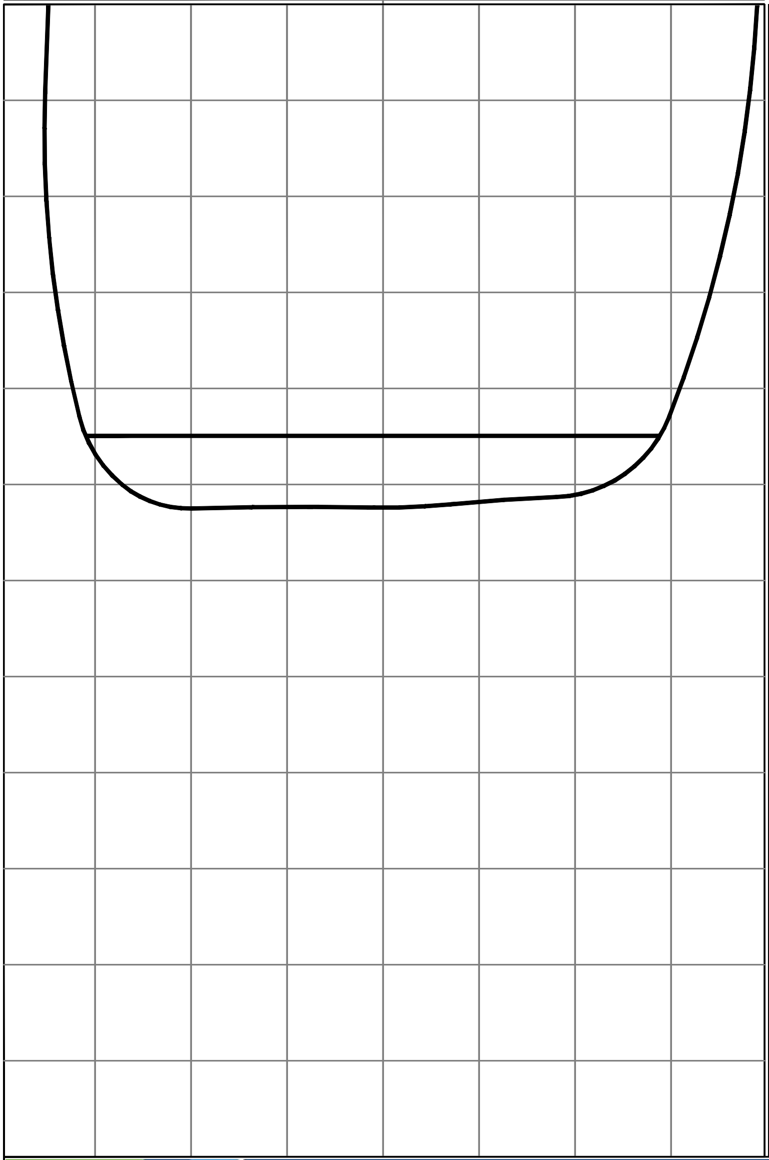
TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED: 10/19/23
TEST PIT NO.: TP-11
GROUND ELEVATION: 120' ± (MSL)
LOGGED BY: KWK
METHOD OF EXCAVATION: Excavator
LOCATION: See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL: Light brown, moist, medium dense, silty fine to medium SAND, few to little rounded to subrounded gravel and cobble up to 6 inches in diameter.
2	■						
4	■					SC	OLD PARALIC DEPOSITS: Reddish brown, moist, medium dense, clayey fine to medium SAND, few to little rounded gravel and cobble up to 10 inches in diameter.
6							
8							
10							
12							

Total Depth = 5.25 feet.
Groundwater not encountered.
Backfilled on 10/19/23.

Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE = 1 in./2 ft.

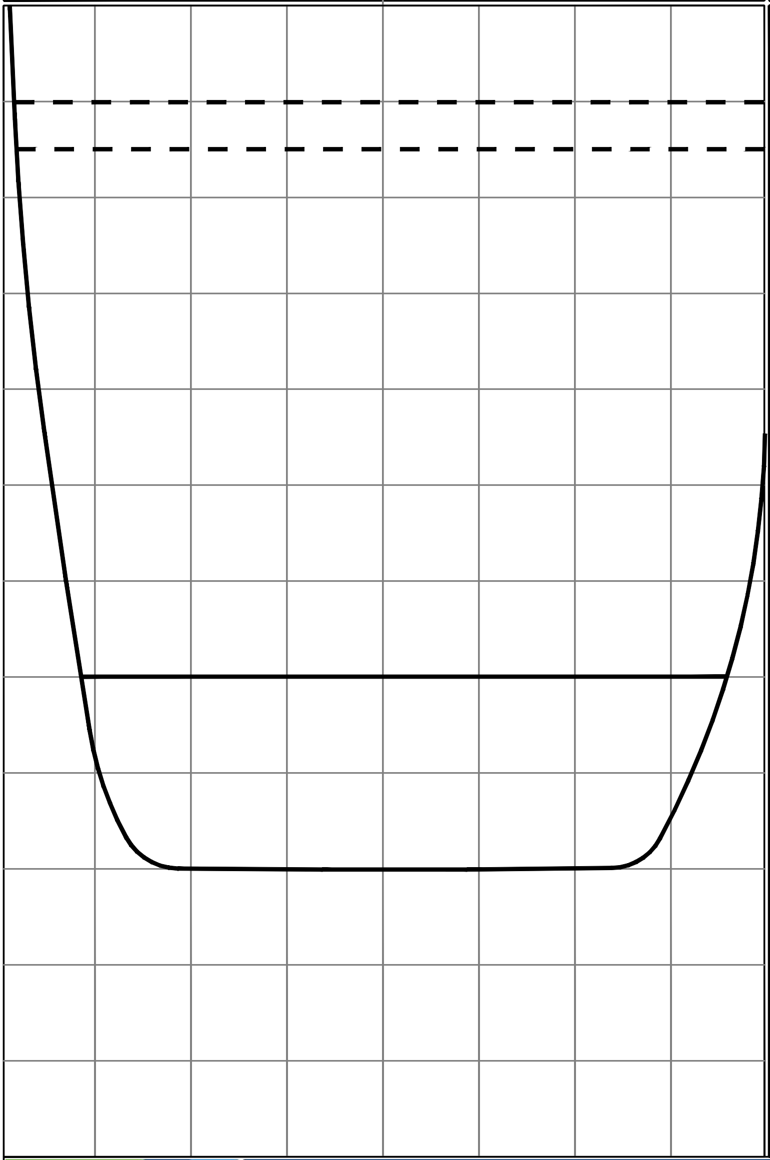
Ninyo & Moore

TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/19/23 TEST PIT NO. TP-12
GROUND ELEVATION 120' ± (MSL) LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						SM	FILL: Yellowish brown, moist, medium dense, silty fine to medium SAND, few to little rounded to subrounded gravel and cobble up to 1 inch in diameter.
						SP	Light gray, moist, loose to medium dense, poorly graded SAND.
2 4 6	■					SM	Yellowish brown, moist, medium dense, silty fine to medium SAND with rounded to subrounded gravel and cobble up to 1 foot in diameter. Scattered gravel and cobble.
8						SC	OLD PARALIC DEPOSITS: Reddish yellow, moist, medium dense, clayey fine to coarse SAND, few to little rounded gravel, scattered pinhole porosity.
10 12							Total Depth = 9 feet. Groundwater not encountered. Backfilled on 10/19/23. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE = 1 in./2 ft.

Ninyo & Moore

TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

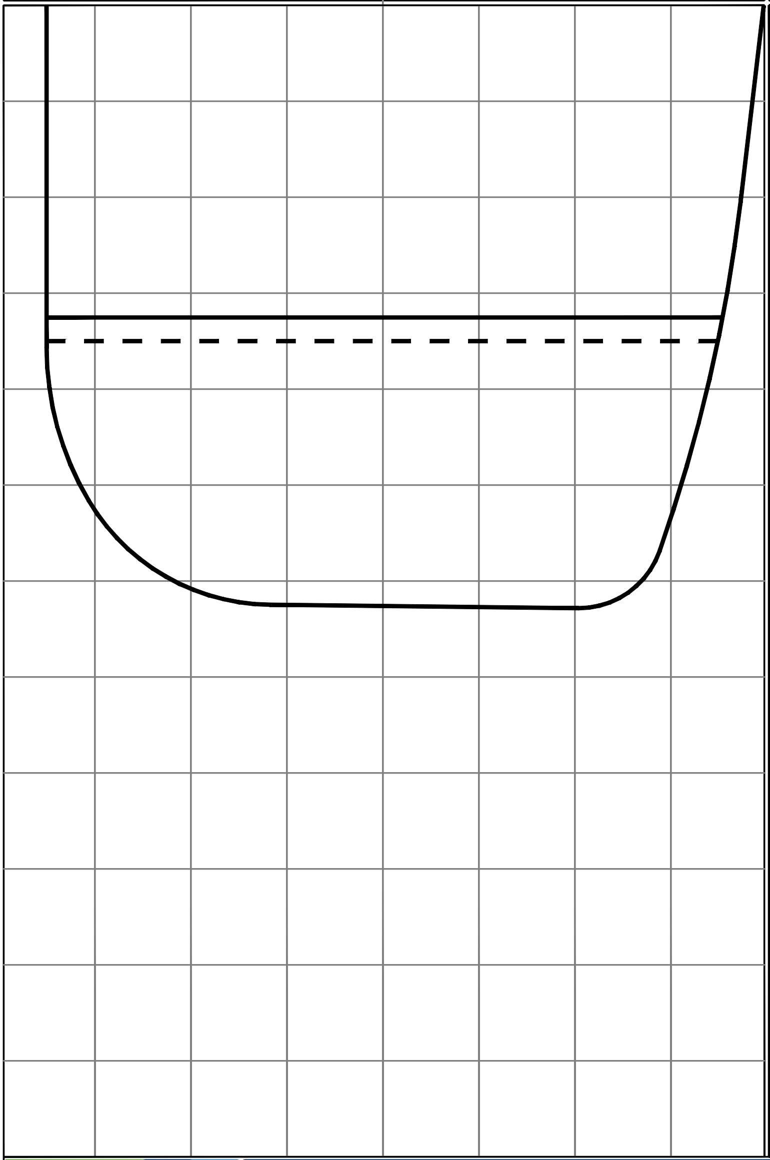
PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/19/23 TEST PIT NO. TP-13

GROUND ELEVATION 118' ± (MSL) LOGGED BY KWK

METHOD OF EXCAVATION Excavator

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0 4	■					SM	<u>FILL:</u> Yellowish brown, moist, medium dense, silty fine to coarse SAND, few to little angular to rounded gravel and cobble up to 1 foot in diameter. Light brown.
8						SC CL	<u>OLD PARALIC DEPOSITS:</u> Reddish brown, brown, and gray, moist, medium dense, clayey fine to coarse SAND, few to little rounded gravel. Reddish brown, moist, stiff, sandy lean CLAY.
12 16 20 24							Total Depth = 12.5 feet. Groundwater not encountered. Backfilled on 10/19/23. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE = 1 in./2 ft.

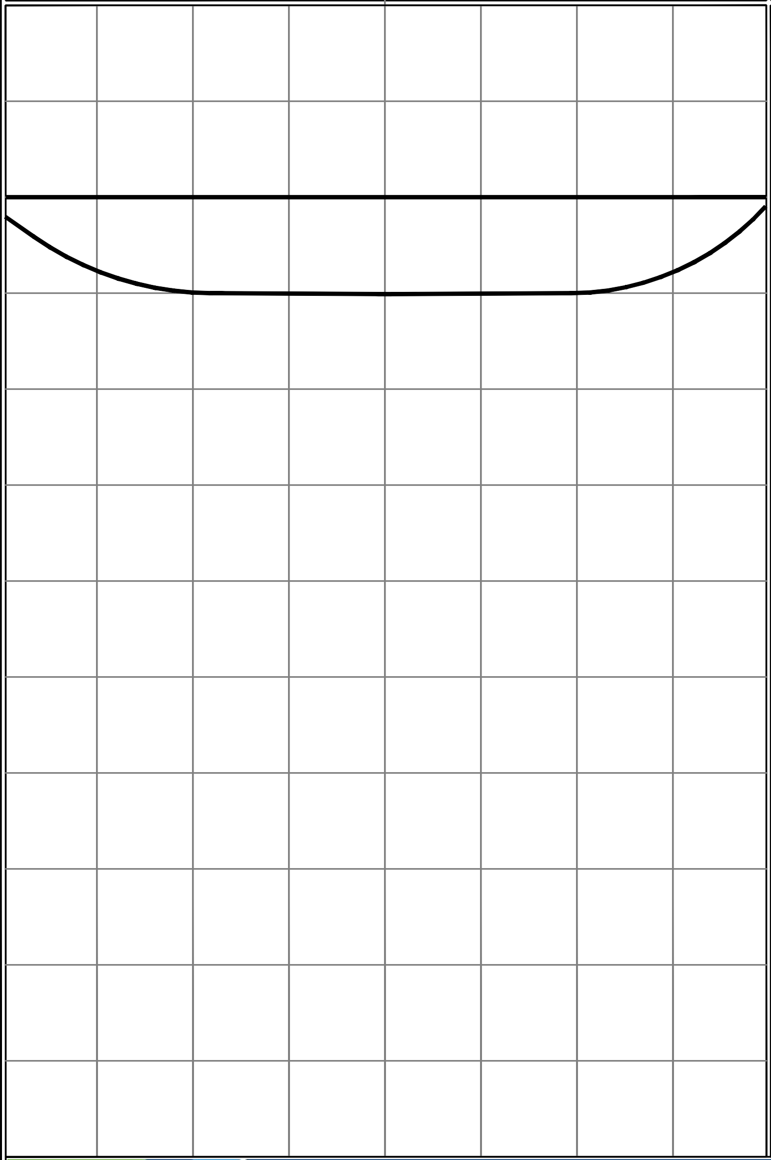
Ninyo & Moore

TEST PIT LOG

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

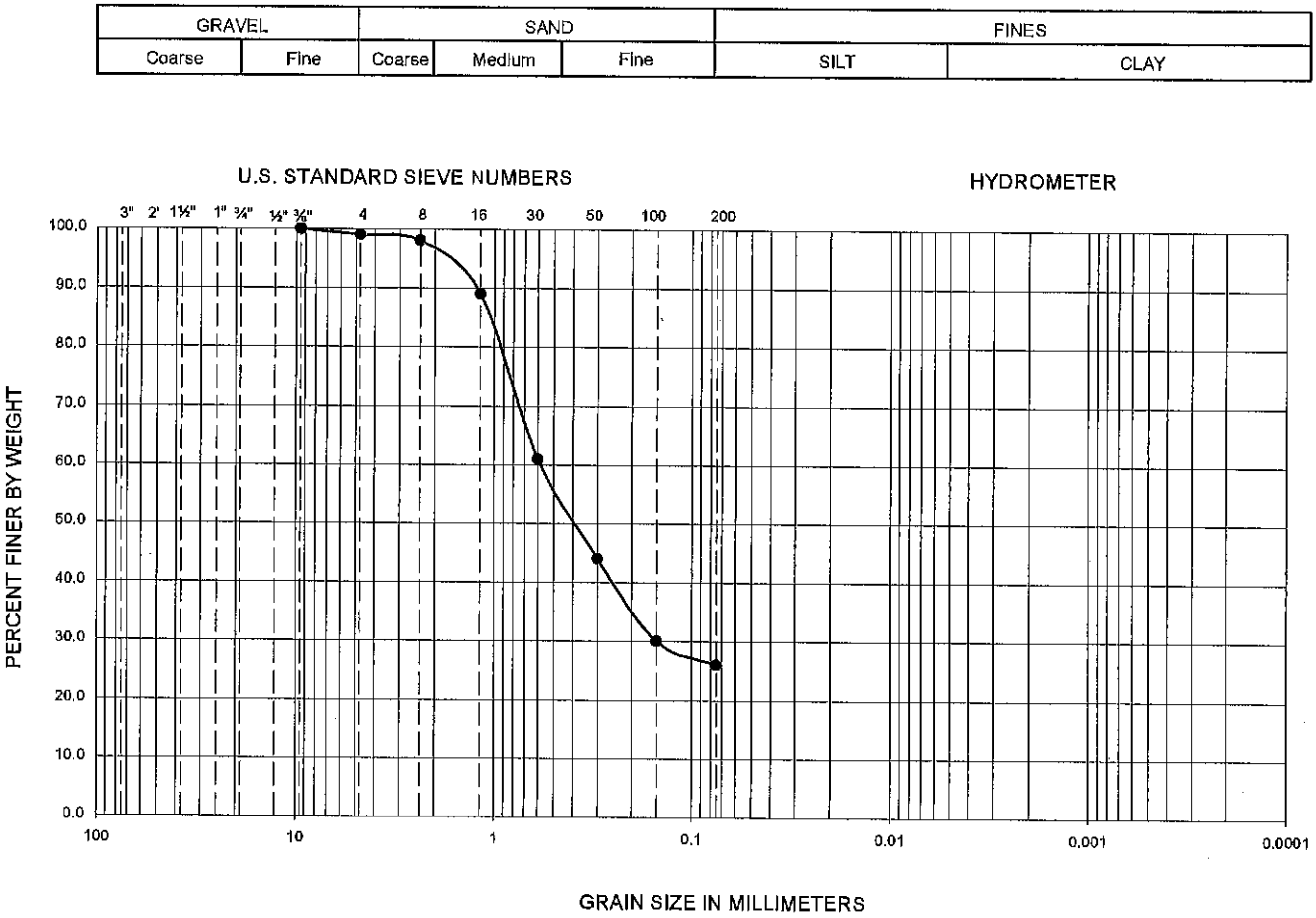
PROJECT NO.	DATE
109765001	12/23

DATE EXCAVATED 10/19/23 TEST PIT NO. TP-14
GROUND ELEVATION 120' ± (MSL) LOGGED BY KWK
METHOD OF EXCAVATION Excavator
LOCATION See Figure 2



DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL: Light brown, moist, medium dense, silty fine to medium SAND, few to little angular to rounded gravel and cobble up to 4 inches in diameter.
2							OLD PARALIC DEPOSITS: Reddish brown, moist, medium dense, clayey fine to medium SAND, scattered rootlets, scattered iron concretions, trace pinhole porosity.
							Total Depth = 3 feet. Groundwater not encountered. Backfilled on 10/19/23. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
4							
6							
8							
10							
12							

SCALE = 1 in./2 ft.



