HIGHLAND PARK JUNIOR ARTS CENTER

111 BRIDEWELL STREET, LOS ANGELES, CA 90042

PRE-DESIGN REPORT

ENGINEERING
CITY OF LOS ANGELES

Prepared by the Bureau of Engineering- Architectural Division

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1.0 INTRODUCTION

1.1 BACKGROUND

The Highland Park Junior Arts Center involves the construction of a new 5,000-square-foot junior arts center facility at 111 Bridewell Street, Los Angeles, CA 90042. This new facility will provide arts education to Los Angeles youth, through classes, including drawings, painting, ceramics, clay, photography, and more. Funding for this project will be available through Proposition K, and other sources.

1.2 PROJECT OVERVIEW:

The scope for this Project includes the following:

1. Construction of a 5,000-square-foot, two-story building on an approximately 50,560 square-foot site,
2. Replace windows, doors, and roofing as needed to achieve a watertight condition for the existing Bridewell Armory
3. Improvements to the existing parking lot to meet ADA code-required upgrades, including EV charging requirements.

   The site will include a new plaza adjacent to the Project to support outdoor classrooms, kilns, and exhibitions. The building should be sited to minimize hardscape required for ADA access and may be expanded as necessary to accommodate kilns and related equipment.

1.3 PROPERTY LOCATION

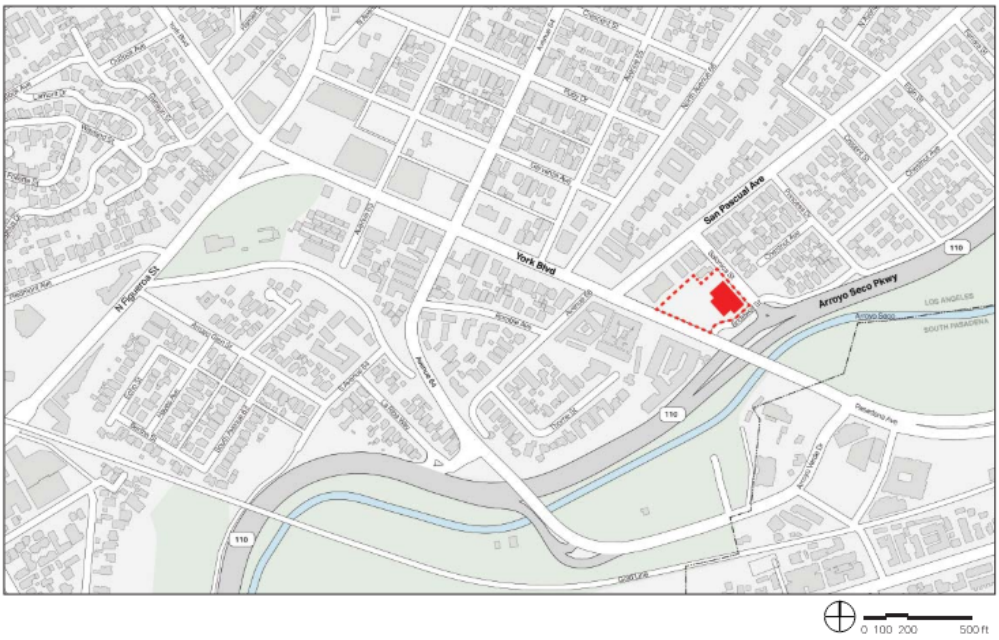
The site is located at 111 Bridewell Street, Los Angeles, CA 90042.

2.0 PROJECT DESCRIPTION

2.1 SITE & LOCATION ANALYSIS

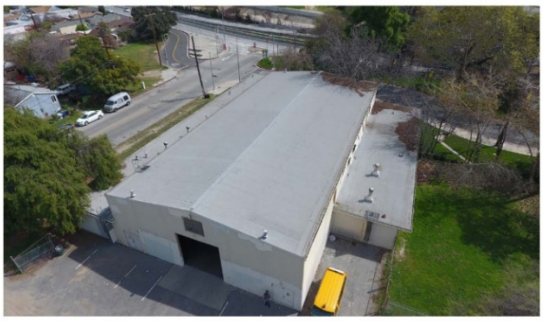
The project is located in the Highland Park neighborhood of Los Angeles. The eastern edge of the site abuts the 110 freeway and the Arroyo Seco watercourse. Surrounding communities include: Hermon and South Pasadena to the east, Eagle Rock and Pasadena to the north, Glassell Park and Mount Washington to the west, and Montecito Heights to the south.

The site contains a 12,295 square foot abandoned Historical armory building, an asphalt parking lot, and landscaping.



Site Map

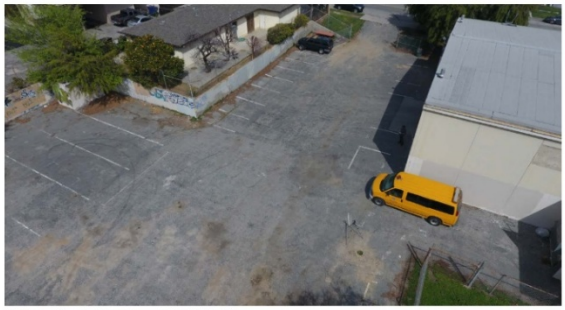
2.2 EXISTING CONDITIONS PHOTOS



Aerial view of the existing building towards 110 Freeway

Aerial view from York Boulevard

Existing landscape on southwest corner of the parcel



Existing parking lot adjacent to west side of the building

2.3 FACILITY DESIGN CONCEPT

a. Project Objectives

- Design and construction of a 5,000 sq. ft. Junior Arts Center and arts plaza in the existing parking lot which provides a safe, comfortable, and productive space to learn about art.
- The existing building would receive improvements to doors and windows to ensure the building remains secure and watertight, and can serve as storage space for art-related equipment, paintings, and sculptures of all sizes. The exterior walls may also serve as the canvas for the Project's public art component.
- Develop strategies to maximize energy efficiency in pursuit of LEED certification.

b. Program

- Instructional Areas

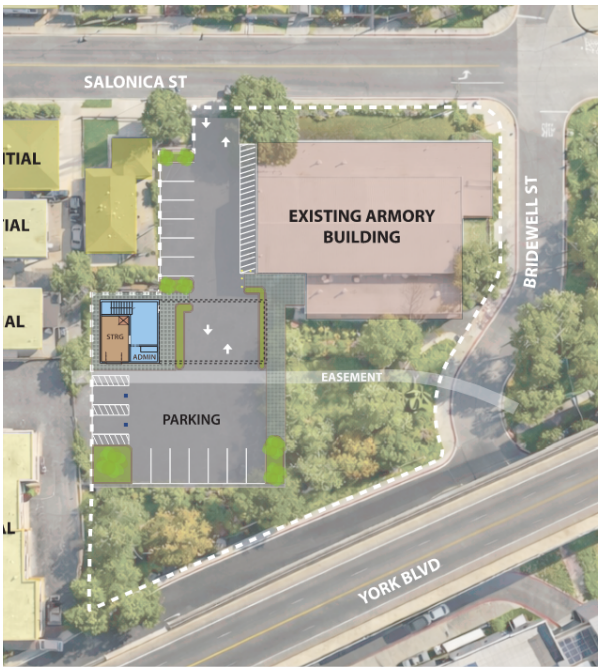
- Visual Arts
- Media Arts
- Performing Arts
- Applied Arts
- Presentation/Performance Areas

- Support Spaces
  - Administration
  - Communal Spaces
  - Storage

c. The selected consultants shall consider the following site constraints when determining the location of the proposed structure:

- The Metropolitan Water District of Southern California easement.
- The proposed structure shall not be located near the steep hill at the southwest end of the site, per geotechnical recommendations.

PROPOSED LOCATION OF JUNIOR ARTS CENTER



PROPOSED CONCEPT PLAN – 1ST FLOOR

PROPOSED CONCEPT PLAN – 2ND FLOOR

2.4 GEOTECHNICAL EVALUATION

See following attachments:

a. Geotechnical Report dated 01/30/2017
b. Soils Report Approval Letter dated 03/17/2017

3.0 CONSTRUCTION ANALYSIS

3.1 CONSTRUCTION APPROACH

Design Build: The Chosen Consultant will develop a 30% Bridging Document, that equates to a complete Design Development Submittal.

3.2 PERMITS REQUIRED

This project will fall under the purview of the following Code enforcement agencies:

- Los Angeles Department of Building & Safety
- Department of City Planning
- Department of Public Works
- Bureau of Sanitation
- Bureau of Engineering

3.3 PARKING/ ZONING/ SITE CONCERNS

a. Parking:

The Project shall comply with all applicable Electric Vehicle (EV) and ADA requirements.

b. Zoning:

- The Highland Park Junior Art Center site is currently zoned PF-1 (Public Facilities). As such, there are no required height limits, yard setbacks, or minimum lot widths.

- The site is identified with a Hillside Area designation and therefore required to comply with the Baseline Hillside Ordinance (BHO).

- Per ZI-2129 the site is located with the State Enterprise Zone. Under this program there may be incentives available to reduce the number of required parking spaces – depending on the final use designation applied to the parking requirements of the facility.

- Per ZI-2427 the site is located within 1,000 feet of a freeway (State Route 110), and the City has provided an advisory notice for sensitive uses.

c. Site:

- The entry ramp accessing the site from Salonica Street may be too steep per current code.

- Existing Retaining Walls:

  The topography of the area slopes upward to the south toward York Boulevard, and to the west toward San Pascual Ave. As a result, retaining walls are required along the western edge of the site to accommodate the change in grade and maintain a generally flat site. Along the southern edge of the site, a steep, heavily wooded slope transitions from the armory site to the elevated York Boulevard.

  The retaining walls along the western perimeter of the site generally follow the property line. Aside from several layers of paint and graffiti, the walls appear to be in good condition.

- Parking Lot:

An asphalt parking lot is accessible from Salonica Street and extending southward toward York Boulevard. The lot is adjacent to the western façade of the existing armory building and provides direct access to the roll-up door and two personnel doors on that façade.

The asphalt is in poor condition with several large cracks and breaks in the surface. A storage container is currently located along the western edge of the parking lot.

3.4 PROJECT DELIVERY METHOD

The project will follow a traditional design–bid–construct delivery method, with an accelerated design schedule to meet the Proposition K deadline.

4.0 ENGINEER'S OPINION OF PROBABLE COST

4.1 PROBABLE COST

Current construction budget is $8,000,000

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SUPERINTENDENT OF BUILDING

OSAMA YOUNAN, P.E.
EXECUTIVE OFFICER

SOILS REPORT APPROVAL LETTER

March 17, 2017

LOG # 96972
SOILS/GEOLOGY FILE - 2
LIQ

Department of Recreation and Parks
1149 S. Broadway, 8th Floor
Los Angeles, CA 90015

TRACT: THE MINERAL PARK TRACT (M P 3-31/32)
LOT(S): LT 56
LOCATION: 111 N. Bridewell St.

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE(S) OF DOCUMENT	PREPARED BY
Soils Report	16-191	01/30/2017	Geotechnical Engineering Group
Laboratory Test Report	160523P3.1	01/05/2017	SCST Engineering

The Grading Division of the Department of Building and Safety has reviewed the referenced report that provide recommendations for the proposed remodel and addition to an existing commercial structure. The earth materials at the subsurface exploration locations consist of up to 5 feet of uncertified fill underlain by native soils. The consultants recommend to support the proposed structure(s) on conventional foundations bearing on native undisturbed soils and/or a blanket of properly placed fill a minimum of 2 feet thick.

The site is located in a designated liquefaction hazard zone as shown on the Seismic Hazard Zones map issued by the State of California. The Liquefaction study included as a part of the report/s demonstrates that the site does not possess a liquefaction potential. This satisfies the requirement of the 2014 Los Angeles City Building Code Section 1802.2.7.

The referenced report is acceptable, provided the following conditions are complied with during site development:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2017 City of LA Building Code. P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. The soils engineer shall review and approve the detailed plans prior to issuance of any permit. This approval shall be by signature on the plans that clearly indicates the soils engineer has reviewed the plans prepared by the design engineer and that the plans included the recommendations contained in his report. (7006.1)

2. All recommendations of the report that are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.

3. A copy of the subject and appropriate referenced reports and this approval letter shall be attached to the District Office and field set of plans. Submit one copy of the above reports to the Building Department Plan Checker prior to issuance of the permit. (7006.1)

4. A grading permit shall be obtained for all structural fill and retaining wall backfill. (106.1.2)

5. All man-made fill shall be compacted to a minimum 90 percent of the maximum dry density of the fill material per the latest version of ASTM D 1557. Where cohesionless soil having less than 15 percent finer than 0.005 millimeters is used for fill, it shall be compacted to a minimum of 95 percent relative compaction based on maximum dry density (D1556). Placement of gravel in lieu of compacted fill is allowed only if complying with Section 91.7011.3 of the Code. (7011.3)

6. If import soils are used, no footings shall be poured until the soils engineer has submitted a compaction report containing in-place shear test data and settlement data to the Grading Division of the Department, and obtained approval. (7008.2)

7. Compacted fill shall extend beyond the footings a minimum distance equal to the depth of the fill below the bottom of footings or a minimum of three feet whichever is greater[, except at locations where lateral over excavation is not possible (i.e., foundations adjacent to property lines or structures), in which case the foundations may be deepened to bear in native soils, as recommended] (7011.3).

8. Existing uncertified fill shall not be used for support of footings, concrete slabs or new fill. (1809.2, 7011.3)

9. Drainage in conformance with the provisions of the Code shall be maintained during and subsequent to construction. (7013.12)

10. Controlled Low Strength Material, CLSM (slurry) proposed to be used for backfill shall satisfy the requirements specified in P/BC 2014-121.

11. A supplemental report shall be submitted to the Grading Division of the Department containing recommendations for shoring, underpinning, and sequence of construction in the event that any excavation would remove lateral support to the public way, adjacent property, or adjacent structures. A plot plan and cross-section(s) showing the construction type, number of stories, and location of the structures adjacent to the excavation shall be part of the excavation plans. (3307.3 & 7006.2)

12. Temporary excavations that remove lateral support to the public way, adjacent property, or adjacent structures shall be supported by shoring. Note: Lateral support shall be considered to be removed when the excavation extends below a plane projected downward at an angle of 45 degrees from the bottom of a footing of an existing structure, from the edge of the public way or an adjacent property. (3307.3.1)

13. Where any excavation, not addressed in the approved reports, would remove lateral support (as defined in 3307.3.1) from a public way, adjacent property or structures, a supplemental report shall be submitted to the Grading Division of the Department containing recommendations for shoring, underpinning, and sequence of construction. Report shall include a plot plan and cross-section(s) showing the construction type, number of stories, and

location of adjacent structures, and analysis incorporating all surcharge loads that demonstrate an acceptable factor of safety against failure. (7006.2 & 3307.3.2)

14. Prior to the issuance of any permit which authorizes an excavation where the excavation is to be of a greater depth than are the walls or foundation of any adjoining building or structure and located closer to the property line than the depth of the excavation, the owner of the subject site shall provide the Department with evidence that the adjacent property owner has been given a 30-day written notice of such intent to make an excavation. (3307.1)

15. The soils engineer shall review and approve the shoring and/or underpinning plans prior to issuance of the permit. (3307.3.2)

16. Prior to the issuance of the permits, the soils engineer and/or the structural designer shall evaluate the surcharge loads used in the report calculations for the design of the retaining walls and shoring. If the surcharge loads used in the calculations do not conform to the actual surcharge loads, the soil engineer shall submit a supplementary report with revised recommendations to the Department for approval.

17. Unsurcharged temporary excavations over 5 feet exposing soil shall be trimmed back at a gradient not exceeding 1.5:1, as recommended.

18. Shoring shall be designed for the lateral earth pressures specified on Figure 5 of the report; all surcharge loads shall be included into the design.

19. Shoring shall be designed for a maximum lateral deflection of ½ inch where a structure is within a 1:1 plane projected up from the base of the excavation, and for a maximum lateral deflection of 1 inch provided there are no structures within a 1:1 plane projected up from the base of the excavation.

20. A shoring monitoring program shall be implemented to the satisfaction of the soils engineer.

21. All foundations shall derive entire support from native undisturbed soils, ablanket of properly placed fill a minimum of 2 feet thick, as recommended.

22. The structural designer and soils engineer shall verify and attest to the adequacy of the existing footings for underpinning and for accepting additional loads from the proposed addition by signature and license stamp, on the final plans. Alternatively, the new construction shall be structurally isolated and independently supported, as recommended.

23. Footings supported on approved compacted fill or expansive soil shall be reinforced with a minimum of four (4) ½-inch diameter (#4) deformed reinforcing bars. Two (2) bars shall be placed near the bottom and two (2) bars placed near the top.

24. The foundation/slab design shall satisfy all requirements of the Information Bulletin P/BC 2014-116 "Foundation Design for Expansive Soils" (1803.5.3).

25. The seismic design shall be based on a Site Class D as recommended. All other seismic design parameters shall be reviewed by LADBS building plan check.

26. All roof and pad drainage shall be conducted to the street in an acceptable manner (7013.10)

27. All concentrated drainage shall be conducted in an approved device and disposed of in a manner approved by the LADBS. (7013.10)

28. The soils engineer shall inspect all excavations to determine that conditions anticipated in the report have been encountered and to provide recommendations for the correction of hazards found during grading. (7008 & 1705.6)

29. Prior to the pouring of concrete, a representative of the consulting soils engineer shall inspect and approve the footing excavations. He/She shall post a notice on the job site for the LADBS Building Inspector and the Contractor stating that the work so inspected meets the conditions of the report, but that no concrete shall be poured until the City Building Inspector has also inspected and approved the footing excavations. A written certification to this effect shall be filed with the Grading Division of the Department upon completion of the work. (108.9 & 7008.2)

30. Prior to excavation, an initial inspection shall be called with LADBS Inspector at which time sequence of construction, shoring, protection fences and dust and traffic control will be scheduled. (108.9.1)

31. Installation of shoring, underpinning, slot cutting excavations and/or pile installation shall be performed under the inspection and approval of the soils engineer and deputy grading inspector. (1705.6)

32. Prior to the placing of compacted fill, a representative of the soils engineer shall inspect and approve the bottom excavations. He/She shall post a notice on the job site for the City Grading Inspector and the Contractor stating that the soil inspected meets the conditions of the report, but that no fill shall be placed until the LADBS Grading Inspector has also inspected and approved the bottom excavations. A written certification to this effect shall be included in the final compaction report filed with the Grading Division of the Department. All fill shall be placed under the inspection and approval of the soils engineer. A compaction report together with the approved soil report and Department approval letter shall be submitted to the Grading Division of the Department upon completion of the compaction. In addition, an Engineer's Certificate of Compliance with the legal description as indicated in the grading permit and the permit number shall be included. (7011.3)

33. No footing/slab shall be poured until the compaction report is submitted and approved by the Grading Division of the Department.

ALAN DANG
Structural Engineering Associate II

AD/ad
Log No. 96972
213-482-0480

cc: City of LA - GEO, Applicant
Geotechnical Engineering Group, Project Consultant
LA District Office

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

GEOTECHNICAL ENGINEERING GROUP

GEOTECHNICAL ENGINEERING REPORT
HIGHLAND PARK JR. ARTS CENTER
111 BRIDEWELL STREET
TRACT: THE MINERAL PARK TRACT, LOT: PT LT 56
LOS ANGELES, CALIFORNIA 90042

W.O. # E170357A
GEO FILE # 16-191
JANUARY 30, 2017

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Figure 5 – Lateral Earth Pressures for Temporary Shoring Systems

Appendix A – Geotechnical Data Report by SCST, Inc. dated January 5, 2017.

Appendix B – Liquefaction Triggering Analyses

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed Highland Park Jr. Arts Center project. The project site, as shown on Figure 1 – Vicinity Map, is located on the northwest side of Bridewell Street between Salonica Street and York Boulevard in the Highland Park area. The project address is 111 Bridewell Street; however, the project site also includes several other adjacent properties, including 6716, 6718, 6720, 6724, 6726, and 6728 Salonica Street.

The purposes of this investigation were to evaluate the nature and engineering properties of the subsurface materials and develop geotechnical recommendations for design and construction of the project. The City of Los Angeles, Department of Public Works, Bureau of Engineering, Geotechnical Engineering Group (GEO) prepared this report in response to the Architectural Division's request on September 22, 2016.

2.0 PROJECT DESCRIPTION

The project consists of converting an existing City building into a Junior Art Center. The work includes refurbishing, retrofitting and possibly an addition to the existing structure. The site plan, including the approximate area of the proposed addition, is shown on Figure 2 – Site Plan. We understand the cost of the refurbish and/or structural retrofit will likely exceed 50 percent of the theoretical replacement value for the existing building.

New foundations are anticipated both inside the existing building and in the area of the proposed addition. The exact location of new foundations is not known at this time, and structural load information was not provided to us at the time this report was prepared. The maximum applied bearing pressure for shallow foundations is not expected to exceed 3,000 pounds per square foot (psf).

The proposed finished grades are expected to be within one to two feet of the existing ones. If significant changes to the project are proposed, the findings and recommendations in this report may not be applicable, and a supplemental report may be required. GEO should be provided an opportunity to review any proposed changes and determine if a supplemental report is required.

3.0 GEOTECHNICAL INVESTIGATION

This geotechnical investigation included field exploration and laboratory testing. SCST, Inc. (SCST) performed the field exploration and laboratory testing for GEO, and a copy of their data report is provided in Appendix A of this report. The findings and recommendations presented in this report are based on the information contained in the data report. GEO has reviewed SCST's report, concurs with the findings, and accepts responsibility for the use of its contents.

4.0 FINDINGS

The following discussion of findings is based on observations and the results of the field exploration and laboratory testing programs (Appendix A).

4.1 GEOLOGIC SETTING

The Geologic Map by Thomas W. Dibblee Jr. (1989), as shown on Figure 3 –Geologic Map, indicates the site is underlain by stream channel deposits from the Quaternary Period (Qg). These deposits are comprised of gravel, sand and silt. The site is also located in close proximity to the Raymond Hill Fault.

4.2 SITE CONDITIONS

The majority of the project site (see Figure 2), has been developed with a concrete building with a slab-on-grade floor and paved parking area. The former building entrance is off Bridewell Street, and the parking area is accessed off Salonica Street. We understand the existing building operated as an armory during World War II. The building includes a gymnasium in the central portion. The building is approximately 140 feet long by 100 feet wide. The building height in the gymnasium area is approximately 23 feet, and the building height in the remaining areas is about 10 feet. There is a roll-up metal door on the northwest side of the gymnasium. Other structures onsite include concrete masonry retaining walls along the northwest side of the property, and adjacent to the parking area. These walls are approximately 4 to 5 feet high.

The site is mostly flat with an average site elevation of approximately 548 feet above mean sea level (msl); however, there is 40-foot high fill slope in the west portion of the site. The slope inclination overall is approximately 2:1 with slope inclinations as steep as 1.5:1 in some areas. GEO is of the opinion that the slope was constructed as part of the York Boulevard overpass that spans over the 110 Freeway and the Arroyo Seco Channel. GEO is also of the opinion that the embankment fill provides lateral support for the overpass abutment. There are some trees along the slope, but for the most part, the slope is not vegetated.

The remaining portions of the site are undeveloped, and at the time of our visit, there is a chain link fence around the perimeter of the property. The undeveloped area near Bridewell is landscaped with grass. The site is bounded by residential buildings to the north and west, Salonica Street to the northeast, and Bridewell Street to the southeast.

4.3 SUBSURFACE CONDITIONS

Uncertified fill was encountered in all borings. The fill thickness in the proposed building addition area is approximately 2½ feet. The fill thickness in the west area of the site is much greater (see Section 4.2). The fill thickness encountered in HSA-3, which was drilled near the toe of the slope, is approximately 5 feet. Fill was encountered to the refusal depth of approximately 4 feet in HA-1, which was drilled on the slope. The uncertified fill consists of silty sand with gravel to silty gravel with sand.

The native soils encountered in our borings are fairly consistent with Dibblee's (1989) description. The native soil generally consists of poorly to well graded sand with varying amounts of silt and gravel, and poorly to well graded gravel with varying amounts of silt and sand. Based on the field blow counts in B-1, the native soil is mostly dense to very dense to a depth of approximately 10 feet. However, these field blow counts may be artificially high due to the presence of gravel. The field blow counts indicate the granular soil between approximately 10 and 17½ feet is medium dense. The field blow counts below 17½ feet indicate the soil is dense to very dense. The native soil below 25 feet is slightly cemented, and has an appearance similar to highly weathered bedrock. The engineering properties of these materials are further discussed in Section 4.5 of this report.

4.4 GROUNDWATER

Groundwater was encountered in the HSA borings and the mud rotary boring at a depth ranging from approximately 15½ to 17½ feet bgs. Groundwater information from the California Department of Conservation, Division of Mines and Geology (DMG, 1998 indicates the shallowest reported historic groundwater depth is approximately 20 feet.

Groundwater levels are expected to fluctuate with seasonal rainfalls, dry weather (i.e. drought conditions), and pumping activities in the vicinity of the site. Groundwater is not anticipated to affect the proposed earthwork and foundation for the project.

4.5 SOIL ENGINEERING PROPERTIES

Laboratory tests were performed on selected samples to characterize the engineering properties of the native soil. The individual laboratory test results are included in SCST's data report (Appendix A).

Moisture content and in-situ dry density tests were performed on seven relatively undisturbed samples to evaluate the total unit weight. The in-situ dry density and moisture content of the native soil was found to range from approximately 93.5 to 131.5 pounds per cubic foot (pcf) and 3.0 to 24.4 percent, respectively. The average total unit weight of the native soil was found to be approximately 124 pcf.

Two Atterberg Limits tests were performed on samples of the silty sand and sandy silt to determine the plasticity index (PI). The results indicate these soils are nonplastic, and therefore, have a low expansion potential.

