CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

GEOTECHNICAL ENGINEERING DIVISION

GEOTECHNICAL ENGINEERING REPORT
ASPHALT PLANT NO. 1 – PHASE II PROJECT
2601 EAST 25TH STREET

W.O. #E1908771
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1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed Asphalt Plant No. 1 – Phase II Project. The project site, as shown on Figure 1 – Vicinity Map, is located on the northeast corner of East (E) 25th Street and Harriet Street in the Redondo Junction area of Los Angeles. The project site includes seven northern parcels and seven southern parcels that are separated by an existing alley. The project address is 2601 E 25th Street.

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

2.0 PROJECT DESCRIPTION

The proposed site plan is presented on Figure 2 – Site Location Map. As shown on Figure 2, the project includes construction of the following:

1) A relatively large canopy structure that will cover stockpiles of reclaimed asphalt pavement (RAP) and RAP processing equipment.
2) A single-story office building that will occupy a footprint of approximately 1,000 square feet.
3) A truck scale with a maximum weighing capacity up to 270,000 pounds.
4) New paved driveway and parking areas as well as other non-structural improvements.

All three structures will be located within the seven southern parcels. Structural load information for the proposed canopy structure and office building was not provided at the time this report was prepared. The maximum applied static bearing pressure is not expected to exceed 2,500 pounds per square foot (psf).

To meet the City's requirements for Low Impact Development Best Management Practices (LID BMP, 2016), onsite storm water will be collected in planters and treated using biofiltration prior to being discharged to the storm drain. The planter depths are not known at this time.

We understand the site will be re-graded; however, we expect the proposed finished grades in the western portion of the site will be within one to two feet of the existing ones. Excavation and removal proposed in the eastern portion of the site will result in the finished grades being lowered by up to approximately 10 feet. The eastern portion of the site is currently occupied by an elevated concrete pad structure, which will be removed to facilitate the proposed construction (see Section 4.3).

If significant changes to the project are proposed, the findings and recommendations in this report may not be applicable, and a supplemental report may be required. The GED shall be provided an opportunity to review any proposed changes and determine if a supplemental report is required.

3.0 GEOTECHNICAL INVESTIGATION

The geotechnical investigation included reviewing relevant information and completing a geophysical survey, field exploration, and laboratory testing programs. The geophysical survey was completed by GeoVision Geophysical Services (GeoVision). The field exploration and laboratory testing were completed by Leighton Consulting, Inc. (Leighton). A copy of Leighton's geotechnical data report is included in Appendix A of this report. The GED has reviewed Leighton's report, concurs with the information contained in it, and accepts responsibility for the use of its contents.

3.1 REVIEW OF RELEVANT INFORMATION

As part of the geotechnical investigation, the GED reviewed: 1) a Phase I environmental site assessment (ESA) report by Ninyo and Moore Geotechnical and Environmental Sciences Consultants (Ninyo and Moore) dated September 8, 2021, and 2) an environmental site investigation report by Leighton dated November 11, 2021. Both Ninyo and Moore and Leighton reviewed historical aerial photographs that were taken approximately every 5 to 10 years between 1923 and 2016. The key findings are discussed in Section 4.1 of this report.

3.2 GEOPHYSICAL SURVEY

The purpose of the geophysical survey was to identify anomalies that would help the GED determine if significant underground obstructions / substructures are present at the site. The results of the geophysical survey are discussed in Section 4.4 of this report.

3.3 FIELD EXPLORATION

Leighton drilled eight (8) hollow-stem-auger (HSA) exploratory borings, each to a total depth of approximately 41½ feet below ground surface (bgs). The boring locations are presented on Figure 2 – Boring Location Map in Leighton's report (Appendix A). Sampling consisted of alternating Standard Penetration Tests (SPTs) and relatively undisturbed rings. Refer to Section 3.0 in Leighton's data report (Appendix A) for additional information on the field exploration. The subsurface conditions are discussed in Section 4.4 of this report.

3.4 LABORATORY TESTING

Laboratory tests were performed on selected samples to characterize the engineering properties of the on-site soils. The laboratory testing program included in-situ moisture content and dry density, laboratory maximum dry density and optimum moisture content, consolidation, direct shear, resistance value (R-value), particle size distribution (i.e. sieve analysis), percent passing the No. 200 sieve (i.e. fines content), expansion index (EI), corrosion potential, and Atterberg Limits. Refer to Section 4.0 in Leighton's data report (Appendix A) for additional information on the laboratory testing program and testing procedures. The laboratory test results are discussed in Section 4.6 of this report.

4.0 DISCUSSION OF FINDINGS

The following discussion of findings is based on our observations and the results of the data review, geophysical survey, field exploration, and laboratory testing programs.

4.1 DATA REVIEW

The results of the historical aerial photo review indicate the site was previously used by the City as a refuse collection and disposal facility between circa 1922 and 1952. The results of the historical aerial photograph review also indicate the site has been used as an asphalt processing facility (i.e. RAP) from 1952 to present. Excerpts from the historical aerial photograph review sections of the referenced reports are provided in Appendix B of this report. The results are not discussed further herein.

4.2 GEOLOGIC SETTING

The Geologic Map by Thomas W. Dibblee Jr. (1989), is presented of Figure 3 in this report. As shown on Figure 3, the site is underlain by Quaternary Alluvium (Qa). Qa consists of unconsolidated floodplain deposits of silt, sand, and gravel. The Reginal Geology is also discussed in Section 5.1 of Leighton's report (Appendix A). The GED acknowledges Leighton classifies these same materials as Quaternary Young Alluvium (Qya).

4.3 SITE CONDITIONS

The project site is located within an industrial area of the City. As discussed, the site was previously used by the City of Los Angeles as a refuse collection and disposal facility between 1922 and 1952. Since 1952, the site has since been used as a RAP processing facility. The eastern property boundary is located approximately 420 feet from the Los Angeles River. There are existing active railroads on the north side of the site that extend to the east and over the Los Angeles River.

The ground surface across the site, except for the eastern portion, is relatively flat (El. ~218 to 219 feet above mean sea level). The eastern portion of the site is currently developed with an elevated concrete pad structure that contains a partial ground-level (El. ~218 to 219 feet) storage room in the northern portion of the structure. The remaining portion of the concrete pad was constructed at an elevation of ~ 227 to 229 feet. The pad is underlain by existing uncertified fill (see Section 4.4) that is laterally supported by concrete retaining walls. The pad is accessed by a ramp that ascends to the east, beginning near the Harriet Street and E 25th Street intersection. The elevation of the concrete pad structure is approximately 10 feet higher than the ground surface elevation in the western portion of the site. Also, the northern portion of the concrete pad structure was constructed with a metal canopy roof that is about 25 feet higher than the concrete pad. We understand the concrete pad structure, metal canopy roof, and retaining walls will be removed to facilitate the proposed construction.

The western portion of the site is undeveloped and the ground surface is paved with asphalt concrete. The western portion is currently being used as a RAP storage area. At the time of this report, asphalt stockpiles up to approximately 30 feet high occupied a large footprint. The asphalt stockpiles spilled over the western wall of the concrete pad structure.

The adjacent property to the east of the project site is occupied by a used cooking oil recycling facility (DarPro Solutions), which is accessed from the termination of E 25th Street. The facility includes two relatively large silos and two enclosed truck delivery bays on the west side of the main building. The west side of the silos and delivery bays are within approximately 2 feet of the property boundary. Also, there is a wrought iron gate at the termination of E 25th Street that extends along the property boundary to the retaining wall of the elevated concrete pad structure.

4.4 SUBSURFACE CONDITIONS

The results of the geophysical survey are presented in Appendix C of this report. The results of the geophysical survey, as shown on Figure 1 – Site Map with Geophysical Interpretation in Appendix C, indicate the presence of multiple buried railroad lines in the western portion of the site. The railroad lines likely extend into the eastern portion of the site. The depth of the buried railroad lines is likely between 6 and 12 inches in the western portion of the site. The results also indicate the possible presence of buried underground utility pipes and a concrete pad.

Uncertified fill material was encountered in all borings. The fill thickness ranges from approximately 3½ to 13½ feet. The fill thickness is greatest beneath the existing concrete pad structure in the eastern area. Based on Borings LB-3 and LB-4, the fill thickness beneath the concrete pad structure is between 11½ and 13½ feet. Fill thicknesses in the western portion of the site range from approximately 3½ to 6 feet. North of the alleyway, the fill thickness is approximately 8 feet (see Boring LB-1). The fill is mostly comprised of poorly graded sand with varying amounts of silt and gravel, and silty sand with varying amounts of gravel. Fill indicators, including glass debris, brick pieces and asphalt fragments, were observed in some of the fill material. Refer to the boring logs in Leighton's report (Appendix A) for more information.

The underlying native soil (i.e. alluvium) mostly consists of poorly to well graded sand with varying amounts of silt and gravel. Layers of sandy silt / sandy lean clay layer were encountered in Borings LB-1 and LB-6 at a depth of 35 feet bgs. Based on the Standard Penetration Test (SPT) field blow counts, the "sandy" alluvium ranges from loose to very dense. The relatively density of the native soils is mostly medium dense. The SPT field blow counts range from 6 to 66 with an average value of approximately 24. It should be noted that some of the SPT field blow counts may be "artificially high" due to the presence of gravel and/or cobbles.

4.5 GROUNDWATER

Groundwater was not encountered in any of the borings, which were all advanced to a depth of approximately 41½ feet bgs. Groundwater information from the California Department of Conservation, Division of Mines and Geology (DMG, 1998) indicates the shallowest reported historic groundwater depth is between 50 and 60 feet. Groundwater levels at the site are expected to vary. Groundwater levels can also fluctuate with seasonal rainfalls, dry weather (i.e. drought conditions), and pumping activities in the vicinity of the site. Groundwater is not expected to affect the proposed construction.

