
**PITTSBURG UNIFIED SCHOOL DISTRICT
PUSD MARTIN LUTHER KING JR JUNIOR HIGH SCHOOL
RUNNING TRACK AND FIELD ALTERATIONS**

**BID ADDENDUM NO. 3
November 19, 2025**

PROJECT: **Martin Luther King Jr Junior High School Running Track & Field Alterations**
2012 Carion Court, Pittsburg, CA 94565

OWNER: Pittsburg Unified School District
3200 Loveridge Road, Pittsburg, CA 94565

Notice is hereby given to all prospective bidders that plans and specifications on the subject project are modified as hereinafter set forth. This Addendum shall be attached to and form a part of the plans and specifications. All bidders must acknowledge receipt of this addendum on the Bid Form. In case of difference with previous addenda or communications, this addendum takes precedence.

It is the responsibility of all bidders to notify all subcontractors from whom they request bids and from whom they accept bids of all changes contained in this addendum.

PROJECT MANUAL

1. ITEM NO. PM-1

Reference: Section 00 01 20 & 00 11 16

Attachment: N/A

Description: **Revise the Bids Due Date & Time to
Tuesday, 11/25/25 @ 3:00 PM (PST)**

2. ITEM NO. PM-2

Reference: Section 00 01 10 & Appendix A

Attachment: Add Appendix A: Past Geotechnical Observations

Description: Find and incorporate findings from attachment Appendix A: Past Geotechnical Observations "Report on Geotechnical Investigation Site of Proposed Buildings for Classrooms, Math /Science, Administration/Library, Music, Gymnasium and Cafeteria DSA Application #01-112191, DSA File #7-36, dated 08/16/2011

3. ITEM NO. PM-3

Reference: Section 00 01 10 & Appendix B

Attachment: Add Appendix B: Past Geologic Hazard Observations

Description: Find and incorporate findings from attachment Appendix B: "Appendix B: Past Geologic Hazard Observations "Geologic Hazard Report Site of Proposed Classrooms, Math & Science Building, Administration/ Library Building, Music Building, Gymnasium, and Cafeteria Building, 950 El Pueblo Avenue, Pittsburg, California DSA Application #01-

1122191, DSA File #7-36, Smith-Emery SF LEA# 56, dated 09/07/2011”

4. ITEM NO. PM-4

Reference: Section 00 01 10 & Appendix C
Attachment: Add Appendix C: Martin Luther King Jr JHS Topographic Survey
Description: Reference attached Appendix B: Existing Site Topographic Survey for existing site grades in original format. These are also shown on Civil C2.01 Grading & Drainage Plan but are here included for clarity.

5. ITEM NO. PM-5

Reference: Sections 00 01 10 & 00 31 32
Attachment: Section 00 31 32 Geotechnical Data
Description: Add Section 00 31 32 Geotechnical Data to Project Manual

6. ITEM NO. PM-6

Reference: Section 32 93 00
Attachment: Section 32 93 00 Plantings
Description: Find and incorporate findings from the attached “Wallace Laboratories LLC dated August 16, 2011” soil, plant and water analyses.

7. ITEM NO. PM-7

Reference: Section 32 93 00
Attachment: Section 32 93 00 Plantings
Description: Revise 1.02 Quality Assurance, Item 3 to read “Wallace Labs: Soils Report: 365 Coral Circle, El Segundo, CA 90245, MLK HS, Project No PN66926, Print Date: August 16, 2011.”

DRAWINGS

1. ITEM NO. 01

Reference: Keynote 01/A1.01
Attachment: N/A
Description: Revise Keynote 01 to read as follows “CONTRACTOR SHALL CLEAR AND GRUB THE TURF AREA, REMOVE TOP 8” OF SOIL AND REMOVE IRRIGATION PER IRRIGATION DRAWINGS. CONTRACTOR SHALL REFER TO ATTACHED TOPOGRAPHICAL SURVEY FOR EXISTING GRADES AND THEN USE CIVIL C2.01 “PAVING AND GRADING PLAN” THAT SHOWS ALL NEW ELEVATIONS. ADDITIONALLY CONTRACTOR SHALL EXCAVATE AND FILL BASED ON THESE DRAWINGS.”

2. ITEM NO. 02

Reference: 1/A1.01
Attachment: N/A
Description: Add demolition Keynote 10 to Keynotes to read as follows “CONTRACTOR SHALL OVER-EXCAVATE AT TRACK, PAVING AREAS AND WALKWAYS BELOW FINISHED SUBGRADE PER CSK-04.”

3. ITEM NO. 03

Reference: 1/A1.02

Attachment: ASK-03

Description: See attached ASK-03 Soil Amendment Section for minimum extents of soil amendment and import topsoil for field areas to receive hydroseed or sod finish. This soil shall be used in conjunction with requirements of Section 32 93 00 Planting.

END OF BID ADDENDUM ITEMS

ATTACHMENTS:

Project Manual:

- **Section 00 31 32 Geotechnical Data**
- **Section 32 93 00 Planting**
- **Appendix A: Past Geotechnical Observations “Report on Geotechnical Investigation Site of Proposed Buildings for Classrooms, Math/Science, Administration/Library, Music, Gymnasium and Cafeteria DSA Application #01-112191, DSA File #7-36 Located at 950 El Pueblo Avenue Pittsburg, California” by Smith-Emery San Francisco**
- **Appendix B: Past Geologic Hazard Observations “Geologic Hazard Report Site of Proposed Classrooms, Math & Science Building, Administration/Library Building, Music Building, Gymnasium, and Cafeteria Building, 950 El Pueblo Avenue, Pittsburg, California DSA Application #01-1122191, DSA File #7-36, Smith-Emery SF LEA# 56, dated 0907/2011”**
- **Appendix C: Martin Luther King Jr JHS Topographic Survey**

Project Drawings:

- **CSK04 – Trench Drain Callout/Excavation & Compaction Requirements**
- **ASK03 – Soil Amendment Section**

GEOTECHNICAL DATA

1. Summary

This document describes geotechnical data at or near the Project that is in the District's possession available for Contractor's review, and use of data resulting from various investigations. This document is **not** part of the Contract Documents. See General Conditions for definition(s) of terms used herein.

2. Geotechnical Reports

- a. Geotechnical reports may have been prepared for and around the Site and/or in connection with the Work by soil investigation engineers hired by Pittsburg Unified School District ("District"), and its consultants, contractors, and tenants.
- b. Geotechnical reports may be inspected at the District offices or the Construction Manager's offices, if any, and copies may be obtained at cost of reproduction and handling upon Bidder's agreement to pay for such copies. These reports are **not** part of the Contract Documents.
- c. The reports and drawings of physical conditions that may relate to the Project are the following:

Report on Geotechnical Investigation Site of Proposed Buildings for Classrooms, Math /Science, Administration/Library, Music, Gymnasium and Cafeteria DSA Application #01-112191, DSA File #7-36, dated 08/16/2011, and Geologic Hazard Report Site of Proposed Classrooms, Math & Science Building, Administration/Library Building, Music Building, Gymnasium, and Cafeteria Building, 950 El Pueblo Avenue, Pittsburg, California DSA Application #01-1122191, DSA File #7-36, Smith-Emery SF LEA# 56, dated 0907/2011

3. Use of Data

- a. Geotechnical data were obtained only for use of District and its consultants, contractors, and tenants for planning and design and are **not** a part of Contract Documents.
- b. Except as expressly set forth below, District does not warrant, and makes no representation regarding, the accuracy or thoroughness of any geotechnical data. Bidder represents and agrees that in submitting a bid it is not relying on any geotechnical data supplied by District, except as specifically allowed below.

- c. Under no circumstances shall District be deemed to make a warranty or representation of existing above ground conditions, as-built conditions, geotechnical conditions, or other actual conditions verifiable by independent investigation. These conditions are verifiable by Bidder by the performance of its own independent investigation that Bidder should perform as a condition to bidding and Bidder must not and shall not rely on information supplied by District.

4. Limited Reliance Permitted on Certain Information

- a. Reference is made herein for identification of:

Reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by District in preparation of the Contract Documents.

Drawings of physical conditions in or relating to existing subsurface structures (except underground facilities) that are at or contiguous to the Site and have been utilized by District in preparation of the Contract Documents.

- b. Bidder may rely upon the general accuracy of the "technical data" contained in the reports and drawings identified above, but only insofar as it relates to subsurface conditions, provided Bidder has conducted the independent investigation required pursuant to Instructions to Bidders, and discrepancies are not apparent. The term "technical data" in the referenced reports and drawings shall be limited as follows:
 - (1) The term "technical data" shall include actual reported depths, reported quantities, reported soil types, reported soil conditions, and reported material, equipment or structures that were encountered during subsurface exploration. The term "technical data" does not include, and Bidder may not rely upon, any other data, interpretations, opinions or information shown or indicated in such drawings or reports that otherwise relate to subsurface conditions or described structures.
 - (2) The term "technical data" shall not include the location of underground facilities.
 - (3) Bidder may not rely on the completeness of reports and drawings for the purposes of bidding or construction. Bidder may rely upon the general accuracy of the "technical data" contained in such reports or drawings.
 - (4) Bidder is solely responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions, or information provided in the identified reports and drawings.

5. Investigations/Site Examinations

- a. Before submitting a bid, each Bidder is responsible for conducting or obtaining any additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site or otherwise, that may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or that Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of Contract Documents.
- b. On request, District will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a bid. Bidders must fill all holes and clean up and restore the Site to its former condition upon completion of its explorations, investigations, tests, and studies. Such investigations and Site examinations may be performed during any and all Site visits indicated in the Notice to Bidders and only under the provisions of the Contract Documents, including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such work, and District's prior approval.

END OF DOCUMENT



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**Report on Geotechnical Investigation
Site of Proposed Buildings for Classrooms,
Math /Science, Administration/Library,
Music, Gymnasium and Cafeteria
DSA Application #01-112191, DSA File #7-36
Located at 950 El Pueblo Avenue
Pittsburg, California**

Prepared
For
Pittsburg Unified School District
2000 Railroad Avenue, Suite A
Pittsburg, California

August 16, 2011
SESF File No.: 66926
SESF Report No.: 11-257
SESF LEA# 56

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INTRODUCTION

This report presents the results of the geotechnical investigation undertaken by this firm for the subject site. This investigation was performed to determine the engineering properties of the soil strata underlying the site for the purpose of arriving at recommendations for foundation types, performing foundation excavation and grading, as well as provide criteria for designing building foundations, pavement and other related facilities, considering the 2010 CBC seismic design provisions, requirements of the State Architect (DSA) and provisions outlined in IR A-4.

The scope of the investigation consisted of site reconnaissance, conducting subsurface explorations where on-site materials were recovered, laboratory testing of selected soil samples, engineering analysis and preparation of this report.

PROPOSED CONSTRUCTION

Based on the Site Development Plan for the new junior high school and information provided by A.T.I. Architects and Engineers, it is proposed to construct (2) two-story steel-frame classroom buildings, a two-story steel-frame math and science building, a two-story administration and library building all having the same footprint size, as well as a one-story music building, a steel-frame gymnasium and a steel-frame cafeteria building on the northern two-thirds of the site. The southern one-third of the site shall consist of a softball field surrounded by a decomposed granite running track, a soccer field, volleyball courts and basketball courts. A new staff parking lot shall be constructed on the west side of the site and parent's drop off and bus drop off parking lots are planned for the east side of the site, all accessed from Carion Court. No basements or mass excavations are planned for the site. The approximate location of the proposed buildings and other improvements are shown on Plate 2-Plot Plan.

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According to Mr. Arun Faha, project structural engineer, the foundation system will consist mostly of continuous footings. We estimate wall loadings not to exceed 15 kips per lineal foot.

The proximity of the cafeteria building to an existing box culvert may require the use of drilled caissons or piers to avoid surcharging the culvert.

As per discussions with A.T.I. Architects and Engineers, it is our understanding that the proposed finish grade elevation on the northern two-thirds portion of the site, under the proposed buildings, will be at about Elevation 50 feet.

The earthwork required will consist of placing fill varying in depth from less than 1-foot at the cafeteria building and gymnasium building to as much as 5 to 6-feet on the northern side of the site, at the proposed math and science building. Minor cuts will be required to construct the proposed basketball courts and other flatwork improvements in the area adjacent to the basketball courts. The proposed softball and soccer fields will be constructed on the natural sloping grounds on the southern portion of the site.

The construction of the new junior high school and proposed site improvements will involve the demolition of the existing buildings comprising the original elementary school (including Wing A, Wing B and the Kindergarten Building) and removal of the existing portable structures, minor retaining walls, paved courtyard and play areas, and some parking lots at the site. It is our understanding that the recently installed solar panel array will remain.

The project will include grading work for a two-lane driveway extending from Carion Court to the northeast corner of the site, along the north side of the site and into the proposed staff parking lot on the west side. Minor grading work may be required at the intersection of El Pueblo Avenue and Carpino Way to accommodate the proposed driveway. The new grade at the northwest corner of the

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site will restrict vehicular access from El Pueblo Avenue. Other improvements may include new asphalt and concrete flatwork, and trenching for new underground utilities.

SITE DESCRIPTION

The site is currently occupied by existing concrete buildings (northern half of the site), several vacant portable buildings (approximately middle of the site), a recently installed solar panel array (north of the portable buildings), asphalt paved courtyards and play areas, landscaped areas and an open grass field (southern side of the site). The site is currently used for the Martin Luther King Jr. Children's Center, pre-school and an off-campus training program. Previously the site was the Martin Luther King Elementary School constructed in the early 1960's. The project site is bound by residential neighborhoods along El Pueblo Avenue and an open field to the north, commercial properties including Hampton Inn and Suites, along Carion Court, to the east, primarily residential to the west, and California Avenue and State Highway 4 to the south.

Queros Creek (sewer easement), flows through a closed channel concrete box culvert from south of the site, under California Avenue and State Highway 4, and along the west side of the site in a general north-south direction. The box culvert is approximately 35-feet wide and 10-feet deep under the site and flows into an open channel north of the site. The location of the existing box culvert is shown on Plate 2.

The site slopes downhill gradually, north, toward the edge of the Suisun Bay delta, which is part of the San Francisco Bay delta system. Based on the United States Geologic Survey (USGS) Topographic Map for the Antioch North Quadrangle and site surveys in the area, we find that ground surface elevations at the subject site range from approximately 42.5-feet above Mean Sea Level (MSL) in the northeastern corner of the site, near Boring B-1 to about 46-feet above MSL in the northwestern corner. The ground surface elevation on the south side of the subject site ranges from

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approximately 56 to 57 feet above MSL. The subject site has a coordinate latitude and longitude of 38.0147 degrees north and -122.8710 degrees west, respectively.

The location of the site with respect to highways, streets and other landmarks is shown in the attached Vicinity Map, Plate 1.

REGIONAL GEOLOGY

The Antioch North Quadrangle is not mapped or is currently in planning by The State of California Seismic Hazard Zones mapping program, for areas potentially susceptible to soil liquefaction or land sliding. As will be discussed later, the potential for soil liquefaction or land sliding at the subject site is nil. The site is located in a seismically active area. However, the site is not within a currently designated Alquist-Priolo Special Studies Zone.

The Bay Area is located in the Coast Range geomorphic province of California which is characterized by north-west trending faults, folds, and thrusts which form ridges of smooth rolling hills to rugged mountains. Valleys between the ridges typically contain fans and flood plains that are overlain by alluvium. The geology is complex with a history of faulting, subsidence, sedimentation and tectonic uplift. Lithologies range in age from the bedrock of mid-Mesozoic age, represented by the Franciscan Complex, to Quaternary sediments of the late Cenozoic age (Holocene). The site is close to the Sacramento-San Joaquin River Delta which is within the Great Valley geomorphic province. A case could be made for considering the site to be in a transitional zone between the Coast Range geomorphic province and the Great Valley geomorphic province. However, this area is widely accepted as being within the Coast Range.

The site lies on the Pittsburg-Antioch alluvial plain which is characterized by unconsolidated alluvium, which includes natural levee deposits, alluvial fan and fluvial deposits. The plain deposits are underlain by older slightly cemented and slightly consolidated alluvium. The United States

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Geologic Survey Open File Report 97-98, "Quaternary Geology of Contra Costa County and Surrounding Areas" by Helley and Graymer (1997), identifies the site as Pleistocene-aged alluvial Fan and Fluvial Deposits and Holocene-aged natural levee Deposits.

As shown on Plate 4- Local Geologic Map – Quaternary, and based on the available data, the surficial geologic deposits at the site and vicinity, have been identified as Holocene and Pleistocene (older than 11,000 years) alluvial fan and fluvial deposits that formed from the hills to the south and natural levee deposits from Queros Creek. In general the alluvial deposits can be described as medium stiff to very stiff silty clays to clayey silts with varying fine sand content.

SUBSURFACE CONDITIONS

The existing pavement or ground surface is underlain by artificial fills with varying thickness within a depth of 4 feet below the ground surface. The thickness of the clayey fill should increase towards the pre-existing box culverts that conveys the flow from the creek along and adjacent to the north and west property boundaries. Beneath the fill is old alluvium consisting of medium stiff to very stiff clayey silt (CL) with varying fine sand content. This upper clayey alluvium is underlain by medium dense clayey silty sand at depths between 13 to 26 feet below the ground surface. Below this intermediate layer are more plastic (CH) very stiff to hard silty clays to a depth of at least 66.5 feet in Boring 5. Cone penetrometer test profiling indicated layers of medium dense to dense, silty sand at depths between 84 feet and 120 feet below the ground surface. Bedrock was not encountered within the depths explored.

Groundwater was encountered during this investigation varied in depth from 31.5 feet to 36.5 feet at Borings 10 and 5, respectively. The groundwater levels measured in the borings do not represent stabilized groundwater levels and may fluctuate seasonally due to rainfall, change in water level

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within the creeks which traverse the site, or local irrigation not apparent at the time of this investigation

At a location near the project site as shown on Plate 5 - Groundwater Site 1, shallow groundwater table in January 1973 was measured at elevation 17.00 above mean sea level. Although this elevation fluctuated thereafter, this same elevation was observed in Boring 10.

LOCAL SEISMICITY

The subject site located within the San Francisco Bay region has a relatively high amount of seismic activity due to the presence of the Greenville, Concord-Green Valley, Calaveras, Hayward, San Andreas, and other active earthquake faults. The Greenville Fault is the closest known to be active in the Holocene (during the past 10,000 years) but is without historic record and is approximately 9.0 km (5.6 miles) to the west southwest. The Concord-Green Valley fault is closest known to be historically active and is approximately 17.7 km (11.0 miles) west of the site. The Calaveras, Hayward, and San Andreas faults are the next closest faults and are 30.6 km (19.0 miles) southwest of the site, 40.5 km (25.2 miles) west of the site, and 72.5 km (45 miles) west of the site, respectively.

GEOLOGIC & SEISMIC HAZARDS

Soil Liquefaction Potential

The potential for soil liquefaction increases where a long duration earthquake generates a sudden increase in excess porewater pressure that cannot be easily dissipated due to the fine-grained texture of the soil, especially when said soil is essentially cohesionless and sufficiently loose. Except for the medium dense to dense layers of silty sand encountered at depths between 90 and 119 feet, the on-site alluvium below the historic shallow groundwater level (at elevation 17.00 in Boring 10) consists

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mostly of clayey silt or silty clay with varying fine sand content. Consequently, potential for ground surface subsidence is practically nil or limited to a value of 0.20 inch or less.

Seismic Compaction

More detailed soil profiling derived from the cone penetrometer testing (CPT) suggested the presence of partially saturated layers of loose to medium dense sand above the current groundwater table. Based on the Tokimatsu and Seed (1987) method, ground surface subsidence due to seismic compaction of the loose sand layers will vary across the site to a maximum estimated magnitude of 0.35 inch, which is considered insignificant. This estimate is based on a moment magnitude of 7.5 and a peak ground acceleration of 0.4g having a 10% probability of exceedence in 50 years.

Ground Surface Rupture

As discussed earlier, the subject site is not situated within a currently designated Alquist-Priolo Special Fault Studies Zone. Consequently, the potential for ground surface rupture is remote.

Lateral Spreading

Lateral spreading is normally associated with loose soil layers that have fully liquefied at shallower depths. Since the liquefaction potential at the site is remote and the ground surface is nearly level, lateral spreading is not likely to happen.

Tsunami

As mentioned earlier, the subject site is approximately 50 feet above mean sea level. Since the site is sufficiently far from any shoreline, the potential for damage from a tsunami is remote.

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Flooding

The site's gently sloping topography varies from elevation 42.5 to 57 feet above Mean Sea Level (MSL). Accordingly, the site is 4.5 feet above the recently modified 100-year flood plain as defined by the Federal Emergency Management Agency (FEMA). The average 100-year Base Flood Elevation (BFE) within the subject site had been set by FEMA at elevation 38 feet above the MSL as defined by the National Geodetic Vertical Datum (NGVD). Consequently, the risk of flooding associated with the box culvert (containing Queros Creek) under the site, is low to moderate.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

Based on our field exploration (auger test borings and cone penetrometer testing), laboratory testing and engineering analyses, it is our opinion that the site is suitable for the proposed construction provided that recommendations herein presented are incorporated in the design considerations, project plans, and job specifications.

SEISMIC DESIGN

The site is located in a seismically active area and is not situated within the currently designated Alquist-Priolo Special Studies Zone.

On the basis of the geotechnical soil profile determined during this investigation and the mapping done by the California Geological Survey, we conclude that the soil profile at the site can be designated S_D, Stiff Soil Profile. The parameters listed below are for seismic design according to the 2010 edition of the California Building Code. The following values are based, in part, on the

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National Seismic Hazard Mapping Program's (NSHMP) Java Ground Motion Parameter Calculator, version 5.0.9 (USGS website, considering project site latitude N 38.014708 degrees and longitude W -121.870950 degrees.

2010 CBC Seismic Design Parameters	
Seismic Source	Within 100-km radius
Distance to Closest Fault km (mi)	9 km (5.6 mi.) Greenville Fault
Site Class	D (Stiff Soil Profile)
Mapped Spectral Response Acceleration for Short Period	$S_s = 1.50g$
Mapped Spectral Response Acceleration for 1-second Period	$S_1 = 0.56g$
Site Coefficient F_a	$F_a = 1.0$
Site Coefficient F_v	$F_v = 1.5$
Maximum Considered Earthquake Spectral Response Acceleration for Short Period	$S_{MS} = F_a S_s = 1.50g$
Maximum Considered Earthquake Spectral Response Acceleration for 1-second Period	$S_{M1} = F_v S_1 = 0.84g$
Five-Percent Damped Design Spectral Response	$S_{DS} = (2/3) S_{MS} = 1.00g$
Five-Percent Damped Design Spectral Response Acceleration for 1-second Period	$S_{D1} = (2/3) S_{M1} = 0.56g$

TREATMENT OF EXISTING GROUND

In order to provide adequate and uniform subgrade support for shallow foundations placed within the upper 4 feet where non-uniform existing fill or proposed fill prevails, all such foundations should be underlain by a uniform thickness of 95 percent compacted fill (per ASTM D1557-09) at least 3 feet thick or equal to the width of the footing, whichever is deeper. Overexcavation may not exceed 10 feet below the existing ground surface. Fill containing more than 15 percent clay may be compacted to 90 percent relative compaction.

Overexcavation should extend laterally at least 5 feet beyond perimeter footings or 1.5 times the depth of the footing below lowest adjacent finished subgrade, whichever is greater.

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The native soils at or below 10 feet beneath the existing ground surface will be adequate to support conventional shallow foundations. However, any soils loosened by the excavation process should be compacted to at least 95 percent relative compaction (per ASTM D1557-09).

Any clayey soil (imported fill or in-place native) that will be used as subgrade for concrete slabs-on-grade, paving and other flatwork should be moisture conditioned to achieve at least 85 percent degree of saturation where placed within 3 feet of finished subgrade.

No shallow foundation system shall bear partly on compacted fill and partly on firm native alluvium. The alluvium should be overexcavated in order to provide at least 3 feet of compacted fill consisting of the same soil type.

In exterior areas to be paved with asphalt concrete, Portland cement concrete or other forms of flatwork or hardscaping, the underlying subgrade should consist of at least 2 feet of very low expansive (expansion index of 20 or less) on-site or imported soils compacted to at least 95 percent relative compaction.

Overexcavation for exterior paved areas should extend laterally a minimum of 3 feet beyond their perimeter.

Grading should be performed in accordance with the Standard Grading Specifications presented in Appendix C.

EXCAVATION

For maximum safety, any excavation in soil with vertical sides more than four feet deep should be laterally supported by bracing or shoring. Such support should be designed for a trapezoidal earth

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pressure distribution starting with zero at the top and linearly increasing to $22H$ (psf) at a depth of $0.2H$, this value maintained to a depth of $0.8H$ and then decreasing to zero at a depth equal to H , where H is the height of the wall in feet. Any anticipated surcharge loading within a distance equal to the depth of excavation due to stockpiled material or construction equipment should be added to the foregoing earth pressure. For relatively light vehicular traffic loading, apply a uniform lateral pressure of 100 pounds per square foot within the upper 10 feet. Heavy concentrated loading should be subject to further analysis.

An alternative to shoring would be slope back the excavation sides at 45 degree to a maximum depth of 10 feet.

For tied-back shoring required for excavations deeper than 15 feet, effective anchorage behind the active wedge shall be defined as a plane inclined at 33 degrees from the vertical projected from the bottom of the excavation and towards the retained earth. The longitudinal axis of the anchor blocks should be more or less perpendicular to this plane, plus or minus 5 degrees.

At least 5 percent of the total number of anchors shall be proof-tested to 200% of their design load to verify if the desired skin friction is achieved. Proof-load testing at this load should be maintained during a 24 hour period. Total deflection after attaining the 200% load should not exceed 4 percent strain.

The capacity of all tieback anchors should be proof-tested to 150 percent of their design load. Total axial movement of the anchor rod during the 150% proof-load testing should not exceed 3 percent strain. After reaching the test load, additional deflection should not exceed 0.1 inch for a period of 15 minutes. All anchors should be locked at their design load.

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More detailed proof-load testing requirements shall be provided by the shoring design engineer as to the number of anchor testing, duration of each test, allowable movement, and other acceptance criteria.

FILL PLACEMENT

Prior to placement of fill, native soil exposed at the bottom should be scarified, moisture conditioned above optimum moisture content, and then compacted to at least 95 percent relative compaction based on ASTM D1557-09, the five-layer method. Subsequent layers of fill should be placed in loose lifts not exceeding 6 inches thick, moisture conditioned at or above optimum and then properly compacted.

SHRINKAGE AND SUBSIDENCE

Shrinkage due to compaction of loose on-site alluvium may vary between 10 and 15 percent. Subsidence due to placement of fill over existing grades should be estimated as 0.3 inch per additional foot of fill placed.

CONVENTIONAL SHALLOW FOUNDATIONS

Wall and column footings, more than 15 feet from any descending cut or fill slope, should be proportioned for dead and live loads using the following net allowable bearing pressure, q_{dnet} , formula:

$$q_{dnet} = 2500(1+0.2D_f/B)(1+0.2B/L), \text{ in pounds per square foot (psf),}$$

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where B and L are the width and length of the footing in feet. The depth of foundation D_f should not exceed $2.5B$. For a circular footing or pier, the diameter D may be taken as $D = B = .L$. To determine the net foundation pressure of the embedded foundation, assume a soil unit weight of 115 pounds per square foot (pcf).

The computed allowable bearing value may be increased by one-third when considering transient lateral loading due to wind or seismic forces. Where planters are placed adjacent to exterior footings, embedment of footing should be at least 24 inches.

Wall footings should be reinforced with at least four No. 5 deformed rebars, two placed near the bottom and the other two placed near the top, or as determined by the structural engineer.

Settlement of conventional footings up to six feet wide continuous and ten feet square are not expected to exceed 0.7 inch under a net allowable bearing pressure of 2,800 psf. Differential settlement over a horizontal distance of 30 feet between footings should not exceed $\frac{1}{4}$ inch.

LATERAL RESISTANCE OF SHALLOW FOUNDATIONS

Resistance to lateral loads may be provided by friction at the base of the footings and by passive pressure against the adjacent soil. For concrete footings on engineered fill or firm alluvium, use a coefficient of friction of 0.30. For calculating passive pressure, use an equivalent fluid unit weight of 300 pounds per cubic foot, but not to exceed 3,000 pounds per square foot. When combining frictional and passive resistance, use only two thirds of their total value.

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“SHORT” DRILLED PILE FOUNDATION

Shallow building foundations that may adversely surcharge the existing box culverts should be supported by short drilled piles or piers with tip levels at or below the bottom of the culvert. These piers will qualify as a “rigid pole” whose embedment will be defined by the design criteria or formula set forth in Section 1805.7.1 of the 2010 California Building Code.

To calculate lateral bearing pressure, S_1 , at one-third of the pile’s depth of embedment, limited to a maximum of 12 feet under the “Non-constrained” condition, use an equivalent fluid unit weight (EFW) of 300 pounds per cubic foot (pcf) to calculate passive pressure. This EFW may be increased to 600 pcf considering a lateral deflection not to exceed one-half inch. Calculated passive pressure should not exceed 6,000 pounds per square foot. For the “Constrained” condition, use the same passive resistance to calculate the lateral bearing pressure, S_3 , based on a depth equal to depth of embedment, not to exceed 10 times the diameter of the drilled pile.

To limit pile (minimum 24 inches in diameter and 10 feet embedment) settlement to one-half inch or less, end-bearing pressure should not exceed 6000 pounds per square foot.

The embedment of the drilled pile based on the magnitude of vertical loading should be based on the surrounding soil’s shear strength of 500 pounds per square foot applied over the lateral surface of the pier.

Prior to placing the steel reinforcement, loose soil and debris at the bottom of the borehole should be removed using a flat-bottom bucket auger. Firm soil condition at the bottom of the pile should be verified by Smith-Emery prior to placing concrete.

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RETAINING WALL DESIGN

Cantilevered walls retaining level backfill should be designed for lateral earth pressure due to an equivalent fluid unit weight of 30 pounds per cubic foot where wall backfill is fully drained and consists of a minimum one-foot thick, non-expansive, granular material. Basement walls that are restrained from moving laterally at the top should be designed for a trapezoidal pressure distribution starting with zero at the top and linearly increasing to $24H$ (psf) at a depth of $0.2H$, this value maintained to a depth of $0.8H$ and then decreasing to zero at a depth equal to H , where H is the height of the wall in feet.

Unless designed for additional hydrostatic pressure, waterproofing and a suitable subdrain system should be provided behind the wall

Box culvert and other retaining walls below grade should be designed for additional surcharge loading due to overlying adjacent footings and/or traffic loads in accordance with the following tabulation:

Line Load Parallel to Wall

Distance of Foundation from Wall	Wall Surcharge Linear Load	Location of Resultant above base of Wall
0.4 H or less	$0.55 q_L$	0.60 H
0.6 H	$0.47 q_L$	0.52 H
0.8 H	$0.39 q_L$	0.46 H
1.0 H	$0.32 q_L$	0.43 H
1.5 H	$0.20 q_L$	0.38 H
2.0 H	$0.13 q_L$	0.36 H
2.5 H	$0.09 q_L$	0.35 H

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Point Load Adjacent to Wall

Distance of Foundation from Wall	Wall Surcharge Point Load	Location of Resultant above base of Wall
0.4 H or less	$0.78 Q_p$	0.59 H
0.6 H	$0.60 Q_p$	0.49 H
0.8 H	$0.47 Q_p$	0.43 H
1.0 H	$0.37 Q_p$	0.39 H
1.5 H	$0.19 Q_p$	0.34 H
2.0 H	$0.11 Q_p$	0.32 H
2.5 H	$0.06 Q_p$	0.31 H

Where H = height of the retaining wall in feet, and q_L and Q_p are the line or wall loading per foot and point loading, respectively.

Lateral seismic loading on retaining walls should be applied as an inverted triangular pressure distribution with $19H$ (psf) at the top and linearly decreasing to zero at the bottom of said wall.

The retaining wall's resistance to lateral and overturning forces should be determined using the parameters given earlier under. **LATERAL RESISTANCE OF SHALLOW FOUNDATIONS.**

CONCRETE FLOOR SLAB-ON-GRADE

Properly moisture conditioned and compacted clayey soils or imported fill, with an expansion index of 20 or less (placed within the top 2 feet) will adequately support floor slabs-on-grade. The floor slab thickness and steel reinforcing, as well as proper placement of crack-control joints, should be determined by the structural engineer depending on anticipated floor loading and ground-shaking.

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To minimize serious random cracking, the Design Civil/Structural Engineer should comply with the recommended placement of steel reinforcement, jointing, joint fillers, doweling, etc., as set forth by the Portland Cement Association and American Concrete Institute.

In adopting an alternate slab design, using design methods suggested by the Portland Cement Association or American Concrete Institute, the structural engineer may use a modulus of subgrade reaction, k , of 200 pounds per cubic inch.

The fine-grained texture of the on-site soils inherently makes it a perfect media conducive to the migration of moisture (by capillary action) derived from landscape and other surface and underground sources. Current standard of practice specifies the use of a vapor barrier (i.e., plastic sheet or high density polyethylene membrane (minimum 6 mil thick), with one-inch thick layer of moist, clean sand top and bottom), and an underlying capillary break (i.e., aggregate base or gravel, minimum 4 inches thick, $\frac{3}{4}$ -inch maximum size and less than 5% passing the No. 100 sieve) placed below the floor slab. These provisions are recommended in areas where the floor slab will be covered with a moisture-sensitive floor covering.

In modifying this practice, the Architect should consider the following:

1. Where vapor barrier is used without the capillary break, the overlap or seam between adjacent membrane panels should be heat-welded, said welded seam inspected and tested for water-tightness using the vacuum method or a better procedure. All membrane terminations at footings and grade beams and membrane penetrations for various piping and conduit installations and other cut-outs should be properly sealed with a suitable product guaranteed by the manufacturer.

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2. To minimize water seepage derived from landscape areas and other unforeseen sources, planter boxes adjacent to building walls should be provided with a water-tight bottom slab and sufficient curb weep holes to discharge excess irrigation water onto the pavement or concrete swale or gutter.
3. Roof water and HVAC system condensate drains should not be allowed to discharge into bare ground adjacent to the buildings where building protection from seepage water is not provided.

SOIL CORROSIVITY

Imported fill, if any, that will be in contact with concrete should be tested for its soluble sulfate and chloride content in order to determine which type of cement will be suitable for achieving corrosion resistance.

Based on Wallace Laboratory corrosion test results (Plates B-5.1 thru B-5.3), the on-site soils within the upper 12 feet have soluble chloride contents of 0.0015 to 0.0021 percent and soluble sulfate contents of 0.0010 to 0.0495 percent, respectively. Consequently, no special corrosion resistant cement is required.

However, said soils have pH values of 7.03 to 8.78 and minimum resistivity values of 935 to 4,762 ohm/cm (saturated extract). These values indicate severe (within upper 2 feet) to moderate (with increasing depth) corrosive soil conditions (especially to underground ferrous materials and use of connected dissimilar metals) that may require the services of a corrosion engineer which is beyond the scope of this investigation.

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SURFACE DRAINAGE CONTROL

Grading plan design should provide positive drainage away from the proposed facility. Paved areas should slope at least one percent to drain. All roof drainage should be collected and conveyed by non-erodible devices to the street. Positive drainage should also be provided away from the building during construction. This is especially important when construction takes place during the rainy season. The site drainage should be designed by a civil engineer.

Cleanout connected to any subsurface drainage should be placed a minimum of 5 feet away from all structures. The lip and cover of the cleanout should be protrude above the surrounding pavement at least 2 inches to prevent the inflow of surface water.

SUBSURFACE DRAINAGE

In order to intercept water seepage associated with potential leakage from the box culvert and excess irrigation from landscape areas, a minimum 6-inch perforated pipe should be placed at least one foot outside and below the perimeter foundation of the buildings. This pipe should have two lines of ¼-inch diameter perforations 12 inches, each hole in one line staggered 6 inches with respect to the other line, each line drilled symmetrically about the pipe's flow line and within the bottom 120-degrees of the pipe's circumference. This pipe should be surrounded by ¾-inch maximum size gravel (with fines no more than 5 percent passing the No. 100 sieve), a minimum of 3 cubic feet per foot of pipe. Said gravel should be wrapped with geo-fabric with an apparent opening size (AOS) of 0.21 mm. The upper end of the pipe should be tightly plugged. The non-perforated segment of the pipe that eventually discharges to the storm drain should be a minimum of 20 feet long. In addition to the cleanout at the upper end of the pipe, at least two cleanout points should be placed along the subdrain per building.

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For basement walls, the above-described perforated pipe subdrain system may be combined with a curtain drain such as those from Miradrain or any equivalent proprietary product.

TRENCH BACKFILL

All trench backfill should be mechanically compacted in suitable layers in order to achieve at least 90 percent relative compaction. Jetting or flooding with water as a means of compacting fill shall not be permitted.

INSPECTION AND TESTING

To assure compliance with the recommendations of this report, the following operations shall be observed by a representative of this office:

1. Temporary excavation
2. Removal of unsuitable soils
3. Bottom Inspection
4. Backfill placement and compaction
5. Foundation excavations
6. Surface and subsurface drainage installation

GRADING PLAN REVIEW

Completed grading and foundation plans should be reviewed by the geotechnical engineer for conformance with our recommendations. In addition, all geotechnical reports and addenda shall be noted on the grading plans.

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LIMITS OF INVESTIGATION

The analyses, conclusions, and recommendations contained in this report are based on site conditions as they existed at the time of our investigation and further assume the explorations to be representative of the subsurface conditions throughout the site. No warranty is made nor should any be construed that unforeseen geotechnical or geological weakness may not exist between exploratory points and exposures or below the depths explored. If different subsurface conditions are observed during construction, we should be promptly notified for review and reconsideration of our recommendations.

This report was prepared for the exclusive use and benefit of the owner, architect, and engineer for evaluating the design of the facility as it relates to certain geotechnical aspects. It should be made available to prospective contractors for information on factual data only, and not as a warranty of subsurface conditions included in this report.

If the proposed project is substantially modified from which is discussed herein under **Proposed Construction**, we should be retained to review the new proposed development to ascertain that our findings, conclusions and recommendations are applicable.

Site conditions can change with time. If more than 18 months has passed since the preparation of this report, we should review the site and ascertain that our findings, conclusions and recommendations are still applicable.

We recommend that Smith-Emery San Francisco be retained and given the opportunity to review those portions of the plans and specifications which pertain to foundations and earthwork to ascertain that they are consistent with the recommendations of this report and to inspect construction, particularly foundations, shoring, site grading, and earthwork to ascertain that actual site conditions

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are consistent with the findings of this report and that construction conform to the recommendations of this report. The review of plans and specifications, and construction inspection and testing by Smith-Emery San Francisco are an integral part of the conclusions and recommendations made in this report, and if others are retained for these services, the client will be assuming our responsibility for any potential claims that may arise during or after construction.

The services as described in this report include professional opinions and judgments based on the data collected. Our investigation was performed using the standard of care and level of skill ordinarily exercised under similar circumstances by reputable soil engineers and geologists currently practicing in this or similar localities. No other warranty, express or implied, is made as to the conclusions and professional advice included in this report.

We would be pleased to provide you with additional consultation services through the design and construction phases of this challenging project. If you have any questions concerning this project or desire any additional information, please contact us.

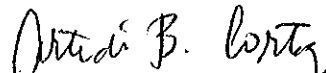
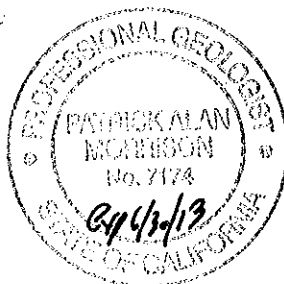
Respectfully submitted,

SMITH-EMERY SAN FRANCISCO

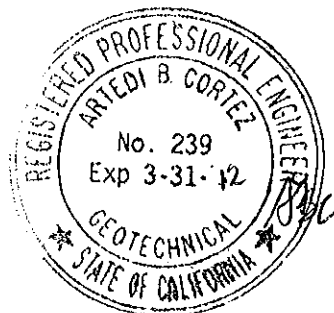


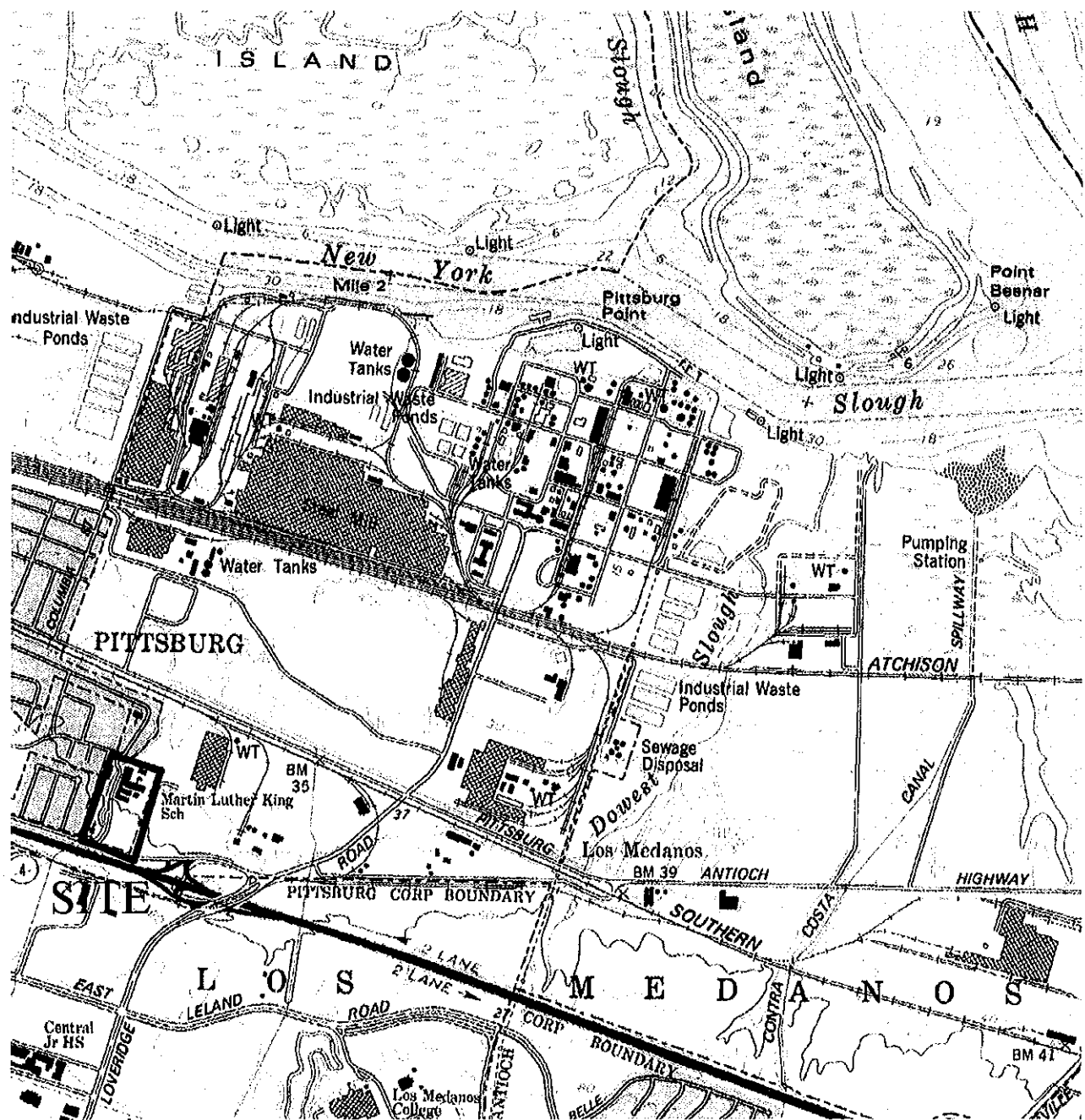
PATRICK MORRISON, PG #7174
GeoServices Manager

PM/AC/rm



ARTEDI B. CORTEZ, RGE #239
Senior Geotechnical Engineer





REFERENCE: ANTIOCH NORTH, 7.5 MINUTE TOPOGRAPHIC QUADRANGLE, 1978



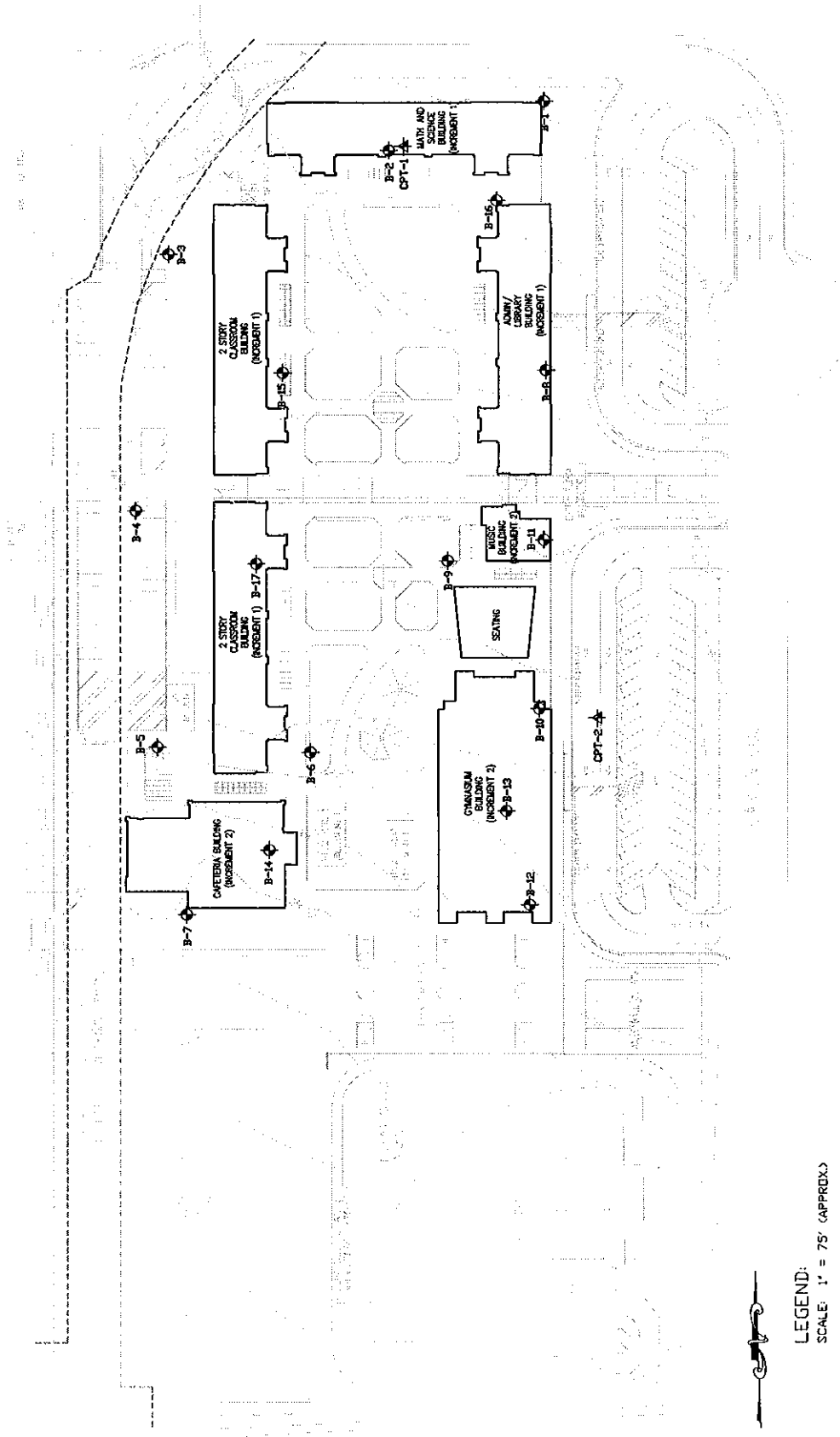
GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

VICINITY MAP

Smith-Emery San Francisco
Job No.: 66926

DWG BY R.M.
PLATE 1

REFERENCE: MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL, INCIDENT 1, 950 EL PUEBLO AVENUE, PITTSBURGH, CA 94601, SITE PLAN.
SHEET NO. A111, BY AN ARCHITECTS AND ENGINEERS, DATED 4/25/01.



LEGEND:

SCALE: 1" = 75' (APPROX.)