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-1	5.0-6.5	--	--	--	--	--	--	--	--	26	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore

GRADATION TEST RESULTS

PROJECT NO.	DATE
107254001	3/12

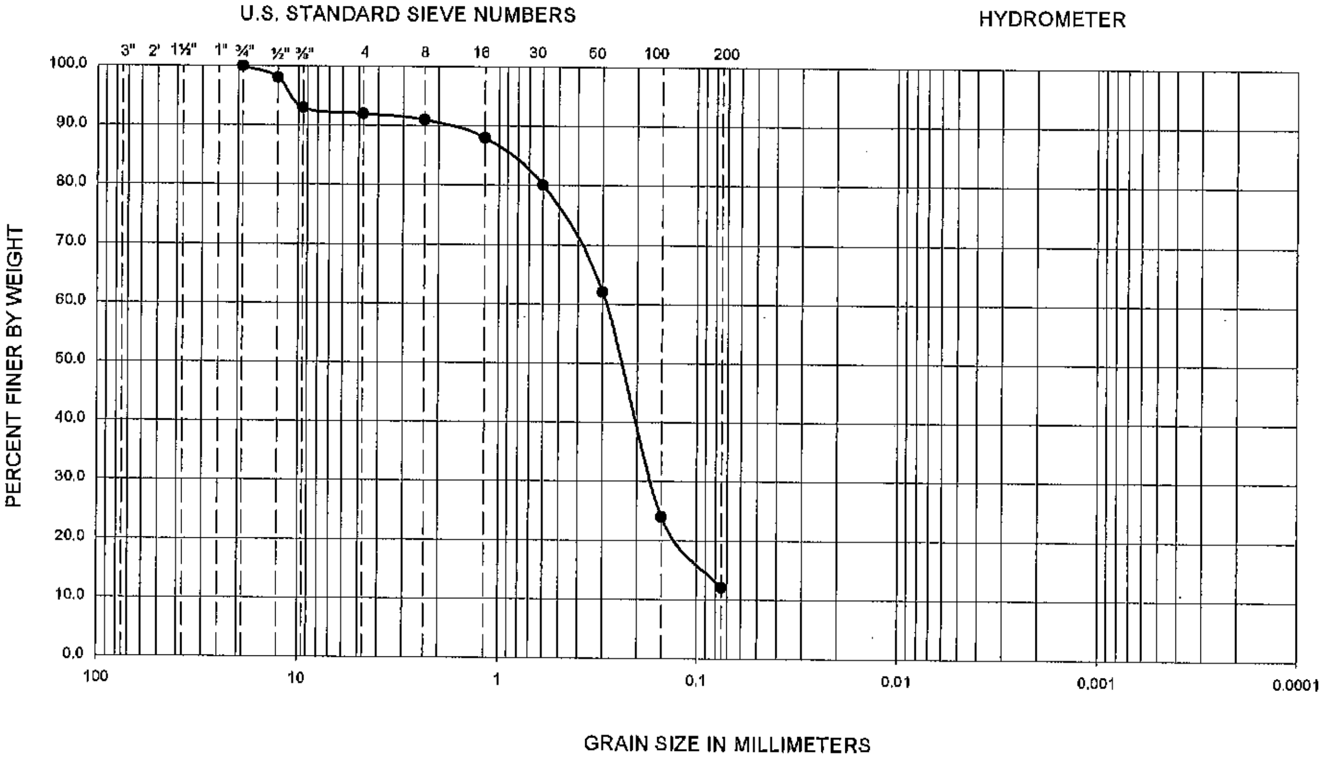
BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

FIGURE

C-1

107254001_SIEVE B-1 @ 5.0-6.5.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

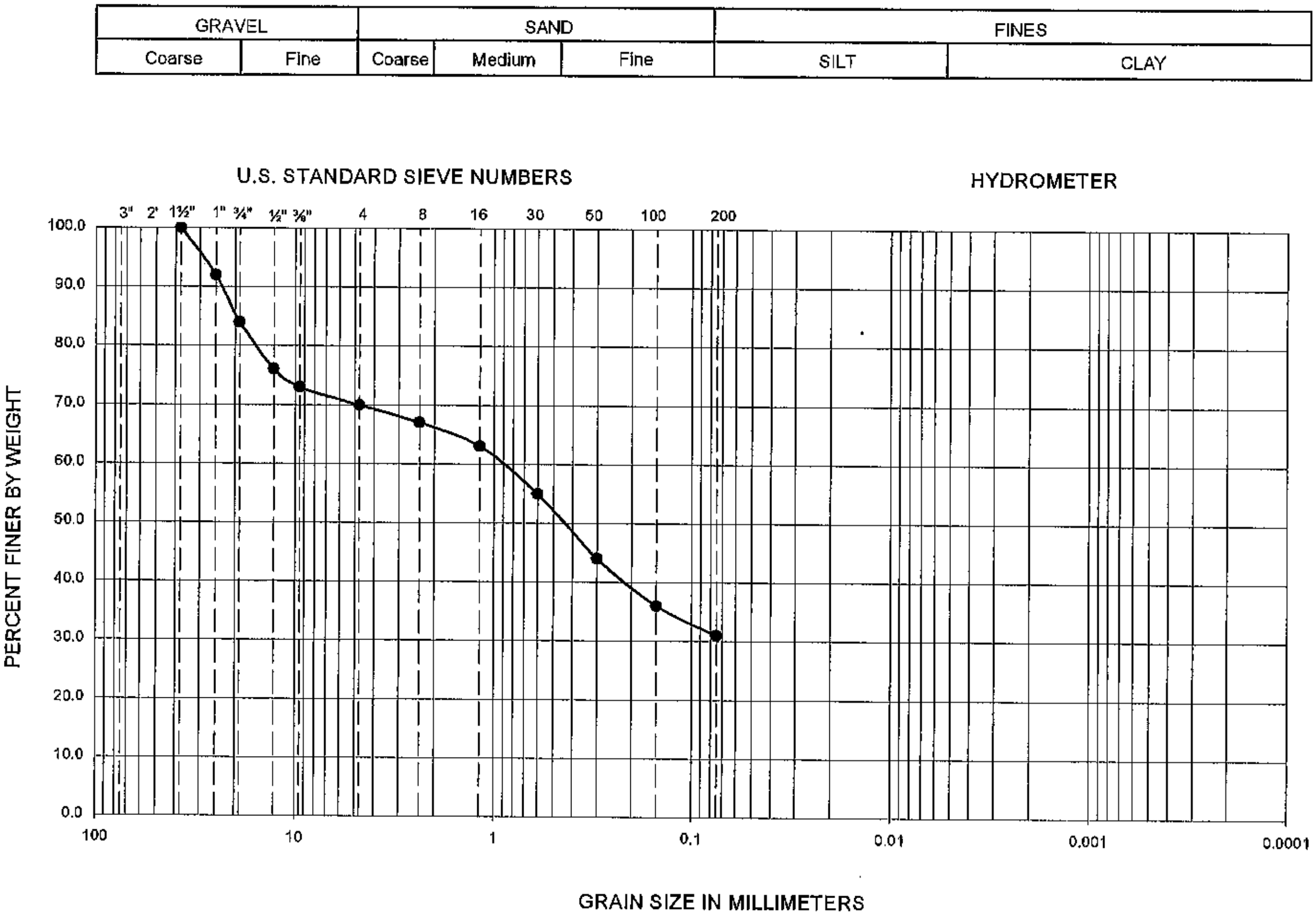


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	Equivalent USCS
●	B-10	5.0-6.5	--	--	--	0.06	0.18	0.29	4.8	1.9	12	SW-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore		GRADATION TEST RESULTS	FIGURE
PROJECT NO.	DATE	BEYER ELEMENTARY SCHOOL SAN DIEGO, CALIFORNIA	C-2
107254001	3/12		

107254001_SIEVE B-10 @ 5.0-6.5.xls



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-12	5.0-6.5	--	--	--	--	--	--	--	--	31	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore

GRADATION TEST RESULTS

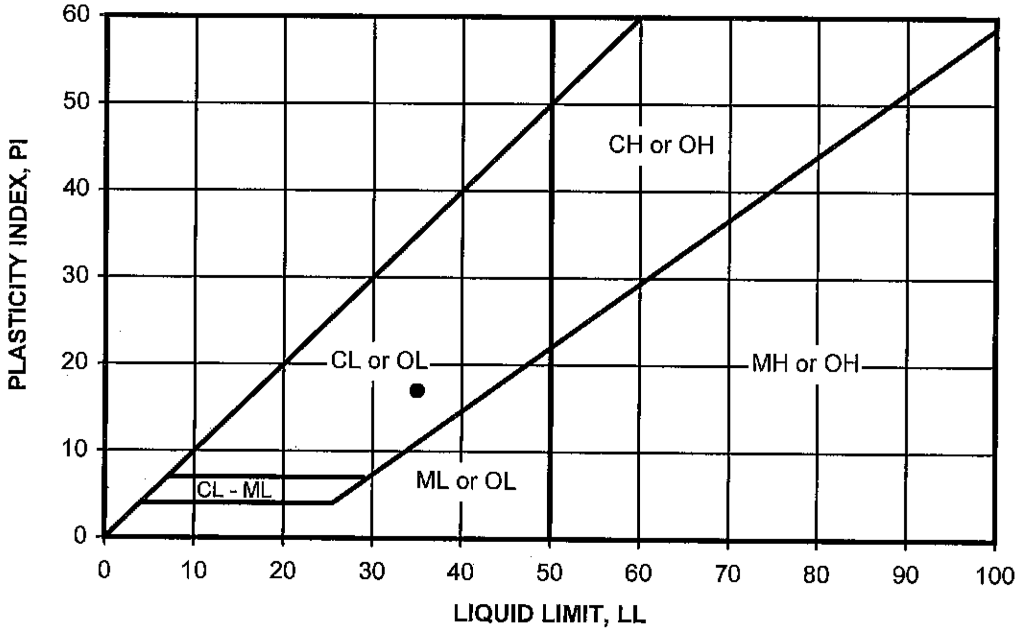
PROJECT NO.	DATE
107254001	3/12

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

FIGURE
C-3

SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B-8	5.0-6.5	35	18	17	CL	SC

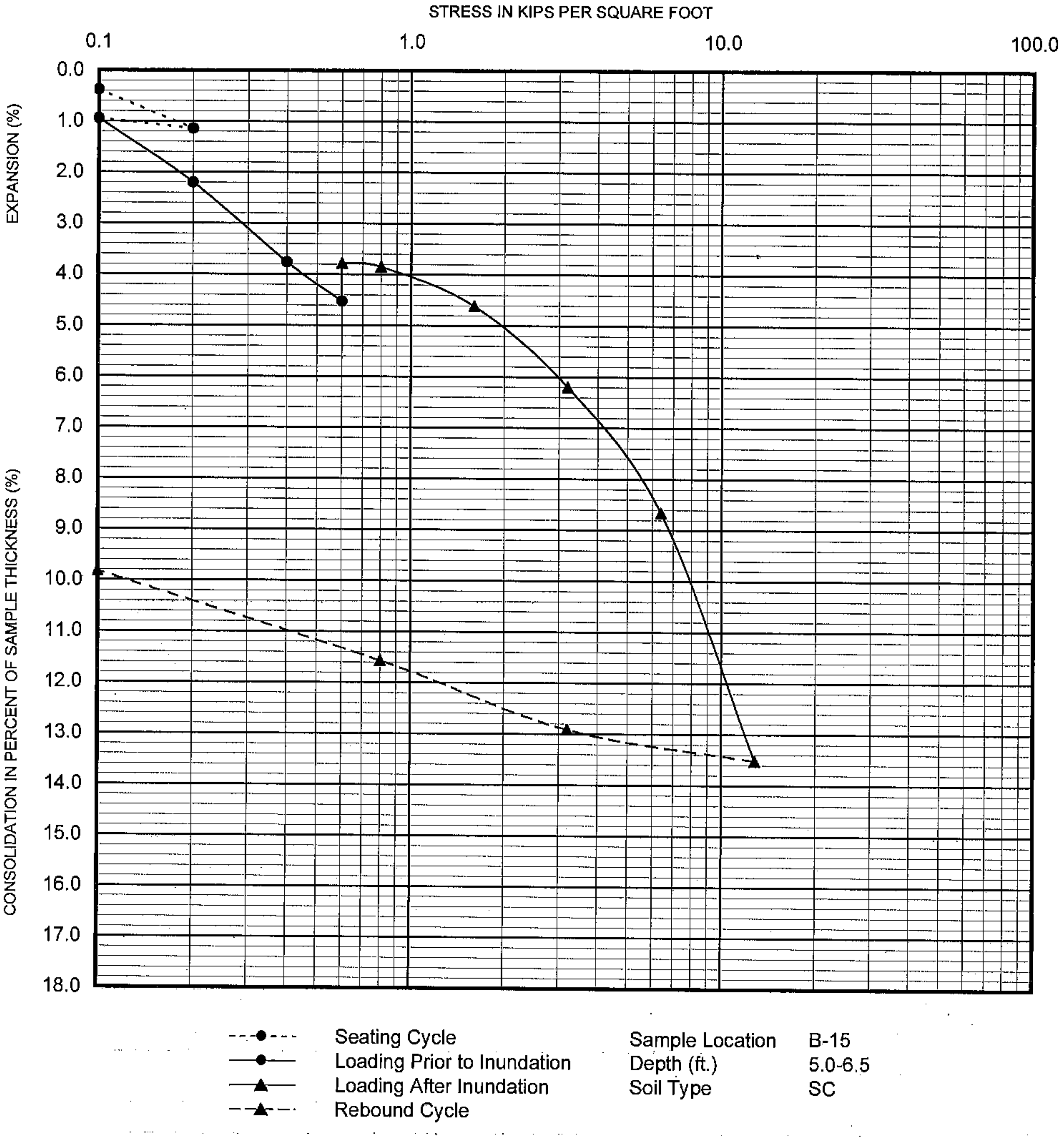
NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore		ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO.	DATE	BEYER ELEMENTARY SCHOOL SAN DIEGO, CALIFORNIA	C-4
107254001	3/12		

107254001_ATTERBERG_Page 1.xls



Sample Location	B-15
Depth (ft.)	5.0-6.5
Soil Type	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore

CONSOLIDATION TEST RESULTS

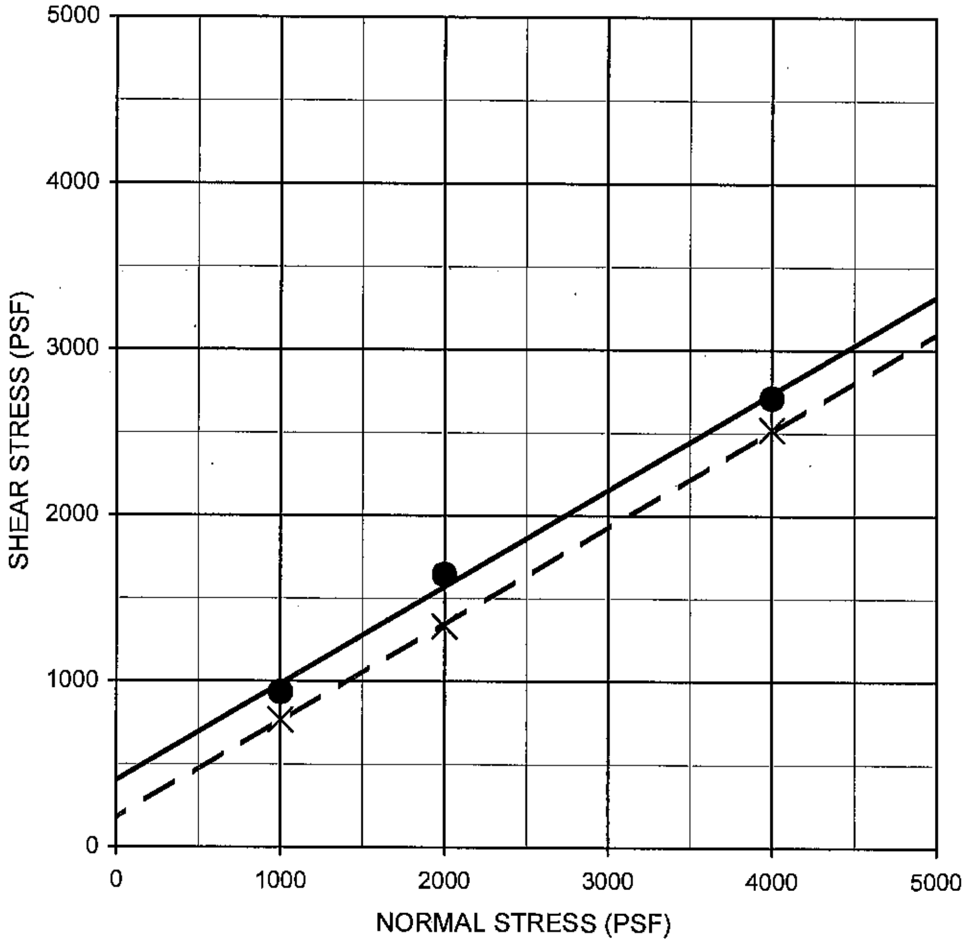
PROJECT NO.	DATE
107254001	3/12

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

FIGURE

C-5

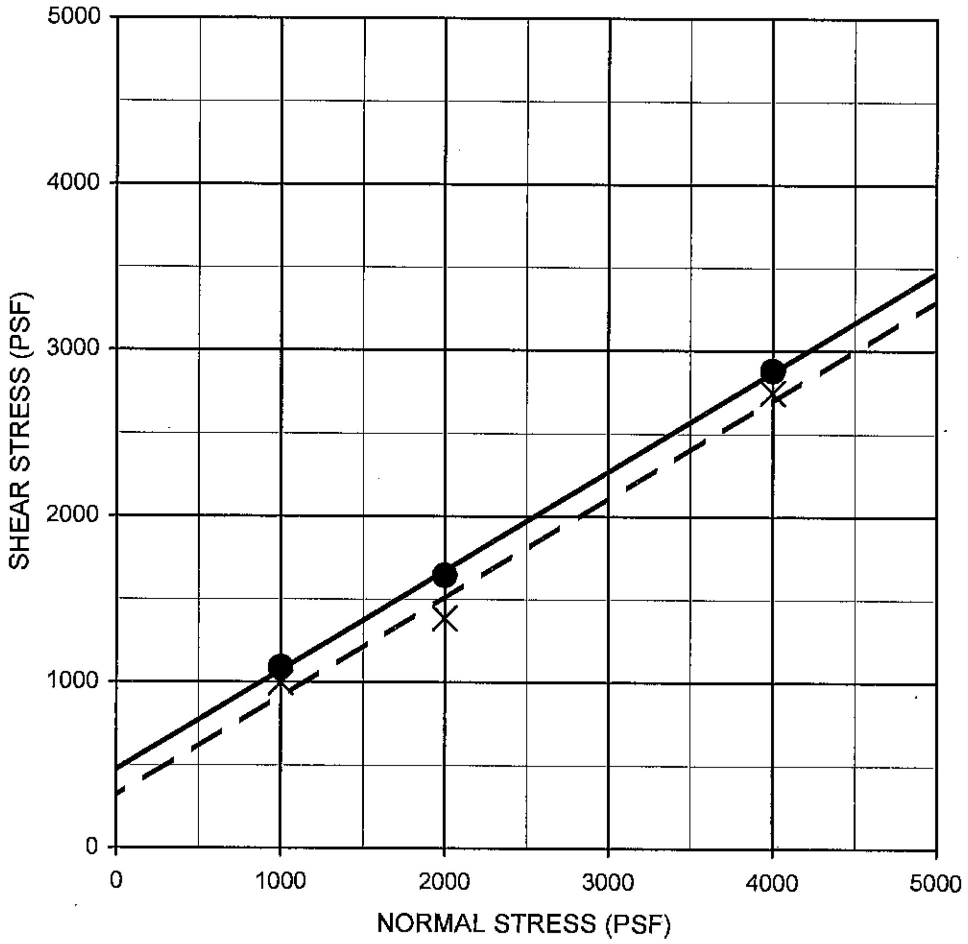
107254001_CONSOLIDATION B-15 @ 5.0-6.5.xls



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Silty SAND	——●——	B-1	5.0-6.5	Peak	400	30	SM
Silty SAND	- - X - -	B-1	5.0-6.5	Ultimate	170	30	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore		DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO.	DATE	BEYER ELEMENTARY SCHOOL SAN DIEGO, CALIFORNIA	C-6
107254001	3/12		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Silty SANDSTONE	—●—	B-5	5.0-6.5	Peak	370	31	Formation
Silty SANDSTONE	- - x - -	B-5	5.0-6.5	Ultimate	320	31	Formation