4.6 LABORATORY TEST RESULTS

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

Moisture content and in-situ dry density tests were performed on some of the relatively undisturbed fill and native soil samples to estimate the total unit weight. The in-situ moisture content and dry density of the fill samples tested ranges from approximately 4 to 7 percent and 94 to 113 pounds per cubic foot (pcf), respectively. The total unit weight of the fill ranges from approximately 100 to 119 pcf with an average value of 109 pcf. The in-situ moisture content and dry density of the sandy native soil tested ranges from approximately 2 to 5 percent and 100 to 125 pcf, respectively. The average total unit weight of the sandy native soil ranges from 103 to 129 pcf with an average value of 116 pcf.

Fines content and sieve analysis tests were performed on selected samples to assist with soil classification. The fines content and gradation tests are summarized in Table 2 and Table 3, respectively, of Leighton's report (Appendix A). The results of the sieve analysis tests indicate the sandy native soils contain up to approximately 32 percent gravel.

Atterberg Limits tests were performed on samples of the native sandy silt / sandy lean clay from LB-1 and LB-6. The test results indicate the plasticity index of this material is between 6 and 7, which is considered to be low in terms of shrink-swell behavior.

Consolidation tests were performed on two remolded samples of the uncertified fill and on a sample of the sandy native soil. The remolded samples were compacted to 95 percent relative compaction (RC) and very close to the optimum moisture content. The test results indicate there is very little potential for soil collapse to occur upon wetting.

Direct shear tests were performed on two remolded samples of the uncertified fill and on three relatively undisturbed samples of the sandy native soil. The remolded samples were compacted to 95 RC and very close to the optimum moisture content. The test results are summarized in Table 5 of Leighton's report (Appendix A). Based on Leigthon's interpretation of the test results, the ultimate friction angle and cohesion value of the remolded fill ranges from 34 to 36 degrees and 0 to 88 pounds psf, respectively. Leighton's test results indicate the ultimate friction angle of the sandy native soil ranges from 34 to 37 degrees, and these materials have no cohesion.

An EI test was performed on a bulk sample of the existing near surface fill from LB-7. The test results indicate the EI value is 0.

The corrosion test results are discussed in Section 6.7 of this report.

Compaction tests were performed on four bulk samples of near surface uncertified fill. The test results are summarized in Table 9 of Leighton's report (Appendix A). The compaction test results indicate the optimum moisture content and corrected maximum dry density ranges from approximately ranged from 7.2 to 8.3 percent and 120 to 132 pcf, respectively.

Finally, an R-value test was performed on a bulk sample of the near surface uncertified fill from LB-1. The test results indicate an R-Value of 80.

5.0 SEISMIC CONSIDERATIONS

The following sections present seismic design parameters and discuss seismic hazards for the site.

5.1 2020 LABC SESISMIC DESIGN PARAMETERS

Seismic design parameters for the project site, as presented in Table 1, were developed in accordance with the 2020 Los Angeles Building Code (LABC), which are based on the procedures outlined in ASCE 7-16. Latitude 34.0153421°N and Longitude 118. 2245693°W were used for the project site location.

TABLE 1 – SEISMIC DESIGN PARAMETERS

Parameter	Value
Site Class	D
S_s	1.866
S_1	0.664
S_{MS}	2.239
S_{M1}	Null – See Section 11.4.8
S_{DS}	1.493
S_{D1}	Null – See Section 11.4.8

The peak ground acceleration $(PGA)_M$ at the site is 0.96g.

5.2 SEISMIC HAZARDS

This section provides the results of our evaluation of earthquake-related geologic/geotechnical hazards for the site, including surface fault rupture, liquefaction and seismic compression. The earthquake zones of required investigation for the Los Angeles Quadrangle (1999) are presented on Figure 4 in this report.

5.2.1 Surface Fault Rupture

As shown on Figure 4, the project site is not located within a State of California Alquist-Priolo Special Study Zone, and nor is it located within a City of Los Angeles Fault Rupture Study Zone (NavigateLA). Based on this information, the potential for surface fault rupture to occur at the project site is considered remote.

5.2.2 Liquefaction Evaluation

As shown on Figure 4, the site is <u>not</u> located within a liquefaction zone. Due to the lack of shallow groundwater, the potential for liquefaction is considered low.

5.2.3 Seismic Compression

During an earthquake, dry loose sandy soils may also experience densification due to ground shaking, although to a generally lesser degree than saturated soils. This phenomenon is often referred to as dry sand settlement or seismic compression. Densification is expected to occur in the sandy native soil. Seismic compression (i.e. settlement) was estimated using the procedures outlined in Pradel (1998). The estimated seismically induced dry sand settlement is approximately ½-inch.

6.0 RECOMMENDATIONS

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

6.1 KEY DESIGN ISSUE

One important design factor for this project is the presence of existing uncertified fill. The existing fill is prone to settlement, which could adversely impact structures. Also, the Los Angeles Department of Building and Safety (LADBS), Grading Division doesn't allow structures to be supported on uncertified fill. To mitigate the effects of potential settlement associated with uncertified fill, we recommend removing it and replacing it with compacted fill. Earthwork recommendations are provided in Section 6.2 of this report.

6.2 EARTHWORK

All earthwork shall be performed in accordance with the geotechnical recommendations presented in this report and the LADBS, Grading Division's requirements. Furthermore, all earthwork should be performed under the observation and testing of the GED. Recommendations are provided in the following sections for site preparation, over-excavation, subgrade preparation, temporary excavations, temporary shoring, utility trench backfill, controlled low strength material, and fill certification.

6.2.1 Site Preparation

Site preparation will initially involve the demolition of the existing concrete pad structure, metal canopy, retaining walls, foundations, pavement, and other obstructions within the construction area. Following the demolition, the construction area shall be cleared of any vegetation and stripped of miscellaneous debris and other deleterious material. We anticipate a significant amount of existing fill will be removed from the concrete pad structure area to facilitate construction of the proposed at-grade canopy structure.

Organic matter and other material that may interfere with the completion of the work should be removed from the limits of the construction area. Vegetation and organic matter should not be incorporated into the compacted fill. Organic rich soil, if present, may be stockpiled for future landscaping. Voids resulting from the site preparation shall be backfilled with properly compacted fill. These materials shall be removed from the construction area and hauled to a proper disposal area.

Any utilities, whether active or inactive, shall be identified and properly abandoned or relocated per project plans and specifications. Any depressions resulting from removal of any existing foundations or utility lines shall be properly backfilled and compacted in accordance with the recommendations in the following sections.

6.2.2 Over-Excavation

All existing uncertified fill material shall be removed beneath the proposed canopy structure, office building, and truck scale. The fill removal will result in excavating approximately 5 to 6 feet below the existing western site grade. The fill removal could be up to approximately 15 feet in the eastern portion of the site. The fill removal includes both structural elements and concrete slab-on-grade (SOG) floors. The fill removal, over-excavation, and recompaction shall result in at least 36 inches of compacted fill beneath structural elements. Also, the excavation should extend laterally a minimum of 5 feet beyond each edge of the structure(s).

The existing soil in new pavement areas shall be removed to a depth of at least 24 inches below the existing western grade (El. = 218 feet msl) or 18 inches below the pavement section, whichever is greater. The excavation shall extend laterally at least 24 inches beyond the edge of pavement or to the property boundary, whichever is less.

The existing soil beneath non-structural footings shall be removed to a depth of at least 24 inches below the existing western grade (El. = 281 feet msl) or 12 inches below the bottom of footing, whichever is greater. The excavation shall extend laterally at least 12 inches beyond each edge of the footing or to the property boundary, whichever is less.

The existing soil beneath proposed exterior concrete flatwork shall be removed to a depth of at least 12 inches below the slab. Lateral over-excavation is not required for exterior flatwork.

6.2.3 Subgrade Preparation

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

6.2.4 Temporary Excavations

Based on the results of the geotechnical investigation, the soils at the site should be readily excavated by conventional earthmoving equipment in good operating condition. All temporary excavations shall conform to the State of California Construction Safety Orders (CAL/OSHA). *Unsurcharged*, temporary vertical excavations shall not exceed 4 feet. Unsurcharged excavations greater than 4 feet and to a maximum of 12 feet shall be sloped at a 1.5:1 (H:V) or flatter inclination from the ground surface to the bottom of the excavation. If temporary excavations greater than 12 feet in vertical height are proposed, they shall be reviewed by the GED, and supplemental recommendations will be provided.

6.2.5 Temporary Shoring

Cantilever or braced shoring may be considered at this site as an alternative to temporary excavations. Shoring deflections shall not exceed ½-inch unless it can be clearly demonstrated with calculations that adjacent structures, utilities, and/or streets will not be impacted. Sheet piles, box shoring, and/or trench shields (i.e. speed shores) are generally not acceptable. The GED may approve them; however, approval depends on several factors. If they are proposed, the GED will review each situation on a case-by-case basis.

Settlement of structures/utilities behind shoring will occur in proportion to both the distance between the shoring and the structure, and the amount of horizontal deflection of the shoring system. Vertical settlement will be a maximum at the shoring face and decrease as the horizontal distance from the shoring increases. Beyond a distance from the shoring equal to the height of the shoring, the settlement is expected to be negligible. The maximum vertical settlement is expected to be about 75 percent of the horizontal deflection of the shoring system. Prior to excavation, it is recommended that walls, structures, or portions of structures within a horizontal distance of 1½ times the depth of the excavation be inspected to determine their present condition. For documentation purposes, photographs should be taken of preconstruction conditions and level surveys should be performed.

6.2.5.1 Lateral Earth Pressures

Cantilever of braced shoring shall be designed for the lateral earth pressures shown on Figure 5 – Lateral Earth Pressures for Temporary Shoring Systems. These values are based on the assumption that (1) the shored soil material is level at ground surface, (2) the exposed height of the shoring is no greater than 20 feet, and (3) the shoring is temporary, and will not be required to support the soil longer than about four months. Surcharge coefficients of 0.28 and 0.44 may be used with uniform vertical surcharges for cantilever and braced shoring lateral earth pressures, respectively. These surcharge pressures should be added to the lateral earth pressures.

6.2.5.2 Soldier Piles and Lagging Design

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

6.2.5.3 Construction Considerations for Soldier Piles

Based on the results of the investigation, the potential for soil caving to occur during pile excavation is considered high. If caving conditions are encountered, temporary steel casing shall be used to support the sides of the excavations. The inside diameter of casing shall be at least as large as the diameter of the pile shown on the shoring plans. Drilling shall be accomplished within the temporary steel casing.