----- OUTLINE OF PROPOSED BUILDING OR STRUCTURE

----- OUTLINE OF OTHER PROPOSED IMPROVEMENTS

----- EXISTING SITE TOPOGRAPHY

----- LIMITS OF (E) U.G. SEWER EASEMENT

B-17 B-17 BORING LOCATION

CPT-2 CPT-2 LOCATION OF CONE PENETRATION TEST (CPT)

PLOT PLAN

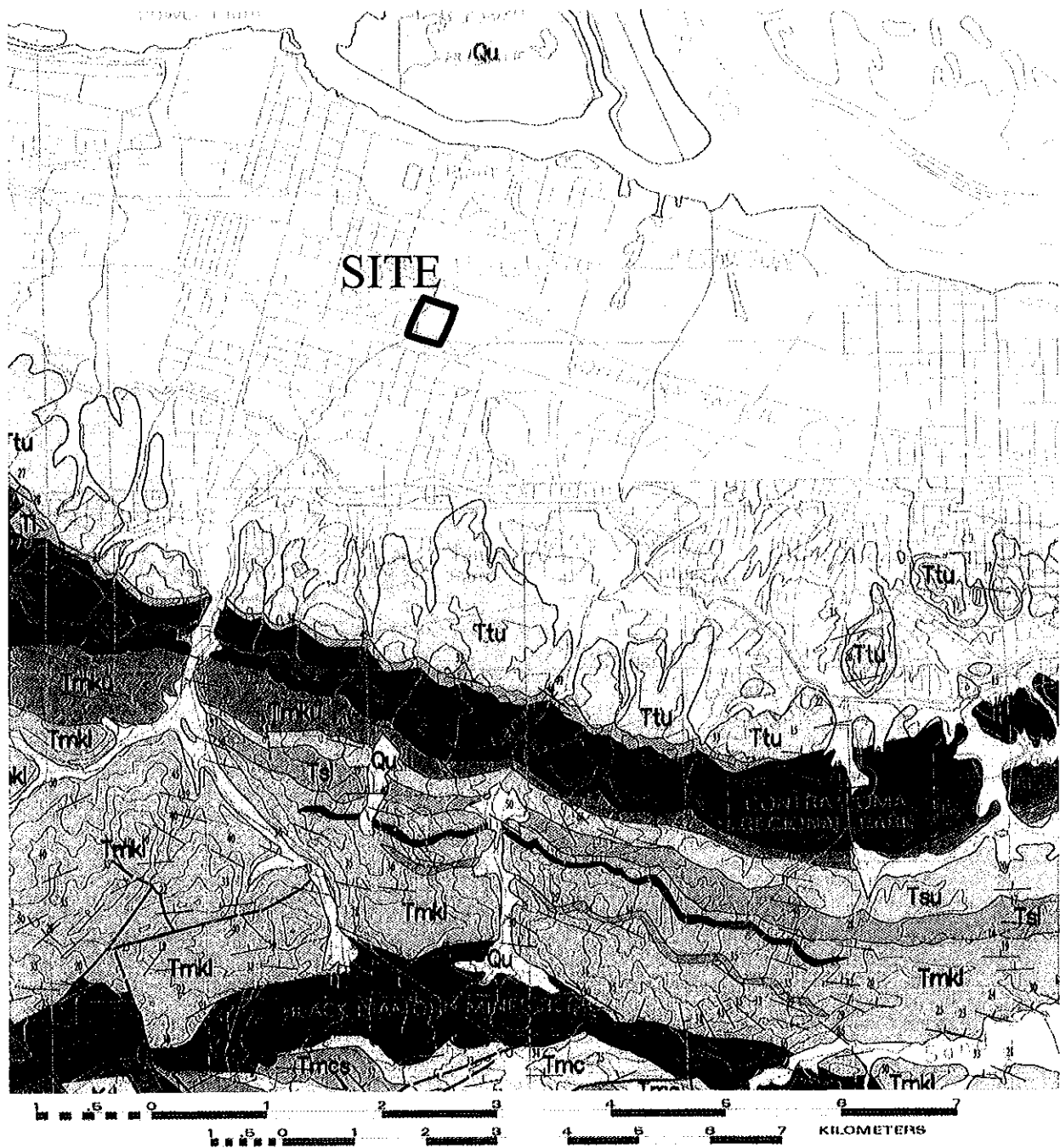
GEOTECHNICAL INVESTIGATION
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JOB NO.: 66926

PLATE 2

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Qu -- Undivided Quaternary deposits

Tl -- Lawlor tuff

Tc -- Clerbo Sandstone

Ttu -- Tulare Formation

Tn -- Neroly Sandstone

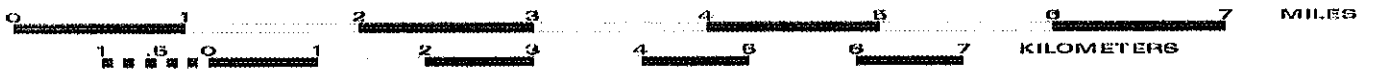
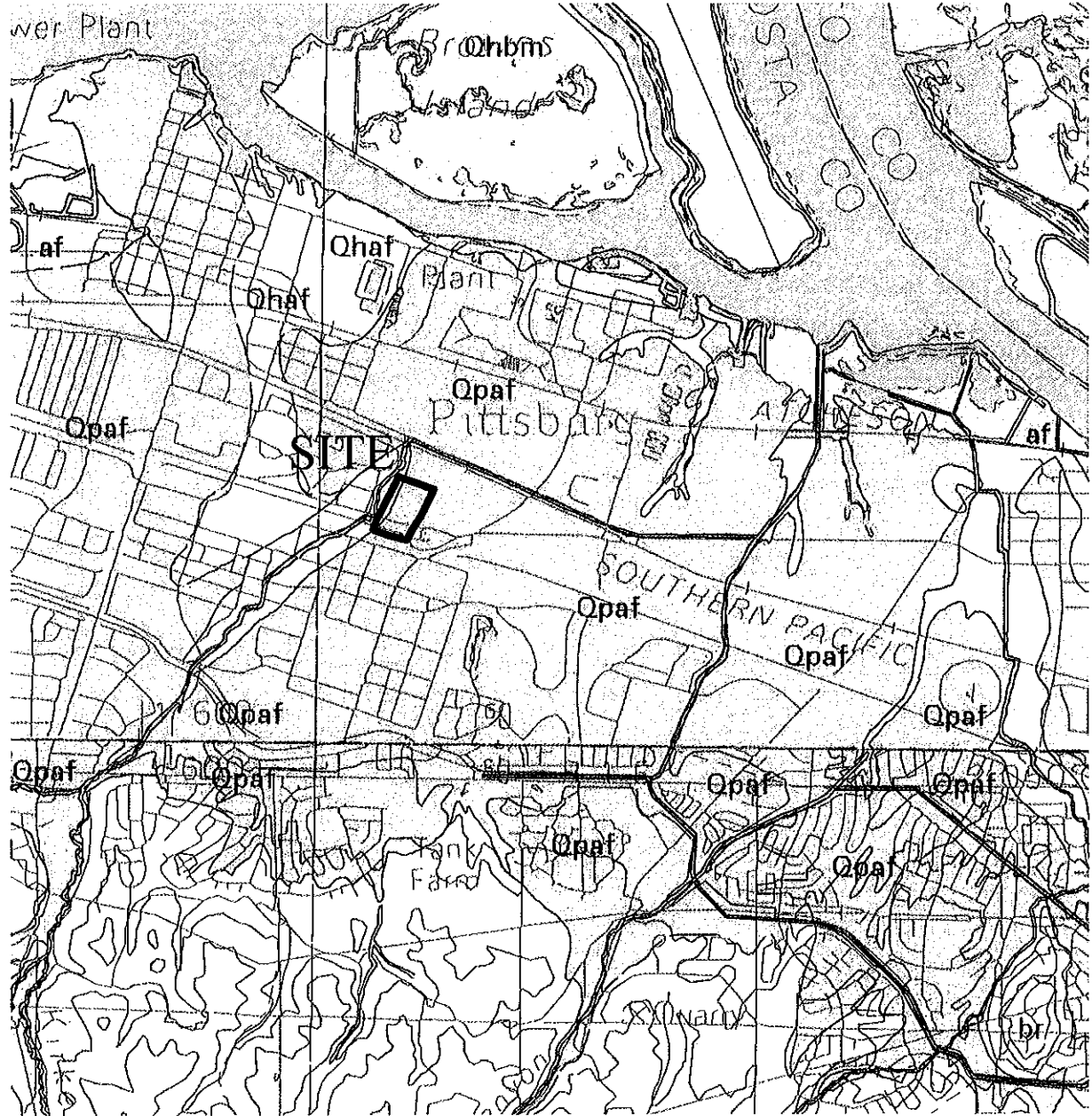
REFERENCE: PRELIMINARY GEOLOGIC MAP EMPHASIZING BEDROCK FORMATIONS IN CONTRA COSTA COUNTY, CALIFORNIA, DEPT. OF THE INTERIOR, U.S. GEOLOGIC SURVEY, R.W. GRAYMER, D.L. JONES & E.E. BRABB, 1994.

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LOCAL GEOLOGIC MAP - BEDROCK

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Job No.: 66926

DWG BY R.M.
PLATE 3



- | | | | |
|--|--|--|----------------------|
| | Qhaf - Alluvial Fan deposits (Holocene) | | af - Artificial Fill |
| | Qpaf - Alluvial Fan deposits (Pleistocene) | | |

REFERENCE: QUATERNARY GEOLOGY OF CONTRA COSTA COUNTY, CALIFORNIA AND SURROUNDING AREAS: DERIVED FROM THE DIGITAL DATABASE OPEN-FILE 97-98, DEPT. OF THE INTERIOR, U.S. GEOLOGIC SURVEY, E.J. HELLEY & R.W. GRAYMER, 1997.

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PITTSBURG, CALIFORNIA

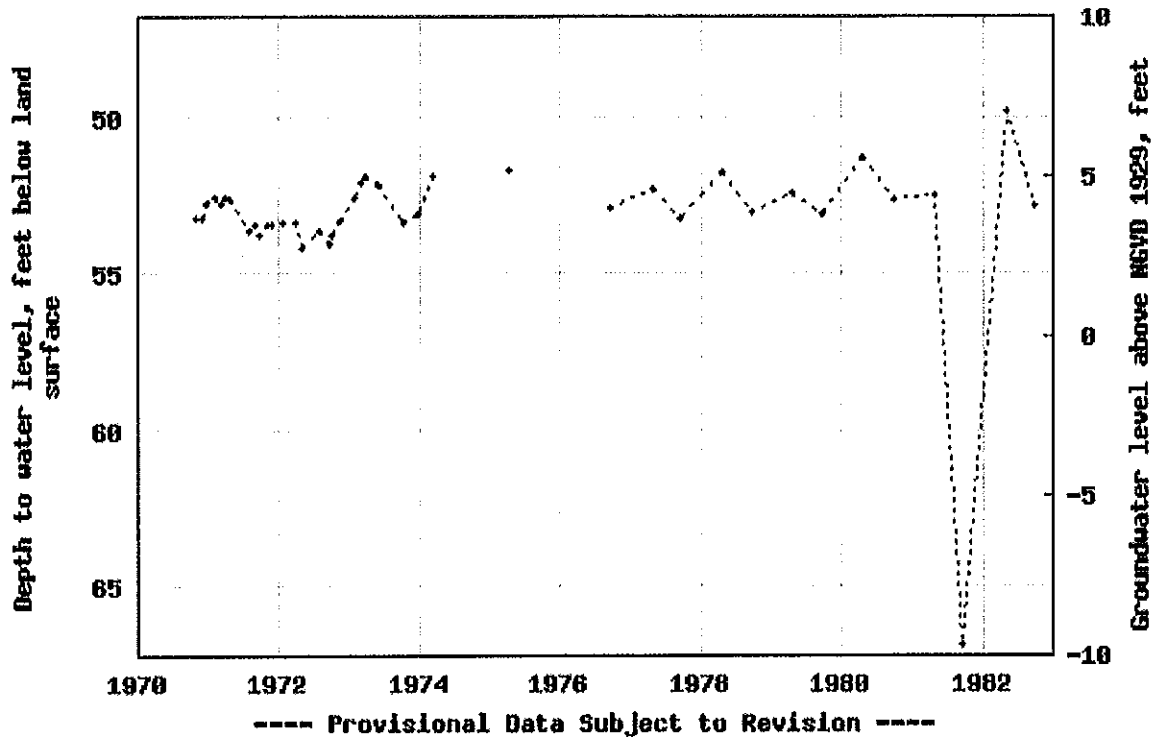
LOCAL GEOLOGIC MAP - QUATERNARY

Smith-Emery San Francisco
Job No.: 66926

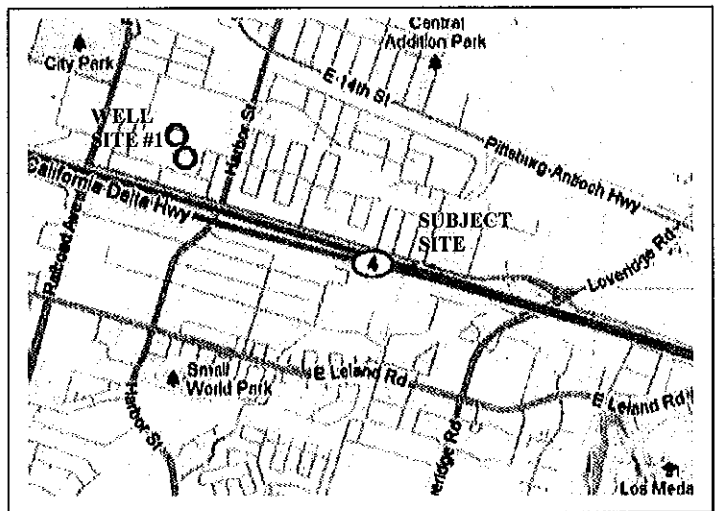
DWG BY R.M.
PLATE 4



USGS 380107121530201 002N001E17K001M



Contra Costa County, California
Hydrologic Unit Code 18050001
Latitude 38°01'07", Longitude 121°53'02" NAD27
Land-surface elevation 57.00 feet above NGVD29
The depth of the well is 190 feet below land surface.
The depth of the hole is 190 feet below land surface.
This well is completed in the Central Valley aquifer system (S100CNRLVL) national aquifer.
This well is completed in the Quaternary Alluvium (110ALVM) local aquifer.



WELL SITE #1 LOCATION: NORTH OF MACARTHUR AVE, B/W RAILROAD AVE AND HARBOR STREET.
REFERENCE: USGS CALIFORNIA WATER SCIENCE CENTER.

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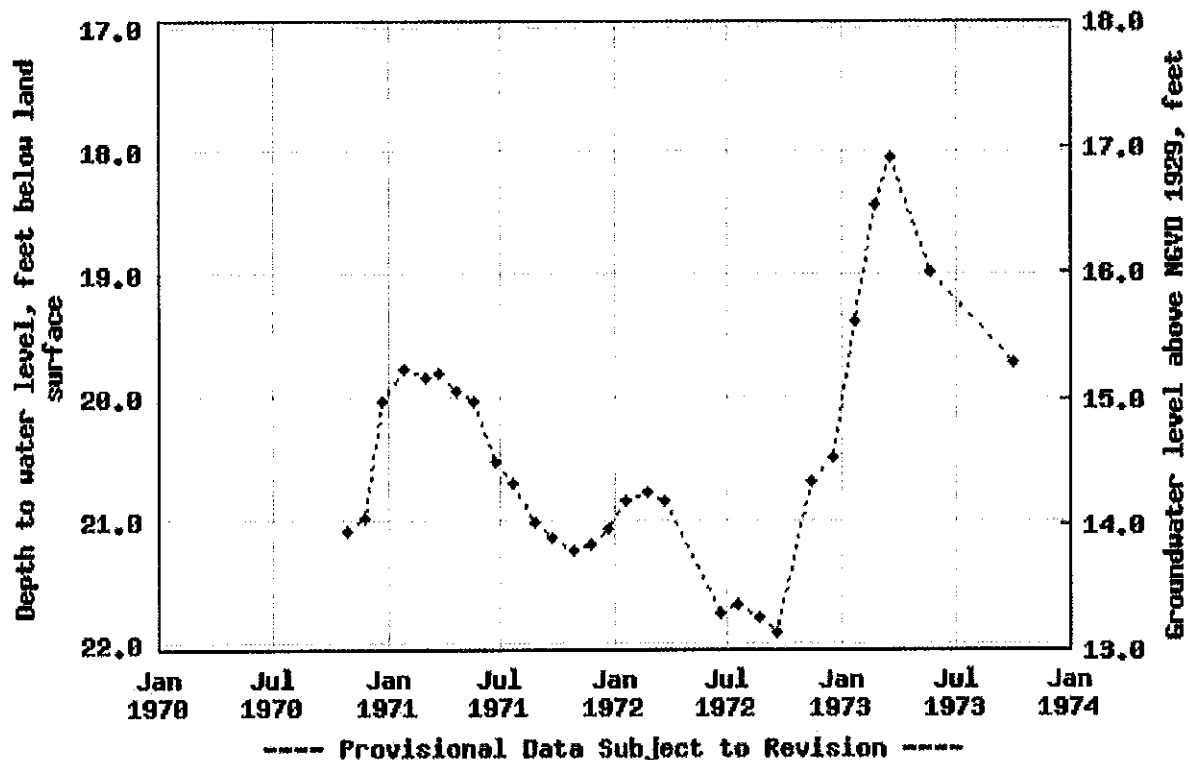
GROUNDWATER LEVELS-WELL SITE 1

Smith-Emery San Francisco
Job No.: 66926

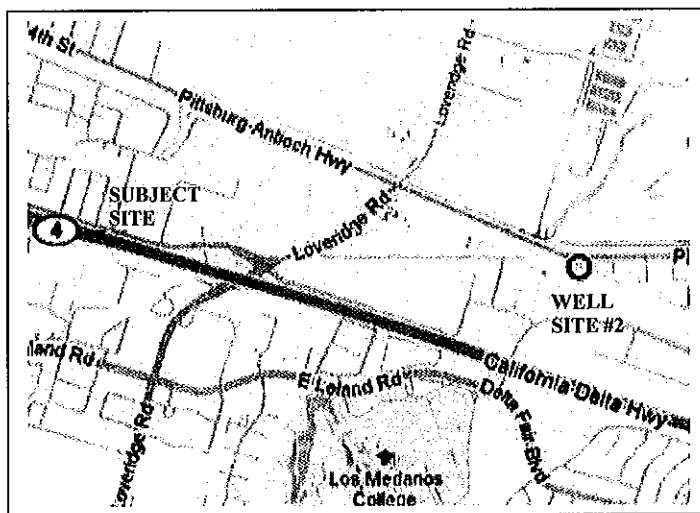
DWG BY R.M.
PLATE 5



USGS 380044121510301 002N001E22C001M



Contra Costa County, California
Hydrologic Unit Code 18050001
Latitude 38°00'44", Longitude 121°51'03" NAD27
Land-surface elevation 35.00 feet above NGVD29
The depth of the well is 160 feet below land surface.
The depth of the hole is 160 feet below land surface.
This well is completed in the Central Valley aquifer system (S100CNRLVL) national aquifer.
This well is completed in the Quaternary Alluvium (110ALVM) local aquifer.



WELL SITE #2 LOCATION: PITTSBURG-ANTIOCH HIGHWAY, EAST OF LOVERIDGE ROAD.
REFERENCE: USGS CALIFORNIA WATER SCIENCE CENTER.

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GROUNDWATER LEVELS-WELL SITE 2

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DWG BY R.M.
PLATE 6

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APPENDIX A

FIELD EXPLORATION

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APPENDIX A

FIELD EXPLORATION

The subsurface soils at the site were explored by drilling seventeen (17) test borings (designated as B-1 through B-17) and performing two (2) Cone Penetration Tests, (designated as CPT-1 and CPT-2). The approximate locations of the test borings and CPT's are shown on Plate 2. The two CPT's were performed on July 14, 2011 and were advanced to depths ranging from 79 to 119 feet below ground surface.

CPT logs, showing tip resistance, friction ratio by depth, interpreted SPT N-values, soil types, shear wave velocities and a classification chart for the CPT's, are presented in Appendix D.

The seventeen test borings were drilled between the dates of July 19 and July 22, 2011 and were extended to depths ranging from 6.0-feet bgs to 66.5-feet bgs. The majority of the borings were drilled with a truck mounted 8-inch hollow stem auger. Boring numbers B-11 through B-17 were drilled with hand auger and portable sampling equipment. The test borings were conducted to ascertain soil conditions and to obtain bulk and intact samples for subsequent laboratory testing. Soils were classified in accordance with the Unified Soil Classification System as shown summarized on Plate A-18. An explanation of all the symbols and notations used on the boring logs is presented on Plate A-19, Key to Log of Borings. Detailed logs of the test borings are presented on Plates A-1.1 through A-17.1. Relatively undisturbed soil samples were obtained by driving with a 140-pound hammer (free falling from a height of 30 inches), onto a split-barrel Modified California sampler, lined with 2.0-inch I.D. brass tubes. Standard Penetration Testing was also performed using a 2-inch O.D., (1.4-inch I.D.) split-spoon sampler. Blow counts recorded are shown on the boring logs. The samples were sealed in plastic containers and brought to our laboratory for testing. Bulk samples

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were also obtained. All samples were brought to our laboratory to verify visual classification and perform various tests deemed appropriate for the soil conditions encountered and the engineering data required.

GEOTECHNICAL TEST DATA

BORING B-1

SURFACE ELEVATION: 43.7' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0						
	DS		33	19	17.8	88.9
5	SA HA CONSOL	76.9			21.9	104.3
10					18.3	
15	SA HA DS CONSOL	54.7			17.0	100.9
20						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

	AC	2" Asphalt Concrete Surface.
	CL	Fill: Sandy Clayey Silt - grayish brown, medium stiff, moist.
	CL	Old Alluvium: Sandy Clayey Silt - yellowish brown, medium stiff, moist.
		Orangish brown, very stiff.
	SC	Clayey Silty Sand - orangish brown, medium dense, moist.
		Yellowish brown.

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LOG OF BORING

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JOB NO.: 66926

PLATE A-1.1

GEOTECHNICAL TEST DATA

BORING B-1 (Continued)

SURFACE ELEVATION: 43.7' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
20					21.1	
25	DS CONSOL				15.1	106.7
30					22.1	
35						
40						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

16



CL

Silty Clay - Yellowish brown, very stiff, moist.

19



Stiff.

20



Wet, very stiff.

BORING TERMINATED @ 31.5' ON 7/19/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
LOGGED BY C. LARKIN

GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-1.2

GEOTECHNICAL TEST DATA

BORING B-2 (Continued)

SURFACE ELEVATION: 44.5' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	BLOWS/FT SAMPLE POCKET PEN. (TSF)	SYMBOL	USCS	DESCRIPTION
20	SA HA	75.0			23.3		18		CL	Sandy Clayey Silt - orangish brown, very stiff, moist.
25					20.9	103.5	39			
30	SA HA	70.3			18.6		14			Stiff.
35	DS				22.1	104.2	46		CH	Silty Clay - yellowish brown, very stiff, moist.
40										Hard.

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SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-2.2

GEOTECHNICAL TEST DATA

BORING B-2 (Continued)

SURFACE ELEVATION: 44.5' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
40					24.8	
45	DS CONSOL				27.5	97.1
50					30.3	
55						
60						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

17



CH

Silty Clay - yellowish brown, very stiff, very moist.

29

3.75

Wet.

24

2.75

19

Stiff.

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LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-2.3

[illegible]

SURFACE ELEVATION: 44.5' (MSL)

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

28 3.25



CH

Silty Clay - yellowish brown, very stiff.

BORING TERMINATED @ 61.5' ON 7/19/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
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LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-2.4

GEOTECHNICAL TEST DATA

BORING B-3

SURFACE ELEVATION: 46.1' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0					7.6	
5	SA HA DS CONSOL	59.4	36	21	14.4	110.1
10					19.5	
15	SA HA DS	19.7			12.1 6.6	106.1 104.9
20						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

9

45

32

35

SYMBOL

USCS

DESCRIPTION

AC	4" Asphalt Concrete Surface.
CL	Fill (Box Culvert): Sandy Clayey Silt - dark yellowish brown, stiff, slightly moist.
CL	Old Alluvium: Sandy Clayey Silt - yellowish brown, very stiff, moist.
	Hard.
SC	Clayey Silty Sand - orangish brown, medium dense, trace fine gravel, moist.

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LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-3.1

GEOTECHNICAL TEST DATA

BORING B-3 (Continued)

SURFACE ELEVATION: 46.1' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
20	SA HA	85.8	52	30	25.0	
25	CONSOL		49	27	17.6	106.4
30					17.1	
35						
40						

BLOWS/FT

SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

21



CL

Sandy Silty Clay - orangish brown, very stiff, moist.

47

Sandy Clayey Silt - orangish brown, hard, moist.

25

Very stiff.

BORING TERMINATED @ 31.5' ON 7/19/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
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PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-3.2

GEOTECHNICAL TEST DATA

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0					17.2	
5	SA HA DS CONSOL	18.9			8.3	95.4
10					3.9	
15	SA HA DS	23.4			18.3	91.2
20						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

8

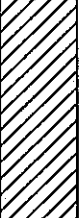
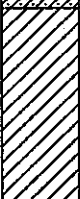
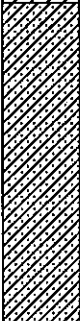
15

13

15

BORING B-4

SURFACE ELEVATION: 47.1' (MSL)

SYMBOL	USCS	DESCRIPTION
	AC	4" Asphalt Concrete Surface.
	CL	Fill (Box Culvert): Sandy Clayey Silt - dark yellowish brown, medium stiff to stiff, moist.
	SC	Fill (Box Culvert): Clayey Silty Sand - orangish brown, medium dense, trace fine gravel, moist. Grayish orange.
	CL	Old Alluvium: Sandy Clayey Silt - yellowish brown, stiff, moist.
	SC	Clayey Silty Sand - yellowish brown, medium dense, moist.

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JOB NO.: 66926

PLATE A-4.1

GEOTECHNICAL TEST DATA

BORING B-4 (Continued)

SURFACE ELEVATION: 47.1' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
20					21.2	
25					20.4	98.5
30	SA HA	80.0	46	25	14.4	
35						
40						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

9



CL

Sandy Clayey Silt - yellowish brown, stiff, moist.

30



Very stiff.

24



BORING TERMINATED @ 31.5' ON 7/19/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
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GEOTECHNICAL INVESTIGATION
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950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-4.2

GEOTECHNICAL TEST DATA

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0					16.4	110.8
5					16.7	
10					16.1	109.2
15	SA HA	35.9			9.5	
20						

BLOWS/FT

SAMPLE

POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

BORING B-5

SURFACE ELEVATION: 49.6' (MSL)

	AC	4" Asphalt Concrete Surface.
	CL	Fill: Sandy Silty Clay - yellowish brown, stiff, moist.
	CL	Old Alluvium: Sandy Silty Clay - yellowish brown, stiff, moist.
		Very stiff.
	SC	Clayey Silty Sand - orangish brown, medium dense, moist.
		Grades with increasing fines content.

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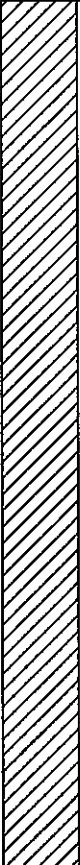
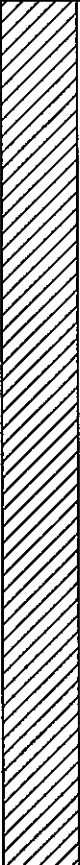
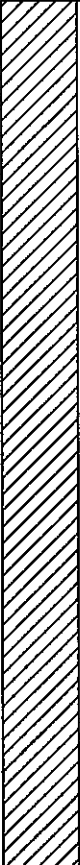
JOB NO.: 66926

PLATE A-5.1

GEOTECHNICAL TEST DATA

BORING B-5 (Continued)

SURFACE ELEVATION: 49.6' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	BLOWS/FT	SAMPLE	POCKET PEN. (TSF)	SYMBOL	USCS	DESCRIPTION
20	DS				22.5	98.6	20				CL	Sandy Clayey Silt - yellowish brown, stiff, moist.
25	SA HA	70.6			15.4		16					Very stiff.
30	DS				18.3	97.5	22					Grades stiff.
35			55	31	21.7		17				CH	Silty Clay - yellowish brown, very stiff, moist.
												Wet. Groundwater first encountered at 36.5'
40												

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JOB NO.: 66926

PLATE A-5.2

GEOTECHNICAL TEST DATA

BORING B-5 (Continued)

SURFACE ELEVATION: 49.6' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	BLOWS/FT	SAMPLE	POCKET PEN. (TSF)	SYMBOL	USCS	DESCRIPTION
40					30.2	91.0	14				CH	Silty Clay - yellowish brown, stiff.
45	SA HA	96.7	72	46	29.6		17					Very stiff.
50	DS				33.9	87.8	27					
55					19.7		16					Light brown, very stiff.
60												

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JOB NO.: 66926

PLATE A-5.3

GEOTECHNICAL TEST DATA

BORING B-5 (Continued)

SURFACE ELEVATION: 49.6' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
60	DS				27.2	97.8
65					28.5	
70						
75						
80						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

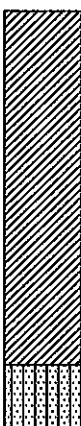
31

30

SYMBOL

USCS

DESCRIPTION



CH

Silty Clay – yellowish brown with reddish brown mottling, very stiff.

SM

Silty Sand – yellowish brown, dense.

BORING TERMINATED @ 66.5' ON 7/19/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
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LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-5.4

BORING B-6

SURFACE ELEVATION: 49.6' (MSL)

GEOTECHNICAL TEST DATA

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0					15.0	
5					21.8	99.1
10					18.8	
15	SA HA	15.7			18.1 5.9	98.5 98.9
20						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

13

15

21

20

SYMBOL

USCS

DESCRIPTION

AC	2" Asphalt Concrete Surface.
CL	Fill: Sandy Clayey Silt - yellowish brown, stiff, trace fine gravel, moist.
CL	Old Alluvium: Sandy Clayey Silt - yellowish brown, stiff, moist.
	Orangish brown.
	Grades with grayish orange silt lenses, 1/4" to 1/2", very stiff.
SC	Clayey Silty Sand - orangish brown, medium dense, moist.

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JOB NO.: 66926

PLATE A-6.1

GEOTECHNICAL TEST DATA

BORING B-6 (Continued)

SURFACE ELEVATION: 49.6' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
20					17.7	
25	SA HA	29.1	26	5	18.4	94.7
30					21.1	
35						
40						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

16

22

21

SYMBOL

USCS

DESCRIPTION



SC

Clayey Silty Sand – orangish brown, medium dense, moist.

CL

Silty Clay – orangish brown, stiff, moist.

Very stiff.

BORING TERMINATED @ 31.5' ON 7/20/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
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LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-6.2

GEOTECHNICAL TEST DATA

BORING B-7

SURFACE ELEVATION: 52.2' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0					14.7	113.2
5	SA HA	67.5	34	17	16.7	
10	DS				15.7	106.2
15	SA HA	29.3	24	6	6.5	
20						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

17

8

29

23

SYMBOL

USCS

DESCRIPTION

AC	3" Asphalt Concrete Surface.
CL	Fill: Gravelly Clay - yellowish brown, stiff, moist.
CL	Old Alluvium: Sandy Clayey Silt - yellowish brown, stiff, trace fine gravel, slightly moist.
	Orangish brown, moist, medium stiff to stiff.
	Very stiff.
SC	Clayey Silty Sand - orangish brown, medium dense, moist.

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LOG OF BORING

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JOB NO.: 66926

PLATE A-7.1

GEOTECHNICAL TEST DATA

BORING B-7 (Continued)

SURFACE ELEVATION: 52.2' (MSL)

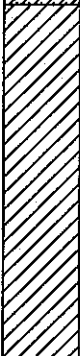
DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
-20	DS				18.5	92.8
-25	SA HA	43.2			10.4	
-30	DS CONSOL				18.4	103.3
-35						
-40						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

27		SC	Clayey Silty Sand - orangish brown, medium dense, moist.
20		CL	Sandy Clayey Silt - orangish brown, very stiff, moist.

BORING TERMINATED @ 31.5' ON 7/20/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
LOGGED BY C. LARKIN

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PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-7.2

GEOTECHNICAL TEST DATA

BORING B-8

SURFACE ELEVATION: 46.6' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0						
					10.4	
5	DS CONSOL		43	28	17.7	109.2
10	SA HA	75.6			20.2	
15	DS CONSOL				11.3	111.2
20						

BLOWS/FT

SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

	AC	4" Asphalt Concrete Surface.
	CL	Fill: Gravelly Clay - yellowish brown, stiff, moist.
	CL	Old Alluvium: Sandy Clayey Silt - yellowish brown, very stiff, slightly moist.
		Stiff.
	SC	Clayey Silty Sand - orangish brown, medium dense, trace gravel, moist.

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LOG OF BORING

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JOB NO.: 66926

PLATE A-8.1

GEOTECHNICAL TEST DATA

BORING B-8 (Continued)

SURFACE ELEVATION: 46.6' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
20					12.2	
25	DS CONSOL				15.0	106.8
30					15.7	
35						
40						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

17

37

25

SYMBOL

USCS

DESCRIPTION

	SC	Clayey Silty Sand - orangish brown, medium dense, trace gravel, moist.
	CL	Sandy Clayey Silt - orangish brown, very stiff, moist.
		Yellowish brown.

BORING TERMINATED @ 31.5' ON 7/20/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
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PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-8.2

GEOTECHNICAL TEST DATA

BORING B-9

SURFACE ELEVATION: 47.8' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0					17.4	107.8
5	SA HA	71.4	42	27	18.0	
10					16.8	99.2
15	SA HA	28.8			16.1	
20						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

	AC	4" Asphalt Concrete Surface.
	CL	Fill: Sandy Clayey Silt - dark yellowish brown, stiff, trace gravel, slightly moist.
14	CL	Old Alluvium: Sandy Clayey Silt - dark yellowish brown, stiff, moist.
6		Yellowish brown, medium stiff.
17		Stiff.
18	SC	Clayey Silty Sand - yellowish brown, medium dense, moist.

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SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-9.1

GEOTECHNICAL TEST DATA

BORING B-9 (Continued)

SURFACE ELEVATION: 47.8' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
20					20.4	90.7
25					14.9	
30					9.1	91.6
35						
40						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

20

37

30



CL

SM

Sandy Silty Clay - orangish brown, stiff, moist.

Hard.

Silty Sand - orangish brown, medium dense, trace of fine gravel, moist.

BORING TERMINATED @ 31.5' ON 7/21/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION
UNDER THE SUPERVISION OF CONTRA COSTA COUNTY.
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GEOTECHNICAL INVESTIGATION
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950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-9.2

GEOTECHNICAL TEST DATA

BORING B-10

SURFACE ELEVATION: 48.5' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	BLOWS/FT	SAMPLE	POCKET PEN. (TSF)	SYMBOL	USCS	DESCRIPTION
0											AC	2" Asphalt Concrete Surface.
					9.0		10				CL	Fill: Sandy Clayey Silt - dark yellowish brown, stiff, trace gravel, slightly moist.
											CL	Old Alluvium: Sandy Clayey Silt - dark yellowish brown, stiff, moist.
5					17.4	105.1	15	3.5				Orangish brown.
10			43	25	17.9		20					Yellowish brown, very stiff.
15					11.5	108.5	26				SC	Clayey Silty Sand - yellowish brown, medium dense, moist.
20												

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JOB NO.: 66926

PLATE A-10.1

GEOTECHNICAL TEST DATA

BORING B-10 (Continued)

SURFACE ELEVATION: 48.5' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	BLOWS/FT SAMPLE POCKET PEN. (TSF)	SYMBOL	USCS	DESCRIPTION
20					22.5		14		CL	Sandy Clayey Silt - orangish brown, stiff, slightly moist.
25					15.7	102.7	30	3.25		Very stiff.
30					15.9		22			Wet.
										Groundwater first encountered at 31.5'
35					22.2	100.7	21		CH	Silty Clay - yellowish brown, stiff.
40										

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MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

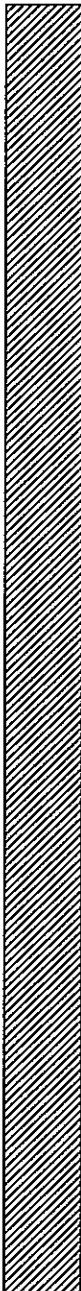
JOB NO.: 66926

PLATE A-10.2

GEOTECHNICAL TEST DATA

BORING B-10 (Continued)

SURFACE ELEVATION: 48.5' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	BLOWS/FT SAMPLE POCKET PEN. (TSF)	SYMBOL	USCS	DESCRIPTION
40					25.7		16 		CH	Silty Clay - yellowish brown, very stiff.
45					27.7	96.3	19 			Stiff.
50					28.6		21 			Very stiff.
55					31.9	89.6	36 			Light brown to olive gray.
60										

GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING
SMITH-EMERY SAN FRANCISCO
JOB NO.: 66926 PLATE A-10.3

GEOTECHNICAL TEST DATA

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0						
5						
10						
15						
20						

BULK
SAMPLE

BLOWS/FT

SAMPLE

POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

	AC	2" Asphalt Concrete Surface.
	CL	Fill: Sandy Clayey Silt - dark yellowish brown, medium stiff, trace gravel, moist.
	CL	Old Alluvium: Sandy Clayey Silt - dark yellowish brown, medium stiff to stiff, moist.
		Orangish brown.

BORING TERMINATED @ 8.5' ON 7/22/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION.
LOGGED BY C. LARKIN

GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-11.1

GEOTECHNICAL TEST DATA

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0						
5						
10						
15						
20						

BLOWS/FT
SAMPLE
POCKET PEN. (TSF)

BULK
SAMPLE



BORING B-12

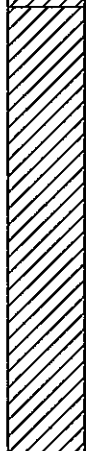
HAND AUGER

SURFACE ELEVATION: 50.2' (MSL)

SYMBOL

USCS

DESCRIPTION

	CL	Fill: Sandy Clayey Silt - dark yellowish brown, medium stiff, slightly moist.
	CL	Old Alluvium: Sandy Clayey Silt - dark yellowish brown medium stiff to stiff, slightly moist.
		Orangish brown.

BORING TERMINATED @ 8.0' ON 7/22/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION.
LOGGED BY C. LARKIN

GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-12.1

GEOTECHNICAL TEST DATA												
DEPTH IN FEET		OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)					
0												
5												
10												
15												
20												
25												
30												
35												
40												
45												
50												
55												
60												
65												
70												
75												
80												
85												
90												
95												
100												

SURFACE ELEVATION: 49.9' (MSL)

USCS

DESCRIPTION

	AC	2" Asphalt Concrete Surface.
	GM	Fill: Silty Gravel with Sand – brown, medium dense, slightly moist.
	CL	Old Alluvium: Sandy Clayey Silt – dark yellowish brown, medium stiff to stiff, slightly moist. Orangish brown.

BORING TERMINATED @ 6.0' ON 7/22/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION.
LOGGED BY C. LARKIN

GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-13.1

GEOTECHNICAL TEST DATA

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0						
5						
10						
15						
20						

BLOWS/FT

SAMPLE

POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

BULK SAMPLE



GM	Fill: Silty Gravel with Sand - brown, dry.
CL	Old Alluvium: Sandy Clayey Silt - dark yellowish brown, medium stiff to stiff, slightly moist.
	Orangish brown.
	Tan with traces of caliche.

BORING TERMINATED @ 8.0' ON 7/22/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION.
LOGGED BY C. LARKIN

GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-14.1

GEOTECHNICAL TEST DATA

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0						
5						
10						
15						
20						

BULK
SAMPLE



BORING B-15

HAND AUGER

SURFACE ELEVATION: 46.3' (MSL)

BLOWS/FT

SAMPLE

POCKET PEN. (TSF)

SYMBOL

USCS

DESCRIPTION

	CL	Fill: Sandy Clayey Silt - brown, medium stiff, trace gravel, moist.
	CL	Old Alluvium: Sandy Clayey Silt - dark yellowish brown, medium stiff to stiff, moist.
		
		
		
		Orangish brown.

BORING TERMINATED @ 6.5' ON 7/22/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION.
LOGGED BY C. LARKIN

GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-15.1

GEOTECHNICAL TEST DATA

BORING B-16

HAND AUGER

SURFACE ELEVATION: 44.8' (MSL)

DEPTH IN FEET	OTHER TESTS	% PASSING #200	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
0						
5						
10						
15						
20						

BLOWS/FT

SAMPLE

POCKET PEN. (TSF)

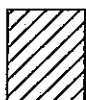
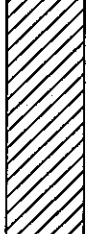
SYMBOL

USCS

DESCRIPTION

BULK
SAMPLE



	CL	Fill: Sandy Clayey Silt - dark yellowish brown, medium stiff to stiff, moist.
	CL	Old Alluvium: Sandy Clayey Silt - dark yellowish brown, medium stiff to stiff, moist.
		Orangish brown.

BORING TERMINATED @ 6.5' ON 7/22/11.
GROUTED WITH NEAT CEMENT UPON COMPLETION.
LOGGED BY C. LARKIN

GEOTECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

LOG OF BORING

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-16.1

MAJOR SUBDIVISIONS			GROUP SYMBOL	MAJOR SUBDIVISIONS		
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION <u>RETAINED</u> FRACTION ON A NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	
				GP	POORLY GRADED GRAVELS, OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES.	
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES.	
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.	
				SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.	
	MORE THAN 50% OF MATERIAL IS <u>LARGER</u> THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION <u>PASSING</u> A NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES.
					SC	CLAYEY SANDS, SAND-CLAY MIXTURES.
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT <u>LESS</u> THAN 50.		ML	INORGANIC SILTS, SANDY SILTS, AND CLAYEY SILTS OF LOW PLASTICITY.	
				CL	INORGANIC CLAYS OF LOW TO MED. PLASTICITY; GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS.	
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.	
	SILTS AND CLAYS	LIQUID LIMIT <u>GREATER</u> THAN 50.		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS. PLASTIC SILTS.	
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.	
				OH	ORGANIC CLAYS AND SILTY CLAYS OF MEDIUM TO HIGH PLASTICITY.	
HIGHLY ORGANIC SOILS				PT	PEAT AND OTHER HIGHLY ORGANIC SOILS.	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE CLASSIFICATIONS

SOIL CLASSIFICATION CHART

GEO TECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

UNIFIED SOIL CLASSIFICATION SYSTEM

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-18

KEY TO LOG OF BORINGS

SYMBOL	TYPE OF TEST	KEY TO SAMPLES
COMP	COMPACTION CHARACTERISTICS	 INDICATES DEPTH OF UNDISTURBED SAMPLE, MODIFIED CALIFORNIA SAMPLER (2.0" I.D.)
TX	TRIAXIAL COMPRESSION TEST	
DS	DIRECT SHEAR TEST	
UC	UNCONFINED COMPRESSION TEST	 INDICATES DEPTH OF STANDARD PENETRATION TEST (SPT), (1.4" I.D.)
CONSOL	CONSOLIDATION TEST	
COLL	COLLAPSE TEST	
EXP	PERCENT EXPANSION	 INDICATES DEPTH OF BULK SAMPLE
EI	EXPANSION INDEX	
SA	SIEVE ANALYSIS (+ #200 ONLY)	
-200	% PASSING #200 SIEVE	 INDICATES DEPTH OF SAMPLE ATTEMPT W/NO RECOVERY
HA	HYDROMETER ANALYSIS (- #200 ONLY)	
AL	ATTERBERG LIMITS	
SE	SAND EQUIVALENT	
P	PERMEABILITY	
R	R-VALUE	
Gs	SPECIFIC GRAVITY	
S	SOLUBLE SULFATES	
CH	HYDROGEN ION CONTENT	
RE	RESISTIVITY	
CL	CHLORIDE	
PTV	POCKET TORQUE VANE	
PID	PHOTO IONIZATION DETECTOR	

NOTE ON SAMPLERS:

Undisturbed samples were obtained by manually driving a steel sampler having an I.D. of 2.0 or 1.4 inches. Unless practical refusal was encountered, the sampler was driven 18 inches into the soil using a 140 pound slide hammer falling 30 inches.

NOTES:

The descriptions on the boring logs apply only at the specific boring locations and at the time the borings were made. They are not warranted to be representative of subsurface conditions. Soil and rock descriptions are based on commonly accepted geotechnical methods of identification and classification and are based on our professional judgment and experience. Field descriptions have been modified where appropriate to reflect laboratory test results. The stratification of soil layers is represented with approximate boundaries and the transition between soil types may be gradual.

Groundwater depths indicated on boring logs are specific to the time of drilling. The term "encountered" refers to the level at which free water was first noticed in the boring. The term "stabilized" refers to the level of the water after a lapse of at least one hour.

GEO TECHNICAL INVESTIGATION
MARTIN LUTHER KING JR. JUNIOR HIGH SCHOOL
950 EL PUEBLO AVENUE
PITTSBURG, CALIFORNIA

KEY TO LOG OF BORINGS

SMITH-EMERY SAN FRANCISCO

JOB NO.: 66926

PLATE A-19

Martin Luther King, Jr. High School
950 El Pueblo Avenue
Pittsburg, California

SESF File No. 66926
SESF Report No: 11-257
August 16, 2011

SMITH-EMERY SAN FRANCISCO

APPENDIX B

GEOTECHNICAL LABORATORY TESTING

SMITH-EMERY SAN FRANCISCO

APPENDIX B

GEOTECHNICAL LABORATORY TESTING

GENERAL

Laboratory tests were performed on selected intact and bulk soil samples to classify the soils encountered and evaluate their physical and engineering properties. Laboratory work included soil moisture and density testing, direct shear strength testing, consolidation testing, hydrometer and sieve analyses, corrosivity analysis, and maximum density testing.

MOISTURE & DENSITY TESTING

Testing for in-situ moisture content and dry density was performed on all intact undisturbed soil samples. Moisture content was expressed as a percentage of the dry soil weight. Testing was performed in accordance with ASTM D 2216 test method using a drying oven maintained at 110 degrees centigrade. The results of these tests are presented in the boring logs, Plates A-2.1 through A-17.1.

ATTERBERG LIMITS TESTING

In order to verify the classification of typical clayey soils, liquid and plastic limits were determined in accordance with ASTM D 4318-10. The test results are shown plotted in the Plasticity Charts, Plates B-1.1 through B-1.13.

SMITH-EMERY SAN FRANCISCO

PARTICLE SIZE ANALYSIS

The distribution of particle size on typical soil strata was determined in accordance with ASTM D422-63 (Re-approved 2007). The results are shown on Plates B-2.1 through 2.19. Soil fraction passing the No. 200 sieve derived from the grain size distribution plots are shown in the boring logs.

CONSOLIDATION TEST

Consolidation testing was performed on selected soil samples in accordance with the ASTM D 2435-03 test method. The samples were loaded in geometric progression where each subsequent load increment was twice the previous load. The next increment was applied only after there was no apparent increase in settlement has occurred under said load. The test sample was inundated at the load increment indicated on the plot of test results, to ascertain the effect of saturation on soil compressibility. The test results are plotted on Plates B-3.1 through B-3.11.

DIRECT SHEAR TESTS

Direct shear tests were performed on selected intact soil samples to determine their drained shear strength envelope at yield strain. The tests were performed in accordance with ASTM D 3080-03. The results of these tests are shown on Plate B-4.

EXPANSION INDEX TESTING

Expansion index testing was performed on a typical clay sample in Boring 1 encountered 3 to 12 feet below the existing ground surface. The test, performed in accordance with ASTM D 4829, yielded an expansion index of 81, thus classifying said soil as medium expansive.

SMITH-EMERY SAN FRANCISCO

CORROSION SERIES

The results of analytical testing to determine soil pH, soluble chloride and sulfate contents, and minimum resistivity are presented on Plate 5.