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore

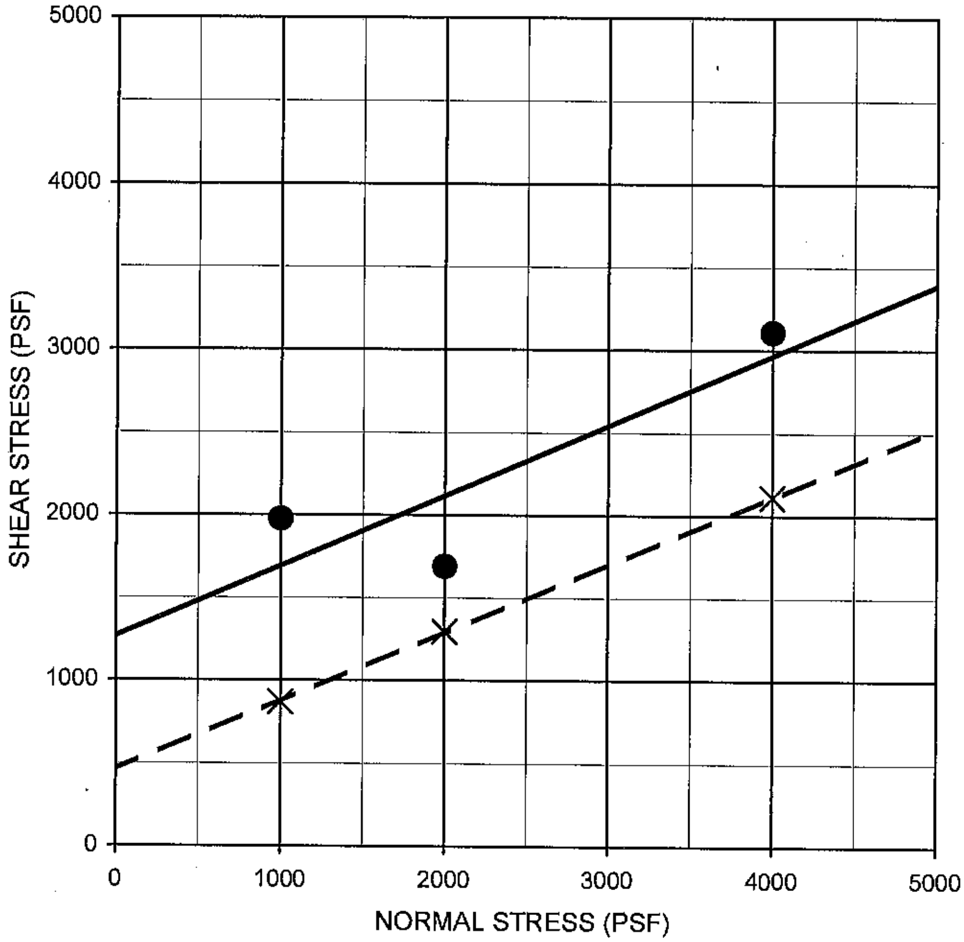
PROJECT NO.	DATE
107254001	3/12

DIRECT SHEAR TEST RESULTS

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

FIGURE

C-7



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Clayey SAND	—●—	B-8	10.0-11.5	Peak	1270	23	SC
Clayey SAND	- - X - -	B-8	10.0-11.5	Ultimate	460	22	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

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PROJECT NO.	DATE
107254001	3/12

DIRECT SHEAR TEST RESULTS

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

FIGURE
C-8

SAMPLE LOCATION	SAMPLE DEPTH (FT)	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (PCF)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (IN)	EXPANSION INDEX	POTENTIAL EXPANSION
B-4	0.5-5.0	10.0	108.6	19.8	0.051	51	Medium
B-9	0.5-5.0	9.5	111.5	19.4	0.051	51	Medium

PERFORMED IN GENERAL ACCORDANCE WITH ☐ UBC STANDARD 18-2 ☑ ASTM D 4829

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EXPANSION INDEX TEST RESULTS

PROJECT NO.	DATE
107254001	3/12

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

FIGURE
C-9

107254001_EXPANSION_Page 1.xls

SAMPLE LOCATION	SAMPLE DEPTH (FT)	pH [1]	RESISTIVITY [1] (Ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-9	0.5-5.0	7.8	900	90	0.009	450

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

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PROJECT NO.	DATE
107254001	3/12

CORROSIVITY TEST RESULTS

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

FIGURE

C-10

SAMPLE LOCATION	SAMPLE DEPTH (FT)	SOIL TYPE	R-VALUE
B-4	0.5- 5.0	Clayey Sand (SC)	21

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2844/CT 301

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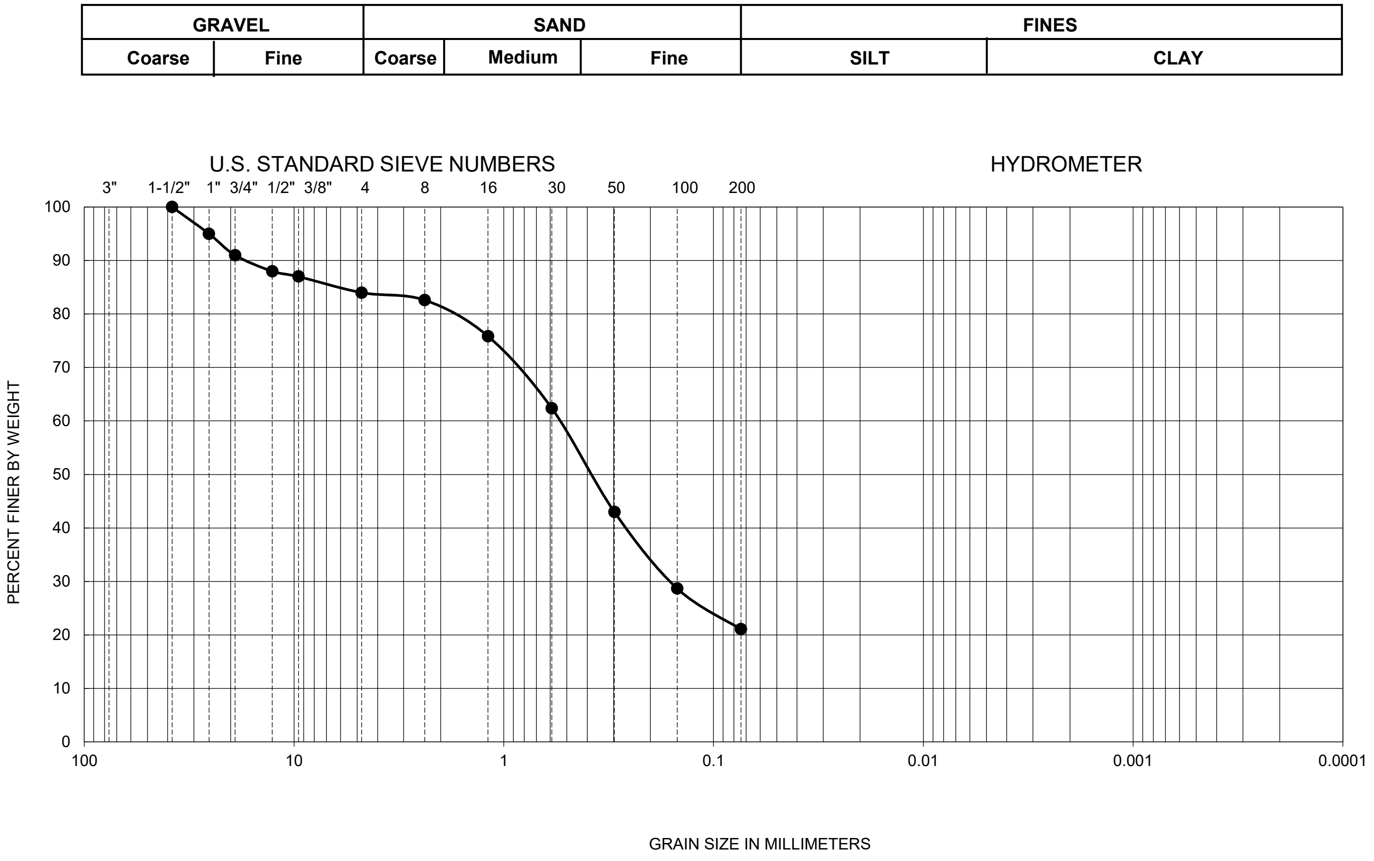
R-VALUE TEST RESULTS

PROJECT NO.	DATE
107254001	3/12

BEYER ELEMENTARY SCHOOL
SAN DIEGO, CALIFORNIA

FIGURE
C-11

107254001_R-Value TABLE B-4@0.5-5.0.xls



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-1	0.0-1.5	--	--	--	--	--	--	--	--	21	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-1

GRADATION TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23

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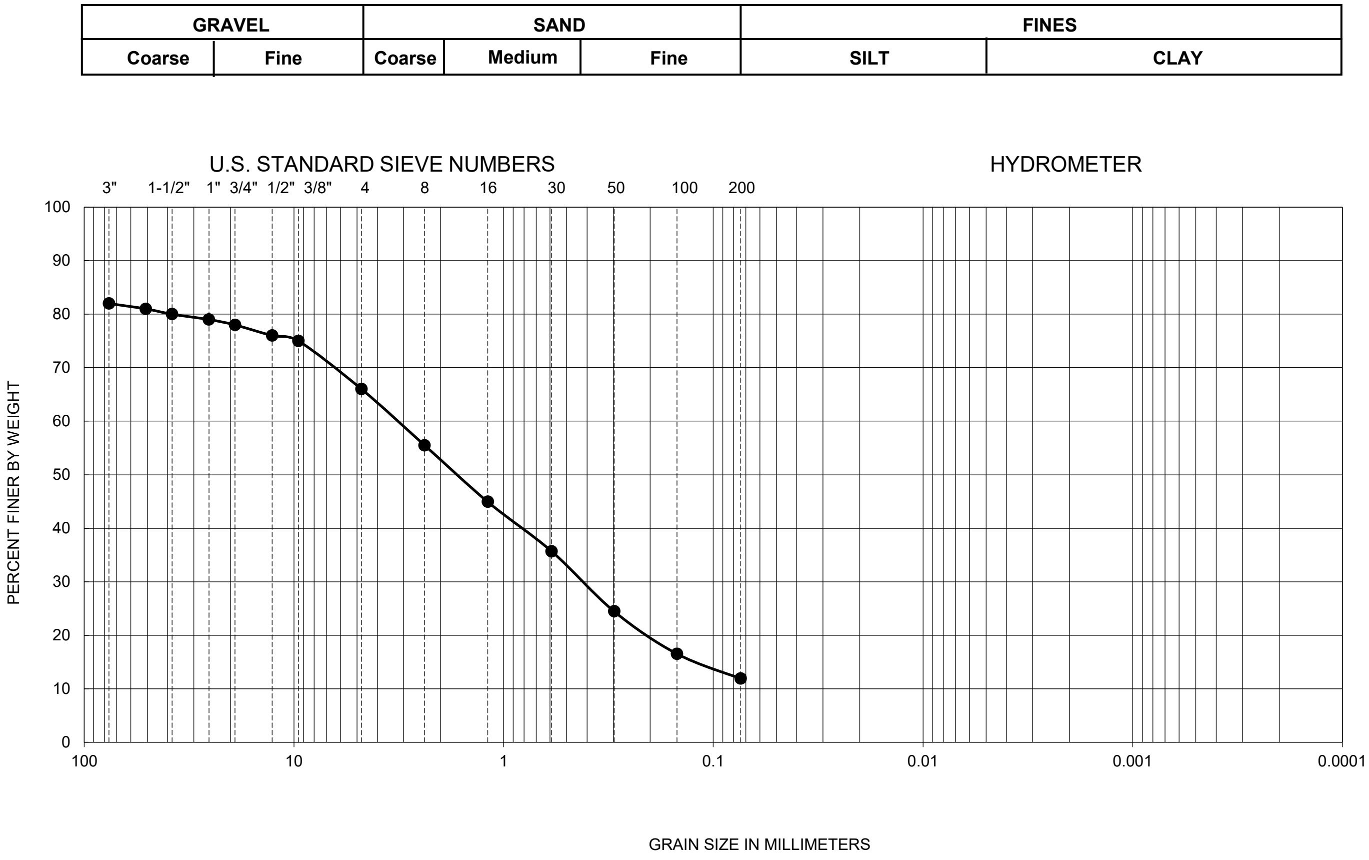

Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-2	0.0-1.0	--	--	--	--	--	--	--	--	12	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-2

GRADATION TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

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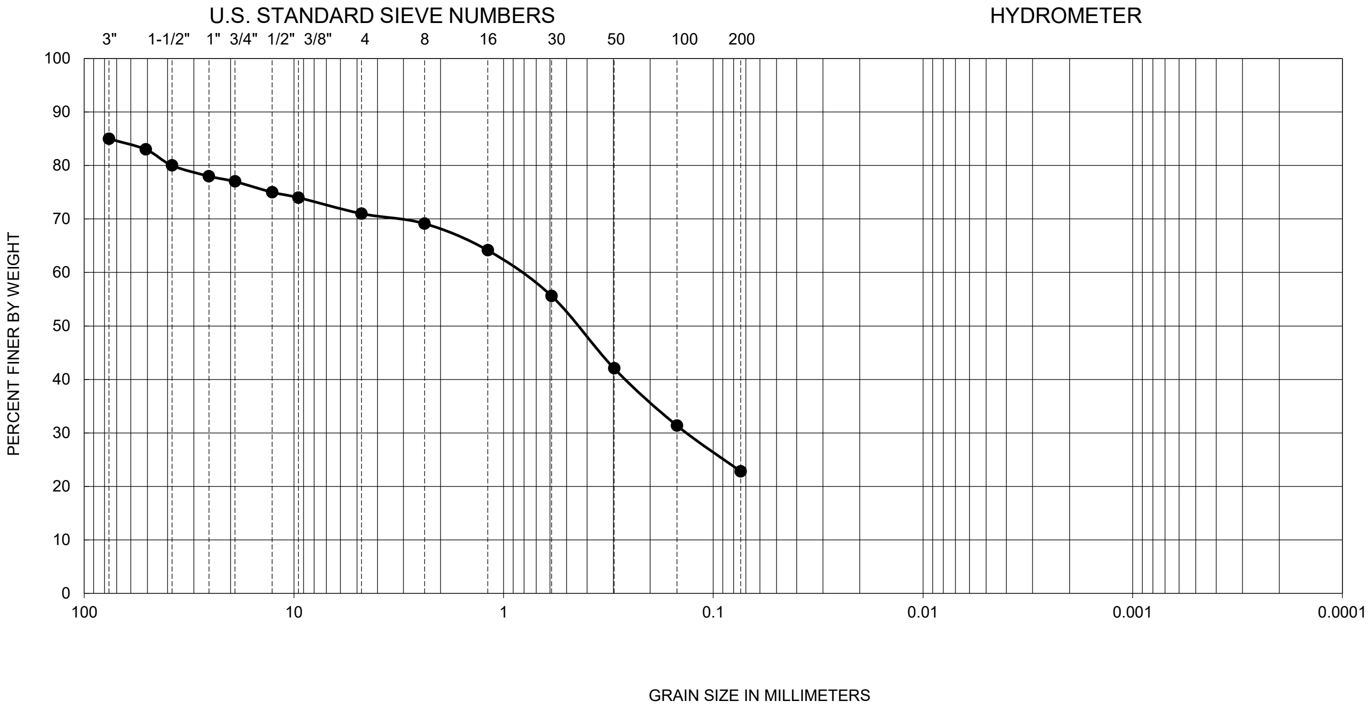
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-3	0.0-1.5	--	--	--	--	--	--	--	--	23	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-3

GRADATION TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

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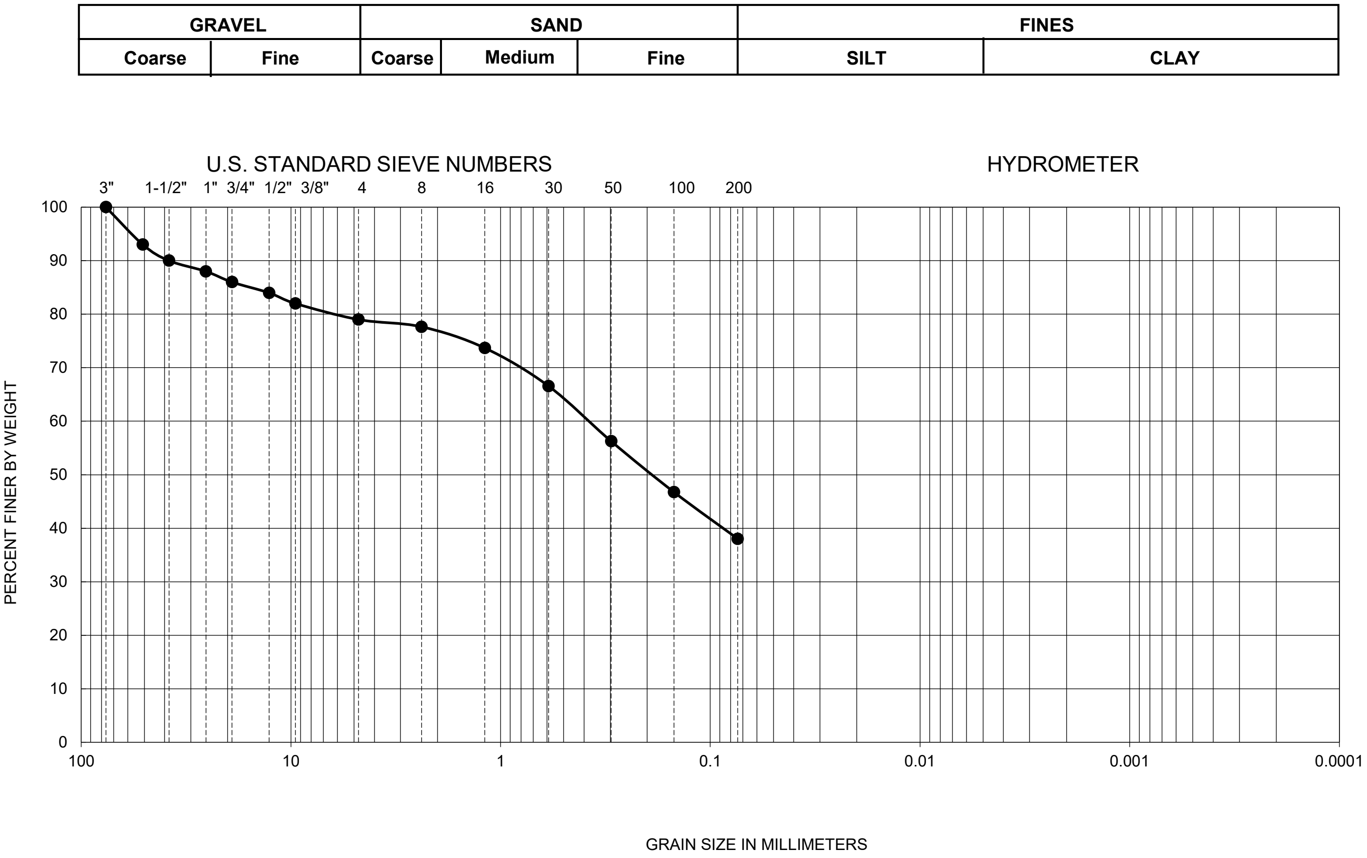

Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-5	0.0-1.0	--	--	--	--	--	--	--	--	38	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-4