Even though the piles will be used for temporary shoring, it will be necessary for the contractor to remove loose soil from the bottom of the pile excavation. Upon completion of drilling, secure covers shall be placed over the excavations. Concrete placement shall be completed within 12 hours of drilling and drilled holes shall not be left open overnight. Drilled excavations shall be observed and approved by the GED prior to installation of steel reinforcement.

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

6.2.6 Fill Materials and Backfill Placement

The existing fill and native soil are suitable for reuse as compacted fill. The results of the in-situ moisture content tests indicate these materials will require water to achieve a moisture content that is at or above the optimum value. It is the contractor's responsibility (i.e. means and methods) to achieve a uniformly moisture conditioned stockpile of fill material that meets the moisture requirements (see below).

Import soil shall be predominantly granular (minimum 80% passing the No. 4 sieve and between 5% and 20% passing the No. 200 sieve), non-expansive (EI less than 10). All fill material shall be free of organic or inorganic debris, contamination and materials with any dimension larger than 3 inches. Proposed import soil shall be reviewed by the GED for approval prior to delivery to the job site. The GED shall be notified a minimum of three working days prior to scheduled delivery to the site.

Fill material shall be placed in loose lifts not exceeding 8 inches in thickness, moisture-conditioned between 0 and 3 percent above the optimum moisture content and mechanically compacted. The onsite soils shall be compacted to at least 95 percent RC for reuse as primary structural fill. All secondary structural fill, including fill beneath SOG floors, shall be compacted to at least 90 percent RC. Crushed aggregate base (CAB) and/or crushed miscellaneous base (CMB) shall be compacted to at least 95 percent RC.

Fill placement and compaction shall be observed and tested by a certified compaction testing agency working under the direct supervision of the GED. Compacted fill soils shall be kept moist, (at or slightly above the specified moisture content at the time of compaction) but not flooded, until covered with subsequent construction. If compacted fill soils become softened or disturbed, they shall be replaced or recompacted at the discretion of the GED before additional fill or construction is placed. Certification and inspection approvals for compromised soils are void and invalid.

6.2.7 Utility Trench Backfill

Trench excavations for utility pipes may be backfilled with onsite soils under the observation of a representative of the GED. After utility pipes have been laid, properly bedded, and covered per the project specifications, they shall be backfilled to the ground surface or design subgrade with controlled backfill. Controlled backfill shall be moisture conditioned, placed and compacted in accordance with the recommendations presented above in Section 6.2.6. Densification by flooding or jetting is not allowed.

6.2.8 Controlled Low Strength Material

Controlled low strength material (CLSM) is an acceptable alternative to *secondary* compacted fill. CLSM materials and placement shall meet the requirements outlined in Section III of the LADBS' Bulletin P/BC 2020-121.

6.2.9 Fill Certification

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

6.3 OFFICE BUILDING AND CANOPY STRUCTURE – SHALLOW FOOTINGS

Following the site preparation and recommended Earthwork (Section 6.2), the new office building and canopy structure may be supported on shallow footings. Design recommendations are provided in the following sections.

6.3.1 Bearing Capacity and Settlement

Continuous and isolated (i.e. column) footings shall bear entirely upon at least 36 inches of compacted fill, which in turn, is underlain by native soil. Continuous and column footings shall have a minimum width of 18 and 24 inches, respectively. All footings shall be embedded at least 24 inches below the lowest adjacent grade. Footings may be designed using a net allowable bearing capacity of 2,500 psf. The allowable bearing value applies to combined dead and sustained live loads. This value may be increased by ⅓ when considering transient live loads, including wind and seismic forces.

Total settlement, including both static and dynamic, is anticipated to be less than 1-inch. Differential settlement across the footprint of each structure is expected to be less than ½-inch.

6.3.2 Lateral Load Resistance

Lateral load resistance will be developed by passive soil pressure against the footings and by friction acting along the base of the footings. An allowable passive pressure of 275 psf per foot of depth may be used for design purposes. Passive pressure shall begin at a depth of 12 inches below the ground surface; however, if the structure is located adjacent to an exterior slab or pavement, passive pressure may begin at the ground surface. The

allowable passive pressure is only applicable for level (ground slope equal to or flatter than 5:1) conditions. An allowable coefficient of friction of 0.40 may be used for dead and sustained live loads for frictional resistance. A FS of 1.5 has been incorporated into both the allowable passive and frictional resistance values. For temporary loading conditions such as wind or seismic forces, the lateral load resistance may combine the passive pressure and frictional resistance; however, the passive pressure shall not exceed ⅓ the combined total lateral resistance.

6.4 TRUCK SCALE – STRUCTURAL MAT

Following the site preparation and recommended earthwork, the new truck scale may be supported on a structural mat foundation. Design recommendations are provided in the following sections.

6.4.1 Bearing Capacity and Settlement

The structural mat shall be underlain by at least 36 inches of compacted fill. The structural engineer shall determine if thickened edges along the perimeter are required to resist the lateral loads. If thickened edges are required, they shall be embedded at least 12 inches below lowest adjacent grade. The mat may be designed based on an allowable static bearing capacity of 1,500 psf. This value may be increased by 1/3rd for temporary loading conditions such as wind or seismic forces.

Based on the allowable bearing value recommended above, the total (static and seismic) settlement of the mat foundation should not exceed 1 inch. The maximum differential settlement across the building footprint is not expected to exceed ½-inch.

6.4.2 Lateral Load Resistance

Recommendations for lateral load resistance are provided in Section 6.3.2 of this report. These recommendations are applicable to a structural mat foundation.

6.4.3 Modulus of Subgrade Reaction

We recommend the structural mat be designed based on elastic theory principles. A modulus of subgrade reaction “k” may be estimated based on the following equation below:

$$k = k_1\left(\frac{1}{B}\right)\left(\frac{1+0.5\frac{B}{L}}{1.5}\right)$$

where k_1 is the coefficient of subgrade reaction in pounds per cubic inch (pci) of a square foundation measuring one foot by one foot, and B and L are the width and length of the structural mat, respectively. A value of 150 pci may be assumed for k_1 in the above equation.

6.5 PLANTER AND FENCE WALL AND NON-STRUCTURAL FOUNDATIONS

Continuous and/or isolated footings may be used to support planter, fence, and other non-structural (i.e. non-retaining) site walls less than 8 feet tall. Non-structural footings shall be structurally isolated from the building foundation. Also, the footings shall bear on at least 18 inches of compacted fill. The structural engineer is responsible for designing the steel reinforcement.

Footings with a minimum width of 12 inches and embedded a minimum of 18 inches below the lowest adjacent grade, bearing on properly compacted fill, may be designed for an allowable bearing capacity of 1,500 psf. The allowable bearing capacity includes dead-load and sustained live-loads. The value may be increased by one-third for short durations of loading which will include the effect of wind or seismic forces. The total static settlement is not expected to exceed 1 inch.

Lateral load resistance will be developed by passive soil pressure against the footings and by friction acting along the base of the footings. An allowable passive pressure of 240 psf per foot of depth may be used for design purposes. Passive pressure shall begin at a depth of 12 inches below the ground surface; however, if the structure is located adjacent to an exterior slab or pavement, passive pressure may begin at the ground surface. The allowable passive pressure is only applicable for level (ground slope equal to or flatter than 5:1) conditions. An allowable coefficient of friction of 0.35 may be used for dead and sustained live loads for frictional resistance.

6.6 DRAINAGE

Final grades should be sloped to direct surface water away from foundations and slabs and towards discharge facilities. Surface water should not be allowed to pond anywhere onsite. Water from downspouts, if any, should be collected in closed pipes and conveyed to storm drains or other appropriate discharge locations.

6.7 CORROSION AND SULFATE ATTACK RESISTANCE

Chemical analyses, pH and minimum resistivity tests were performed on four bulk samples of the near surface fill material. The test results are summarized in Table 8 of Leighton's report (Appendix A).

The chloride concentration ranges from 41 to 120 ppm, the sulfate concentration ranges from 66 to 292 ppm, and the soil pH ranges from 7.64 to 9.21. For structural elements, Caltrans (2021) considers a soil to be corrosive if one or more of the following conditions exist:

- Chloride concentration is 500 ppm or greater;
- Sulfate concentration is 1,500 ppm or greater;
- pH is 5.5 or less.

Based on Caltrans' (2021) criteria, the near surface fill is not corrosive when in contact with ferrous metals. According to criteria by other agencies such as NAVFAC, however, the onsite soils may be classified as mildly or slightly corrosive. If desired or required, a corrosion specialist should be consulted regarding selection of construction materials and/or protective design.

The results of the sulfate concentration tests indicate that, based on the American Concrete Institute (ACI, 2008) criteria, these sandy soils have negligible sulfate attack potential on concrete. Refer to ACI 318-08 for appropriate concrete mix design.

6.8 PAVEMENT DESIGN

The following pavement designs have been prepared for parking areas and driveways based on an R-value of 50. Recommendations for asphalt and Portland cement concrete pavement design sections are presented below. In all pavement areas, the uppermost 18 inches of soil subgrade should be compacted to a minimum 95 percent RC.

6.8.1 Asphalt Pavement Sections

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

TABLE 2 – ASPHALT PAVEMENT SECTION LAYER THICKNESSES (INCHES)

Layer	Traffic Index = 5.0	Traffic Index = 6.0	Traffic Index = 7.0	Traffic Index = 8.0	Traffic Index = 9.0
Asphalt Concrete Surface	2.5	3.0	3.5	4.0	4.0
CAB / CMB (95 percent RC)	4.0	6.0	6.0	7.0	9.0
Compacted Subgrade (95 percent RC)	18	18	18	18	18

6.8.2 Portland Cement Concrete Pavement

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

7.0 SUPPLEMENTAL GEOTECHNICAL SERVICES

7.1 REVIEW OF PLANS AND SPECIFICATIONS

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

7.2 GEOTECHNICAL OBSERVATION AND TESTING DURING CONSTRUCTION

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

- During demolition;
- Upon completion of site clearing;
- During site excavation;
- During installation of shoring elements;
- During subgrade preparation;
- During fill placement and compaction;
- After excavation of any foundations and immediately prior to placement of foundation concrete;
- During excavation and backfilling of all utility trenches; and
- When any unusual or unexpected geotechnical conditions are encountered.