COMPACTION TEST

The maximum dry density and optimum moisture contents of two typical soils obtained from the upper 6 feet were determined in accordance with ASTM D1557-09, the five layer method. The results of testing are as shown in the table:

Soil Type	Boring No. & Depth (feet)	Maximum Dry Density	Optimum Moisture Content (%)
FILL: SANDY CLAYEY SILT	B-11 TO B-17 @ 1'-4'	119.6	11.5



SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

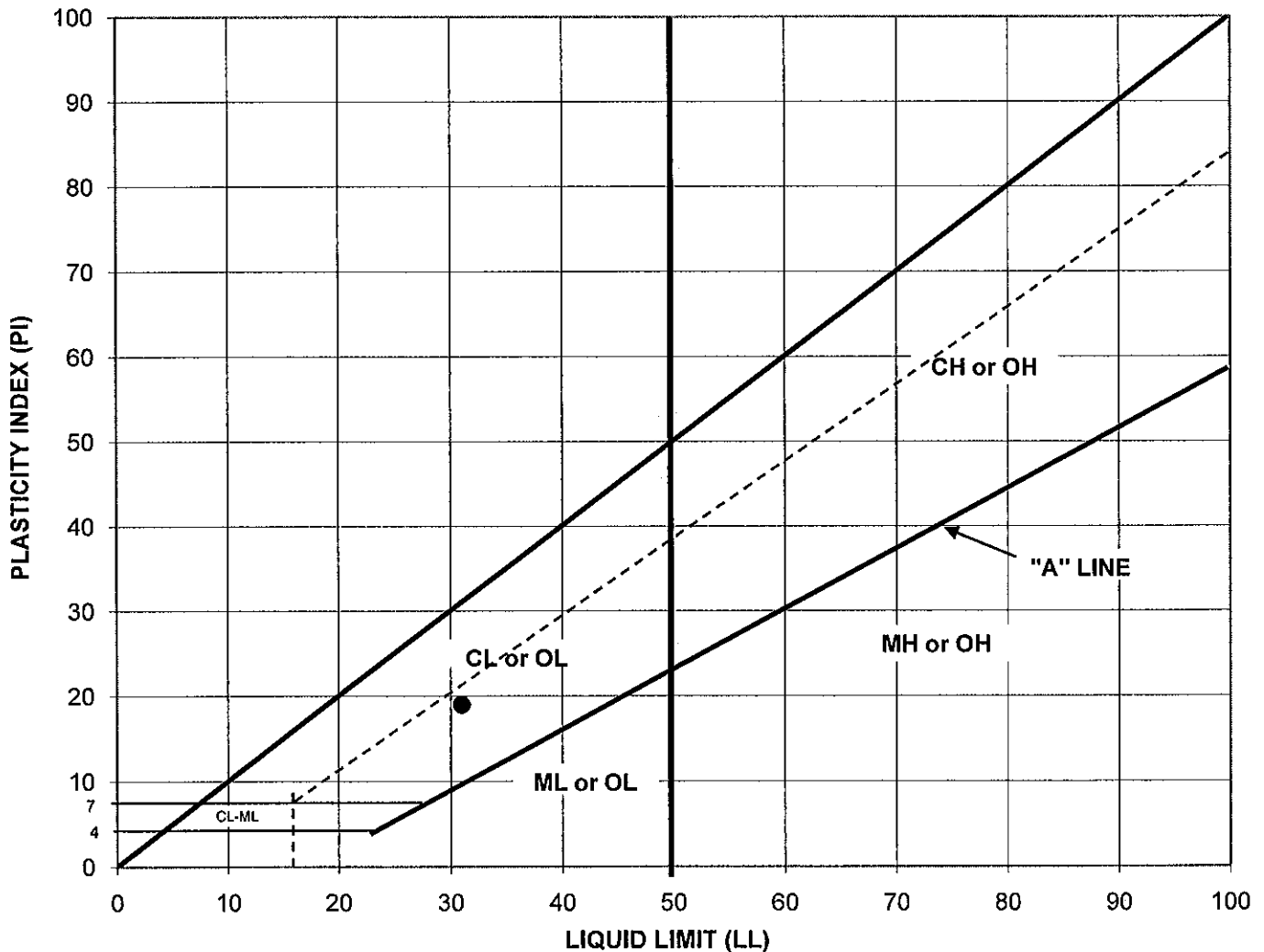
Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Grayish brown SANDY CLAYEY SILT
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6

Lab. Ref. No.: 351
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 7/21/11
Date Sampled: 7/18/11
Date Received: 7/19/11
Sampled by: SE San Francis

Bore Hole No.: 1 Sample No.: 1C Depth (ft): 2.0-2.5

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
33	14	19	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





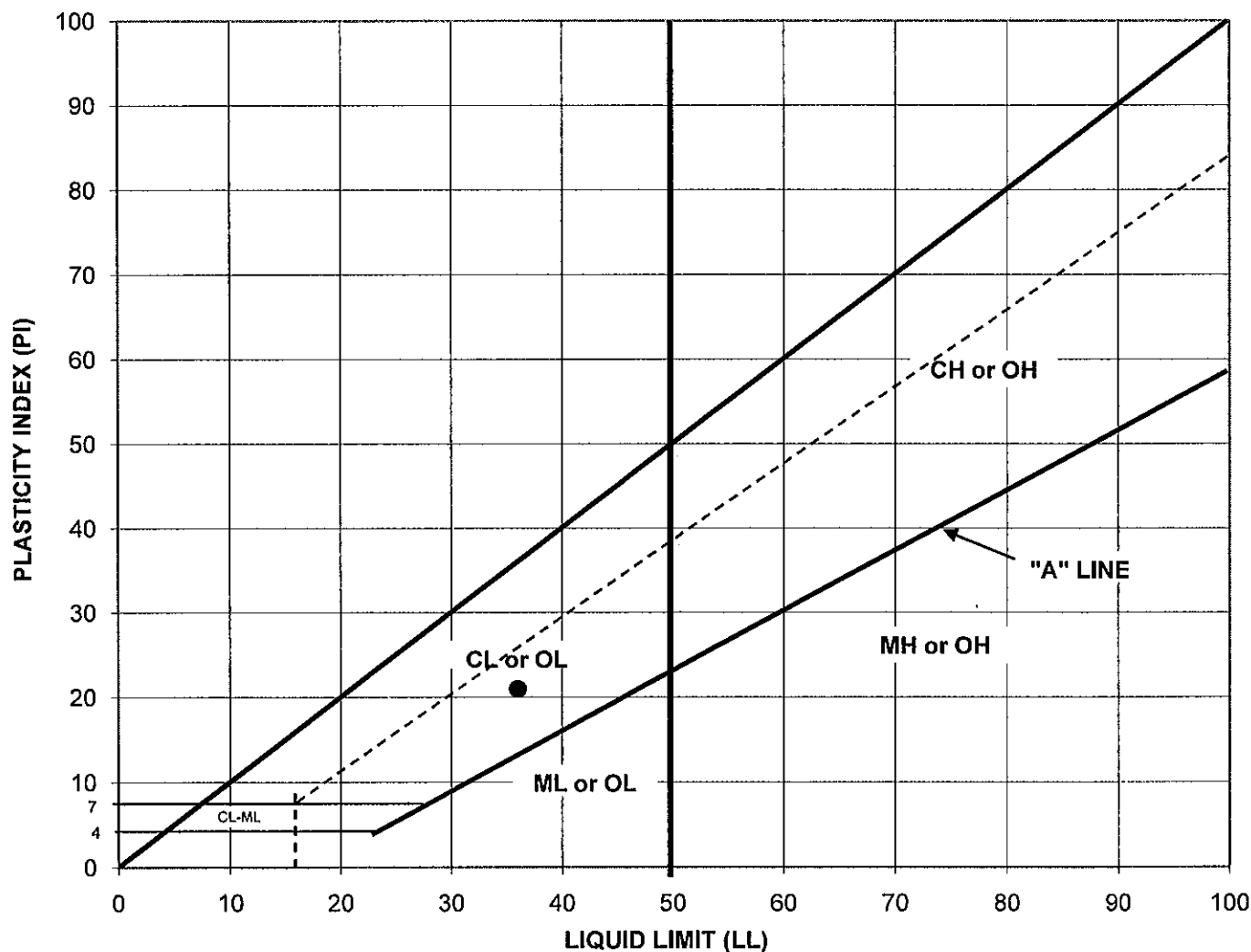
SMITH-EMERY Laboratories Liquid Limit, Plastic Limit, and Plasticity Index ASTM D4318-05

Client: Pittsburg Unified School District
 Project: Martin Luther King Jr., Junior High School
 Location: Pittsburg, CA
 Material Description: Yellowish Brown SANDY CLAYEY SILT
 Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: #6
 Bore Hole No.: 3 Sample No.: 2B Depth (ft): 5.5-6.0

Lab. Ref. No.: 353
 SESF Report No.: 11-257
 SESF File No.: 66926
 Date Tested: 7/27/11
 Date Sampled: 7/19/11
 Date Received: 7/21/11
 Sampled by: SE San Francis

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet $\leq$ 0.75	
36	15	21	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





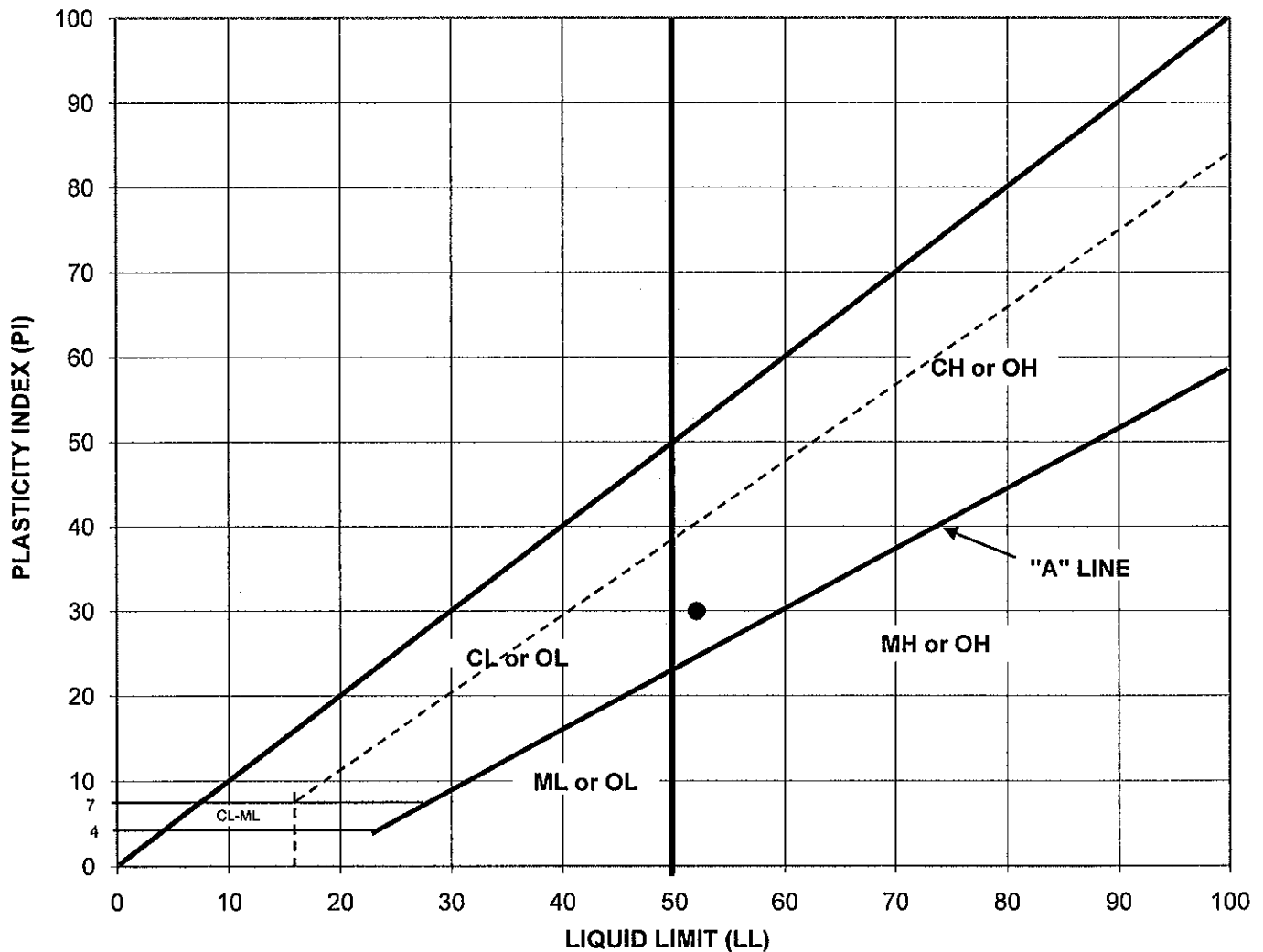
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Orangish brown SANDY SILTY CLAY
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: #6
Bore Hole No.: 3 Sample No.: 5 Depth (ft): 20.0-21.5

Lab. Ref. No.: 353
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 7/28/11
Date Sampled: 7/19/11
Date Received: 7/20/11
Sampled by: SE San Francisco

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
52	22	30	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





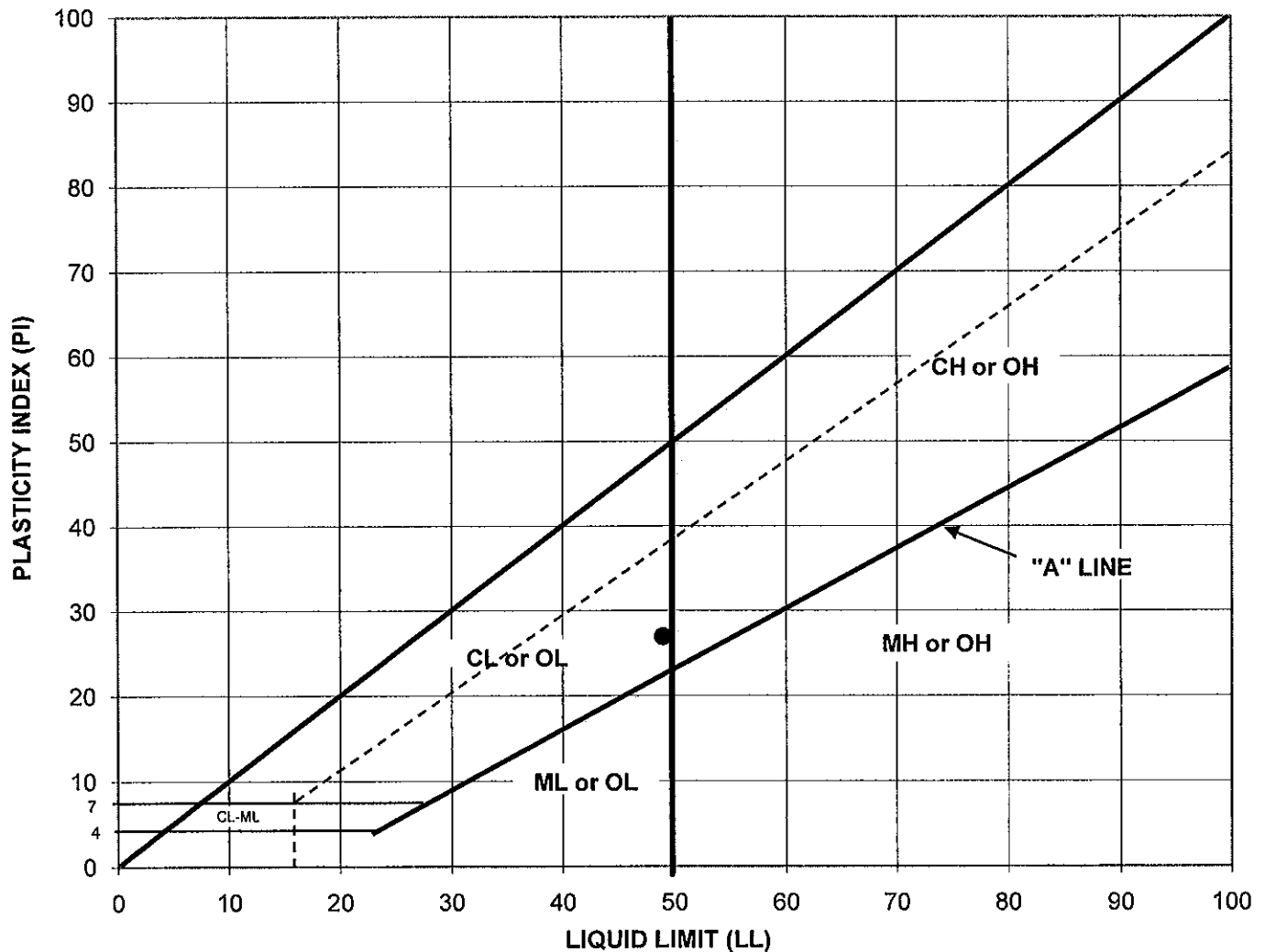
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Orangish brown SANDY CLAYEY SILT
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6
Bore Hole No.: 3 Sample No.: 6B Depth (ft): 25.5-26.0

Lab. Ref. No.: 354
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 7/28/11
Date Sampled: 7/19/11
Date Received: 7/20/11
Sampled by: SE San Francis

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
49	22	27	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





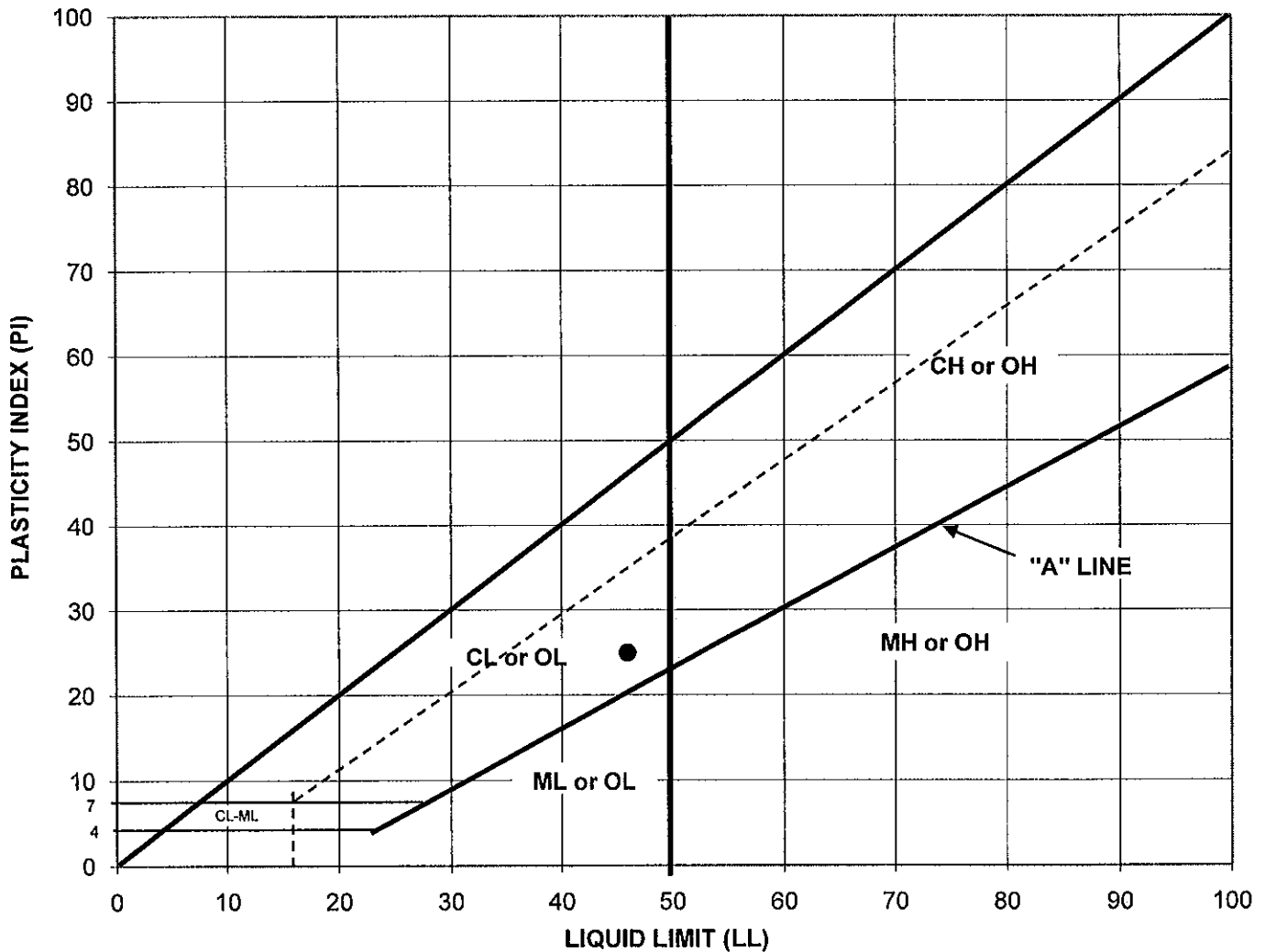
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Yellowish brown SANDY CLAYEY SILT
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6
Bore Hole No.: 4 Sample No.: 7 Depth (ft): 31.0-31.5

Lab. Ref. No.: 354
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 7/29/11
Date Sampled: 7/19/11
Date Received: 7/20/11
Sampled by: SE San Francis

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
46	21	25	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

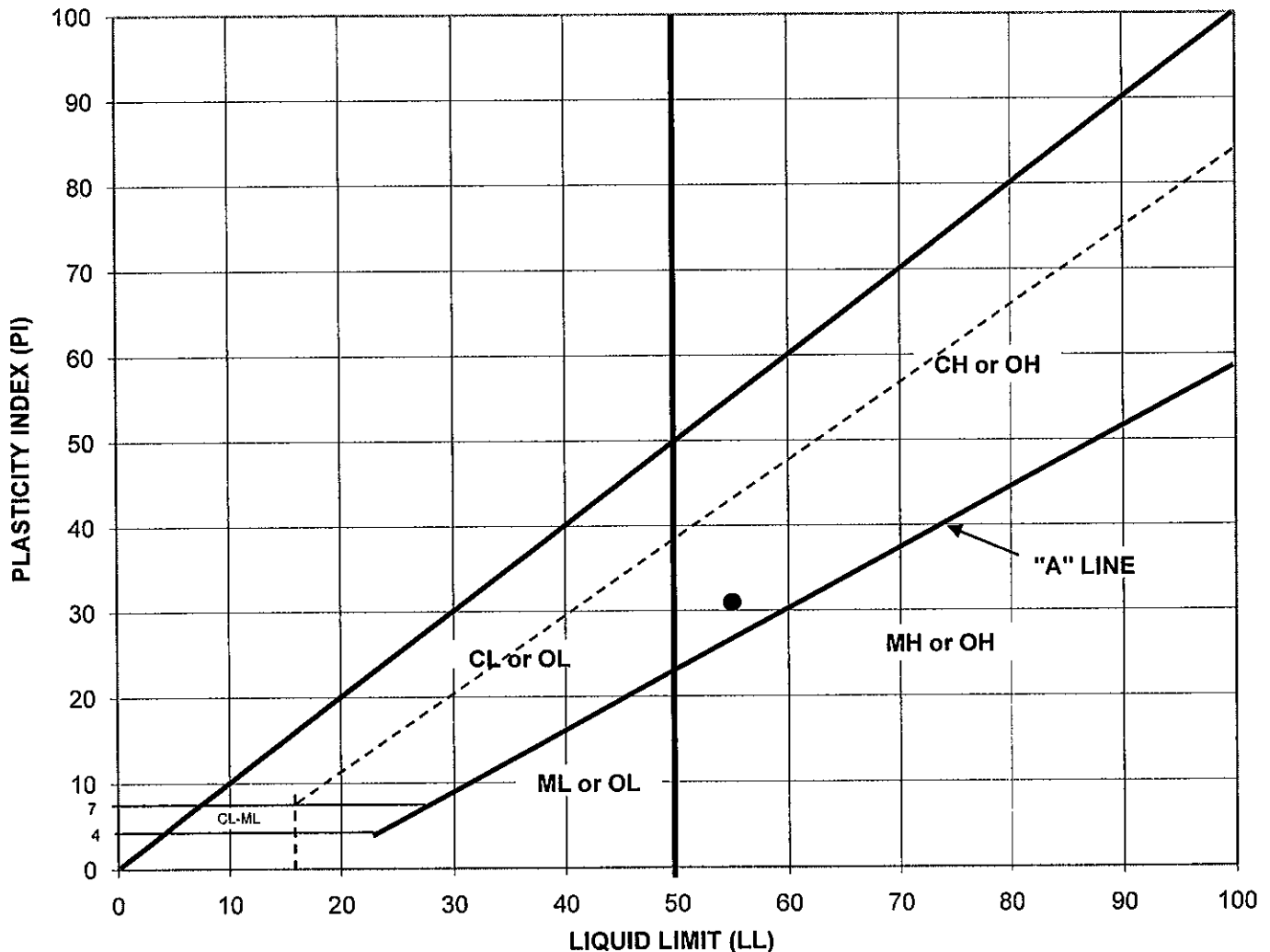
Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Yellowish brown SILTY CLAY
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6

Lab. Ref. No.: 355
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 7/29/11
Date Sampled: 7/19/11
Date Received: 7/20/11
Sampled by: SE San Francis

Bore Hole No.: 5 Sample No.: 8 Depth (ft): 35.0-36.5

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
55	24	31	0	0.00	Organic ☐ Inorganic ☐	CH

PLASTICITY CHART





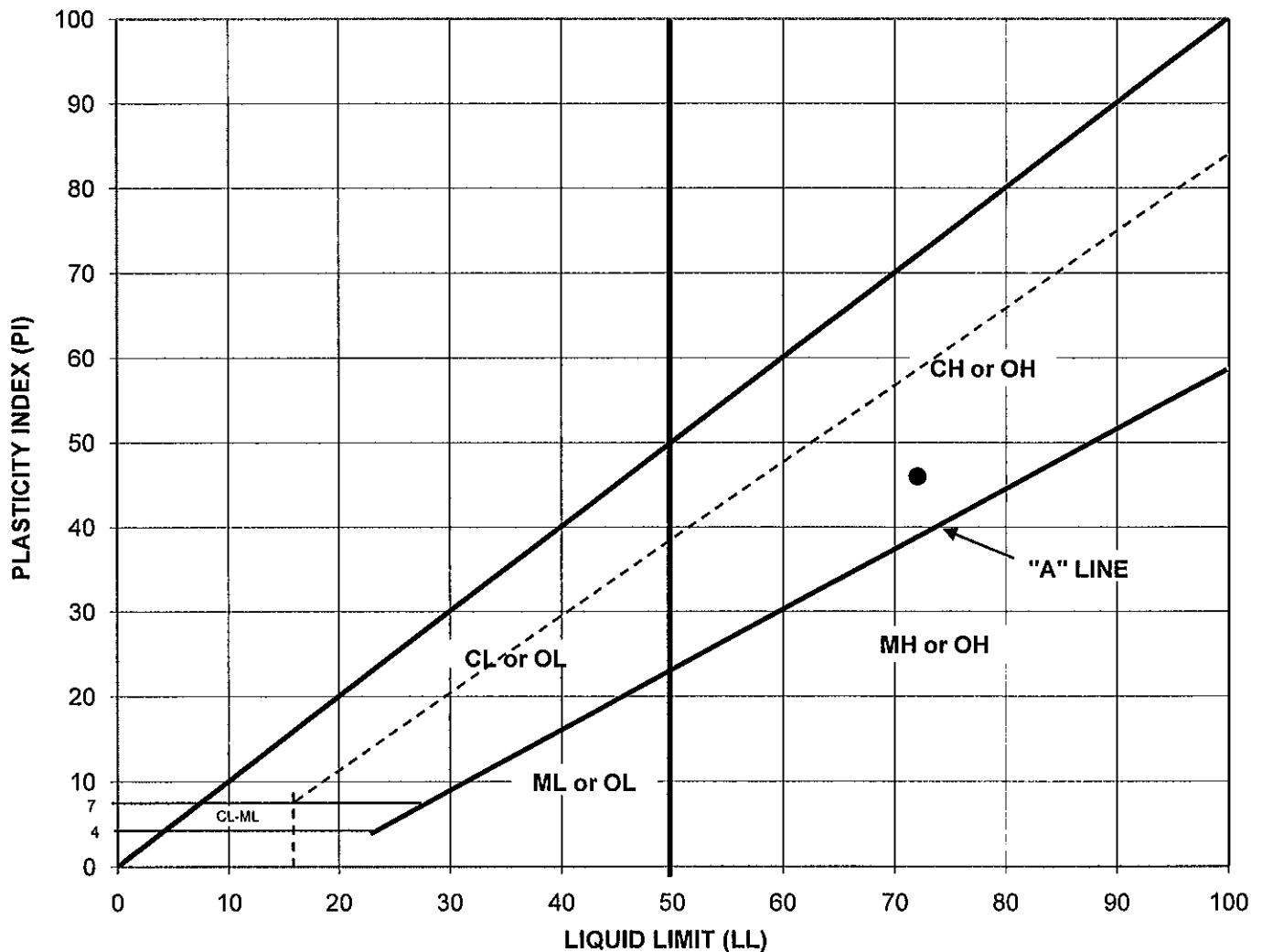
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Yellowish brown SILTY CLAY
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6
Bore Hole No.: 5 Sample No.: 10 Depth (ft): 45.0-46.5

Lab. Ref. No.: 355
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 8/2/11
Date Sampled: 7/20/11
Date Received: 7/21/11
Sampled by: SE San Francis

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet $\leq$ 0.75	
72	26	46	0	0.00	Organic ☐ Inorganic ☐	CH

PLASTICITY CHART





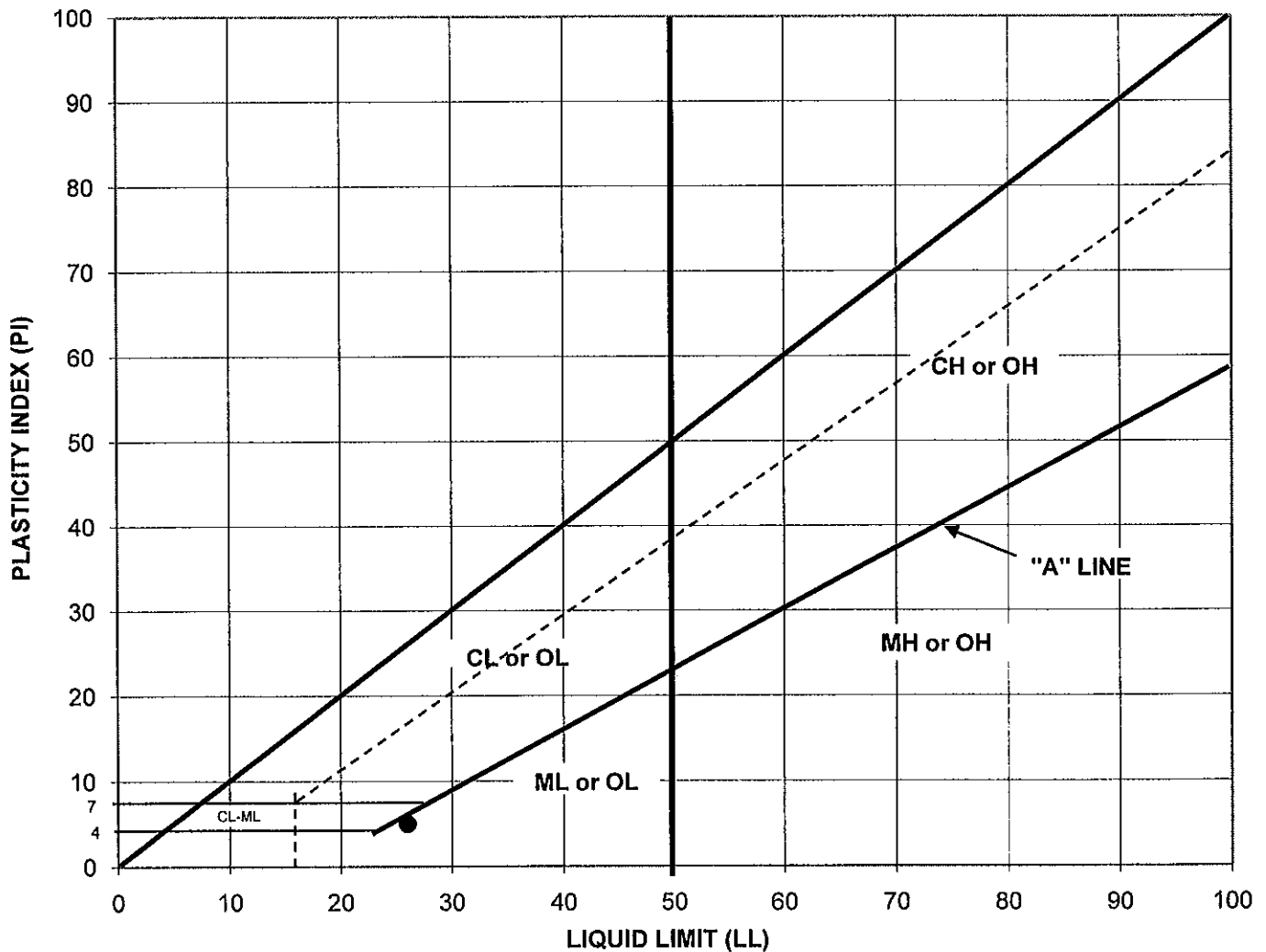
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Orangish brown CLAYEY SILTY SAND
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6
Bore Hole No.: 6 Sample No.: 6B Depth (ft): 25.5-26.0

Lab. Ref. No.: 356
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 8/2/11
Date Sampled: 7/20/11
Date Received: 7/21/11
Sampled by: SE San Francis

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
26	21	5	0	0.00	Organic ☐ Inorganic ☐	SC

PLASTICITY CHART





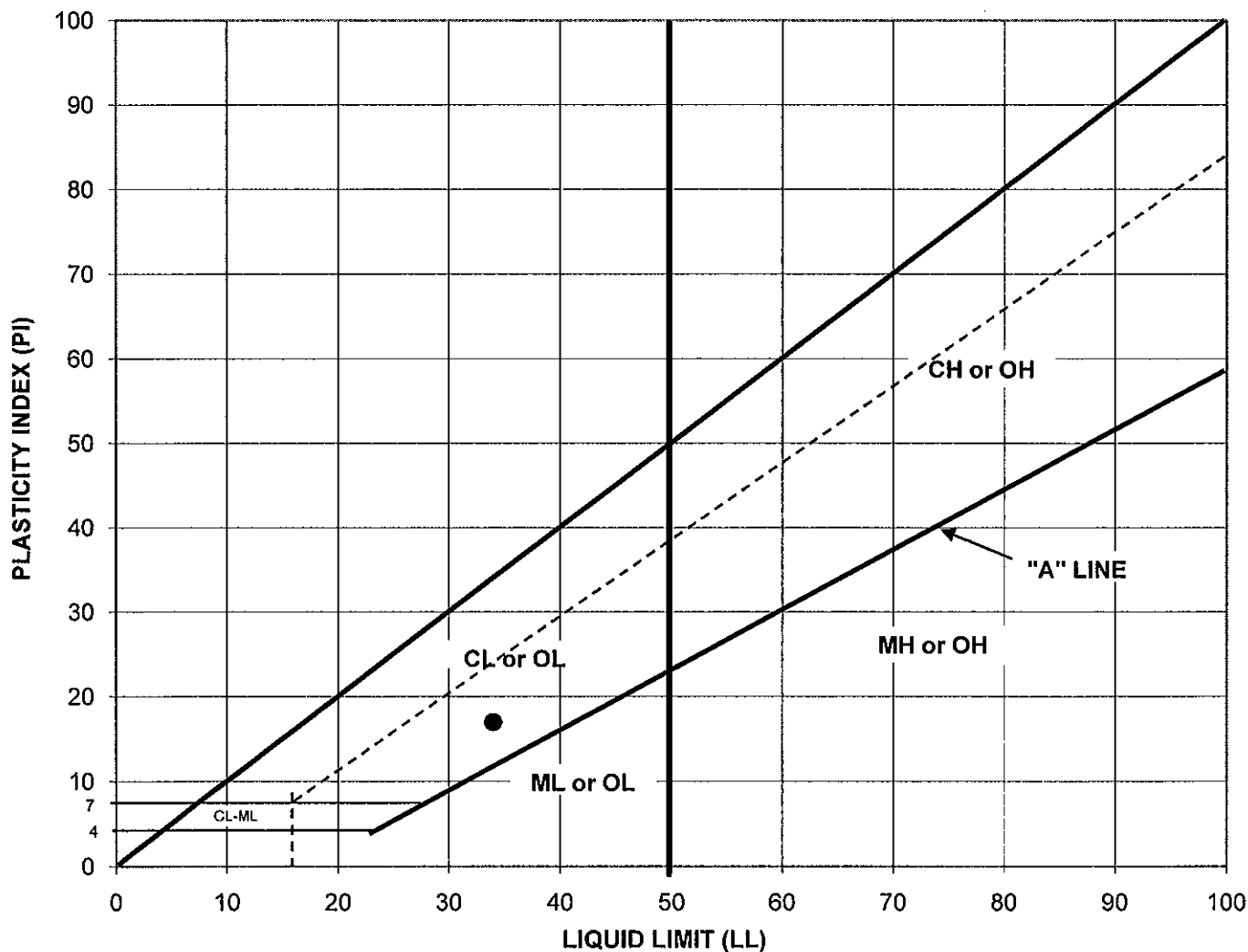
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Orangish Brown SANDY SILTY CLAY
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: #6
Bore Hole No.: 7 Sample No.: 2 Depth (ft): 5.0-6.5

Lab. Ref. No.: 359
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 7/27/11
Date Sampled: 7/20/11
Date Received: 7/21/11
Sampled by: SE San Francisco

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
34	17	17	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





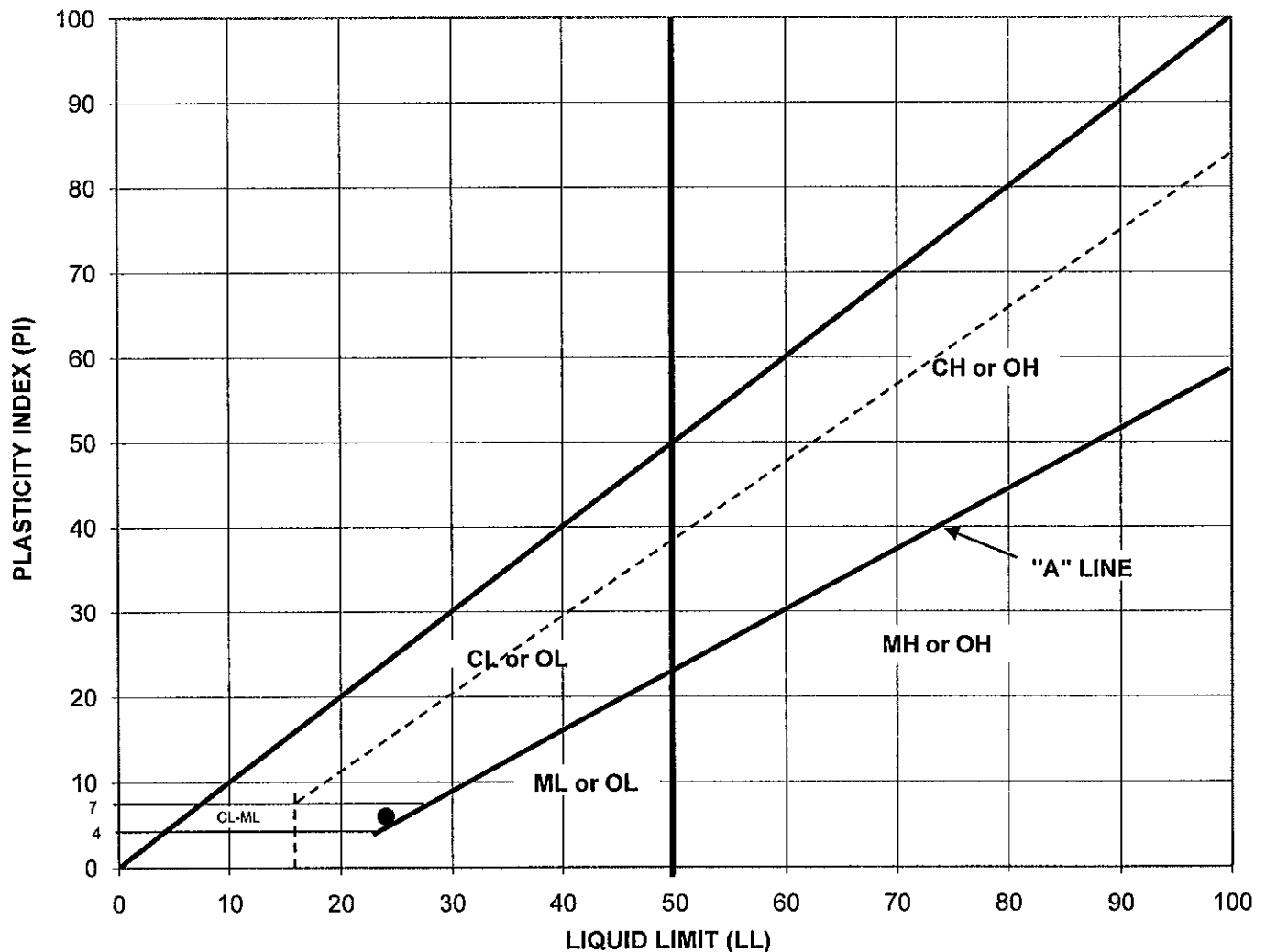
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Orangish Brown CLAYEY SILTY SAND
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6
Bore Hole No.: 7 Sample No.: 4 Depth (ft): 15.0-16.5

Lab. Ref. No.: 359
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 8/1/11
Date Sampled: 7/20/11
Date Received: 7/21/11
Sampled by: SE San Francis

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
24	18	6	0	0.00	Organic ☐ Inorganic ☐	SC

PLASTICITY CHART





SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

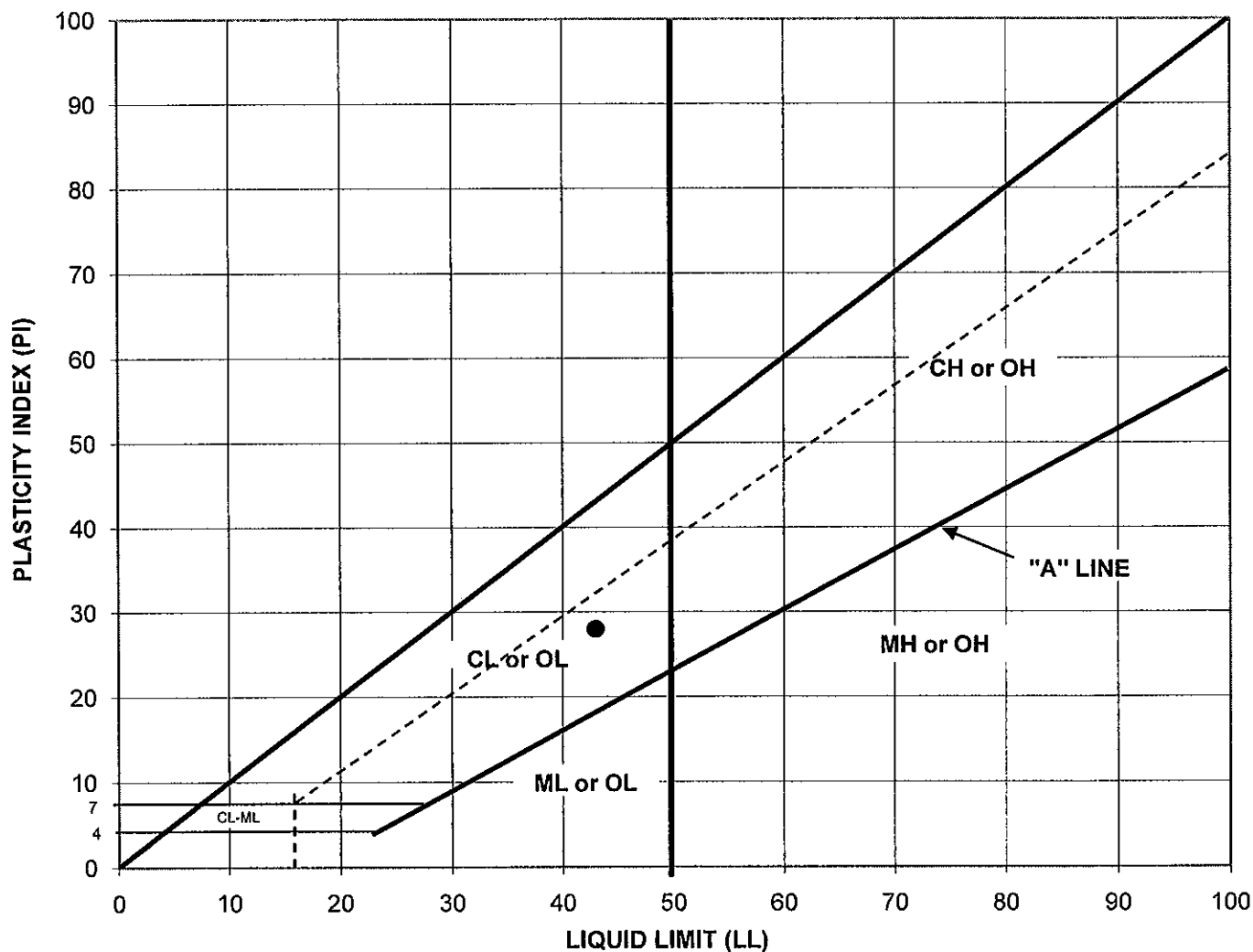
Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Yellowish brown SANDY SILTY CLAY
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6

Lab. Ref. No.: 360
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 7/27/11
Date Sampled: 7/20/11
Date Received: 7/21/11
Sampled by: SE San Francis

Bore Hole No.: 8 Sample No.: 2B Depth (ft): 5.5-6.0

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
43	15	28	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





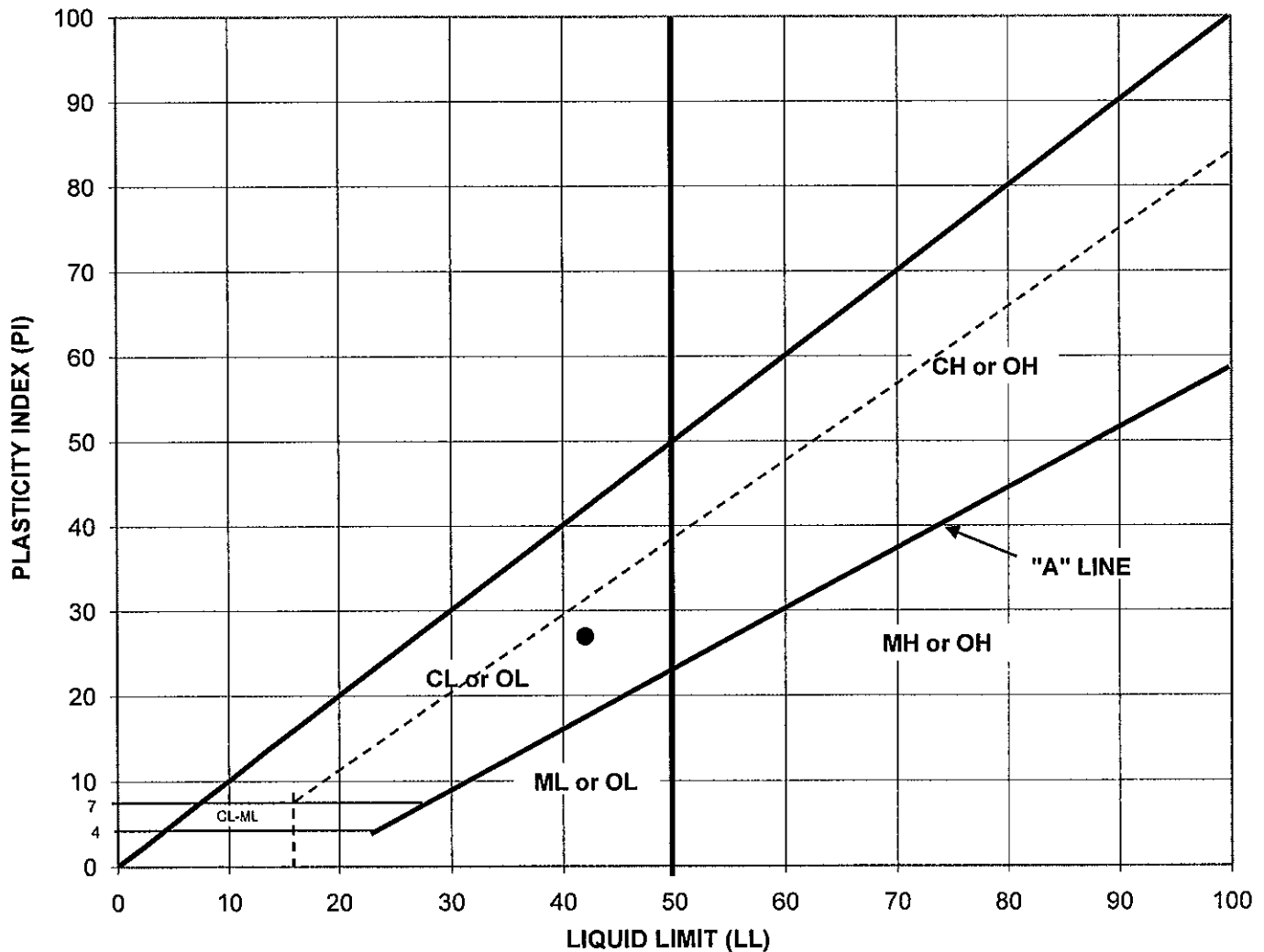
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Yellowish Brown SANDY CLAYEY SILT
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: # 6
Bore Hole No.: 9 Sample No.: 2 Depth (ft): 5.0-6.5

Lab. Ref. No.: 359
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 8/2/11
Date Sampled: 7/20/11
Date Received: 7/21/11
Sampled by: SE San Francis

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
42	15	27	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