Direct shear tests were performed on a remolded sample of the near surface fill and on two undisturbed samples of the native soil. The fill from HSA-1 was remolded to approximately 95% relative compaction (RC) at slightly over the optimum moisture content. Based on SCST's interpretation of the test results, the remolded fill has an ultimate friction angle and cohesion value of 50 degrees and 50 psf, respectively. The ultimate friction angle and cohesion value of the native soil was found to range from approximately 46 to 49 degrees and 500 to 750 psf, respectively. For our analysis, we conservatively assumed an ultimate friction angle and cohesion value of 35 degrees and 50 psf, respectively, for both certified fill and the native soil.

A compaction test was performed on a bulk sample of the uncertified fill from HSA-1 to determine the maximum dry density and optimum moisture content. The compaction test results indicate that the optimum moisture content and maximum dry density this material ranges significantly depending on the gravel content. The maximum dry density and optimum moisture content ranges from 130.4 to 138.7 pcf and 7.4 to 5.5, respectively

Finally, a resistance value (R-value) test was performed on a sample of the near surface silty sand from HSA-3, and the results indicate the R-value is 74.

5.0 SEISMIC CONSIDERATIONS

The following sections present seismic design parameters and discussions of the seismic hazards for the project.

5.1 2014 LABC SEISMIC DESIGN PARAMETERS

Seismic design parameters for the project site were developed in accordance with the 2014 Los Angeles Building Code (LABC). Latitude 34.11321°N and Longitude 118.17753°W coordinates were used for the site location.

The seismic parameter values for the site are summarized in Table 2, Seismic Design Parameters.

TABLE 2 – SEISMIC DESIGN PARAMETERS

Parameter	Value	ASCE 7-10 Reference
Site Class	D	Table 20.3-1
S_s	2.822	Figure 22-1
S_1	0.981	Figure 22-2
S_{MS}	2.822	Equation 11.4-1
S_{M1}	1.471	Equation 11.4-2
S_{DS}	1.881	Equation 11.4-3
S_{D1}	0.981	Equation 11.4-4
T_O (seconds)	0.104	Figure 11.4-1
T_S (seconds)	0.522	Figure 11.4-1

The peak ground acceleration $(PGA)_M$ at the site is 1.073g.

5.2 SEISMIC HAZARDS

This section provides the results of our evaluation of earthquake-related geologic/geotechnical hazards for the site, including surface fault rupture, liquefaction, and landslides.

5.2.1 Surface Fault Rupture

The closest fault is the Raymond Fault, which is approximately ½-mile north of the project site. The project site is not located within a State of California Alquist-Priolo Special Study Zone, nor is it located within a City of Los Angeles Fault Rupture Study Zone (NavigateLA); therefore, the potential for surface fault rupture is considered to be remote.

5.2.2 Liquefaction

As shown on Figure 4 – Seismic Hazards Zone Map (California Department of Conservation, DMG, 1999), the site is located within a potentially liquefiable area.

Significant research has recently been devoted to evaluating the liquefaction susceptibility of fine-grained soils. The susceptibility criteria adopted by the Los Angeles Department of Building and Safety (LADBS, 2014) is based on the findings of Bray and Sancio (2006). In order to assume a soil is not susceptible, the moisture content must not be greater than 80 percent of the liquid limit, or the soil must have a minimum PI of 18. Two PI tests were performed on the encountered fine grained materials. Both test results indicate the material to be non-plastic, and therefore, all native soils in the mud rotary boring, B-1, were considered to be susceptible.

The liquefaction triggering was evaluated using the SPT-based procedure outlined by Youd et al (2001). The cyclic resistance ratio (CRR) is based on the corrected clean-sand blow counts, $(N_1)_{60\text{-}cs}$. If the $(N_1)_{60\text{-}cs}$ is greater than 30, the soil layer is considered to be too dilative (i.e. dense) to liquefy. In accordance with the LADBS' 2014 requirements, the cyclic stress ratio (CSR) was calculated using two different PGAs; one corresponding to 2/3 of the PGA_M, and the other corresponding to the full PGA_M. Also, the CSR was calculated based on an earthquake with M_W=6.6 along the Raymond Fault for both cases. The groundwater depth during the earthquake was conservatively assumed to be 15 feet bgs, which is shallower than the historical high groundwater depth (see Section 4.4). Results of the liquefaction triggering analyses are presented in Appendix B. The results of our analyses indicate that the potential for liquefaction is low.

6.0 RECOMMENDATIONS

Based on the results of our investigation, the proposed project is considered geotechnically feasible provided the recommendations presented in this report are incorporated into the design and construction. If changes in the design are made or changed conditions are encountered during construction, GEO should be notified to determine if supplemental recommendations are required.

6.1 EARTHWORK

All earthwork shall be performed in accordance with the geotechnical recommendations presented in this report and the LADBS, Grading Division requirements. Furthermore, all earthwork should be performed under the observation and testing of a qualified Geotechnical Engineer.

6.1.1 Site Preparation

If new foundations are required inside the existing building, site preparation will likely include removal of the existing floor slab(s) in some areas. If new foundations are required adjacent to the building, site preparation will likely include removal of the existing asphalt pavement.

Following demolition, the construction areas should be cleared of any vegetation and stripped of miscellaneous debris and other deleterious material. Organic matter and other material that may interfere with the completion of the work should be removed from the limits of the construction area. Vegetation and/or organic matter should not be incorporated into the compacted fill. Organic rich soil, if present, may be stockpiled for future landscaping. Any utilities, whether active or inactive, shall be identified and, if required, properly abandoned or relocated per project plans and specifications.

Any depressions resulting from the demolition/site preparation shall be properly backfilled in accordance with the recommendations in the following sections.

6.1.2 Over-Excavation

Over-excavation is not required for structural footings founded in firm undisturbed native soil; however, the allowable bearing capacity for footings in native soil is lower than that for those underlain by compacted fill (see Section 6.2). If a larger allowable bearing capacity is desired, the over-excavation and backfill shall result in at least 24 inches of compacted fill beneath the bottom of the footing(s). For footings greater than 3 feet wide, the over-excavation depth shall be increased to at least one footing width. The over-excavation shall extend 2 feet laterally beyond the edges of the footing, wherever possible.

Over-excavation is not required beneath non-structural (i.e. secondary) foundations provided the footings are embedded into firm undisturbed native soil.

The existing fill beneath new pavements shall be over-excavated to a depth of 18 inches bgs. The excavation shall extend laterally at least 2 feet beyond the edge of the pavement or to the property boundary, whichever is less. The earthwork beneath new pavements shall result in at least 1 foot of compacted subgrade beneath the aggregate base (see Section 6.7.

6.1.3 Subgrade Preparation

All excavation bottoms shall be scarified to a depth of 6 inches, moisture conditioned to within 3 percent above the optimum moisture content, and compacted to at least 95 percent RC, as determined by ASTM Test Method D1557. All excavation bottoms must be approved by GEO and the LADBS Grading inspector prior to backfill.

6.1.4 Temporary Excavations

Based on the results of the geotechnical investigation, the materials at the site should be readily excavated by conventional earthmoving equipment in good operating condition. All temporary excavations shall conform to the State of California Construction Safety Orders (CAL/OSHA).

Unsurcharged, temporary vertical excavations shall not exceed 5 feet in depth. Unsurcharged excavations greater than 5 feet and to a maximum of 12 feet may be sloped at a 1.5:1 (H:V) or flatter, as measured from the ground surface to the bottom of the excavation. Excavations greater than 12 feet are not anticipated for the project. If deeper excavations are proposed, they shall be reviewed by GEO and supplemental recommendations may be required.

6.1.5 Temporary Shoring

Cantilever or braced shoring may be considered at this site as an alternative to temporary excavations. Cantilever shoring shall only be utilized if some deflection is acceptable; therefore, it is not recommended adjacent to existing structures or utilities that cannot tolerate at least ½-inch of lateral and/or vertical movement. Sheet piles, box shoring, and/or trench shields (i.e. speed shores) are not acceptable.

6.1.5.1 Allowable Deflections and Monitoring

Settlement of structures and utilities located adjacent to the shoring will occur in proportion to both the distance between the shoring and the structure/utility, and the amount of horizontal deflection of the shoring system. The vertical displacement (i.e. settlement) will be a maximum at the shoring face and decrease as the horizontal distance from the shoring increases. Beyond a distance from the shoring equal to the height of the shoring, the settlement is expected to be negligible. The maximum vertical settlement is expected to be about 75 percent of the horizontal deflection of the shoring system. Lateral deflections exceeding ½-inch are not anticipated at this time. If shoring deflections greater than ½-inch are anticipated at a later date, additional analysis will be performed and submitted to LADBS.

Prior to excavating, it is recommended that walls, structures, or portions of structures within a horizontal distance of 1.5 times the depth of the excavation be inspected to determine their present condition. For documentation purposes, photographs should be taken of preconstruction distress conditions and level surveys of adjacent grade and pavement should be performed. Deflection of the shoring system should be monitored initially on a relatively frequent (daily) basis until it can be demonstrated that no movement is occurring. At that time, less frequent monitoring can be performed. In addition, the structures should be periodically inspected for signs of distress. GEO shall be contacted immediately if any signs of distress are observed.

6.1.5.2 Lateral Earth Pressures

Cantilever or braced shoring systems shall be designed for the lateral earth pressures shown on Figure 5 – Lateral Earth Pressures for Temporary Shoring Systems. The assumed groundwater depth shall be 15 feet bgs. These values are based on the assumption that 1) the shored soil material is level at ground surface, (2) the exposed

height of the shoring is no greater than 15 feet for cantilevered shoring, and (3) the shoring is temporary, and will not be required to support the soil longer than about six months. Surcharge coefficients of 0.27 and 0.43 may be used with uniform vertical surcharges for cantilever and braced shoring lateral earth pressures, respectively. These surcharge pressures should be added to the lateral earth pressures for design.

6.1.5.3 Soldier Piles and Lagging Design

Drilled holes for soldier piles shall be backfilled with Controlled Low Strength Material (CLSM) per Greenbook Section 201, from the bottom of lagging (i.e. proposed excavation depth) to the ground surface. The CLSM shall contain a minimum of one sack of Portland cement per cubic yard of slurry and a maximum of two sacks of Portland cement per cubic yard of slurry. Drilled holes below the excavation bottom shall be backfilled with structural concrete. To reduce the potential for sloughing and caving of the soils, continuous lagging shall be installed between the soldier piles. All lumber shall be pressure-treated in accordance with Specification C-2 of the American Wood Preservers Association.

6.1.5.4 Construction considerations for Soldier Piles

Due to the coarse grained (i.e. granular) nature of the soil, there is the potential for soil caving to occur during pile excavation. If caving conditions are encountered, casing shall be used to support the sides of the excavations. The inside diameter of casing shall be at least as large as the diameter of the pile shown on the shoring plans. Drilling shall be accomplished within the casing.

Even though the piles will be used for temporary shoring, it will be necessary for the contractor to remove loose soil from the bottom of the pile excavation. Upon completion of drilling, secure covers shall be placed over the excavations. Concrete placement shall be completed within 12 hours of drilling and drilled holes shall not be left open overnight. Under no circumstances shall drilled holes be left over the weekend(s). Drilled excavations shall be observed and approved by GEO prior to installation of steel reinforcement.

Concrete placement by the pumping and tremie method will be required. Both concrete mix and concrete placement should be addressed in the specifications. The steel reinforcement shall be installed and the concrete pumped immediately after drilling is completed. No drilled hole should be drilled immediately adjacent to another pile until the concrete in the other pile has attained its initial set. The tremie pipe should extend to the bottom of the pile excavation. During concrete placement, the bottom of the tremie pipe shall remain embedded at all times in at least 3 feet of concrete. During concrete placement, the casing shall be removed slowly. Furthermore, the casing shall extend above ground surface and shall always be filled with a sufficient head of concrete above the bottom of the casing before it is pulled out.

6.1.6 Fill Materials and Backfill Placement

The existing fill and native soil may be reused as compacted fill provided it is free of organic material, debris, and does not contain fragments greater than 3 inches in maximum dimension.

Import fill may also be used instead of the native soil. Import fill material shall be predominantly granular (minimum 80% passing number 4 sieve and between 10% and 35% passing the number 200 sieve), and non-expansive (EI less than 25). Also, the import fill material shall be free of organic or inorganic debris, contamination and materials with any dimension larger than 3 inches. Import material shall be reviewed for approval by GEO prior to importing to the job site. GEO shall be notified a minimum of three working days prior to scheduled importing of soil to the project site.

Fill material shall be placed in loose lifts not exceeding 8 inches in thickness, moisture-conditioned to within 3 percent above the optimum moisture content and mechanically compacted. All primary structural fill, subgrade beneath pavements, and any aggregate base, shall be compacted to at least 95 percent RC, as determined by ASTM Test Method D1557. Secondary fill is not anticipated at this time.

Fill placement and compaction shall be observed and tested by GEO. Compacted fill soils shall be kept moist (at or slightly above the specified moisture content at the time of compaction), but not flooded, until covered with subsequent construction. Certification and inspection approvals for compromised soils are void and invalid.

6.1.7 Controlled Low Strength Material

Controlled Low Strength Material (CLSM) may be used as an alternative to compacted soil. CLSM shall conform to LADBS' requirements, as outlined in Bulletin P/BC 2014-121. Per this Bulletin, testing is required to verify the bearing capacity of CLSM if it is used for structural support of footings.

6.1.8 Utility Trench Backfill

Trench excavations for new utility pipes may be backfilled with onsite soils or CLSM. After utility pipes have been laid, properly bedded, and covered per the project specifications, they shall be backfilled to the ground surface or design subgrade with controlled backfill. Controlled backfill shall be moisture conditioned, placed and compacted in accordance with the recommendations presented in Section 6.1.6 or Section 6.1.7. Densification by flooding or jetting is not allowed.

6.1.9 Fill Certification

Upon successful completion of fill placement and compaction, GEO will issue a Compaction Certification for the fill. Unless approved by the Building Inspector during construction, the Contractor shall not pour footings until an approval letter is issued by the LADBS, Grading Division for the Compaction Certification. The contractor may excavate in compacted fill for foundation elements before the fill certification approval letter is issued, but does so at his/her own risk.

6.2 Shallow Foundations

Footings may be embedded into firm undisturbed native soil or compacted fill; however, continuous footings shall not span a cut-to-fill transition. The minimum footing width shall be 24 inches, and all footings shall be embedded at least 24 inches below the lowest adjacent grade.

6.2.1 Bearing Capacity and Settlement

Footings underlain by native soil may be designed for a net allowable bearing capacity of 2,500 psf. Footings underlain by at least 30 inches of either compacted fill or CLSM may be designed for a net allowable bearing capacity of 3,000 psf. The net allowable bearing capacity values apply to combined dead and sustained live loads. A 1/3 increase may be used for short term loading conditions such as wind or seismic forces.

Total settlements, including static and dynamic, are not expected to exceed ½-inch. Differential settlements are not expected to exceed ¼-inch.

6.2.2 Lateral Load Resistance

Lateral load resistance will be developed by passive soil pressure against the sides of the footing and by friction acting along the base of the footing(s). An allowable passive pressure of 300 psf per foot of depth shall be used for footings underlain and surrounded by native soil or compacted fill. You may begin applying passive pressure below the ground surface if the footing is located directly adjacent to exterior slabs or pavement. Otherwise, passive pressure shall begin 1 foot below the lowest adjacent grade. The allowable passive pressure is only applicable for level (ground slope equal to or flatter than 5:1) conditions. An allowable coefficient of friction of 0.40 may be used for dead and sustained live loads for frictional resistance of the footings constructed directly on either native soil or compacted fill. A safety factor of 1.5 has been incorporated in the development of both allowable passive and frictional resistance values.

The passive pressure and frictional resistance may be increased by ⅓ under seismic and wind loading conditions. The lateral load resistance may combine the passive pressure and frictional resistance; however, the passive resistance may not exceed ½ of the combined total lateral resistance.

6.3 Underpinning of Existing Foundations

The exact location and size of the proposed footings within and adjacent to the existing building are not known at this time. Existing foundations may be adversely impacted by the proposed construction. If this is the case, the existing foundations shall be underpinned. It is the responsibility of the contractor to ensure existing footings are not adversely impacted by the proposed construction, particularly during excavation. If underpinning is required, the contractor shall submit a proposed underpinning work plan to GEO for our review and approval prior to excavation.

6.4 Non-Structural Foundations

Spread footing foundations are also suitable for non-structural foundations, including but not limited to, lights, fences, and site walls under 8 feet high. Non-structural footings shall be embedded into firm undisturbed native soil. Footings with a minimum width of 18 inches and embedded a minimum of 18 inches below the lowest adjacent grade, may be designed for an allowable bearing capacity of 2,000 psf. The allowable bearing capacity includes dead-load and sustained live-loads. The value may be increased by one-third for short durations of loading which will include the effect of wind or seismic forces. The structural engineer should design the actual footing reinforcement.

Resistance to lateral loads may be designed in accordance with the recommendations provided in Section 6.2.2 of this report.

6.5 DRAINAGE

Final grades and pavements should be sloped to convey surface water away from foundations and slabs and toward suitable discharge facilities. Ponding of surface water should not be allowed anywhere on site. The water from any downspouts should be directed in closed pipes to storm drains or other appropriate points of discharge. Water shall not be discharged on the adjacent descending slopes. During construction, the contractor shall implement drainage provisions to divert rain and construction water away from open excavations.

6.6 CORROSION AND SULFATE ATTACK RESISTANCE

Chemical analyses, pH and minimum resistivity tests were performed on two samples of the near surface silty soil from HSA-1 and B-1. The results of the tests are presented in Appendix A.

The soil pH for both samples ranged from 7.2 to 7.7, the chloride concentration ranged from 0.001 to 0.013 percent, and the minimum resistivity ranged from 3,170 to 6,920 ohm-centimeters. The sulfate concentration was determined to be 0.003 percent in HSA-1. Caltrans (2012) considers a soil to be corrosive if one or more of the following conditions exist:

- Chloride concentration is 500 ppm or greater;
- Sulfate concentration is 2,000 ppm or greater;
- pH is 5.5 or less.

Based on Caltran's (2012) criteria, the onsite silty soil is not corrosive when in contact with ferrous metals. The results of the sulfate concentration tests indicate that, based on the American Concrete Institute (ACI, 2008) criteria, the soils have negligible sulfate attack potential on concrete. Refer to ACI 318-08 for appropriate concrete mix design.

6.7 PAVEMENT DESIGN

Based on the results of the laboratory tests on a surficial bulk sample, the existing near surface silty sand has a resistance value (R-value) of 74. The following pavement designs have been prepared for parking areas based on an R-value of 50. It is recommended that samples of the prepared subgrade be collected and tested following grading to finalize pavement design sections. Recommendations for asphalt pavement design sections are presented below. In all pavement areas, the uppermost 12 inches of soil subgrade should be compacted to a minimum 95 percent RC.

6.7.1 Asphalt Pavement Sections

Traffic indexes (TIs) were not provided to us at the time of this report. Pavement sections were calculated for the range of TIs shown in the table below.

TABLE 2 – ASPHALT PAVEMENT SECTION LAYER THICKNESSES (INCHES)

Layer	Traffic Index = 5.0	Traffic Index = 6.0	Traffic Index = 7.0	Traffic Index = 8.0	Traffic Index = 9.0
Asphalt Concrete Surface	2.5	3.0	3.5	4.0	4.0
Crushed Aggregate Base	4.0	6.0	6.0	7.0	9.0
Compacted Subgrade (95 percent RC)	12	12	12	12	12

6.7.2 Portland Cement Concrete Pavement

Portland cement concrete (PCC) pavement may be used instead of asphalt concrete. For TIs between 6 and 7, a section of 6 inches of PCC over 8 inches of crushed aggregate base or crushed miscellaneous base is recommended. For TIs of 8 and 9, the PCC section should be increased to 7 and 8 inches, respectively. The Portland Cement Concrete should have a minimum modulus of rupture of 650 psi at 28 days.

7.0 SUPPLEMENTAL GEOTECHNICAL SERVICES

7.1 REVIEW OF PLANS AND SPECIFICATIONS

The grading and foundation plans and details shall implement the recommendations presented in this report and should be reviewed by GEO to ensure proper interpretation and application of our recommendations.

7.2 GEOTECHNICAL OBSERVATION AND TESTING DURING CONSTRUCTION

All grading, excavation, and construction of foundations should be performed under the observation and testing of the Geotechnical Engineer at the following stages:

- Upon completion of site clearing;
- During site excavation;
- During subgrade preparation;
- During installation of temporary shoring;
- During underpinning of existing foundations;

- During fill placement and compaction;
- During footing excavation(s) and immediately prior to placement of foundation concrete;
- During excavation and backfilling of all utility trenches; and
- When any unusual or unexpected geotechnical conditions are encountered.

8.0 CLOSURE

If there are any questions regarding this report, please contact Karynna Carlos at (213) 847-0497.

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REFERENCES

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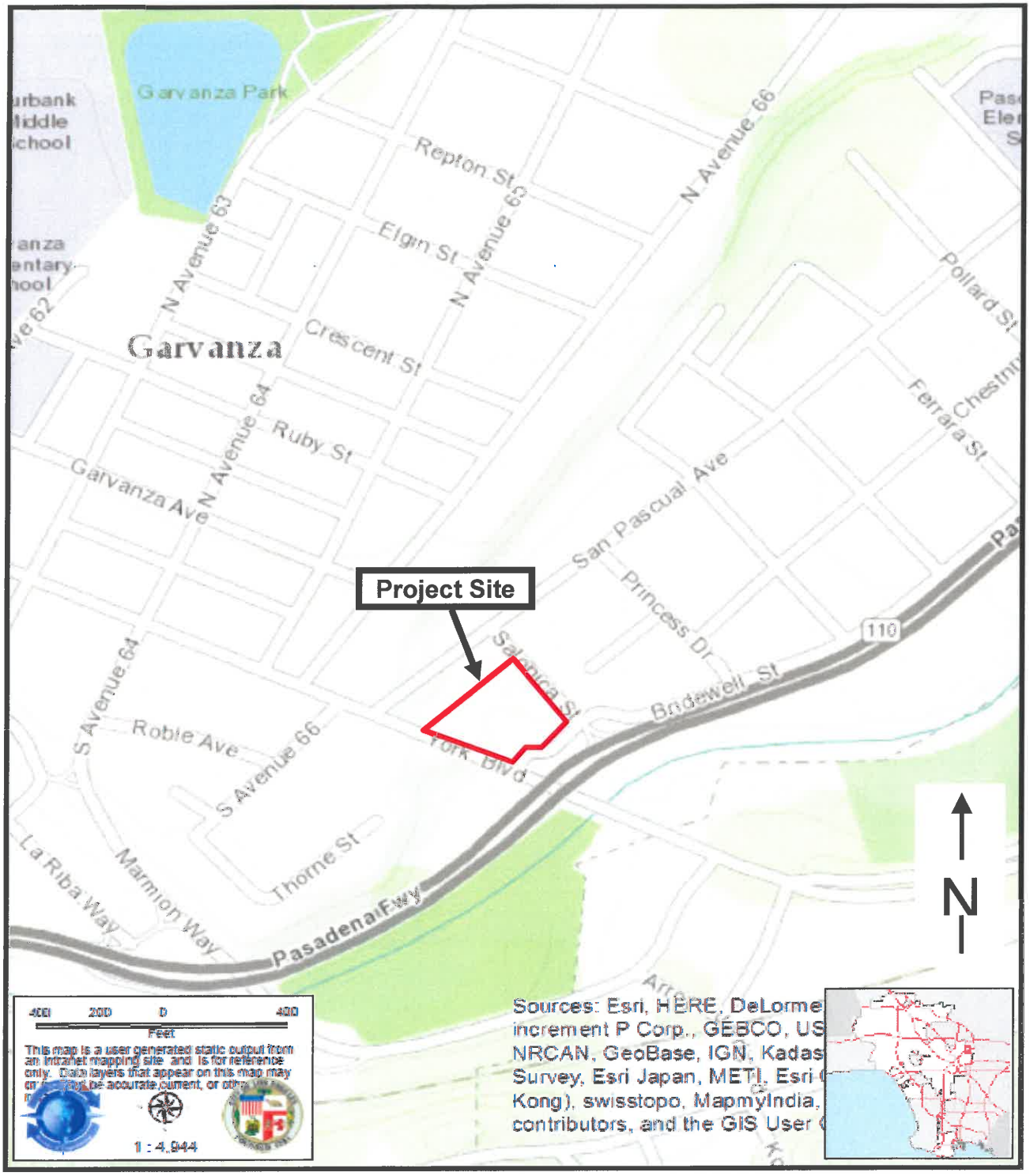
FIGURES



Reference: NavigateLA

VICINITY MAP

Scale: As Shown

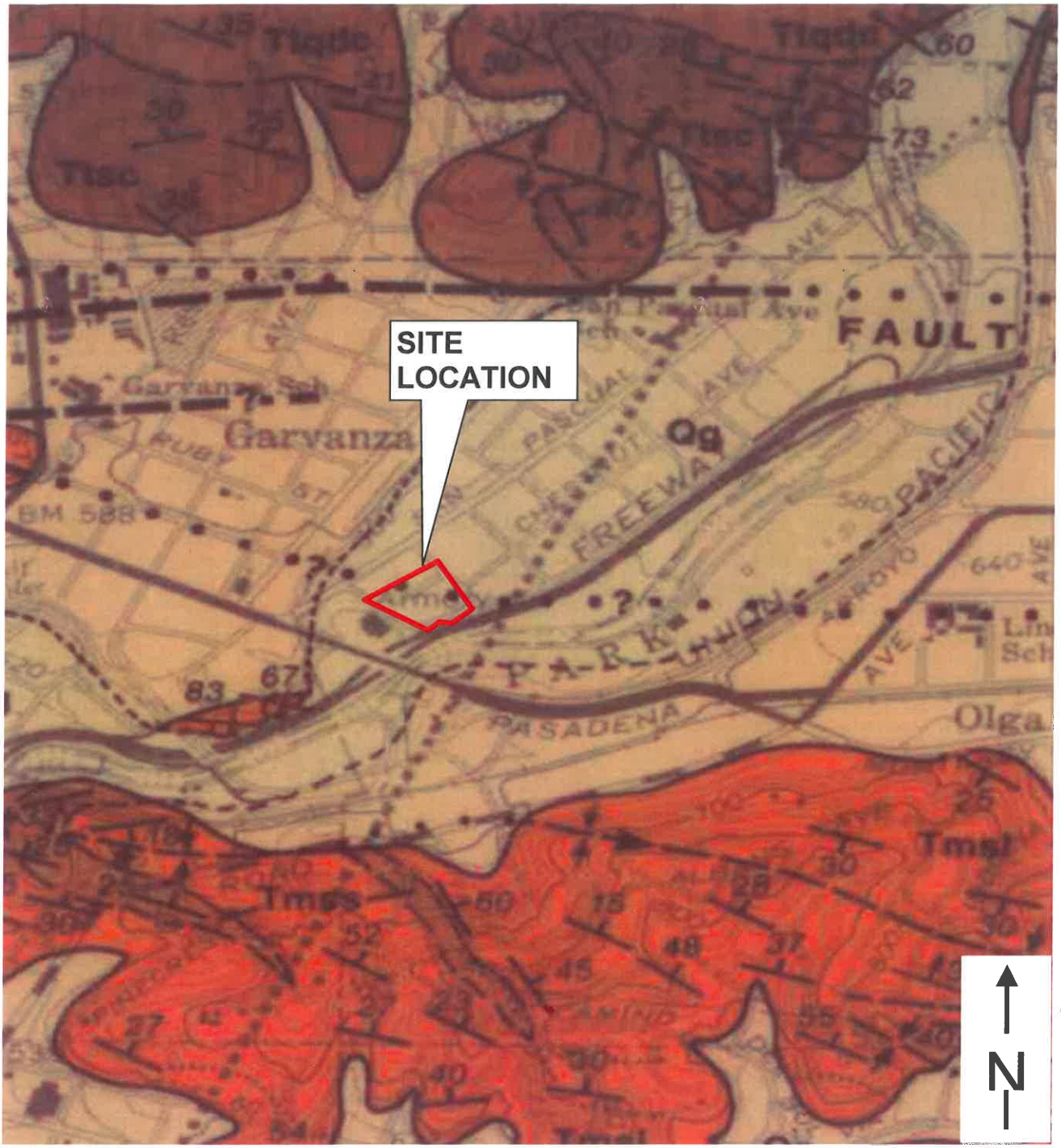
Highland Park Jr. Art Center 111 Bridewell Street LOS ANGELES, CALIFORNIA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING GROUP (GEO) GEO FILE No.: 16-191 DATE: January 2017	FIGURE No. 1

Reference: NavigateLA

Site Plan

Scale: 1:80 (approx.)