8.0 CLOSURE

If you have any questions regarding this report, please contact Jose Beristain at (213) 847-0478 or Easton Forcier at (213) 847-0476.

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Civil Engineering Associate II

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12-9-21

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12-9-21

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Geotechnical Engineer II

REFERENCES

American Concrete Institute, 2008, Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary, January.

California Deparment of Conservation, Division of Mines and Geology, 1998, Seismic Hazard Zone Report for the Los Angeles 7.5-Minute Quadrangle, Los Angeles County.

California Department of Transportation (Caltrans), Division of Engineering Services, Materials Engineering and Testing Services, Corrosion Branch, 2021, Corrosion Guidelines, Version 3.2, May.

California Geological Survey, 1999, Earthquake Zones of Required Investigation, Los Angeles Quadrangle, March 25 with latest revision date of June 15, 2017.

Los Angeles Building Code, 2020.

City of Los Angeles, Department of Building and Safety, 2020, Guidelines for Storm Water Infiltration, Information Bulletin P/BC 2020-118, latest revision May 7.

City of Los Angeles, Department of Public Works, Bureau of Sanitation, 2016, Planning and Land Development Handbook for Low Impact Development (LID), Part B, Planning Activities, 5th Edition, May 9.

Dibblee Jr., Thomas W., 1989, Geologic Map of the Los Angeles Quadrangle, Los Angeles County, California, May, Dibblee Foundation Map #DF-22

Leighton Consulting, Inc., 2021, Geotechnical Exploration Data Report, Asphalt Plant No. 1 – Phase II Project, 2601 East 25th Street, Los Angeles, California, October 18.

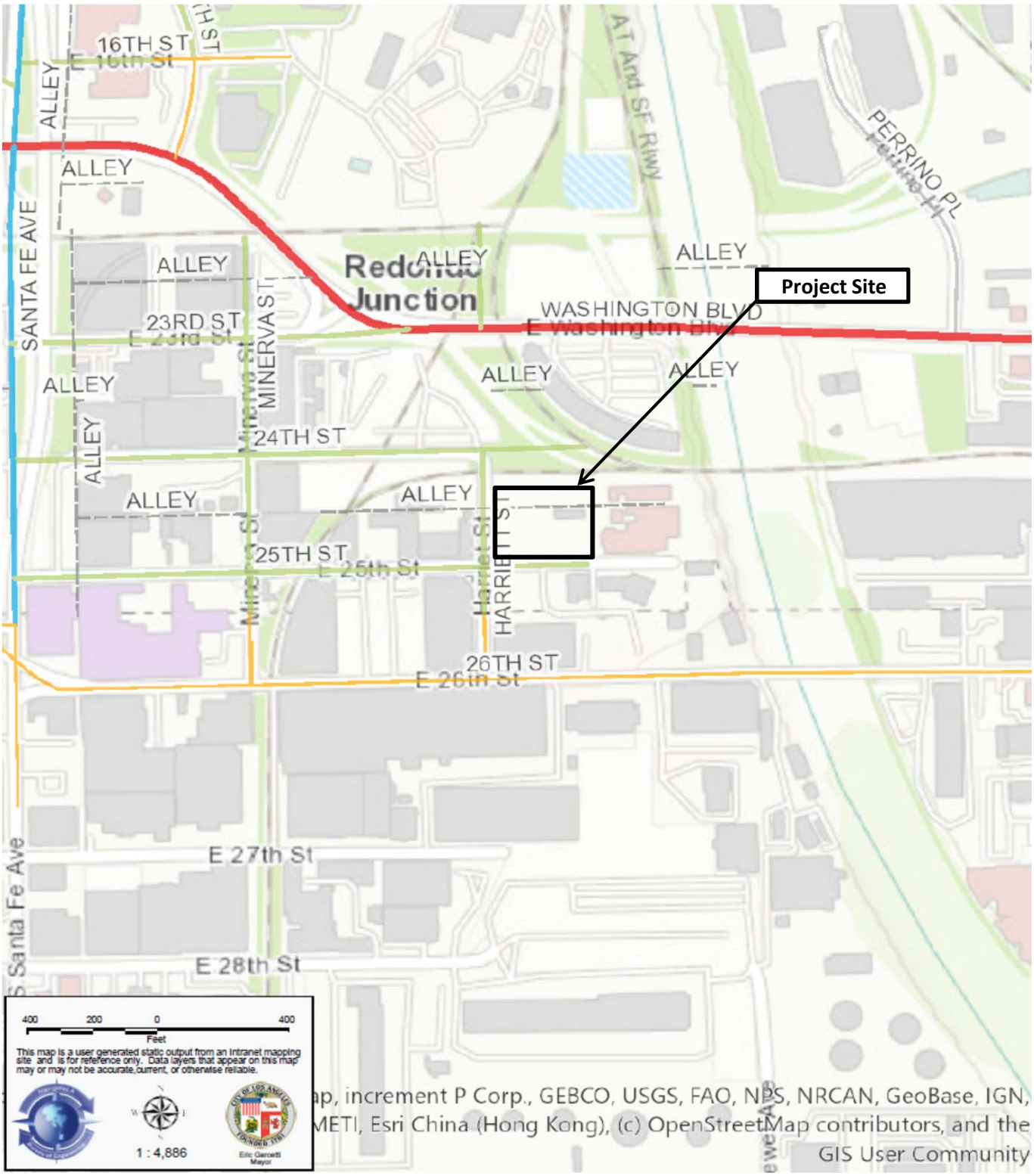
Leighton Consulting, Inc., 2021, Environmental Site Investigation Report, Asphalt Plant No.1 – Phase II Project, 2601 East 25th Street, Los Angeles, California, November 11 (revised December 8).

Los Angeles Department of Building and Safety, 2020, Information Bulletin P/BC 2020-121, Controlled Low Strength Material, January 1.

Ninyo and Moore Geotechnical and Environmental Sciences Consultants, 2021, Phase I Environmental Site Assessment, Asphalt Plant No. 1, 25th Street and Harriet Street, Los Angeles, California, September 8.

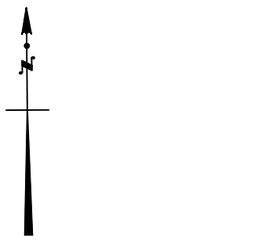
Pradel, D., 1998, Procedure to Evaluate Earthquake-Induced Settlements in Dry Sandy Soils, ASCE Journal of Geotechnical and GeoEnvironmental Engineering, Vol. 124, No. 4, p. 364-368, April.

FIGURES



Vicinity Map

Asphalt Plant No. 1 - Phase II 2601 East 25th Street Los Angeles, CA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING DIVISION (GED) GED FILE NO.: 21-006 DATE: DECEMBER 2021	FIGURE NO. 1



1 INCH = 30 FEET
CONTOUR INTERVAL IS 2'

SITE LOCATION MAP

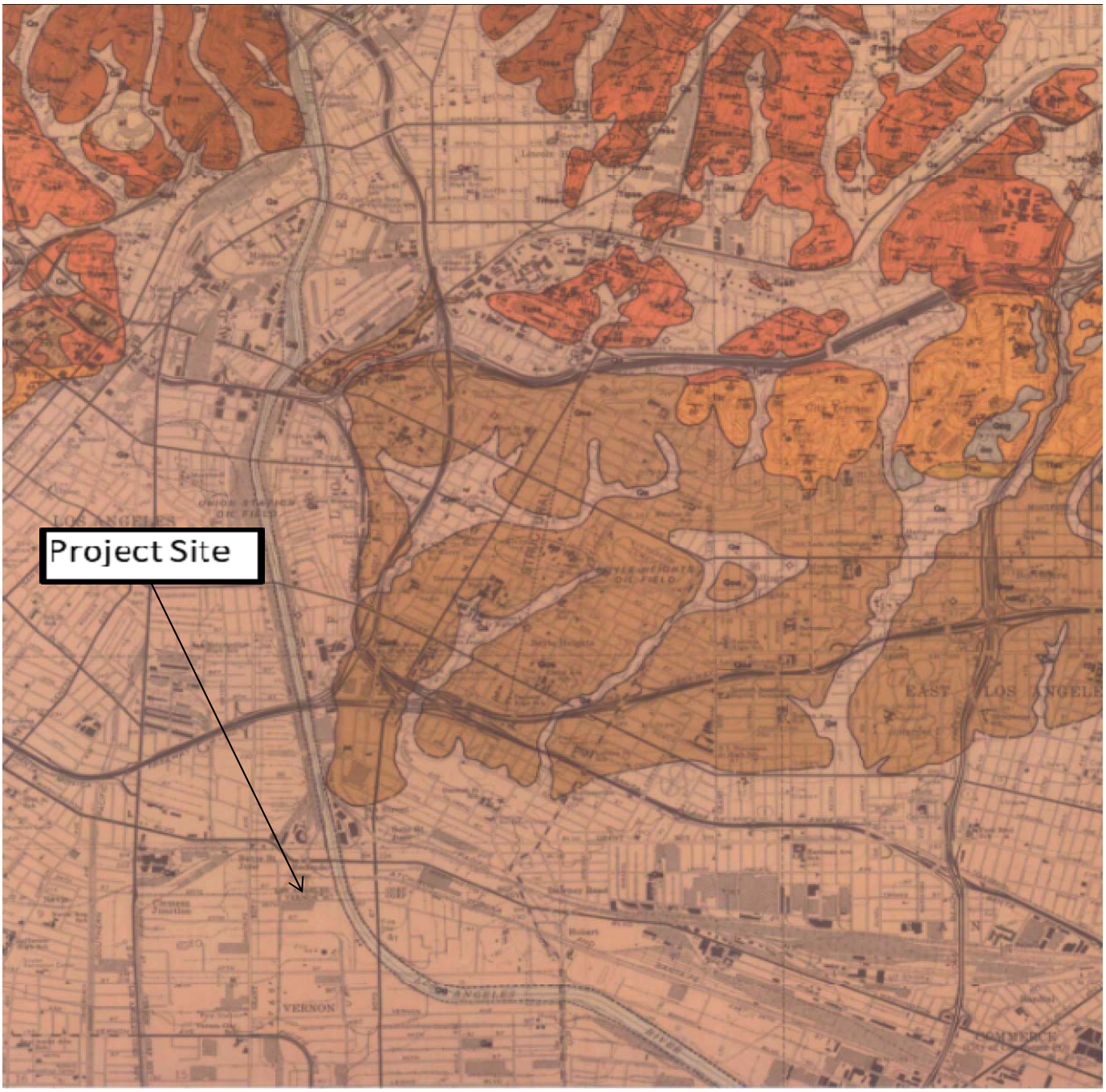
ASPHALT PLANT NO 1 PHASE II
W.O. E1908771