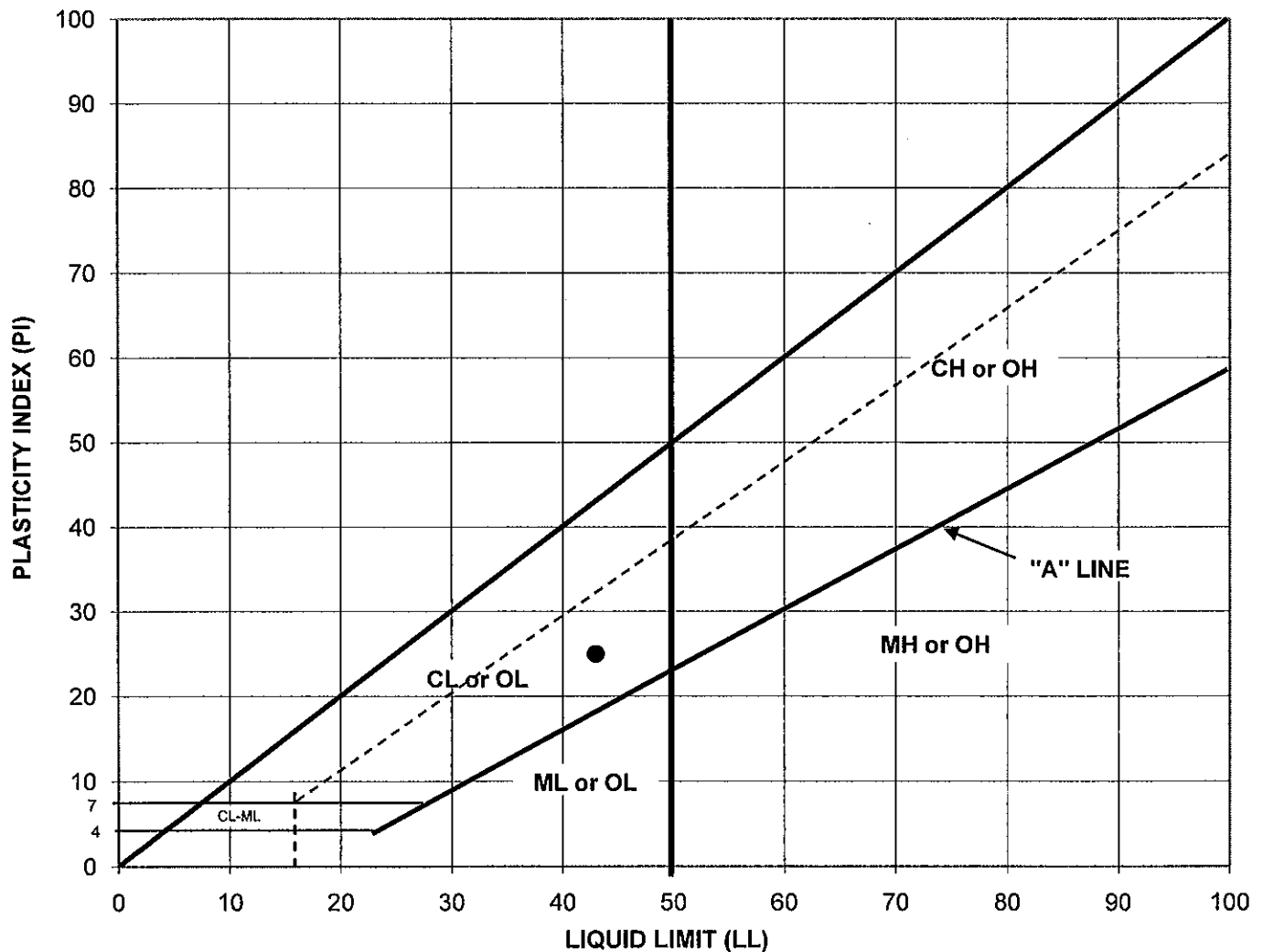
SMITH-EMERY Laboratories
Liquid Limit, Plastic Limit, and Plasticity Index
ASTM D4318-05

Client: Pittsburg Unified School District
Project: Martin Luther King Jr., Junior High School
Location: Pittsburg, CA
Material Description: Yellowish Brown SANDY CLAYEY SILT
Liquid Limit App.: SN 0704 Scale: 15612017 Oven: SQ-2 Grooving Tool: #6
Bore Hole No.: 10 Sample No.: 3 Depth (ft): 10.0-11.5

Lab. Ref. No.: 360
SESF Report No.: 11-257
SESF File No.: 66926
Date Tested: 8/2/11
Date Sampled: 7/20/11
Date Received: 7/21/11
Sampled by: SE San Francis

wet			Oven dried	Result	Remarks	Classification USCS
Liquid Limits	Plastic Limit	Plasticity Index	Liquid Limits	LL oven/LL wet	LL oven/LL wet ≤ 0.75	
43	18	25	0	0.00	Organic ☐ Inorganic ☐	CL

PLASTICITY CHART





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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

Client: **Pittsburg Unified School District**

SESF Report No.: 11-257

Project: **Martin Luther King Jr., Junior High School**

Date: 7/28/11

Location: **Pittsburg, Ca**

Classification: **Yellowish Brown SANDY CLAYEY SILT**

Sp. Gr.: 2.700 assumed

Boring No.: 1

Sample No.: 2A

Depth (ft.): 5.0'-5.5'

Particle Size Distribution

By Percentage Gravel: 0.0

Sand: 23.0

Silt: 39.7

Clay: 37.2

D60: NA

D30: NA

D10: NA

Cu: NA

Cc: NA

LL: NA

PL: NA

PI: NA

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	99
No. 60	95
No. 140	82
No. 200	77

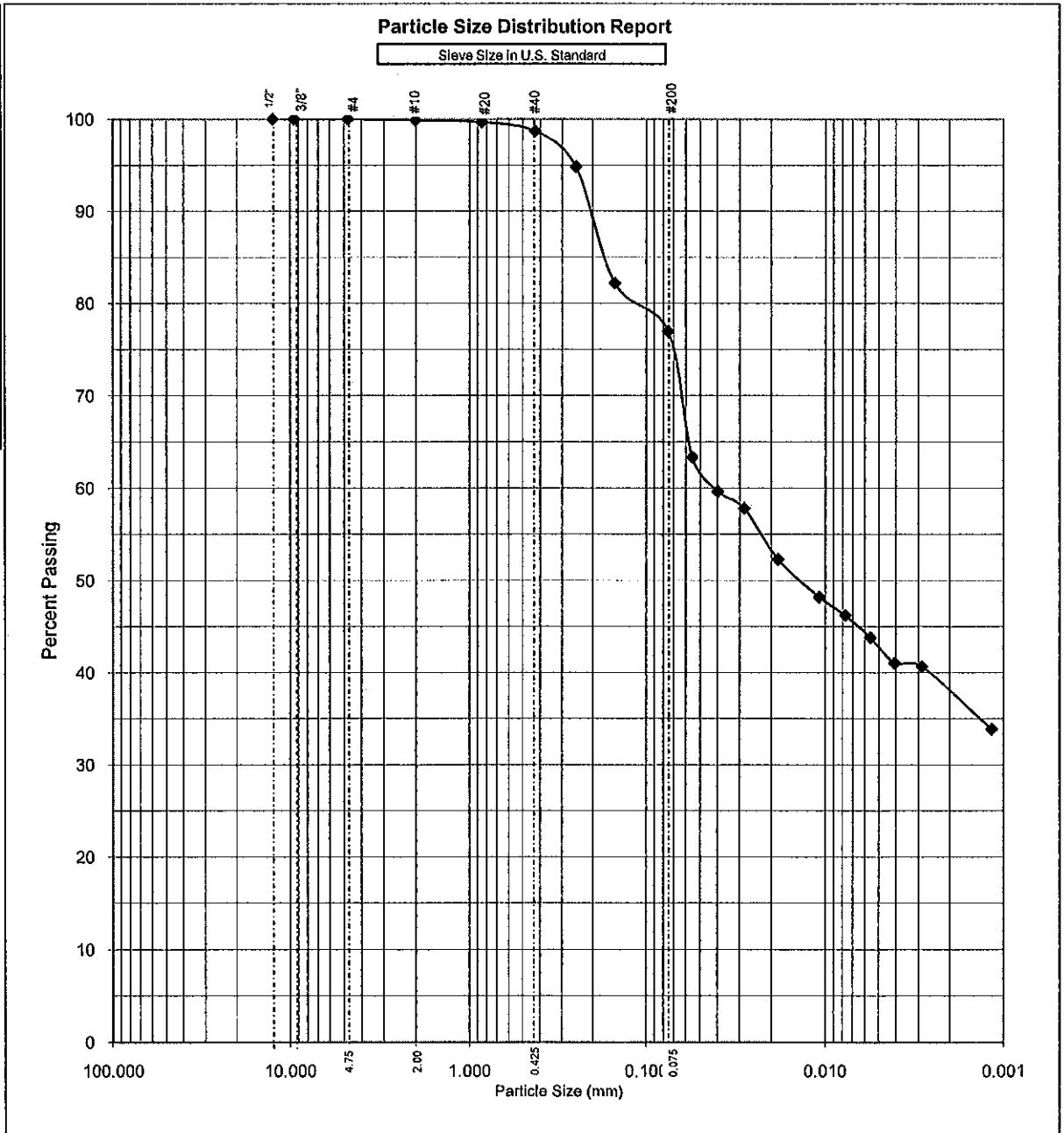


PLATE : B-2.1



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

SESF Report No.: 11-257

Date: 7/28/11

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, Ca**

Classification: **Orangish Brown CLAYEY SILTY SAND**

Sp. Gr.: 2.700 assumed

Boring No.: 1

Sample No.: 4B

Depth (ft.): 15.0'-15.5'

Particle Size Distribution

By Percentage Gravel: 0.0

Sand: 45.3

Silt: 41.1

Clay: 13.6

D60: 0.107

D30: NA

D10: NA

Cu: NA

Cc: NA

LL: NA

PL: NA

PI: NA

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	99
No. 60	95
No. 140	67
No. 200	55

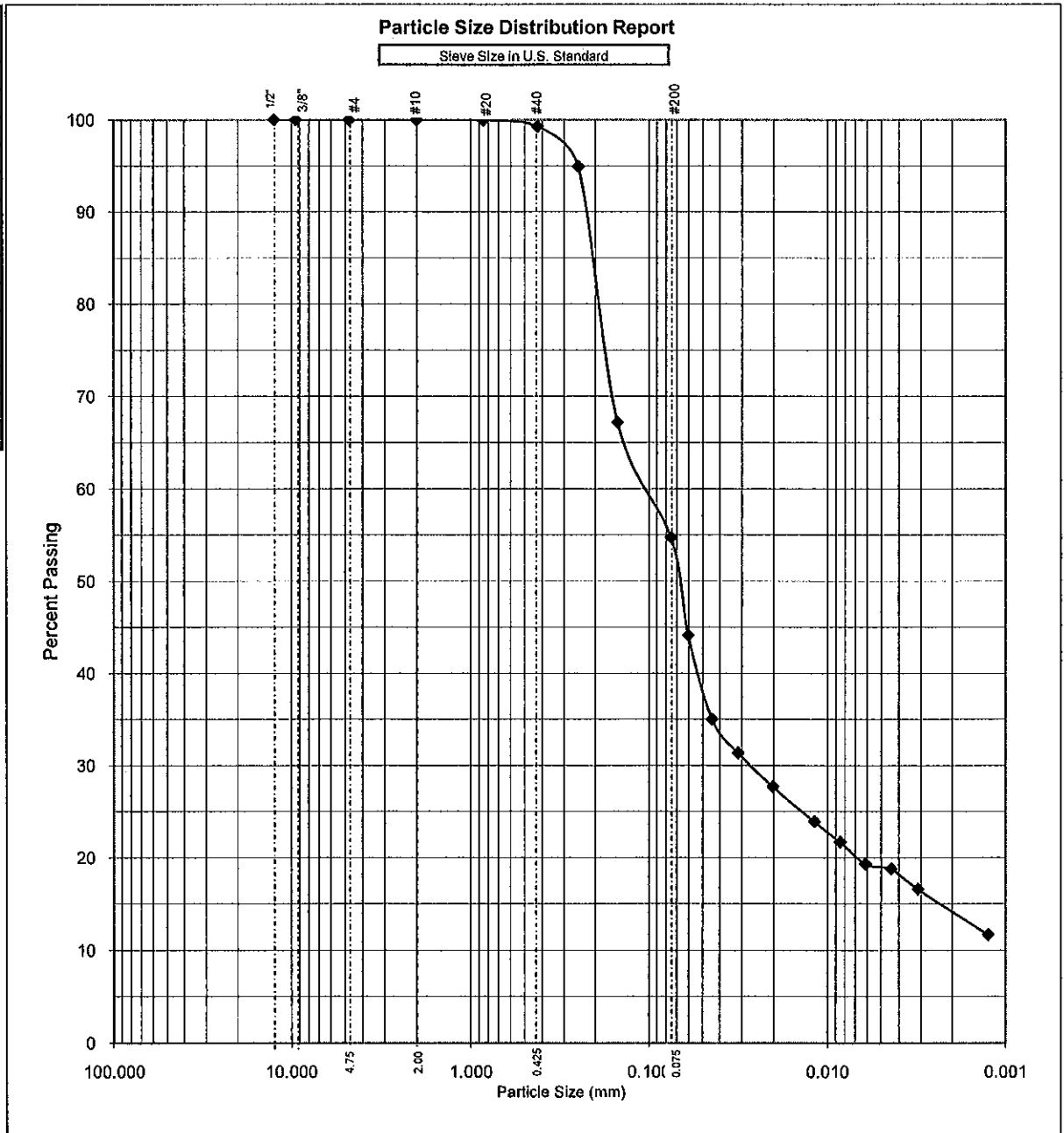


PLATE : B-2.2



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

SESF Report No.: 11-257

Date: 7/28/11

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, Ca**

Classification: **Orangish Brown SANDY CLAYEY SILT**

Sp. Gr.: 2.700 assumed

Boring No.: 2

Sample No.: 5

Depth (ft.): 20.0'-21.5'

Particle Size Distribution

By Percentage Gravel: 0.0

Sand: 25.1

Silt: 55.2

Clay: 19.8

D60: NA

D30: NA

D10: NA

Cu: NA

Cc: NA

LL: NA

PL: NA

PI: NA

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	99
No. 60	94
No. 140	80
No. 200	75

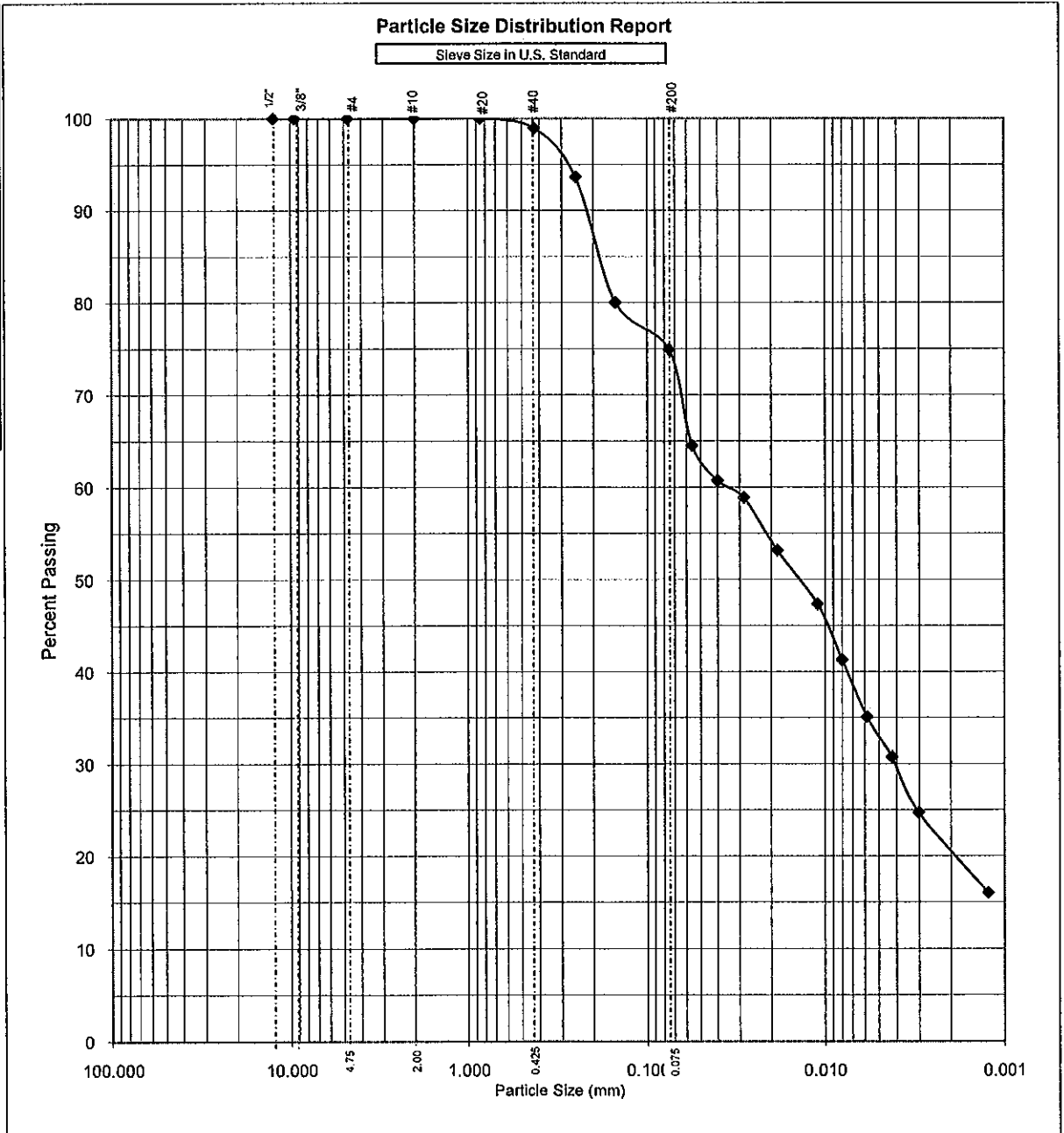


PLATE : B-2.3



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

SESF Report No.: 11-257

Date: 7/28/11

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, Ca**

Classification: **Orangish brown SANDY CLAYEY SILT**

Sp. Gr.: 2.700 assumed

Boring No.: 2

Sample No.: 7

Depth (ft.): 30.0'-31.5'

Particle Size Distribution

By Percentage Gravel: 0.0

Sand: 29.7

Silt: 40.6

Clay: 29.7

D60: #DIV/0!

D30: NA

D10: NA

Cu: NA

Cc: NA

LL: NA

PL: NA

PI: NA

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	99
No. 40	97
No. 60	91
No. 140	76
No. 200	70

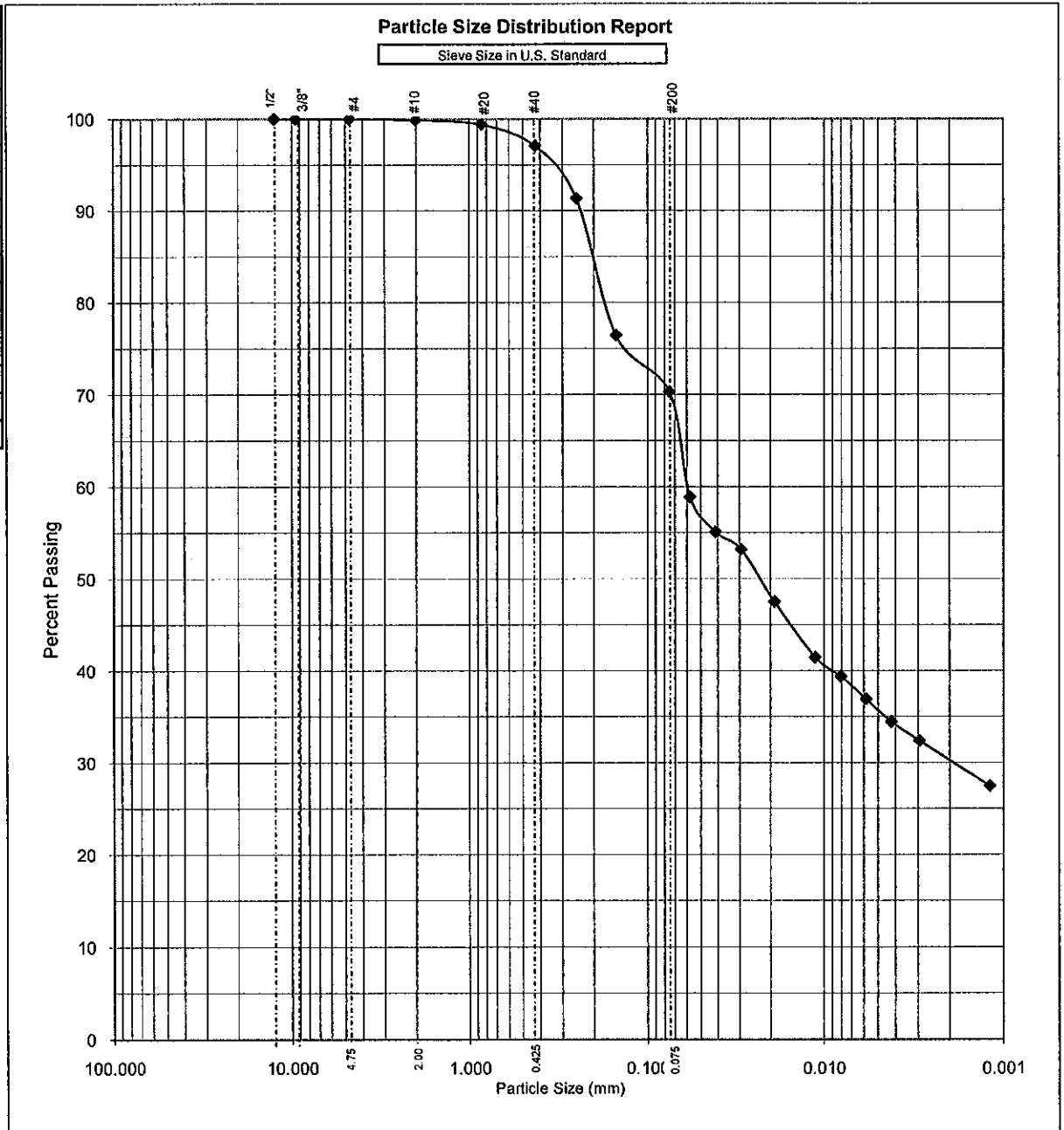


PLATE : B-2.4



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

SESF Report No.: 11-257

Date: 8/1/11

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Yellowish Brown SANDY CLAYEY SILT**

Sp. Gr.: 2.700 assumed

Boring No.: **3**

Sample No.: **2B**

Depth (ft.): **5.5'-6.0'**

Particle Size Distribution

By Percentage Gravel: 0.0

Sand: 40.6

Silt: 34.2

Clay: 25.2

D60: 0.080

D30: NA

D10: NA

Cu: NA

Cc: NA

LL: 36

PL: 15

PI: 21

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	99
No. 20	99
No. 40	98
No. 60	93
No. 140	69
No. 200	59

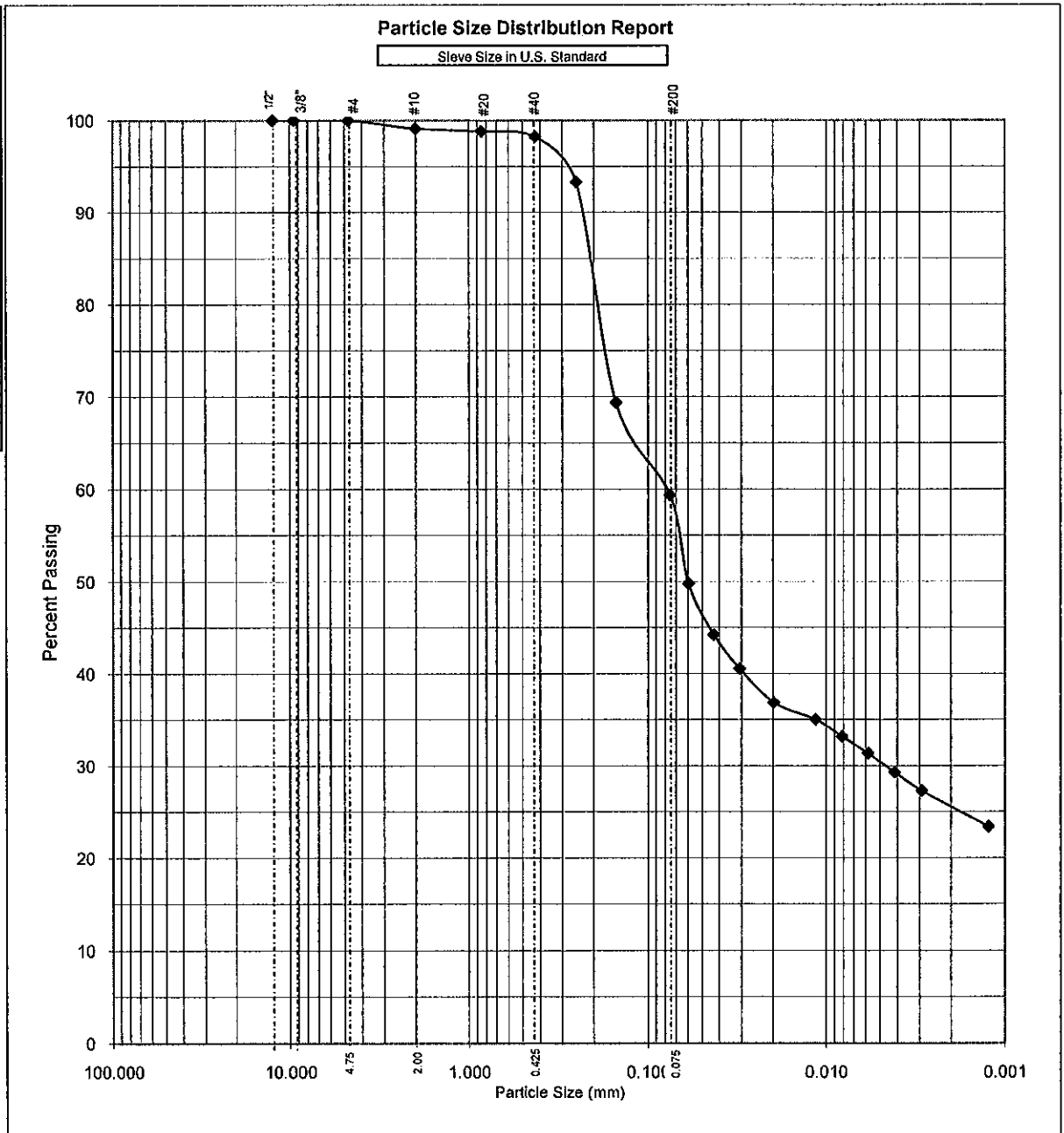


PLATE : B-2.5



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

SESF Report No.: 11-257

Date: 8/1/11

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Orangish Brown CLAYEY SILTY SAND**

Sp. Gr.: 2.700 assumed

Boring No.: **3**

Sample No.: **4B**

Depth (ft.): **15.5'-16.0'**

Particle Size Distribution

By Percentage Gravel: **0.0**

Sand: **80.3**

Silt: **15.0**

Clay: **4.7**

D60: **0.247**

D30: **0.162**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **NA**

PL: **NA**

PI: **NA**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	98
No. 20	95
No. 40	84
No. 60	61
No. 140	26
No. 200	20

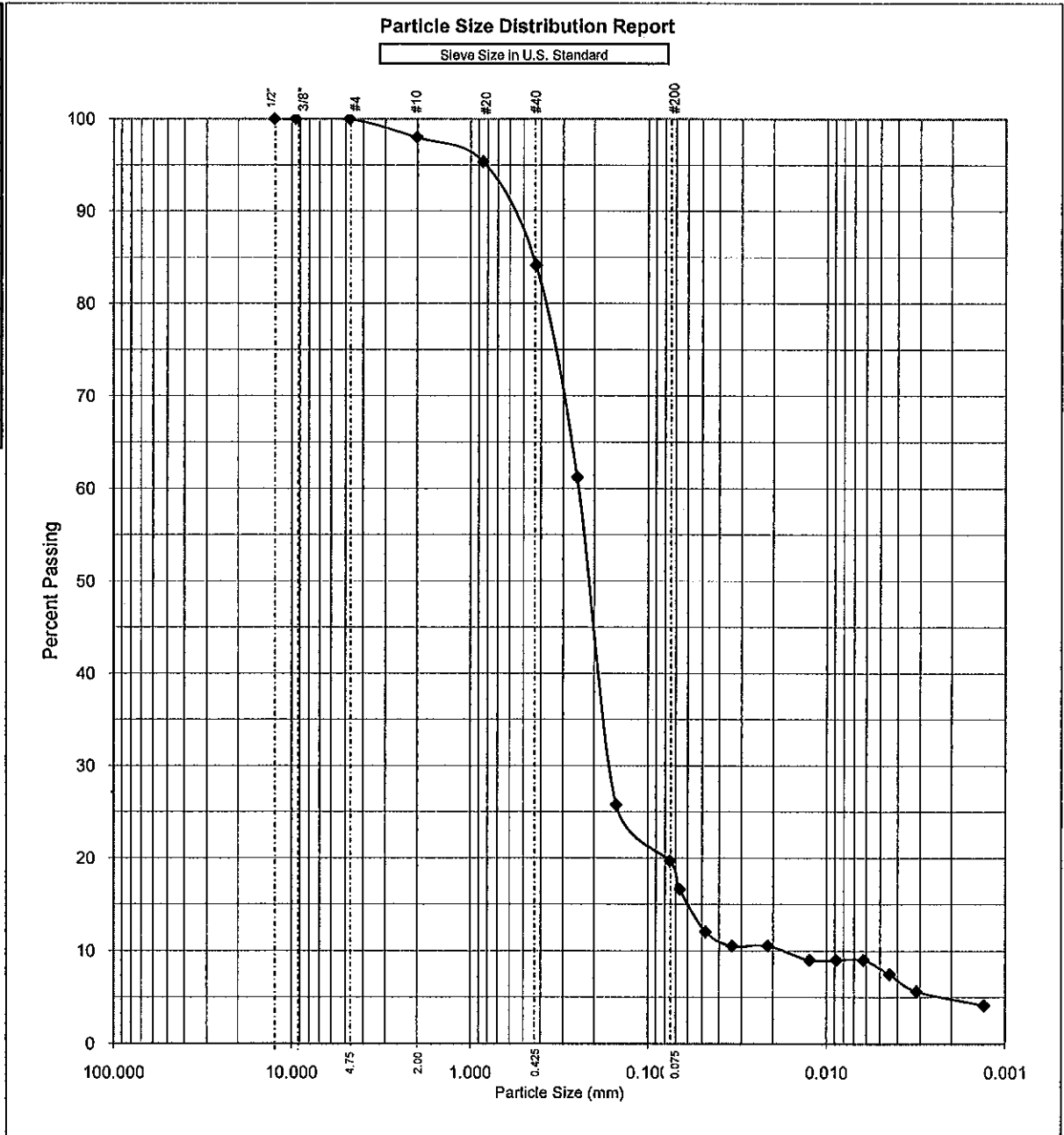


PLATE : B-2.6



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Orangish Brown SANDY SILTY CLAY**

Boring No.: **3**

Sample No.: **5**

Depth (ft.): **20.0' - 21.0'**

SEG File No: **66926**

SEG Report No.: **11-257**

Date: **8/1/11**

Sp. Gr.: **2.700 assumed**

Particle Size Distribution

By Percentage Gravel: **0.0**

Sand: **14.2**

Silt: **39.0**

Clay: **46.8**

D60: **NA**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **52**

PL: **22**

PI: **30**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	99
No. 60	96
No. 140	88
No. 200	86

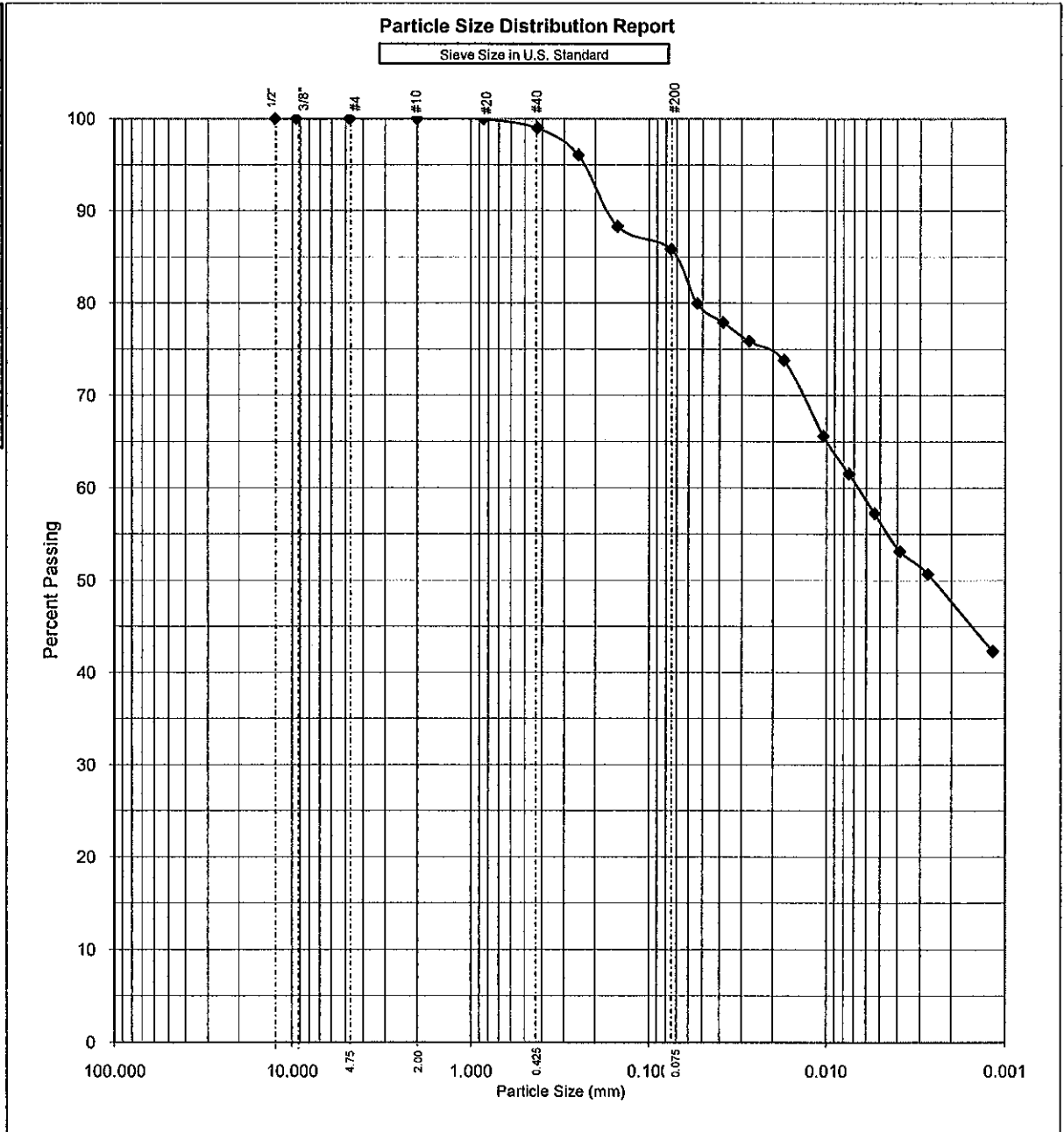


PLATE : B-2.7



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Orangish brown CLAYEY SILTY SAND**

Boring No.: **4**

Sample No.: **2C**

Depth (ft.): **6.0'-6.5'**

SESF File No: **66926**

SESF Report No.: **11-257**

Date: **8/1/11**

Sp. Gr.: **2.700 assumed**

Particle Size Distribution

By Percentage Gravel: **0.4**

Sand: **80.7**

Silt: **12.1**

Clay: **6.8**

D60: **0.245**

D30: **0.166**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **NA**

PL: **NA**

PI: **NA**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	99
No. 20	98
No. 40	89
No. 60	62
No. 140	24
No. 200	19

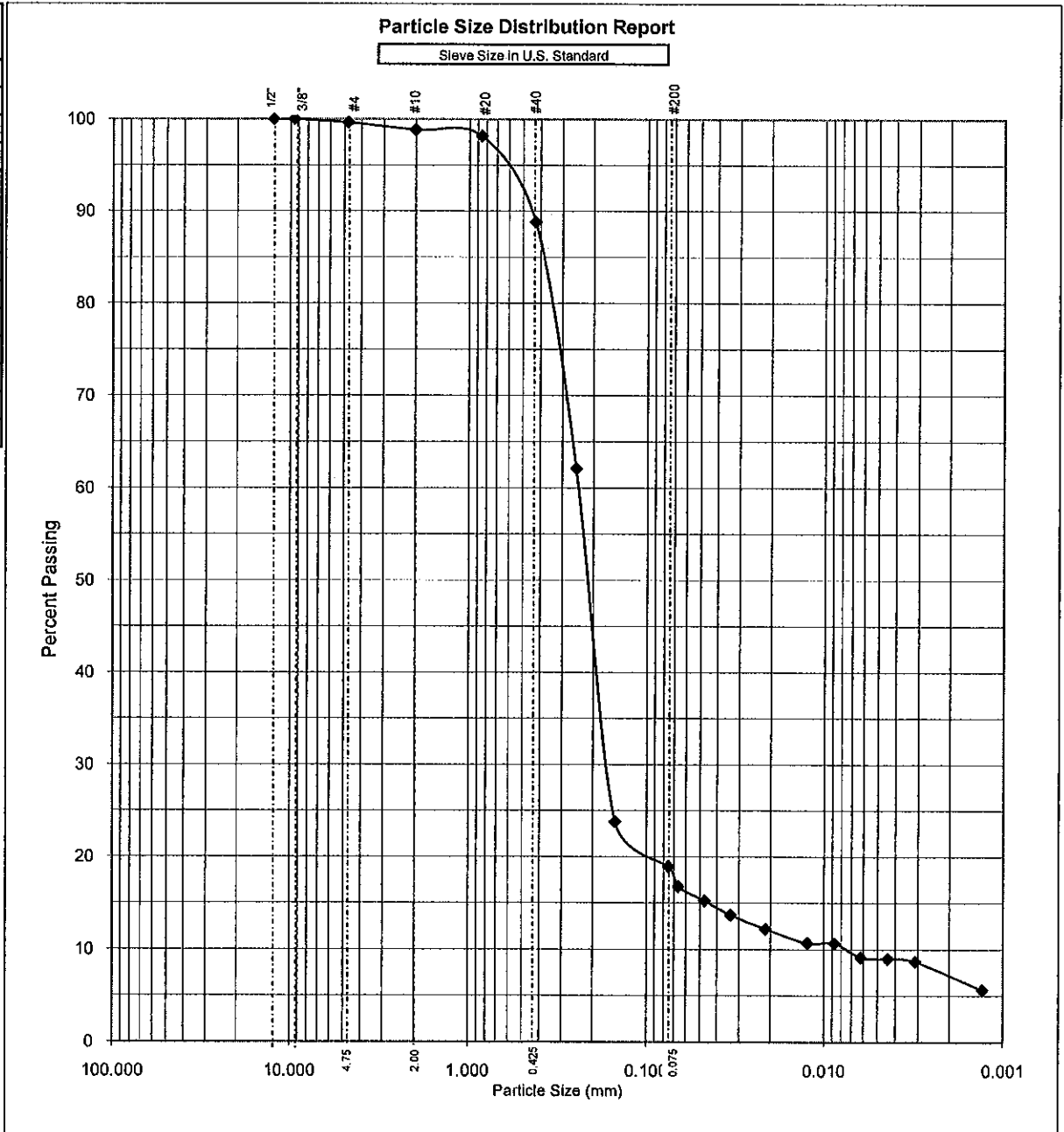


PLATE : B-2.8



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**
Project: **Martin Luther King Jr., Junior High School**
Location: **Pittsburg, CA**
Classification: **Yellowish brown CLAYEY SILTY SAND**

SESF File No: **66926**

SESF Report No.: **11-257**

Date: **8/1/11**

Sp. Gr.: **2.700 assumed**

Boring No.: **4** Sample No.: **4C** Depth (ft.): **16.0'-16.5'**

Particle Size Distribution

By Percentage Gravel: **2.7** Sand: **73.9** Silt: **17.4** Clay: **6.0**
D60: **0.297** D30: **0.159** D10: **NA** Cu: **NA** Cc: **NA**
LL: **NA** PL: **NA** PI: **NA**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	99
3/8"	99
No. 4	97
No. 10	96
No. 20	93
No. 40	78
No. 60	54
No. 140	28
No. 200	23

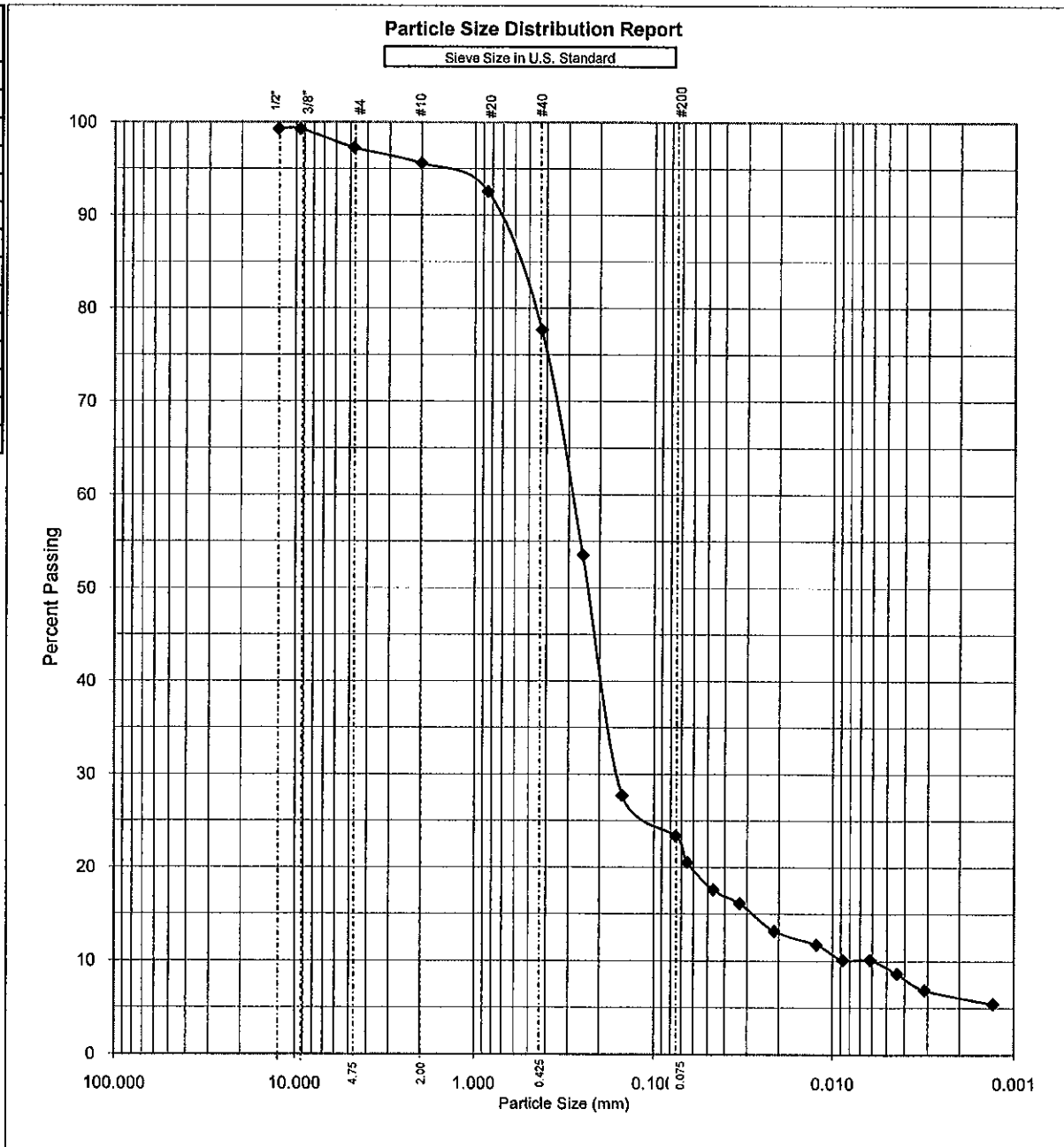


PLATE : B-2.9



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Yellowish Brown SANDY CLAYEY SILT**

Boring No.: **4**

Sample No.: **7**

Depth (ft.): **30.0'-31.5'**

SESF File No: **66926**

SESF Report No.: **11-257**

Date: **8/1/11**

Sp. Gr.: **2.700 assumed**

Particle Size Distribution

By Percentage Gravel: **0.0**

Sand: **20.0**

Silt: **47.5**

Clay: **32.5**

D60: **NA**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **46**

PL: **21**

PI: **25**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	99
No. 40	98
No. 60	95
No. 140	86
No. 200	80

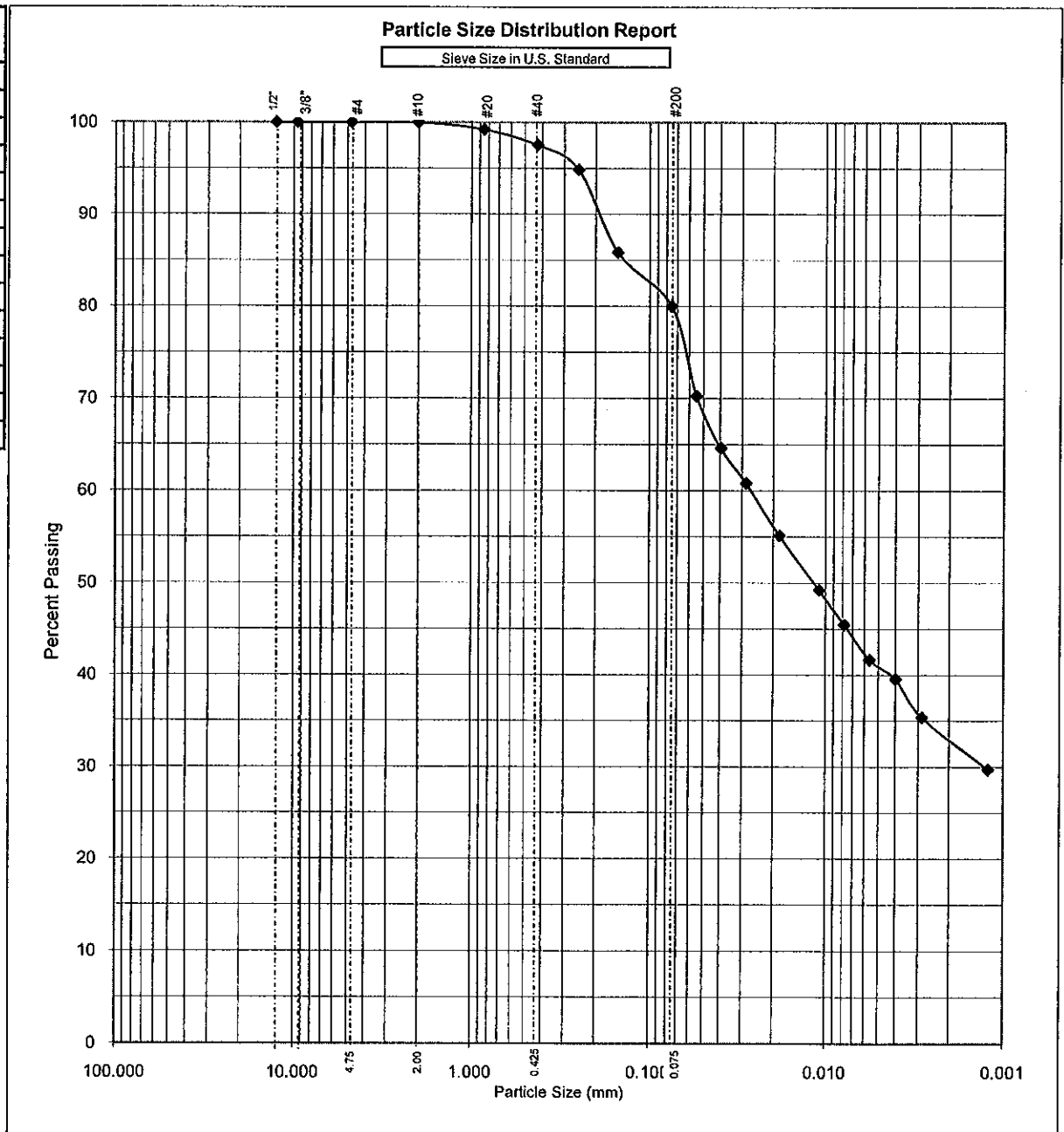


PLATE : B-2.10



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Orangish Brown CLAYEY SILTY SAND**

Boring No.: **5**

Sample No.: **4**

Depth (ft.): **15.0'-16.5'**

SESF File No: **66926**

SESF Report No.: **11-257**

Date: **8/3/11**

Sp. Gr.: **2.700 assumed**

Particle Size Distribution

By Percentage Gravel: **0.1**

Sand: **64.1**

Silt: **24.5**

Clay: **11.4**

D60: **0.208**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **NA**

PL: **NA**

PI: **NA**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	99
No. 20	96
No. 40	89
No. 60	72
No. 140	43
No. 200	36