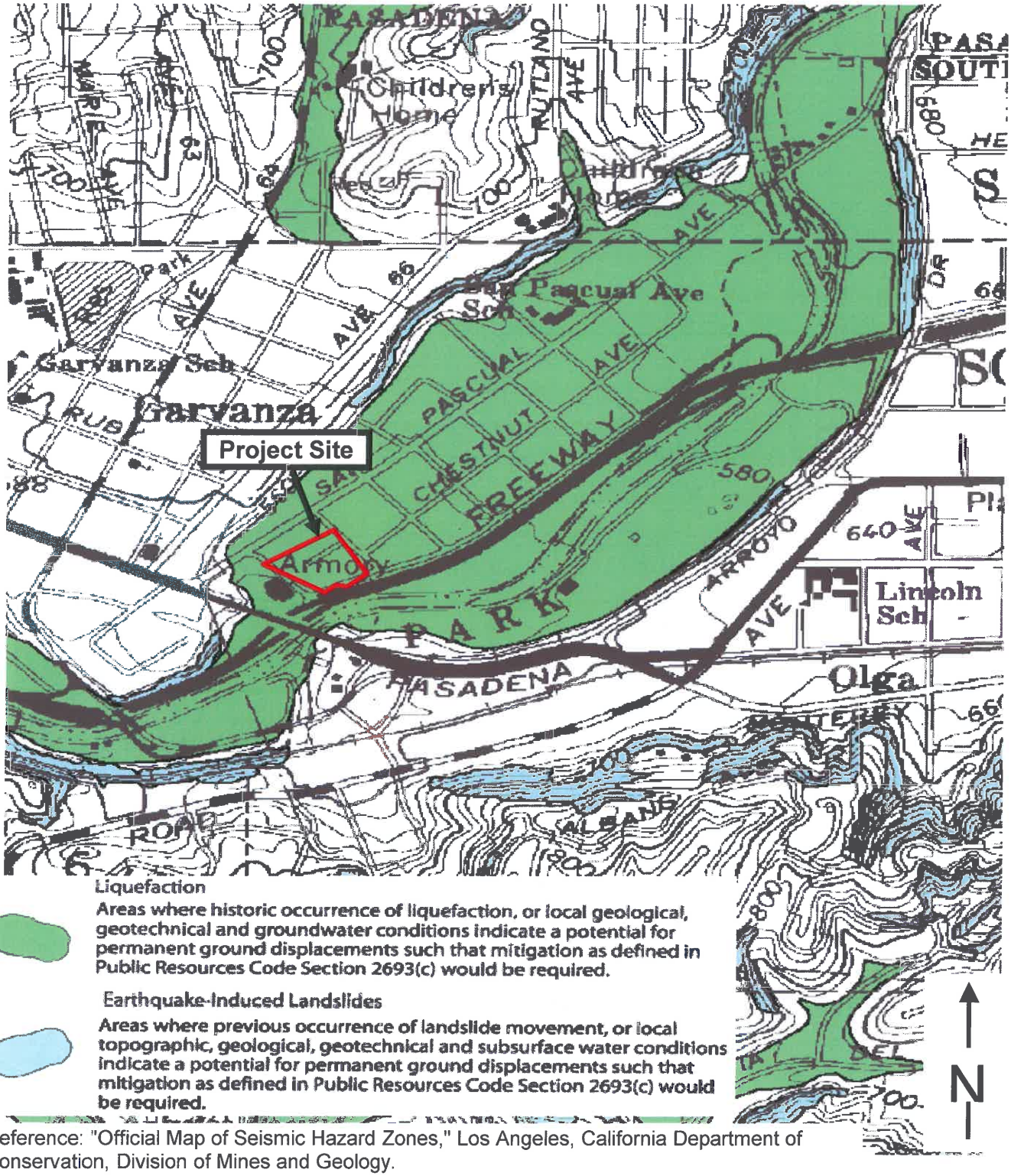
HIGHLAND PARK JR. ARTS CENTER 111 BRIDEWELL STREET LOS ANGELES, CALIFORNIA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING GROUP (GEO) GEO FILE No.: 16-191 January 2017	Figure No. 2



Reference: Dibblee, T.W., 1989, "Geologic Map of the Los Angeles Quadrangle", Los Angeles County, California: Dibblee Geological Foundation Map #DF-22, Santa Barbara California, Scale 1:24,000).

REGIONAL GEOLOGIC MAP

Highland Park Jr. Art Center 111 Bridewell Street LOS ANGELES, CALIFORNIA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING GROUP (GEO) GEO FILE No.: 16-191 DATE: January 2017	FIGURE No. 3

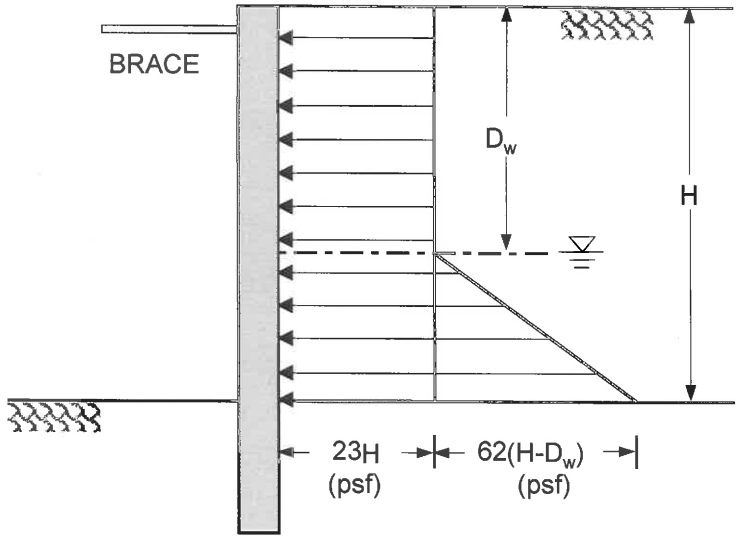


Reference: "Official Map of Seismic Hazard Zones," Los Angeles, California Department of Conservation, Division of Mines and Geology.

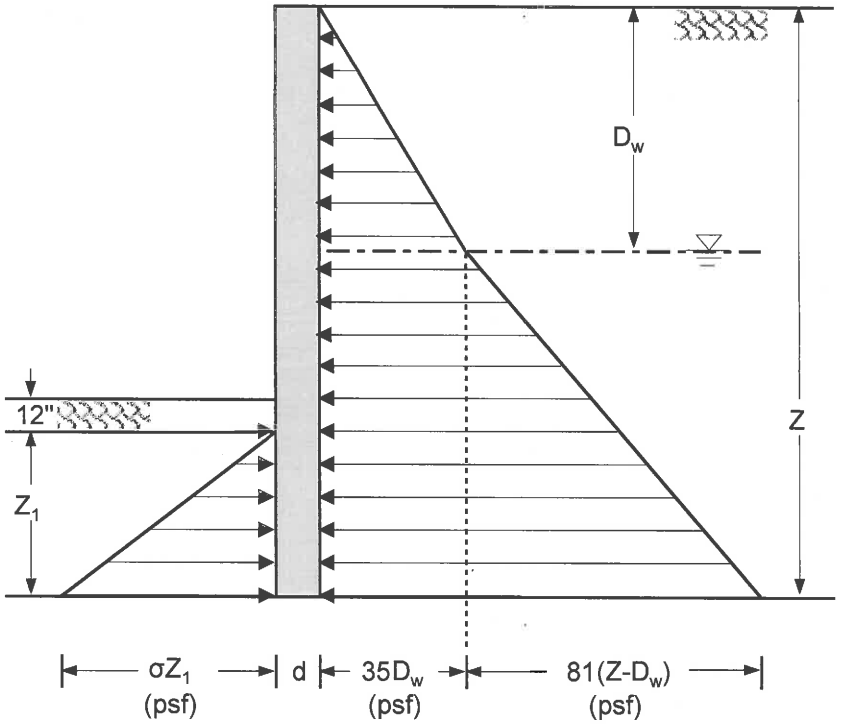
Approximate Scale 1" =800'

SEISMIC HAZARD ZONES

Highland Park Jr. Art Center 111 Bridewell Street LOS ANGELES, CALIFORNIA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING GROUP (GEO) GEO FILE No.: 16-191 DATE: January 2017	FIGURE No. 4



BRACED SHORING



CANTILEVER SHORING

σ = 640 pcf for soldier piles spaced at least 2.5d apart above water table
σ = 333 pcf for soldier piles spaced at least 2.5d apart below water table
σ = 320 pcf for soldier piles spaced less than 2.5d apart above water table
σ = 166 pcf for soldier piles spaced less than 2.5d apart below water table

Notes:
1. Dimensions are in feet
2. Pressure Includes hydrostatic pressure
3. D_w is the depth to groundwater (15 feet)
4. The earth pressures shown are based on level backfill conditions behind shorings

LATERAL EARTH PRESSURES FOR TEMPORARY SHORING SYSTEMS
HIGHLAND PARK JR. ART CENTER
111 BRIDEWELL STREET
Los Angeles, California

By: ERF	Date: 1/7/17	Project No.: 16-191
Geotechnical Engineering Group (GEO)		Figure **5**

APPENDIX A

SCST, INC.
GEOTECHNICAL DATA REPORT
HIGHLAND PARK JR. ARTS CENTER

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GEOTECHNICAL AND ENVIRONMENTAL DATA REPORT
HIGHLAND PARK JR. ARTS CENTER
111 BRIDEWELL STREET
LOS ANGELES, CALIFORNIA

PREPARED FOR:

MR. KEITH THOMPSON
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PREPARED BY:

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January 5, 2017

SCST No. 160523P3.1
Report No. 1R

Mr. Keith Thompson
Pinnacle Environmental Technologies
2 Santa Maria
Foothill Ranch, California 92610

Subject: GEOTECHNICAL AND ENVIRONMENTAL DATA REPORT
HIGHLAND PARK JR. ARTS CENTER
111 BRIDEWELL STREET
LOS ANGELES, CALIFORNIA

Dear Mr. Thompson:

SCST, Inc. (SCST) is pleased to present the results of this revised geotechnical and environmental investigation for the subject project. SCST conducted the geotechnical and environmental investigation in general conformance with the scope of work presented in our proposal dated October 27, 2016 and have incorporated comments from the City of Los Angeles into this revised report. If you have any questions, please call us at (619) 280-4321.

Respectfully Submitted,
SCST, INC.

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W. Lee Vanderhurst, CEG 3437
Principal Geologist

EM:RS:WLV:rt:aw

ATTACHMENTS

FIGURES

Figure 1..... Site Vicinity Map
Figure 2..... Subsurface Exploration Map

APPENDICES

Appendix I……..Field Investigation
Appendix II……Laboratory Testing
Appendix III……..Environmental Testing

(1) Addressee via e-mail: ktpinnacle@cox.net
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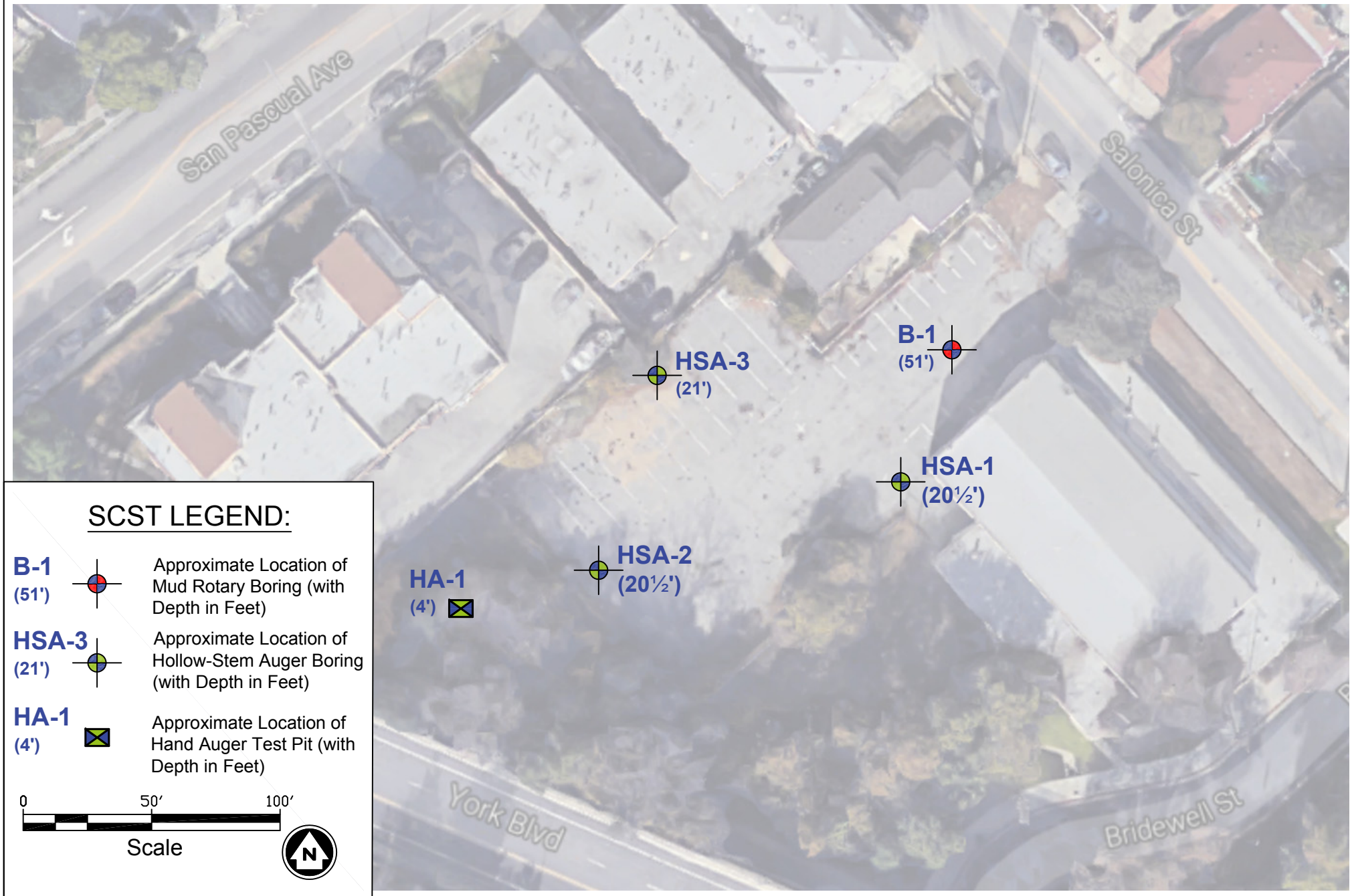
SCST, Inc.	SITE VICINITY MAP Highland Park Jr. Arts Center City of Los Angeles, California	Date: December, 2016 By: MAW Job No.: 160523P3.1-1	Figure: 1



SCST LEGEND:

B-1 (51') — Approximate Location of Mud Rotary Boring (with Depth in Feet)

HSA-3 (21') — Approximate Location of Hollow-Stem Auger Boring (with Depth in Feet)

HA-1 (4') — Approximate Location of Hand Auger Test Pit (with Depth in Feet)

0 50′ 100′

Scale

N

SCST, Inc.

SUBSURFACE EXPLORATION MAP

Highland Park Jr. Arts Center
City of Los Angeles, California

Date: January, 2017
By: MAW
Job No.: 160523P3.1-1

Figure: 2

APPENDIX I
GEOTECHNICAL FIELD INVESTIGATION

Our field investigation consisted of drilling 4 borings and excavating 1 test pit between December 5, 2016 and December 9, 2016. The borings were drilled by Choice Drilling Inc. using a truck-mounted drill rig equipped with both hallow stem auger and mud rotary capabilities. Three borings were drilled to depths between about 20½ and 21 feet below the existing ground surface using hollow stem auger. The mud rotary drilling method was used to drill one boring to a depth of about 51 feet below the existing ground surface. The test pit was excavated to a depth of about 4 feet below the existing ground surface using hand tools. Refusal was encountered in the test pit. Figure 2 shows the approximate locations of the borings and test pit. The field investigation was performed under the observation of an SCST engineer who also logged the borings and obtained samples of the materials encountered.

Relatively undisturbed samples were obtained from the hollow-stem auger borings (HSA) using a modified California (CAL) sampler, which is a ring-lined split tube sampler with a 3-inch outer diameter and 2½-inch inner diameter. Standard Penetration Tests (SPT) were performed in the mud rotary boring using a 2-inch outer diameter and 1⅜-inch inner diameter split tube sampler. The CAL and SPT samplers were driven with a 140-pound weight dropping 30 inches. The number of blows needed to drive the samplers the final 12 inches of an 18-inch drive is noted on the boring logs as "Driving Resistance (blows/ft of drive)." SPT and CAL sampler refusal was encountered when 50 blows were applied during any one of the three 6-inch intervals, a total of 100 blows was applied, or there was no discernible sampler advancement during the application of 10 successive blows. Choice Drilling Inc. was contacted in order to obtain the latest hammer efficiency ratio (ER_i) calibration results for the CME-95 used during the investigation. The most recent ER_i (85.3%) was used in our SPT calculations. The SPT penetration resistance was normalized to a safety hammer (cathead and rope) with a 60% energy transfer ratio in accordance with ASTM D6066. The normalized SPT penetration resistance is noted on the boring logs as "N_{60}." Disturbed bulk samples were obtained from the SPT sampler and the drill cuttings.

The soils are classified in accordance with the Unified Soil Classification System as illustrated on Figure I-1. Logs of the borings and test pit are presented on Figures I-2 through I-8.

SUBSURFACE EXPLORATION LEGEND

UNIFIED SOIL CLASSIFICATION CHART

SOIL DESCRIPTION		GROUP SYMBOL	TYPICAL NAMES
I. COARSE GRAINED, more than 50% of material is larger than No. 200 sieve size.			
GRAVELS More than half of coarse fraction is larger than No. 4 sieve size but smaller than 3".	CLEAN GRAVELS	GW	Well graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels, gravel sand mixtures, little or no fines.
	GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, poorly graded gravel-sand-silt mixtures.
		GC	Clayey gravels, poorly graded gravel-sand, clay mixtures.
SANDS More than half of coarse fraction is smaller than No. 4 sieve size.	CLEAN SANDS	SW	Well graded sand, gravelly sands, little or no fines.
		SP	Poorly graded sands, gravelly sands, little or no fines.
		SM	Silty sands, poorly graded sand and silty mixtures.
		SC	Clayey sands, poorly graded sand and clay mixtures.
II. FINE GRAINED, more than 50% of material is smaller than No. 200 sieve size.			
	SILTS AND CLAYS (Liquid Limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, sandy silt or clayey-silt-sand mixtures with slight plasticity.
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		OL	Organic silts and organic silty clays or low plasticity.
	SILTS AND CLAYS (Liquid Limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
		CH	Inorganic clays of high plasticity, fat clays.
		OH	Organic clays of medium to high plasticity.
III. HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils.

SAMPLE SYMBOLS

- ☒ - Bulk Sample
- CAL - Modified California sampler
- CK - Undisturbed Chunk sample
- MS - Maximum Size of Particle
- ST - Shelby Tube
- SPT - Standard Penetration Test sampler

GROUNDWATER SYMBOLS

- ▽ - Water level at time of excavation or as indicated
- ≈ - Water seepage at time of excavation or as indicated

LABORATORY TEST SYMBOLS

- AL - Atterberg Limits
- CON - Consolidation
- COR - Corrosivity Tests (Resistivity, pH, Chloride, Sulfate)
- DS - Direct Shear
- EI - Expansion Index
- MAX - Maximum Density
- RV - R-Value
- SA - Sieve Analysis
- UC - Unconfined Compression
- HYD - Hydrometer

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	I-1

LOG OF BORING HSA-1

Date Drilled: 12/9/2016 | Logged by: EM

Equipment: CME-95 with 8-inch Diameter Hollow-Stem Auger | Project Manager: WLV

Elevation (ft): 548 | Depth to Groundwater (ft): 16.9

Coordinates: N 34.11358 W 118.17765 | Hammer Energy Ratio (ER_i): 85.3

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVEN	SAMPLES: BULK	DRIVING RESISTANCE (blows/6 in. of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
		2 inches of asphalt concrete over 3 inches of aggregate base.							
1	SM	**FILL (Qf)**: SILTY GRAVEL with SAND, dark brown, fine to medium grained, some cobbles up to 3 inches in diameter, moist. VOC = 0 ppm.		X					DS MAX SA HYD COR
2									
3	GP	**ALLUVIUM (Qal)**: POORLY GRADED GRAVEL with SAND, mottled gray and reddish brown, fine to medium grained, cobbles up to 3-inches in diameter, moist. No sample recovery on cobbles.	CAL		50/4"				
4									
5		No sample recovery on cobbles.	CAL		40 50/3"				
6									
7									
8		Dense, VOC = 0 ppm.	CAL		27 32 44		2.6	131.5	
9									
10	SP	POORLY GRADED SAND, light orangish brown, medium to coarse grained, trace gravel, moist, very dense. VOC = 0 ppm.	CAL		30 50/6"		4.8	112.0	DS
11									
12									
13		Grades with less gravel. VOC = 0 ppm, 3 rings.	CAL		34 50/3"				
14									
15		Wet, dense. VOC = 0 ppm.	CAL		17 32 42		12.1	117.5	
16									
17		▽ Groundwater at 16.9 feet.							
18		Very dense. VOC = 0 ppm, 6 rings.	CAL		39 50/6"				
19									
20		VOC = 0 ppm	CAL		50/6"				
21		**BORING TERMINATED AT 20½ FEET**							

SCST, Inc.

Highland Park Jr. Arts Center

City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	I-2

LOG OF BORING HSA-2

Date Drilled: 12/9/2016 | Logged by: EJM

Equipment: CME-95 with 8-inch Diameter Hollow-Stem Auger | Project Manager: WLV

Elevation (ft): 548 | Depth to Groundwater (ft): 15.7

Coordinates: N 34.11354 W 118.17804 | Hammer Energy Ratio (ER_i): 85.3

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVEN	SAMPLES: BULK	DRIVING RESISTANCE (blows/6 in. of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
		1½ inches of asphalt concrete over 3 inches of aggregate base.							
1	GM	**FILL (Qf)**: SILTY SAND with GRAVEL, moderate brown, fine to medium grained, moist, medium dense. VOC = 0 ppm.		X					SA HYD
2									
3	SM	SILTY SAND, grayish brown, fine to medium grained, moist, medium dense. VOC = 0 ppm.	CAL		5 7 12		5.0	93.5	
4									
5		**ALLUVIUM (Qal)**: SILTY SAND with GRAVEL, grayish brown, fine to medium grained. moist, dense. No sample recovery due to gravel.	CAL		20 37 35				
6									
7		Grades with more gravel. VOC = 0 ppm, 5 rings.							
8			CAL		38 50/5"		3.0	121.3	DS
9									
10		VOC = 0 ppm.	CAL		45 50/2"				
11									
12									
13		No sample recovery due to gravel	CAL		50/1"				
14									
15	SW-SM	WELL-GRADED SAND with SILT and GRAVEL, orangish brown, wet, very dense. VOC = 0 ppm.	CAL		36 50/6"				SA HYD
16		▽ Groundwater at 15.7 feet.							
17									
18		Grades with less gravel, VOC = 0 ppm.	CAL		40 50/3"				
19									
20		VOC = 0 ppm.	CAL		40 50/2"				
21		**BORING TERMINATED AT 20½ FEET**							

SCST, Inc.