FIGURE #2

BUREAU OF ENGINEERING
GEOTECHNICAL ENGINEERING DIVISION

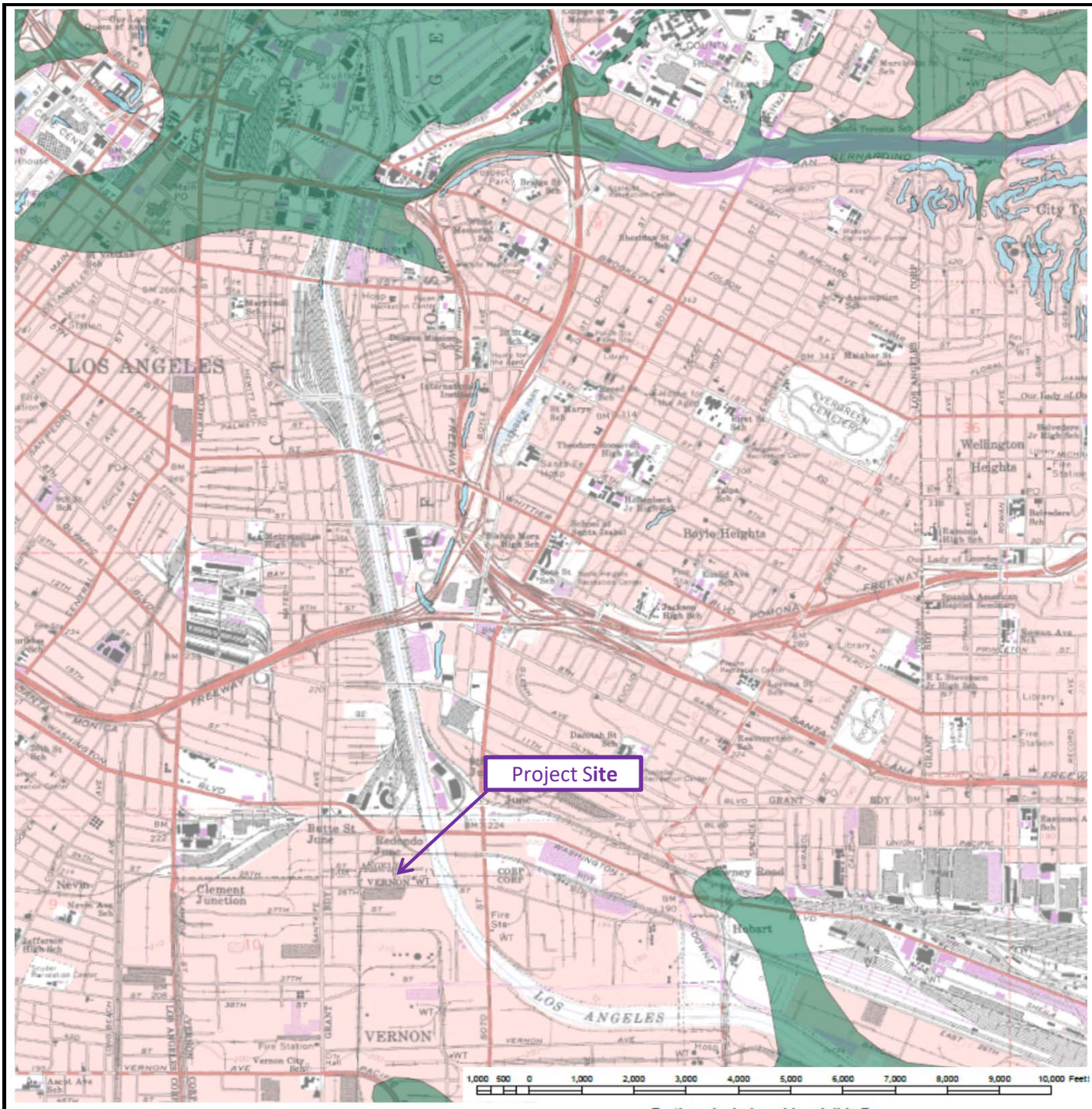
File No. 21-006 Date December 2021

CADD by ES Checked by EF Supervised by EF



Geologic Map (Dibblee Jr., 1989)

Asphalt Plant No. 1 - Phase II Project 2601 East 25th Street Los Angeles, CA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING DIVISION (GED) GED FILE NO.: 21-006 DATE: DECEMBER 2021	FIGURE NO. 3



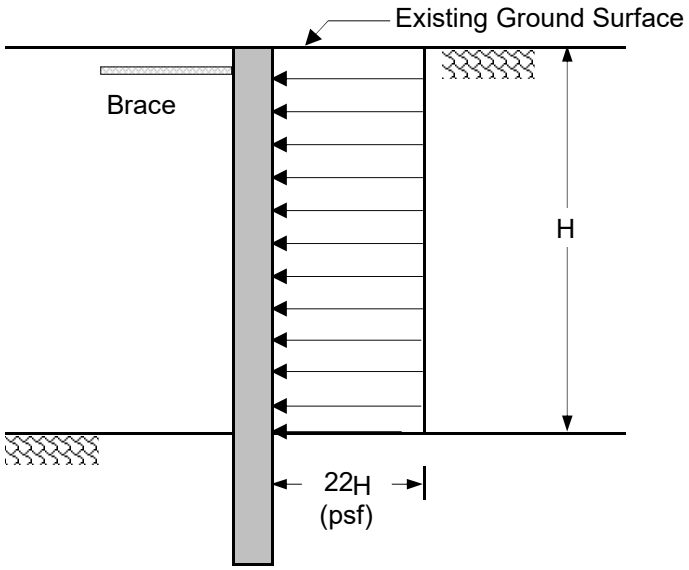
Liquefaction Zones
Areas where historical occurrence of liquefaction, or local geological geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

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

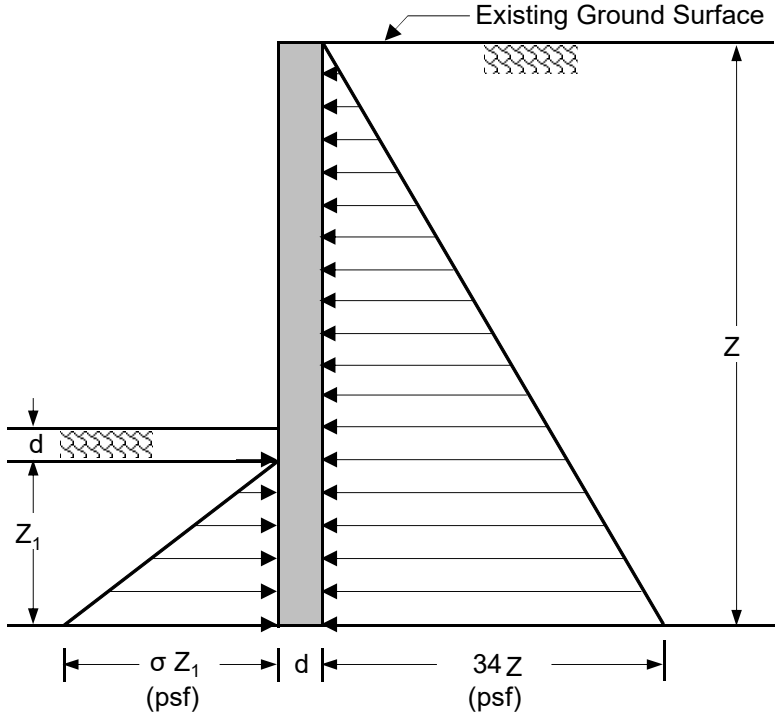
Earthquake Zones of Required Investigation

Asphalt Plant No. 1 - Phase II Project 2601 East 25th Street Los Angeles, CA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING DIVISION (GED) GED FILE NO.: 21-006 DATE: DECEMBER 2021	FIGURE NO. 4

Q:\PROJECTS\2021\21-006 Asphalt Plant No 1 Phase II\Geotechnical\Analyses\Lateral earth pressures shoring



BRACED SHORING



CANTILEVER SHORING

σ = 520 pcf for soldier piles spaced at least 2.5d apart
σ = 260 pcf for sheet piles or soldier piles spaced less than 2.5d apart

Notes:
1. Not to scale.
2. Dimensions are in feet.
3. Earth pressures shown are based on level backfill conditions behind shoring elements and groundwater below bottom of shoring elements.