GRADATION TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23

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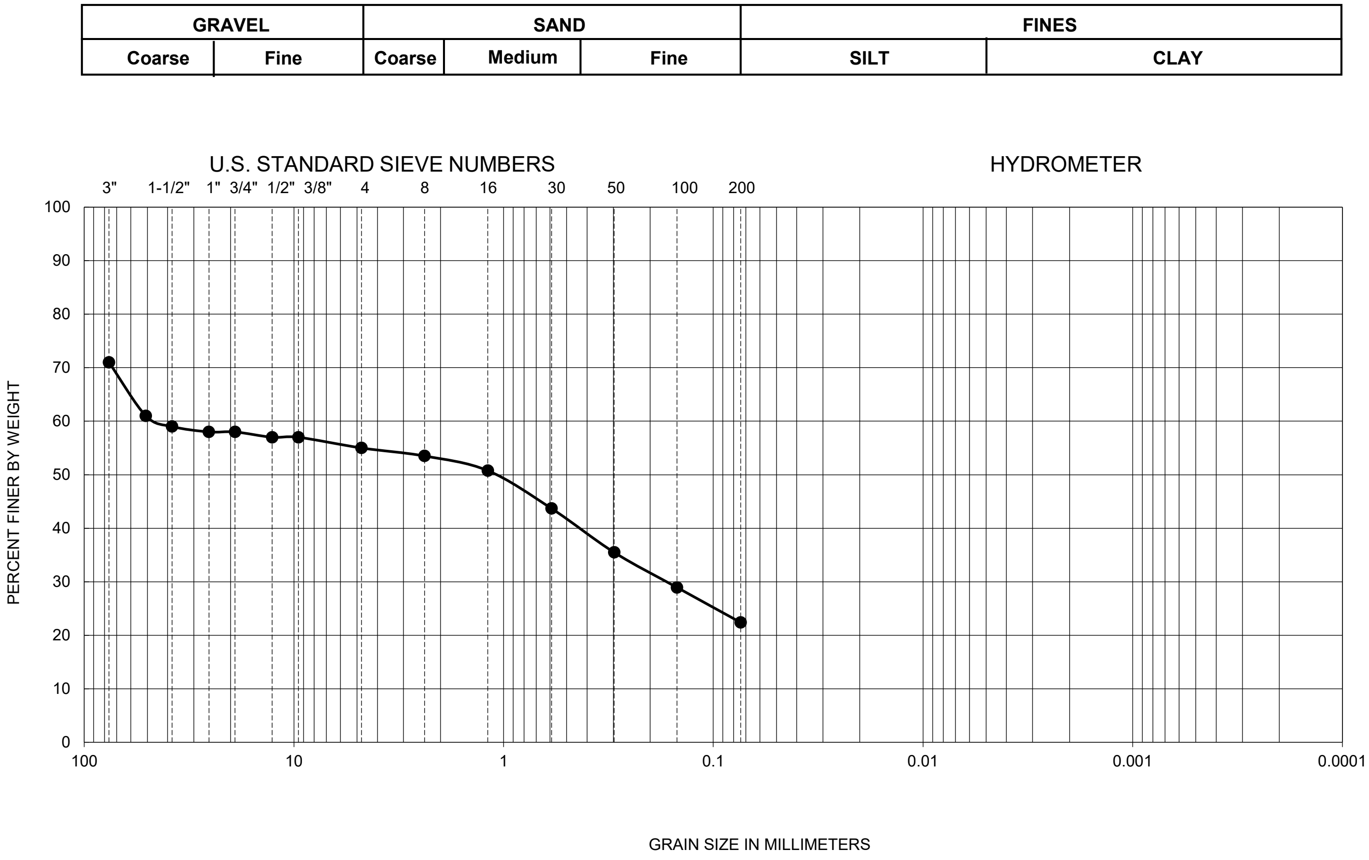

Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-7	0.0-1.5	--	--	--	--	--	--	--	--	22	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-5

GRADATION TEST RESULTS

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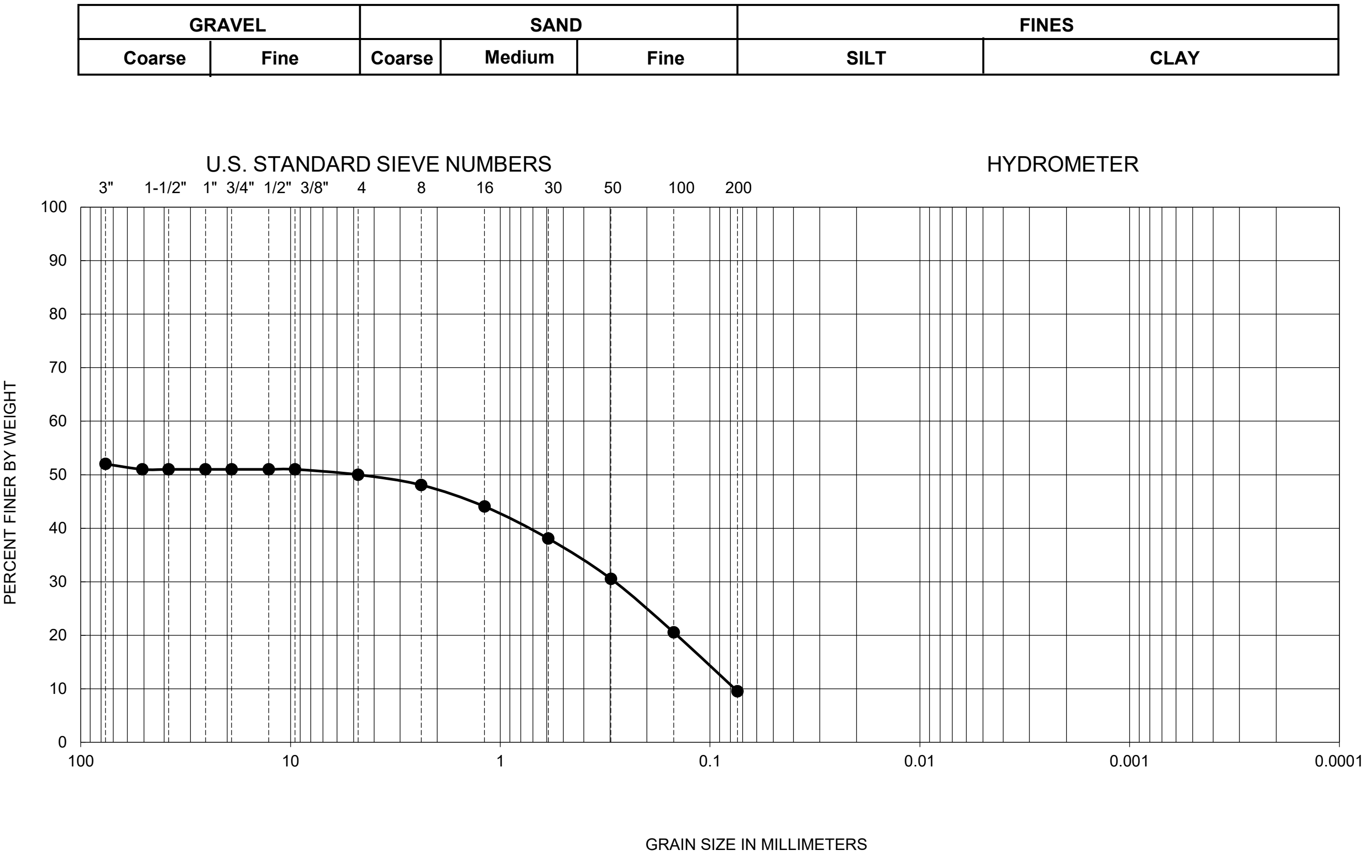
BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-9	0.0-1.5	--	--	--	--	--	--	--	--	10	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-6

GRADATION TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23

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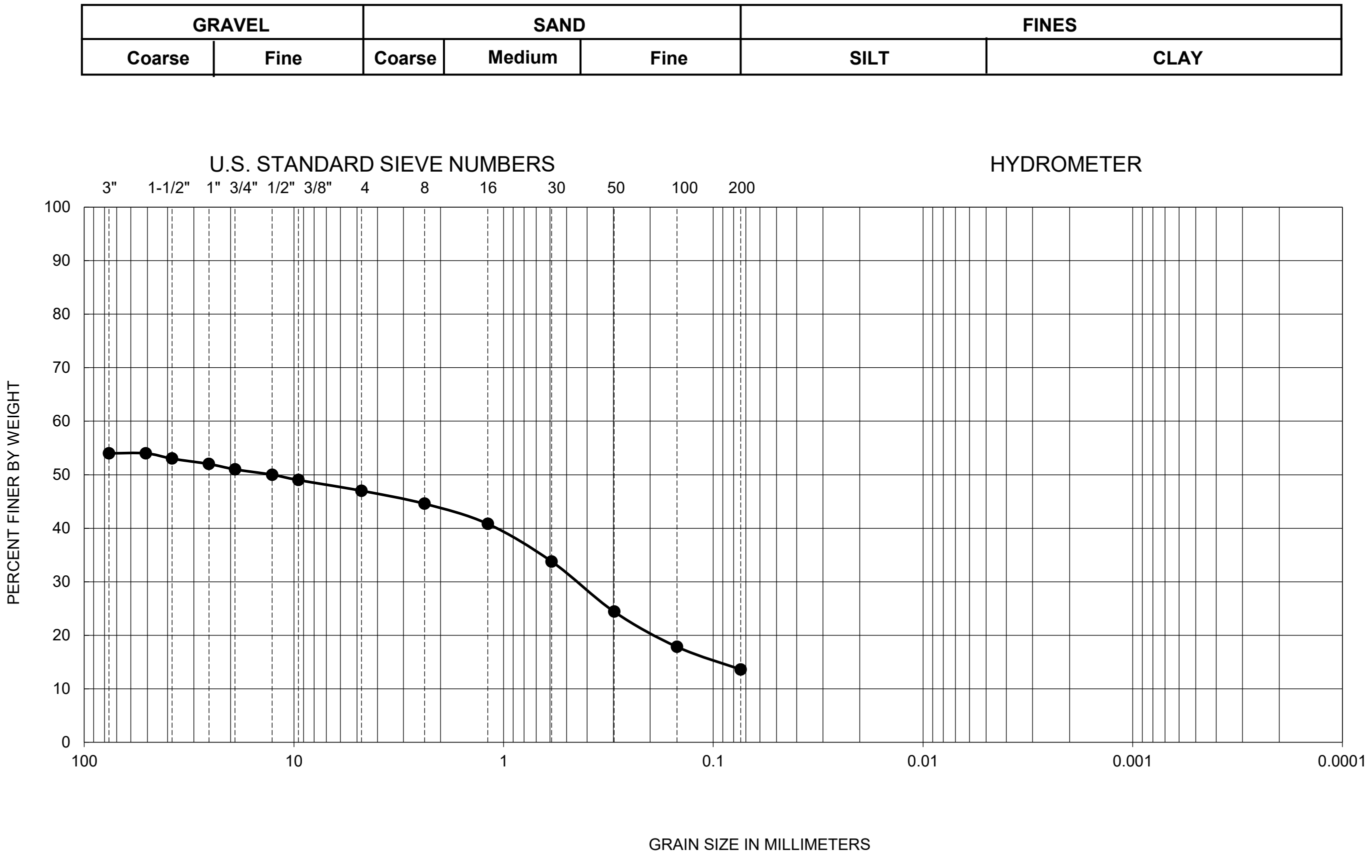
109765001_SPLITSIEVE TP-9 @ 0.0-1.5



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-10	0.0-1.5	--	--	--	--	--	--	--	--	14	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-7

GRADATION TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

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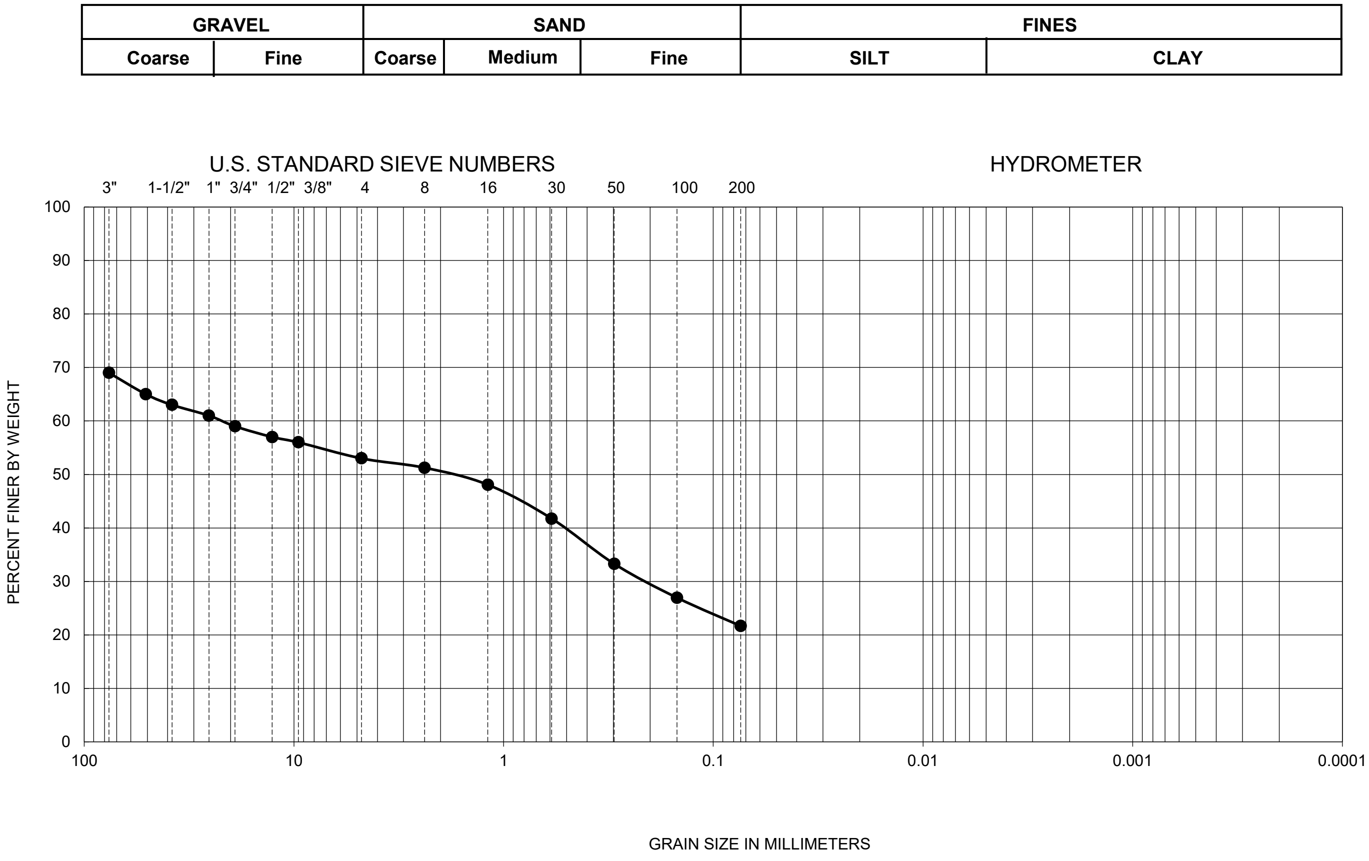

Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-11	0.0-4.5	--	--	--	--	--	--	--	--	22	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-8

GRADATION TEST RESULTS

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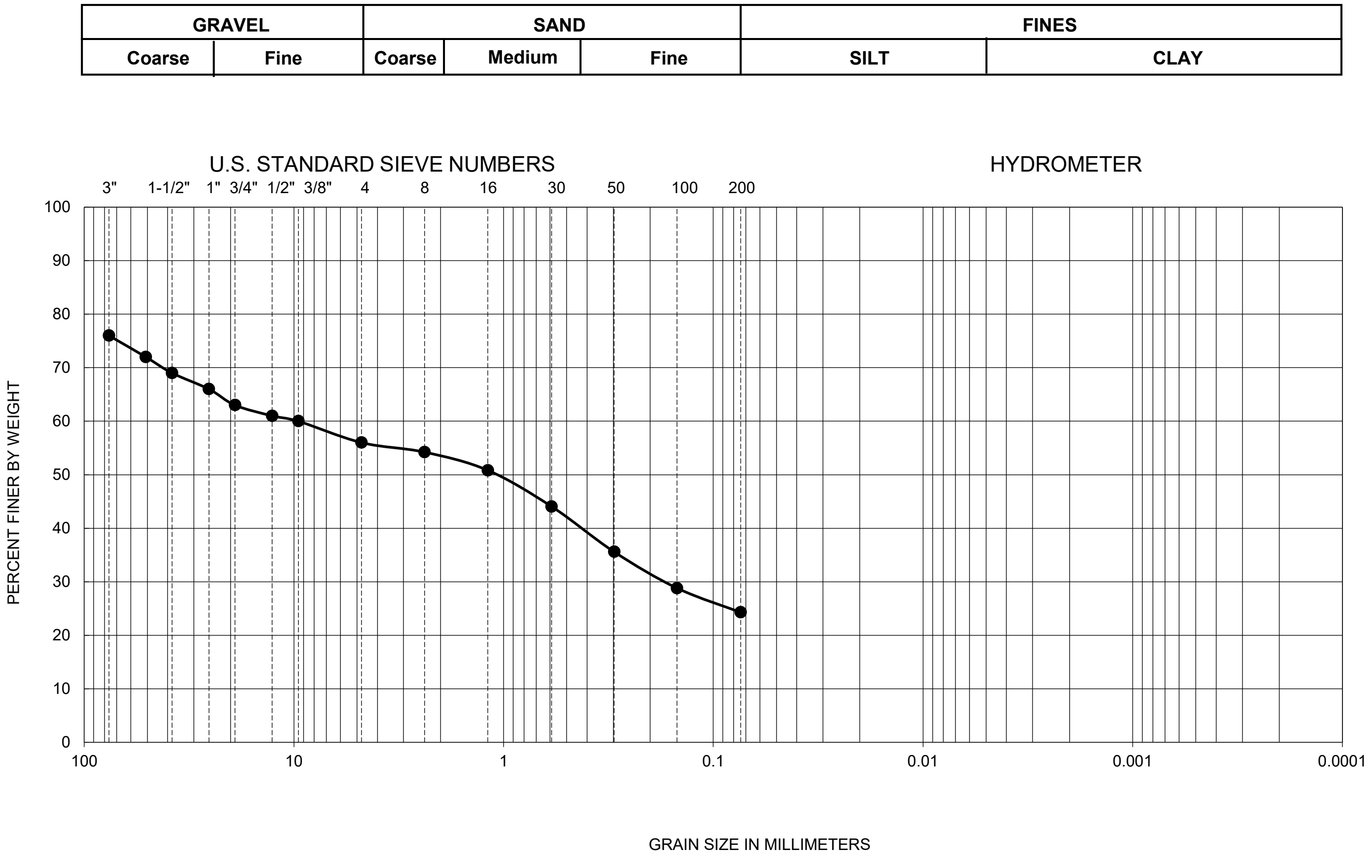
BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-12	1.5-5.0	--	--	--	--	--	--	--	--	24	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-9

GRADATION TEST RESULTS

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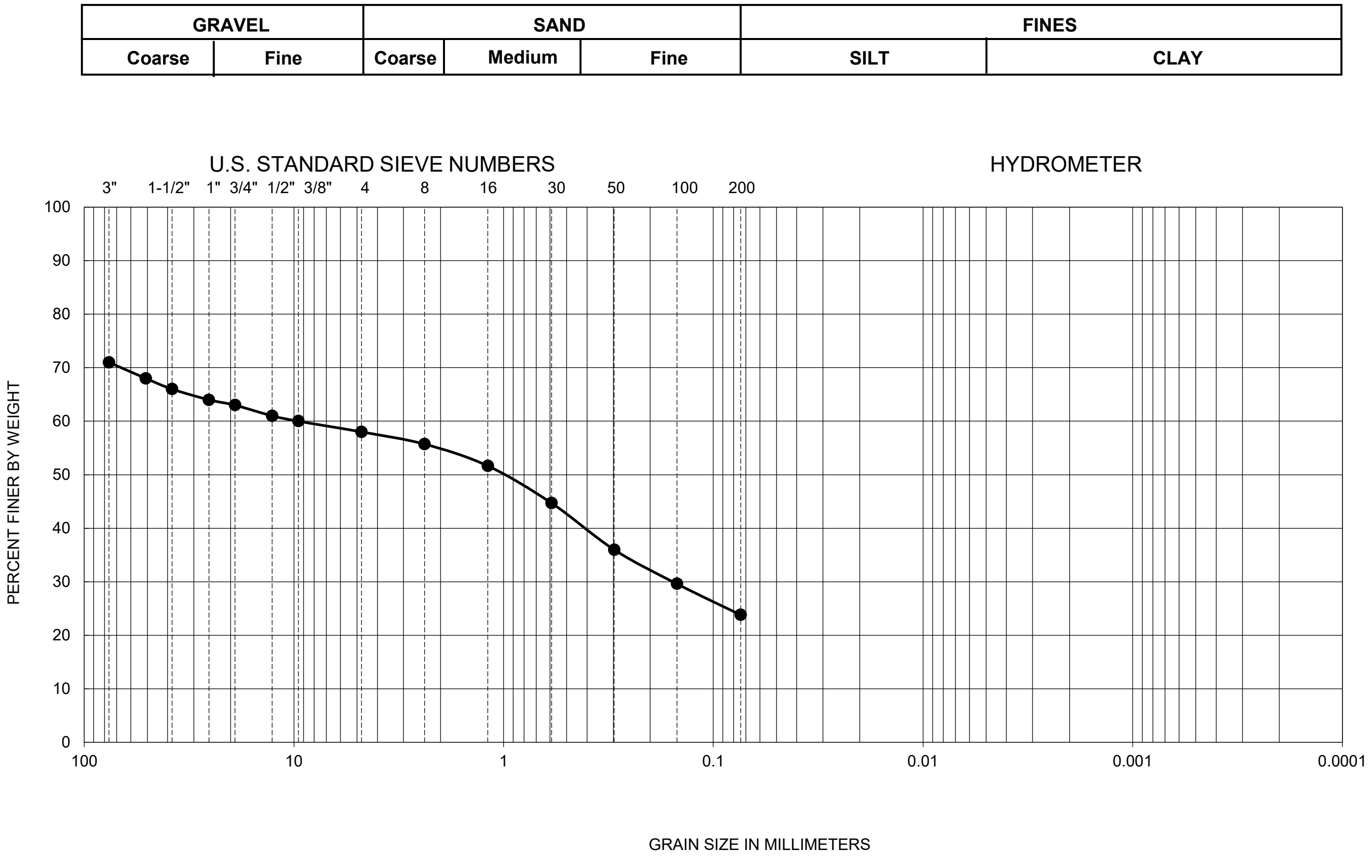
BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	TP-13	0.0-6.0	--	--	--	--	--	--	--	--	24	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-10