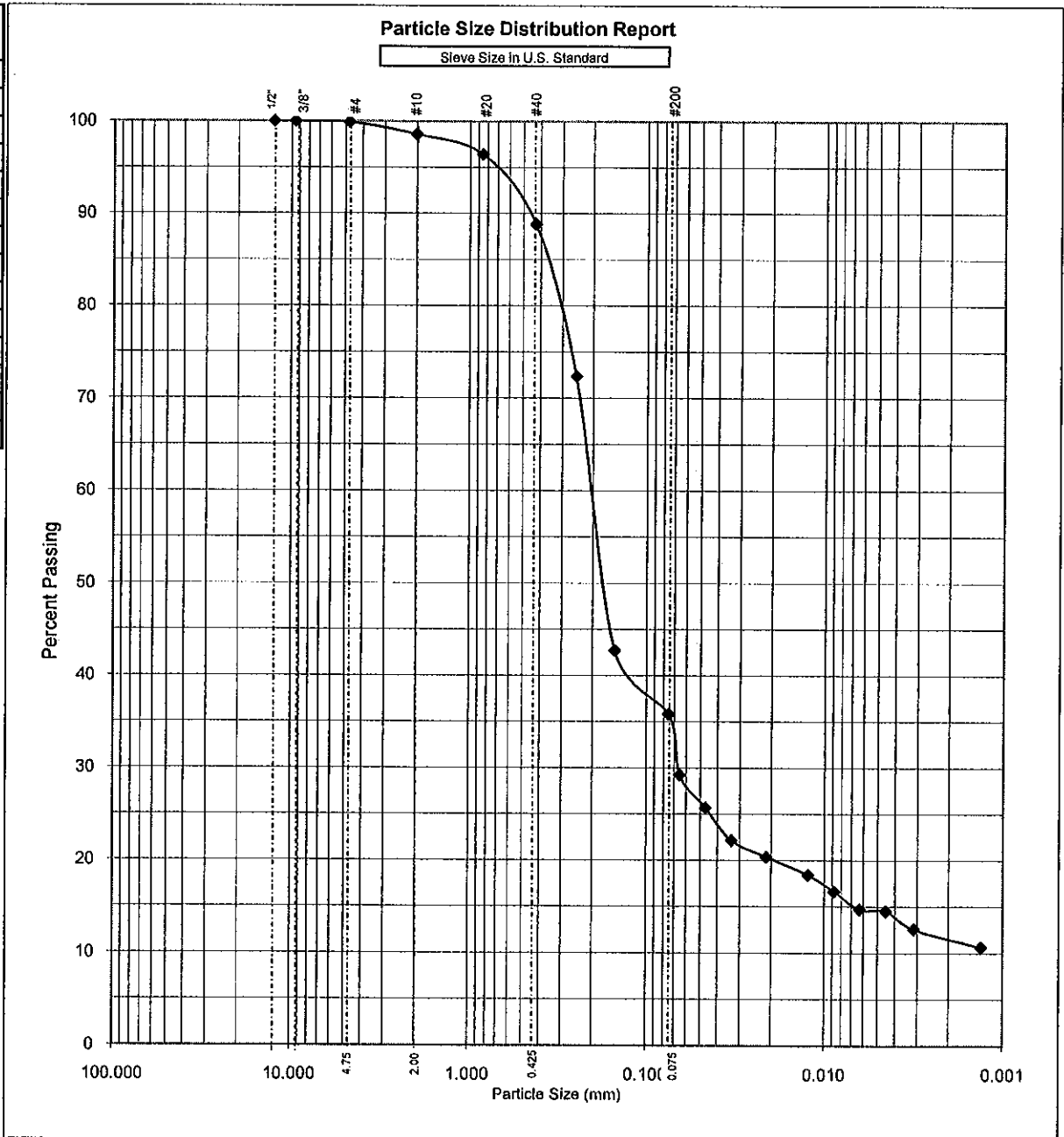


PLATE : B-2.11



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GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

Client: **Pittsburg Unified School District**

SESF Report No.: 11-257

Project: **Martin Luther King Jr., Junior High School**

Date: 8/3/11

Location: **Pittsburg, CA**

Classification: **Yellowish Brown SANDY CLAYEY SILT**

Sp. Gr.: 2.700 assumed

Boring No.: 5

Sample No.: 6

Depth (ft.): 25.0'-26.5'

Particle Size Distribution

By Percentage Gravel: 0.0

Sand: 29.5

Silt: 39.5

Clay: 31.1

D60: NA

D30: NA

D10: NA

Cu: NA

Cc: NA

LL: NA

PL: NA

PI: NA

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	99
No. 60	95
No. 140	79
No. 200	71

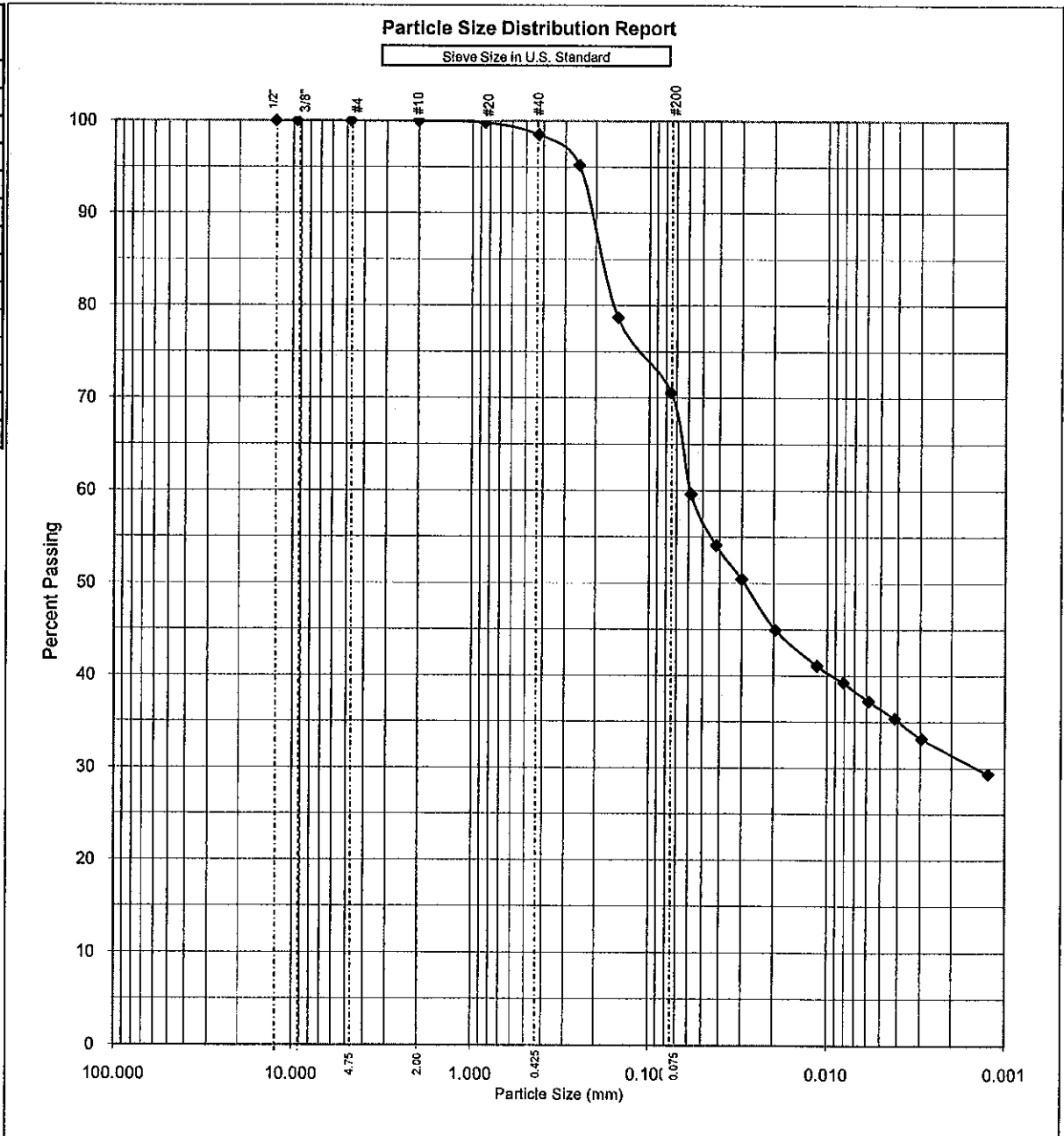


PLATE : B-2.12



SMITH-EMERY Laboratories

781/791 East Washington Boulevard, Los Angeles, CA 90021

Tel. No.: (213) 745-5333; Fax No.: (213) 746-0744

GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**
Project: **Martin Luther King Jr., Junior High School**
Location: **Pittsburg, CA**

Classification: **Yellowish brown SILTY CLAY**

Boring No.: **5**

Sample No.: **10**

Depth (ft.): **45.0'-46.5'**

SESF File No: **66926**

SESF Report No.: **11-257**

Date: **8/3/11**

Sp. Gr.: **2.700 assumed**

Particle Size Distribution

By Percentage Gravel: **0.0**

Sand: **3.3**

Silt: **32.5**

Clay: **64.2**

D60: **NA**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **72**

PL: **26**

PI: **46**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	100
No. 60	99
No. 140	98
No. 200	97

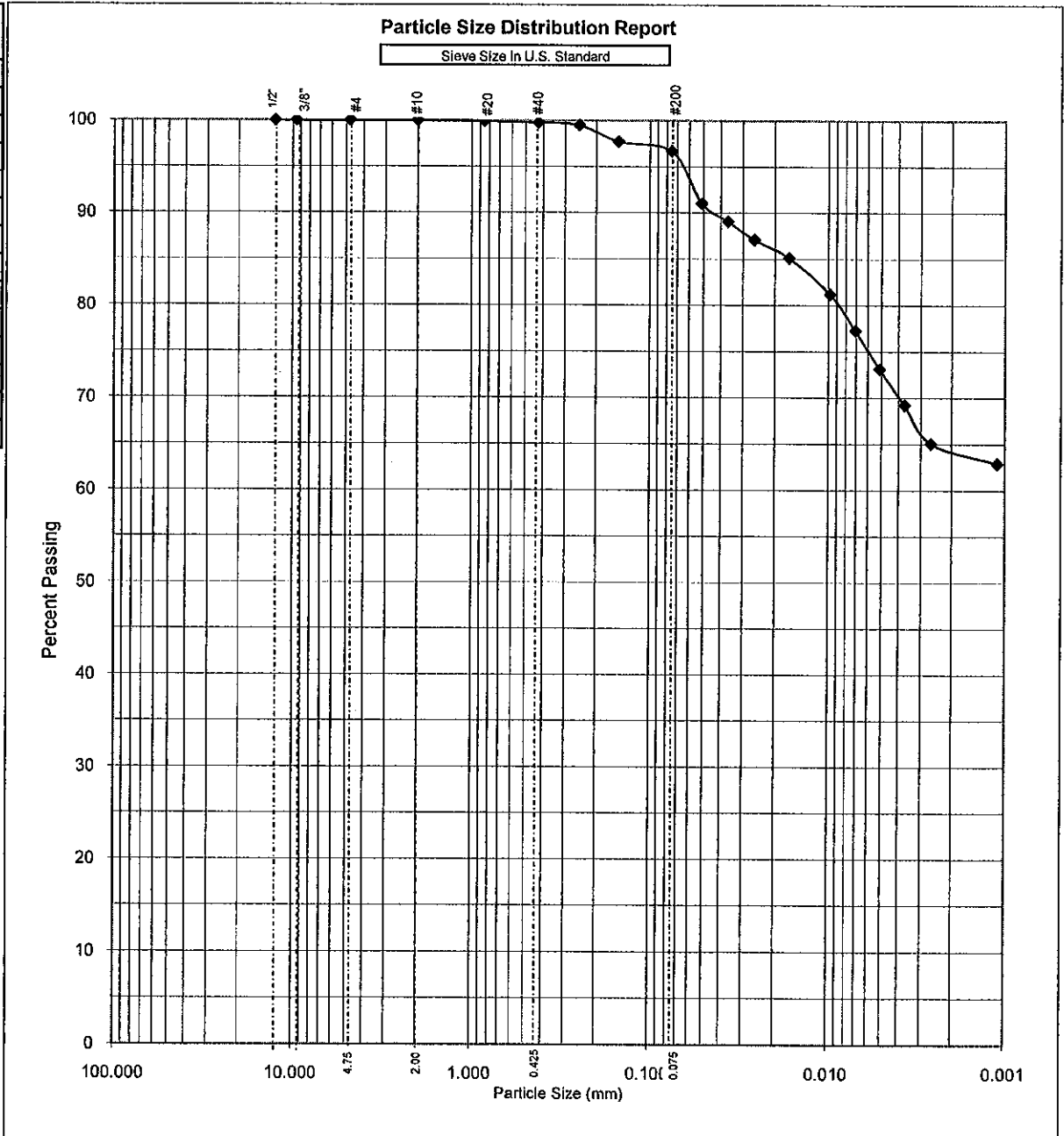


PLATE : B-2.13



SMITH-EMERY Laboratories

781/791 East Washington Boulevard, Los Angeles, CA 90021

Tel. No.: (213) 745-5333; Fax No.: (213) 746-0744

GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

SESF Report No.: 11-257

Date: 8/3/11

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Orangish Brown CLAYEY SILTY SAND**

Sp. Gr.: 2.700 assumed

Boring No.: **6**

Sample No.: **4B**

Depth (ft.): **15.5'-16.0'**

Particle Size Distribution

By Percentage Gravel: **3.5**

Sand: **80.9**

Silt: **11.2**

Clay: **4.5**

D60: **0.278**

D30: **0.179**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **NA**

PL: **NA**

PI: **NA**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	100
1/2"	98
3/8"	98
No. 4	97
No. 10	95
No. 20	94
No. 40	84
No. 60	56
No. 140	20
No. 200	16

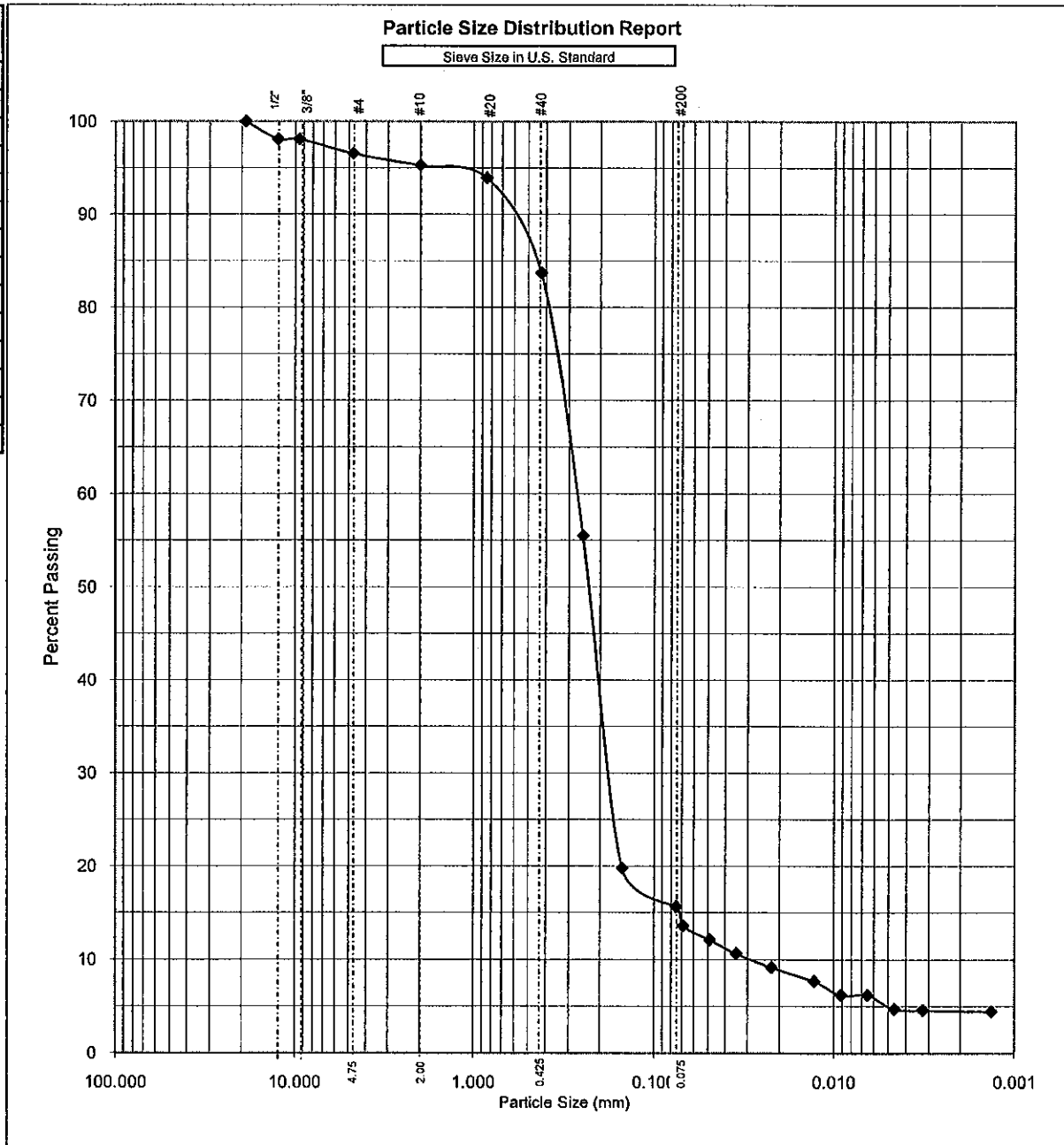


PLATE : B-2.14



SMITH-EMERY Laboratories

781/791 East Washington Boulevard, Los Angeles, CA 90021

Tel. No.: (213) 745-5333; Fax No.: (213) 746-0744

GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

Client: **Pittsburg Unified School District**

SESF Report No.: 11-257

Project: **Martin Luther King Jr., Junior High School**

Date: 8/3/11

Location: **Pittsburg, CA**

Classification: **Orangish brown CLAYEY SILTY SAND**

Sp. Gr.: 2.700 assumed

Boring No.: **6**

Sample No.: **6B**

Depth (ft.): **25.5'-26.0'**

Particle Size Distribution

By Percentage Gravel: **0.0**

Sand: **70.8**

Silt: **16.1**

Clay: **13.0**

D60: **0.210**

D30: **0.084**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **26**

PL: **21**

PI: **5**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	96
No. 60	76
No. 140	36
No. 200	29

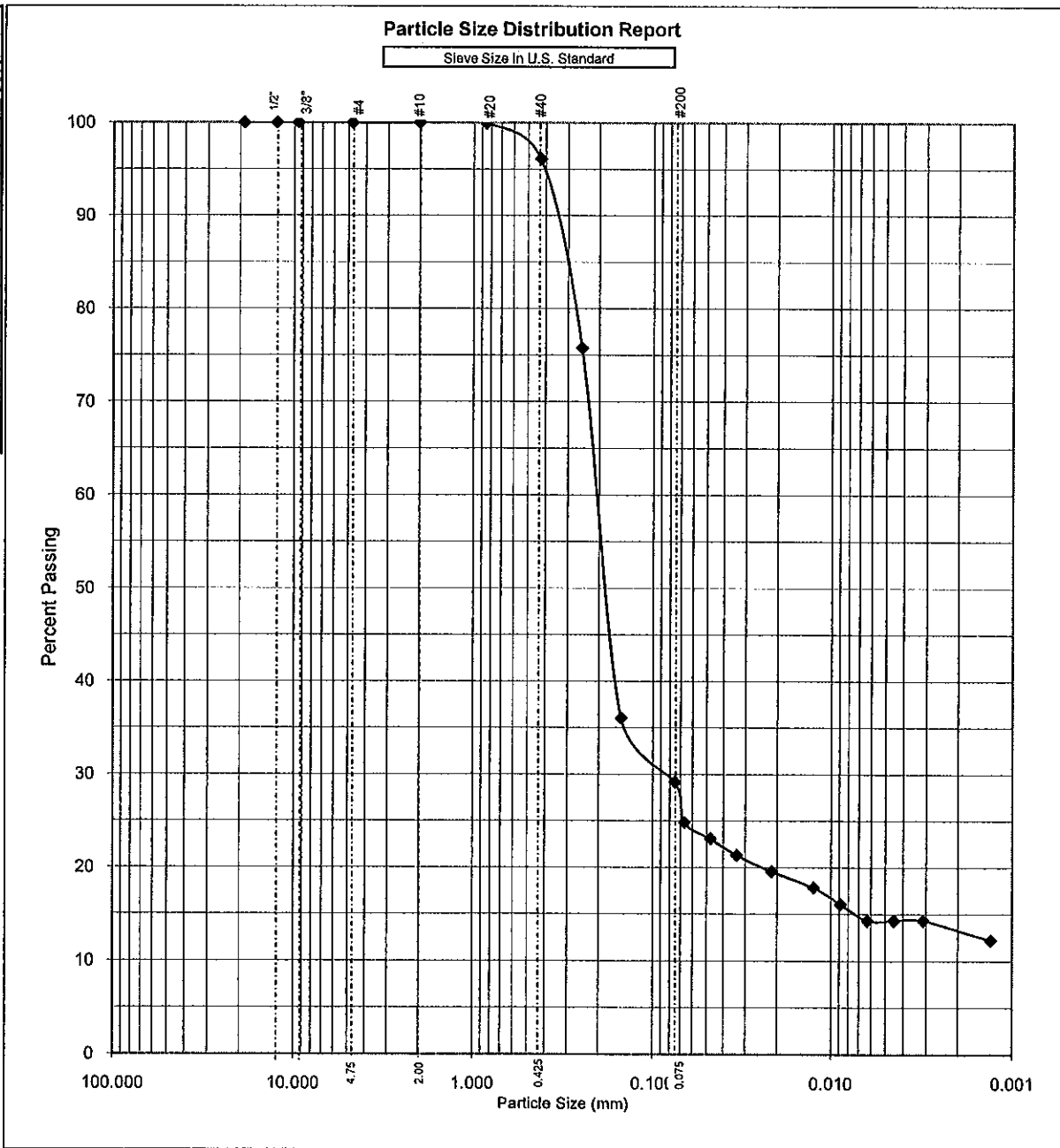


PLATE : B-2.15



SMITH-EMERY Laboratories

781/791 East Washington Boulevard, Los Angeles, CA 90021

Tel. No.: (213) 745-5333; Fax No.: (213) 746-0744

GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Orangish Brown SANDY CLAYEY SILT**

Boring No.: **7**

Sample No.: **2**

Depth (ft.): **5.0'-6.5'**

SESF File No: **66926**

SESF Report No.: **11-257**

Date: **7/28/11**

Sp. Gr.: **2.700 assumed**

Particle Size Distribution

By Percentage Gravel: **0.0**

Sand: **32.5**

Silt: **44.9**

Clay: **22.6**

D60: **NA**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **34**

PL: **17**

PI: **17**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	99
No. 40	98
No. 60	93
No. 140	75
No. 200	67

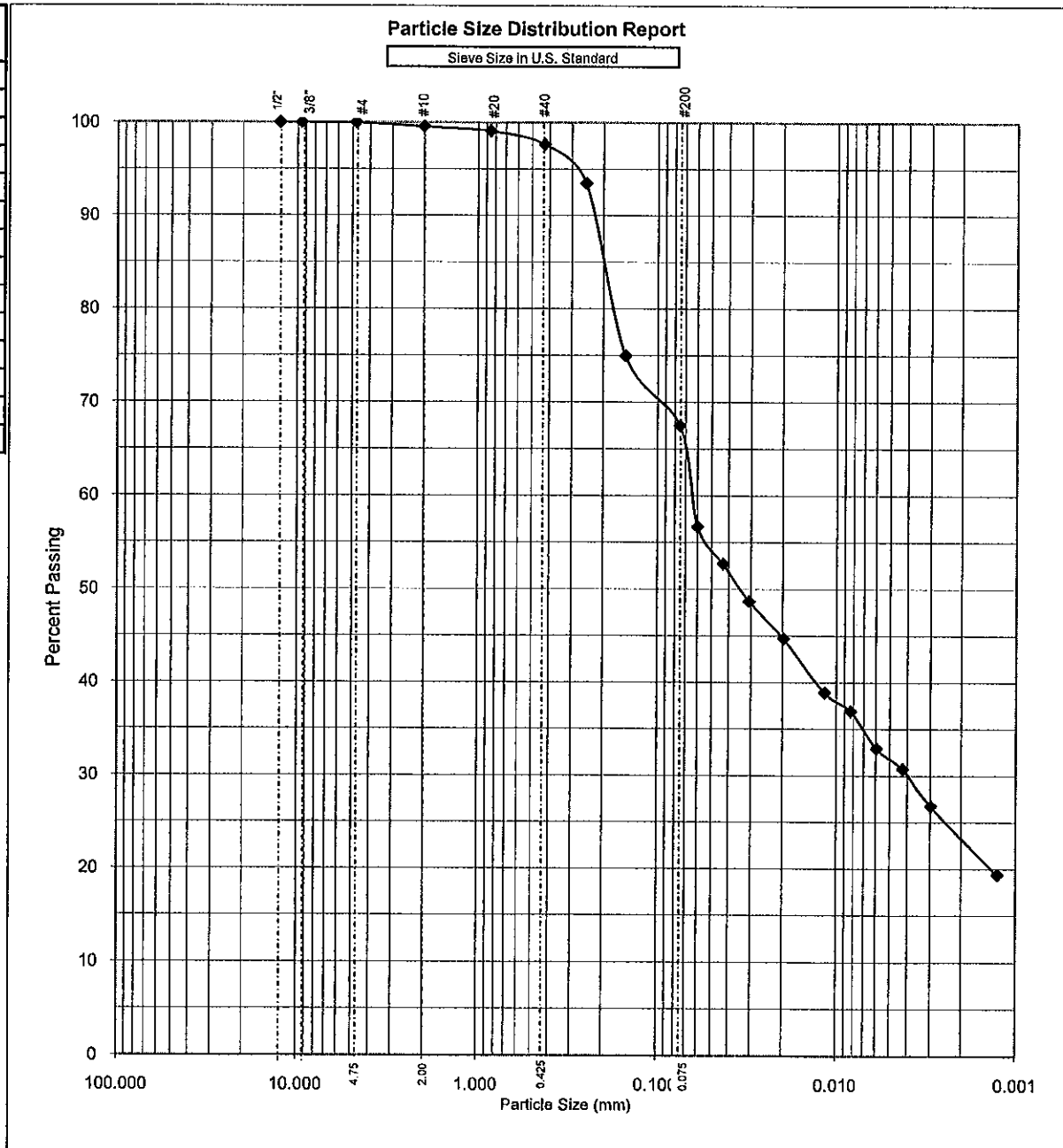


PLATE : B-2.16



SMITH-EMERY Laboratories

781/791 East Washington Boulevard, Los Angeles, CA 90021

Tel. No.: (213) 745-5333; Fax No.: (213) 746-0744

GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Orangish brown CLAYEY SILTY SAND**

Boring No.: **7**

Sample No.: **4**

Depth (ft.): **15.0'-16.5'**

SESF File No: **66926**

SESF Report No.: **11-257**

Date: **7/28/11**

Sp. Gr.: **2.700 assumed**

Particle Size Distribution

By Percentage Gravel: **1.5**

Sand: **69.2**

Silt: **20.1**

Clay: **9.2**

D60: **NA**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **24**

PL: **18**

PI: **6**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	99
No. 10	96
No. 20	92
No. 40	81
No. 60	63
No. 140	36
No. 200	29

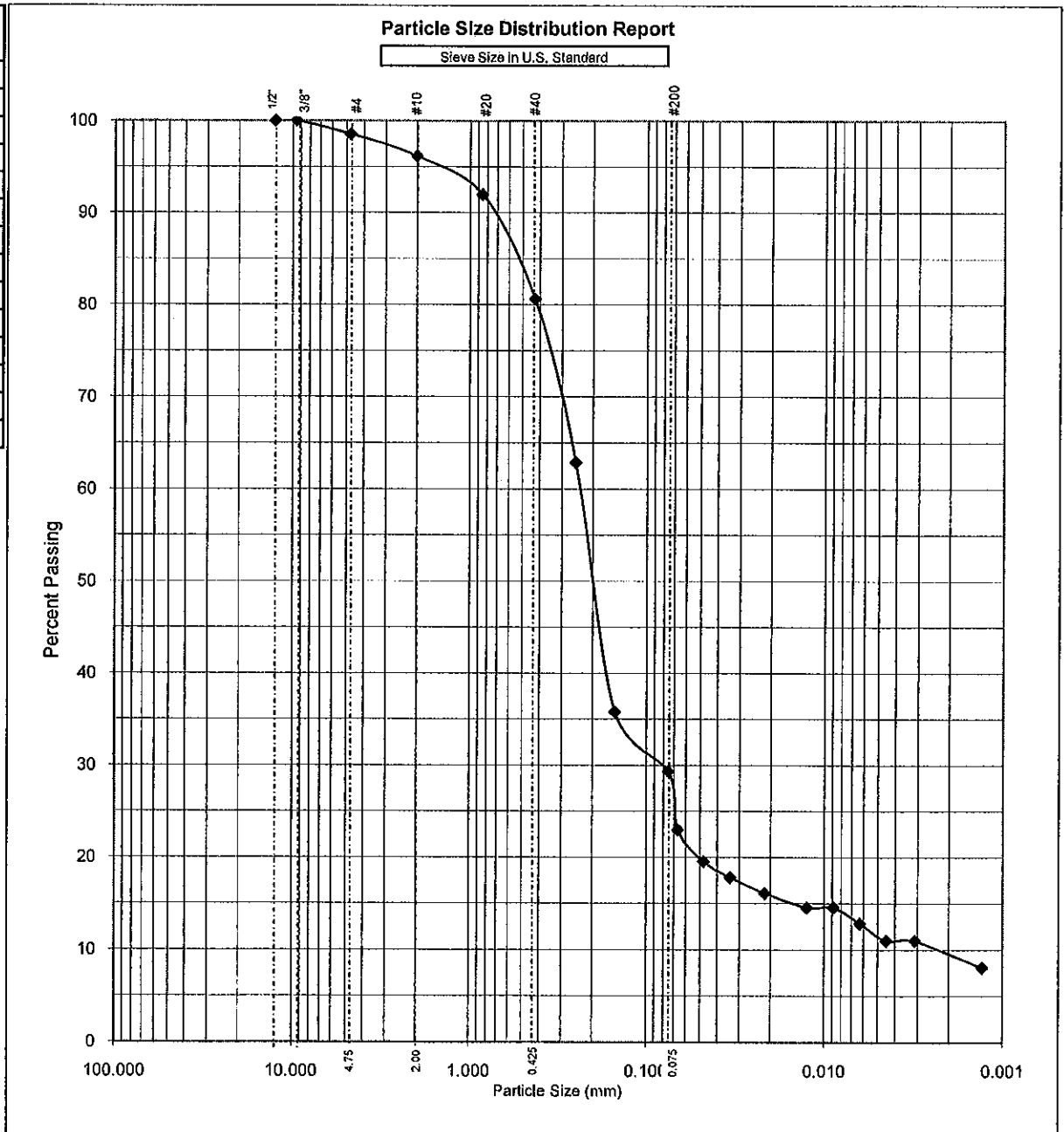


PLATE : B-2.17



SMITH-EMERY Laboratories

781/791 East Washington Boulevard, Los Angeles, CA 90021

Tel. No.: (213) 745-5333; Fax No.: (213) 746-0744

GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Orangish brown CLAYEY SILTY SAND**

Boring No.: **7**

Sample No.: **6**

Depth (ft.): **25.0'-26.5'**

SESF File No: **66926**

SESF Report No.: **11-257**

Date: **7/28/11**

Sp. Gr.: **2.700 assumed**

Particle Size Distribution

By Percentage Gravel: **0.2**

Sand: **56.6**

Silt: **30.1**

Clay: **13.1**

D60: **0.182**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **NA**

PL: **NA**

PI: **NA**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	99
No. 20	99
No. 40	94
No. 60	81
No. 140	50
No. 200	43

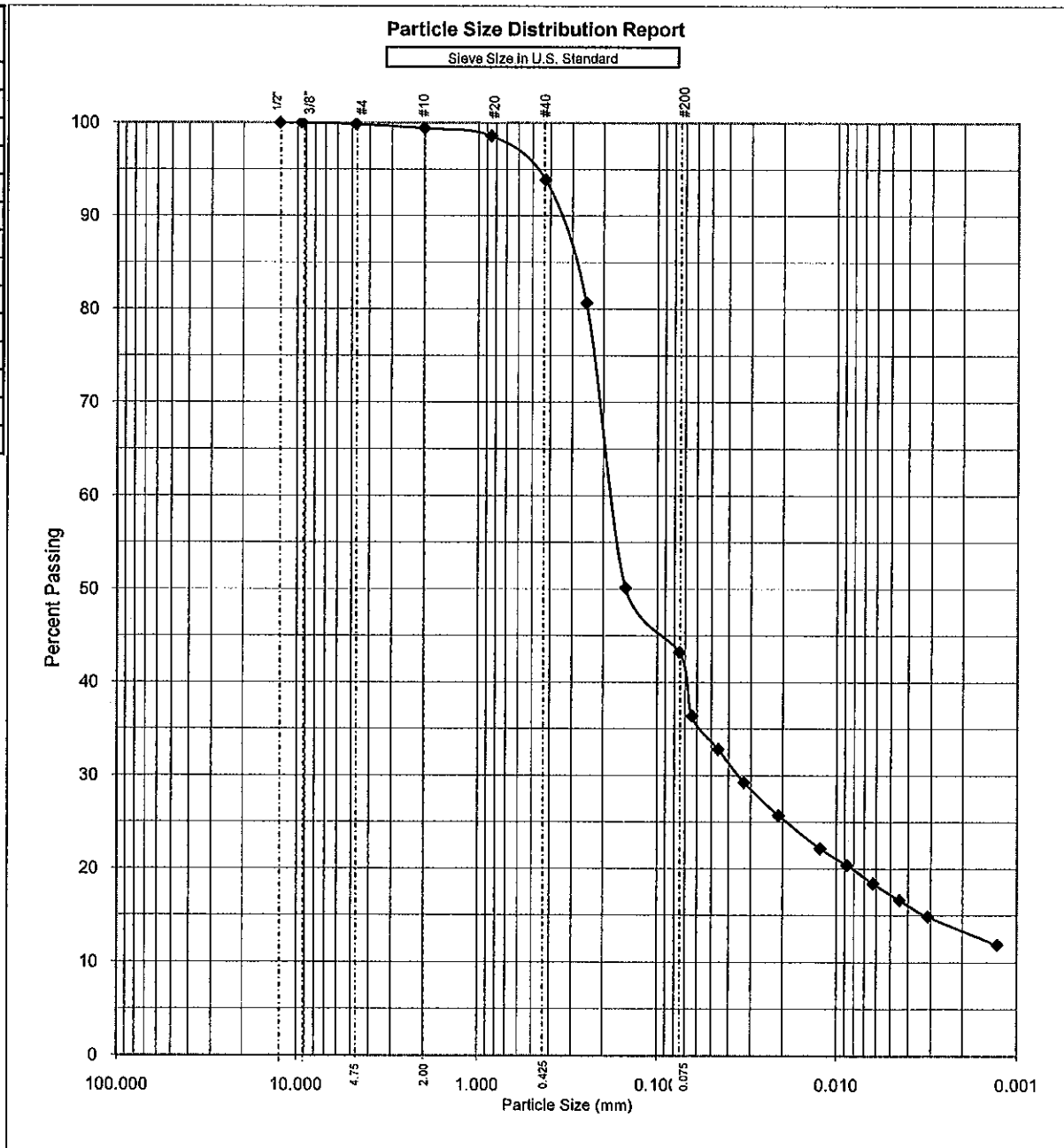


PLATE : B-2.18



SMITH-EMERY Laboratories

781/791 East Washington Boulevard, Los Angeles, CA 90021

Tel. No.: (213) 745-5333; Fax No.: (213) 746-0744

GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

SESF Report No.: 11-257

Date: 7/28/11

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Yellowish brown SANDY CLAYEY SILT**

Sp. Gr.: 2.700 assumed

Boring No.: **8**

Sample No.: **3**

Depth (ft.): **10.0'-11.5'**

Particle Size Distribution

By Percentage Gravel: **0.0**

Sand: **24.4**

Silt: **39.0**

Clay: **36.6**

D60: **NA**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **NA**

PL: **NA**

PI: **NA**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	99
No. 60	94
No. 140	81
No. 200	76

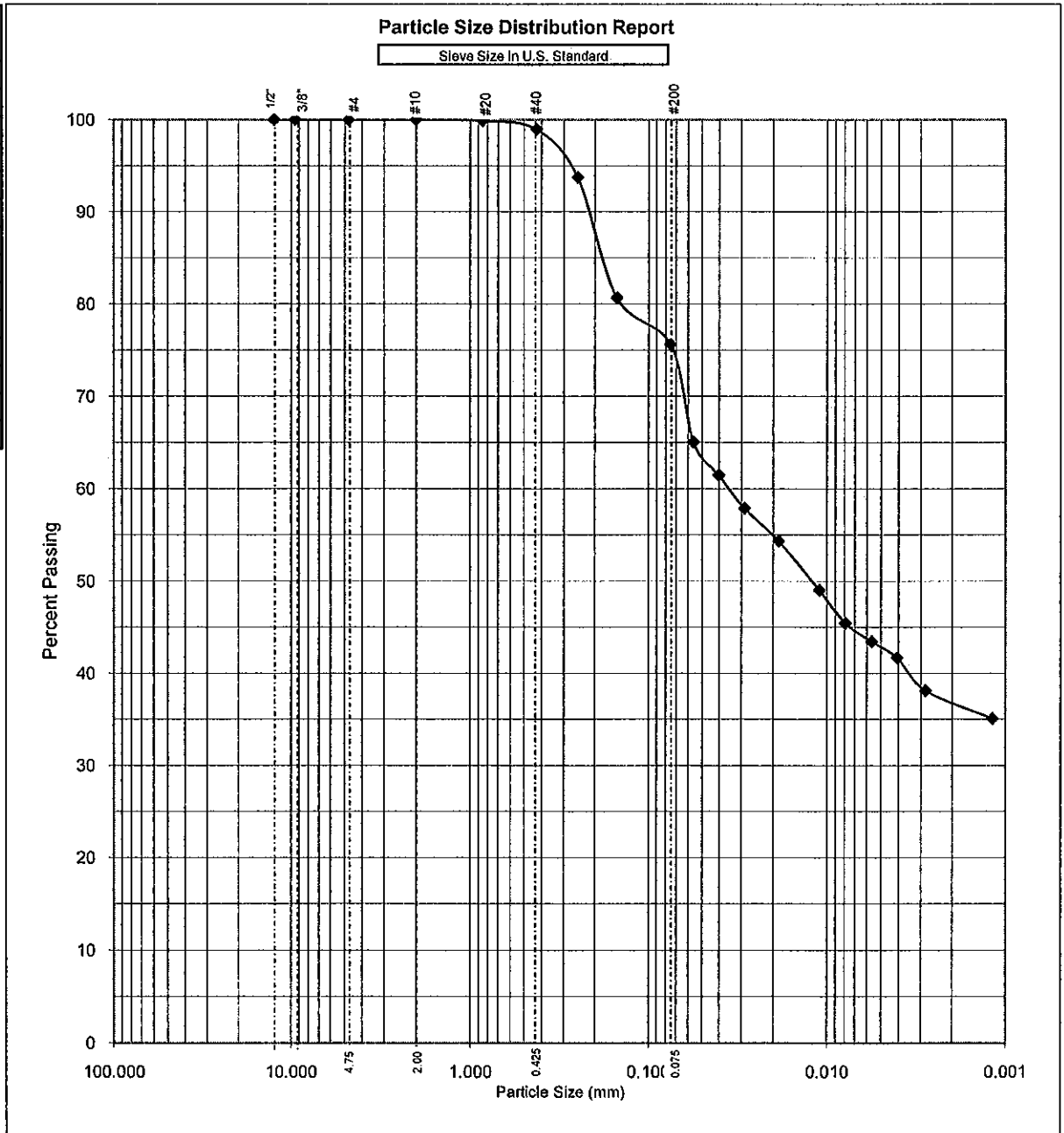


PLATE : B-2.19



SMITH-EMERY Laboratories

781/791 East Washington Boulevard, Los Angeles, CA 90021

Tel. No.: (213) 745-5333; Fax No.: (213) 746-0744

GRAIN SIZE ANALYSIS-HYDROMETER AND MECHANICAL METHOD

ASTM D422 (2007)

SESF File No: 66926

SESF Report No.: 11-257

Date: 8/3/11

Client: **Pittsburg Unified School District**

Project: **Martin Luther King Jr., Junior High School**

Location: **Pittsburg, CA**

Classification: **Yellowish brown SANDY CLAYEY SILT**

Sp. Gr.: 2.700 assumed

Boring No.: **9**

Sample No.: **2**

Depth (ft.): **5.0'-6.5'**

Particle Size Distribution

By Percentage Gravel: **0.0**

Sand: **28.6**

Silt: **43.4**

Clay: **28.0**

D60: **NA**

D30: **NA**

D10: **NA**

Cu: **NA**

Cc: **NA**

LL: **34**

PL: **17**

PI: **17**

Remark:

Sieve Size	Percent Passing
3"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	100
3/8"	100
No. 4	100
No. 10	100
No. 20	100
No. 40	98
No. 60	93
No. 140	78
No. 200	71

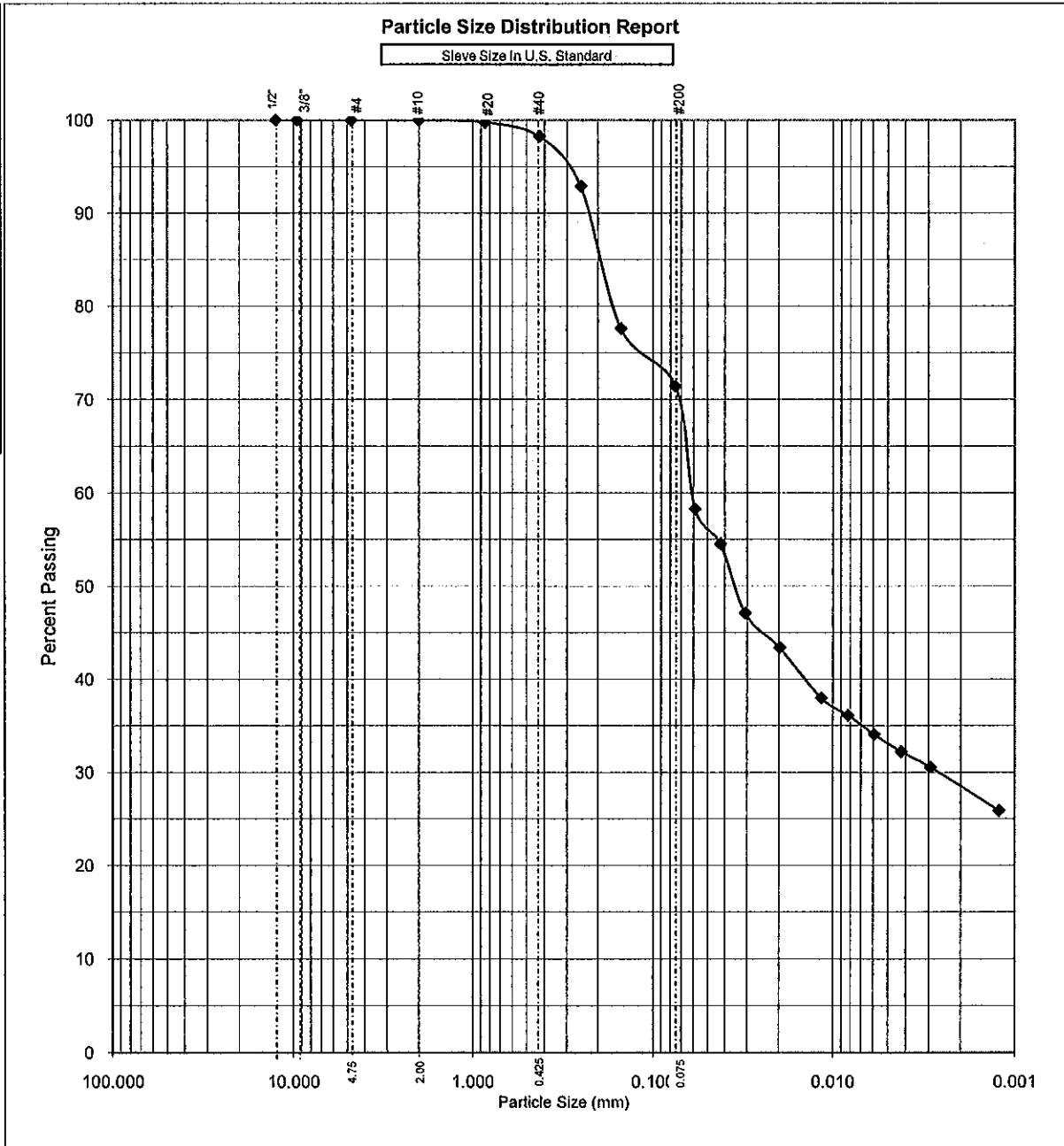


PLATE : B-2.20

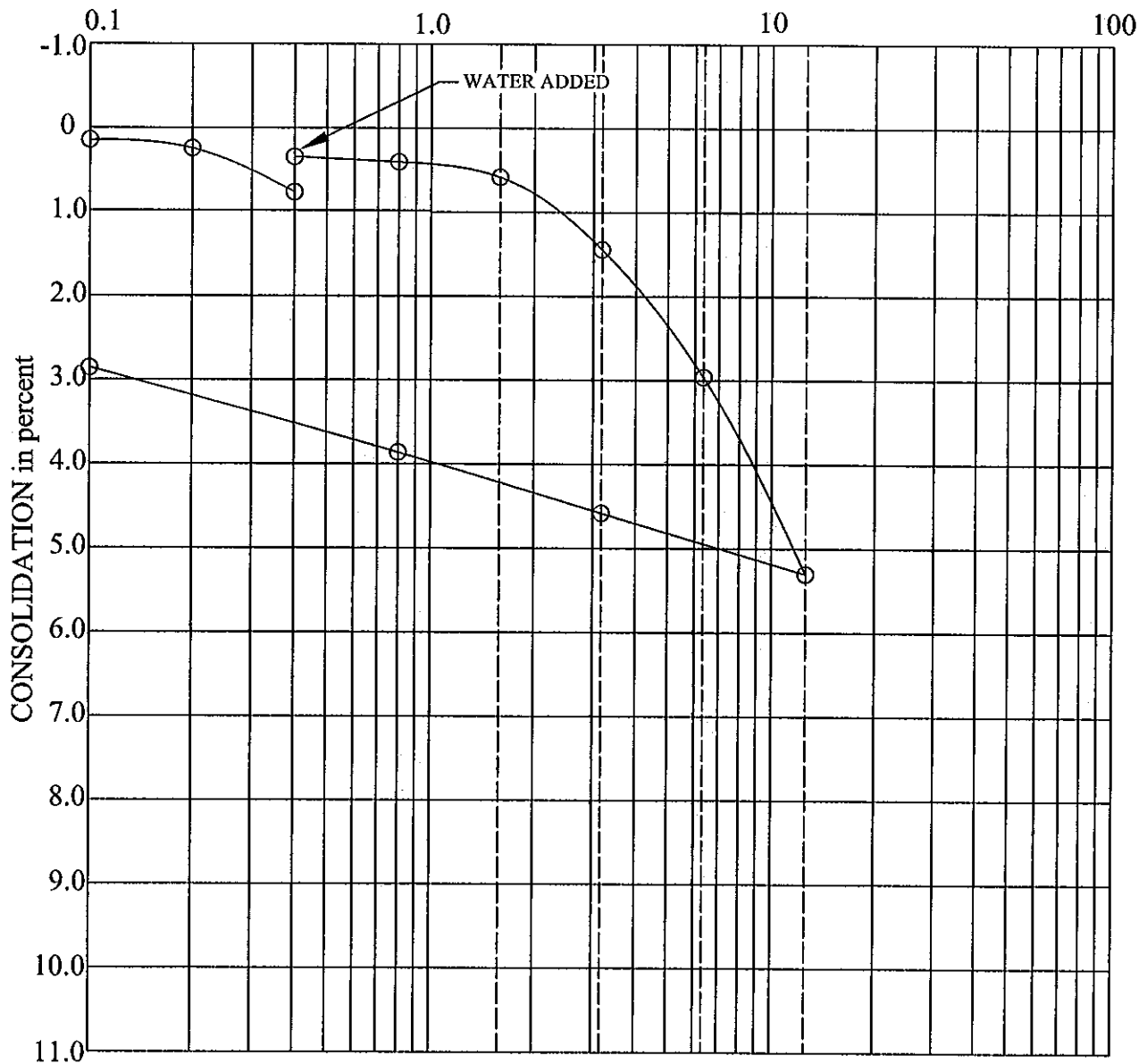
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS

NORMAL STRESS in kips per square foot



LEGEND:

—○— B-1@5.5': SANDY CLAYEY SILT

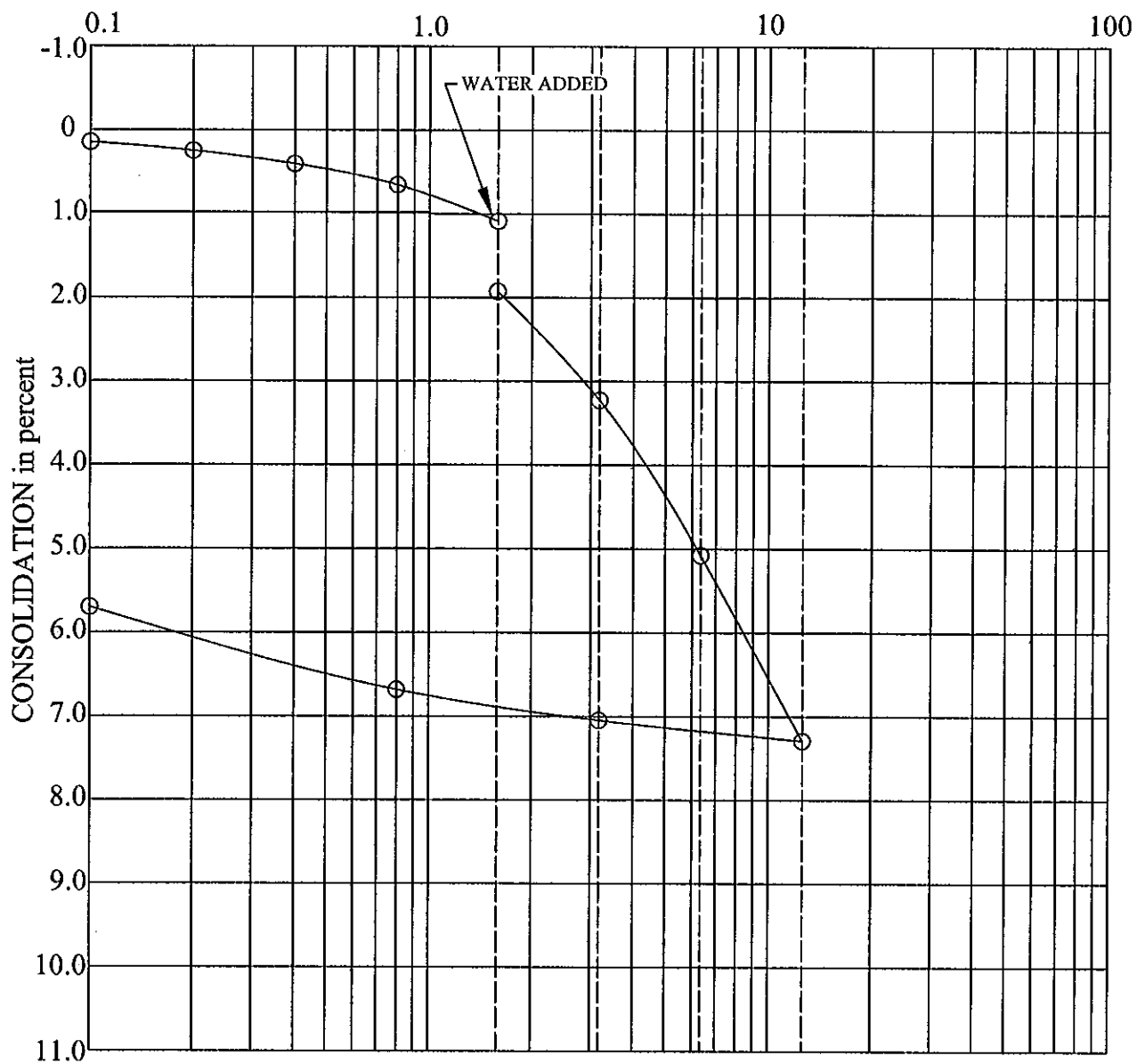
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS

NORMAL STRESS in kips per square foot



LEGEND:

—○— B-1@16': CLAYEY SILTY SAND

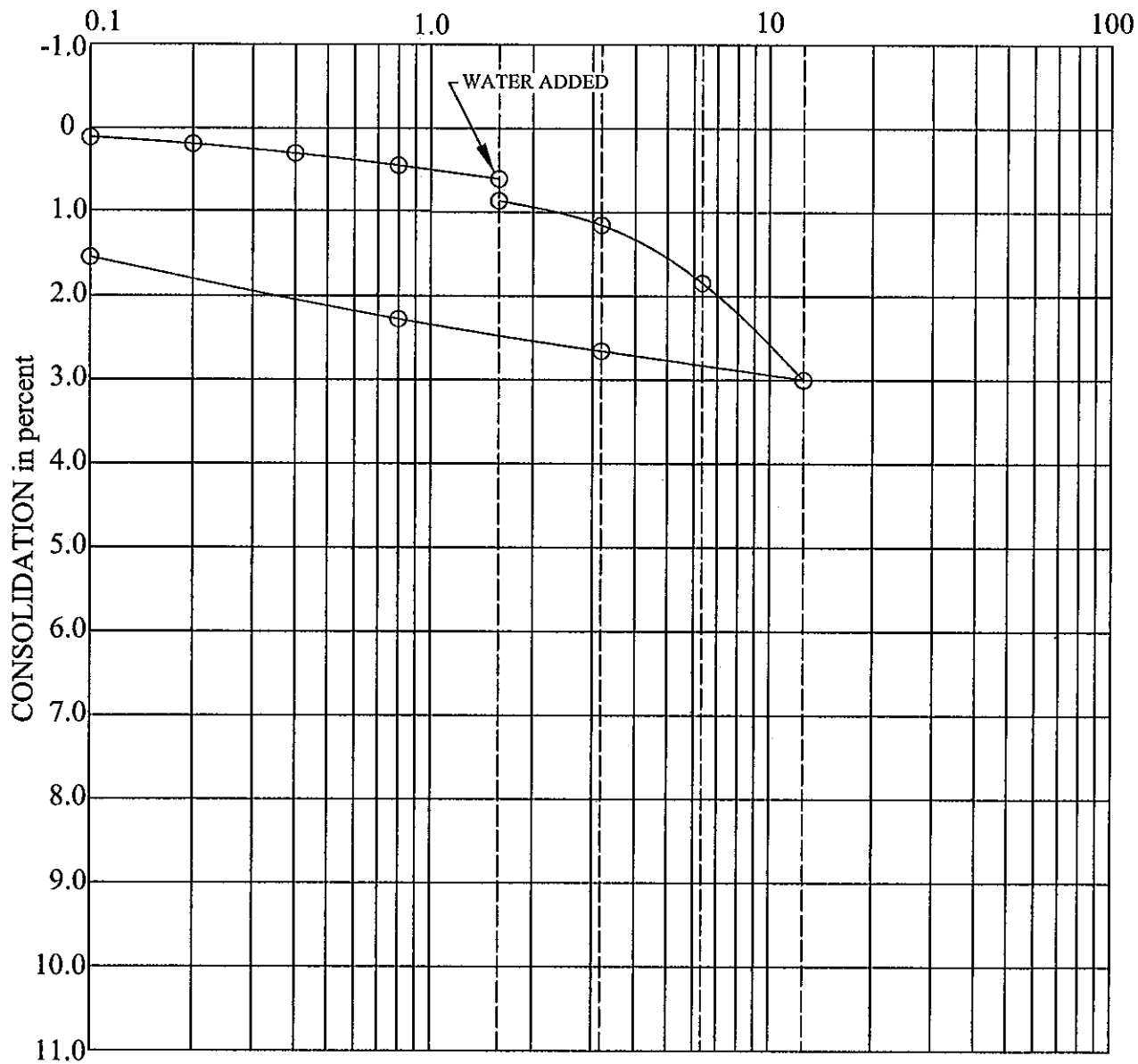
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS

NORMAL STRESS in kips per square foot



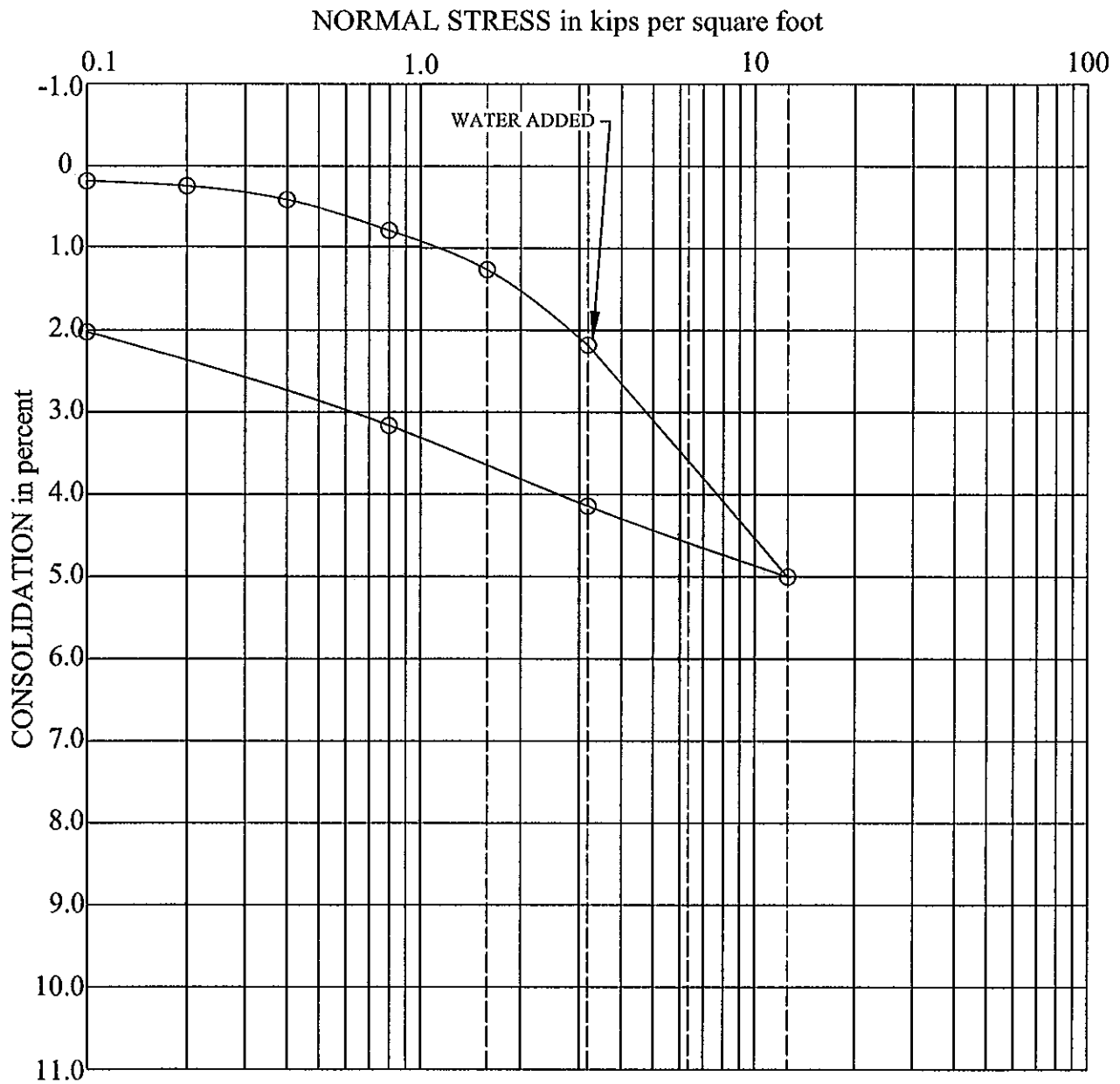
LEGEND:

—○— B-1@26': SILTY CLAY

SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926
REPORT NO. 11-257

CONSOLIDATION TEST RESULTS



LEGEND:

—○— B-2@46.5': SILTY CLAY

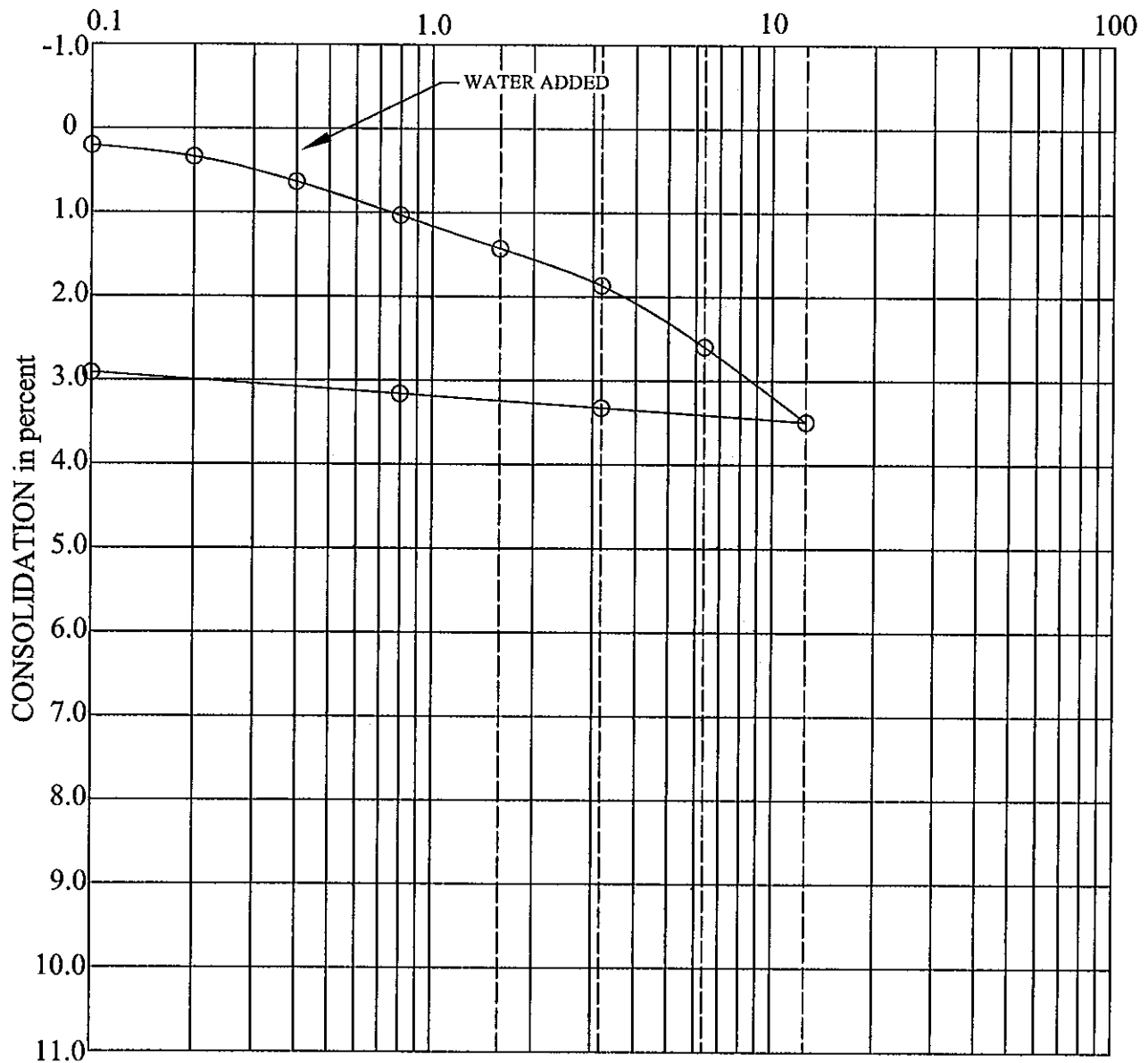
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS

NORMAL STRESS in kips per square foot



LEGEND:

—○— B-3@6.5': SANDY CLAYEY SILT

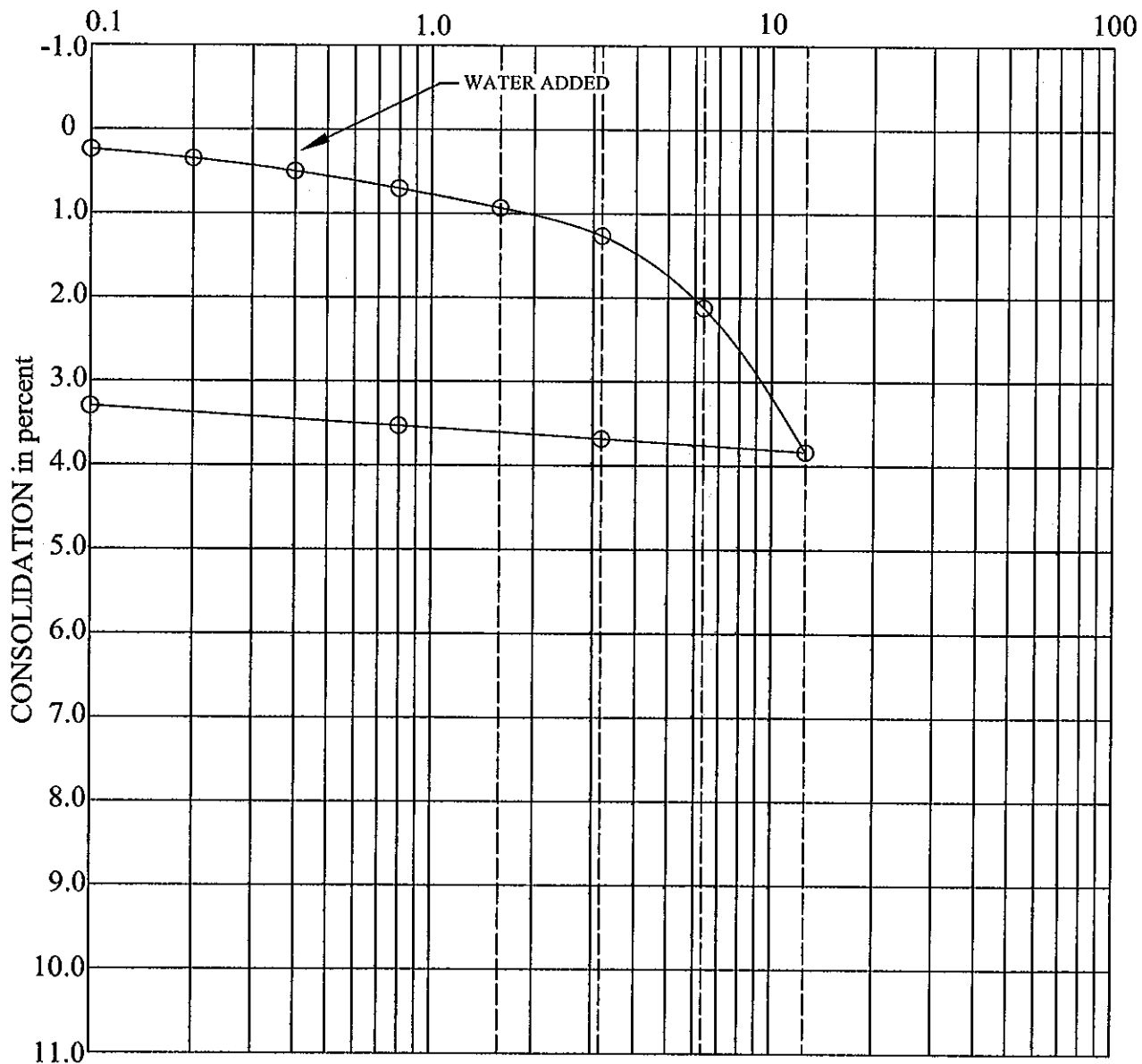
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS

NORMAL STRESS in kips per square foot



LEGEND:

—○— B-3@26': SANDY CLAYEY SILT

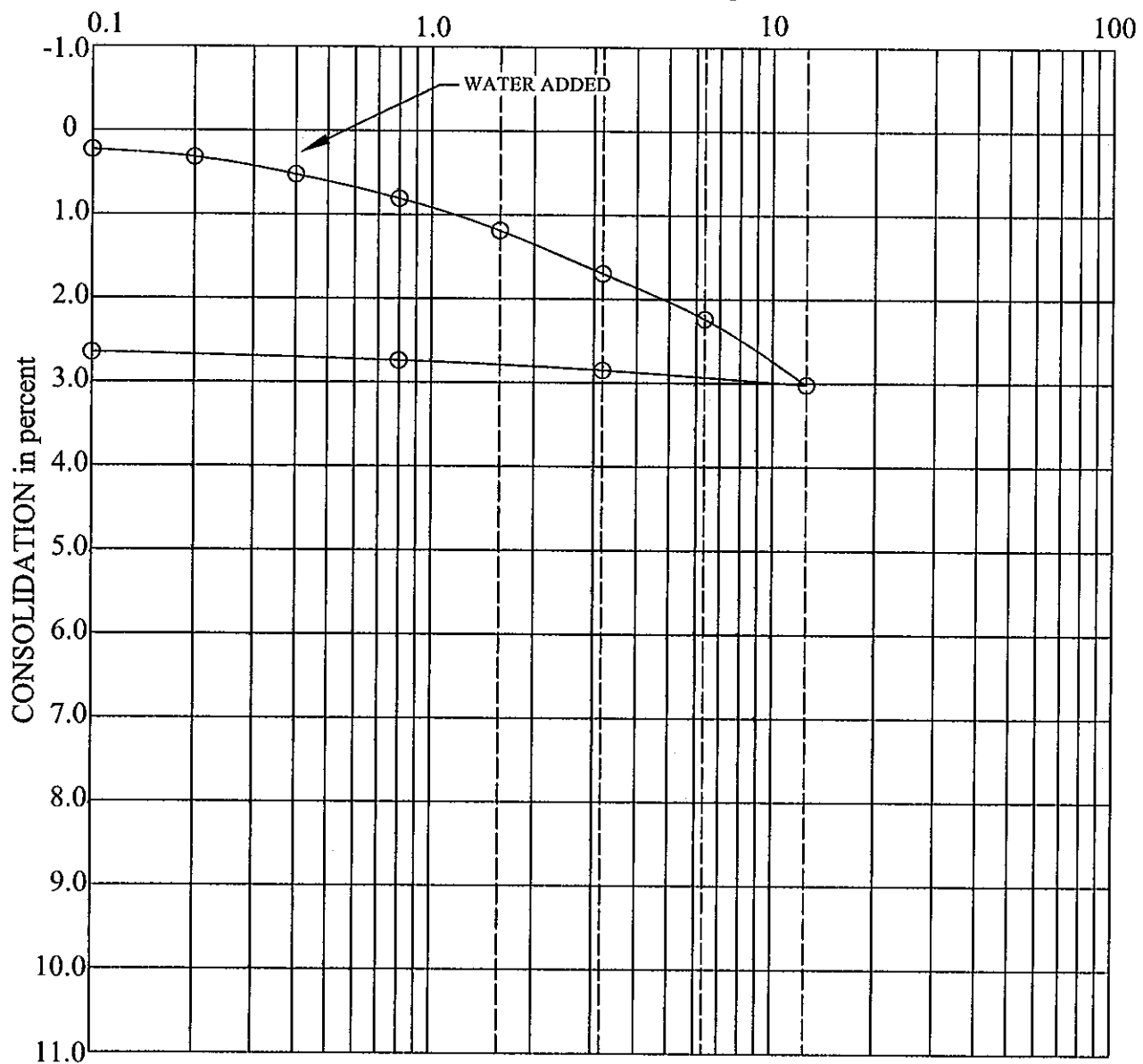
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS

NORMAL STRESS in kips per square foot



LEGEND:

—○— B-4@6': CLAYEY SILTY SAND

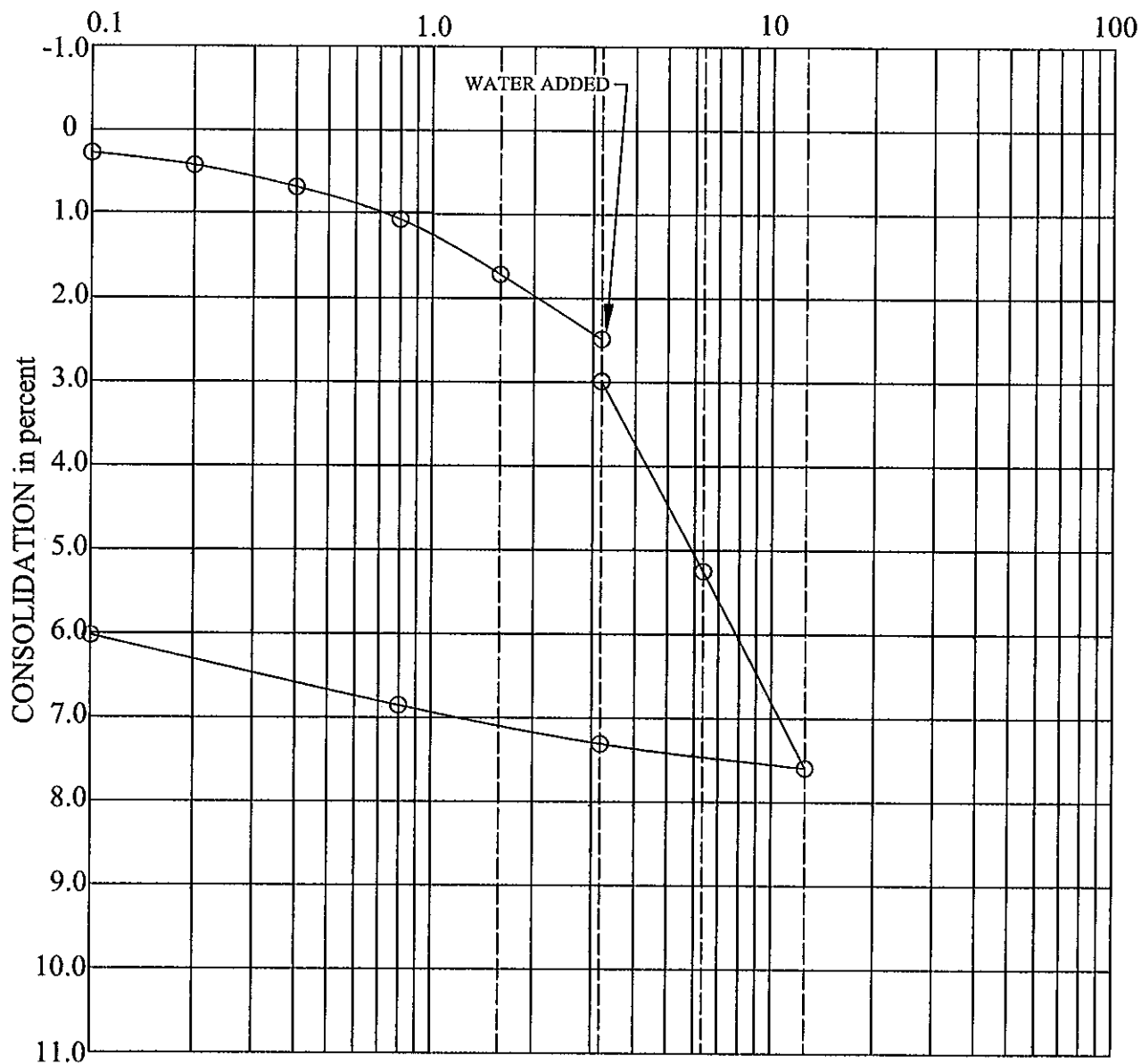
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS

NORMAL STRESS in kips per square foot



LEGEND:

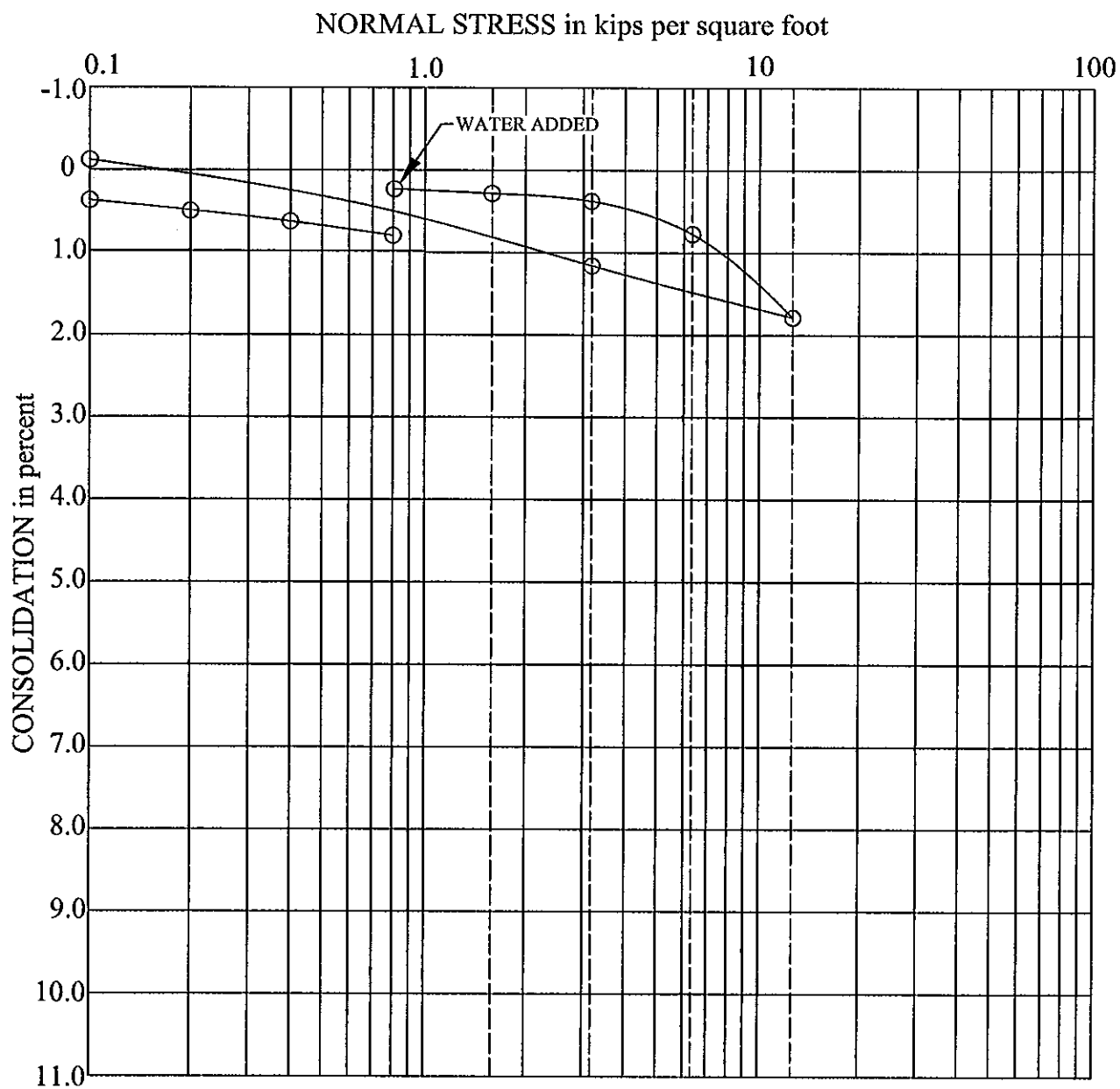
—○— B-7@31': SANDY CLAYEY SILT

SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS



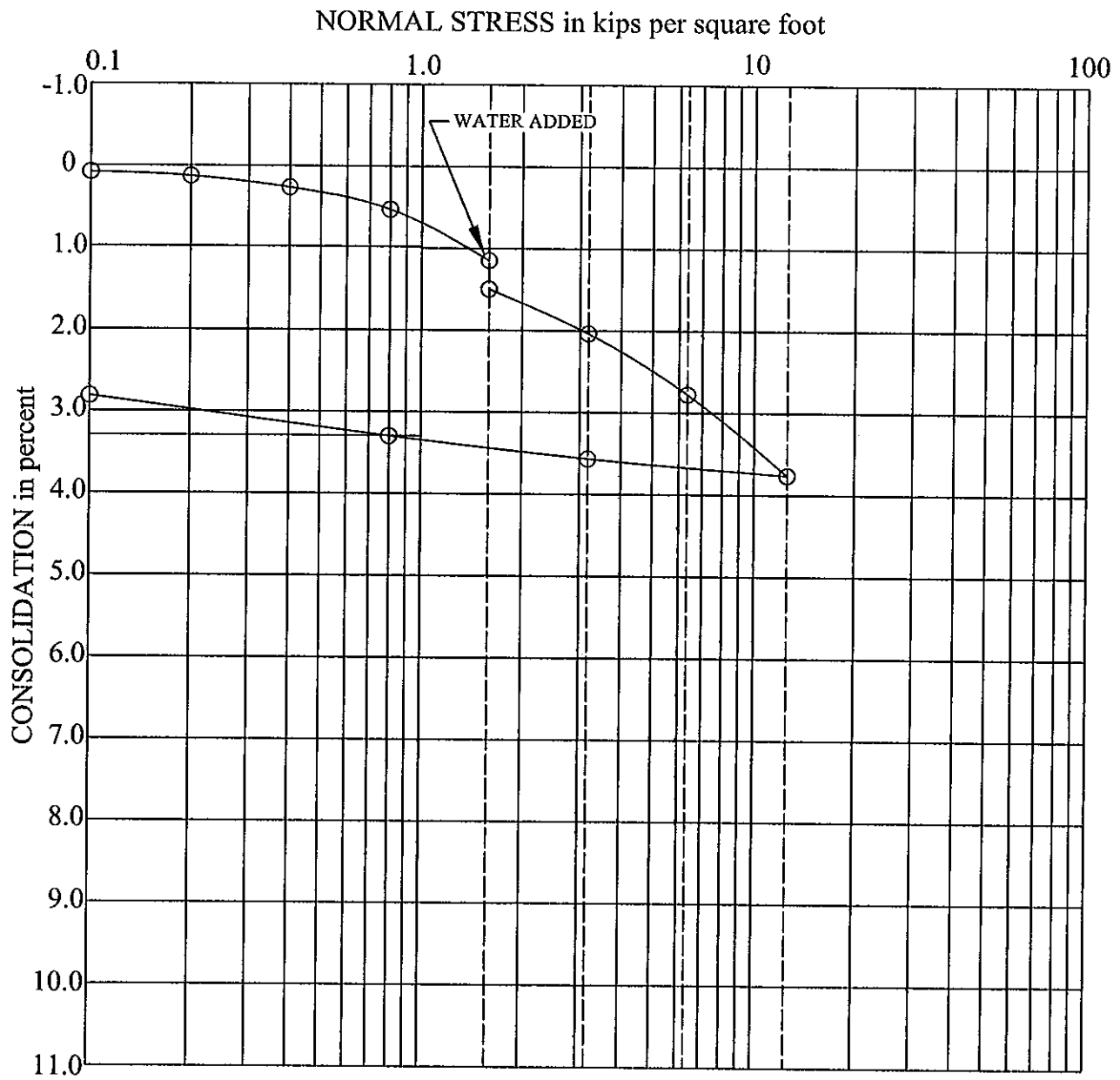
LEGEND:

—○— B-8@6.5': SANDY CLAYEY SILT

SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926
REPORT NO. 11-257

CONSOLIDATION TEST RESULTS



LEGEND:

—○— B-8@16.5': CLAYEY SILTY SAND

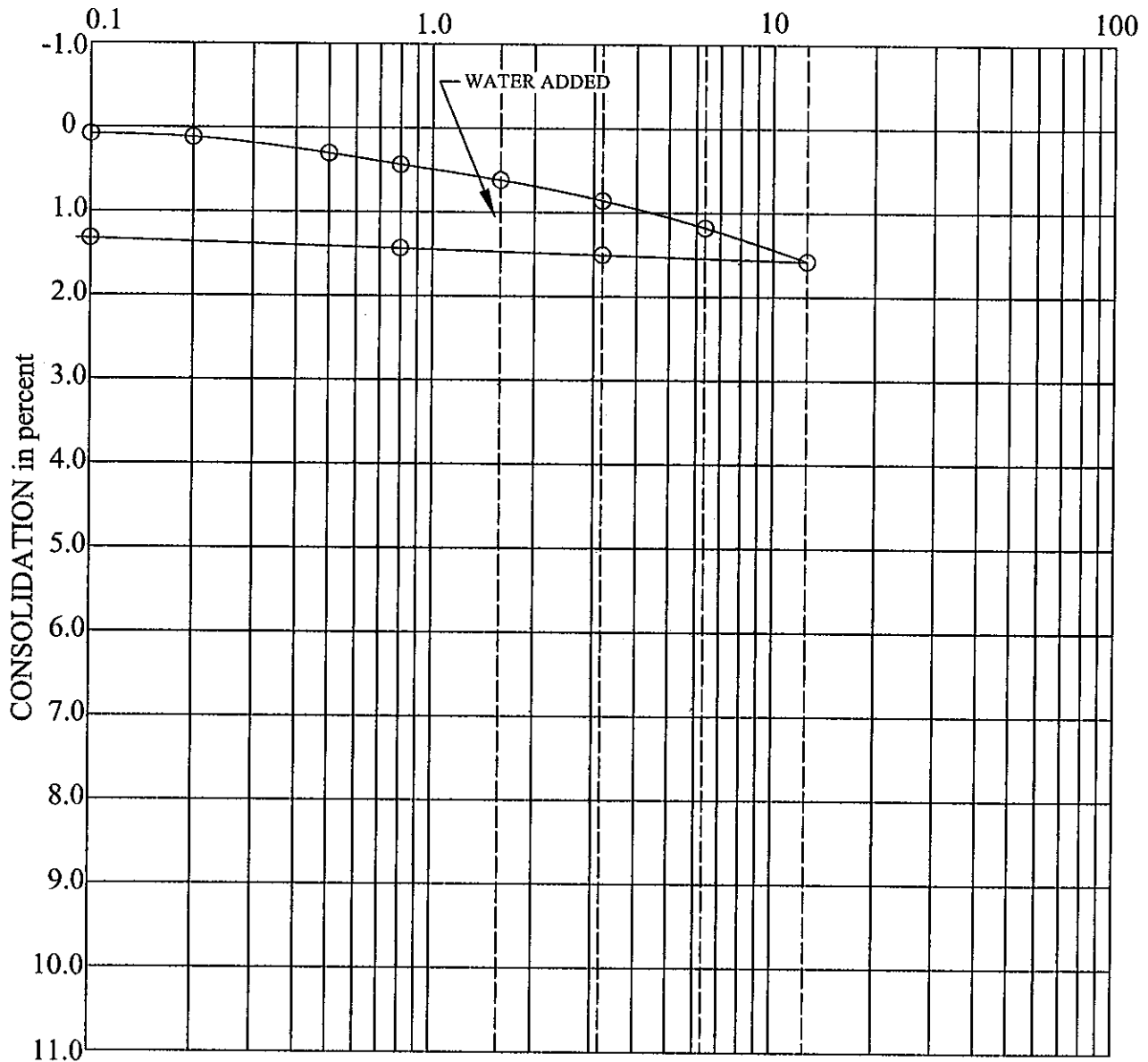
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

CONSOLIDATION TEST RESULTS

NORMAL STRESS in kips per square foot



LEGEND:

—○— B-8@26.5': SANDY CLAYEY SILT

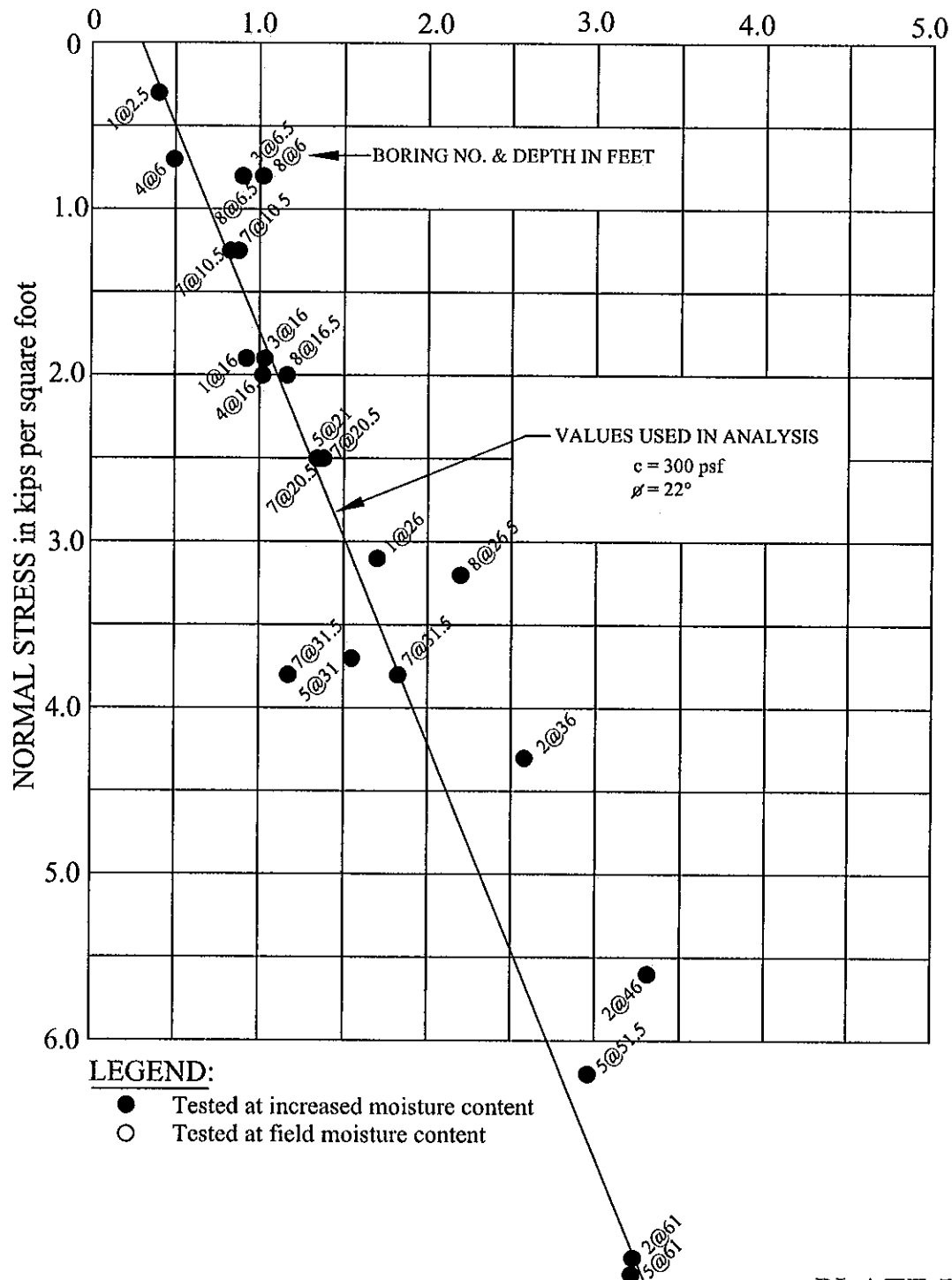
SMITH-EMERY SAN FRANCISCO

SESF FILE NO. 66926

REPORT NO. 11-257

DIRECT SHEAR TEST RESULTS

SHEAR STRENGTH in kips per square foot



WALLACE LABORATORIES, LLC

365 Coral Circle
El Segundo, CA 90245
phone (310) 615-0116 fax (310) 640-6863

July 25, 2011

Fax 213/746-0744
Smith-Emery GeoServices
Angelito Cabarilla
791 East Washington Blvd.
Los Angeles, CA 90021

Dear Angelito,

Your Project: MLK HS, Project No. PN66926

Sample BH No.-1, 2; Sample No. 1C, 2-2.5'

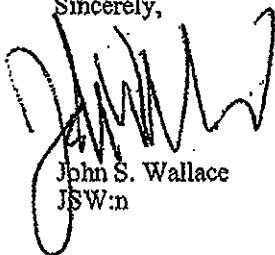
Resistivity - 3,448 ohms-cm in saturation extract

pH - 7.03 in saturation extract

Soluble chloride - 1.5 parts per million on a dry weight basis

Soluble sulfates - 28 parts per million on a dry weight basis

Sincerely,



John S. Wallace
JSW:n

PLATE B-5.1

Soil Analyses Plant Analyses Water Analyses

WALLACE LABORATORIES, LLC

365 Coral Circle
El Segundo, CA 90245
phone (310) 615-0116 fax (310) 640-6863

August 1, 2011

Fax 213/746-0744
Smith-Emery GeoServices
Angelito Cabarilla
791 East Washington Blvd.
Los Angeles, CA 90021

Dear Angelito,

Your Project: MLK HS, Project No. PN66926

Sample BH No. 3 Sample No. 2A 5-5.5'

Resistivity - 2,326 ohms-cm in saturation extract

pH - 7.61 in saturation extract

Soluble chloride - 20 parts per million on a dry weight basis

Soluble sulfates - 74 parts per million on a dry weight basis

Sample BH No. 4 Sample No. 3 10-11.5'

Resistivity - 2,041 ohms-cm in saturation extract

pH - 8.78 in saturation extract

Soluble chloride - 15 parts per million on a dry weight basis

Soluble sulfates - 10 parts per million on a dry weight basis

Sample BH No. 5 Sample No. 1C 2-2.5'

Resistivity - 1,250 ohms-cm in saturation extract

pH - 7.98 in saturation extract

Soluble chloride - 21 parts per million on a dry weight basis

Soluble sulfates - 226 parts per million on a dry weight basis

PLATE B-5.2

Soil Analyses Plant Analyses Water Analyses

Smith-Emery GeoServices, August 1, 2011 page 2

Sample BH No. 6 Sample No. 1 1-2'

Resistivity -- 4,545 ohms-cm in saturation extract

pH -- 7.49 in saturation extract

Soluble chloride -- 4 parts per million on a dry weight basis

Soluble sulfates -- 37 parts per million on a dry weight basis

Sample BH No. 6 Sample No. 3 10-11.5'

Resistivity -- 2,703 ohms-cm in saturation extract

pH -- 8.25 in saturation extract

Soluble chloride -- 6 parts per million on a dry weight basis

Soluble sulfates -- 28 parts per million on a dry weight basis

Sample BH No. 7 Sample No. 1B 1.5-2.0'

Resistivity -- 935 ohms-cm in saturation extract

pH -- 7.18 in saturation extract

Soluble chloride -- 12 parts per million on a dry weight basis

Soluble sulfates -- 495 parts per million on a dry weight basis

Sample BH No. 8 Sample No. 1 1-2.5'

Resistivity -- 1,961 ohms-cm in saturation extract

pH -- 7.84 in saturation extract

Soluble chloride -- 10 parts per million on a dry weight basis

Soluble sulfates -- 39 parts per million on a dry weight basis

Sample BH No. 9 Sample No. 1A 1-1.5'

Resistivity -- 4,762 ohms-cm in saturation extract

pH -- 7.11 in saturation extract

Soluble chloride -- 6 parts per million on a dry weight basis

Soluble sulfates -- 19 parts per million on a dry weight basis

Sincerely,

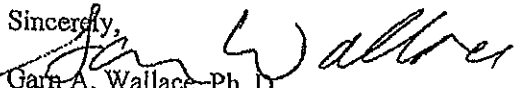

Gary A. Wallace, Ph. D.
GAW:n

PLATE B-5.3

Soil Analyses Plant Analyses Water Analyses

Martin Luther King, Jr. High School
950 El Pueblo Avenue
Pittsburg, California

SESF File No. 66926
SESF Report No: 11-257
August 16, 2011

SMITH-EMERY SAN FRANCISCO

APPENDIX C

STANDARD GRADING SPECIFICATIONS

SMITH-EMERY SAN FRANCISCO

STANDARD GRADING SPECIFICATIONS

These specifications present the usual and minimum requirements for grading operations performed under the control of Smith-Emery GeoServices.

No deviation from these specifications will be allowed, except where specifically superseded in the preliminary soils report or in other written communication signed by the Soils Engineer.

I. GENERAL

- A. The Soils Engineer is the Owner's or Builder's representative on the project. For the purpose of these specifications, supervision by the Soils Engineer includes that inspection performed by any person or persons employed by, and responsible to, the licensed Civil Engineer signing the soil reports.
- B. All clearing, site preparation or earthwork performed on the project shall be conducted by the Contractor under the supervision of the Soils Engineer.
- C. It is the Contractor's responsibility to prepare the ground surface to receive the fills to the satisfaction of the Soils Engineer and to place, spread, mix, water and compact the fill in accordance with specifications of the Soils Engineer. The Contractor shall also remove all material considered unsatisfactory by the Soils Engineer.
- D. It is also the Contractor's responsibility to have suitable and sufficient compaction equipment on the job site to handle the amount of fill being placed. If necessary, excavation equipment will be shut down to permit completion of compaction. Sufficient watering apparatus will also be provided by the Contractor, with due consideration for the fill material, rate of placement and time of year.
- E. The Soils Engineer attesting the Contractor's conformance with these specifications shall issue a final report.

II. SITE PREPARATION

- A. All vegetation and deleterious material such as rubbish shall be disposed of offsite. This removal must be concluded prior to placing fill.

SMITH-EMERY SAN FRANCISCO

- B. The Soils Engineer shall locate all houses, sheds, sewage disposal systems, large trees or structures on the site or on the grading plan to the best of his knowledge prior to preparing the ground surface.
- C. Soil, alluvium or rock materials determined by the Soils Engineer as being unsuitable for placement in compacted fills shall be removed and wasted from the site. Any material incorporated as a part of a compacted fill must be approved by the Soils Engineer.
- D. After the ground surface to receive fill has been cleared, it shall be scarified, dissect or bladed by the Contractor until it is uniform and free from ruts, hollows, hummocks or other uneven features which may prevent uniform compaction.

The scarified ground surface shall then be brought to optimum moisture, mixed as required, and compacted as specified. If the scarified zone is greater than twelve inches in depth, the excess shall be removed and placed in lifts restricted to six inches.

Prior to placing fill, the ground surface to receive fill shall be inspected, tested and approved by the Soils Engineer.

- E. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipe lines or others not located prior to grading are to be removed or treated in a manner prescribed by the Soils Engineer.