Highland Park Jr. Arts Center

City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	I-3

LOG OF BORING HSA-3

Date Drilled: 12/9/2016 | Logged by: EJM

Equipment: CME-95 with 8-inch Diameter Hollow-Stem Auger | Project Manager: WLV

Elevation (ft): 550 | Depth to Groundwater (ft): 17.5

Coordinates: N 34.11369 W 118.17789 | Hammer Energy Ratio (ER_i): 85.3

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVEN	SAMPLES: BULK	DRIVING RESISTANCE (blows/6 in. of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
		2 inches of asphalt concrete over 3 inches of aggregate base.							
1	SM	**FILL (Qf):** SILTY SAND with GRAVEL, dark brown, fine to medium grained, moist, medium dense. VOC = 0 ppm.		X					RV
2									
3		**ALLUVIUM (Qal)**: SILTY SAND with GRAVEL, grayish brown, fine to medium grained, cobbles up to 3 inches in diameter, moist, very dense. VOC = 0 ppm	CAL		30 50/4"				
4									
5		No sample recovery due to cobbles.	CAL		24 50/6"				
6									
7									
8		No sample recovery due to cobbles.	CAL		40 50/1"				
9									
10		POORLY GRADED SAND, orangish brown, medium to coarse grained, trace gravel up to 2 inches in diameter, moist, very dense. VOC = 0 ppm.	CAL		34 50/6"				
11									
12									
13		SILTY SAND, orangish brown, fine to medium grained, moist, very dense. VOC = 0 ppm.	CAL		32 50/6"				
14									
15		WELL-GRADED SAND, orangish brown, moist, dense. VOC = 0 ppm.	CAL		17 29 34		16.2	114.9	
16									
17		▽ Groundwater at 17.5 feet.							
18		SILTY SAND, orangish brown, fine to medium grained, wet, dense. VOC = 0 ppm.	CAL		13 19 26		24.4	101.3	
19									
20		Very dense VOC = 0 ppm	CAL		32 50/2"				
21									

BORING TERMINATED AT 21 FEET

SCST, Inc.

Highland Park Jr. Arts Center

City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	I-4

LOG OF BORING B-1

Date Drilled: 12/9/2016 | Logged by: EM

Equipment: CME-95 with Mud Rotary | Project Manager: WLV

Elevation (ft): 549 | Depth to Groundwater (ft): 16.2

Coordinates: N 34.11364 W 118.17749 | Hammer Energy Ratio (ER_i): 85.3

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVEN	SAMPLES: BULK	DRIVING RESISTANCE (blows/6 in. of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
		2 inches of asphalt concrete over 3 inches of aggregate base.							
1	SM	**FILL (Qf):** SILTY SAND with GRAVEL, dark brown, fine to medium grained, some cobbles, moist. VOC = 0 ppm.		X					
2									
3	SM	**ALLUVIUM (Qal):** SILTY SAND with GRAVEL, grayish brown, fine to medium grained, some cobbles, moist. VOC = 0 ppm.	SPT		16 19 24	61			COR
4									
5	GW	WELL GRADED GRAVEL with SAND, grayish brown, moist. VOC = 0 ppm.	SPT		50/6"	71/6"			
6									
7									
8		VOC = 0 ppm.	SPT		50/6"	71/6"			
9									
10	SC	CLAYEY SAND, moderate brown, fine grained, moist, medium dense. VOC = 0 ppm.	SPT		8 7 8	21			
11									
12									
13	SW-SM	WELL GRADED SAND with SILT, moderate brown, moist, dense. VOC = 0 ppm.	SPT		8 10 14	34			
14									
15		Wet.	SPT		10 12 14	37			SA HYD
16		▽ Groundwater at 16.2 feet.							
17									
18		Mottled brown/ black, wet, very dense.	SPT		27 29 32	87			
19									
20									

BORING CONTINUED ON I-6

SCST, Inc.

Highland Park Jr. Arts Center

City of Los Angeles, California

By:	CLF	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	I-5

LOG OF BORING B-1

Date Drilled: 12/9/2016 | Logged by: EM

Equipment: CME-95 with Mud Rotary | Project Manager: WLV

Elevation (ft): 549 | Depth to Groundwater (ft): 16.2

Coordinates: N 34.11364 W 118.17749 | Hammer Energy Ratio (ER_i): 85.3

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVEN	SAMPLES: BULK	DRIVING RESISTANCE (blows/6 in. of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
21	SM	**ALLUVIUM (Qal):** SILTY SAND, moderate brown, fine to medium grained, moist, dense.	SPT		10 13 17	43			SA HYD
22									
23	ML	SANDY SILT, moderate brown, fine to medium grained, moist, dense.	SPT		10 13 17	43			SA HYD
24									
25	SM	SILTY SAND, moderate brown, fine to medium grained, moist, dense.	SPT		13 15 18	47			SA HYD AL
26									
27									
28			SPT		15 18 20	54			
29									
30	ML	SANDY SILT, moderate brown, fine to medium grained, moist, hard.	SPT		16 22 32	77			
31									
32									
33			SPT		12 22 23	64			SA HYD AL
34									
35	SM	SILTY SAND, moderate brown, fine grained, moist, very dense.	SPT		12 16 27	61			
36									
37									
38									
39									
40									

BORING CONTINUED ON I-7

SCST, Inc.

Highland Park Jr. Arts Center

City of Los Angeles, California

By:	CLF	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	I-6

LOG OF BORING B-1

Date Drilled: 12/9/2016 | Logged by: EM

Equipment: CME-95 with Mud Rotary | Project Manager: WLV

Elevation (ft): 549 | Depth to Groundwater (ft): 16.2

Coordinates: N 34.11364 W 118.17749 | Hammer Energy Ratio (ER_i): 85.3

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVEN	SAMPLES: BULK	DRIVING RESISTANCE (blows/6 in. of drive)	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
41	SC	**ALLUVIUM (Qal):** CLAYEY SAND, moderate brown, fine grained, moist, very dense, weakly cemented.	SPT		19 24 30	77			
42									
43									
44									
45	SP	POORLY GRADED SAND, moderate brown, coarse grained, moist, very dense.	SPT		15 25 35	85			
46									
47									
48									
49									
50			SPT		32 50/6"	71/6"			
51		**BORING TERMINATED AT 51 FEET**							
52									
53									
54									
55									
56									
57									
58									
59									
60									
61									

SCST, Inc.

Highland Park Jr. Arts Center

City of Los Angeles, California

By:	CLF	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	I-7

LOG OF TEST PIT HA-1

Date Drilled: 12/5/2016 | Logged by: EJM

Equipment: Hand Tools | Project Manager: WLV

Elevation (ft): 580 | Groundwater Depth (ft): Not Encountered

Coordinates: N34.11348 W 118.17825

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVEN	SAMPLES: BULK	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LABORATORY TESTS
0	SM	**FILL (Qf)**: SILTY SAND with GRAVEL, dark brown, fine to medium grained, moist, VOC = 0.2 ppm.		X			SA HYD
1							
2		Grades with more gravel.					
3	GM	SILTY GRAVEL with SAND, moderate brown, fine to medium grained, cobbles up to 3 inches in diameter, moist, VOC = 0.1 ppm		X			SA HYD
4		**REFUSAL AT 4 FEET**					
5							
6							
7							
8							
9							
10							

SCST, Inc.

Highland Park Jr. Arts Center

City of Los Angeles, California

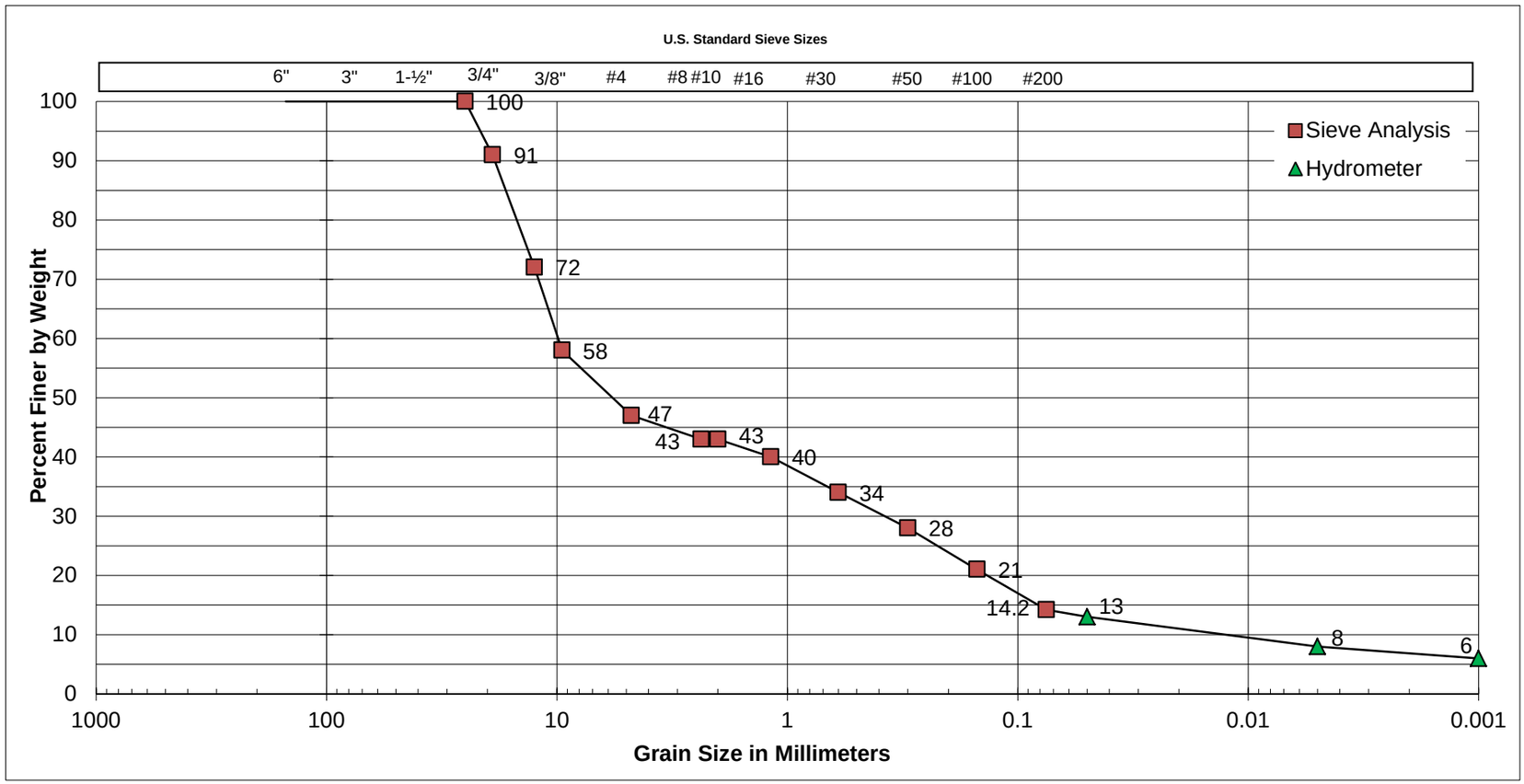
By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	I-8

APPENDIX II
LABORATORY TESTING

Laboratory tests were performed to provide geotechnical parameters for engineering analyses. The following tests were performed:

- **CLASSIFICATION:** Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soil Classification System.
- **IN SITU MOISTURE AND DENSITY:** The in-situ moisture content and dry unit weight were determined on samples collected from the borings. The test results are presented on the boring logs in Appendix I.
- **GRAIN SIZE DISTRIBUTION:** The grain size distribution was determined on 10 soil samples in accordance with ASTM D422. Figures II-1 through II-10 present the test results.
- **ATTERBERG LIMITS:** The Atterberg limits were determined on two soil samples in accordance with ASTM D4318. Figures II-7 and II-8 present the test results.
- **R-VALUE:** An R-value test was performed on one sample in accordance with California Test Method 301. Figure II-11 presents the test result.
- **MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE:** The maximum dry density and optimum moisture content were determined on one soil sample in accordance with ASTM D1557. Figure II-11 presents the test results.
- **CORROSIVITY**: Corrosivity tests were performed on two samples. The pH and minimum resistivity were determined in general accordance with California Test 643. The soluble sulfate content was determined in accordance with California Test 417. The total chloride ion content was determined in accordance with California Test 422. Figure II-11 presents the test results.
- **DIRECT SHEAR:** Direct shear tests were performed on three samples in accordance with ASTM D3080. The shear stress was applied at a constant rate of strain of 0.003 inch per minute. Figures II-12 through II-14 present the test results.

Soil samples not tested are now stored in our laboratory for future reference and analysis, if needed. Unless notified to the contrary, all samples will be disposed of 30 days from the date of this report.