LATERAL EARTH PRESSURES FOR TEMPORARY SHORING SYSTEMS
ASPHALT PLANT NO. 1 - PHASE II PROJECT
2601 E 25th Street
Los Angeles, California

By: ERF	Date: December 2021	Project No.: 21-006
City of Los Angeles, DPW, BOE, Geotechnical Engineering Group		Figure **5**

APPENDIX A

Geotechnical Exploration Data Report

Asphalt Plant No. 1 – Phase II Project

2061 East 25th Street, Los Angeles, California

by Leighton dated October 18, 2021

GEOTECHNICAL EXPLORATION DATA REPORT
ASPHALT PLANT NO. 1 – PHASE II PROJECT
2061 EAST 25TH STREET, LOS ANGELES, CALIFORNIA
W.O. NO. E1908771, GED FILE NO. 21-006,
TOS NO. 21-006

Prepared For

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING,
GEOTECHNICAL ENGINEERING DIVISION (GED)
1149 SOUTH BROADWAY, SUITE 120
LOS ANGELES, CALIFORNIA 90015-2213

Prepared By

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17781 COWAN
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Project Number 11957.013

October 18, 2021

Leighton Consulting, Inc.
A Leighton Group Company

October 18, 2021

Project No. 11957.013

City of Los Angeles Department of Public Works
Bureau of Engineering, Geotechnical Engineering Division (GED)
1149 South Broadway, Suite 120
Los Angeles, CA 90015-2213

Attention: Mr. Patrick J. Schmidt, PE, GE
Division Manager, Geotechnical Engineering Division

Subject: Geotechnical Exploration Data Report
Asphalt Plant No. 1 – Phase II Project
2601 East 25th Street
Los Angeles, California
W.O. No. E1908771, GED File No. 21-006, TOS No. 21-006

In accordance with our proposal dated May 7, 2021, and the subsequent Notice to Proceed issued June 9, 2021, Leighton Consulting, Inc. (Leighton) is pleased to present this Geotechnical Data Report, which summarizes the results of our field exploration and laboratory-testing program in support of the Asphalt Plant No. 1 – Phase II Project.

Respectfully submitted,

LEIGHTON CONSULTING, INC.

Christian Delgadillo, PE, GE 3144
Senior Project Engineer

ED/CD/rg

TABLE OF CONTENTS

ATTACHMENTS

1.0 INTRODUCTION

This data report presents the results of our geotechnical exploration for the proposed Asphalt Plant No. 1 – Phase II Project, located on the northeast side of Harriet Street and East 25th Street in the Redondo Junction area of the city of Los Angeles, California (Project or Site). The site is shown on Figure 1, *Site Location Map.*

1.1 Project Description

Our understanding of the Project is based on the Geotechnical Engineering Division (GED) April 14, 2021 Task Order Solicitation (TOS) 21-006 WO# E1908771, GED File No. 21-006. The site is rectangular in shape and consists of approximately 1.4 acres of industrial land. The site is currently occupied by Asphalt Plant No. 1, operated by the City of Los Angeles Bureau of Street Services (BSS). We understand the proposed project consists of the construction of a relatively large canopy structure on the southern parcels associated with the site. The canopy will cover the recycled asphalt pavement (RAP) and RAP processing equipment. The project also includes the construction of a new employee office, truck scale, utilities, planters, and new parking lot. The surrounding area consists of primarily light industrial and commercial properties. A rendering plant is located to the east and south of the site. Harriet Street, followed by the Mor-Cast Aluminum Foundry plant, is located to the west of the site. Railroad right-of-way and additional industrial properties are located to the north of the site.

2.0 PRE-FIELD ACTIVITIES

Prior to commencing fieldwork, Leighton met with a GED representative to discuss project details and mark the boring locations on August 23, 2021. Underground Service Alert (USA) was notified at least 48 hours prior to commencing drilling. In addition, a private utility locator performed a geophysical survey at the boring locations to assess the presence of underground features and ensure no conflict at the boring locations.

A Site-Specific Health and Safety Plan (HSP) was prepared prior to the field exploration. The HSP was prepared in accordance with Chapter 29 of the Code of Federal Regulations (29 CFR) 1910.120, Title 8 Section 5192 of the CCR, and requirements for COVID-19 prevention consistent with applicable governmental orders. The HSP was reviewed by a GED representative prior to exploration.

Based on the TOS, LA county permits were not required.

3.0 FIELD EXPLORATION

The field exploration was performed between August 30 and September 1, 2021, and consisted of the advancement of eight (8) soil borings (LB-1 through LB-8) to a depth of 41½ feet below ground surface (bgs). The borings were advanced using a hollow-stem auger. After completion of drilling activities, the borings were backfilled with cement-bentonite grout and patched with cold asphalt where asphalt was penetrated. A list of the borings performed as a part of this study along with pertinent location and depth information is presented in the following table.

Table 1: Boring Location Data Table

Boring	Depth (ft)	Latitude	Longitude
LB-1	41½	34.016018	-118.225387
LB-2	41½	34.015654	-118.225423
LB-3	41½	34.015716	-118.224952
LB-4	41½	34.01554	-118.22485
LB-5	41½	34.015521	-118.225242
LB-6	41½	34.01573	-118.225525
LB-7	41½	34.015641	-118.225233
LB-8	41½	34.015796	-118.225213

Bulk, Standard Penetration Test (SPT), and relatively undisturbed drive soil samples were collected using a SPT and Modified-California ring sampler at selected intervals within the hollow-stem auger borings for geotechnical and environmental laboratory testing.

3.1 Soil Sampling

Leighton personnel sampled the borings using Standard Penetration Test (SPT) and California Ring samplers generally alternating every 2½ feet to 15 feet, and at 5 feet intervals thereafter, to the explored depths. The SPT and Ring samplers were driven into the soil with a 140-pound hammer, free falling 30 inches. The number of blows was noted for every 6 inches of sampler penetration. Relatively undisturbed samples were collected from the borings using the Ring sampler. The sampling procedures generally followed ASTM D 1586 and D 3550 for SPT and split-barrel sampling of soil. In addition to driven samples, representative bulk soil samples were also collected from the borings. Each soil sample collected was

described in general conformance with the Unified Soil Classification System (USCS). The samples were sealed, packaged, and transported to our soil laboratory. The soil descriptions and depths are noted on the boring logs included in Appendix A, *Boring Logs*.

3.2 Volatile Organic Compound Screening

Each soil sample collected above the water table was field screened using a photoionization detector (PID) to evaluate the soil sample for the presence of volatile organic hydrocarbon vapors. Additionally, a combustible gas meter, or 4-gas meter, capable of reading the Lower Explosive Limit (LEL) of methane and parts per million (ppm) of hydrogen sulfide was placed at the ground surface upon removal of the soil sampling device from each depth. PID, LEL, and hydrogen sulfide readings recorded for each soil sample are presented on the boring logs in Appendix A.

3.3 Investigation Derived Waste

Investigation-derived waste (i.e. soil cuttings) was generated during the geotechnical exploration. Soil cuttings were placed in DOT-approved 55-gallon drums and properly labeled, manifested, and disposed offsite. Composite soil samples were collected from the soil cuttings for analytical laboratory testing. Copies of the chain of custody forms and complete analytical reports are presented in Appendix C

4.0 LABORATORY TESTING

4.1 Geotechnical Laboratory Testing

Geotechnical laboratory tests were performed on selected soil samples obtained during field exploration. Laboratory tests were selected and scheduled by GED. The following laboratory tests were performed on soil samples to evaluate geotechnical engineering properties of the subsurface materials:

- Soil classification (ASTM D2488);
- In-situ moisture content and dry density determination (ASTM D2216 and ASTM D2937);
- Fines content (ASTM D1140);
- Sieve analyses (ASTM D6913);
- Atterberg Limits (ASTM D4318);
- Consolidation (ASTM D2435);
- Direct shear (ASTM D3080);
- Expansion Index (ASTM D4829);
- Resistivity, chloride content, sulfate content, and pH (CA DOT Test 422, 417, 643);
- R-Value (CA DOT Test 301); and
- Maximum Density (ASTM D1557).

All laboratory tests were performed in general conformance with ASTM and California Test procedures. The results of the in-situ moisture tests are presented on the geotechnical boring logs (Appendix A). Detailed results of laboratory testing are presented in Appendix B – *Laboratory Test Results.* Test results are summarized as follows:

4.1.1 Soil Classification

Classifying soils in accordance with standardized methods enables their properties and characteristics to be evaluated in a broad-based manner, and to correlate soils found on various sites. Visual classifications made in the field are often refined after more detailed observations of the materials are made in the laboratory, and after subsequent laboratory testing. ASTM

Test Method D2488 was used to perform the visual classification of selected soil samples in the laboratory.

The determined classifications of each soil sample are shown on the boring logs in Appendix A. The classifications of specific specimens that were tested in the laboratory are indicated with the respective test results in Appendix B. Because the types of in-situ materials may change abruptly, there may be apparent discrepancies between the classifications as indicated on the boring logs and in the test-result documentation.

4.1.2 In-situ Moisture Content and Dry Density Determination

The in-situ moisture content and dry density were performed in accordance with ASTM Test Methods D2216 and D2937, respectively. The in-situ moisture content serves to establish a correlation between the properties and behavior of a soil and the in-situ dry density provides a measure of the degree of densification of a material. The in-situ moisture content (as a percentage of dry weight of soil) and dry density (in pounds per cubic foot, pcf) were determined for relatively undisturbed specimens. The test results are presented on the boring logs in Appendix A.

4.1.3 Fines Content

Selected soil samples were wet-wash sieved through a No. 200 U.S. Standard brass sieve in accordance with ASTM Test Method D1140 to determine the percentage of fines (silts and clays). This data was used to refine the Unified Soil Classification for the tested samples. The results are summarized in the table below.

Table 2: Percent Passing No. 200 Sieve Results

Percent Passing No. 200 (ASTM D1140)			
Boring ID	**Depth (feet)**	**Fines (%)**	**Sand (%)**
LB-1	7½	5.2	94.8
LB-1	35	70.7	29.3
LB-2	7½	3.9	96.1
LB-4	1-5	17.6	82.4
LB-5	10	5.4	94.6
LB-6	5	4.4	95.6
LB-6	35	70.5	29.5
LB-7	7½	7.3	92.7
LB-8	10	6.1	93.9

4.1.4 Particle Size Analysis

The particle-size distributions of selected soil samples were evaluated by performing mechanical (sieve) analyses. The data was used to refine the Unified Soil Classification for the tested soil samples. The results of the tests are presented graphically in Appendix B and summarized in the table below.