GRADATION TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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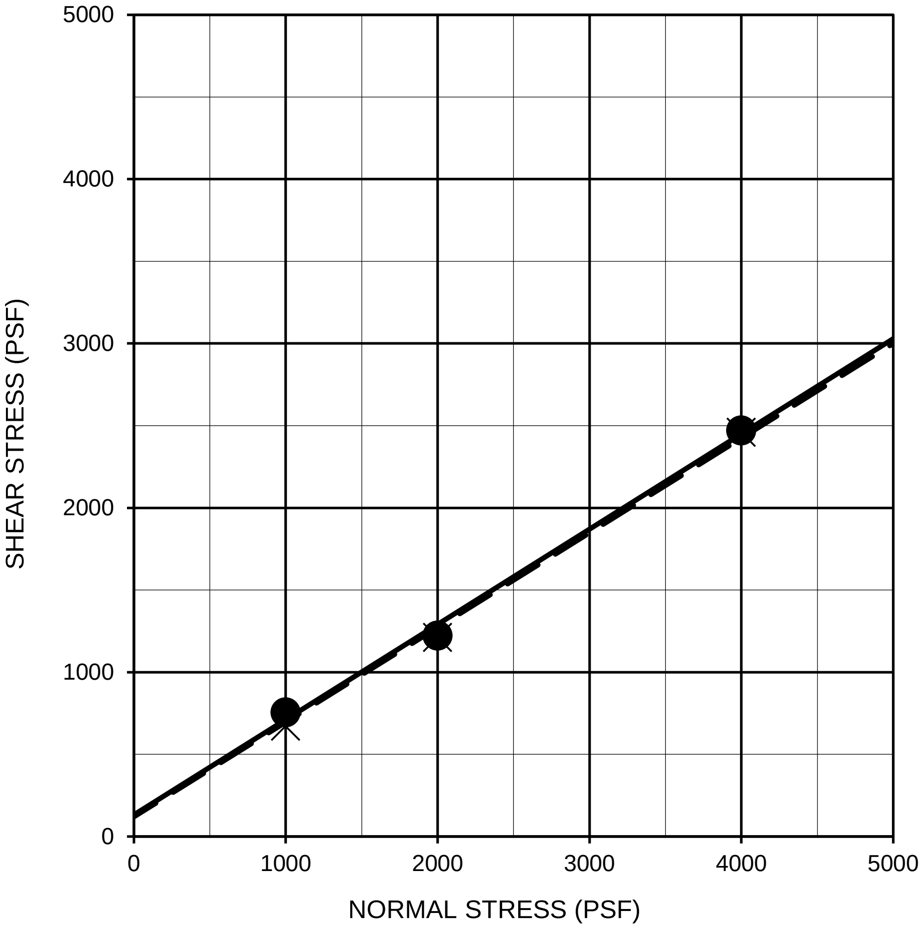

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Remolded @ 90% Relative Compaction	—●—	TP-6	0.0-1.5	Peak	130	30	SM
	- - X - -	TP-6	0.0-1.5	Ultimate	120	30	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-11

DIRECT SHEAR TEST RESULTS

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Geotechnical & Environmental Sciences Consultants

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23

SAMPLE LOCATION	SAMPLE DEPTH (ft)	INITIAL MOISTURE (percent)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (percent)	VOLUMETRIC SWELL (in)	EXPANSION INDEX	POTENTIAL EXPANSION
TP-4	0.0-2.0	11.5	104.9	24.5	0.057	57	Medium

PERFORMED IN GENERAL ACCORDANCE WITH ☐ UBC STANDARD 18-2 ☑ ASTM D 4829

FIGURE B-12

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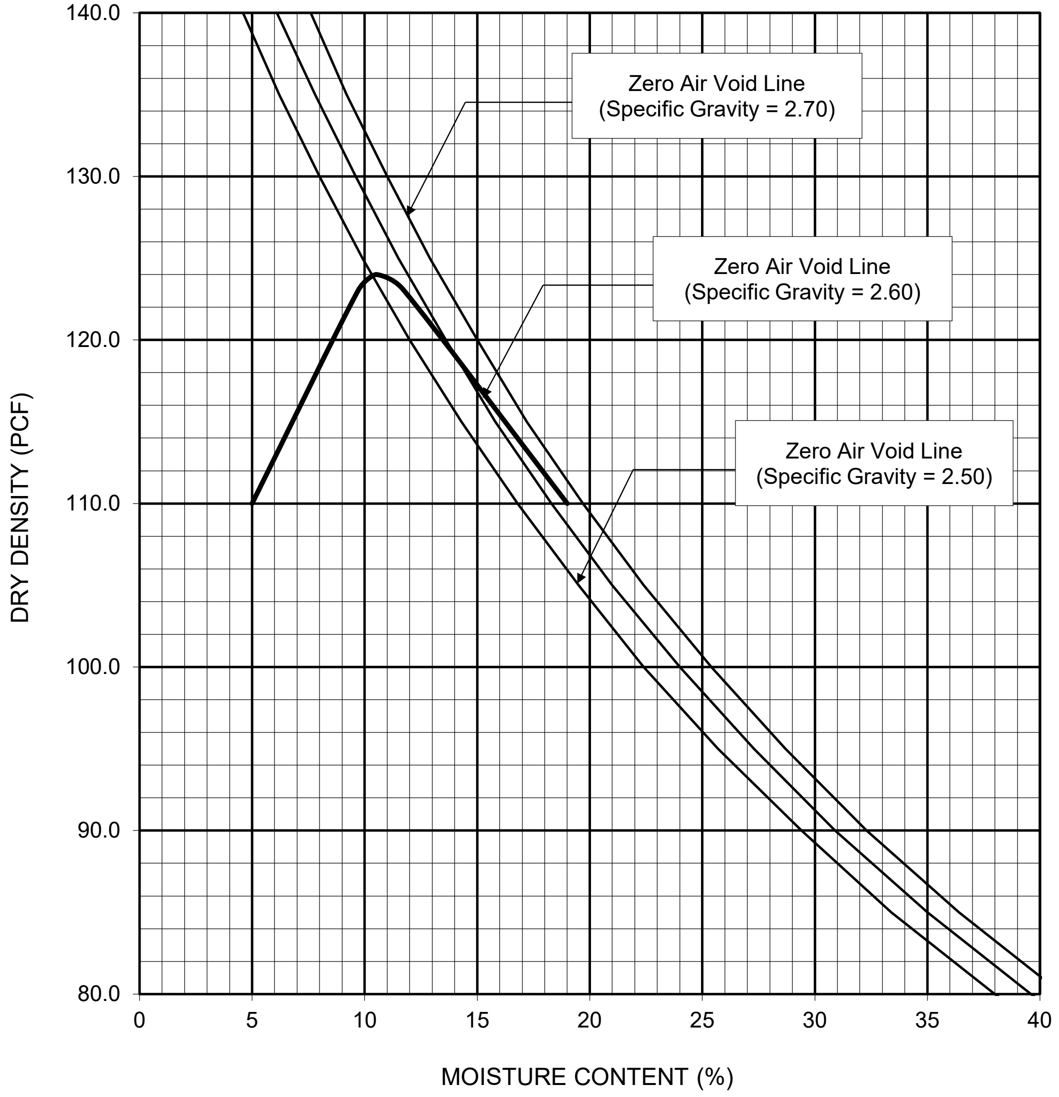
EXPANSION INDEX TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
TP-6	0.0-1.5	Silty SAND	124.0	10.5

PERFORMED IN GENERAL ACCORDANCE WITH ☑ ASTM D 1557 ☐ ASTM D 698 METHOD ☑ A ☐ B ☐ C

FIGURE B-13

PROCTOR DENSITY TEST RESULTS

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BEYER ELEMENTARY SCHOOL SITE REDEVELPOMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001_MAXDENSITY1 TP-6 @ 0.0-1.5

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
TP-8	0.0-5.0	7.9	680	110	0.011	435

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE B-14

CORROSIVITY TEST RESULTS

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BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23

SAMPLE LOCATION	SAMPLE DEPTH (ft)	SOIL TYPE	R-VALUE
TP-4	0.0-2.0	Sandy Lean CLAY	15
TP-14	0.0-1.0	Silty SAND w/ Cobbles and Gravel	67

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2844/CT 301

FIGURE B-15

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R-VALUE TEST RESULTS

BEYER ELEMENTARY SCHOOL SITE REDEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109765001 12/23

Test Date:	1/6/2012	Infiltration Test No.:	IT-1
Test Hole Diameter (inches):	6.0	Excavation Depth (feet):	2.0
Test performed and recorded by:	NMM		

t_1	d_1	t_2	d_2	Δt	Δd	Δt/Δd MPI	Adjusted MPI	Rate in/hr
8:05	0.698	9:15	0.750	70	0.052	112	216	<0.4
9:15	0.750	9:55	0.771	40	0.021	159	305	<0.4
9:55	0.771	10:10	0.781	15	0.010	125	240	<0.4
10:10	0.781	10:40	0.792	30	0.011	227	437	<0.4
10:40	0.792	11:15	0.813	35	0.021	139	267	<0.4
11:15	0.813	11:30	0.823	15	0.010	125	240	<0.4

Porosity of gravel (n) =	0.46	3/4" gravel
Hole Diameter (D_H) =	6.0	inches
Pipe Diameter (D_P) =	2.0	inches

Adjustment Factor = **1.92**

Notes:
t_1 = initial time when filling or refilling is completed in minutes
d_1 = initial depth to water in hole at t_1 in feet
t_2 = final time when incremental water level reading is taken in minutes
d_2 = final depth to water in hole at t_2 in feet
Δt = change in time between initial and final water level readings in minutes (t_2 - t_1)
Δd = change in depth to water in feet (d_2 - d_1)
MPI = minutes per inch
in/hr = inches per hour
DNI = did not infiltrate

APPENDIX B

Recent Boring Logs

APPENDIX B

RECENT BORING LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory excavations. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1⅜ inches. The sampler was driven into the ground with a 140-pound hammer free-falling from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed and transported to the laboratory for testing.

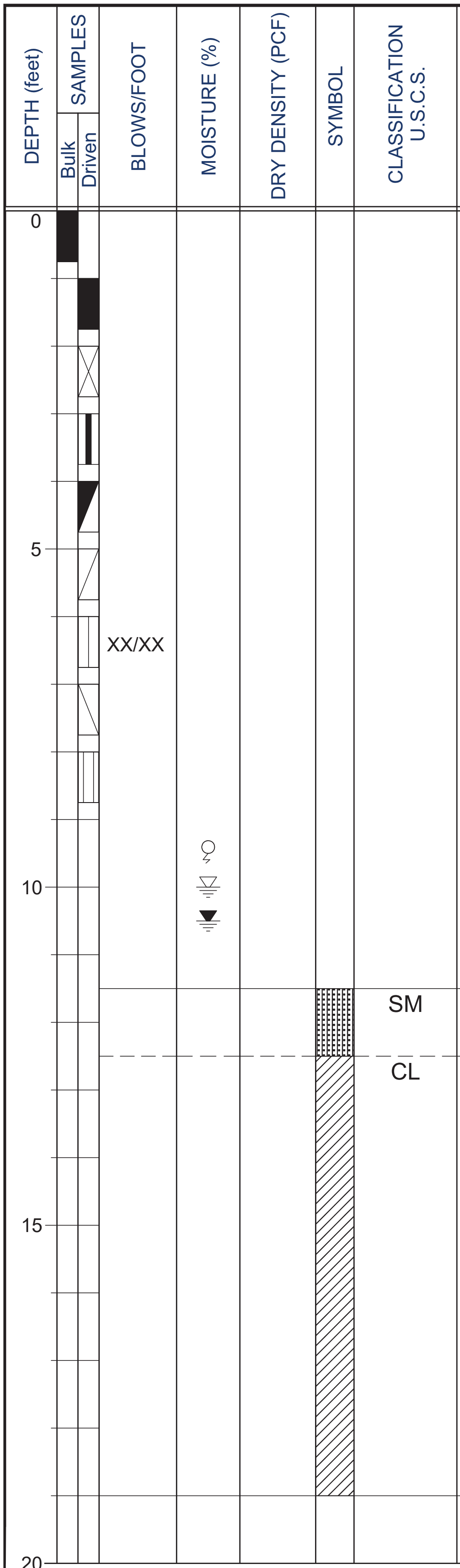
Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a 140-pound hammer, in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

BORING LOG EXPLANATION SHEET



Bulk sample.

Modified split-barrel drive sampler.

No recovery with modified split-barrel drive sampler.

Sample retained by others.

Standard Penetration Test (SPT).

No recovery with a SPT.

Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.

No recovery with Shelby tube sampler.

Continuous Push Sample.

Seepage.

Groundwater encountered during drilling.

Groundwater measured after drilling.

MAJOR MATERIAL TYPE (SOIL):

Solid line denotes unit change.

Dashed line denotes material change.

Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface

The total depth line is a solid line that is drawn at the bottom of the boring.

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BORING LOG

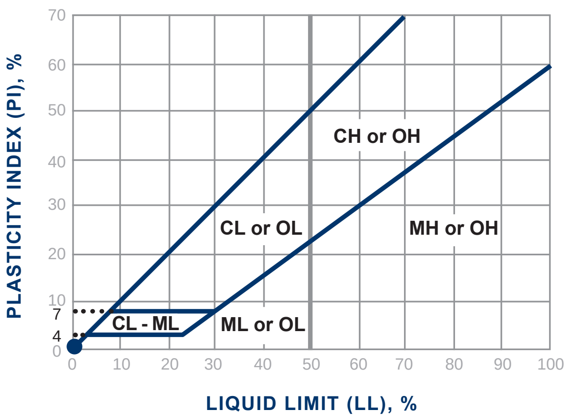
Soil Classification Chart Per ASTM D 248.

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with clay
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consistency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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USCS METHOD OF SOIL CLASSIFICATION

DATE DRILLED 12/6/24 BORING NO. NM-1
GROUND ELEVATION 130'±(MSL) SHEET 1 OF 2
METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)
DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"
SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Light brown, moist, medium dense, silty fine to medium SAND; scattered subangular to subrounded gravel.
							SM	OLD PARALIC DEPOSITS: Brown to reddish brown, moist, dense, silty fine to coarse SAND; trace subangular gravel.
5			58	6.2	113.0			
								Hard drilling at 7 feet; cobbles.
10			50/2"					
								Rig chatter at 13 feet.
15			53				ML	Light brown, moist, very dense, sandy SILT.
							SM	Light to yellowish brown, moist, dense, silty fine to coarse SAND.
			54	6.7	111.5			
20								

DATE DRILLED 12/6/24 BORING NO. NM-1

GROUND ELEVATION 130'±(MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 12/6/24. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
25								
30								
35								
40								

FIGURE B- 2

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DATE DRILLED 12/6/24 BORING NO. NM-2

GROUND ELEVATION 128'±(MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	<u>FILL:</u> Brown to reddish brown, moist, medium dense, silty fine to medium SAND; scattered subangular to subrounded gravel.
							SM	<u>OLD PARALIC DEPOSITS:</u> Brown to reddish brown, moist, very dense, silty fine to medium SAND; scattered subangular gravel.
5		■	50/4"					
10		■	50/3"					Brown to light brown.
								Hard drilling at 13 feet; cobble.
							ML	Brown, moist, very dense, sandy SILT; decrease in gravel.
15		■	67					
							SM	Brown, moist, medium dense, silty fine to coarse SAND; scattered subangular gravel.
		■	32	6.5	109.7			
20								

DATE DRILLED 12/6/24 BORING NO. NM-2

GROUND ELEVATION 128'±(MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 12/6/24. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
25								
30								
35								
40								

DATE DRILLED 12/6/24 BORING NO. NM-3
GROUND ELEVATION 130'±(MSL) SHEET 1 OF 2
METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)
DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"
SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	FILL: Brown, moist, medium dense, silty fine to medium SAND with subangular gravel.
								OTAY FORMATION: Yellowish to light gray, moist, moderately cemented, sandy SILTSTONE; scattered subangular gravel.
5		■	37					
								Hard drilling.
10		■	50/5"					Cobble in sample.
15		■	50/6"					
								Sampling on cobble.
		☒ ☒	50/5" 50/3"					
								Total Depth = 19.2 feet. Groundwater not encountered during drilling.
20								

DATE DRILLED 12/6/24 BORING NO. NM-3

GROUND ELEVATION 130'±(MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20								Backfilled shortly after drilling on 12/6/24. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
25								
30								
35								
40								

DATE DRILLED 12/6/24 BORING NO. NM-4

GROUND ELEVATION 125'±(MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■					▨	SM	<u>FILL:</u> Brown to light brown, moist, medium dense, silty fine to coarse SAND; scattered subangular to subrounded gravel; cobbles on surface up to 8 inches.
						▨		<u>OTAY FORMATION:</u> Light brown, moist, moderately cemented, silty fine to medium grained SANDSTONE; scattered subangular gravel and subrounded cobbles.
5		■	50/6"			▨		
						▨		Hard drilling.
						▨		Sample on cobble.
			50/1"					Total Depth = 9.1 feet. (Refusal on cobbles). Groundwater not encountered during drilling. Backfilled shortly after drilling on 12/6/24. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
10								
15								
20								

FIGURE B- 7

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DATE DRILLED 12/6/24 BORING NO. NM-5

GROUND ELEVATION 121'±(MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■					▨	GM	<u>FILL:</u> Brown, moist, medium dense, silty GRAVEL with sand; trace cobbles up to 6 inches.
5								Total Depth = 5 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 12/6/24. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
10								
15								
20								

FIGURE B- 8

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DATE DRILLED 12/6/24 BORING NO. NM-6
GROUND ELEVATION 119'±(MSL) SHEET 1 OF 1
METHOD OF DRILLING 8" dia. Hollow-Stem Auger (CME-95)
DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"
SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■					▨	SM	FILL: Brown, moist, medium dense, silty fine to coarse SAND; scattered subangular to subrounded gravel; trace organics.
5								Total Depth = 5 feet. Groundwater not encountered during drilling. Backfilled shortly after drilling on 12/6/24. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
10								
15								
20								

FIGURE B- 9

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DATE DRILLED 12/5/24 BORING NO. IT-2

GROUND ELEVATION 120'±(MSL) SHEET 1 OF 1

METHOD OF DRILLING Hand Auger

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY CMH LOGGED BY CMH REVIEWED BY ZH

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■					▨	GM	FILL: Light brown to brown, moist, medium dense, silty GRAVEL with sand; trace subrounded cobbles up to 6 inches; trace organics.
								Total Depth = 2 feet. (Refusal on cobbles). Groundwater not encountered during drilling. Converted to infiltration testing on 12/5/24. Backfilled on 12/6/24 shortly after infiltration testing. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
5								
10								
15								
20								

FIGURE B- 10

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APPENDIX C

Geotechnical Laboratory Testing

APPENDIX C

GEOTECHNICAL LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings in Appendix B.