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

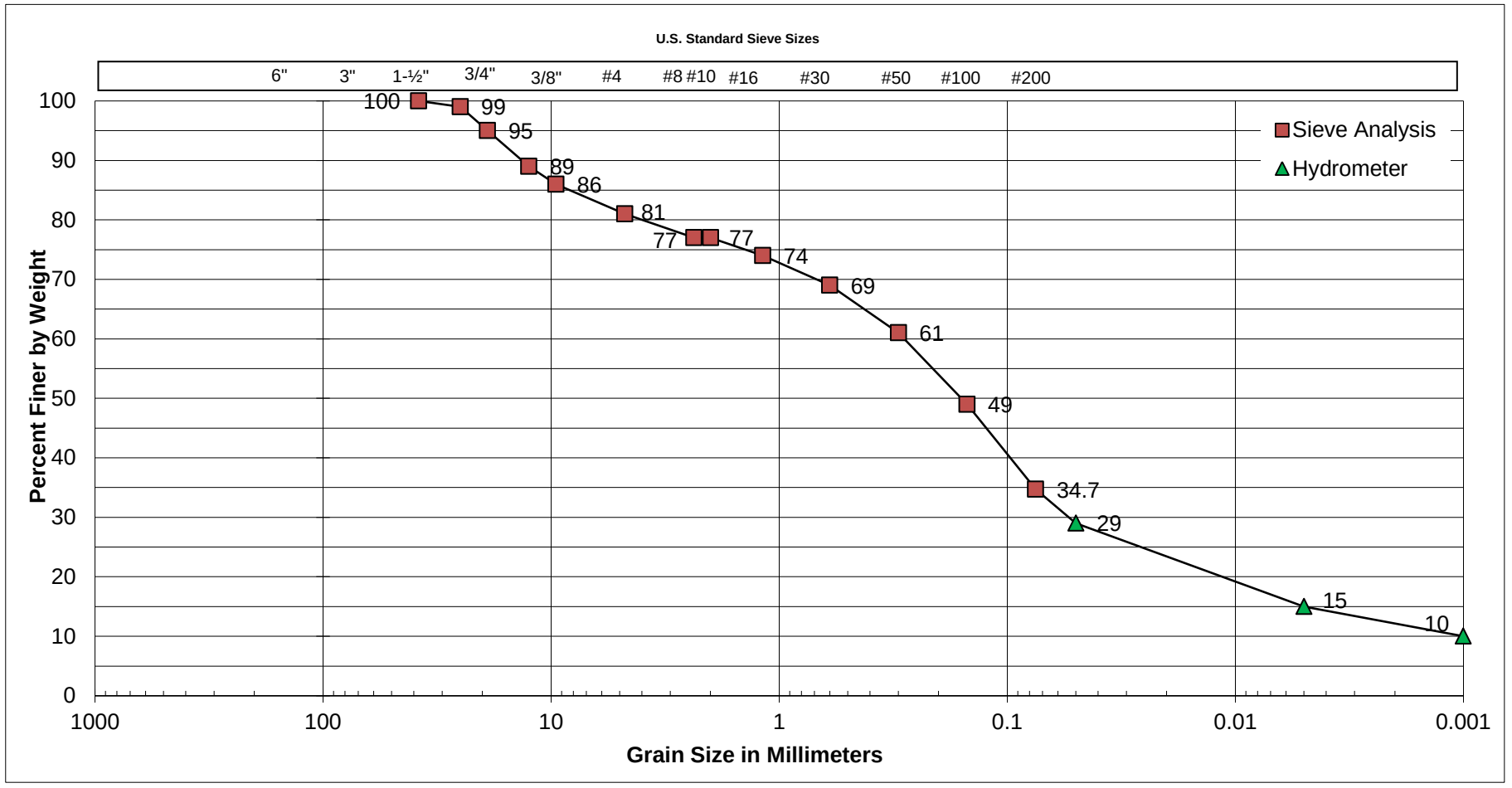
SAMPLE LOCATION
HSA-1 at ½ to 2½ feet

UNIFIED SOIL CLASSIFICATION:	GM
DESCRIPTION	SILTY GRAVEL with SAND

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, Califonria

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-1



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

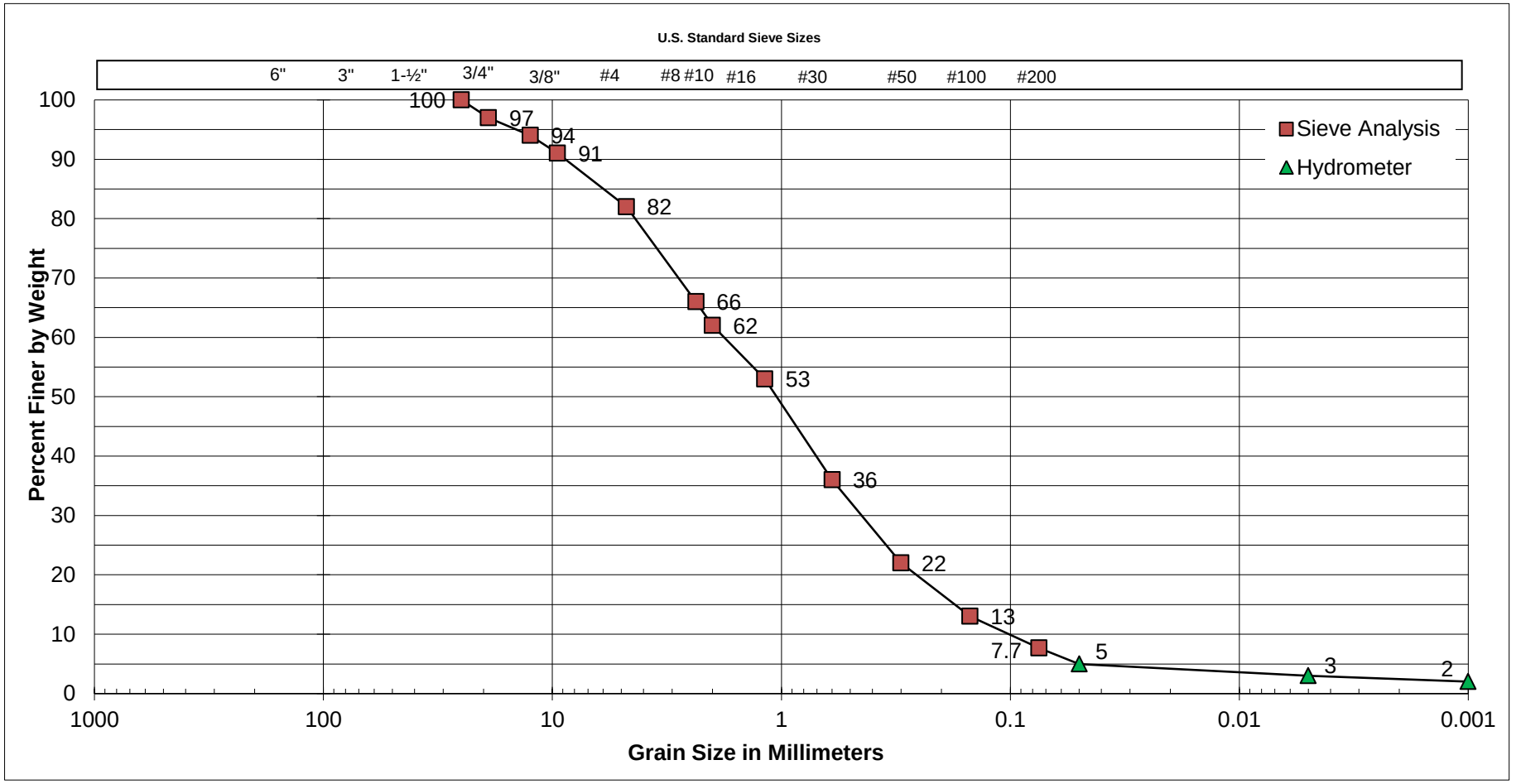
SAMPLE LOCATION
HSA-2 at ½ to 2½ feet

UNIFIED SOIL CLASSIFICATION:	SM
DESCRIPTION	SILTY SAND with GRAVEL

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-2



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

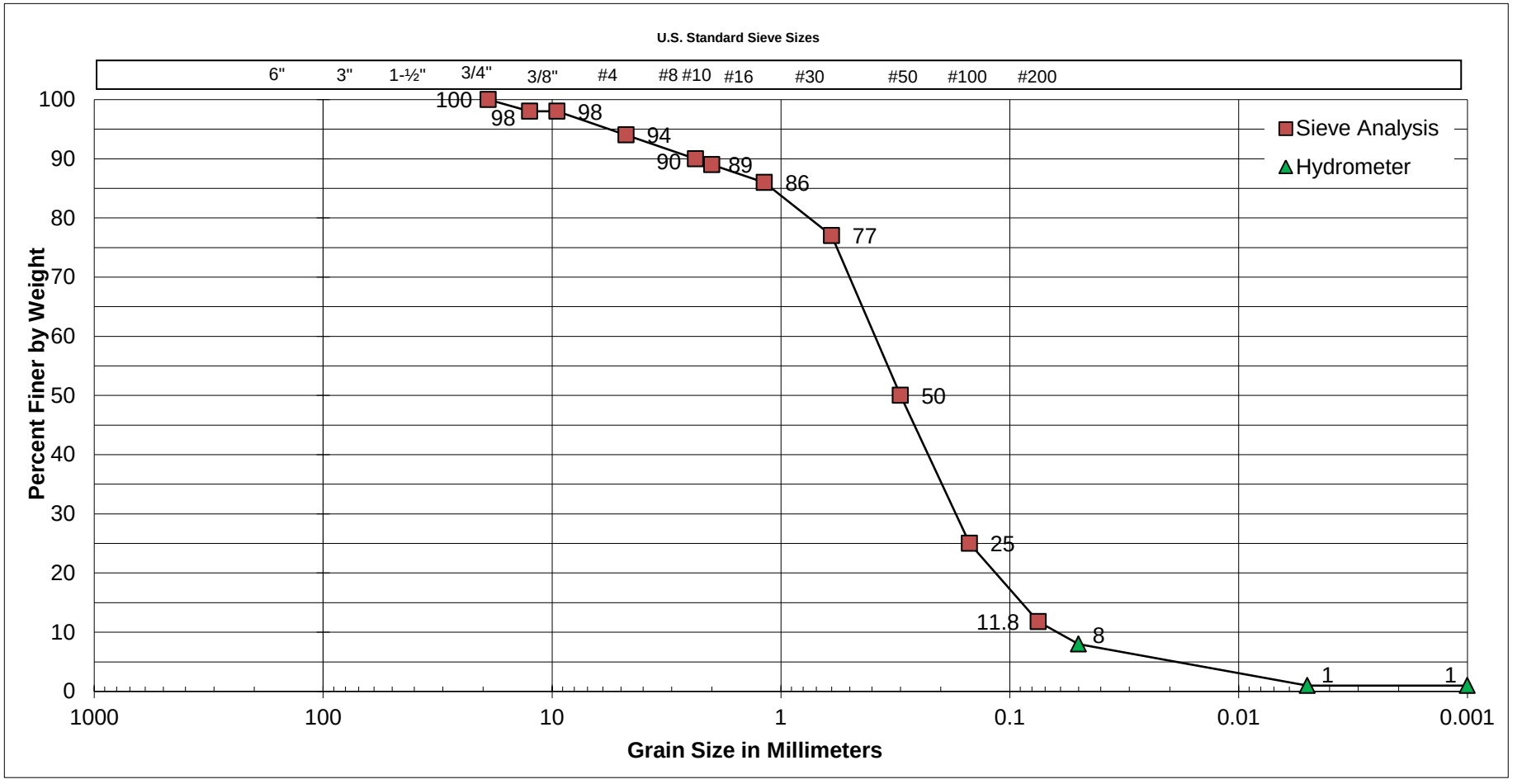
SAMPLE LOCATION
HSA-2 at 15 to 16 feet

UNIFIED SOIL CLASSIFICATION:	SW-SM
DESCRIPTION	WELL-GRADED SAND with SILT and GRAVEL

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-3



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

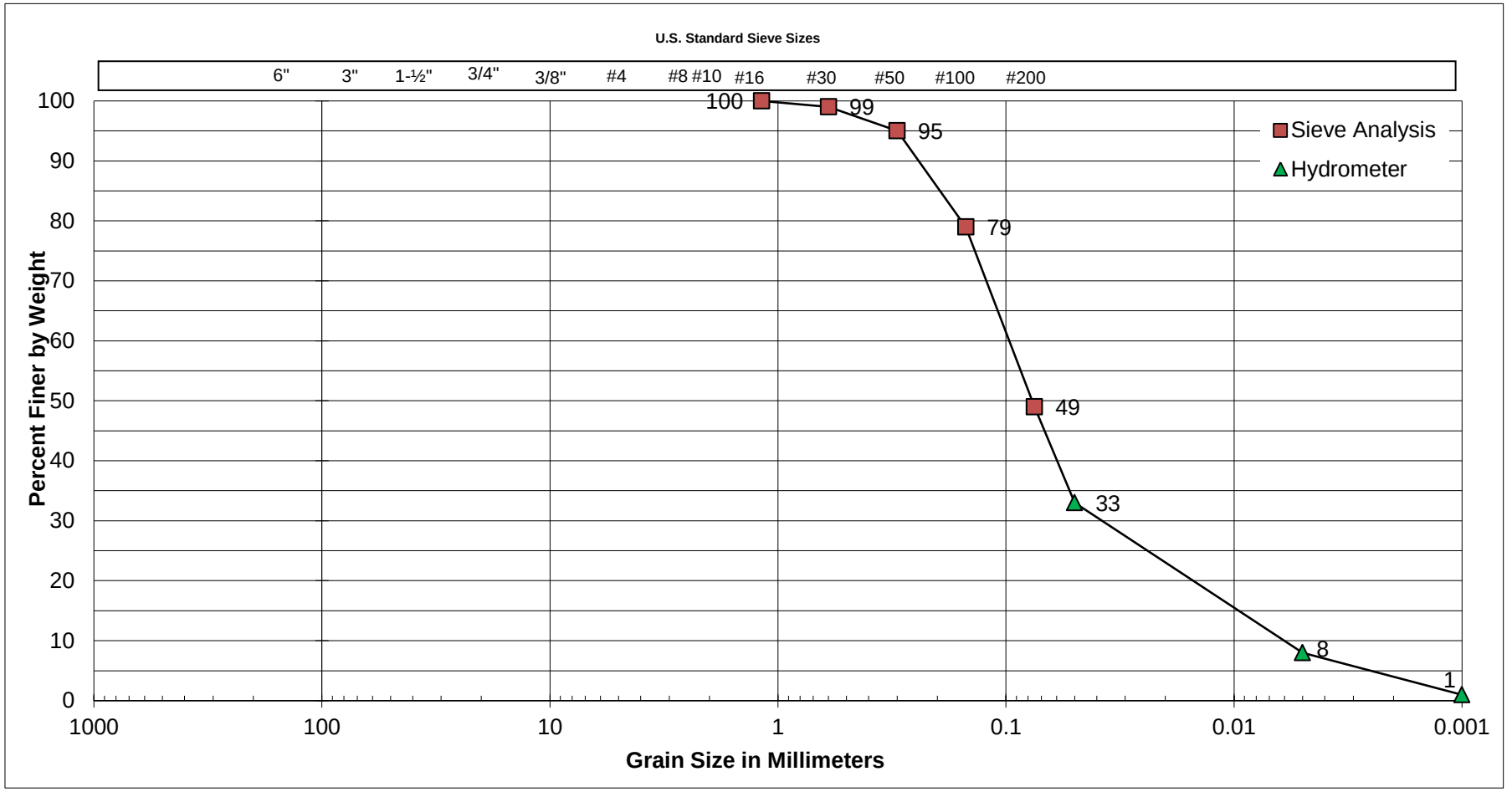
SAMPLE LOCATION
B-1 at 15 to 16½ feet

UNIFIED SOIL CLASSIFICATION:	SW-SM
DESCRIPTION	WELL-GRADED SAND with SILT

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-4



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

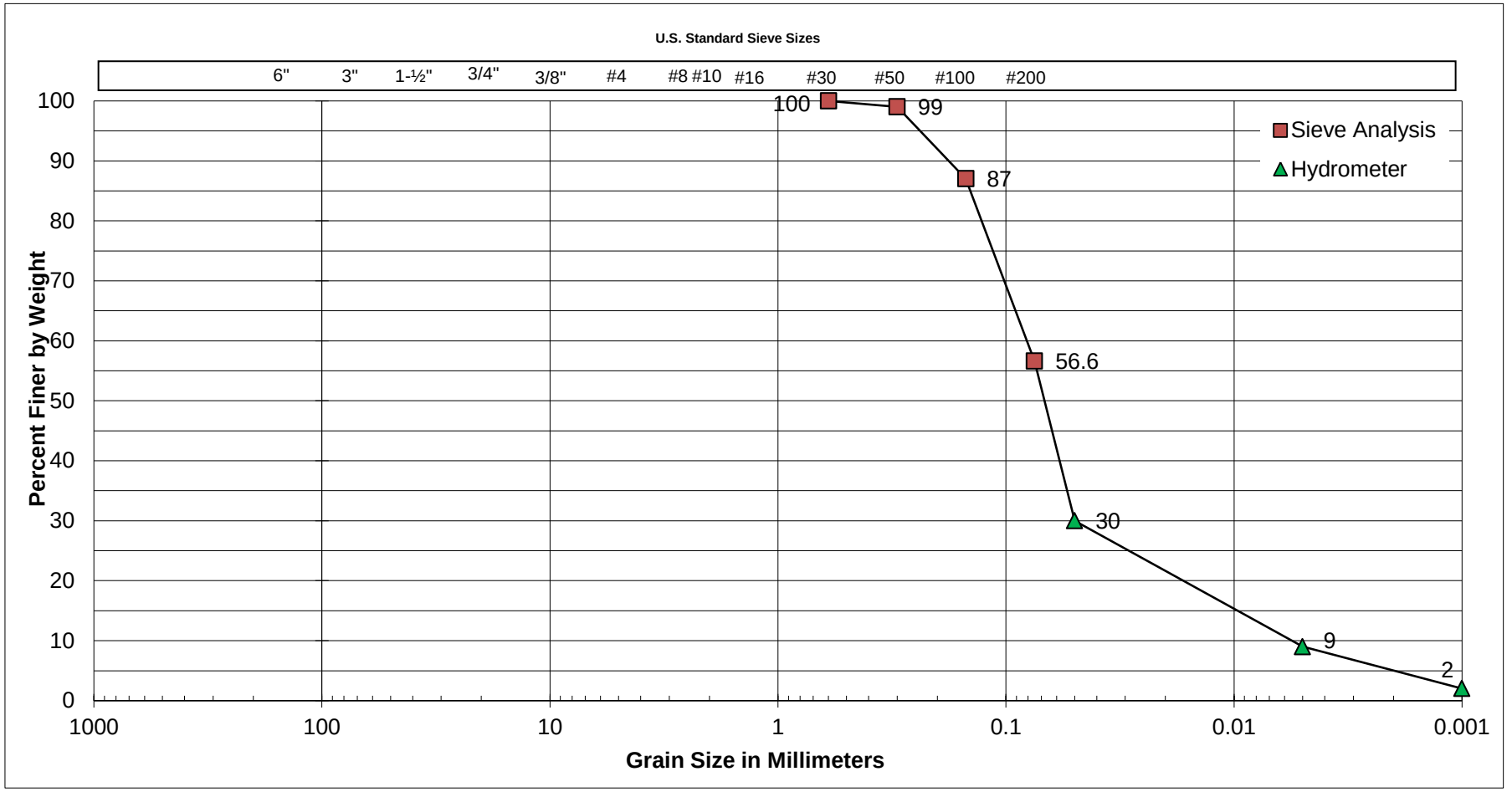
SAMPLE LOCATION
B-1 at 20 to 21½ feet

UNIFIED SOIL CLASSIFICATION:	SM
DESCRIPTION	SILTY SAND

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-5



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

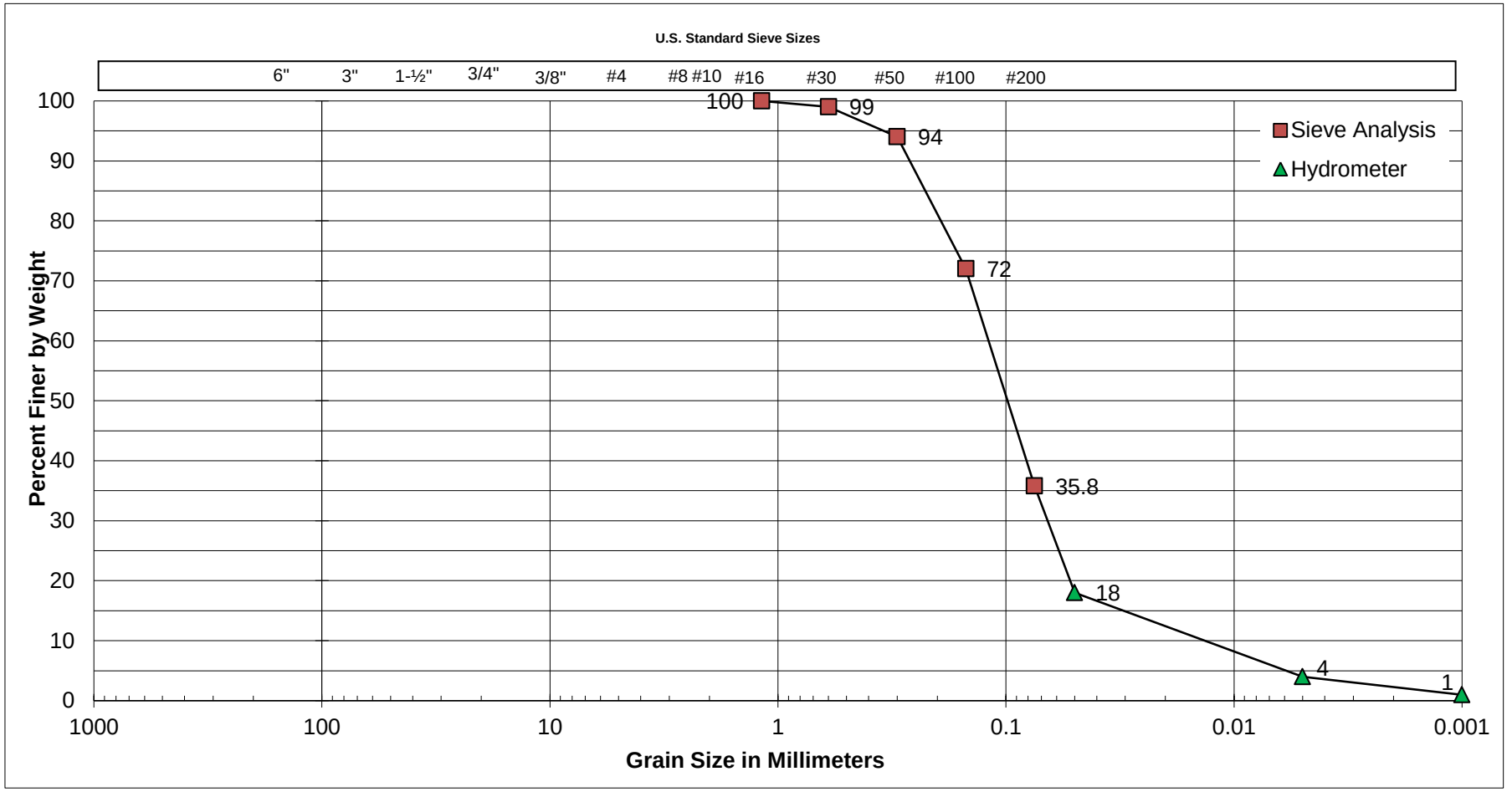
SAMPLE LOCATION
B-1 at 22½ to 24

UNIFIED SOIL CLASSIFICATION:	ML
DESCRIPTION	SANDY SILT

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-6



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE LOCATION
B-1 at 25 to 26½ feet

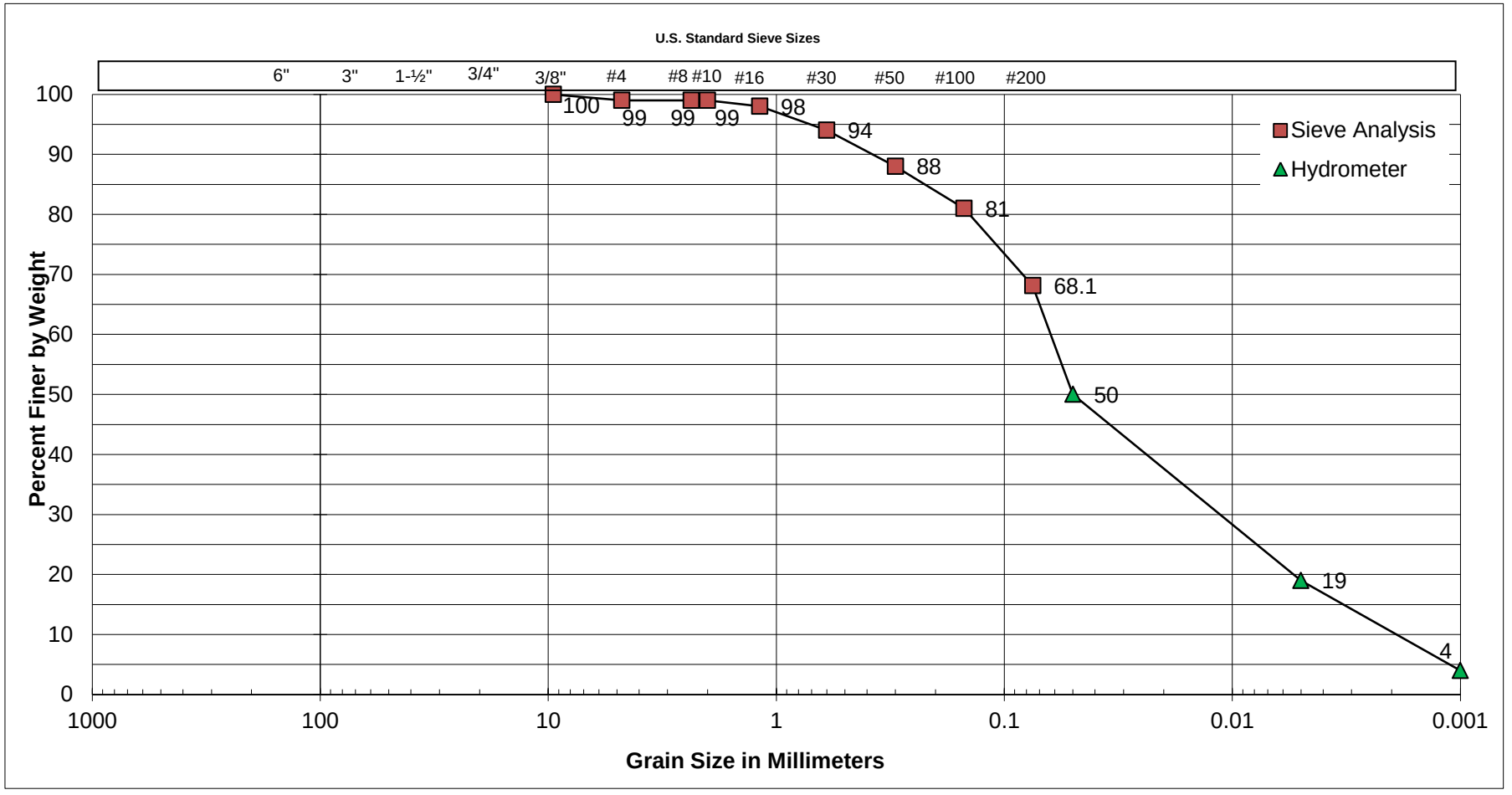
UNIFIED SOIL CLASSIFICATION:	SM
DESCRIPTION	SILTY SAND

ATTERBERG LIMITS	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-7



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE LOCATION
B-1 at 32½ to 34 feet

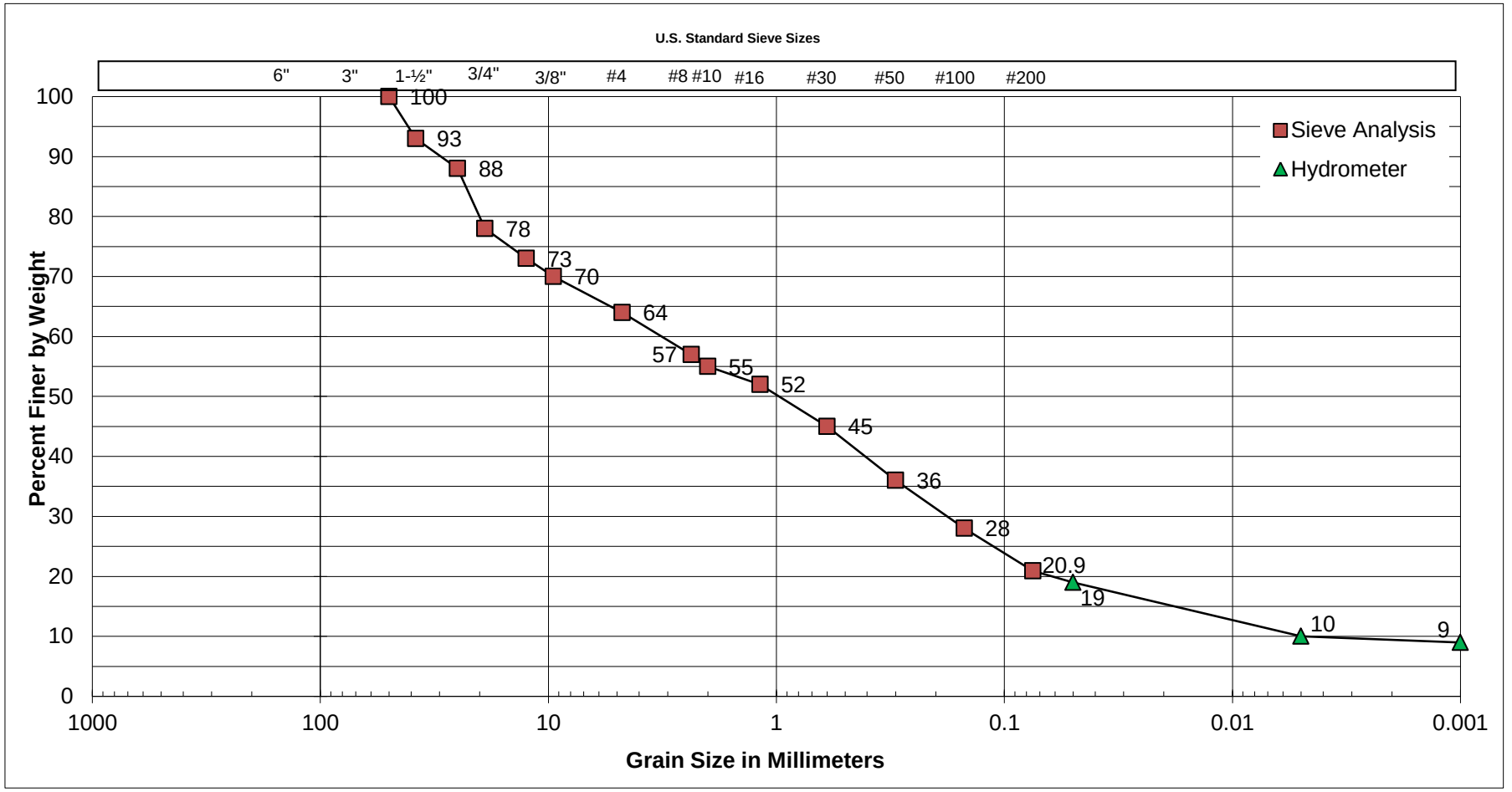
UNIFIED SOIL CLASSIFICATION:	ML
DESCRIPTION	SANDY SILT

ATTERBERG LIMITS	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-8



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

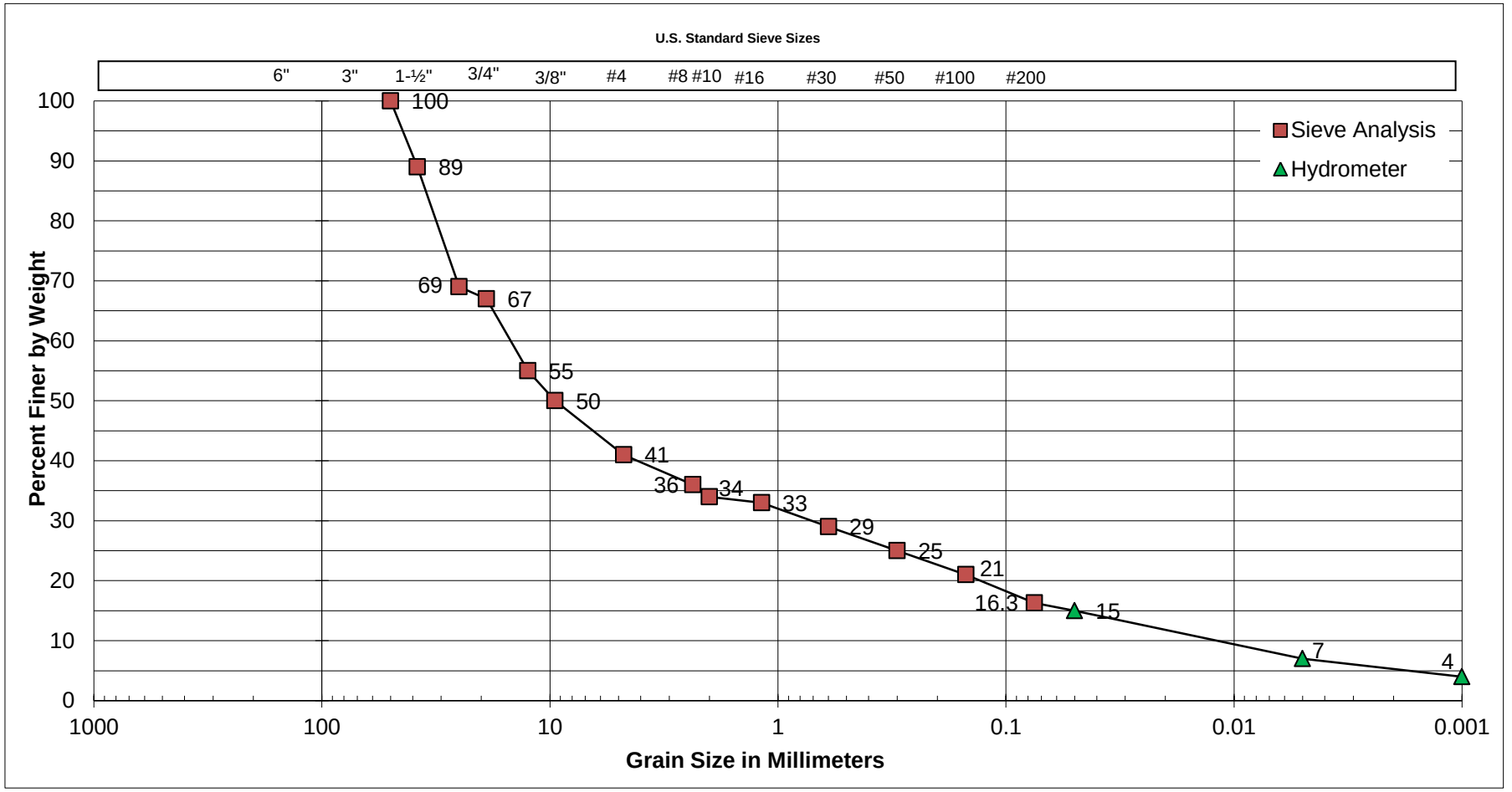
SAMPLE LOCATION
HA-1 at ½ to 2 feet

UNIFIED SOIL CLASSIFICATION:	SM
DESCRIPTION	SILTY SAND with GRAVEL

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-9



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE LOCATION
HA-1 at 2½ to 4 feet

UNIFIED SOIL CLASSIFICATION:	GM
DESCRIPTION	SILTY GRAVEL with SAND

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-10

R-VALUE

CALIFORNIA TEST 301

SAMPLE	DESCRIPTION	R- VALUE
HSA-3 at ½ to 2½ feet	Dark brown SILTY SAND with GRAVEL	74

RESISTIVITY, pH, SOLUBLE CHLORIDE and SOLUBLE SULFATE

SAMPLE	RESISTIVITY (Ω-cm)	pH	CHLORIDE (%)	SULFATE (%)
HSA-1 at ½ to 2½ feet	6920	7.19	0.013	0.003
B-1 at 2½ to 4 feet	3170	7.72	0.001	0.000

SULFATE EXPOSURE CLASSES [2]

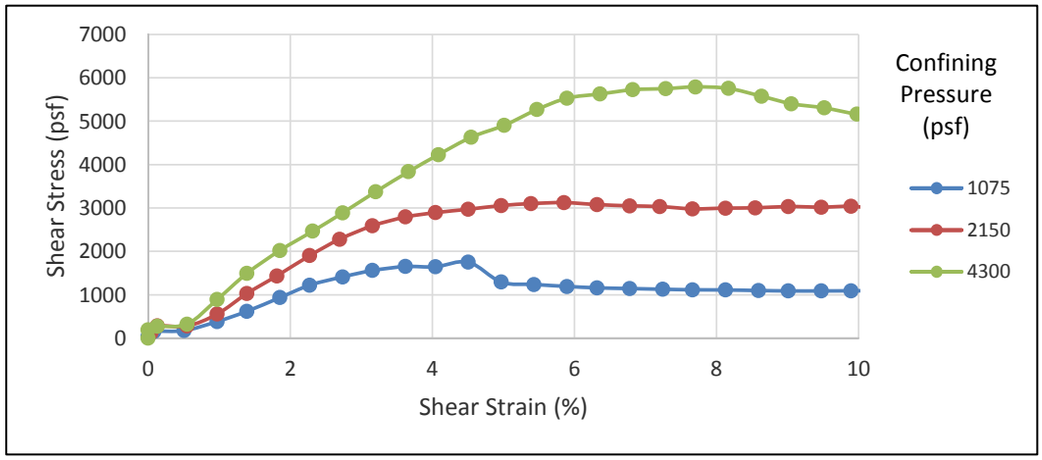
Class	Severity	Water-Soluble Sulfate (SO_4) in Soil, Percent by Mass
S0	Not applicable	$SO_4 < 0.10$
S1	Moderate	$0.10 \le SO_4 < 0.20$
S2	Severe	$0.20 \le SO_4 \le 2.00$
S3	Very Severe	$SO_4 > 2.00$