Table 3: Sieve Analysis Results

Sieve Analysis (ASTM D6913)				
Boring ID	**Depth (feet)**	**Gravel (%)**	**Sand (%)**	**Fines (%)**
LB-2	1-5	14	71	15
LB-3	7½	27	65	8
LB-3	20	14	82	4
LB-4	10	1	79	20
LB-4	25	5	87	8
LB-5	1-5	18	74	8
LB-6	12½	3	90	7
LB-8	1-5	1	80	19
LB-8	12½	16	79	5
LB-8	20	32	63	5

4.1.5 Atterberg Limits

Atterberg limits tests were performed in accordance with ASTM D4318 in order to determine Liquid Limit (LL), Plastic Limit (PL) and Plasticity Index (PI). Samples were air-dried and passed through a No. 40 sieve and moisturized. The liquid and plastic limit tests were performed on the fraction passing the No. 40 sieve. The Atterberg limits test results are summarized in the following table.

Table 4: Atterberg Limits Results

Boring ID	Depth (feet)	Liquid Limit	Plasticity Index
LB-1	35	26	7
LB-6	35	25	6

4.1.6 Consolidation

Consolidation testing was performed on relatively undisturbed ring samples in accordance with ASTM D2435. These tests were performed to evaluate the compressibility and moisture sensitivity of site soils under load. This test involved loading the specimen into a consolidometer, which contained porous stones at the top and bottom of the device to accommodate vertical drainage from the specimen during testing. Normal vertical axial loads were applied to the specimen and the resulting deflections were recorded at various time periods. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. Samples were tested at field and submerged moisture contents. The results are presented graphically in Appendix B.

4.1.7 Direct Shear

Shear strength parameters of selected soil samples were obtained by direct shear tests in accordance with ASTM D3080. We also performed direct shear tests on samples remolded to 95 percent of the maximum dry density as determined by ASTM D 1557. Detailed results of the shear tests are summarized in the table below.

Table 5: Direct Shear Results

Boring ID	Depth (feet)	Ultimate Cohesion (psf)	Ultimate Φ (°)
LB-2	5	0	36
LB-4	15	0	37
LB-5*	1-5	0	36
LB-5	7½	0	34
LB-6*	1-5	88	34

*Samples remolded to 95% relative compaction.

4.1.8 Expansion Index

Expansion Index (EI) tests were performed on a representative bulk soil sample from the site, in general accordance with ASTM D4829. Detailed test results are presented in Appendix B and summarized in the table below.

Table 6: Expansion Index Results

Boring ID	Depth (feet)	USCS	Expansion Index
LB-7	1-5	SP	0

4.1.9 R-Value

R-Value parameter of selected soil samples were obtained in accordance with CA DOT Test 301. Detailed results of the shear tests are summarized in the table below.

Table 7: R-Value Results

Boring ID	Depth (feet)	R-Value
LB-1	1-5	80

4.1.10 Corrosion

Corrosion parameters of selected soil samples were obtained in accordance with CA DOT Test 422, 417, 643. Detailed results of the shear tests are summarized in the table below.

Table 8: Corrosion Results

Boring ID	Depth (feet)	Minimum Resistivity (ohm-cm)	Chloride Content (ppm)	Sulfate Content (ppm)	Soil pH
LB-2	1-5	3,930	70	292	7.81
LB-3	1-5	3,100	105	78	9.21
LB-6	1-5	6,450	41	115	7.77
LB-8	1-5	5,350	120	66	7.64

4.1.11 Maximum Density

The maximum dry density and optimum moisture content of representative near surface soil materials were determined in accordance with ASTM Test Method D1557. The results of these tests are presented in the table below.

Table 9: Maximum Density Results

Boring ID	Depth (feet)	USCS Soil Type	Optimum Moisture (%)	Maximum Dry Density (pcf)
LB-2	1-5	SM	7.4	131.7
LB-5	1-5	SW-SM	7.2	129.2
LB-6	1-5	SM	7.8	119.6
LB-8	1-5	SM	8.3	122.4

5.0 FINDINGS

5.1 Regional Geology

The Project is located in the Los Angeles Basin in the northwestern portion of the Peninsular Ranges Geomorphic Province of Southern California. The Peninsular Ranges province extends approximately 900 miles southward from the Santa Monica Mountains to the tip of Baja California (Yerkes, et al., 1965) and is characterized by elongated, northwest-trending mountain ridges and sediment-floored valleys. The province includes numerous northwest trending fault zones, most of which either gradually truncate, merge with, or are terminated by faults that form the southern margin of the Transverse Ranges province. These northwest trending fault zones include the San Jacinto, Whittier-Elsinore, Palos Verdes, and Newport-Inglewood fault zones.

Approximately 65 million years ago (at the end of the Cretaceous Period), a deep, structural trough existed off the current coast of southern California (Yerkes, 1972). Over time, sedimentation filled the trough with hundreds to thousands of feet of sediment. About 7 million years ago, as sedimentation continued, an eastward shift of the boundary between the Pacific and North American plates to its present position would begin shaping the Los Angeles basin from this deep trough. Today the Los Angeles basin refers to the area defined by the Santa Monica, Whittier and Palos Verdes faults, and San Joaquin Hills. Basin depth is limited to the sediments deposited over the basement rock in the last 7 million years (Wright, 1991). The deepest part of the Los Angeles basin contains Tertiary to Quaternary-aged (65 million years and younger) marine and nonmarine sedimentary rocks that are about 24,000 feet thick (Yerkes, et al, 1965; Wright, 1991). During the Pleistocene epoch (the last two million years), the region was flooded as sea level rose in response to the worldwide melting of the Pleistocene glaciers.

Specifically, the site is located within the Central Block of the Los Angeles Basin, immediately west of the Los Angeles River. As regionally mapped by Dibblee (1989), the site is underlain by quaternary alluvium consisting of sand, gravel, and silt laid down by the Los Angeles River.

5.2 Site-Specific Geology

5.2.1 Artificial Fill (afu)

Artificial fill of varying thickness mantles the majority of the project alignment. Based on our subsurface explorations, fill varies from approximately 3½ feet to 13½ feet in thickness. In general, the encountered fill materials consist of well graded sand, poorly graded sand, poorly graded sand with silt, poorly graded sand with gravel, silty sand, and asphalt.

5.2.2 Quaternary Young Alluvium (Qya)

Below the overlying artificial fill materials, native alluvial materials were encountered to the maximum explored depth of 41½ feet below existing grade. The Quaternary age alluvial soils that underlie the site primarily consist of loose to very dense poorly graded sand and sand with silt with varying amounts of gravel. Stiff to very stiff sandy silt/lean clay layers were encountered at a depth of 35 feet in borings LB-1 and LB-7.

5.3 Groundwater Conditions

According to groundwater information obtained through the California Geological Survey (CGS) and presented in the Seismic Hazard Zone Report for the Los Angeles Quadrangle (CGS, 1998), the historically shallowest groundwater depth in the vicinity of the project site is less than 60 feet bgs. Groundwater was not encountered in our borings drilled to the maximum explored depth of 41½ feet.

The County of Los Angeles has one active groundwater monitoring well (Well No. 2788J) at approximately ¼ miles southeast of the site (https://dpw.lacounty.gov/general/wells/). Monitoring data dating back to the 1960s showed the shallowest groundwater table was measured at 230 feet below grade in 2007.

6.0 LIMITATIONS

This report presents the data obtained during our geotechnical exploration and laboratory testing and does not present any conclusions or recommendations regarding the subject site and the data obtained.

The findings from our site exploration are considered valid as of the date of this report. The data provided in this report was obtained from a limited number of exploration locations (each of which were prescribed by GED) and, therefore, may not completely define all subsurface conditions throughout the site. The nature of many sites is that differing geotechnical or geological conditions can occur within small distances and under varying climactic conditions. Furthermore, changes in subsurface conditions can and do occur over time. The data in this report should be used with these statements in mind.

Leighton's work was performed using the degree of care and skill ordinarily exercised by reputable geotechnical consultants practicing in this or similar localities at the time the work was performed. No other warranty, either expressed or implied, is made as to the conclusions, recommendations, and professional opinions presented in this report.

7.0 REFERENCES

California Geological Survey, 1998, Seismic Hazard Zone Report for the Los Angeles 7.5 Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 07.

Dibblee, Jr., T.W., 1989, Geologic Map of the Los Angeles Quadrangles, Los Angeles County, California, Dibblee Geologic Foundation Map #DF-22, map scale 1:24,000.

Yerkes, R.F., McCulloh, T.H., Schoellhamer, J.E. and Vedder, J.G., 1965, Geology of the Los Angeles Basin, California -- An Introduction: U. S. Geological Survey Professional Paper 420-A, 57 p.

Yerkes, R.F., 1972, Geology and Oil Resources of the Western Puente Hills Area, Southern California: U.S. Geological Survey Professional Paper 420-C, 63 p.

Yerkes, R.F., and Campbell, R.H., 2005, Preliminary Geologic Map of the Los Angeles 30’ x 60’ Quadrangle, Southern California, United States Geological Survey: Open-File Report 2005-1019, Version 1.0, Map Scale 1:100,000.