III. COMPACTED FILLS

- A. Any material imported or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable by the Soils Engineer. Roots, tree branches and other matter missed during clearing shall be removed from the fill as directed by the Soils Engineer.
- B. Rock fragments less than six inches in diameter may be utilized in the fill, provided:
 - 1. They are not placed in concentrated pockets.
 - 2. There is a sufficient percentage of fine-grained material to surround the rocks.
 - 3. The distribution of the rocks is supervised by the Soils Engineer.

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Rocks greater than six inches in diameter shall be taken offsite, or placed in accordance with the recommendations of the Soils Engineer in areas designed as suitable for rock disposal. Details for rock disposal such as location, moisture control, percentage of rock placed, etc., will be referred to in the "Conclusions and Recommendations" section of the soils report.

If rocks greater than six inches in diameter were not anticipated in the preliminary soils and geology report, rock disposal recommendations may not have been made in the "Conclusions and Recommendations" section. In this case, the Contractor shall notify the Soils Engineer if rocks greater than six inches in diameter are encountered. The Soils Engineer will then prepare a rock disposal recommendations or request that such rocks is taken offsite.

- C. Material that is spongy, subject to decay or otherwise considered unsuitable should not be used in the compacted fill.
- D. Representative samples of materials to be utilized as compacted fill shall be analyzed in the laboratory by the Soils Engineer to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material shall be conducted by the Soils Engineer as soon as possible.
- E. Material used in the compacting process shall be evenly spread, watered, processed and compacted in thin lifts not to exceed six inches in thickness to obtain a uniformly dense layer. The fill shall be placed and compacted on horizontal plane, unless otherwise approved by the Soils Engineer.
- F. If the moisture content or relative density varies from that required by the Soils Engineer, the Contractor should rework the fill until it is approved by the Soils Engineer.
- G. Each layer shall be compacted to 90 percent of the maximum density in compliance with the testing method specified by the controlling governmental agency. (ASTM D-1557-09, five layer method). All jurisdictions to-date require relative compaction of at least 90 percent where the soil contains 15 percent or more soil fraction finer than 0.005 mm (clay fraction). Where hydrometer analysis shows clay content less than 15%, the fill material should be compacted to a relative compaction of 95%.
- H. Prior to the start of grading, the Contractor shall submit for approval a written detailed description of the procedure to achieve slope compaction. It is customary to overfill the slope by 3 feet and compaction achieved by using a grid-roller. The final slope surface is obtained by trimming back the excess compacted overfill.

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V. GRADING CONTROL

- A. Inspection of the fill placement shall be provided by the Soils Engineer during the progress of grading.
- B. In general, density tests should be made at intervals not exceeding two feet of fill height or every 500 cubic yards of fills placed. These criteria will vary depending on soil conditions and the size of the job. In any event, an adequate number of field density tests shall be made to verify that the required compaction is being achieved.

Martin Luther King, Jr. High School
950 El Pueblo Avenue
Pittsburg, California

SESF File No. 66926
SESF Report No: 11-257
August 16, 2011

SMITH-EMERY SAN FRANCISCO

APPENDIX D

CONE PENETROMETER TESTING BY GREGG DRILLING



GREGG DRILLING & TESTING, INC.
GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION SERVICES

July 19, 2011

Smith Emery Company
Attn: Patrick Morrison

Subject: CPT Site Investigation
Martin Luther King JHS
Pittsburg, California
GREGG Project Number: 11-102MA

Dear Mr. Morrison:

The following report presents the results of GREGG Drilling & Testing's Cone Penetration Test investigation for the above referenced site. The following testing services were performed:

1	Cone Penetration Tests	(CPTU)	☒
2	Pore Pressure Dissipation Tests	(PPD)	☒
3	Seismic Cone Penetration Tests	(SCPTU)	☒
4	UVOST Laser Induced Fluorescence	(UVOST)	☐
5	Groundwater Sampling	(GWS)	☐
6	Soil Sampling	(SS)	☐
7	Vapor Sampling	(VS)	☐
8	Pressuremeter Testing	(PMT)	☐
9	Vane Shear Testing	(VST)	☐
10	Dilatometer Testing	(DMT)	☐

A list of reference papers providing additional background on the specific tests conducted is provided in the bibliography following the text of the report. If you would like a copy of any of these publications or should you have any questions or comments regarding the contents of this report, please do not hesitate to contact our office at (925) 313-5800.

Sincerely,
GREGG Drilling & Testing, Inc.

Mary Walden
Operations Manager



-Table 1-

950 Howe Rd • Martinez, California 94553 • (925) 313-5800 • FAX (925) 313-0302
OTHER OFFICES: LOS ANGELES • HOUSTON
www.greggdrilling.com



Bibliography

Lunne, T., Robertson, P.K. and Powell, J.J.M., "Cone Penetration Testing in Geotechnical Practice" E & FN Spon. ISBN 0 419 23750, 1997

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Campanella, R.G. and I. Weemeees, "Development and Use of An Electrical Resistivity Cone for Groundwater Contamination Studies", Canadian Geotechnical Journal, Vol. 27 No. 5, 1990 pp. 557-567.

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Zemo, D.A., T.A. Delfino, J.D. Gallinatti, V.A. Baker and L.R. Hilpert, "Field Comparison of Analytical Results from Discrete-Depth Groundwater Samplers" BAT EnviroProbe and QED HydroPunch, Sixth national Outdoor Action Conference, Las Vegas, Nevada Proceedings, 1992, pp 299-312.

Copies of ASTM Standards are available through www.astm.org



Cone Penetration Testing Procedure (CPT)

Gregg Drilling carries out all Cone Penetration Tests (CPT) using an integrated electronic cone system, *Figure CPT*. The soundings were conducted using a 20 ton capacity cone with a tip area of 15 cm^2 and a friction sleeve area of 225 cm^2 . The cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.80.

The cone takes measurements of cone bearing (q_c), sleeve friction (f_s) and penetration pore water pressure (u_2) at 5-cm intervals during penetration to provide a nearly continuous log. CPT data reduction and interpretation is performed in real time facilitating on-site decision making. The above mentioned parameters are stored on disk for further analysis and reference. All CPT soundings are performed in accordance with revised (2007) ASTM standards (D 5778-07).

The cone also contains a porous filter element located directly behind the cone tip (u_2). It consists of porous plastic and is 5.0mm thick. The filter element is used to obtain penetration pore pressure as the cone is advanced as well as Pore Pressure Dissipation Tests (PPDT's) during appropriate pauses in penetration. It should be noted that prior to penetration, the element is fully saturated with oil under vacuum pressure to ensure accurate and fast dissipation.

The cone has the following accuracy:

1 tsf for q_c , 0.02 tsf for f_s and 0.5 psi for u_2 . In soft clays, a lower capacity cone should be used for improved accuracy.

When the soundings are complete, the test holes are grouted. The grouting procedures generally consist of pushing a hollow tremie pipe with a "knock out" plug to the termination depth of the CPT hole. Grout is then pumped under pressure as the tremie pipe is pulled from the hole. Disruption or further contamination to the site is therefore minimized.

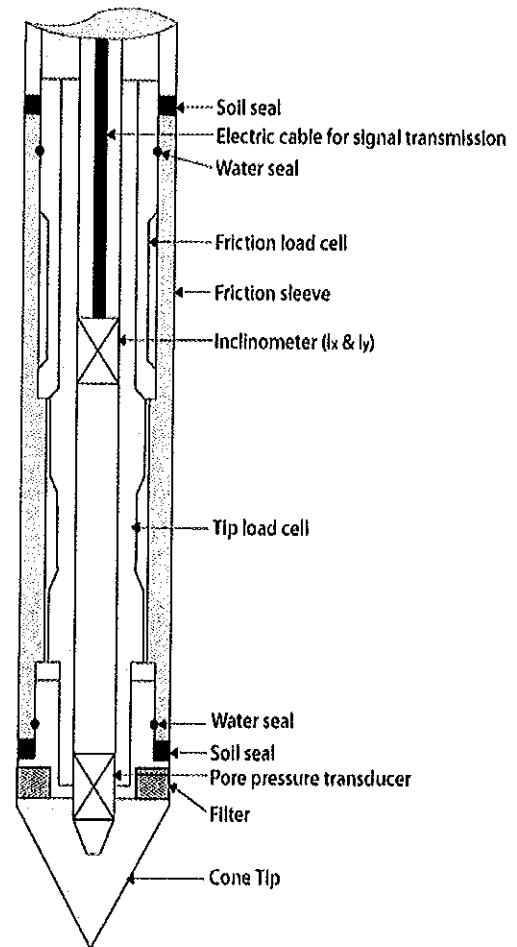


Figure CPT



Seismic Cone Penetrometer Testing (SCPTu)

Gregg Drilling uses a modified CPT cone that contains a built in seismometer to measure compression and shear wave velocities in addition to the standard piezocone parameters (q_c , f_s , and u_2). Therefore, four independent readings are compiled with depth in a single sounding. The standard CPT parameters are recorded continuously while the seismic test is usually performed at 5-foot intervals.

Gregg generates shear waves by striking a seismic beam coupled to the ground surface by a hydraulic cylinder under the CPT rig, *Figure SCPTu*. Compression waves are generated by striking an auger in the ground. The sledgehammer that strikes the beam/auger acts as a trigger, initiating the recording of the seismic wave trace. Before measurements are taken, the rods are decoupled from the CPT rig to prevent energy transmission down the rods.

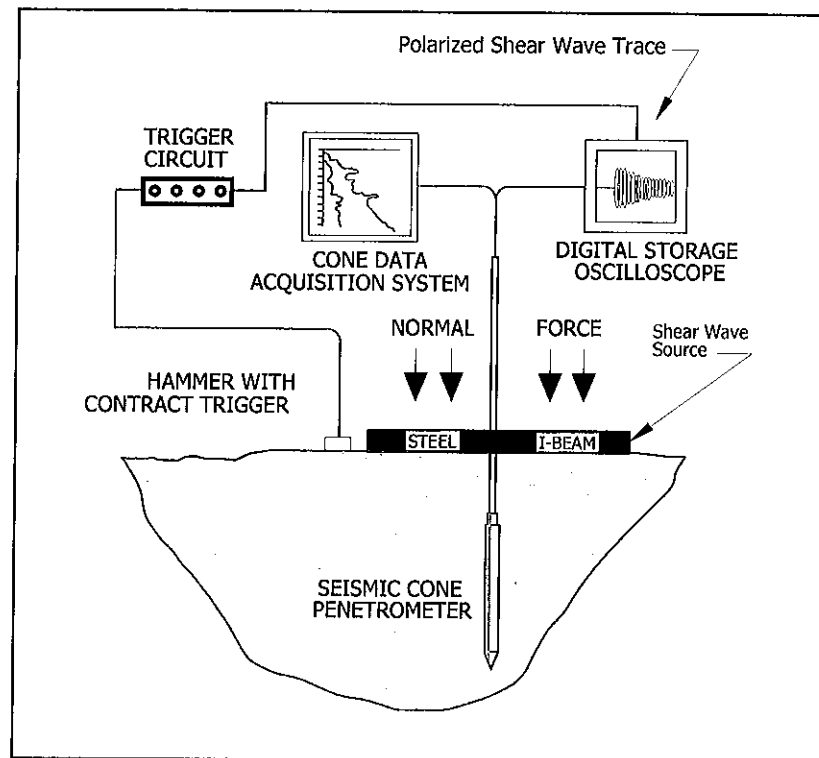


Figure SCPTu

Geophones in the body of the piezocone recognize the arriving waves generated at the ground surface, *Figure Seismic*. Any waves received by the geophones on the cone penetrometer are sent back up to the truck to be displayed on an oscilloscope. On site software then plots the wave amplitude versus time to calculate wave velocities.

At least two waves are recorded for each test depth so the operator can check consistency of the waveforms. Shear wave data is sampled at a frequency of 20 kHz (20,000 samples per second) and compression wave data is sampled at 50 kHz (50,000 samples per second). To maintain a desired signal resolution, the input sensitivity (gain) is increased with depth.

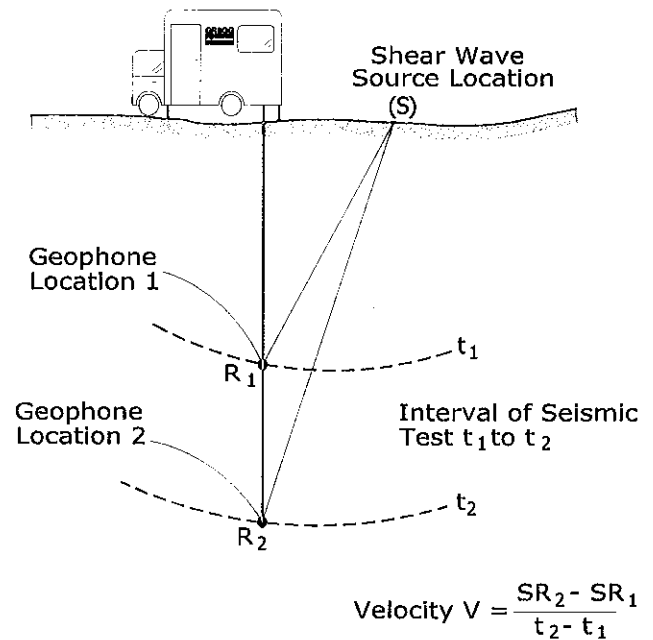


Figure Seismic

Offset distances of the beam from the cone and the location of the geophone are all taken into account in calculations.

The shear wave velocity (V_s) provides information about small-strain stiffness while the penetration data provides information about large-strain strength. From interval shear wave velocity (V_s) and the mass density (ρ) of a soil layer, the dynamic shear modulus (G_0) of the soil can be calculated in a specific depth interval. The dynamic shear modulus (G_0) is a key parameter for the analysis of soil behavior in response to dynamic loading from earthquakes, vibrating machine foundations, waves and wind.

A summary of the data collected including the depth and location identification is displayed in Table 1 and graphical formats and can be found with the corresponding CPT plot.

For a detailed reference on seismic CPT, refer to Robertson et. al., 1986.



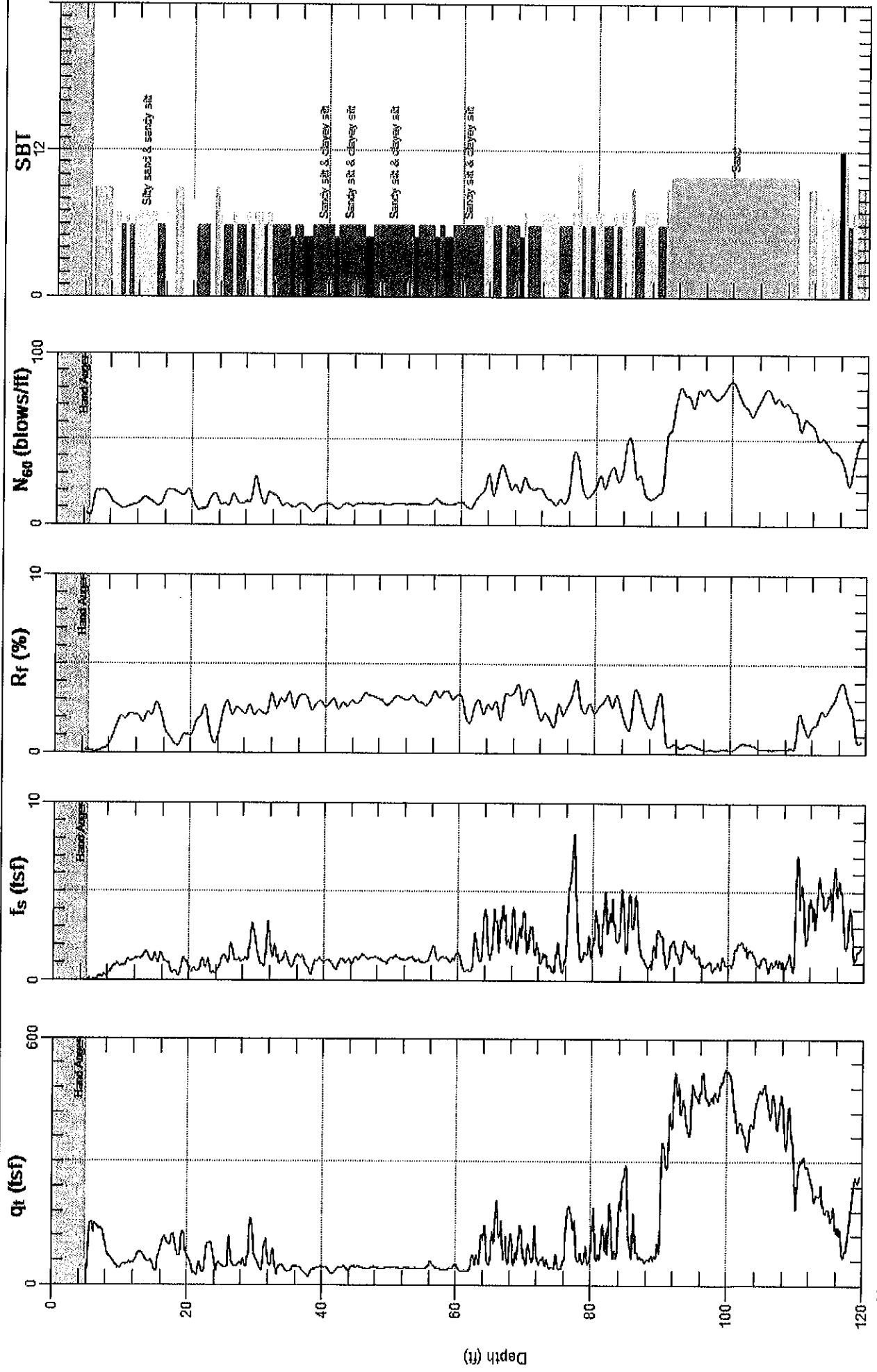
SMITH EMERY

Site: MARTIN L. KING JHS

Engineer: P. MORRISON

Sounding: CPT-01

Date: 7/14/2011 07:53



Max. Depth: 119.587 (ft)
Avg. Interval: 0.656 (ft)



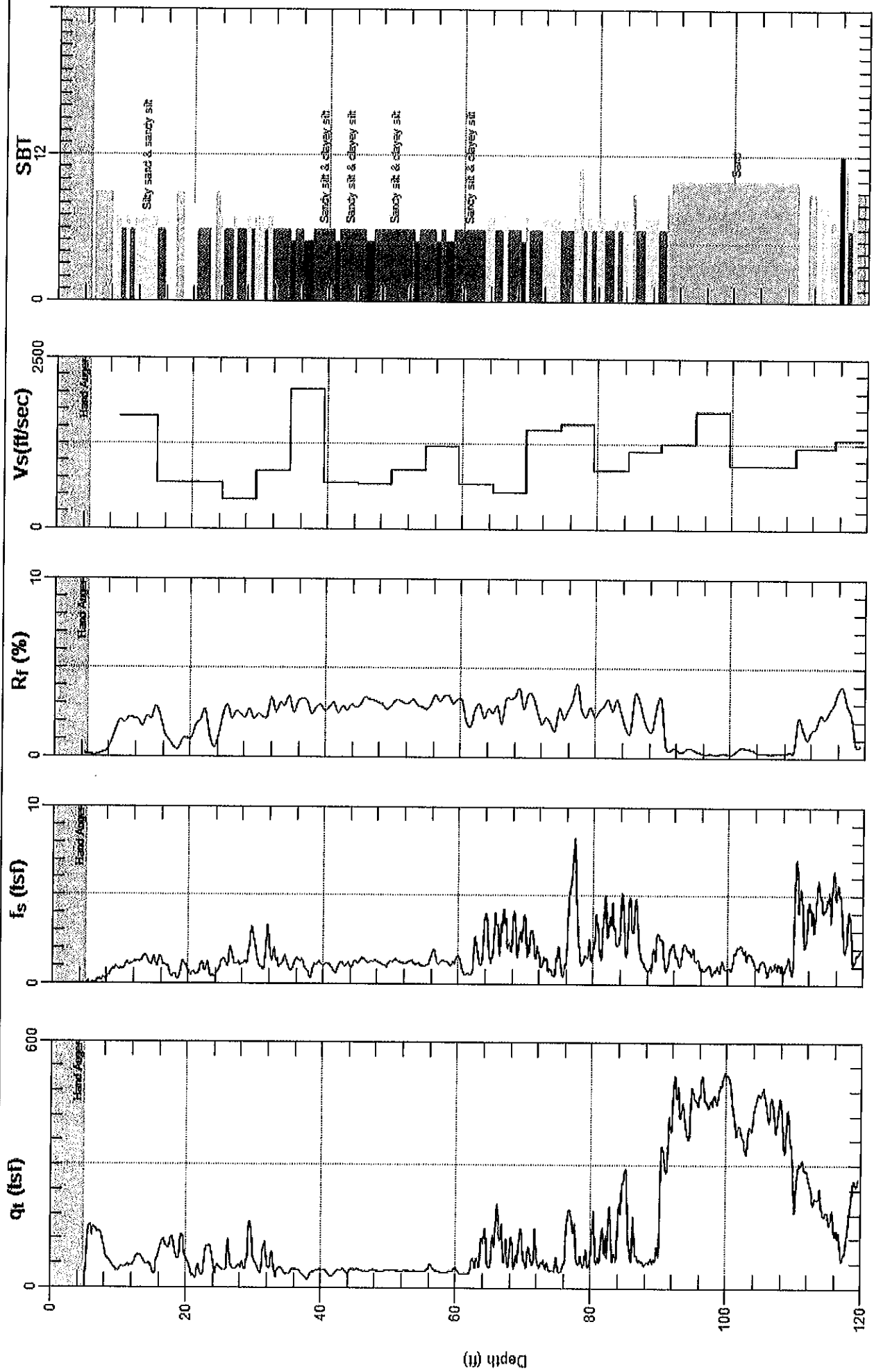
SMITH EMERY

Site: MARTIN L. KING JHS

Engineer: P. MORRISON

Sounding: CPT-01

Date: 7/14/2011 07:53



Max. Depth: 119.587 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)



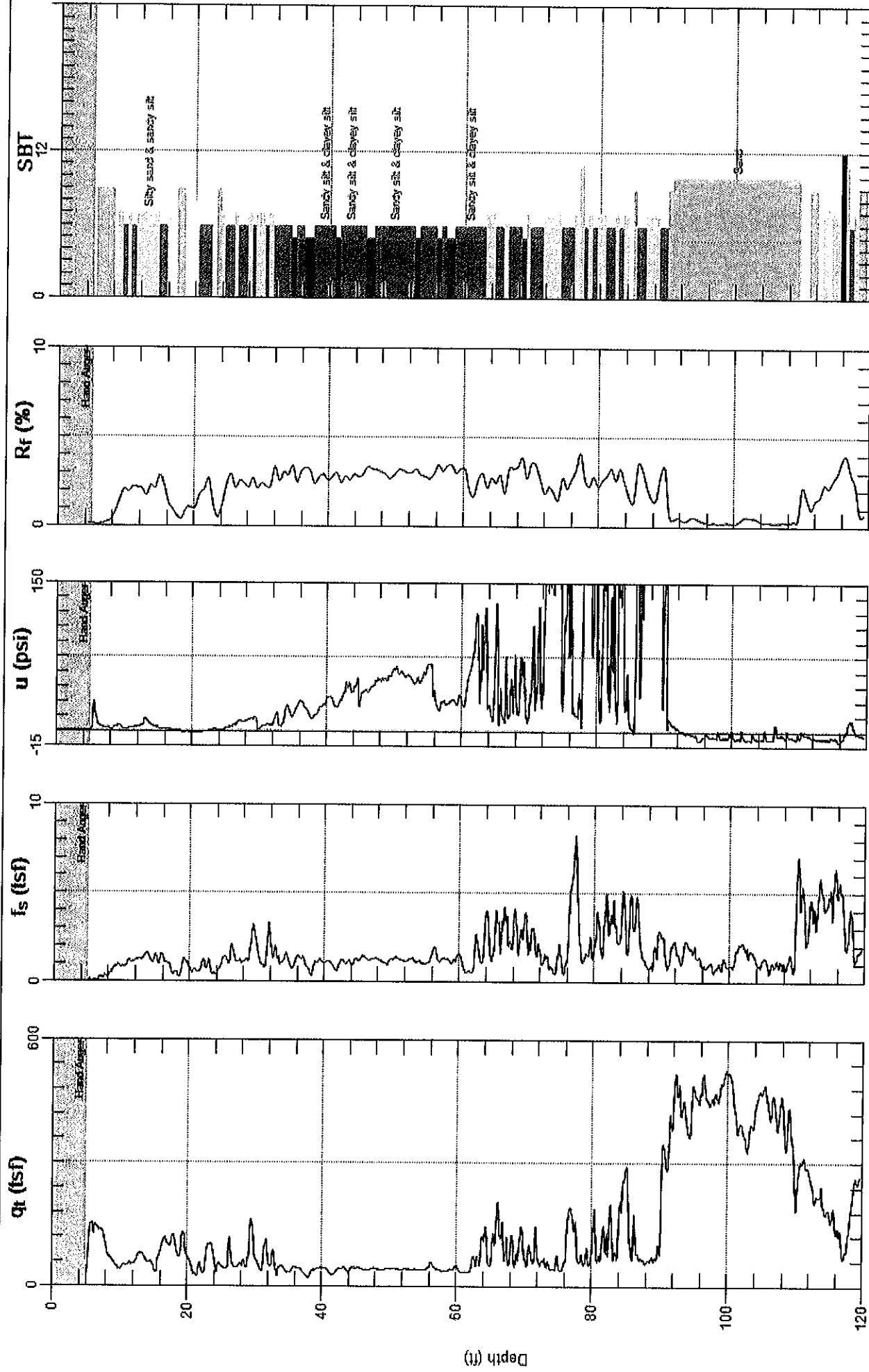
SMITH EMERY

Site: MARTIN L. KING JHS

Engineer: P. MORRISON

Sounding: CPT-01

Date: 7/14/2011 07:53



Max Depth: 119.587 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)



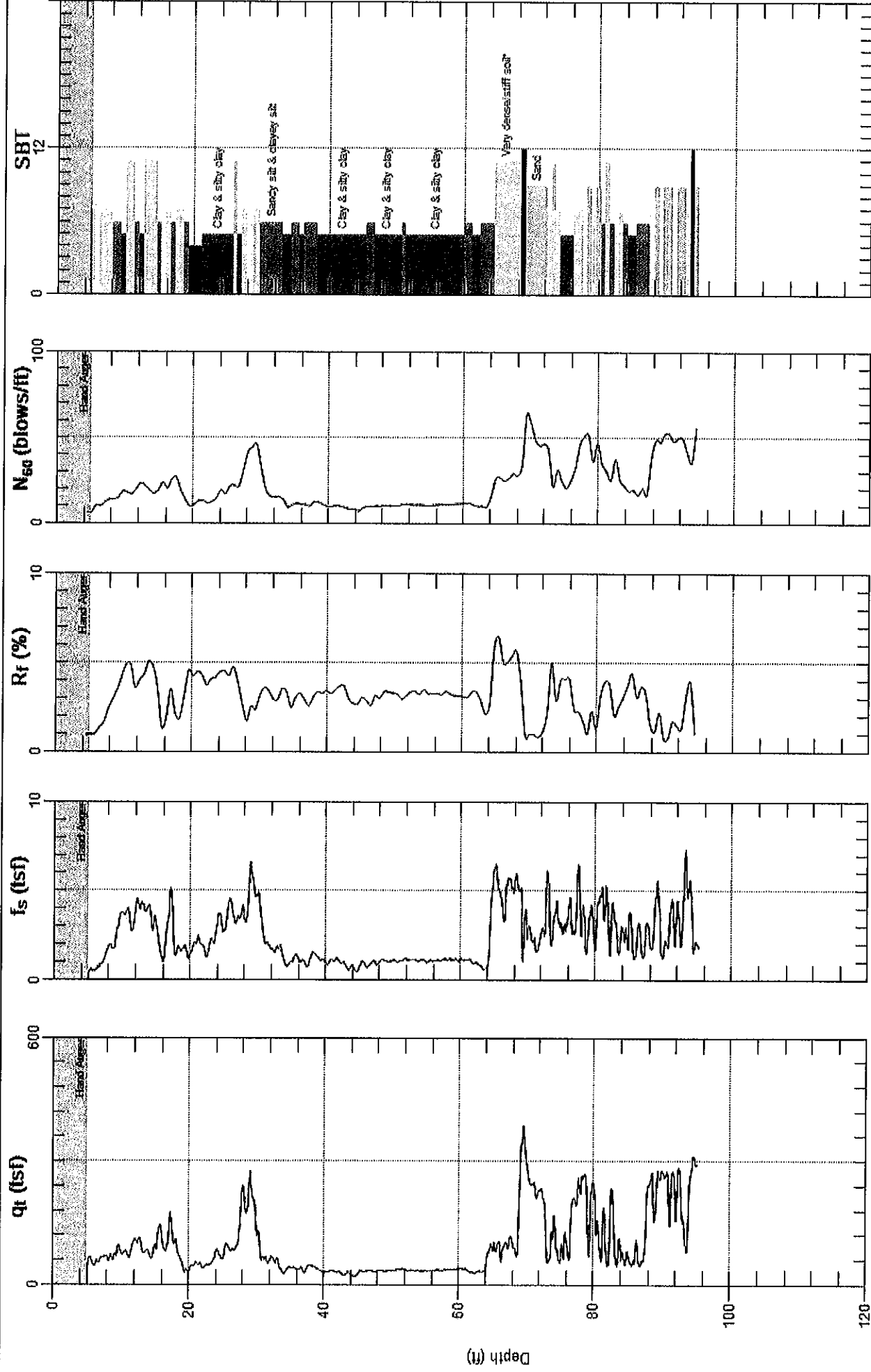
SMITH EMERY

Site: MARTIN L. KING JHS

Engineer: P. MORRISON

Sounding: CPT-02

Date: 7/14/2011 11:35



Max. Depth: 95.144 (ft)
Avg. Interval: 0.656 (ft)

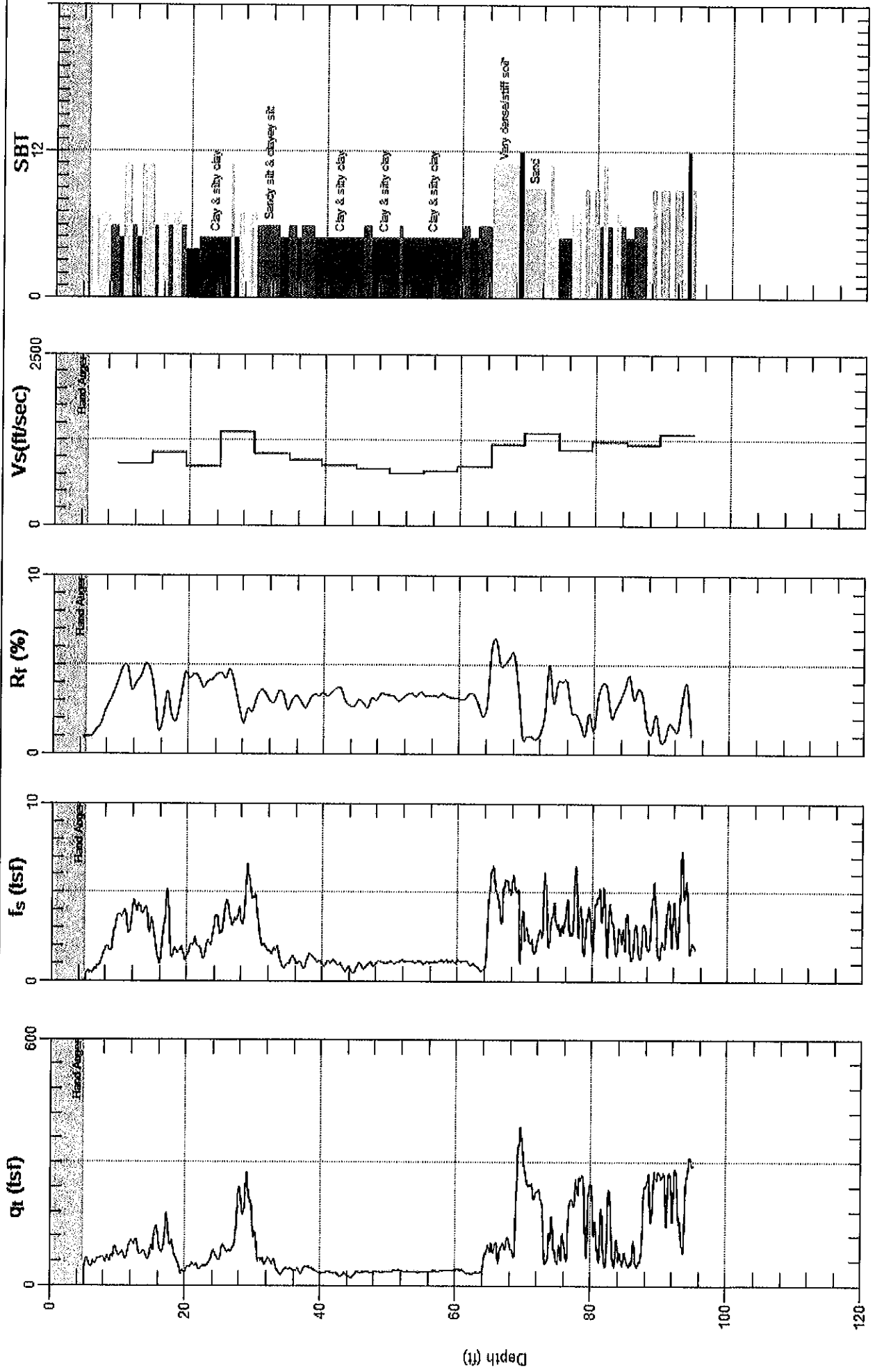
SBT: Soil Behavior Type (Robertson 1990)



SMITH EMERY

Site: MARTIN L. KING JHS
Sounding: CPT-02

Engineer: P. MORRISON
Date: 7/14/2011 11:35



Max. Depth: 95.144 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)



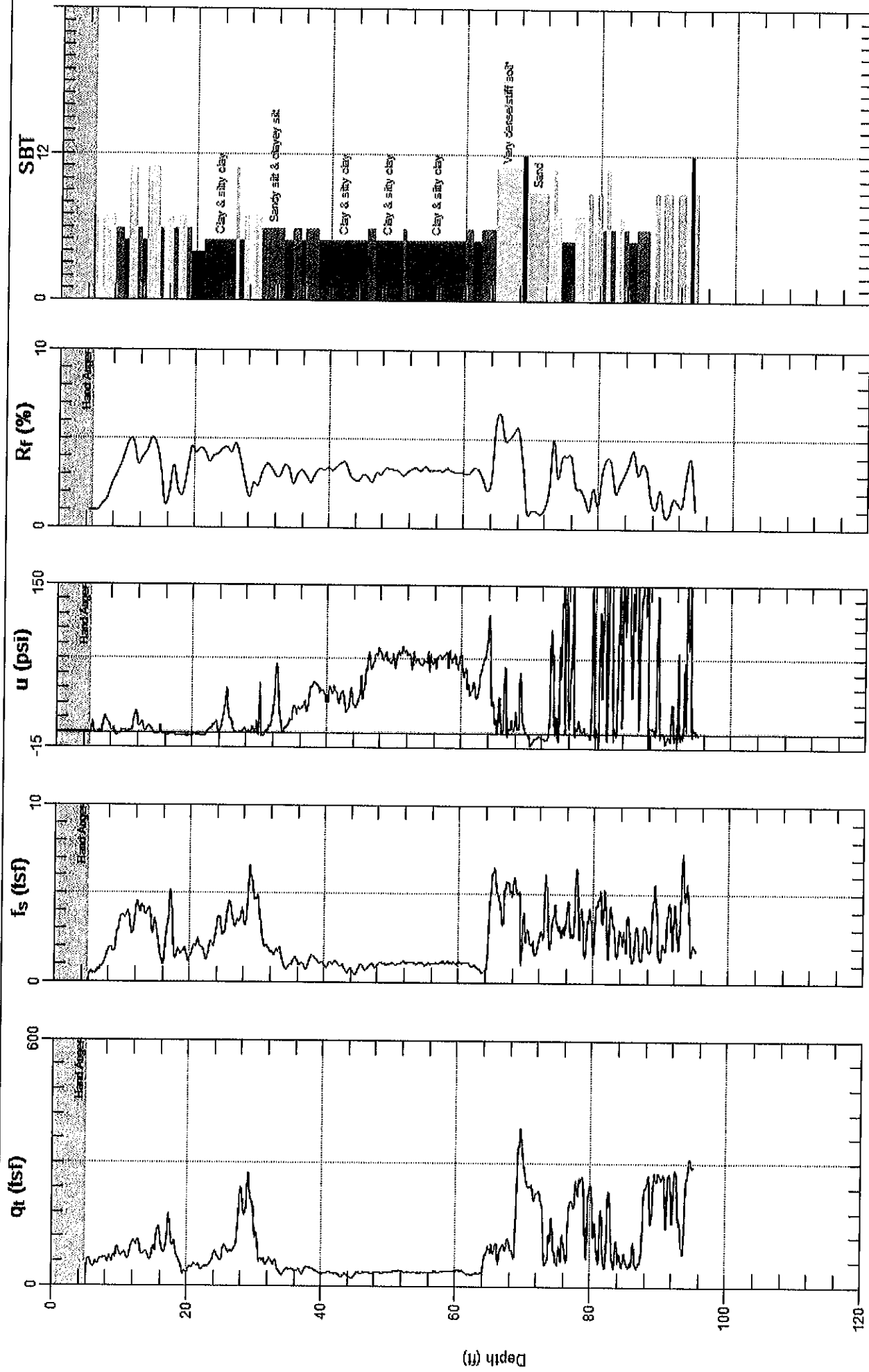
SMITH EMERY

Site: MARTIN L. KING JHS

Engineer: P. MORRISON

Sounding: CPT-02

Date: 7/14/2011 11:35

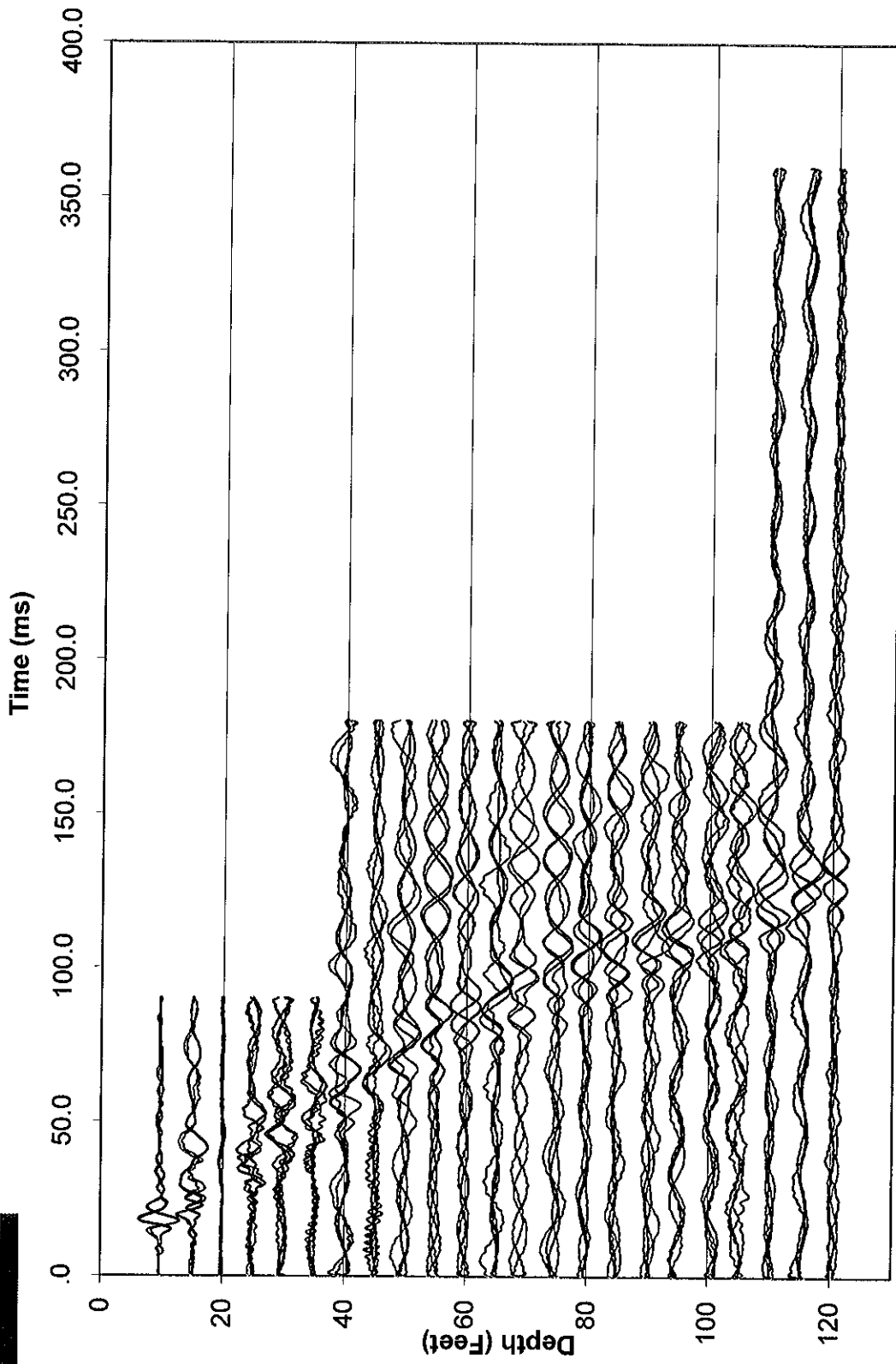


Max. Depth: 95.144 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

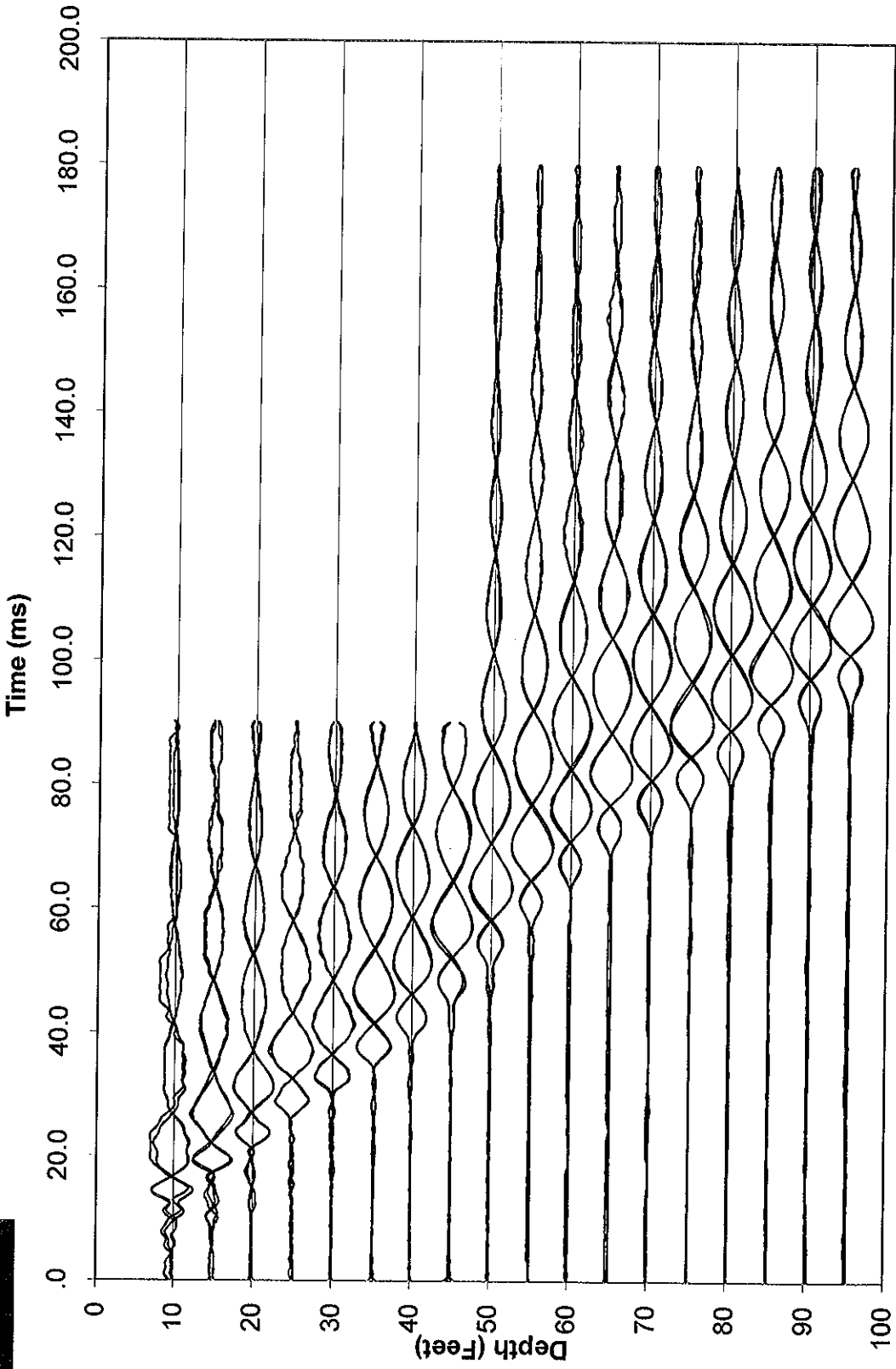


Waveforms for Sounding CPT-01





Waveforms for Sounding CPT-02





Shear Wave Velocity Calculations

MARTIN L. KING JHS

CPT-01

Geophone Offset: 0.66 Feet

Source Offset: 1.67 Feet

07/14/11

Test Depth (Feet)	Geophone Depth (Feet)	Waveform Ray Path (Feet)	Incremental Distance (Feet)	Characteristic Arrival Time (ms)	Incremental Time Interval (ms)	Interval Velocity (Ft/Sec)	Interval Depth (Feet)
10.01	9.35	9.49	9.49	20.3000			
15.42	14.76	14.85	5.36	23.5500	3.2500	1649.1	12.05
25.10	24.44	24.50	9.64	37.7500	14.2000	679.0	19.60
30.02	29.36	29.41	4.91	49.3000	11.5500	425.3	26.90
35.10	34.44	34.49	5.08	55.2500	5.9500	853.5	31.90
40.03	39.37	39.40	4.92	57.6500	2.4000	2048.4	36.91
45.11	44.45	44.48	5.08	65.1500	7.5000	677.5	41.91
50.03	49.37	49.40	4.92	72.7000	7.5500	651.4	46.91
55.12	54.46	54.48	5.08	78.6000	5.9000	861.5	51.92
60.04	59.38	59.40	4.92	82.6500	4.0500	1214.6	56.92
65.12	64.46	64.49	5.08	90.4000	7.7500	655.9	61.92
70.05	69.39	69.41	4.92	99.5500	9.1500	537.7	66.93
75.13	74.47	74.49	5.08	103.0500	3.5000	1452.5	71.93
80.05	79.39	79.41	4.92	106.2500	3.2000	1537.5	76.93
85.14	84.48	84.49	5.08	112.1500	5.9000	861.7	81.93
90.06	89.40	89.41	4.92	116.4500	4.3000	1144.3	86.94
95.14	94.48	94.50	5.08	120.5000	4.0500	1255.4	91.94
100.23	99.57	99.58	5.08	123.4500	2.9500	1723.6	97.03
110.07	109.41	109.42	9.84	133.9500	10.5000	937.3	104.49
115.81	115.15	115.17	5.74	138.7500	4.8000	1196.0	112.28
120.08	119.42	119.43	4.26	142.0000	3.2500	1312.2	117.29



Shear Wave Velocity Calculations

MARTIN L. KING JHS

CPT-02

Geophone Offset: 0.66 Feet
Source Offset: 1.67 Feet

07/14/11

Test Depth (Feet)	Geophone Depth (Feet)	Waveform Ray Path (Feet)	Incremental Distance (Feet)	Characteristic Arrival Time (ms)	Incremental Time Interval (ms)	Interval Velocity (Ft/Sec)	Interval Depth (Feet)
10.01	9.35	9.49	9.49	16.5000			
15.09	14.43	14.53	5.03	22.1000	5.6000	898.9	11.89
20.01	19.35	19.42	4.90	26.7000	4.6000	1064.5	16.89
25.10	24.44	24.50	5.07	32.6000	5.9000	859.4	21.90
30.02	29.36	29.41	4.91	36.2000	3.6000	1364.4	26.90
35.27	34.61	34.65	5.24	41.2000	5.0000	1048.4	31.98
40.03	39.37	39.40	4.75	46.1500	4.9500	960.1	36.99
45.11	44.45	44.48	5.08	51.9500	5.8000	876.1	41.91
50.03	49.37	49.40	4.92	57.8500	5.9000	833.6	46.91
55.12	54.46	54.48	5.08	64.5500	6.7000	758.6	51.92
60.04	59.38	59.40	4.92	70.7500	6.2000	793.4	56.92
65.12	64.46	64.49	5.08	76.6500	5.9000	861.6	61.92
70.05	69.39	69.41	4.92	80.8000	4.1500	1185.5	66.93
75.13	74.47	74.49	5.08	84.5500	3.7500	1355.7	71.93
80.05	79.39	79.41	4.92	89.0000	4.4500	1105.6	76.93
85.14	84.48	84.49	5.08	93.1500	4.1500	1225.1	81.93
90.06	89.40	89.41	4.92	97.3000	4.1500	1185.6	86.94
95.14	94.48	94.50	5.08	101.1000	3.8000	1338.0	91.94

Cone Penetration Test Data & Interpretation

SECTION 32 93 00

PLANTING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Provide planting work and planting maintenance complete as shown on the drawings and as specified.
- B. Related work specified elsewhere includes:
 - 1. Section 32 84 00, PLANTING IRRIGATION

1.02 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. Manufacturer's recommendations.
 - 2. Weed Control Methods Handbook, The Nature Conservancy, Tu, M., Hurd, C. & J.M. Randall. 2001. <http://tncweeds.ucdavis.edu>.
 - 3. Wallace Laboratories LLC report dated August 16, 2011: Soils Report: 365 Coral Circle, El Segundo, CA 90245, MLK HS, Project No PN66926
- B. Plant Material Standards
 - 1. Comply with federal and state laws requiring inspection for plant diseases and infestations. Submit inspection certificates required by law with each shipment of plants, and deliver certificates to the Owner. Obtain clearance from the County Agricultural Commissioner as required by law, before planting plants delivered from outside the County in which planted.
- C. Qualifications of Workmen: Contractor shall provide an experienced full time supervisor who shall be present at all times during execution of this portion of the work, who shall be thoroughly familiar with the type of materials being installed and the proper methods for their installation, and who shall direct all work performed under this Specification.
- D. Equipment: All equipment shall be suitable for the project and in good operational condition.
- E. Inspection: Seed, fertilizer and other packaged materials shall be delivered to project in original and unopened containers, labeled to indicate product identification, manufacturer's name, address, weight, certified analysis and indication of conformance with state and federal laws, as applicable. Materials must be inspected and approved by Owner's Representative prior to use. Containers shall be stored protected from ground contact and from the elements.
- F. Standards: All plants and planting material shall meet or exceed the specifications of Federal, State, and County laws requiring inspection for plant disease and insect control.