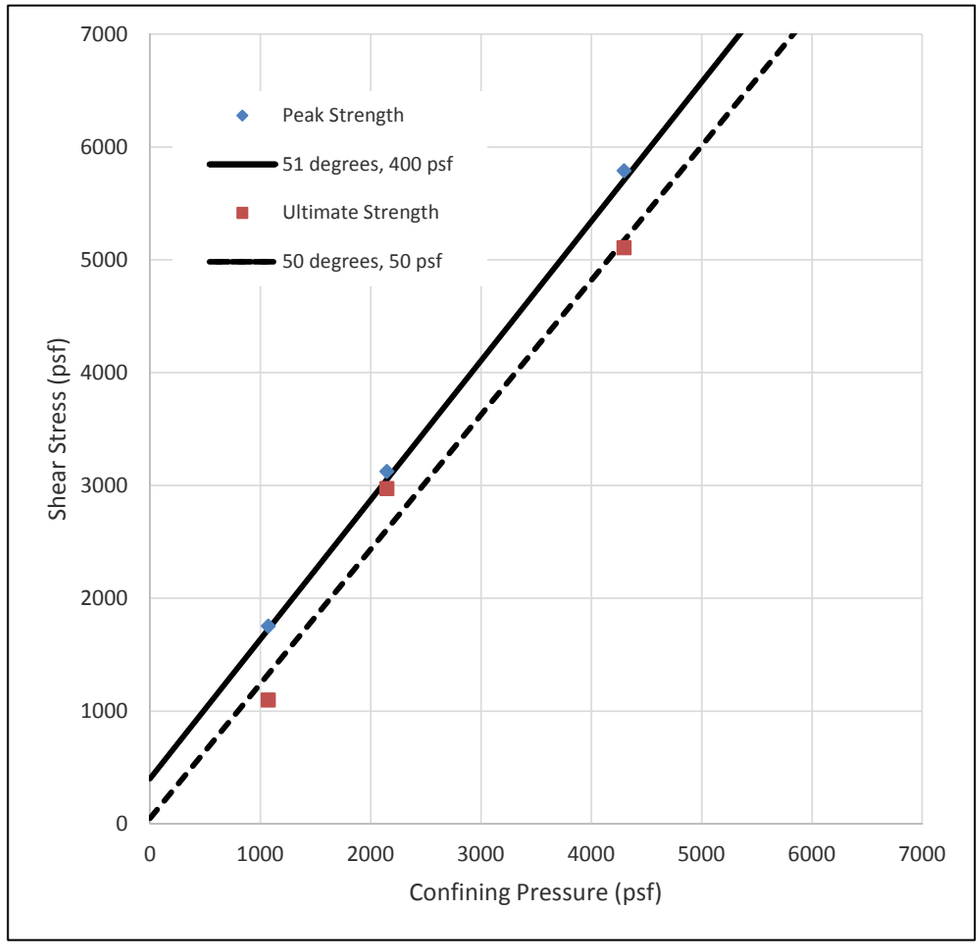
2. ACI 318, Table 19.3.1.1

Maximum Density and Optimum Moisture with Rock Correction

ASTM D1557 and ASTM D4718

SAMPLE	DESCRIPTION	MAXIMUM DENSITY (pcf)	OPTIMUM MOISTURE (%)
HSA-1 at ½ to 2½ feet	Dark brown SILTY GRAVEL with SAND (0% rock)	130.4	7.4
	Dark brown SILTY GRAVEL with SAND (5% rock)	131.7	6.8
	Dark brown SILTY GRAVEL with SAND (10% rock)	133.1	6.4
	Dark brown SILTY GRAVEL with SAND (15% rock)	134.4	6.1
	Dark brown SILTY GRAVEL with SAND (20% rock)	135.8	6.1
	Dark brown SILTY GRAVEL with SAND (25% rock)	137.3	5.8
	Dark brown SILTY GRAVEL with SAND (30% rock)	138.7	5.5





SAMPLE ID: HSA-1 at ½ to 2½ feet

dark brown SILTY GRAVEL with SAND

NOTES: Remolded to 95%

Strain Rate: 0.003 in/min

Sample was consolidated and drained

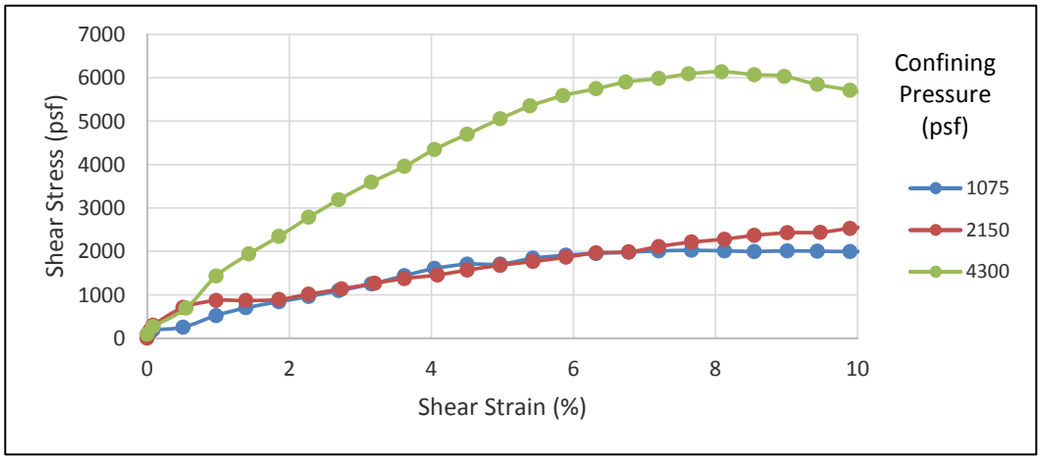
	Peak	Ultimate
Φ	51 °	50 °
c	400 psf	50 psf

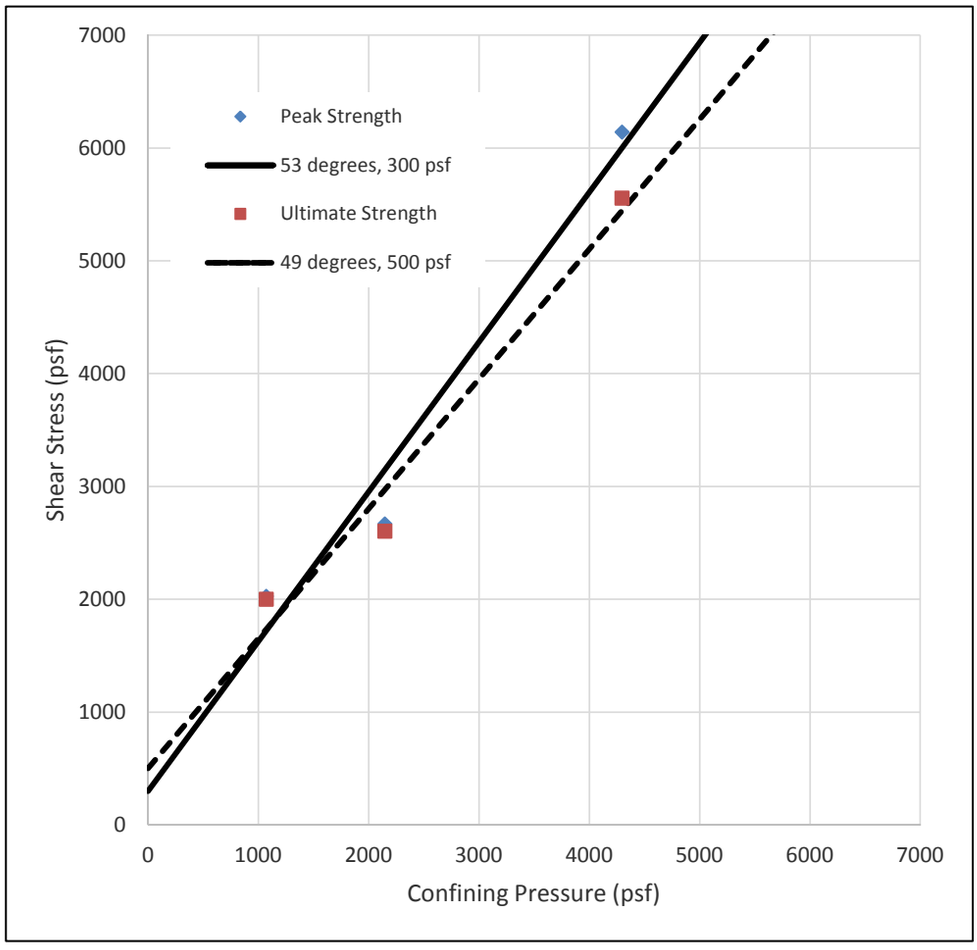
	Initial	Final
γ_d	122.4 pcf	122.4 pcf
w_c	8.2 %	12.2 %
Saturation	60 %	89 %

SCST Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-12





SAMPLE ID: HSA-1 at 10 to 11 feet

Light orangish brown POORLY GRADED SAND

NOTES: Insitu

Strain Rate: 0.003 in/min

Sample was consolidated and drained

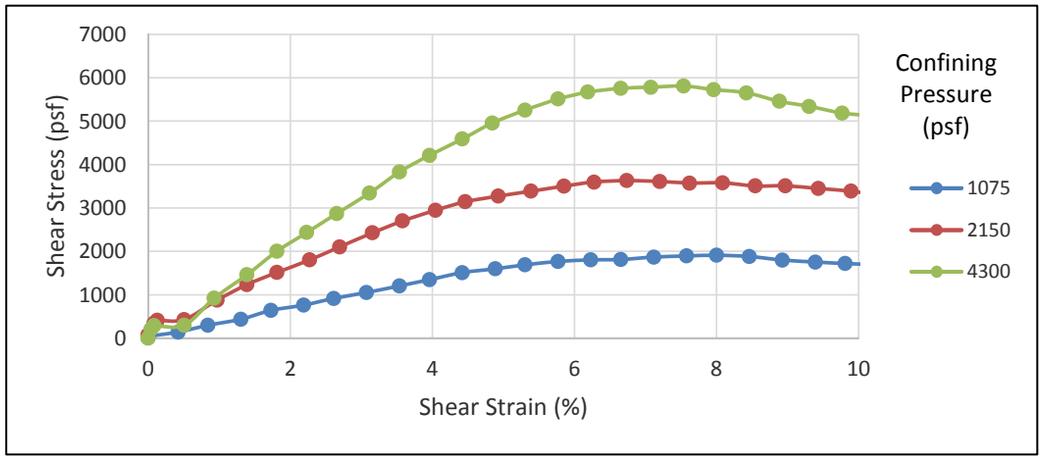
	Peak	Ultimate
Φ	53 °	49 °
c	300 psf	500 psf

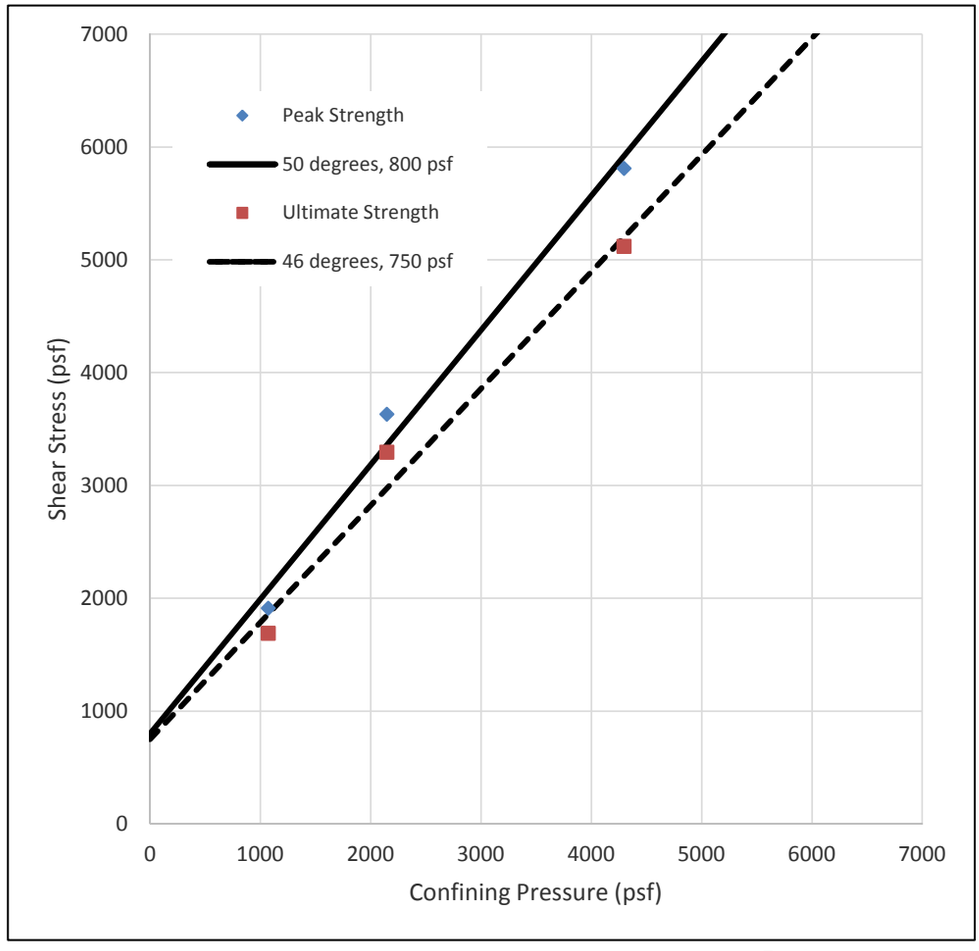
	Initial	Final
γ_d	104.7 pcf	104.7 pcf
w_c	5.1 %	21.2 %
Saturation	23 %	95 %

SCST Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-13





SAMPLE ID: HSA-2 at 7½ to 8½ feet

Grayish brown SILTY SAND with GRAVEL

NOTES: insitu

Strain Rate: 0.003 in/min

Sample was consolidated and drained

	Peak	Ultimate
Φ	50 °	46 °
c	800 psf	750 psf

	Initial	Final
γ_d	121.3 pcf	121.3 pcf
w_c	3.0 %	14.5 %
Saturation	21 %	100 %

SCST, Inc.

Highland Park Jr. Arts Center
City of Los Angeles, California

By:	EJM	Date:	January, 2017
Job Number:	160523P3.1-1	Figure:	II-14

APPENDIX III
ENVIRONMENTAL TESTING

SCST, Inc. collected environmental soil samples from the 3 hollow-stem auger borings drilled on December 9, 2016 for the subject project. The samples were placed in 4-ounce jars, labeled, stored in an insulated cooler with ice and transported under chain-of-custody to Eurofins | Calscience for analytical testing. The sampling equipment was decontaminated between samples to reduce the likelihood of cross-contamination. The environmental test results are presented in the attached analytical report. During the course of the report preparation, the boring labels were changed. Borings B-1, B-2, B-3, and B-4 correspond to borings labeled in this study labeled HSA-1, HSA-2, HSA-3 and B-1 respectively.

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WORK ORDER NUMBER: 16-12-1368

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Southern California Soil & Testing, Inc.

Client Project Name: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Attention: Lee Vanderhurst
6280 Riverdale Street
San Diego, CA 92120-3308

Approved for release on 12/20/2016 by:
Terri Chang
Project Manager

ResultLink

Email your PM

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

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Work Order Number: 16-12-1368

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Work Order Narrative

Work Order: 16-12-1368 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 12/14/16. They were assigned to Work Order 16-12-1368.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

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Sample Summary

Client:	Southern California Soil & Testing, Inc. 6280 Riverdale Street San Diego, CA 92120-3308	Work Order:	16-12-1368
		Project Name:	Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1
		PO Number:	
		Date/Time Received:	12/14/16 18:05
		Number of Containers:	7
Attn:	Lee Vanderhurst		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
B-1 @ 7.5'	16-12-1368-1	12/09/16 12:50	1	Solid
B-1 @ 20'	16-12-1368-2	12/09/16 13:35	1	Solid
B-2 @ 2.5'	16-12-1368-3	12/09/16 08:32	1	Solid
B-2 @ 7.5'	16-12-1368-4	12/09/16 08:41	1	Solid
B-3 @ 2.5'	16-12-1368-5	12/09/16 10:21	1	Solid
B-3 @ 5'	16-12-1368-6	12/09/16 10:27	1	Solid
B-3 @ 20'	16-12-1368-7	12/09/16 11:18	1	Solid

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: Extraction
Method: EPA 418.1M
Units: mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-1 @ 7.5'	**16-12-1368-1-A**	**12/09/16 12:50**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216L01**

Parameter	Result	RL	DF	Qualifiers
TRPH	ND	10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-1 @ 20'	**16-12-1368-2-A**	**12/09/16 13:35**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216L01**

Parameter	Result	RL	DF	Qualifiers
TRPH	ND	10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-2 @ 2.5'	**16-12-1368-3-A**	**12/09/16 08:32**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216L01**

Parameter	Result	RL	DF	Qualifiers
TRPH	590	50	5.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-3 @ 2.5'	**16-12-1368-5-A**	**12/09/16 10:21**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216L01**

Parameter	Result	RL	DF	Qualifiers
TRPH	27	10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-3 @ 5'	**16-12-1368-6-A**	**12/09/16 10:27**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216L01**

Parameter	Result	RL	DF	Qualifiers
TRPH	20	10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-3 @ 20'	**16-12-1368-7-A**	**12/09/16 11:18**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216L01**

Parameter	Result	RL	DF	Qualifiers
TRPH	ND	10	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-2199**	**N/A**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216L01**

Parameter	Result	RL	DF	Qualifiers
TRPH	ND	10	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-1 @ 7.5'	**16-12-1368-1-A**	**12/09/16 12:50**	**Solid**	**GC 41**	**12/15/16**	**12/16/16 12:53**	**161215L09**

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	5.0	1.00	
Alpha-BHC	ND	10	1.00	
Beta-BHC	ND	5.0	1.00	
Chlordane	ND	50	1.00	
4,4'-DDD	ND	5.0	1.00	
4,4'-DDE	ND	5.0	1.00	
4,4'-DDT	ND	5.0	1.00	
Delta-BHC	ND	10	1.00	
Dieldrin	ND	5.0	1.00	
Endosulfan I	ND	5.0	1.00	
Endosulfan II	ND	5.0	1.00	
Endosulfan Sulfate	ND	5.0	1.00	
Endrin	ND	5.0	1.00	
Endrin Aldehyde	ND	5.0	1.00	
Endrin Ketone	ND	5.0	1.00	
Gamma-BHC	ND	5.0	1.00	
Heptachlor	ND	5.0	1.00	
Heptachlor Epoxide	ND	10	1.00	
Methoxychlor	ND	5.0	1.00	
Toxaphene	ND	100	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	92	24-168	
2,4,5,6-Tetrachloro-m-Xylene	68	25-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-3 @ 2.5'	**16-12-1368-5-A**	**12/09/16 10:21**	**Solid**	**GC 41**	**12/15/16**	**12/16/16 13:28**	**161215L09**

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	5.0	1.00	
Alpha-BHC	ND	10	1.00	
Beta-BHC	ND	5.0	1.00	
Chlordane	ND	50	1.00	
4,4'-DDD	ND	5.0	1.00	
4,4'-DDE	ND	5.0	1.00	
4,4'-DDT	ND	5.0	1.00	
Delta-BHC	ND	10	1.00	
Dieldrin	ND	5.0	1.00	
Endosulfan I	ND	5.0	1.00	
Endosulfan II	ND	5.0	1.00	
Endosulfan Sulfate	ND	5.0	1.00	
Endrin	ND	5.0	1.00	
Endrin Aldehyde	ND	5.0	1.00	
Endrin Ketone	ND	5.0	1.00	
Gamma-BHC	ND	5.0	1.00	
Heptachlor	ND	5.0	1.00	
Heptachlor Epoxide	ND	10	1.00	
Methoxychlor	ND	5.0	1.00	
Toxaphene	ND	100	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	96	24-168	
2,4,5,6-Tetrachloro-m-Xylene	70	25-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-537-2578**	**N/A**	**Solid**	**GC 41**	**12/15/16**	**12/16/16 11:38**	**161215L09**

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	5.0	1.00	
Alpha-BHC	ND	10	1.00	
Beta-BHC	ND	5.0	1.00	
Chlordane	ND	50	1.00	
4,4'-DDD	ND	5.0	1.00	
4,4'-DDE	ND	5.0	1.00	
4,4'-DDT	ND	5.0	1.00	
Delta-BHC	ND	10	1.00	
Dieldrin	ND	5.0	1.00	
Endosulfan I	ND	5.0	1.00	
Endosulfan II	ND	5.0	1.00	
Endosulfan Sulfate	ND	5.0	1.00	
Endrin	ND	5.0	1.00	
Endrin Aldehyde	ND	5.0	1.00	
Endrin Ketone	ND	5.0	1.00	
Gamma-BHC	ND	5.0	1.00	
Heptachlor	ND	5.0	1.00	
Heptachlor Epoxide	ND	10	1.00	
Methoxychlor	ND	5.0	1.00	
Toxaphene	ND	100	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	93	24-168	
2,4,5,6-Tetrachloro-m-Xylene	89	25-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8082
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-1 @ 7.5'	**16-12-1368-1-A**	**12/09/16 12:50**	**Solid**	**GC 58**	**12/15/16**	**12/16/16 13:22**	**161215L10**

Parameter	Result	RL	DF	Qualifiers
Aroclor-1016	ND	50	1.00	
Aroclor-1221	ND	50	1.00	
Aroclor-1232	ND	50	1.00	
Aroclor-1242	ND	50	1.00	
Aroclor-1248	ND	50	1.00	
Aroclor-1254	ND	50	1.00	
Aroclor-1260	ND	50	1.00	
Aroclor-1262	ND	50	1.00	
Aroclor-1268	ND	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	100	24-168	
2,4,5,6-Tetrachloro-m-Xylene	59	25-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-3 @ 2.5'	**16-12-1368-5-A**	**12/09/16 10:21**	**Solid**	**GC 58**	**12/15/16**	**12/16/16 13:40**	**161215L10**

Parameter	Result	RL	DF	Qualifiers
Aroclor-1016	ND	50	1.00	
Aroclor-1221	ND	50	1.00	
Aroclor-1232	ND	50	1.00	
Aroclor-1242	ND	50	1.00	
Aroclor-1248	ND	50	1.00	
Aroclor-1254	ND	50	1.00	
Aroclor-1260	ND	50	1.00	
Aroclor-1262	ND	50	1.00	
Aroclor-1268	ND	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	101	24-168	
2,4,5,6-Tetrachloro-m-Xylene	64	25-145	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8082
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-535-4017**	**N/A**	**Solid**	**GC 58**	**12/15/16**	**12/16/16 12:10**	**161215L10**

Parameter	Result	RL	DF	Qualifiers
Aroclor-1016	ND	50	1.00	
Aroclor-1221	ND	50	1.00	
Aroclor-1232	ND	50	1.00	
Aroclor-1242	ND	50	1.00	
Aroclor-1248	ND	50	1.00	
Aroclor-1254	ND	50	1.00	
Aroclor-1260	ND	50	1.00	
Aroclor-1262	ND	50	1.00	
Aroclor-1268	ND	50	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	82	24-168	
2,4,5,6-Tetrachloro-m-Xylene	77	25-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8270C
Units: mg/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-2 @ 2.5'	**16-12-1368-3-A**	**12/09/16 08:32**	**Solid**	**GC/MS CCC**	**12/15/16**	**12/16/16 13:19**	**161215L11**

Parameter	Result	RL	DF	Qualifiers
Acenaphthene	ND	0.50	1.00	
Acenaphthylene	ND	0.50	1.00	
Aniline	ND	0.50	1.00	
Anthracene	ND	0.50	1.00	
Azobenzene	ND	0.50	1.00	
Benzidine	ND	10	1.00	
Benzo (a) Anthracene	ND	0.50	1.00	
Benzo (a) Pyrene	ND	0.50	1.00	
Benzo (b) Fluoranthene	ND	0.50	1.00	
Benzo (g,h,i) Perylene	ND	0.50	1.00	
Benzo (k) Fluoranthene	ND	0.50	1.00	
Benzoic Acid	ND	2.5	1.00	
Benzyl Alcohol	ND	0.50	1.00	
Bis(2-Chloroethoxy) Methane	ND	0.50	1.00	
Bis(2-Chloroethyl) Ether	ND	2.5	1.00	
Bis(2-Chloroisopropyl) Ether	ND	0.50	1.00	
Bis(2-Ethylhexyl) Phthalate	ND	0.50	1.00	
4-Bromophenyl-Phenyl Ether	ND	0.50	1.00	
Butyl Benzyl Phthalate	ND	0.50	1.00	
4-Chloro-3-Methylphenol	ND	0.50	1.00	
4-Chloroaniline	ND	0.50	1.00	
2-Chloronaphthalene	ND	0.50	1.00	
2-Chlorophenol	ND	0.50	1.00	
4-Chlorophenyl-Phenyl Ether	ND	0.50	1.00	
Chrysene	ND	0.50	1.00	
Di-n-Butyl Phthalate	ND	0.50	1.00	
Di-n-Octyl Phthalate	ND	0.50	1.00	
Dibenz (a,h) Anthracene	ND	0.50	1.00	
Dibenzofuran	ND	0.50	1.00	
1,2-Dichlorobenzene	ND	0.50	1.00	
1,3-Dichlorobenzene	ND	0.50	1.00	
1,4-Dichlorobenzene	ND	0.50	1.00	
3,3'-Dichlorobenzidine	ND	10	1.00	
2,4-Dichlorophenol	ND	0.50	1.00	
Diethyl Phthalate	ND	0.50	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8270C
Units: mg/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Parameter	Result	RL	DF	Qualifiers
Dimethyl Phthalate	ND	0.50	1.00	
2,4-Dimethylphenol	ND	0.50	1.00	
4,6-Dinitro-2-Methylphenol	ND	2.5	1.00	
2,4-Dinitrophenol	ND	2.5	1.00	
2,4-Dinitrotoluene	ND	0.50	1.00	
2,6-Dichlorophenol	ND	0.50	1.00	
2,6-Dinitrotoluene	ND	0.50	1.00	
Fluoranthene	ND	0.50	1.00	
Fluorene	ND	0.50	1.00	
Hexachloro-1,3-Butadiene	ND	0.50	1.00	
Hexachlorobenzene	ND	0.50	1.00	
Hexachlorocyclopentadiene	ND	2.5	1.00	
Hexachloroethane	ND	0.50	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.50	1.00	
Isophorone	ND	0.50	1.00	
2-Methylnaphthalene	ND	0.50	1.00	
1-Methylnaphthalene	ND	0.50	1.00	
2-Methylphenol	ND	0.50	1.00	
3/4-Methylphenol	ND	0.50	1.00	
N-Nitroso-di-n-propylamine	ND	0.50	1.00	
N-Nitrosodimethylamine	ND	0.50	1.00	
N-Nitrosodiphenylamine	ND	0.50	1.00	
Naphthalene	ND	0.50	1.00	
4-Nitroaniline	ND	0.50	1.00	
3-Nitroaniline	ND	0.50	1.00	
2-Nitroaniline	ND	0.50	1.00	
Nitrobenzene	ND	2.5	1.00	
4-Nitrophenol	ND	0.50	1.00	
2-Nitrophenol	ND	0.50	1.00	
Pentachlorophenol	ND	2.5	1.00	
Phenanthrene	ND	0.50	1.00	
Phenol	ND	0.50	1.00	
Pyrene	ND	0.50	1.00	
Pyridine	ND	0.50	1.00	
1,2,4-Trichlorobenzene	ND	0.50	1.00	
2,4,6-Trichlorophenol	ND	0.50	1.00	
2,4,5-Trichlorophenol	ND	0.50	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.	Date Received:	12/14/16
6280 Riverdale Street	Work Order:	16-12-1368
San Diego, CA 92120-3308	Preparation:	EPA 3545
	Method:	EPA 8270C
	Units:	mg/kg
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1		Page 3 of 9