In-Place Moisture and Density Tests

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix B.

Gradation Analysis

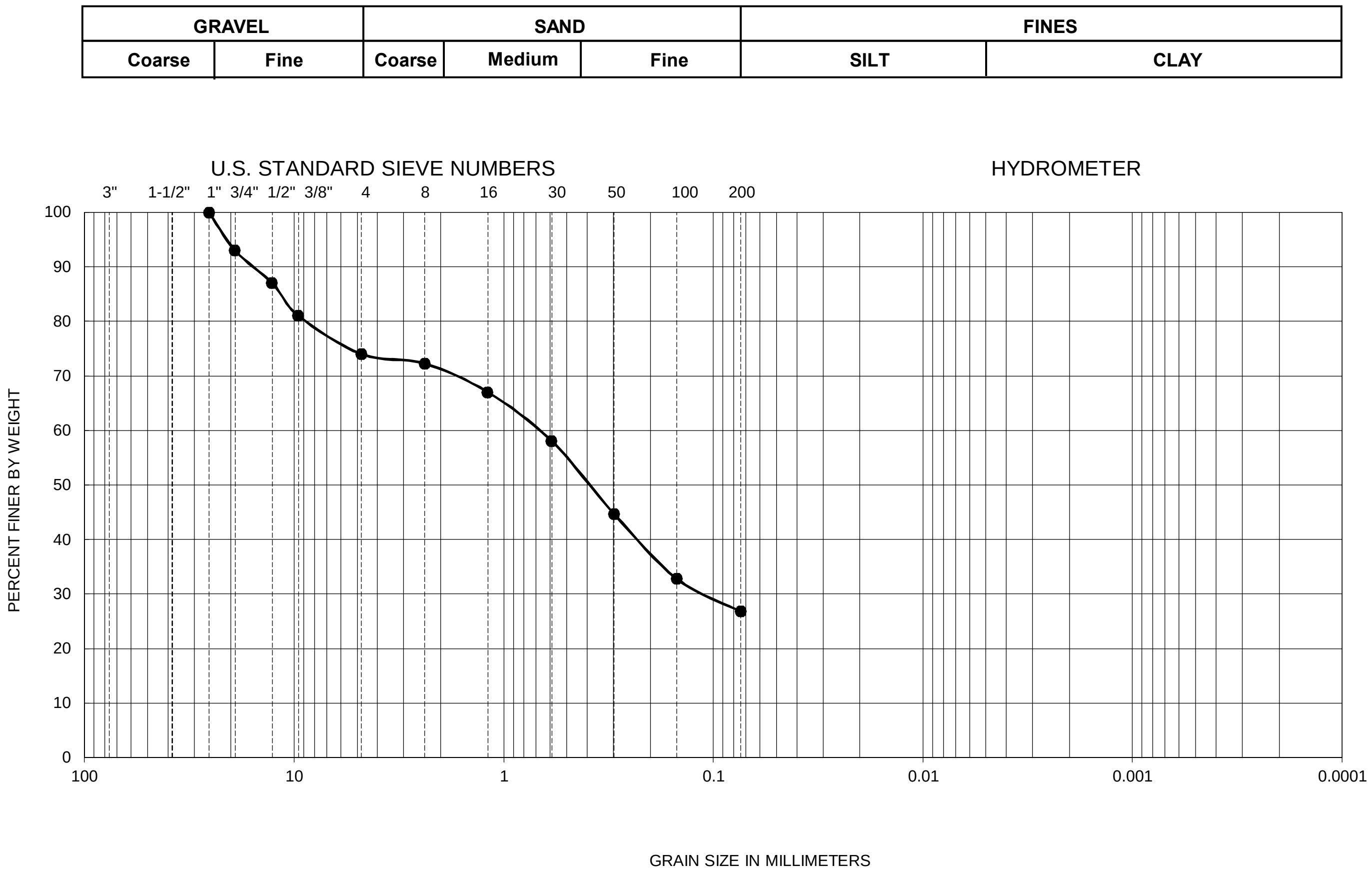
Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain size distribution curves are shown on Figures C-1 through C-7. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

Direct Shear Test

A direct shear test was performed on a relatively undisturbed sample in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of the selected material. The sample was inundated during shearing to represent adverse field conditions. The results are shown on Figure C-8.

Soil Corrosivity Tests

Soil pH and resistivity tests were performed on a representative sample in general accordance with CT 643. The soluble sulfate and chloride contents of the selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure C-9.



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	NM-1	0.0-3.0	--	--	--	--	--	--	--	--	27	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE C-1

GRADATION TEST RESULTS

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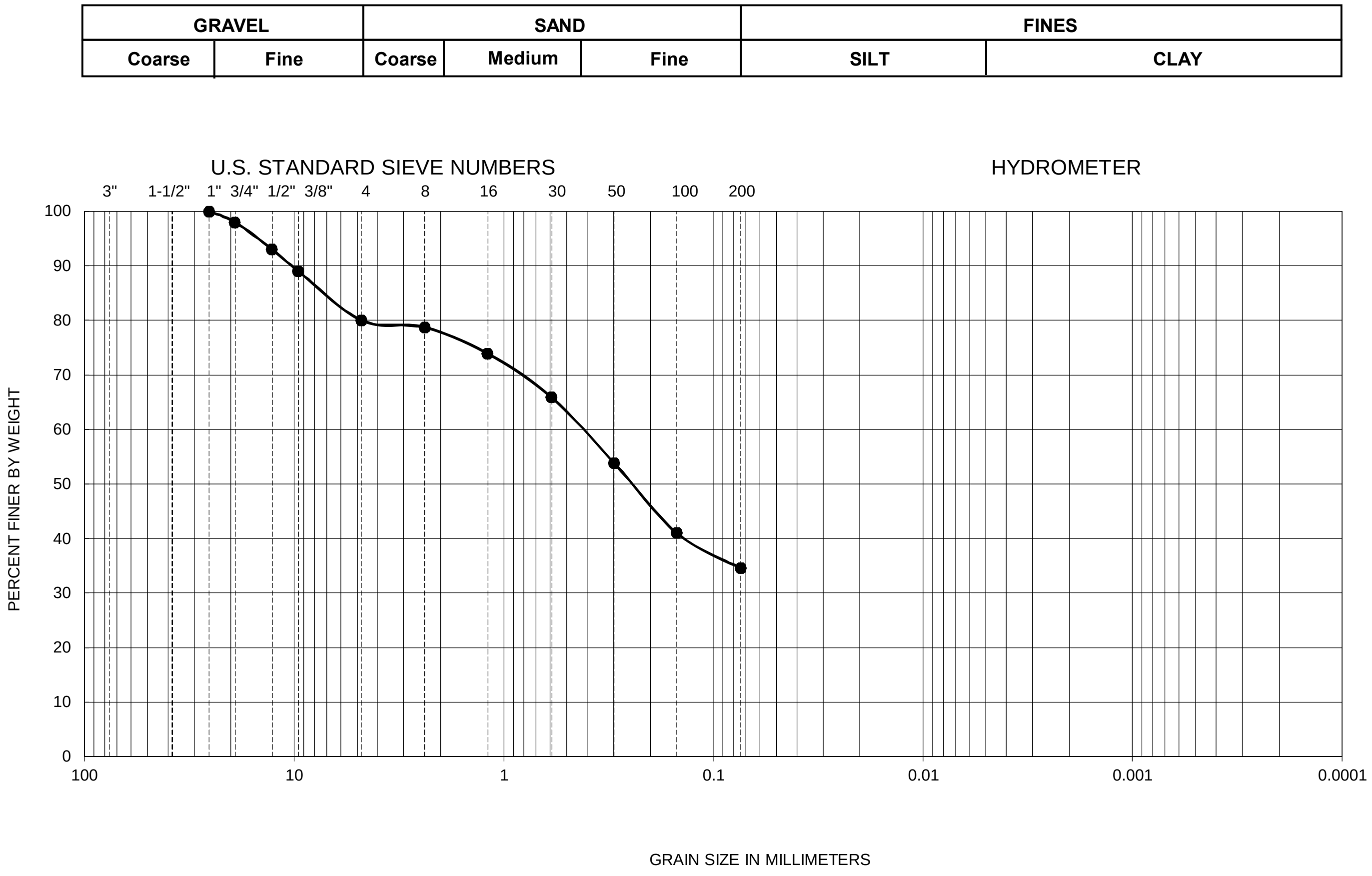

Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	NM-2	0.0-4.0	--	--	--	--	--	--	--	--	35	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE C-2

GRADATION TEST RESULTS

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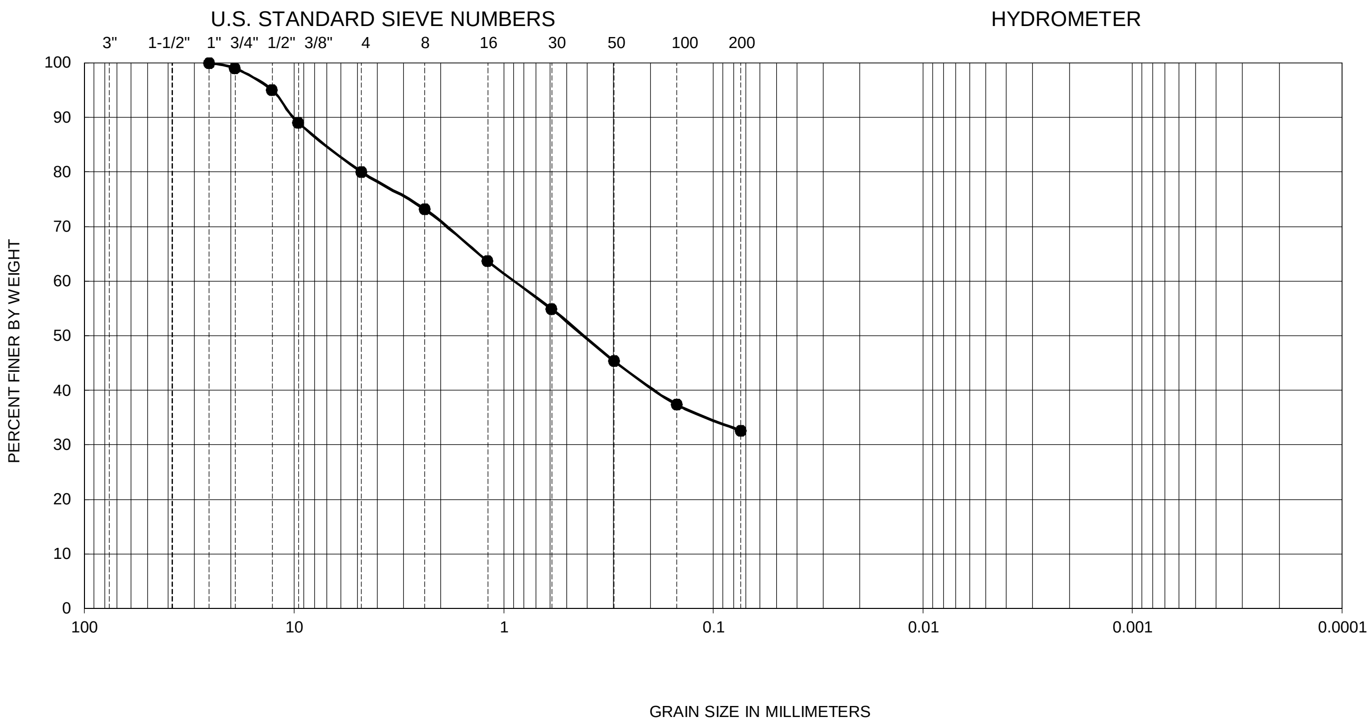
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	NM-3	0.0-4.0	--	--	--	--	--	--	--	--	33	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE C-3

GRADATION TEST RESULTS

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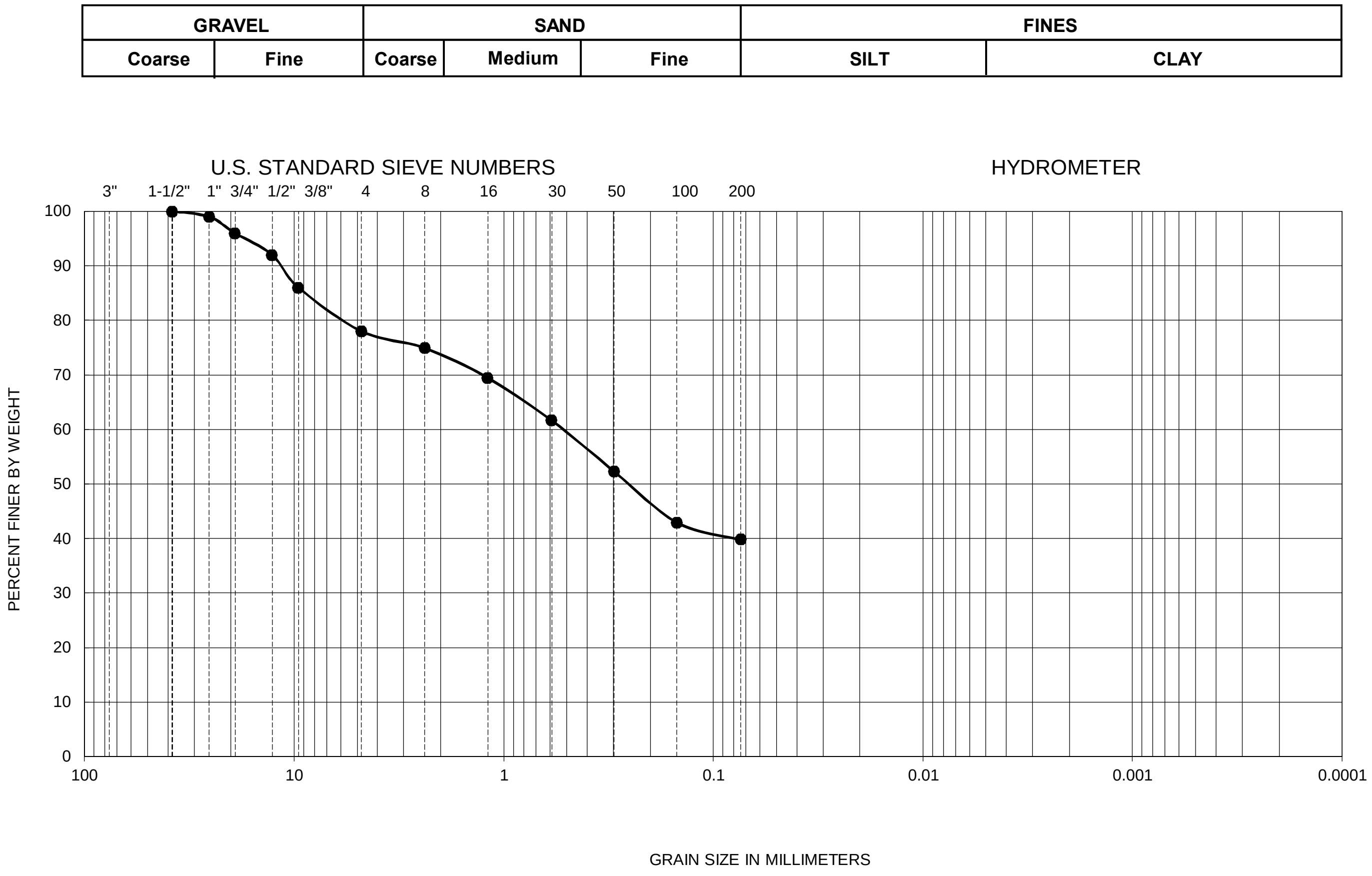
BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109751009 | 2/25



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	NM-4	0.0-4.0	--	--	--	--	--	--	--	--	40	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

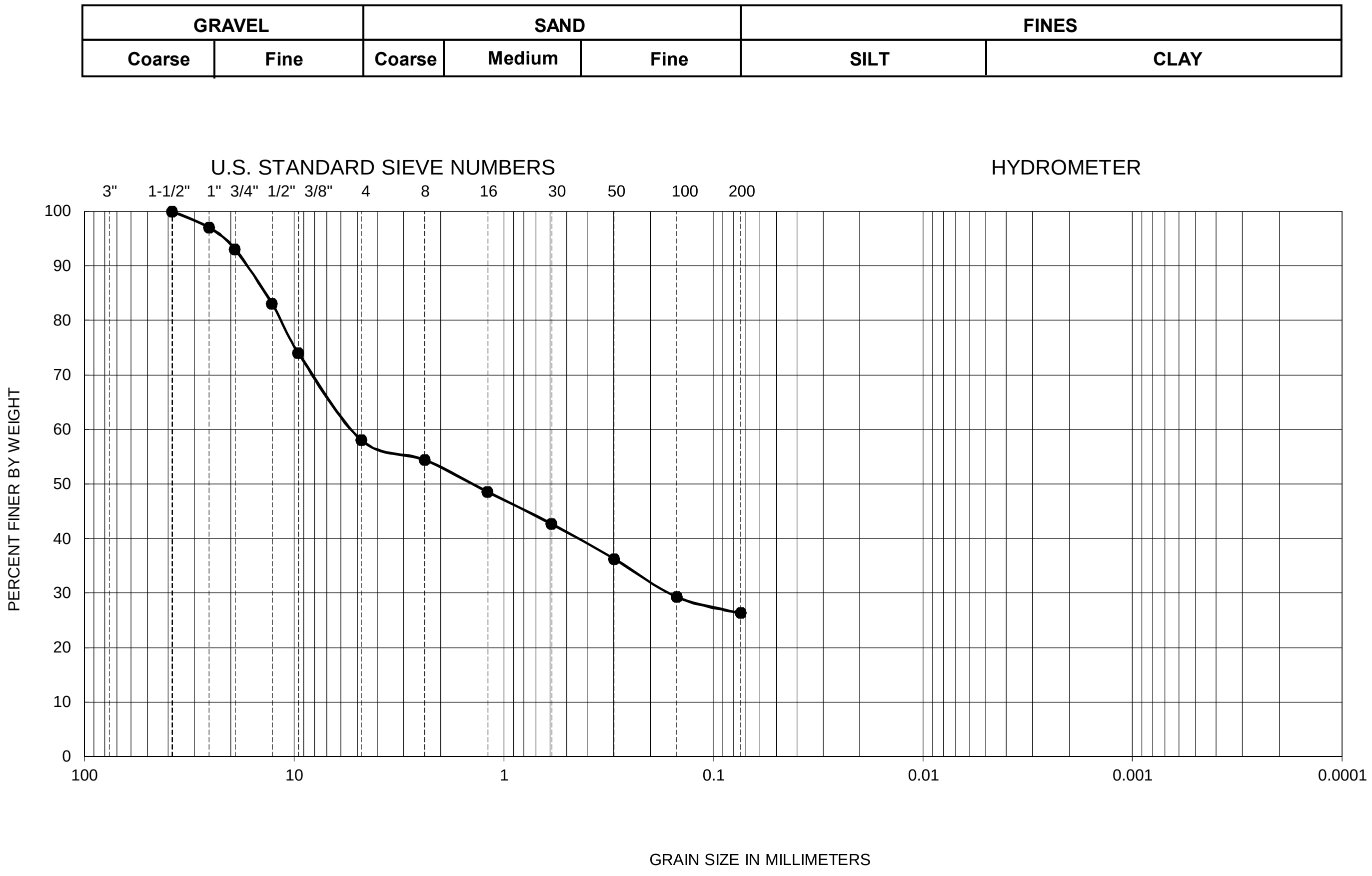
Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