- G. Materials Lists: Within 10 days after award of the Contract, Contractor shall submit a complete list of all materials proposed to be furnished and installed under this Specification, demonstrating complete conformance with the requirements specified.
- H. Certificates: Deliver all certificates to the Owner.
- I. Testing Agency: Soil and Plant Laboratory, Inc. 1101 S. Winchester Blvd., Suite G-173, San Jose, CA 95128. (408) 727-0330.
- J. Planting Soil (Topsoil):
 - 1. Provide and install import planting soil (topsoil) where shown on drawings and as specified.
 - 2. On-site and import topsoil used on this project shall be tested, and approved before placement.
 - 3. Secure acceptance before stripping topsoil (planting soil) from a borrow area or delivering topsoil (planting soil) to the project site.

1.03 SPECIAL PROVISIONS

- A. Maintenance (General): Until final acceptance and a stand of grass is achieved, Contractor must maintain lawn by mowing, edging, watering, cultivating, weeding, spraying, cleaning, and replacing as necessary to keep grass in a vigorous, healthy condition.
- B. Watering: As necessary to keep top two inches of soil moist. It shall be the responsibility of the Contractor to ensure proper operation of the existing irrigation system, and program a temporary watering schedule for grass establishment. If there is no irrigation system present, Contractor shall provide a means to irrigate, which may include a temporary irrigation system for the turf establishment as designated on plans.
- C. Weeding: Remove weeds and foreign grass from newly established areas at least once a week. Herbicides may be used only when approved by Owner.

1.04 SUBMITTALS, per Section 013300.

- A. Product Data: Manufacturer's current catalog cuts and specifications of the following:
 - 1. Seed Certification: Prior to planting, provide the owner certificate stating analysis of purity and germination of seed.
 - 2. Seed: Seed shall be provided in unopened bags, bearing the analysis of the contents, and in sufficient quantities to meet the requirements of the project.
 - 3. Sod: Provide supplier's cutsheets, product data and certification that the specified grass types are available.
 - 4. Fertilizer: Provide manufacturer's cut-sheet and product data.
 - 5. Temporary Erosion Control Blanket: Provide manufacturer's cutsheet and product data. A biodegradable erosion control blanket shall be used when seed is applied to any areas with a slope steeper than 6:1.

6. Straw Mulch: Provide manufacturer's cut-sheet and product data.
 7. Mulch: Provide manufacturer's cut-sheet and product data.
 8. Tackifier: Provide manufacturer's cut-sheet and product data.
 9. Mulching Equipment: Provide manufacturer information, capacity and product data.
 10. Import planting soils: Prior to planting, provide the owner certificate stating analysis of chemical and physical properties of topsoils.
- B. Samples:
1. Plants: Submit typical sample photograph of each variety or entire quantity to site for approval by Architect.
- C. Certificates of Compliance for the following:
1. Seed/Hydroseed purity and germination analysis per state requirements
 2. Import soils chemical and physical properties.
- D. Topsoil Analysis: After approval of rough grading and topsoil placement, obtain three representative samples of topsoil taken from approved site locations and submit to an accredited Soils Laboratory for "agricultural suitability" analysis report, including evaluation of physical and chemical properties of soil and recommendations for adding amendment and fertilizers to the soil.
- Upon approval of the Laboratory's report by the Landscape Architect, the recommendations in the report shall become a part of the Specifications and the quantities of soil amendment, fertilizer and other additives shall be adjusted to conform with the report. Request Testing Laboratory to send one copy of test results directly to Landscape Architect and one copy to the Owner.
- E. Receipts for all fertilizer and grass seed.
- F. Herbicide receipts/type
- G. Temporary Watering Plan.
- H. Submit a proposed work schedule to the owner for approval at least fifteen (15) days prior to start of work under this Section. After approval, no modification shall be made to this schedule without written authorization by the owner.
- I. Substitutions:
1. If the Contractor desires to substitute a product, he shall list each item and note it as a "substitution" and provide the following information:
 - a. Descriptive information describing its similarities to the specified product.
 - b. Reason Contractor wants the substitution.
 - c. The price difference in the two different products.
 2. If the product is approved and, in the opinion of the Owner's Representative,

the substituted product does not perform as well as it should, the Contractor shall replace it with the specified product at no additional cost to the Owner.

1.05 PROJECT/SITE CONDITIONS

- A. Site Visit: At beginning of work, visit and walk the site with the Owner's Representative to clarify scope of work and under-stand existing project/site conditions.
- B. Locations of irrigation components shall be determined by the Contractor to prevent damage. Any damage to existing and newly installed irrigation shall be repaired by the Contractor at his/her expense. All repairs must be inspected and approved by Owner.

1.06 WARRANTIES, per Section 017836.

- A. Dead or discolored sod shall be replaced by the Contractor. Seeded areas that have not established must be re-seeded by the Contractor until a complete cover of grass in a healthy and thriving condition is achieved. It is the responsibility of the Contractor to repair any damage made during re- grassing.
- B. Provide a uniform stand of grass by watering, mowing and maintaining lawn areas until final acceptance. Re-seed areas which fail to provide a uniform stand of grass with specified materials until all affected areas are accepted by the owner. Seeded lawn areas shall have a one-year warranty from date of final acceptance. Contractor shall replace seed immediately as needed during the warranty period at Contractor's expense.
- C. Provide a written warrant all plants and planting to be in a healthy, thriving condition until the end of the maintenance period.
- D. Contractor shall guarantee full turf establishment, 95% cover with no bare areas in excess of six (6") inches diameter.
- E. Guarantee shall provide for timely filling, leveling and repairing eroded areas, reseeding areas exhibiting lack of healthy growth. Contractor shall guarantee to repair seeded lawn areas within 10 working days of written notice by the owner.
- F. Warrant plant installation and maintenance by Contractor against defects for a period of one year.

1.07 PRODUCT DELIVERY, HANDLING AND STORAGE

- A. Furnish products in manufacturer's original, unopened, undamaged, unsoiled and dated within one-year standard containers bearing original labels showing quantity, analysis and name of manufacturer.
 - 1. The owner reserves the right to reject any and all material not meeting this criterion at no additional cost to the owner.
- B. Deliver packaged material to site in original unopened containers with intact labels bearing manufacturer's guaranteed chemical analysis, name, trademark, and conformance to state law.
- C. Store fertilizer and seed in weather proof locations.

- D. Protect all materials before, during, and after installation. Sod shall be stored and maintained in a moist condition from the time of harvest until planted.
- E. Remove from site, all materials which do not comply with the specified requirements.
- F. In the event of damage, immediately make repairs and replacements as necessary, at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 HERBICIDE

- A. Use of petrochemical and salt-based Insecticides, synthetic fertilizers, Insecticides, Fungicides and Herbicides are strictly prohibited without the written consent of the project manager.

2.02 GRASS SOD

- A. Grass sod shall be cut with a full $\frac{3}{4}$ " heavy clay soil covering no more than 24 hours prior to planting and be maintained in a moist condition from the time of harvest until planted. Rolled sod with is preferred for large areas Grass sod shall have a healthy and dense root system and be free from noxious weeds. Sod which has become discolored will be rejected and removed from site.

2.03 GRASSES

- A. For turf seeding & hydroseeding:
 - 1. 90/10 Fescue/Blue Blend.
 - 10 lbs/1000 sq. ft.
 - 32.72% Unitus Tall Fescue
 - 32.68% Cayenne Tall Fescue
 - 24.07% Guardian 41 Tall Fescue
 - 9.92% SR2100 Kentucky Bluegrass
 - 2. Supplier shall be Ewing Irrigation Products Inc, Hayward, CA, (510) 441-9530 or approved equal.
 - 3. Provide extra seed for top seeding as required during the plant establishment period

2.10 ON-SITE PLANTING SOIL (TOPSOIL):

- A. Only use on-site planting soil for topsoil if acceptable to the Architect and if it meets the following requirements:
 - 1. On-site planting soil shall be fertile, friable, natural, productive soil containing a normal amount of humus, and shall be capable of sustaining healthy plant life. Planting soil shall be free of subsoil, heavy or stiff clay, rocks, gravel, brush, roots, weeds, noxious seeds, sticks, trash, and other deleterious substances. Soil shall not be infested with nematodes or with other noxious animal life or toxic substances. Soil shall be obtained from well- drained, arable land, and shall be of an even texture. Soil shall not be taken from areas on which are growing any noxious weeds such as Acacia, Morning Glory, Fennel, Broom, English Ivy,

German Ivy, Sorrel, Oxalis, Bermuda Grass, or plants listed in the Current Edition of the California Invasive Plant Inventory published by the California Invasive Plant Council. <http://www.cal-ipc.org/>

2. On-site planting soil shall have a pH value of between 6.0 and 7.5, a boron concentration of the saturation extract of less than 1 ppm, salinity of the saturation extract at 25 degrees C. of less than 4.0 millimoles, and a sodium absorption rate (SAR) of less than 8.
3. The silt and clay content of On-site planting soil shall not exceed that of the existing soil it is to be placed over. It shall have sand content not less than a "Sandy Loam" as classified in accordance with USDA Standards.
4. Make the site of the source of supply of on-site planting soil available to the Landscape Architect for observation and acceptance prior to any hauling or placing of soil. In addition, submit for approval a 1-quart sample of soil, together with a standard soil analysis report by an accredited soils analyst showing chemical analysis stating source, fertility, agricultural suitability and particle size distribution of the soil. Deliver the sample to the Landscape Architect two weeks before starting the contemplated hauling of the soil. Following approval of the sample, provide a one-half cubic yard sample, which shall be stored at the site of work for comparison with subsequent loads of soil. The comparison sample shall be protected by a cover until the furnishing of all soil has been completed and accepted. Should the soil submittal lack certain requirements which can be added to the soil, the Landscape Architect will consider a request by the Contractor to amend the soil as recommended by the Soils Analyst at the Contractor's expense.

2.11 IMPORTED PLANTING SOIL (TOPSOIL):

A. Imported planting soil shall be imported soil as follows:

1. Imported planting soil shall be fertile, friable, natural, productive soil containing a normal amount of humus, and shall be capable of sustaining healthy plant life. Planting soil shall be free of subsoil, heavy or stiff clay, rocks, gravel, brush, roots, weeds, noxious seeds, sticks, trash, and other deleterious substances. Soil shall not be infested with nematodes or with other noxious animal life or toxic substances. Soil shall be obtained from well- drained, arable land, and shall be of an even texture. Soil shall not be taken from areas on which are growing any noxious weeds such as Acacia, Morning Glory, Fennel, Broom, English Ivy, German Ivy, Sorrel, Oxalis, Bermuda Grass, or plants listed in the Current Edition of the California Invasive Plant Inventory published by the California Invasive Plant Council. <http://www.cal-ipc.org/>
2. Imported planting soil shall have a pH value of between 6.0 and 7.5, a boron concentration of the saturation extract of less than 1 ppm, salinity of the saturation extract at 25 degrees C. of less than 4.0 millimoles, and a sodium absorption rate (SAR) of less than 8.
3. The silt and clay content of imported planting soil shall not exceed that of the existing soil it is to be placed over. It shall have sand content not less than a "Sandy Loam" as classified in accordance with USDA Standards.
4. Make the site of the source of supply of planting soil available to the Landscape Architect for observation and approval prior to any hauling or placing of soil. In addition, submit for approval a 1-quart sample of soil, together with a standard soil analysis report by an accredited soils analyst showing chemical analysis stating

source, fertility, agricultural suitability and particle size distribution of the soil. Deliver the sample to the Landscape Architect two weeks before starting the contemplated hauling of the soil. Following approval of the sample, provide a one-half cubic yard sample, which shall be stored at the site of work for comparison with subsequent loads of soil. The comparison sample shall be protected by a cover until the furnishing of all soil has been completed and accepted. Should the soil submittal lack certain requirements which can be added to the soil, the Landscape Architect will consider a request by the Contractor to amend the soil as recommended by the Soils Analyst at the Contractor's expense.

B. Imported planting soil may conform to the following:

1. Lyngso Garden Material's Top Soil or equivalent from Lyngso Garden Materials Inc., 19 Seaport Boulevard, Redwood City, CA 94063. (650) 364-1730. <http://lyngsogarden.com/>.
2. Loam topsoil, well drained homogeneous texture and of uniform grade, without the admixture of subsoil material and entirely free of dense material, hardpan, sod, or any other objectionable foreign material.
3. Containing not less than 4 percent nor more than 20 percent organic matter in that portion of a sample passing a 1/4 inch sieve when determined by the wet combustion method on a sample dried at 105 degrees C.
4. Containing a pH value within the range of 4.5 to 7 on that portion of the sample which passes a 1/4 inch sieve.
5. Containing the following gradations:

Sieve Designation	Percent
Passing 1 inch	100

Sieve Designation	Percent
Passing 1/4 inch	97 - 100
No. 200	20 - 65 (of the 1/4 inch sieve)

6. Make the site of the source of supply of planting soil available to the Landscape Architect for observation and approval prior to any hauling or placing of soil. In addition, submit for approval a 1-quart sample of soil, together with a standard soil analysis report by an accredited soils analyst showing chemical analysis stating source, fertility, agricultural suitability and particle size distribution of the soil. Deliver the sample to the Landscape Architect two weeks before starting the contemplated hauling of the soil. Following approval of the sample, provide a one-half cubic yard sample, which shall be stored at the site of work for comparison with subsequent loads of soil. The comparison sample shall be protected by a cover until the furnishing of all soil has been completed and accepted. Should the soil submittal lack certain requirements which can be added to the soil, the Landscape Architect will consider a request by the Contractor to amend the soil as recommended by the Soils Analyst at the Contractor's expense.

2.12 WATER

- A. Free of substance harmful to plant growth. Temporary irrigation water shall be provided by trucks, water tanks, hoses, pumps, sprinklers or other methods of

transportation furnished by Contractor. Contractor is responsible for providing all water to the project site required for establishment of all seed and revegetation areas. Temporary irrigation watering plan including method shall be reviewed and approved by the owner, prior to construction.

2.13 MULCH

- A. Wood Cellulose Fiber Mulch: Wood cellulose fiber mulch, for use with the hydraulic application of grass seed and fertilizer, shall consist of specially prepared wood cellulose fiber. It shall be processed in such a manner that it will not contain germination or growth inhibiting factors. It shall be dyed an appropriate color to allow visual metering of its application. The wood cellulose fibers shall have the property of becoming evenly dispersed and suspended when agitated in water. When sprayed uniformly on the surface of the soil, the fibers shall form a blotterlike groundcover which readily absorbs water and allows infiltration to the underlying soil. Weight specifications from suppliers for all applications shall refer only to air dry weight of the fiber, a standard equivalent to eighteen (18%) percent moisture. The mulch material shall be supplied in packages having a gross weight not in excess of 100 pounds and be marked by the manufacturer to show the dry weight content. Suppliers shall be prepared to certify that laboratory and field testing of their product has been accomplished and that it meets all of the foregoing requirements.

6. Wood Cellulose Fiber Mulch application = 2,000 pounds/acre.

2.14 FILTER FABRIC (GEOTEXTILE FABRIC and WEED FABRIC))

- A. Polypropylene non-woven geotextile fabric with uniform fiber distribution by "Mirafi, Inc." #140NC, or accepted equal.

2.15 FERTILIZERS

- A. Commercial fertilizer, pelleted or granular form, conform to the requirements of Chapter 7, Article 2, of the Agricultural Code of the State of California for fertilizing materials as follows:

13-13-13 grade, uniform on composition, free-flowing, and suitable for application with approved equipment. The fertilizer shall be delivered to the site in bags or other convenient containers, each fully labeled, conforming to the applicable state fertilizer laws, and bearing the name or trademark and warrant of the producer.

6. Fertilizer Application: 800 lbs./acre

- B. Maintenance Fertilizer: Same as Above

2.12 OTHER MATERIALS

- A. As shown on drawings or approved equal

2.13 HERBICIDE

- A. As recommended by a licensed pest control specialist. Use Integrated Pest Management practices that use the least toxic practices. Apply according to manufacturer's instructions using certified applicators.

PART 3 - EXECUTION

3.01 PAVING REMOVAL

A. General:

1. Coordinate paving removal with other work as required. Remove materials in an orderly and careful manner.
2. Repair or replace all removal work performed in excess to that required at no cost to the Owner. Repair or replacement shall match and equal construction, condition and finish existing at time of award of Contract.

B. Remove following from locations to the extent required or directed for new construction.

1. Asphalt, concrete paving, base rock under paving, curbs and related materials.
2. Designated utility services occurring within removal areas, including disconnection, capping and complete removal or abandonment.
3. Miscellaneous structural elements which interfere with the new construction and as directed by the Owner's Representative.

C. Legally dispose of demolished materials offsite. Backfill and compact areas excavated and open pits and holes resulting from removal operations. Comply with requirements specified in this Section and Section 312333 for backfill materials, compaction and installation methods.

3.02 HERBICIDE APPLICATION

- A. Use of Synthetic Fertilizer, Insecticides, Fungicides and Herbicides are strictly prohibited without the written consent of the project manager.**

3.03 PREPARATION

- A. Provide 72-hour notification to the owner prior to seed installation so owner can be on site during this process.**
- B. Strip existing vegetation and eight (8) inches of existing soil from all areas to receive seed not stripped and graded under previous work**
- C. After stripping, loosen soil to a depth of two (2) inches prior to laying seed. Break up compacted soil. Remove all stones, roots, vegetation, rubbish, debris and other foreign matter one (1) inch in diameter or larger from the top two (2) inches of soil. No foreign matter may be buried on site.**
- D. Spread import topsoil to achieve rough proposed finished grade per plans.**
- E. Hand rake to achieve a uniform loose depth to 2 inches and a smooth, consistent grade immediately prior to laying seed.**
- F. Finish grade to be one (1) inch below top of adjacent hardscape, unless otherwise noted in drawings.**

3.04 FINE GRADING AND SOIL PREPARATION

- A. Provide 72-hour notification to the owner for final grade inspection for seed installation.
- B. Uniformly distribute and spread planting soil backfill in layers not to exceed 24". Topsoil will be spread as necessary by the site work contractor and is subsidiary to this specification.
- C. Finished Grades: Shall be understood to be final spot grades and contours indicated on the contract drawings. Where final spot grades or new contours are not indicated, finished grades shall be uniformly level or sloping between points for which elevations are given or contours are shown.
- D. Tops and Bottoms of All Slopes: Round tops and bottoms of slopes and drainage swales. Adjust and warp slopes, at intersections of cuts and fills, to flow into each other or into the existing natural ground surface without noticeable break. Cuts and fills shall have a maximum slope of 3' horizontally to 1' vertically, unless otherwise shown on the contract drawings. The finished surface of all lawn areas after planting shall not be less than ¼" below or more than ¾" above the finished grade of all walks or other surface areas.
- E. Fine Grading Lawn Areas: Bring the grade of areas to receive turf to a uniform, level slope, as determined by the use of surveying instruments, by discing, harrowing and other methods approved by the owner. When establishing finish grades, remove and dispose of all clods, hard lumps, rocks, roots, litter and other foreign matter not passing through the teeth of a hand iron rake. Tractor drawn raking equipment that compacts lawn areas will not be allowed. Where lawns are intended to drain across pavements, the uphill grade shall be flush with the pavement; the downhill grade shall be ½" to ¾" below the pavement grade.
- F. Settlement: Maintain ground surfaces to the finish grades shown on the contract drawings, and deposit whatever additional topsoil that may be required to correct any settlement or erosion that occurs prior to the date of issuance of the Certificate of Final Acceptance. The surface upon which additional topsoil is to be deposited shall be raked or otherwise satisfactorily prepared to ensure a proper bond. Fill hollows that develop from settling, to the finished elevations, with approved topsoil. Finished lawn areas shall be left sufficiently high to meet all paved areas after settlement.
- G. Protect graded areas from traffic, compaction, and erosion. Keep areas free from trash and debris. Repair and re-establish grades in settled, eroded, or damaged areas.

3.05 GRASS SODDING

- A. The Contractor shall flag locations of existing underground components or equipment, including sprinkler heads and valve boxes, in order to prevent damage.
- B. Fertilize areas to be sodded at the rate of ½ to 1 lb. N per 1000 square feet, or label requirement.
- C. Run irrigation system prior to planting. Place sod on moist, but not muddy, soil.
- D. Large rolled sod must have root fabric system removed prior to installation. Rolled sod root system must consist of at least ¾ heavy clay soil na

- E. Lay sod with staggered joints and with seams tightly fitted together. Do not cover any existing sprinkler heads or valve boxes. When laying sod adjacent to existing turf, the Contractor shall maintain a smooth transition, with no overlap or visible edges. Water thoroughly after laying sod.
- F. Sod shall be stapled on sloped areas where required as designated on plans.
- G. Roll sod after laying with a 200 lb. hand roller. Roll in crossed directions. Repeat rolling operation two days after laying. Use of mechanical rollers must be approved by Owner's Representative.
- H. Sod which is discolored or dehydrated will be rejected and replaced at no cost to the Owner.

3.06 GRASS SEEDING

- A. The Contractor shall flag locations of existing underground components or equipment, including sprinkler heads and valve boxes, in order to prevent damage.

On small sites, seed can be broadcast with a hand seeder or fertilizer spreader. Equipment such as grass drills or planters may be necessary for larger sites. Use of such equipment must be approved by Owner's Representative.

- B. Grass seed shall be uniformly distributed at recommended seeding rates. Immediately after seeding, the Contractor shall firm the soil with a roller and lightly water the site. Contractor shall set irrigation program to apply water in light, frequent applications. Contractor shall re-seed areas that have washed and have resulted in a non-uniform stand of grass.

3.07 HYDROSEED PLANTING

- A. Special Mulching Equipment and Procedures: Hydraulic equipment used for the application of fertilizer, seed, and slurry of prepared wood fiber mulch shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing up to forty (40) pounds of fiber plus a combined total of seventy (70) pounds of fertilizer solids for each one hundred (100) gallons of water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles which provide even distribution of the slurry on the slopes to be seeded. The slurry tank shall have a minimum capacity of eight hundred (800) gallons and shall be mounted on a traveling unit which may be either self-propelled or drawn with a separate unit which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded so as to provide uniform distribution without waste. The owner's representative may authorize equipment with smaller tank capacity provided that the equipment has the necessary agitation system and sufficient pump capacity to spray the slurry in a uniform coat.
- B. Materials Inspection: The day of hydroseeding, Contractor shall provide hydroseed machine, water, labor, unopened fertilizer and unopened seed container in original manufacturer's container and fiber material. The owner shall inspect and observe the water, mulch, seed mix, fertilizer and tackifier in the original container(s) prior to pouring into tank and application. Any materials placed in the tank, including water, without observation will be rejected and replaced at no additional cost to the Owner.
- C. Mixing:

1. Care shall be taken that the slurry preparation takes place on the site of the work. Any mixture prepared or applied prior to the owner observation or prepared prior to being on site will not be accepted. Spraying shall commence immediately after inspection when the tank is full.
2. Operators of hydromulching equipment shall be thoroughly experienced in this type of application. Apply specified slurry mix in a motion to form a uniform mat at specified rate. The operator shall spray the area with a uniform, visible coat by using the green color of the wood pulp as a guide. Keep hydromulch within areas designated and keep from contact with other plant material. Slurry mixture which has not been applied within four (4) hours of mixing shall not be used and shall be removed from the site.
3. After installation, the Contractor shall not operate any equipment over the covered area. Immediately after application, thoroughly wash off any plant material, planting areas, or paved areas not intended to receive slurry mix. Keep all paved and planting areas clean during maintenance operations.

3.08 PROTECTION

- A. No heavy equipment shall be moved over the planted turf areas unless the soil is again prepared, graded, leveled, and replanted. It will be the responsibility of the Contractor to protect all paving surfaces, curbs, utilities, plant materials, and any other existing improvements from damage. All damage shall be repaired or replaced at no cost to the Owner.

3.09 DITCHES AND SWALES

- A. Construct ditches and swales in the areas designated to convey storm water to the storm drainage facilities. Refer to Civil Drawings.

3.11 ESTABLISHMENT

- A. Seeded areas shall be maintained in good condition throughout the installation process and until final acceptance.
- B. Upon completion of work, clean areas within Contract limits, remove tools, supplies and equipment. Wash down curbs and pavement areas. Scrub curbs and walks as necessary to ensure a clean surface. Provide site clean and free of materials and suitable for use as intended.

3.12 PLANTING ESTABLISHMENT MAINTENANCE

- A. General Requirements:
 1. The planting establishment maintenance period required shall be 90 calendar days after all planting is complete, erosion control areas are seeded, and installation approved. A longer period may be required if the erosion control areas are not thick, vigorous and even, or if the plant material is not acceptably maintained during the maintenance period. The maintenance period may be suspended at any time upon written notice to the Contractor that the landscaping is not being acceptably maintained, and the day count suspended until the landscape is brought up to acceptable standards as determined by the Architect.

2. Maintain seeded areas until final acceptance.
3. Maintain seeded areas, including watering, spot weeding, mowing, and reseeding until a fully rooted, uniform stand of grass free of weeds, undesirable grass species, disease and insects is achieved and accepted by the owner.
4. Water daily to maintain adequate surface soil moisture for proper root establishment. Continue daily watering for not less than 30 days. Thereafter, apply $\frac{1}{2}$ " of water twice weekly until acceptance. The Contractor shall provide a written watering schedule for review by the owner.
5. Repair, rework, and re-seed all areas that are washed out, eroded, or die out. The Contractor shall guarantee to repair seed within ten (10) working days of written notice from the owner.
6. Mow lawn areas as soon as lawn top growth exceeds a 5" height. Cut back to 3 $\frac{1}{2}$ " in height. Repeat mowing as required to maintain specified height not less than 3" and not more than 5". The owner reserves the right to adjust the mowing height and frequency. Protect all areas against damage, including erosion and trespass, and provide proper safeguards. Maintain and keep all temporary barriers erected to prevent trespass.
7. Excess grass clippings shall be picked up and removed from the site and premises.
8. Keep all walks and paved areas clean. Keep the site clear of debris resulting from landscape work or maintenance.
9. Edges shall be trimmed at least twice monthly or as needed for neat appearance. Clippings shall be completely removed and disposed of.
10. Contractor will not be responsible for turf damage due over use by the school and the public after the initial 90-day plant establishment period.
11. Repair all damaged planted areas, and reseed immediately upon discovery of damage or loss.
12. Check sprinkler systems at each watering; adjust coverage and clean heads immediately. Adjust timing of sprinkler controller to prevent flooding.
13. Maintain adequate moisture depth in soil to ensure vigorous growth.
14. Turf seed shall not be mown shorter than one-third ($\frac{1}{3}$) of grass leaf height.
15. Seed shall be well established, free of bare spots and weeds, and of a "sod-like" quality to the satisfaction of the School District prior to Final Acceptance.
16. Keep Contract areas free from weeds by cultivating, hoeing or hand pulling. Use of chemical weed killers will not relieve the Contractor of the responsibility of keeping areas free of weeds over 1-inch high at all times.

B. Fertilization:

- a) Turf that is installed from sod should receive a light fertilization 2 weeks after planting with 5-5-5 applied at a rate of 6 pounds per 1000 square feet. Once the turf is well established, the frequency of fertilization should be decreased depending on color and rate of growth desired.
 - b) After completion of 60-days of establishment period, fertilize all turf seed with 16-16-16 at a rate of 3.0 pounds per 1,000 square feet and continue through the maintenance period at the discretion of the turf maintenance contractor to provide a healthy, well-rooted, even-colored, viable lawn well established, free of weeds, open joints, bare areas, and surface irregularities through the Athletic Field Maintenance Period.
2. Disease Control: Control turf diseases throughout the Field Maintenance Period with legally approved fungicides and herbicides.
 3. Weed Control: Control broad leaf weeds with Bay-Friendly practices or selective, legally approved herbicides. No herbicide shall be used without the prior consent of the School District.

3.13 FINAL PLANTING CLEANING & CLOSEOUT PROCEDURES, per Section 017700.

- A. Inspection to determine final acceptance of seed will be made by the owner upon Contractor's request. Provide notification at least 10 working days before requested inspection date.
- B. Seeded areas will be acceptable provided all requirements, including maintenance, have been completed and a healthy, uniform, close stand of the specified grass is established, free of weeds, undesirable grass species, disease and insects.
- C. The project will not be accepted, nor final payment authorized until sod is healthy, vigorous, fully rooted and grown-in with 80% cover and no bare areas larger than six (6") in diameter. The contractor is responsible to maintain the project sod until these criteria are met.

END OF SECTION AFTER FINDINGS FROM WALLACE LABORATORIES LLC

WALLACE LABORATORIES, LLC

365 Coral Circle
El Segundo, CA 90245
phone (310) 615-0116 fax (310) 640-6863

July 25, 2011

Fax 213/746-0744
Smith-Emery GeoServices
Angelito Cabarilla
791 East Washington Blvd.
Los Angeles, CA 90021

Dear Angelito,

Your Project: MLK HS, Project No. PN66926

Sample BH No.-1, 2; Sample No. 1C, 2-2.5'

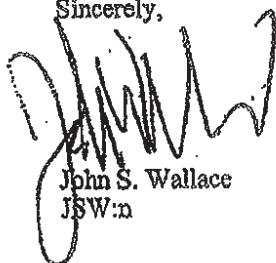
Resistivity - 3,448 ohms-cm in saturation extract

pH - 7.03 in saturation extract

Soluble chloride - 1.5 parts per million on a dry weight basis

Soluble sulfates - 28 parts per million on a dry weight basis

Sincerely,



John S. Wallace
JSW:n

PLATE B-5.1

Soil Analyses Plant Analyses Water Analyses

WALLACE LABORATORIES, LLC

365 Coral Circle
El Segundo, CA 90245
phone (310) 615-0116 fax (310) 640-6863

August 1, 2011

Fax 213/746-0744
Smith-Emery GeoServices
Angelito Cabarilla
791 East Washington Blvd.
Los Angeles, CA 90021

Dear Angelito,

Your Project: MLK HS, Project No. PN66926

Sample BH No. 3 Sample No. 2A 5-5.5'

Resistivity - 2,326 ohms-cm in saturation extract

pH - 7.61 in saturation extract

Soluble chloride - 20 parts per million on a dry weight basis

Soluble sulfates - 74 parts per million on a dry weight basis

Sample BH No. 4 Sample No. 3 10-11.5'

Resistivity - 2,041 ohms-cm in saturation extract

pH - 8.78 in saturation extract

Soluble chloride - 15 parts per million on a dry weight basis

Soluble sulfates - 10 parts per million on a dry weight basis

Sample BH No. 5 Sample No. 1C 2-2.5'

Resistivity - 1,250 ohms-cm in saturation extract

pH - 7.98 in saturation extract

Soluble chloride - 21 parts per million on a dry weight basis

Soluble sulfates - 226 parts per million on a dry weight basis

PLATE B-5.2

Smith-Emery GeoServices, August 1, 2011 page 2

Sample BH No. 6 Sample No. 1 1-2'

Resistivity -- 4,545 ohms-cm in saturation extract

pH -- 7.49 in saturation extract

Soluble chloride -- 4 parts per million on a dry weight basis

Soluble sulfates -- 37 parts per million on a dry weight basis

Sample BH No. 6 Sample No. 3 10-11.5'

Resistivity -- 2,703 ohms-cm in saturation extract

pH -- 8.25 in saturation extract

Soluble chloride -- 6 parts per million on a dry weight basis

Soluble sulfates -- 28 parts per million on a dry weight basis

Sample BH No. 7 Sample No. 1B 1.5-2.0'

Resistivity -- 935 ohms-cm in saturation extract

pH -- 7.18 in saturation extract

Soluble chloride -- 12 parts per million on a dry weight basis

Soluble sulfates -- 495 parts per million on a dry weight basis

Sample BH No. 8 Sample No. 1 1-2.5'

Resistivity -- 1,961 ohms-cm in saturation extract

pH -- 7.84 in saturation extract

Soluble chloride -- 10 parts per million on a dry weight basis

Soluble sulfates -- 39 parts per million on a dry weight basis

Sample BH No. 9 Sample No. 1A 1-1.5'

Resistivity -- 4,762 ohms-cm in saturation extract

pH -- 7.11 in saturation extract

Soluble chloride -- 6 parts per million on a dry weight basis

Soluble sulfates -- 19 parts per million on a dry weight basis

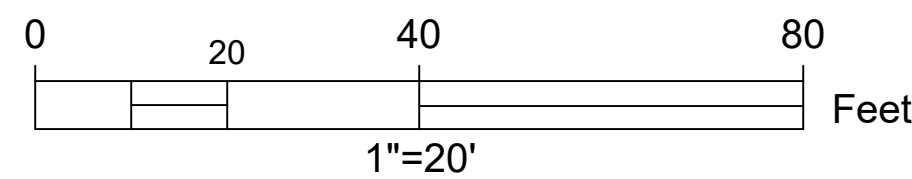
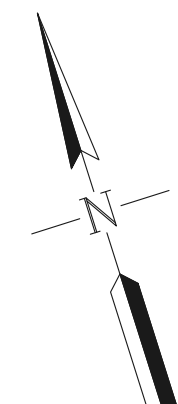
Sincerely,

Garn A. Wallace, Ph. D.

GAW:n

PLATE B-5.3

Soil Analyses Plant Analyses Water Analyses



ABBREVIATIONS

AD	ASPHALT	HB	HOSE BIBB
AE	AREA DRAIN	HR	HAND RAILING
AF	BASKETBALL HOOP	ICV	IRRIGATION CONTROL VALVE
AG	BUILDING CORNER	IRR BOX	IRRIGATION BOX
BFP	BACK FLOW PREVENTOR	J	JOINT
BOL	BOLLARD	LIP	LIP OF GUTTER
CB	CATCH BASIN	MARQ	MARQUEE
CC	CHAIN-LINK FENCE	MS	POST MOUNTED VALVE
CNTR	STORAGE CONTAINER	PS	PARQUEE STRIPE
COMM BOX	COMMUNICATION BOX	RTW	RETAINING WALL
COMM VAILT	COMMUNICATION VAILT	RN	RAIN WATER DRAINER - SURFACE RELEASE
CONC	CONCRETE	SDMH	STORM DRAIN MAN HOLE
E BOX	ELECTRIC BOX	ST	STREET LIGHT
E GND	ELECTRIC GROUND	SLE BOX	STREET LIGHT ELECTRIC BOX
E_VLT	ELECTRIC VAILT	SSCO	SANITARY SEWER CLEANOUT
ED	EDGE OF CONCRETE	SSMH	SANITARY SEWER MANHOLE
EP	EDGE OF PAVEMENT	TC	TOP OF CURB
FC	FIRE DEPARTMENT CONNECTOR	TD	TRUNCATED DOME
FENH FLOOT	FINISH FLOOT	TR BOX	TRAFFIC SIGNAL BOX
FL	FIRE HYDRANT	UNK	UNKNOWN UTILITY
FL	FIRE LINE	W BOX	WATER BOX
G_VENT	GAS VENTILATION PIPE	WF	WATER FOUNTAIN
G_VLT	GAS VAILT	WFG	WROUGHT IRON FENCE
GM	GRASS METER	WS	WHEEL STOP
GND	GROUND ELEVATION	WV	WATER VAILT
GT	GRAPE TRAP	XFORM	TRANSFORMER
GUY	GUY WIRE		
GV	GAS VAILT		

ELEVATION DATUM:
ELEVATIONS ARE BASED UPON GPS OBSERVATION = NAVD88

BASIS OF BEARINGS:
THE BEARING, NORTH 73°15'00" WEST, OF THE CENTERLINE OF CALIFORNIA AVENUE, AS SHOWN ON MAP FILED IN BOOK 84 OF SUBDIVISIONS AT PAGES 37-39, CONTRA COUNTY OFFICIAL RECORDS WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BENCHMARK:
AN ELEVATION OF 60.018', OF A MAGNAIL SET IN CALIFORNIA AVENUE, WAS USED AS
THE BENCHMARK FOR THIS SURVEY.

RECORD BOUNDARY STATEMENT:
THE BOUNDARY SHOWN HEREON IS BASED ON RECORD MAPS AND SURVEYED LOCATIONS OF FOUND MONUMENTS. ADDITIONAL BOUNDARY EVIDENCE MAY EXIST THAT MIGHT RESULT IN MINOR VARIATIONS IN BOUNDARY LINES AND WOULD ONLY BE REVEALED BY A RESOLVED BOUNDARY SURVEY.

LEGEND

BOUNDARY	
BUILDING LINE	
CENTERLINE	
CHAIN-LINK FENCE	
EASEMENT	
HAND RAILING	
UNDERGROUND GAS	
UNDERGROUND IRRIGATION	
UNDERGROUND JOINT TRENCH	
UNDERGROUND SIGNAL	
UNDERGROUND STORM DRAIN	
UNDERGROUND UNKNOWN	
UNDERGROUND WATER	
WROUGHT IRON FENCE	

NOTES:

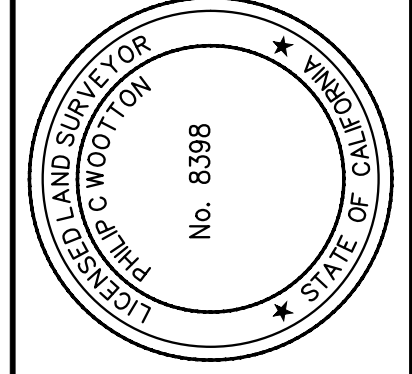
1.) UTILITY NOTE.
THE TYPES, LOCATIONS, SIZES AND/OR DEPTH OF EXISTING UNDERGROUND UTILITIES, AS SHOWN ON THIS TOPOGRAPHIC SURVEY WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL TYPES, EXTENT, SIZES, LOCATION, AND DEPTHS OF SUCH UNDERGROUND UTILITIES. (A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE ALL KNOWN UTILITIES AND UTILITIES HOWEVER, THE ENGINEER CAN ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF ITS DELINEATION OF SUCH UNDERGROUND UTILITIES WHICH MAY BE ENCOUNTERED, BUT WHICH ARE NOT SHOWN ON THESE DRAWINGS.



REVISIONS		
MARK	DATE	DESCRIPTION
BY		

TOPOGRAPHIC SURVEY
MARTIN LUTHER KING, JR JUNIOR HIGH SCHOOL
2012 Carion Court
urgh
Califo

DATE: 04/16/2025
SCALE: 1" = 20'
DRAWN BY: KWC
DESIGNED BY: --
CHECKED BY: PCW
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ALL RIGHTS RESERVED



ROLL
ENGINEERING
engineers and surveyors

1101 S. WINCHESTER BLVD.
SUITE 100
SAN JOSE, CA 95128
TEL: 408-261-9800
FAX: 408-261-0595
E-MAIL: Robert@carroll-engineering.com

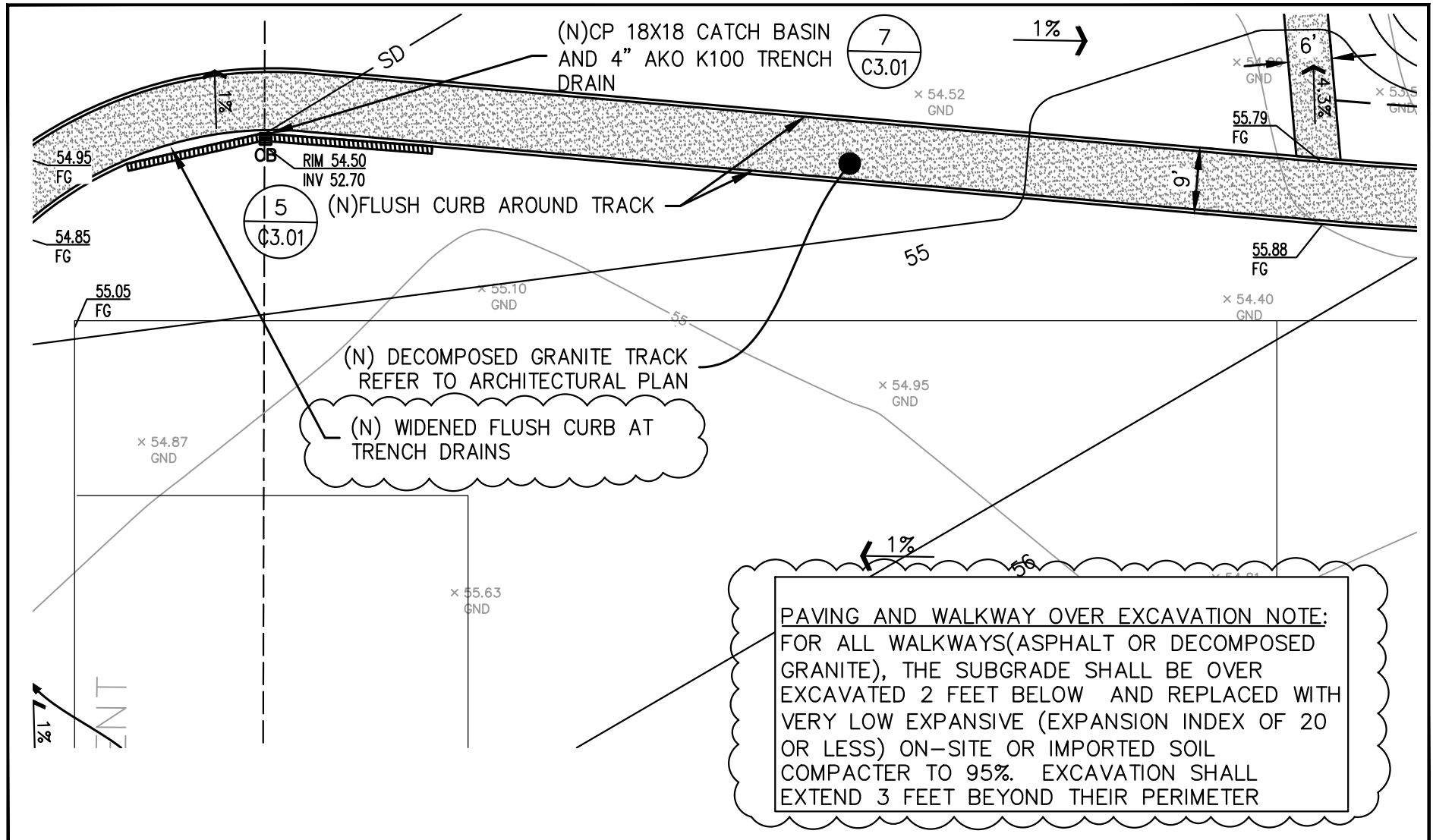
SHEET	
1	
OF	2 SHEETS
JOB NO.	3197

0:\3197 - MLK Jr JHS Track\DWG\3197topo.dwg 4-16-25 03:29:12 PM Kevin

PLUM | architects

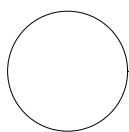
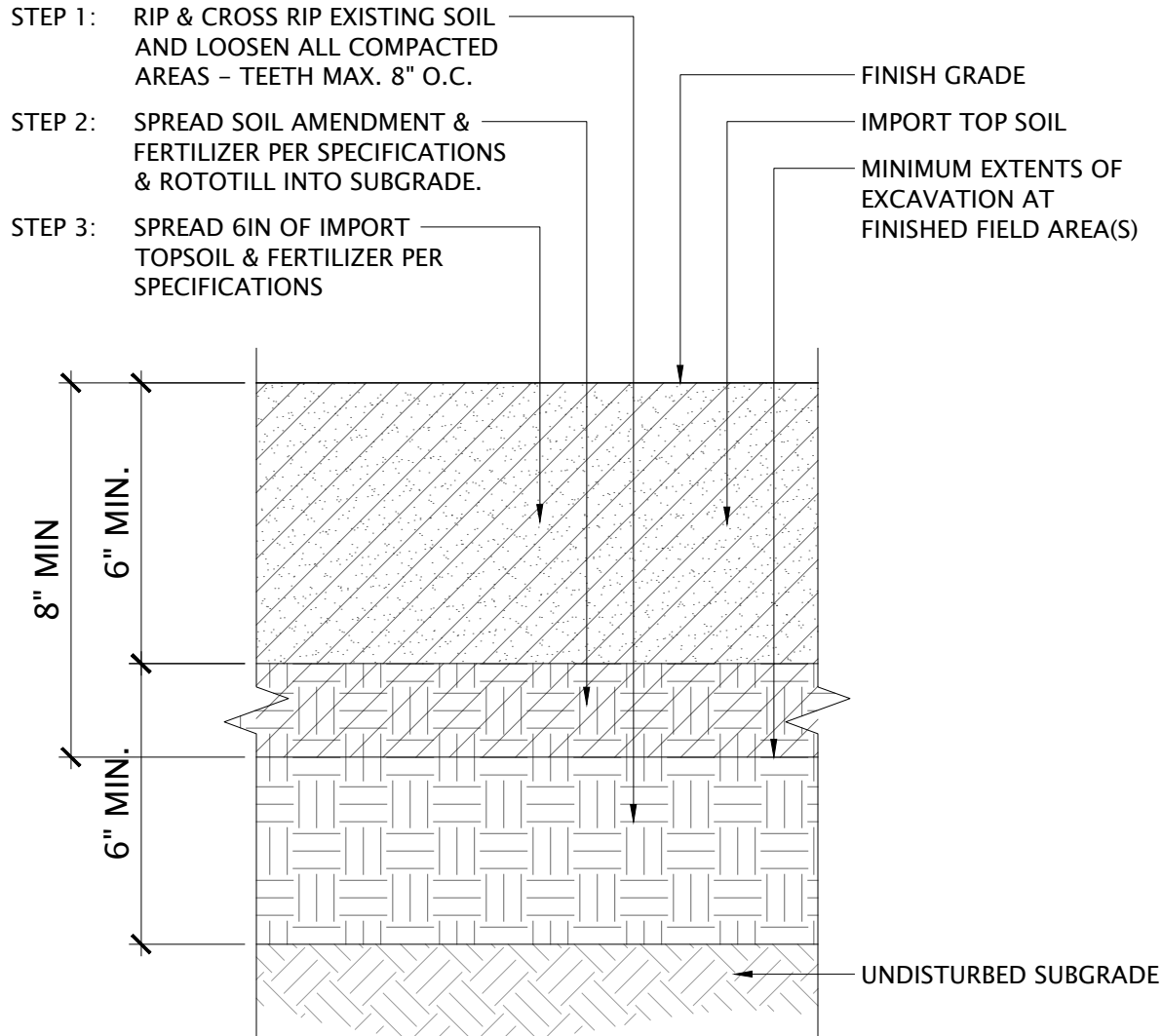
870 Market Street, Ste 878, San Francisco CA
94102
TEL: 415-837-0900

Martin Luther King Jr Junior High School
Running Track & Field Alterations Project
Pittsburg Unified School District
DSA Appl.#: 01-122476, Bid: 26-001



DRAWING TITLE: TRENCH DRAIN CALLOUT/EXCAVATION & COMPACTION REQUIREMENTS
REFERENCE DRAWING: C2.01
ISSUED VIA: ADDENDUM 03 (11/19/25)
SCALE: N.T.S.

CSK-04



SOIL AMENDMENT SECTION

site_soil-amendment.dwg

SCALE: 3" = 1'-0"

DRAWING TITLE: SOIL AMENDMENT SECTION
REFERENCE DRAWING: A1.02
ISSUED VIA: ADDENDUM 03 (11/19/25)
SCALE: 3"=1'-0"

ASK-03