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	63	27-120	
2-Fluorophenol	70	25-120	
Nitrobenzene-d5	60	33-123	
p-Terphenyl-d14	79	27-159	
Phenol-d6	71	26-122	
2,4,6-Tribromophenol	104	18-138	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8270C
Units: mg/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-3 @ 2.5'	**16-12-1368-5-A**	**12/09/16 10:21**	**Solid**	**GC/MS CCC**	**12/15/16**	**12/16/16 13:37**	**161215L11**

Parameter	Result	RL	DF	Qualifiers
Acenaphthene	ND	0.50	1.00	
Acenaphthylene	ND	0.50	1.00	
Aniline	ND	0.50	1.00	
Anthracene	ND	0.50	1.00	
Azobenzene	ND	0.50	1.00	
Benzidine	ND	10	1.00	
Benzo (a) Anthracene	ND	0.50	1.00	
Benzo (a) Pyrene	ND	0.50	1.00	
Benzo (b) Fluoranthene	ND	0.50	1.00	
Benzo (g,h,i) Perylene	ND	0.50	1.00	
Benzo (k) Fluoranthene	ND	0.50	1.00	
Benzoic Acid	ND	2.5	1.00	
Benzyl Alcohol	ND	0.50	1.00	
Bis(2-Chloroethoxy) Methane	ND	0.50	1.00	
Bis(2-Chloroethyl) Ether	ND	2.5	1.00	
Bis(2-Chloroisopropyl) Ether	ND	0.50	1.00	
Bis(2-Ethylhexyl) Phthalate	ND	0.50	1.00	
4-Bromophenyl-Phenyl Ether	ND	0.50	1.00	
Butyl Benzyl Phthalate	ND	0.50	1.00	
4-Chloro-3-Methylphenol	ND	0.50	1.00	
4-Chloroaniline	ND	0.50	1.00	
2-Chloronaphthalene	ND	0.50	1.00	
2-Chlorophenol	ND	0.50	1.00	
4-Chlorophenyl-Phenyl Ether	ND	0.50	1.00	
Chrysene	ND	0.50	1.00	
Di-n-Butyl Phthalate	ND	0.50	1.00	
Di-n-Octyl Phthalate	ND	0.50	1.00	
Dibenz (a,h) Anthracene	ND	0.50	1.00	
Dibenzofuran	ND	0.50	1.00	
1,2-Dichlorobenzene	ND	0.50	1.00	
1,3-Dichlorobenzene	ND	0.50	1.00	
1,4-Dichlorobenzene	ND	0.50	1.00	
3,3'-Dichlorobenzidine	ND	10	1.00	
2,4-Dichlorophenol	ND	0.50	1.00	
Diethyl Phthalate	ND	0.50	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8270C
Units: mg/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Parameter	Result	RL	DF	Qualifiers
Dimethyl Phthalate	ND	0.50	1.00	
2,4-Dimethylphenol	ND	0.50	1.00	
4,6-Dinitro-2-Methylphenol	ND	2.5	1.00	
2,4-Dinitrophenol	ND	2.5	1.00	
2,4-Dinitrotoluene	ND	0.50	1.00	
2,6-Dichlorophenol	ND	0.50	1.00	
2,6-Dinitrotoluene	ND	0.50	1.00	
Fluoranthene	ND	0.50	1.00	
Fluorene	ND	0.50	1.00	
Hexachloro-1,3-Butadiene	ND	0.50	1.00	
Hexachlorobenzene	ND	0.50	1.00	
Hexachlorocyclopentadiene	ND	2.5	1.00	
Hexachloroethane	ND	0.50	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.50	1.00	
Isophorone	ND	0.50	1.00	
2-Methylnaphthalene	ND	0.50	1.00	
1-Methylnaphthalene	ND	0.50	1.00	
2-Methylphenol	ND	0.50	1.00	
3/4-Methylphenol	ND	0.50	1.00	
N-Nitroso-di-n-propylamine	ND	0.50	1.00	
N-Nitrosodimethylamine	ND	0.50	1.00	
N-Nitrosodiphenylamine	ND	0.50	1.00	
Naphthalene	ND	0.50	1.00	
4-Nitroaniline	ND	0.50	1.00	
3-Nitroaniline	ND	0.50	1.00	
2-Nitroaniline	ND	0.50	1.00	
Nitrobenzene	ND	2.5	1.00	
4-Nitrophenol	ND	0.50	1.00	
2-Nitrophenol	ND	0.50	1.00	
Pentachlorophenol	ND	2.5	1.00	
Phenanthrene	ND	0.50	1.00	
Phenol	ND	0.50	1.00	
Pyrene	ND	0.50	1.00	
Pyridine	ND	0.50	1.00	
1,2,4-Trichlorobenzene	ND	0.50	1.00	
2,4,6-Trichlorophenol	ND	0.50	1.00	
2,4,5-Trichlorophenol	ND	0.50	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.	Date Received:	12/14/16
6280 Riverdale Street	Work Order:	16-12-1368
San Diego, CA 92120-3308	Preparation:	EPA 3545
	Method:	EPA 8270C
	Units:	mg/kg
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1		Page 6 of 9

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	65	27-120	
2-Fluorophenol	72	25-120	
Nitrobenzene-d5	65	33-123	
p-Terphenyl-d14	75	27-159	
Phenol-d6	71	26-122	
2,4,6-Tribromophenol	99	18-138	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8270C
Units: mg/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-549-3769**	**N/A**	**Solid**	**GC/MS CCC**	**12/15/16**	**12/16/16 11:45**	**161215L11**

Parameter	Result	RL	DF	Qualifiers
Acenaphthene	ND	0.50	1.00	
Acenaphthylene	ND	0.50	1.00	
Aniline	ND	0.50	1.00	
Anthracene	ND	0.50	1.00	
Azobenzene	ND	0.50	1.00	
Benzidine	ND	10	1.00	
Benzo (a) Anthracene	ND	0.50	1.00	
Benzo (a) Pyrene	ND	0.50	1.00	
Benzo (b) Fluoranthene	ND	0.50	1.00	
Benzo (g,h,i) Perylene	ND	0.50	1.00	
Benzo (k) Fluoranthene	ND	0.50	1.00	
Benzoic Acid	ND	2.5	1.00	
Benzyl Alcohol	ND	0.50	1.00	
Bis(2-Chloroethoxy) Methane	ND	0.50	1.00	
Bis(2-Chloroethyl) Ether	ND	2.5	1.00	
Bis(2-Chloroisopropyl) Ether	ND	0.50	1.00	
Bis(2-Ethylhexyl) Phthalate	ND	0.50	1.00	
4-Bromophenyl-Phenyl Ether	ND	0.50	1.00	
Butyl Benzyl Phthalate	ND	0.50	1.00	
4-Chloro-3-Methylphenol	ND	0.50	1.00	
4-Chloroaniline	ND	0.50	1.00	
2-Chloronaphthalene	ND	0.50	1.00	
2-Chlorophenol	ND	0.50	1.00	
4-Chlorophenyl-Phenyl Ether	ND	0.50	1.00	
Chrysene	ND	0.50	1.00	
Di-n-Butyl Phthalate	ND	0.50	1.00	
Di-n-Octyl Phthalate	ND	0.50	1.00	
Dibenz (a,h) Anthracene	ND	0.50	1.00	
Dibenzofuran	ND	0.50	1.00	
1,2-Dichlorobenzene	ND	0.50	1.00	
1,3-Dichlorobenzene	ND	0.50	1.00	
1,4-Dichlorobenzene	ND	0.50	1.00	
3,3'-Dichlorobenzidine	ND	10	1.00	
2,4-Dichlorophenol	ND	0.50	1.00	
Diethyl Phthalate	ND	0.50	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 3545
Method: EPA 8270C
Units: mg/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Parameter	Result	RL	DF	Qualifiers
Dimethyl Phthalate	ND	0.50	1.00	
2,4-Dimethylphenol	ND	0.50	1.00	
4,6-Dinitro-2-Methylphenol	ND	2.5	1.00	
2,4-Dinitrophenol	ND	2.5	1.00	
2,4-Dinitrotoluene	ND	0.50	1.00	
2,6-Dichlorophenol	ND	0.50	1.00	
2,6-Dinitrotoluene	ND	0.50	1.00	
Fluoranthene	ND	0.50	1.00	
Fluorene	ND	0.50	1.00	
Hexachloro-1,3-Butadiene	ND	0.50	1.00	
Hexachlorobenzene	ND	0.50	1.00	
Hexachlorocyclopentadiene	ND	2.5	1.00	
Hexachloroethane	ND	0.50	1.00	
Indeno (1,2,3-c,d) Pyrene	ND	0.50	1.00	
Isophorone	ND	0.50	1.00	
2-Methylnaphthalene	ND	0.50	1.00	
1-Methylnaphthalene	ND	0.50	1.00	
2-Methylphenol	ND	0.50	1.00	
3/4-Methylphenol	ND	0.50	1.00	
N-Nitroso-di-n-propylamine	ND	0.50	1.00	
N-Nitrosodimethylamine	ND	0.50	1.00	
N-Nitrosodiphenylamine	ND	0.50	1.00	
Naphthalene	ND	0.50	1.00	
4-Nitroaniline	ND	0.50	1.00	
3-Nitroaniline	ND	0.50	1.00	
2-Nitroaniline	ND	0.50	1.00	
Nitrobenzene	ND	2.5	1.00	
4-Nitrophenol	ND	0.50	1.00	
2-Nitrophenol	ND	0.50	1.00	
Pentachlorophenol	ND	2.5	1.00	
Phenanthrene	ND	0.50	1.00	
Phenol	ND	0.50	1.00	
Pyrene	ND	0.50	1.00	
Pyridine	ND	0.50	1.00	
1,2,4-Trichlorobenzene	ND	0.50	1.00	
2,4,6-Trichlorophenol	ND	0.50	1.00	
2,4,5-Trichlorophenol	ND	0.50	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.	Date Received:	12/14/16
6280 Riverdale Street	Work Order:	16-12-1368
San Diego, CA 92120-3308	Preparation:	EPA 3545
	Method:	EPA 8270C
	Units:	mg/kg
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1		Page 9 of 9

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	77	27-120	
2-Fluorophenol	80	25-120	
Nitrobenzene-d5	77	33-123	
p-Terphenyl-d14	85	27-159	
Phenol-d6	83	26-122	
2,4,6-Tribromophenol	106	18-138	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-2 @ 7.5'	**16-12-1368-4-A**	**12/09/16 08:41**	**Solid**	**GC/MS W**	**12/14/16**	**12/15/16 16:25**	**161215L020**

Parameter	Result	RL	DF	Qualifiers
Acetone	ND	130	1.00	
Benzene	ND	5.1	1.00	
Bromobenzene	ND	5.1	1.00	
Bromochloromethane	ND	5.1	1.00	
Bromodichloromethane	ND	5.1	1.00	
Bromoform	ND	5.1	1.00	
Bromomethane	ND	25	1.00	
2-Butanone	ND	51	1.00	
n-Butylbenzene	ND	5.1	1.00	
sec-Butylbenzene	ND	5.1	1.00	
tert-Butylbenzene	ND	5.1	1.00	
Carbon Disulfide	ND	51	1.00	
Carbon Tetrachloride	ND	5.1	1.00	
Chlorobenzene	ND	5.1	1.00	
Chloroethane	ND	5.1	1.00	
Chloroform	ND	5.1	1.00	
Chloromethane	ND	25	1.00	
2-Chlorotoluene	ND	5.1	1.00	
4-Chlorotoluene	ND	5.1	1.00	
Dibromochloromethane	ND	5.1	1.00	
1,2-Dibromo-3-Chloropropane	ND	10	1.00	
1,2-Dibromoethane	ND	5.1	1.00	
Dibromomethane	ND	5.1	1.00	
1,2-Dichlorobenzene	ND	5.1	1.00	
1,3-Dichlorobenzene	ND	5.1	1.00	
1,4-Dichlorobenzene	ND	5.1	1.00	
Dichlorodifluoromethane	ND	5.1	1.00	
1,1-Dichloroethane	ND	5.1	1.00	
1,2-Dichloroethane	ND	5.1	1.00	
1,1-Dichloroethene	ND	5.1	1.00	
c-1,2-Dichloroethene	ND	5.1	1.00	
t-1,2-Dichloroethene	ND	5.1	1.00	
1,2-Dichloropropane	ND	5.1	1.00	
1,3-Dichloropropane	ND	5.1	1.00	
2,2-Dichloropropane	ND	5.1	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Parameter	Result	RL	DF	Qualifiers
1,1-Dichloropropene	ND	5.1	1.00	
c-1,3-Dichloropropene	ND	5.1	1.00	
t-1,3-Dichloropropene	ND	5.1	1.00	
Ethylbenzene	ND	5.1	1.00	
2-Hexanone	ND	51	1.00	
Isopropylbenzene	ND	5.1	1.00	
p-Isopropyltoluene	ND	5.1	1.00	
Methylene Chloride	ND	51	1.00	
4-Methyl-2-Pentanone	ND	51	1.00	
Naphthalene	ND	51	1.00	
n-Propylbenzene	ND	5.1	1.00	
Styrene	ND	5.1	1.00	
1,1,1,2-Tetrachloroethane	ND	5.1	1.00	
1,1,2,2-Tetrachloroethane	ND	5.1	1.00	
Tetrachloroethene	ND	5.1	1.00	
Toluene	ND	5.1	1.00	
1,2,3-Trichlorobenzene	ND	10	1.00	
1,2,4-Trichlorobenzene	ND	5.1	1.00	
1,1,1-Trichloroethane	ND	5.1	1.00	
1,1,2-Trichloroethane	ND	5.1	1.00	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	51	1.00	
Trichloroethene	ND	5.1	1.00	
1,2,3-Trichloropropane	ND	5.1	1.00	
1,2,4-Trimethylbenzene	ND	5.1	1.00	
Trichlorofluoromethane	ND	51	1.00	
1,3,5-Trimethylbenzene	ND	5.1	1.00	
Vinyl Acetate	ND	51	1.00	
Vinyl Chloride	ND	5.1	1.00	
p/m-Xylene	ND	5.1	1.00	
o-Xylene	ND	5.1	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	5.1	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	100	80-120	
Dibromofluoromethane	94	79-133	
1,2-Dichloroethane-d4	95	71-155	
Toluene-d8	99	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B-3 @ 5'	**16-12-1368-6-A**	**12/09/16 10:27**	**Solid**	**GC/MS W**	**12/14/16**	**12/15/16 16:52**	**161215L020**

Parameter	Result	RL	DF	Qualifiers
Acetone	ND	130	1.00	
Benzene	ND	5.0	1.00	
Bromobenzene	ND	5.0	1.00	
Bromochloromethane	ND	5.0	1.00	
Bromodichloromethane	ND	5.0	1.00	
Bromoform	ND	5.0	1.00	
Bromomethane	ND	25	1.00	
2-Butanone	ND	50	1.00	
n-Butylbenzene	ND	5.0	1.00	
sec-Butylbenzene	ND	5.0	1.00	
tert-Butylbenzene	ND	5.0	1.00	
Carbon Disulfide	ND	50	1.00	
Carbon Tetrachloride	ND	5.0	1.00	
Chlorobenzene	ND	5.0	1.00	
Chloroethane	ND	5.0	1.00	
Chloroform	ND	5.0	1.00	
Chloromethane	ND	25	1.00	
2-Chlorotoluene	ND	5.0	1.00	
4-Chlorotoluene	ND	5.0	1.00	
Dibromochloromethane	ND	5.0	1.00	
1,2-Dibromo-3-Chloropropane	ND	10	1.00	
1,2-Dibromoethane	ND	5.0	1.00	
Dibromomethane	ND	5.0	1.00	
1,2-Dichlorobenzene	ND	5.0	1.00	
1,3-Dichlorobenzene	ND	5.0	1.00	
1,4-Dichlorobenzene	ND	5.0	1.00	
Dichlorodifluoromethane	ND	5.0	1.00	
1,1-Dichloroethane	ND	5.0	1.00	
1,2-Dichloroethane	ND	5.0	1.00	
1,1-Dichloroethene	ND	5.0	1.00	
c-1,2-Dichloroethene	ND	5.0	1.00	
t-1,2-Dichloroethene	ND	5.0	1.00	
1,2-Dichloropropane	ND	5.0	1.00	
1,3-Dichloropropane	ND	5.0	1.00	
2,2-Dichloropropane	ND	5.0	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Parameter	Result	RL	DF	Qualifiers
1,1-Dichloropropene	ND	5.0	1.00	
c-1,3-Dichloropropene	ND	5.0	1.00	
t-1,3-Dichloropropene	ND	5.0	1.00	
Ethylbenzene	ND	5.0	1.00	
2-Hexanone	ND	50	1.00	
Isopropylbenzene	ND	5.0	1.00	
p-Isopropyltoluene	ND	5.0	1.00	
Methylene Chloride	ND	50	1.00	
4-Methyl-2-Pentanone	ND	50	1.00	
Naphthalene	ND	50	1.00	
n-Propylbenzene	ND	5.0	1.00	
Styrene	ND	5.0	1.00	
1,1,1,2-Tetrachloroethane	ND	5.0	1.00	
1,1,2,2-Tetrachloroethane	ND	5.0	1.00	
Tetrachloroethene	ND	5.0	1.00	
Toluene	ND	5.0	1.00	
1,2,3-Trichlorobenzene	ND	10	1.00	
1,2,4-Trichlorobenzene	ND	5.0	1.00	
1,1,1-Trichloroethane	ND	5.0	1.00	
1,1,2-Trichloroethane	ND	5.0	1.00	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	1.00	
Trichloroethene	ND	5.0	1.00	
1,2,3-Trichloropropane	ND	5.0	1.00	
1,2,4-Trimethylbenzene	ND	5.0	1.00	
Trichlorofluoromethane	ND	50	1.00	
1,3,5-Trimethylbenzene	ND	5.0	1.00	
Vinyl Acetate	ND	50	1.00	
Vinyl Chloride	ND	5.0	1.00	
p/m-Xylene	ND	5.0	1.00	
o-Xylene	ND	5.0	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	5.0	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	98	80-120	
Dibromofluoromethane	97	79-133	
1,2-Dichloroethane-d4	100	71-155	
Toluene-d8	100	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/kg

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-796-12095**	**N/A**	**Solid**	**GC/MS W**	**12/15/16**	**12/15/16 13:46**	**161215L020**

Parameter	Result	RL	DF	Qualifiers
Acetone	ND	120	1.00	
Benzene	ND	5.0	1.00	
Bromobenzene	ND	5.0	1.00	
Bromochloromethane	ND	5.0	1.00	
Bromodichloromethane	ND	5.0	1.00	
Bromoform	ND	5.0	1.00	
Bromomethane	ND	25	1.00	
2-Butanone	ND	50	1.00	
n-Butylbenzene	ND	5.0	1.00	
sec-Butylbenzene	ND	5.0	1.00	
tert-Butylbenzene	ND	5.0	1.00	
Carbon Disulfide	ND	50	1.00	
Carbon Tetrachloride	ND	5.0	1.00	
Chlorobenzene	ND	5.0	1.00	
Chloroethane	ND	5.0	1.00	
Chloroform	ND	5.0	1.00	
Chloromethane	ND	25	1.00	
2-Chlorotoluene	ND	5.0	1.00	
4-Chlorotoluene	ND	5.0	1.00	
Dibromochloromethane	ND	5.0	1.00	
1,2-Dibromo-3-Chloropropane	ND	10	1.00	
1,2-Dibromoethane	ND	5.0	1.00	
Dibromomethane	ND	5.0	1.00	
1,2-Dichlorobenzene	ND	5.0	1.00	
1,3-Dichlorobenzene	ND	5.0	1.00	
1,4-Dichlorobenzene	ND	5.0	1.00	
Dichlorodifluoromethane	ND	5.0	1.00	
1,1-Dichloroethane	ND	5.0	1.00	
1,2-Dichloroethane	ND	5.0	1.00	
1,1-Dichloroethene	ND	5.0	1.00	
c-1,2-Dichloroethene	ND	5.0	1.00	
t-1,2-Dichloroethene	ND	5.0	1.00	
1,2-Dichloropropane	ND	5.0	1.00	
1,3-Dichloropropane	ND	5.0	1.00	
2,2-Dichloropropane	ND	5.0	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Southern California Soil & Testing, Inc.	Date Received:	12/14/16
6280 Riverdale Street	Work Order:	16-12-1368
San Diego, CA 92120-3308	Preparation:	EPA 5030C
	Method:	EPA 8260B
	Units:	ug/kg
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1		Page 6 of 6

Parameter	Result	RL	DF	Qualifiers
1,1-Dichloropropene	ND	5.0	1.00	
c-1,3-Dichloropropene	ND	5.0	1.00	
t-1,3-Dichloropropene	ND	5.0	1.00	
Ethylbenzene	ND	5.0	1.00	
2-Hexanone	ND	50	1.00	
Isopropylbenzene	ND	5.0	1.00	
p-Isopropyltoluene	ND	5.0	1.00	
Methylene Chloride	ND	50	1.00	
4-Methyl-2-Pentanone	ND	50	1.00	
Naphthalene	ND	50	1.00	
n-Propylbenzene	ND	5.0	1.00	
Styrene	ND	5.0	1.00	
1,1,1,2-Tetrachloroethane	ND	5.0	1.00	
1,1,2,2-Tetrachloroethane	ND	5.0	1.00	
Tetrachloroethene	ND	5.0	1.00	
Toluene	ND	5.0	1.00	
1,2,3-Trichlorobenzene	ND	10	1.00	
1,2,4-Trichlorobenzene	ND	5.0	1.00	
1,1,1-Trichloroethane	ND	5.0	1.00	
1,1,2-Trichloroethane	ND	5.0	1.00	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	1.00	
Trichloroethene	ND	5.0	1.00	
1,2,3-Trichloropropane	ND	5.0	1.00	
1,2,4-Trimethylbenzene	ND	5.0	1.00	
Trichlorofluoromethane	ND	50	1.00	
1,3,5-Trimethylbenzene	ND	5.0	1.00	
Vinyl Acetate	ND	50	1.00	
Vinyl Chloride	ND	5.0	1.00	
p/m-Xylene	ND	5.0	1.00	
o-Xylene	ND	5.0	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	5.0	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	102	80-120	
Dibromofluoromethane	95	79-133	
1,2-Dichloroethane-d4	95	71-155	
Toluene-d8	99	80-120	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - Spike/Spike Duplicate

Southern California Soil & Testing, Inc.	Date Received:	12/14/16
6280 Riverdale Street	Work Order:	16-12-1368
San Diego, CA 92120-3308	Preparation:	Extraction
	Method:	EPA 418.1M
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1		Page 1 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
16-12-1088-3	**Sample**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216S01**
16-12-1088-3	**Matrix Spike**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216S01**
16-12-1088-3	**Matrix Spike Duplicate**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216S01**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
TRPH	436.7	100.0	538.0	101	568.0	131	55-135	5	0-30	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

Southern California Soil & Testing, Inc.		Date Received:	12/14/16
6280 Riverdale Street		Work Order:	16-12-1368
San Diego, CA 92120-3308		Preparation:	EPA 3545
		Method:	EPA 8081A
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1			Page 2 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
16-12-1284-1	**Sample**	**Solid**	**GC 41**	**12/15/16**	**12/16/16 12:23**	**161215S09**
16-12-1284-1	**Matrix Spike**	**Solid**	**GC 41**	**12/15/16**	**12/16/16 11:53**	**161215S09**
16-12-1284-1	**Matrix Spike Duplicate**	**Solid**	**GC 41**	**12/15/16**	**12/16/16 12:08**	**161215S09**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Aldrin	ND	25.00	19.72	79	19.94	80	50-135	1	0-25	
Alpha-BHC	ND	25.00	18.55	74	18.70	75	50-135	1	0-25	
Beta-BHC	ND	25.00	21.17	85	21.39	86	50-135	1	0-25	
4,4'-DDD	ND	25.00	21.96	88	22.19	89	50-135	1	0-25	
4,4'-DDE	ND	25.00	22.57	90	22.43	90	50-135	1	0-25	
4,4'-DDT	ND	25.00	22.76	91	21.05	84	50-135	8	0-25	
Delta-BHC	ND	25.00	23.08	92	23.01	92	50-135	0	0-25	
Dieldrin	ND	25.00	22.85	91	22.51	90	50-135	1	0-25	
Endosulfan I	ND	25.00	21.31	85	21.02	84	50-135	1	0-25	
Endosulfan II	ND	25.00	22.46	90	21.86	87	50-135	3	0-25	
Endosulfan Sulfate	ND	25.00	22.38	90	21.76	87	50-135	3	0-25	
Endrin	ND	25.00	19.92	80	20.45	82	50-135	3	0-25	
Endrin Aldehyde	ND	25.00	21.02	84	18.36	73	50-135	14	0-25	
Gamma-BHC	ND	25.00	19.53	78	19.69	79	50-135	1	0-25	
Heptachlor	ND	25.00	19.48	78	19.64	79	50-135	1	0-25	
Heptachlor Epoxide	ND	25.00	21.33	85	21.08	84	50-135	1	0-25	
Methoxychlor	ND	25.00	21.34	85	19.83	79	50-135	7	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