FIGURE C-4

GRADATION TEST RESULTS

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109751009 | 2/25



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	NM-5	0.0-5.0	--	--	--	--	--	--	--	--	26	GM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

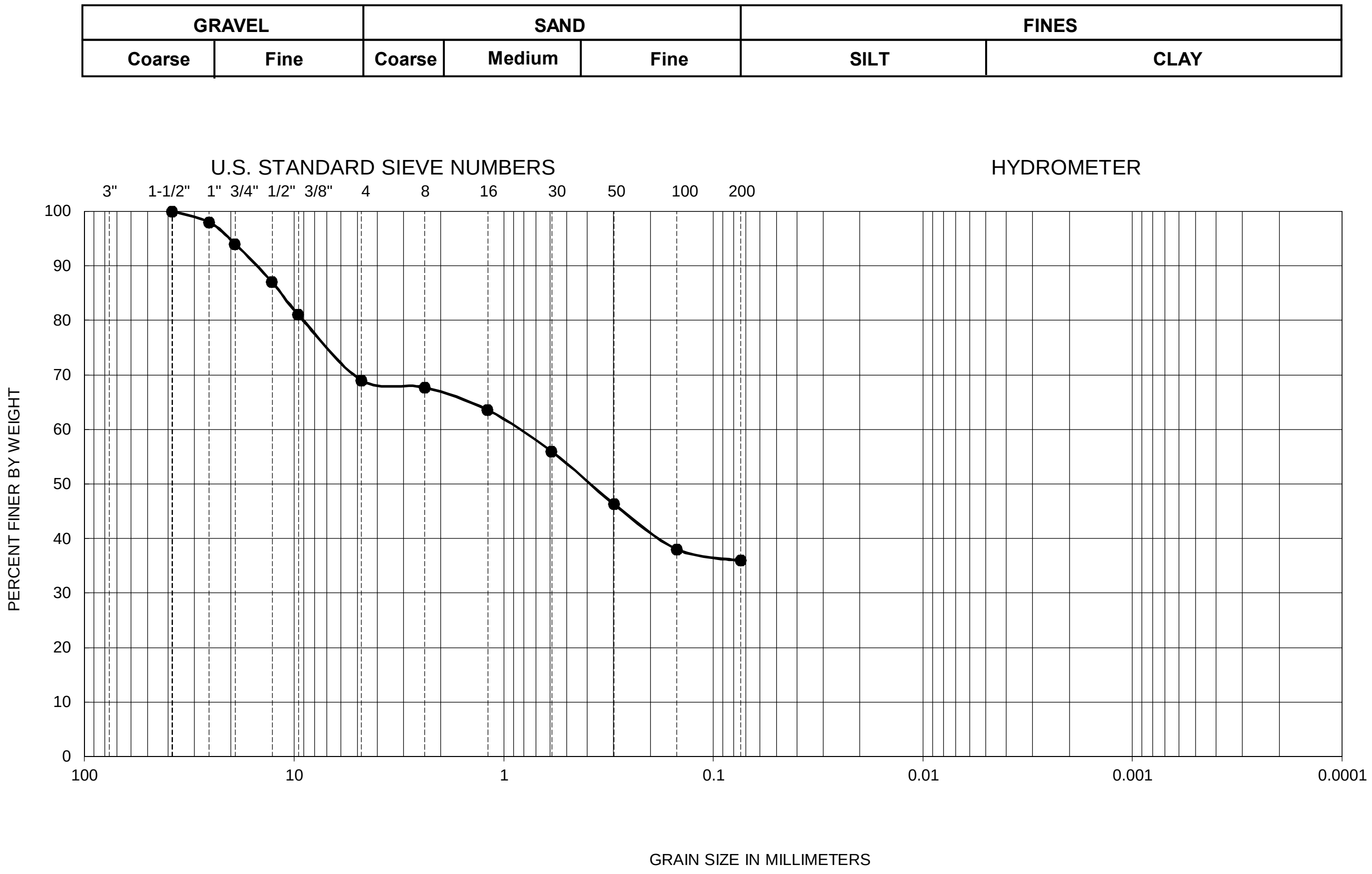
FIGURE C-5

GRADATION TEST RESULTS

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

109751009 | 2/25



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	NM-6	0.0-5.0	--	--	--	--	--	--	--	--	36	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

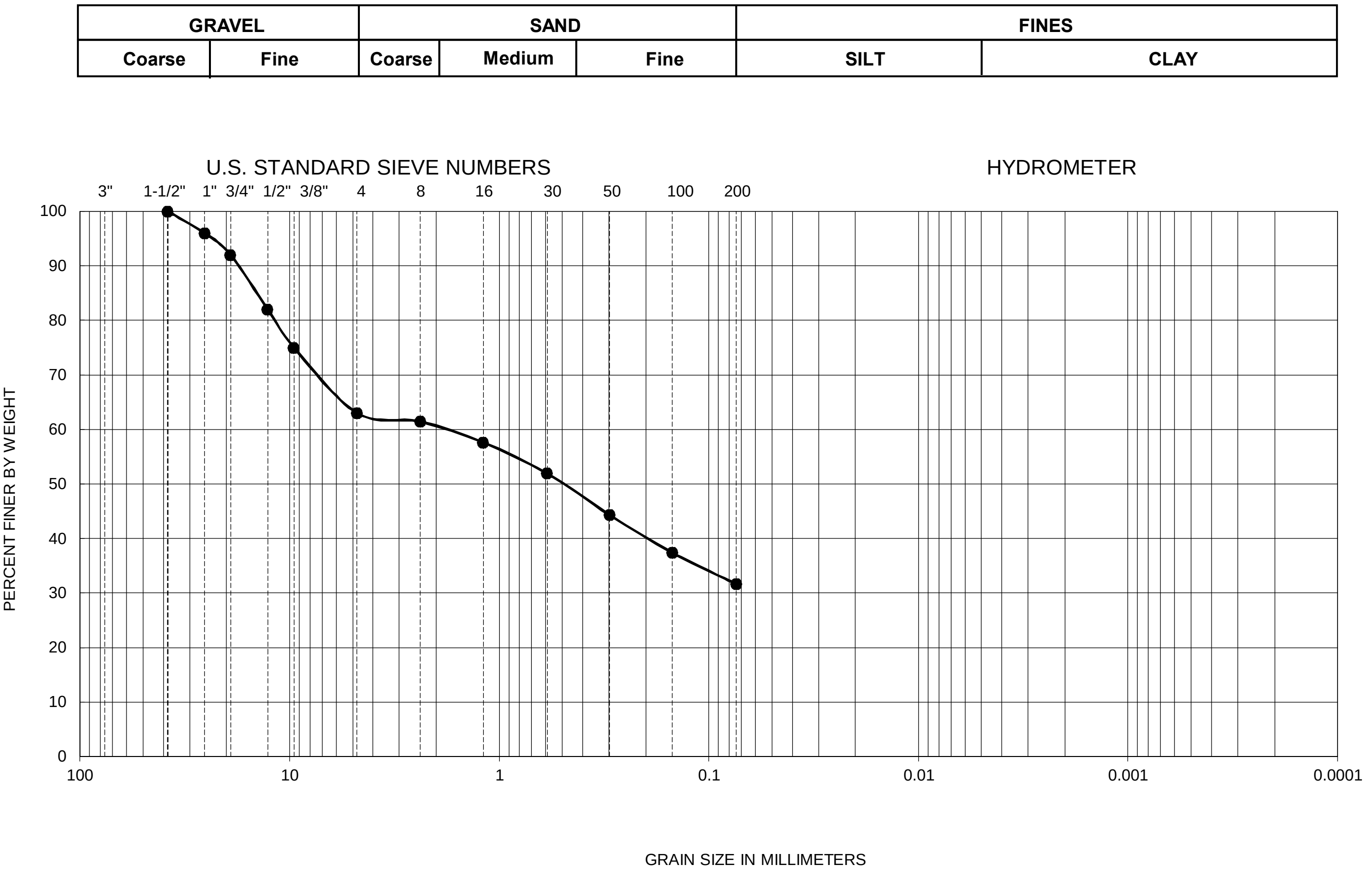
FIGURE C-6

GRADATION TEST RESULTS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109751009 | 2/25



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	IT-2	0.0-2.0	--	--	--	--	--	--	--	--	32	GM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

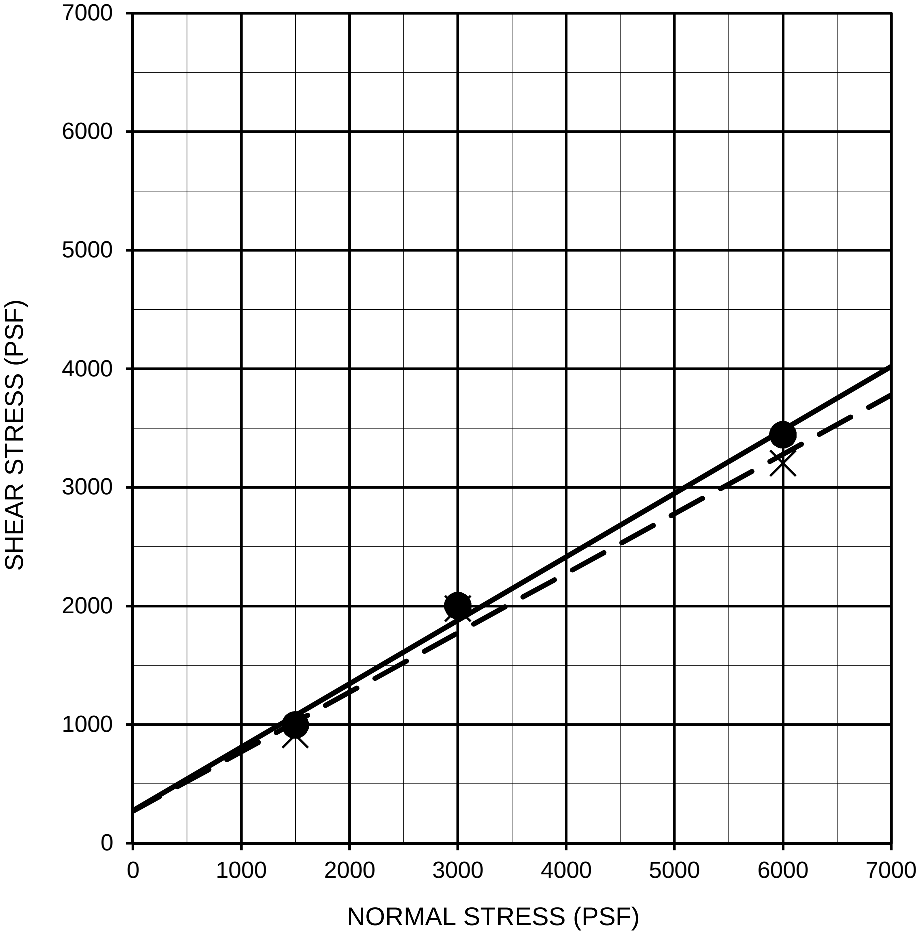
FIGURE C-7

GRADATION TEST RESULTS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109751009 | 2/25



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Silty SAND	—●—	NM-1	5.0-6.5	Peak	280	28	SM
Silty SAND	– – X – –	NM-1	5.0-6.5	Ultimate	270	27	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-8

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

DIRECT SHEAR TEST RESULTS

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109751009 | 2/25

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
NM-2	0.0-4.0	7.8	2,650	90	0.009	135

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643

[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417

[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE C-9

CORROSIVITY TEST RESULTS

BEYER COMMUNITY RESOURCE CENTER DEVELOPMENT
2312 EAST BEYER BOULEVARD, SAN DIEGO, CALIFORNIA

109751009 | 2/25

APPENDIX D

Recent Infiltration Testing Results

Test Date: 12/6/2024
Test Hole Diameter, D (inches): 6.0
Test performed and recorded by: CMH

Infiltration Test No.: IT-2
Excavation Depth (feet): 2.0
Pipe Length (feet): 5.0

t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
7:20	3.50	7:45	3.55	25	0.05	41.67	1.48	0.05
7:45	3.55	8:10	3.60	25	0.05	41.67	1.43	0.05
8:10	3.60	8:40	3.62	30	0.02	125.00	1.39	0.02
8:40	3.62	9:10	3.65	30	0.03	83.33	1.37	0.03
9:10	3.65	9:40	3.68	30	0.03	83.33	1.34	0.03
9:40	3.68	10:10	3.70	30	0.02	125.00	1.31	0.02
10:10	3.70	10:40	3.72	30	0.02	125.00	1.29	0.02
10:40	3.72	11:10	3.74	30	0.02	125.00	1.27	0.02
11:10	3.74	11:40	3.76	30	0.02	125.00	1.25	0.02
11:40	3.60	12:10	3.62	30	0.02	125.00	1.39	0.02
12:10	3.62	12:40	3.64	30	0.02	125.00	1.37	0.02
12:40	3.64	1:10	3.66	30	0.02	125.00	1.35	0.02
1:10	3.66	1:40	3.68	30	0.02	125.00	1.33	0.02
1:40	3.68	2:10	3.70	30	0.02	125.00	1.31	0.02

Notes:

t_1 = initial time when filling or refilling is completed

d_1 = initial depth to water in hole at t_1

t_2 = final time when incremental water level reading is taken

d_2 = final depth to water in hole at t_2

Δt = change in time between initial and final water level readings

ΔH = change in depth to water or change in height of water column (i.e., d_2 - d_1)

in/hr = inches per hour

AF=Adjustment Factor = 2.37

Percolation Rate to Infiltration Rate Conversion[1]

$$I_t = \frac{\Delta H \times 60 \times r}{\Delta t\left(r + 2H_{avg}\right)AF}$$

I_t = tested infiltration rate, inches/hour

ΔH = change in head over the time interval, inches

Δt = time interval, minutes

r = effective radius of test hole

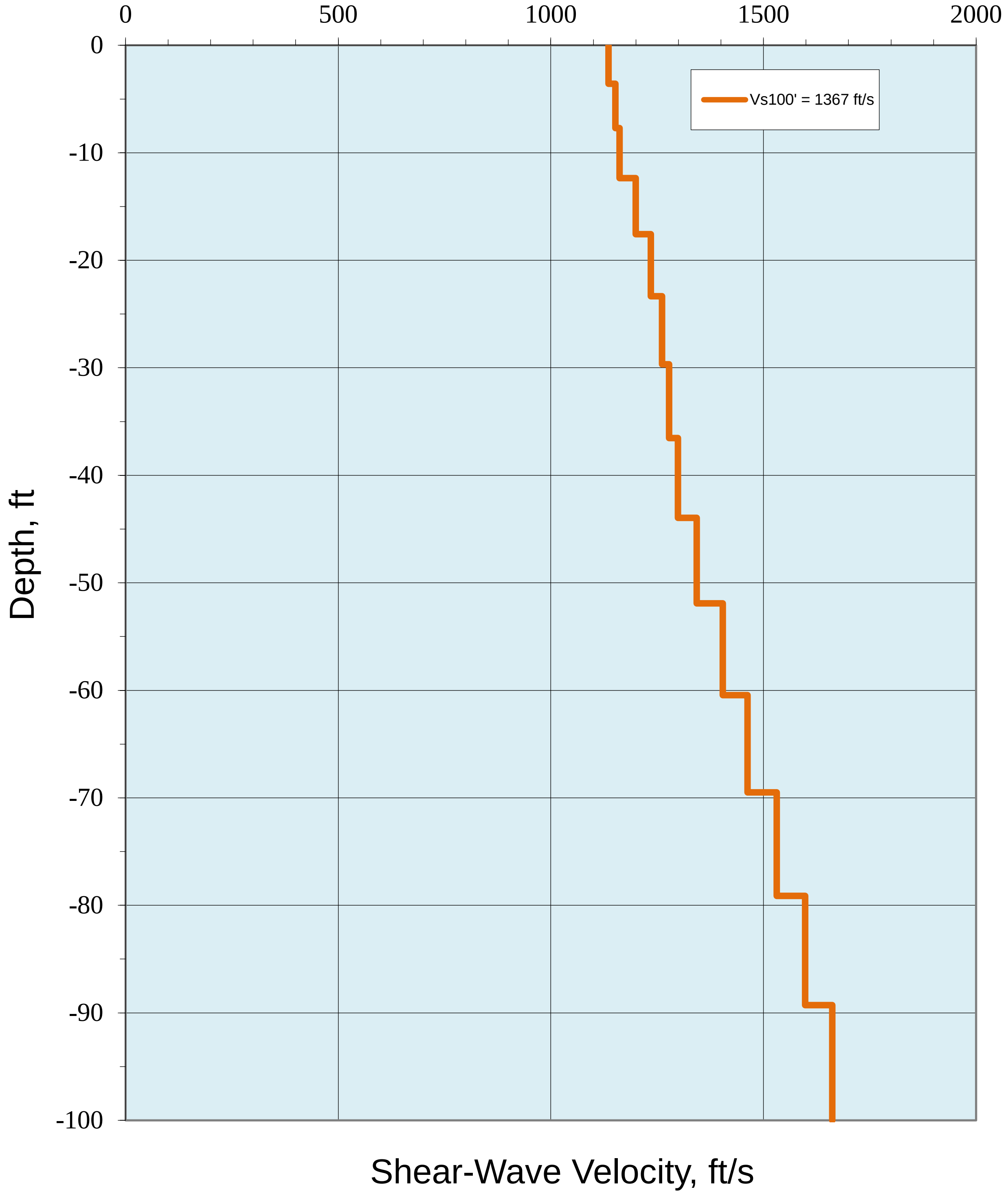
H_{avg} = average head over the time interval, inches

[1] Based on the "Porchet Method" as presented in:
Riverside County Flood Control, 2011, Design Handbook for Low Impact Development Best Management Practices: dated September.

APPENDIX E

Refraction Microtremor (ReMi) Survey Data
(Ninyo & Moore, 2023)

109751009 - Beyer Elementary School Site Redevelopment, Vs Model, Line 1



REMI SHEAR WAVE CALCULATIONS

109751009

2312 East Beyer Boulevard
San Diego, California

Line 1

d_i	v_{si}	d_i/v_{si}
3.6	1135.6	0.00314
4.1	1152.0	0.00358
4.7	1161.8	0.00402
5.2	1199.3	0.00435
5.8	1235.3	0.00467
6.3	1261.4	0.00501
6.9	1277.8	0.00538
7.4	1299.0	0.00571
8.0	1343.1	0.00593
8.5	1404.3	0.00606
9.1	1462.4	0.00620
9.6	1531.0	0.00628
10.2	1598.0	0.00636
10.7	1661.8	0.00645
	Average v_s	1367

$$\overline{v_s} = \frac{\sum d_i}{\sum \frac{d_i}{v_{si}}}$$

Per ASCE 7-22: Equation 20.4-1

d_i = thickness of any layer between 0 and 100 feet

v_{si} = shear wave velocity in feet per second

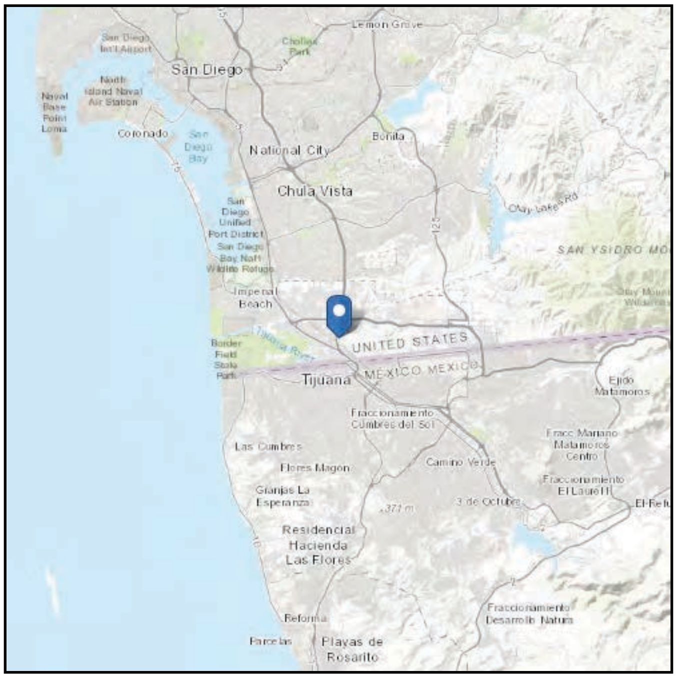
APPENDIX F

Geotechnical Calculations

ASCE Hazards Report

Address:
2312 E Beyer Blvd
San Ysidro, California
92173

Standard:	ASCE/SEI 7-16	**Latitude:**	32.556501
Risk Category:	II	**Longitude:**	-117.04061
Soil Class:	C - Very Dense Soil and Soft Rock	**Elevation:**	136.52398954265206 ft (NAVD 88)



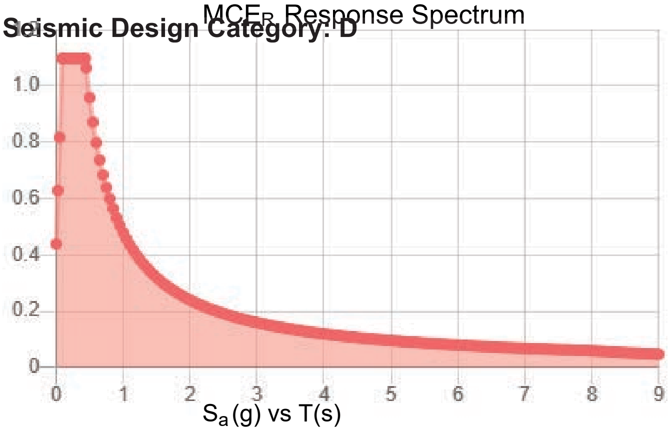
Seismic

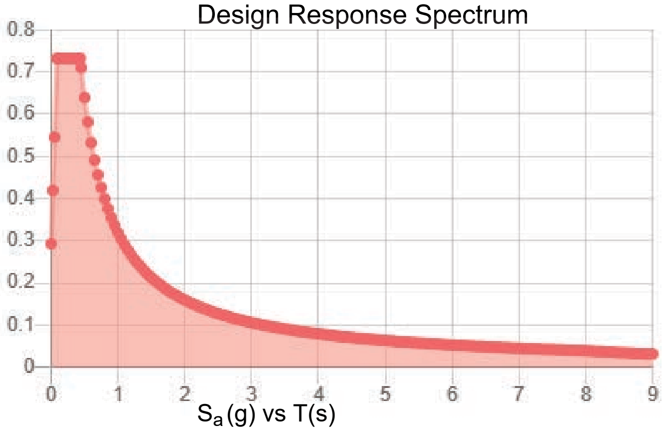
Site Soil Class: C - Very Dense Soil and Soft Rock

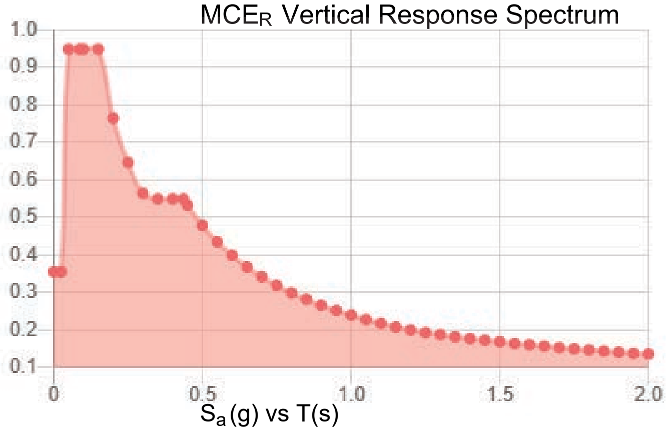
Results:

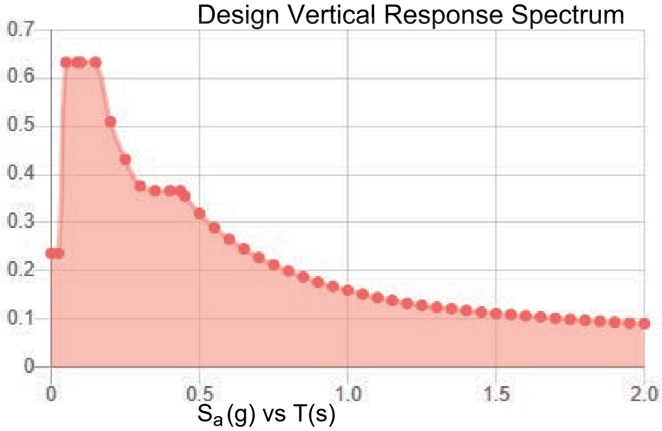
S_S :	0.915	S_{D1} :	0.319
S_1 :	0.319	T_L :	8
F_a :	1.2	PGA :	0.404
F_v :	1.5	PGA_M :	0.485
S_{MS} :	1.098	F_{PGA} :	1.2
S_{M1} :	0.479	I_e :	1
S_{DS} :	0.732	C_v :	1.079

Seismic Design Category: D









Data Accessed: **Tue Jan 14 2025**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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BEARING CAPACITY OF SHALLOW FOUNDATIONS
Terzaghi and Vesic Methods

Date February 5, 2025
Identification 109751009 Beyer CRC

Input

Units of Measurement
E SI or E

Foundation Information
Shape co SQ, CI, CO, or RE
B = 1.5 ft
L = 100 ft
D = 1.5 ft

Soil Information
c = 60 lb/ft^2
phi = 30 deg
gamma = 120 lb/ft^3
Dw = 25 ft

Factor of Safety
F = 3

Results

	Terzaghi		Vesic	
Bearing Capacity				
q ult =	8,082	lb/ft^2	8,816	lb/ft^2
q a =	2,694	lb/ft^2	2,939	lb/ft^2
Allowable Wall Load				
P/b =	4	k/ft	4	k/ft

Unit conve	1000
Gamma w	62.4
phi (radian	0.523599

Terzaghi Computations

a theta =	3.350802
Nc =	37.16
Nq =	22.46
N gamma	20.12
gamma' =	120
coefficient	1
coefficient	0.5
sigma zD'	180

Vesic Computation

Nc =	30.14
sc =	1.00
dc =	1.40
Nq =	18.40
sq =	1.00
dq =	1.29
N gamma	22.40
s gamma	1.00
d gamma	1.00
B/L =	0
k =	1
W sub f	0

BEARING CAPACITY OF SHALLOW FOUNDATIONS

Terzaghi and Vesic Methods

Date February 5, 2025
Identification 109751009 Beyer CRC

Input

Units of Measurement

E SI or E

Foundation Information

Shape = SQ SQ, CI, CO, or RE
B = 1.5 ft
L = 1.5 ft
D = 1.5 ft

Soil Information

c = 60 lb/ft^2
phi = 30 deg
gamma = 120 lb/ft^3
Dw = 25 ft

Factor of Safety

F = 3

Results

	Terzaghi	Vesic
Bearing Capacity		
q ult =	8,389 lb/ft^2	12,020 lb/ft^2
q a =	2,796 lb/ft^2	4,007 lb/ft^2
Allowable Column Load		
P =	6 k	9 k

Unit conve	1000

Gamma w	62.4
phi (radian	0.523599

Terzaghi Computations

a theta =	3.350802
Nc =	37.16
Nq =	22.46
N gamma	20.12
gamma' =	120
coefficient	1.3
coefficient	0.4
sigma zD'	180

Vesic Computation

Nc =	30.14
sc =	1.61
dc =	1.40
Nq =	18.40
sq =	1.58
dq =	1.29
N gamma	22.40
s gamma	0.60
d gamma	1.00
B/L =	1
k =	1

W sub f	0

Evaluate Side Friction Capacity of (Specify Pile Diameter)-Diameter CIDH Pile

Reese Method: Q s = P*L*[C + K*Po*tan(b)]

Where:

d = 24 **(in)** (Pile Diameter)

P = **6.28** **(ft)** (Pile Perimeter)

K = 0.6 (Earth Pressure Coefficient; choose correct one for given pile)

b = ϕ (Friction Angle btwn Pile and Soil)

Layer No. See NOTE below *	Soil Unit Weight γ (ft)	Length of Pile Section in Soil Layer **L** (ft)	Depth to Bottom of Layer **D** (ft)	Stress at bottom of layer **Po** (ksf)	Stress in middle of layer σ (ksf)	Friction Angle ϕ (deg.)	Friction btwn pile & soil β (deg.)	tan (β)	Cohesion **C** (ksf)	**Ultimate Shaft Resistance Qs** (kips)
0	0	0.00	0.00	0.00						
1	0.12	4.00	4.00	0.48	0.24	30	30	0.58	0.12	5.11
2	0.12	6.00	20.00	1.20	0.84	26	26	0.49	0.30	20.58
				0.00	0.00			0.00		0.00
				0.00	0.00			0.00		0.00
				0.00	0.00			0.00		0.00
				0.00	0.00			0.00		0.00
				0.00	0.00			0.00		0.00
				0.00	0.00			0.00		0.00
				0.00	0.00			0.00		0.00
				0.00	0.00			0.00		0.00

TOTAL Qs= **26** **(kips)**
13 **(tons)**

Pile Length = 10 (ft)

Pile Cut-off Elevation = (ft) Pile Tip Elevation = -10 (ft)

NOTE: All input cells (yellow) should be filled out with appropriate parameters to obtain a meaningful Shaft Resistance value.

Calculated By: ROS Date: January 2025 Checked By: GS Date: February 2025 Sheet 1 of 2

Evaluate Ultimate Uplift Capacity

Static: Pup = %*Qs 0.6 (choose appropriate %)

Pup = 15 (kips) = 8 (tons)

Project Name: **Beyer Elementary**
Project Number: **109751009**
Calculated By: ROS Date: 1/13/2025
Checked By: GS Date: 2/3/2025

Ninyo & Moore

STATIC LATERAL EARTH PRESSURE

Internal friction angle of soil $\phi =$ 30.0 degrees
Slope angle adjacent to footing/wall[1] $\beta =$ 0.0 degrees
Total unit weight of soil $\gamma =$ 120.0 pcf

Note:
[1] slope angle is "0" for level ground, positive for ascending ground, and negative for descending ground.

Active Earth Pressure, Ka

$K_a = [\cos\phi/(1+(\sin\phi*(\sin\phi-\cos\phi*\tan\beta)))^{1/2}]^2$ **K_a = 0.33**

Equivalent fluid pressure, EFP $=\gamma*K_a$ **EFP = 40.0 pcf** 6.3 kN/m^3

At-Rest Earth Pressure, Ko

Ko = $(1-\sin\phi)*(1+\sin\beta)$ **Ko = 0.50**

Equivalent fluid pressure, EFP $=\gamma*K_o$ **EFP = 60.0 pcf** 9.4 kN/m^3

Passive Earth Pressure, K_p

$K_p = [\cos\phi/(1-(\sin\phi*(\sin\phi+\cos\phi*\tan\beta)))^{1/2}]^2$ **K_p = 3.00**

Equivalent fluid pressure, EFP $=\gamma*K_a$ **EFP = 360.0 pcf** 56.6 kN/m^3

DYNAMIC LATERAL EARTH PRESSURE

Agusti & Sitar (2013) Analysis for the Design Earthquake:

Design Spectral Response Accleration at 0.2-second period, S_{DS} S_{DS} = 0.73 g
Effective Peak Ground Acceleration (PGA), = $S_{DS}/2.5$ PGA = 0.29 g
Dynamic Load Coefficient for Cantilever Walls with level backfill (0.42 PGA/g) Kae = 0.12 g
Dynamic Load Coefficient for Restrained Walls with level backfill (0.68 PGA/g) Kae = 0.20
Dynamic Load Coefficient for Retaining Walls with 2:1 sloping backfill (0.7 PGA/g) Kae = 0.20 degrees

Seismic Active Earth Pressure Coefficient, K_{ae}

Equivalent fluid pressure for dynamic lateral earth pressure for Cantilever Walls with level backfill, EFP $=\gamma*K_e$
EFP = 14.7 pcf

Equivalent fluid pressurefor dynamic lateral earth pressure for Restrained Walls with level backfill, EFP $=\gamma*K_e$
EFP = 23.8 pcf

Equivalent fluid pressure for dynamic lateral earth pressure for Cantilever Walls with 2:1 sloping backfill, EFP $=\gamma*K_e$
EFP = 24.5 pcf

Project Name: **Beyer Elementary**
Project Number: **109751009**
Calculated By: ROS Date: 1/13/2025
Checked By: GS Date: 2/3/2025

Ninyo & Moore

STATIC LATERAL EARTH PRESSURE

Internal friction angle of soil	ϕ =	30.0	degrees
Slope angle adjacent to footing/wall[1]	β =	26.5	degrees
Total unit weight of soil	γ =	120.0	pcf

Note:

[1] *slope angle is "0" for level ground, positive for ascending ground, and negative for descending ground.*

Active Earth Pressure, Ka

$K_a = [\cos\phi/(1+(\sin\phi*(\sin\phi-\cos\phi*\tan\beta))^{1/2}]^2$ **K_a =** **0.53**

Equivalent fluid pressure, EFP = $\gamma*K_a$ **EFP = 64.1 pcf** 10.1 kN/m^3

At-Rest Earth Pressure, Ko

Ko = $(1-\sin\phi)*(1+\sin\beta)$ **Ko = 0.72**

Equivalent fluid pressure, EFP = $\gamma*K_o$ **EFP = 86.8 pcf** 13.6 kN/m^3

Passive Earth Pressure, K_p

$K_p = [\cos\phi/(1-(\sin\phi*(\sin\phi+\cos\phi*\tan\beta))^{1/2}]^2$ **K_p =** **7.44**

Equivalent fluid pressure, EFP = $\gamma*K_a$ **EFP = 893.2 pcf** 140.3 kN/m^3

Project Name: **Beyer Elementary**
Project Number: **109751009**
Calculated By: ROS Date: 1/13/2025
Checked By: GS Date: 2/3/2025

Ninyo & Moore

STATIC LATERAL EARTH PRESSURE

Internal friction angle of soil $\phi =$ 30.0 degrees
Slope angle adjacent to footing/wall[1] $\beta =$ -26.5 degrees
Total unit weight of soil $\gamma =$ 120.0 pcf

Note:
[1] slope angle is "0" for level ground, positive for ascending ground, and negative for descending ground.

Active Earth Pressure, Ka

$K_a = [\cos\phi/(1+(\sin\phi*(\sin\phi-\cos\phi*\tan\beta)))^{1/2}]^2$ **K_a = 0.26**

Equivalent fluid pressure, EFP = $\gamma*K_a$ **EFP = 31.8 pcf** 5.0 kN/m^3

At-Rest Earth Pressure, Ko

Ko = $(1-\sin\phi)*(1+\sin\beta)$ **Ko = 0.28**

Equivalent fluid pressure, EFP = $\gamma*K_o$ **EFP = 33.2 pcf** 5.2 kN/m^3

Passive Earth Pressure, K_p

$K_p = [\cos\phi/(1-(\sin\phi*(\sin\phi+\cos\phi*\tan\beta)))^{1/2}]^2$ **K_p = 1.13**

Equivalent fluid pressure, EFP = $\gamma*K_a$ **EFP = 135.4 pcf** 21.3 kN/m^3

CalFP-Web v3.DD002.0 **User:** Gabriel Smith **Report Time Stamp:** Wednesday, February 05, 2025, 3:16 PM

Project: 109751009 Beyer CRC
Description: Preliminary Pavement Design Design R-Value = 15
Trial: TI = 5
Description: Parking Stalls

Results of the Caltrans Empirical Design Check Applied to the Current Structure

Minimum and Maximum Thickness Checks

No problems with minimum/maximum thickness checks;

Structural Adequacy Checks

Warning: Gravel Equivalent Provided above Layer 2 (AB): 0.63 is more than required: 0.55;
Error: Gravel Equivalent Provided above Layer 3 (SG): 1.18 is less than required: 1.36;

CalFP Design Alternatives

```
Design    HMA     AB     SG    AC GF  Res GE  TtlThick  Cost/mi  MsgsText
------   -----  -----  -----  -----  ------  --------  -------  --------
   1     0.20   0.80   0.00   2.54    0.03      1.00         0

   2     0.25   0.65   0.00   2.54   -0.01      0.90         0

   3     0.30   0.55   0.00   2.54    0.01      0.85         0

   4     0.35   0.45   0.00   2.54    0.02      0.80         0

   5     0.40   0.35   0.00   2.54    0.04      0.75         0

   6     0.45   0.35   0.00   2.54    0.17      0.80         0
```

7	0.50	0.35	0.00	2.54	0.29	0.85	0
8	0.55	0.35	0.00	2.56	0.44	0.90	0

CalFP-Web **v3.DD002.0** **User:** Gabriel Smith **Report Time Stamp:** Wednesday, February 05, 2025, 3:17 PM

Project: 109751009 Beyer CRC
Description: Preliminary Pavement Design Design R-Value = 15
Trial: TI = 6
Description: Drive Aisles

Results of the Caltrans Empirical Design Check Applied to the Current Structure

Minimum and Maximum Thickness Checks

No problems with minimum/maximum thickness checks;

Structural Adequacy Checks

Error: Gravel Equivalent Provided above Layer 2 (AB): 0.58 is less than required: 0.62;
Error: Gravel Equivalent Provided above Layer 3 (SG): 1.13 is less than required: 1.63;

CalFP Design Alternatives

```
Design   HMA    AB     SG    AC GF  Res GE  TtlThick  Cost/mi  MsgsText
------  -----  -----  -----  -----  ------  --------  -------  --------
   1    0.25   0.95   0.00   2.31   -0.01      1.20        0

   2    0.30   0.85   0.00   2.31    0.00      1.15        0

   3    0.35   0.75   0.00   2.31    0.00      1.10        0

   4    0.40   0.65   0.00   2.31    0.01      1.05        0

   5    0.45   0.55   0.00   2.31    0.01      1.00        0

   6    0.50   0.45   0.00   2.31    0.02      0.95        0
```

7	0.55	0.35	0.00	2.34	0.04	0.90	0
8	0.60	0.35	0.00	2.41	0.20	0.95	0
9	0.65	0.35	0.00	2.48	0.36	1.00	0

CalFP-Web **v3.DD002.0** **User:** Gabriel Smith **Report Time Stamp:** Wednesday, February 05, 2025, 3:18 PM

Project: 109751009 Beyer CRC
Description: Preliminary Pavement Design Design R-Value = 15
Trial: TI = 7
Description: Fire Lanes and Bus Lanes

Results of the Caltrans Empirical Design Check Applied to the Current Structure

Minimum and Maximum Thickness Checks

No problems with minimum/maximum thickness checks;

Structural Adequacy Checks

Error: Gravel Equivalent Provided above Layer 2 (AB): 0.54 is less than required: 0.69;
Error: Gravel Equivalent Provided above Layer 3 (SG): 1.09 is less than required: 1.90;

CalFP Design Alternatives

```
Design   HMA     AB     SG    AC GF   Res GE  TtlThick  Cost/mi  MsgsText
------  -----  -----  -----  -----  ------  --------  -------  --------
   1     0.30   1.15   0.00   2.14    0.00      1.45        0

   2     0.35   1.05   0.00   2.14    0.00      1.40        0

   3     0.40   0.95   0.00   2.14    0.00      1.35        0

   4     0.45   0.85   0.00   2.14    0.00      1.30        0

   5     0.50   0.75   0.00   2.14   -0.01      1.25        0

   6     0.55   0.65   0.00   2.17    0.00      1.20        0
```

7	0.60	0.50	0.00	2.23	-0.02	1.10	0
8	0.65	0.40	0.00	2.29	0.03	1.05	0
9	0.70	0.35	0.00	2.35	0.13	1.05	0
10	0.75	0.35	0.00	2.40	0.28	1.10	0
11	0.80	0.35	0.00	2.46	0.45	1.15	0

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