Southern California Soil & Testing, Inc.	Date Received:	12/14/16
6280 Riverdale Street	Work Order:	16-12-1368
San Diego, CA 92120-3308	Preparation:	EPA 3545
	Method:	EPA 8082
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1		Page 3 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B-1 @ 7.5'	**Sample**	**Solid**	**GC 58**	**12/15/16**	**12/16/16 13:22**	**161215S10**
B-1 @ 7.5'	**Matrix Spike**	**Solid**	**GC 58**	**12/15/16**	**12/16/16 12:46**	**161215S10**
B-1 @ 7.5'	**Matrix Spike Duplicate**	**Solid**	**GC 58**	**12/15/16**	**12/16/16 13:04**	**161215S10**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Aroclor-1016	ND	100.0	75.00	75	68.50	68	50-135	9	0-20	
Aroclor-1260	ND	100.0	86.00	86	84.00	84	50-135	2	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

Southern California Soil & Testing, Inc.	Date Received:	12/14/16
6280 Riverdale Street	Work Order:	16-12-1368
San Diego, CA 92120-3308	Preparation:	EPA 3545
	Method:	EPA 8270C
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1		Page 4 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B-2 @ 2.5'	**Sample**	**Solid**	**GC/MS CCC**	**12/15/16**	**12/16/16 13:19**	**161215S11**
B-2 @ 2.5'	**Matrix Spike**	**Solid**	**GC/MS CCC**	**12/15/16**	**12/16/16 12:42**	**161215S11**
B-2 @ 2.5'	**Matrix Spike Duplicate**	**Solid**	**GC/MS CCC**	**12/15/16**	**12/16/16 13:00**	**161215S11**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Acenaphthene	ND	10.00	7.271	73	7.106	71	34-148	2	0-20	
Acenaphthylene	ND	10.00	7.020	70	6.828	68	53-120	3	0-20	
Butyl Benzyl Phthalate	ND	10.00	7.982	80	7.869	79	15-189	1	0-20	
4-Chloro-3-Methylphenol	ND	10.00	8.140	81	8.160	82	32-120	0	0-20	
2-Chlorophenol	ND	10.00	6.827	68	6.911	69	53-120	1	0-20	
1,4-Dichlorobenzene	ND	10.00	5.260	53	5.394	54	43-120	3	0-26	
Dimethyl Phthalate	ND	10.00	6.908	69	6.801	68	44-122	2	0-20	
2,4-Dinitrotoluene	ND	10.00	9.122	91	8.881	89	28-120	3	0-20	
Fluorene	ND	10.00	7.639	76	7.464	75	12-186	2	0-20	
N-Nitroso-di-n-propylamine	ND	10.00	5.849	58	5.918	59	38-140	1	0-20	
Naphthalene	ND	10.00	6.102	61	6.196	62	20-140	2	0-20	
4-Nitrophenol	ND	10.00	7.926	79	7.301	73	14-128	8	0-59	
Pentachlorophenol	ND	10.00	8.581	86	8.413	84	10-124	2	0-20	
Phenol	ND	10.00	6.584	66	6.723	67	22-124	2	0-20	
Pyrene	ND	10.00	7.839	78	7.804	78	31-169	0	0-20	
1,2,4-Trichlorobenzene	ND	10.00	6.200	62	6.298	63	56-120	2	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

Southern California Soil & Testing, Inc.	Date Received:	12/14/16
6280 Riverdale Street	Work Order:	16-12-1368
San Diego, CA 92120-3308	Preparation:	EPA 5030C
	Method:	EPA 8260B
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1		Page 5 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
16-12-1370-2	**Sample**	**Sediment**	**GC/MS W**	**12/15/16**	**12/15/16 14:39**	**161215S010**
16-12-1370-2	**Matrix Spike**	**Sediment**	**GC/MS W**	**12/15/16**	**12/15/16 15:05**	**161215S010**
16-12-1370-2	**Matrix Spike Duplicate**	**Sediment**	**GC/MS W**	**12/15/16**	**12/15/16 15:32**	**161215S010**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Benzene	ND	50.00	38.04	76	38.83	78	61-127	2	0-20	
Carbon Tetrachloride	ND	50.00	16.60	33	17.88	36	51-135	7	0-29	3
Chlorobenzene	ND	50.00	28.55	57	30.42	61	57-123	6	0-20	
1,2-Dibromoethane	ND	50.00	29.82	60	31.15	62	64-124	4	0-20	3
1,2-Dichlorobenzene	ND	50.00	17.00	34	20.01	40	35-131	16	0-25	3
1,2-Dichloroethane	ND	50.00	35.79	72	37.08	74	80-120	4	0-20	3
1,1-Dichloroethene	ND	50.00	52.50	105	54.42	109	47-143	4	0-25	
Ethylbenzene	ND	50.00	29.96	60	32.20	64	57-129	7	0-22	
Toluene	ND	50.00	35.16	70	36.12	72	63-123	3	0-20	
Trichloroethene	ND	50.00	39.58	79	40.38	81	44-158	2	0-20	
Vinyl Chloride	ND	50.00	30.49	61	31.78	64	49-139	4	0-47	
p/m-Xylene	ND	100.0	57.45	57	61.82	62	70-130	7	0-30	3
o-Xylene	ND	50.00	29.13	58	31.11	62	70-130	7	0-30	3
Methyl-t-Butyl Ether (MTBE)	ND	50.00	37.17	74	38.53	77	57-123	4	0-21	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

Southern California Soil & Testing, Inc.		Date Received:	12/14/16
6280 Riverdale Street		Work Order:	16-12-1368
San Diego, CA 92120-3308		Preparation:	Extraction
		Method:	EPA 418.1M
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1			Page 1 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-07-015-2199	**LCS**	**Solid**	**IR 2**	**12/16/16**	**12/16/16 17:25**	**161216L01**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
TRPH	100.0	101.4	101	70-130	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

Southern California Soil & Testing, Inc.		Date Received:	12/14/16
6280 Riverdale Street		Work Order:	16-12-1368
San Diego, CA 92120-3308		Preparation:	EPA 3545
		Method:	EPA 8081A
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1			Page 2 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-12-537-2578	**LCS**	**Solid**	**GC 41**	**12/15/16**	**12/16/16 11:23**	**161215L09**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
Aldrin	25.00	21.12	84	50-135	36-149	
Alpha-BHC	25.00	21.49	86	50-135	36-149	
Beta-BHC	25.00	20.49	82	50-135	36-149	
4,4'-DDD	25.00	20.67	83	50-135	36-149	
4,4'-DDE	25.00	20.94	84	50-135	36-149	
4,4'-DDT	25.00	21.66	87	50-135	36-149	
Delta-BHC	25.00	22.91	92	50-135	36-149	
Dieldrin	25.00	21.76	87	50-135	36-149	
Endosulfan I	25.00	21.79	87	50-135	36-149	
Endosulfan II	25.00	21.92	88	50-135	36-149	
Endosulfan Sulfate	25.00	22.21	89	50-135	36-149	
Endrin	25.00	12.28	49	50-135	36-149	ME
Endrin Aldehyde	25.00	26.27	105	50-135	36-149	
Gamma-BHC	25.00	21.48	86	50-135	36-149	
Heptachlor	25.00	21.00	84	50-135	36-149	
Heptachlor Epoxide	25.00	21.63	87	50-135	36-149	
Methoxychlor	25.00	19.09	76	50-135	36-149	

Total number of LCS compounds: 17
Total number of ME compounds: 1
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

Southern California Soil & Testing, Inc.		Date Received:	12/14/16
6280 Riverdale Street		Work Order:	16-12-1368
San Diego, CA 92120-3308		Preparation:	EPA 3545
		Method:	EPA 8082
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1			Page 3 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-12-535-4017	**LCS**	**Solid**	**GC 58**	**12/15/16**	**12/16/16 12:28**	**161215L10**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Aroclor-1016	100.0	93.00	93	50-135	
Aroclor-1260	100.0	81.00	81	50-135	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

Southern California Soil & Testing, Inc.		Date Received:	12/14/16
6280 Riverdale Street		Work Order:	16-12-1368
San Diego, CA 92120-3308		Preparation:	EPA 3545
		Method:	EPA 8270C
Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1			Page 4 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-12-549-3769	**LCS**	**Solid**	**GC/MS CCC**	**12/15/16**	**12/16/16 11:26**	**161215L11**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
Acenaphthene	10.00	7.908	79	51-123	39-135	
Acenaphthylene	10.00	7.773	78	52-120	41-131	
Butyl Benzyl Phthalate	10.00	8.787	88	43-139	27-155	
4-Chloro-3-Methylphenol	10.00	8.170	82	55-121	44-132	
2-Chlorophenol	10.00	6.681	67	58-124	47-135	
1,4-Dichlorobenzene	10.00	5.277	53	42-132	27-147	
Dimethyl Phthalate	10.00	7.948	79	51-123	39-135	
2,4-Dinitrotoluene	10.00	9.957	100	51-129	38-142	
Fluorene	10.00	8.112	81	54-126	42-138	
N-Nitroso-di-n-propylamine	10.00	7.350	74	40-136	24-152	
Naphthalene	10.00	6.896	69	32-146	13-165	
4-Nitrophenol	10.00	7.441	74	24-126	7-143	
Pentachlorophenol	10.00	7.488	75	23-131	5-149	
Phenol	10.00	6.853	69	40-130	25-145	
Pyrene	10.00	8.302	83	47-143	31-159	
1,2,4-Trichlorobenzene	10.00	6.929	69	45-129	31-143	

Total number of LCS compounds: 16
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

Southern California Soil & Testing, Inc.
6280 Riverdale Street
San Diego, CA 92120-3308

Date Received: 12/14/16
Work Order: 16-12-1368
Preparation: EPA 5030C
Method: EPA 8260B

Project: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-796-12095	**LCS**	**Solid**	**GC/MS W**	**12/15/16**	**12/15/16 10:48**	**161215L020**
099-12-796-12095	**LCSD**	**Solid**	**GC/MS W**	**12/15/16**	**12/15/16 12:53**	**161215L020**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	50.00	50.97	102	48.98	98	80-120	73-127	4	0-20	
Carbon Tetrachloride	50.00	33.22	66	30.33	61	65-137	53-149	9	0-20	ME
Chlorobenzene	50.00	51.81	104	49.35	99	80-120	73-127	5	0-20	
1,2-Dibromoethane	50.00	49.31	99	48.85	98	80-120	73-127	1	0-20	
1,2-Dichlorobenzene	50.00	52.19	104	49.30	99	80-120	73-127	6	0-20	
1,2-Dichloroethane	50.00	49.64	99	48.02	96	80-120	73-127	3	0-20	
1,1-Dichloroethene	50.00	63.68	127	55.17	110	68-128	58-138	14	0-20	
Ethylbenzene	50.00	52.34	105	50.25	100	80-120	73-127	4	0-20	
Toluene	50.00	51.65	103	49.87	100	80-120	73-127	3	0-20	
Trichloroethene	50.00	52.78	106	50.24	100	80-120	73-127	5	0-20	
Vinyl Chloride	50.00	41.24	82	40.27	81	67-127	57-137	2	0-20	
p/m-Xylene	100.0	101.9	102	97.28	97	75-125	67-133	5	0-25	
o-Xylene	50.00	51.72	103	49.74	99	75-125	67-133	4	0-25	
Methyl-t-Butyl Ether (MTBE)	50.00	48.48	97	49.17	98	70-124	61-133	1	0-20	

Total number of LCS compounds: 14
Total number of ME compounds: 1
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

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RPD: Relative Percent Difference. CL: Control Limits

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Sample Analysis Summary Report

Work Order: 16-12-1368 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 418.1M	Extraction	605	IR 2	1
EPA 8081A	EPA 3545	669	GC 41	1
EPA 8082	EPA 3545	944	GC 58	1
EPA 8260B	EPA 5030C	867	GC/MS W	2
EPA 8270C	EPA 3545	923	GC/MS CCC	1

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Glossary of Terms and Qualifiers

Work Order: 16-12-1368 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1427
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE: 12/14/16

PAGE: 1 OF 1

LABORATORY CLIENT: SCST, Inc.

ADDRESS: 6280 Riverdale Street

CITY: San Diego STATE: CA ZIP: 92120

TEL: 619-280-4321 FAX: 619-280-4717 E-MAIL: lvanderhurst@scst.com

CLIENT PROJECT NAME / NUMBER: Pinnacle Env Tech/Highland Park Jr. Arts Center - 160523P3.1

P.O. NO.:

PROJECT CONTACT: Lee Vanderhurst

LAB CONTACT OR QUOTE NO.:

SAMPLER(S): (SIGNATURE) Evan Morrill

LAB USE ONLY 16-12-1368

TURNAROUND TIME:

☐ SAME DAY ☐ 24 HR 48 HR ☐ 72 HR ☒ 5 DAYS 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____ / ____ / ____

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION / DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPRH	SVOC	VOC	Pesticides and PCB's
1	B-1 @ 7.5'		12/9/16	12:50	Soil	1	/			/
2	B-1 @ 20'		12/9/16	13:35	Soil	1	/			
3	B-2 @ 2.5'		12/9/16	8:32	Soil	1	/	/		
4	B-2 @ 7.5'		12/9/16	8:41	Soil	1			/	
5	B-3 @ 2.5'		12/9/16	10:21	Soil	1	/	/		/
6	B-3 @ 5'		12/9/16	10:27	Soil	1	/		/	
7	B-3 @ 20'		12/9/16	11:18	Soil	1	/			

Relinquished by: (Signature)	Received by: (Signature) ECL	Date: 12/14/16	Time: 1450
Relinquished by: (Signature)	Received by: (Signature) ECL	Date: 12/14/16	Time: 18:05
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

02/24/10 Revision

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WORK ORDER NUMBER: 16-12-1368

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: SCS&T INC

DATE: 12 / 14 / 2016

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC3A (CF: 0.0°C); Temperature (w/o CF): 3.0 °C (w/ CF): 3.0 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter

Checked by: 671

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 671

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1069

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☐	☐	☑
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☐ 250CGB**s** ☐ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☑ 1AGB ☐ 1AGB**na$_2$** ☐ 1AGB**s** ☐ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☑ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1069

Reviewed by: ZB

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APPENDIX B

LIQUEFACTION TRIGGERING ANALYSES

Calculation of Liquefaction Potential Using SPT Data
Youd et al. (2001)

Reference: Geotechnical Data Report dated October 2014 by Fugro Consultants Inc.

Soil types CL, CH, or MH will return a "non-liquefiable" FS
Sampler types: **s** = SPT OR **m** = Modified California
Liner: **y** = liners used or no room for liners OR **n** = room for liners but no liners used

FIELD DATA									STANDARDIZED BLOW COUNTS						OVERBURDEN CORRECTION & CORRECTED BLOW COUNTS							FINES CORRECTION		CSR & LIQUEFACTION TRIGGERING RESULT														SATURATED SETTLEMENT			
Boring Number	Sample No.	Sample Depth (ft)	Field Blow Count, N	USCS	%fines	Sampler Type	Liner	Hammer Efficiency (%)	CR_rods	CB_Borehole	ModCat / SPT conversion	CS_liner	CE_energy	N_{60}	Groundwater Depth During Sampling (ft)	Avg Unit Wt Above Sample (pcf)	Total Overburden Stress (psf)	Pore Pressure (psf)	Effective Overburden Stress (psf)	C_N	$(N1)_{60}$	Fines Correction	$(N1)_{60\text{-cs}}$	PGA	M	Groundwater Depth During EARTHQUAKE (ft)	Avg Unit Wt Above Sample (pcf)	Total Overburden Stress (psf)	Pore Pressure (psf)	Effective Overburden Stress (psf)	rd	CSR	CRR7.5	MSF	Kσg	FS	Volumetric Strain (%)	layer Thickness (ft)	layer Settlement (in)	Cumulative Settlement (in)
B-1	6	15.0	26	SW-SM	12	s	y	85	0.85	1.0	1	1.00	142%	31.3	15	115	1740	0	1740	1.10	34.5	2.5	37.0	0.715	6.6	15	115	1740	0	1740	0.97	0.45		1.39	1.00	N160cs>30	0.00	2.5	0.00	0.00
	7	17.5	61	SW-SM	12	s	y	85	0.85	1.0	0.6	1.00	142%	44.1	15	133	2072.5	156	1916.5	1.05	46.3	2.7	49.0	0.715	6.6	15	115	2028	156	1872	0.96	0.49		1.39	1.00	N160cs>30	0.00	2.5	0.00	0.00
	8	20.0	30	SM	49	s	y	85	0.95	1.0	1	1.00	142%	40.4	15	133	2405	312	2093	1.01	40.6	9.0	49.**8**	0.715	6.6	15	115	2315	312	2003	0.96	0.51		1.39	1.01	N160cs>30	0.00	2.5	0.00	0.00
	9	22.5	30	ML	57	s	y	85	0.95	1.0	0.6	1.00	142%	24.2	15	126	2720	468	2252	0.97	23.5	9.0	32.**5**	0.715	6.6	15	126	2630	468	2162	0.95	0.54		1.39	0.99	N160cs>30	0.00	2.5	0.00	0.00
	10	25.0	33	SM	38	s	y	85	0.95	1.0	1	1.00	142%	44.4	15	105	2983	624	2359	0.95	42.1	9.0	51.**1**	0.715	6.6	15	105	2893	624	2269	0.94	0.56		1.39	0.98	N160cs>30	0.00	2.5	0.00	0.00
	11	27.5	38	SM	36	s	y	85	0.95	1.0	1	1.00	142%	51.1	15	126	3298	780	2518	0.92	46.9	9.0	55.**9**	0.715	6.6	15	126	3260	780	2480	0.93	0.57		1.39	0.96	N160cs>30	0.00	2.5	0.00	0.00
	12	30.0	54	ML	68	s	y	85	0.95	1.0	0.6	1.00	142%	43.6	15	126	3613	936	2677	0.89	38.8	9.0	47.**8**	0.715	6.6	15	126	3575	936	2639	0.92	0.58		1.39	0.95	N160cs>30	0.00	2.5	0.00	0.00
	13	32.5	45	ML	68	s	y	85	0.95	1.0	1	1.00	142%	60.6	15	105	3875	1092	2783	0.87	52.8	9.0	61.**8**	0.715	6.6	15	105	3838	1092	2746	0.91	0.59		1.39	0.94	N160cs>30	0.00	2.5	0.00	0.00
	14	35.0	43	SM	36	s	y	85	**1.0**	1.0	0.6	1.00	142%	36.6	15	105	4137.5	1248	2890	0.86	31.3	9.0	40.**3**	0.715	6.6	15	105	4100	1248	2852	0.89	0.60		1.39	0.93	N160cs>30	0.00	2.5	0.00	0.00
	15	40.0	54	SC	49	s	y	85	**1.0**	1.0	1	1.00	142%	76.5	15	126	4767.5	1560	3208	0.81	62.1	9.0	71.**1**	0.715	6.6	15	126	4730	1560	3170	0.85	0.59		1.39	0.90	N160cs>30	0.00	5.0	0.00	0.00
	16	45.0	60	SP	5	s	y	85	**1.0**	1.0	0.6	1.00	142%	51.0	15	123	5382.5	1872	3511	0.78	39.6	0.0	39.**8**	0.715	6.6	15	123	5345	1872	3473	0.80	0.57		1.39	0.88	N160cs>30	0.00	5.0	0.00	0.00
	17	50.0	50	SP	5	s	y	85	**1.0**	1.0	1	1.00	142%	70.8	15	132	6042.5	2184	3859	0.74	52.5	0.0	52.**5**	0.715	6.6	15	132	6005	2184	3821	0.75	0.55		1.39	0.86	N160cs>30	0.00	5.0	0.00	0.00

Red font indicates actual fines content from laboratory test results

Calculation of Liquefaction Potential Using SPT Data
Youd et al. (2001)

Reference: Geotechnical Data Report dated October 2014 by Fugro Consultants Inc.

Soil types CL, CH, or MH will return a "non-liquefiable" FS
Sampler types: **s** = SPT OR **m** = Modified California
Liner: **y** = liners used or no room for liners OR **n** = room for liners but no liners used

FIELD DATA									STANDARDIZED BLOW COUNTS						OVERBURDEN CORRECTION & CORRECTED BLOW COUNTS							FINES CORRECTION		CSR & LIQUEFACTION TRIGGERING RESULT												SATURATED SETTLEMENT			
Boring Number	Sample No.	Sample Depth (ft)	Field Blow Count, N	USCS	%fines	Sampler Type	Liner	Hammer Efficiency (%)	C_R_rods	C_B_Borehole	ModCal / SPT conversion	C_S_liner	C_E_energy	N_{60}	Groundwater Depth During Sampling (ft)	Avg Unit Wt Above Sample (pcf)	Total Overburden Stress (psf)	Pore Pressure (psf)	Effective Overburden Stress (psf)	C_N	$(N1)_{60}$	Fines Correction	$(N1)_{60cs}$ measured	PGA	M	Groundwater Depth During EARTHQUAKE (ft)	Avg Unit Wt Above Sample (pcf)	Total Overburden Stress (psf)	Pore Pressure (psf)	Effective Overburden Stress (psf)	rd	CSR	CRR7.5	MSF	Kslg	FS	Volumetric Strain (%)	Layer Thickness (ft)	Layer Settlement (in)	Cumulative Settlement (in)
B-1	6	15.0	26	SW-SM	12	s	y	85	0.85	1.0	1	1.00	142%	31.3	15	115	1740	0	1740	1.10	34.5	2.5	37.**0**	1.073	6.6	15	115	1740	0	1740	0.97	0.88		1.39	1.00	N160cs>30	0.00	2.5	0.00	0.00
	7	17.5	61	SW-SM	12	s	y	85	0.85	1.0	1	1.00	142%	73.5	15	133	2072.5	156	1916.5	1.05	77.2	3.8	81.**0**	1.073	6.6	15	133	2073	156	1917	0.96	0.73		1.39	1.00	N160cs>30	0.00	2.5	0.00	0.00
	8	20.0	30	SM	45	s	y	85	0.95	1.0	1	1.00	142%	40.4	15	133	2405	312	2093	1.01	40.6	9.0	49.**6**	1.073	6.6	15	133	2405	312	2093	0.96	0.77		1.39	1.00	N160cs>30	0.00	2.5	0.00	0.00
	9	22.5	30	ML	67	s	y	85	0.95	1.0	1	1.00	142%	40.4	15	126	2720	468	2252	0.97	39.1	9.0	48.**1**	1.073	6.6	15	126	2720	468	2252	0.95	0.80		1.39	0.98	N160cs>30	0.00	2.5	0.00	0.00
	10	25.0	33	SM	38	s	y	85	0.95	1.0	1	1.00	142%	44.4	15	105	2983	624	2359	0.95	42.1	9.0	51.**1**	1.073	6.6	15	105	2983	624	2359	0.94	0.83		1.39	0.97	N160cs>30	0.00	2.5	0.00	0.00
	11	27.5	36	SM	36	s	y	85	0.95	1.0	1	1.00	142%	51.1	15	126	3298	780	2518	0.92	46.9	9.0	55.**9**	1.073	6.6	15	126	3350	780	2570	0.93	0.85		1.39	0.95	N160cs>30	0.00	2.5	0.00	0.00
	12	30.0	54	ML	68	s	y	85	0.95	1.0	1	1.00	142%	72.7	15	126	3813	936	2677	0.89	64.6	9.0	73.**6**	1.073	6.6	15	126	3865	936	2729	0.92	0.86		1.39	0.94	N160cs>30	0.00	2.5	0.00	0.00
	13	32.5	45	ML	58	s	y	85	0.95	1.0	1	1.00	142%	60.6	15	105	3875	1092	2783	0.87	52.8	9.0	61.**8**	1.073	6.6	15	105	3928	1092	2836	0.91	0.88		1.39	0.93	N160cs>30	0.00	2.5	0.00	0.00
	14	35.0	43	SM	36	s	y	85	1.0	1.0	1	1.00	142%	60.9	15	105	4137.5	1248	2890	0.88	52.1	9.0	61.**1**	1.073	6.6	15	105	4190	1248	2942	0.89	0.88		1.39	0.92	N160cs>30	0.00	2.5	0.00	0.00
	15	40.0	54	SC	49	s	y	85	**1.0**	1.0	1	1.00	142%	76.5	15	126	4767.5	1560	3208	0.81	62.1	9.0	71.**1**	1.073	6.6	15	126	4820	1560	3260	0.85	0.88		1.39	0.90	N160cs>30	0.00	5.0	0.00	0.00
	16	45.0	60	SP	5	s	y	85	1.0	1.0	1	1.00	142%	85.0	15	123	5382.5	1872	3511	0.78	66.0	0.0	66.**0**	1.073	6.6	15	123	5435	1872	3563	0.80	0.85		1.39	0.88	N160cs>30	0.00	5.0	0.00	0.00
	17	50.0	50	SP	5	s	y	85	1.0	1.0	1	1.00	142%	70.8	15	132	6042.5	2184	3859	0.74	52.5	0.0	52.**5**	1.073	6.6	15	132	6095	2184	3911	0.75	0.82		1.39	0.86	N160cs>30	0.00	5.0	0.00	0.00

Red font indicates actual fines content from laboratory test results