Project: 11957.013	Eng/Geol: BFM
Scale: 1 " = 2,000 '	Date: September 2021
Base Map: ESRI ArcGIS Online 2021 Author: Leighton Geomatics (mmurphy)	

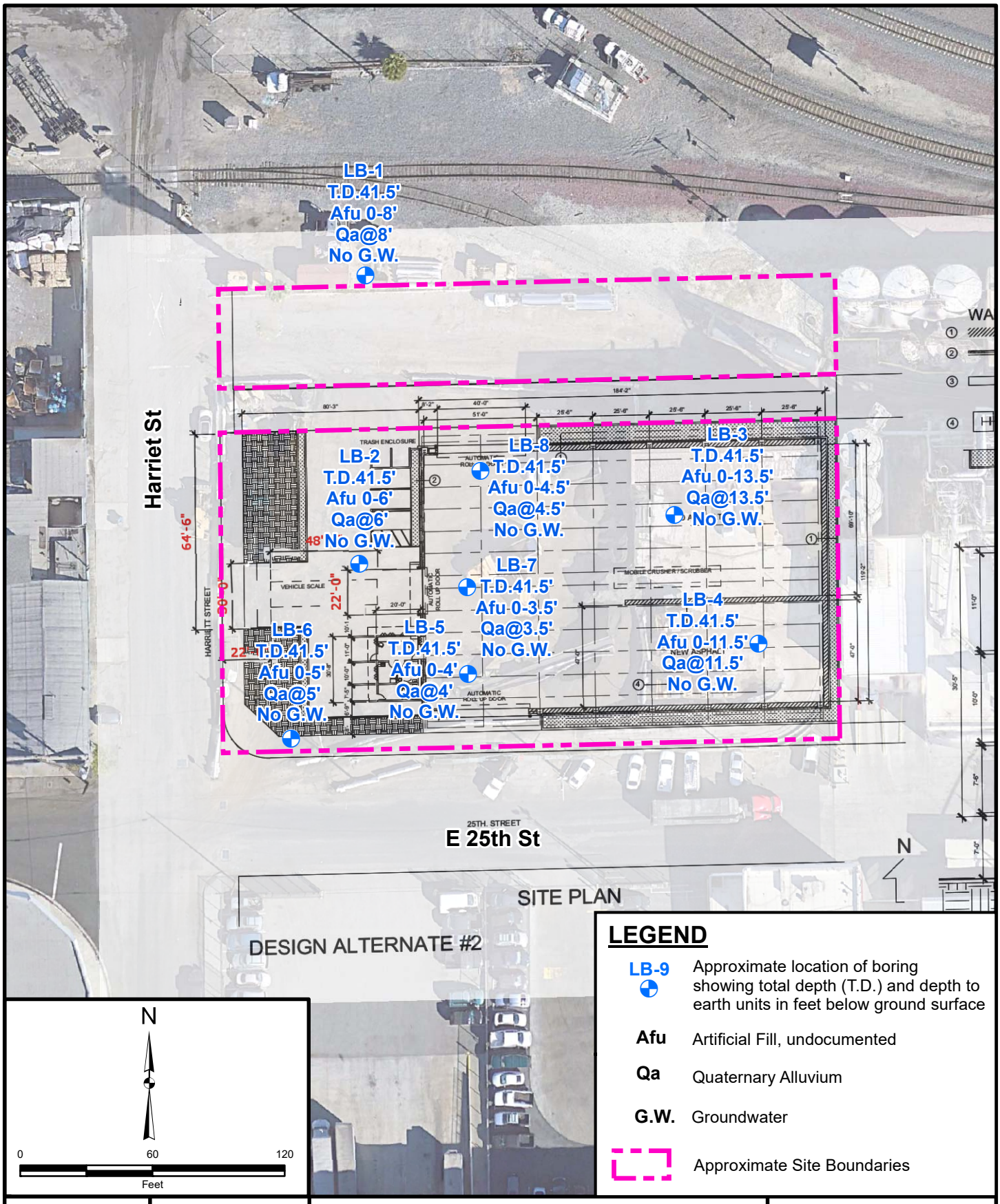
SITE LOCATION MAP

Asphalt Plant No. 1 - Phase II
2601 East 25th Street
Los Angeles, California

FIGURE 1

Leighton

Map Saved as V:\Drafting\11957\013\Maps\11957-013_F01_SLM_2021-09-09.mxd on 9/23/2021 11:58:11 AM



N

0 60 120

Feet

LEGEND

LB-9	Approximate location of boring showing total depth (T.D.) and depth to earth units in feet below ground surface
Afu	Artificial Fill, undocumented
Qa	Quaternary Alluvium
G.W.	Groundwater
	Approximate Site Boundaries

Project: 11957.013	Eng/Geol: CD
Scale: 1 " = 60 '	Date: October 2021

Base Map: Google Earth, 2021.
and Site Plan (Design Alternative #2)

Author: Leighton Geomatics (btran)

BORING LOCATION MAP

Asphalt Plant No. 1 - Phase II
2601 East 25th Street
Los Angeles, California

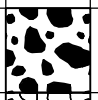
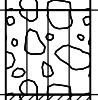
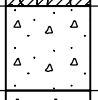
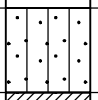
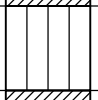
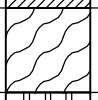
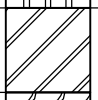
FIGURE 2

Leighton

Map Saved as V:\Drafting\11957\013\Maps\11957-013_F02_SP_2021-10-14.mxd on 10/14/2021 3:42:03 PM

APPENDIX A

BORING LOGS

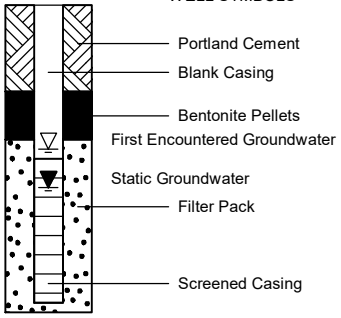
MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

SYMBOLS KEY

SAMPLE TYPES

- Bulk Bag Sample
- Grab Sample
- Undisturbed Sample

WELL SYMBOLS



ABBREVIATION KEY

CR	-	CORROSION	-200	-	% FINES PASSING NO. 200 SIEVE
CD	-	CONSOLIDATED DRAINED TRIAXIAL			
CN	-	CONSOLIDATION	SW	-	SWELL TEST
CU	-	CONSOLIDATED UNDRAINED TRIAXIAL	TC	-	CYCLIC TRIAXIAL
DS	-	DIRECT SHEAR	TV	-	TORVANE SHEAR
PP	-	POCKET PENETROMETER (TSF)	UC	-	UNCONFINED COMPRESSION
(3.0)	-	(WITH SHEAR STRENGTH IN KSF)	(1.5)	-	(WITH SHEAR STRENGTH IN KSF)
RV	-	R-VALUE			
SA	-	SIEVE ANALYSIS:	UU	-	UNCONSOLIDATED UNDRAINED TRIAXIAL

Key to Boring Log

GEOTECHNICAL BORING LOG LB-1

Project No.	11957.013	**Date Drilled**	8-31-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	216'
Location	34.016018, -118.225387	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			B-1				SP	**Artificial Fill, undocumented (Afu)** @ Surface: Poorly Graded SAND with Gravel; brown, slightly moist, fine sand, fine and coarse subangular gravel, little silt	RV
215									@2': Dark brown, moist, fine sand, fine subrounded gravel @3': Black	
	5		0.4	S-1	3 2 3				@5': Poorly Graded SAND; loose, grayish brown, moist, fine sand, few fine gravel, trace organics, asphalt debris @6.5': Brown, moist, fine sand, trace organics	
210			.6	R-1	5 9 13		2	SP-SM	@7.5': Poorly Graded SAND with Silt; medium dense, grayish brown, fine sand, little coarse subrounded gravel, trace organics	-200
	10		25.2	S-2	2 3 3			SP	**Quaternary Alluvium: (Qa)** @8': Poorly Graded SAND with Silt; dark yellowish brown, moist, predominantly fine sand, some medium sand, trace coarse gravel @10': Poolry Graded SAND; loose, yellowish brown, moist, fine sand	
205			.7	R-2	8 14 23	123	3		@12.5': Poorly Graded SAND with Gravel; medium dense, yellowish brown, moist, fine sand, fine subangular gravel	
	15		0	S-3	6 8 10				@15': Partial recovery, 1-inch thick interbed of Silty SAND; grayish brown, moist, fine sand, few fine gravel	
200										
	20		0	R-3	9 14 22	113	4	SP-SM	@20': Poorly Graded SAND with Silt; medium dense, grayish brown, moist, fine to coarse sand, trace rootlets	
195								SP	@21.5': Poorly Graded SAND; orangish brown, moist, fine sand, trace fine subangular gravel	
	25		0	S-4	6 7 9				@25': Medium dense, brown to grayish brown, predominantly fine sand, few medium sand, few fine gravel	
190										
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

GEOTECHNICAL BORING LOG LB-1

Project No.	11957.013	**Date Drilled**	8-31-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	216'
Location	34.016018, -118.225387	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
									This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
185	30		0	R-4	7 20 22				@30': Grayish brown, predominantly fine sand, few coarse sand, few fine gravel @30.75': Poorly Graded SAND; orangish brown, moist, fine and medium sand	
180	35		0	S-5	6 7 8			CL-ML	@35': Sandy SILT/Sandy lean CLAY; stiff, olive brown, moist, low plasticity, fine sand	-200, AL
175	40		0	R-5	10 14 19			ML	@40': Sandy SILT; medium dense, olive brown and light brown, moist, non-plastic, fine sand @40.5': 4-inch thick interbed of Poorly Graded SAND; brown, moist, predominantly fine sand, few coarse sand, trace fine gravel	
170	45								**Total Depth = 41.5'** **No groundwater encountered** **Backfilled with cement-bentonite grout and patched with asphalt**	
165	50									
160	55									
	60									

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

GEOTECHNICAL BORING LOG LB-2

Project No.	11957.013	**Date Drilled**	8-31-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.015654, -118.225423	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
215	0								@ Surface: 8-inch Asphalt over 2-inch Base	
				B-1				SM	**Artificial Fill, undocumented (Afu)** @10": Silty SAND; dark grayish brown, slightly moist, fine sand, some fine and coarse subangular gravel @2': Brown, fine sand, few fine and coarse subangular gravel	CN, CR, MD, SA
								SP	@3.5': Poorly Graded SAND; light brown, moist, fine sand, few fine and coarse subangular gravel	
210	5		5.4	R-1	4 6 8	105	7	SM	@4': Silty SAND; light brown, moist, fine sand, few clay	DS
								SP	@4.5': Poorly Graded SAND; moist, grayish brown, fine sand, few fine gravel	
								SM	@5': Silty SAND; loose, light olive brown, predominantly fine sand, few coarse sand, few fine gravel	
			.4	S-1	4 6 8			SP	**Quaternary Alluvium: (Qa)** @6': Poorly Graded SAND; dark yellowish brown, moist, fine sand @7.5': Medium dense	-200
205	10		0	R-2	6 8 10		2		@10': Medium dense, fine and medium sand, loose sand, sample disturbed	
			0	S-2	5 7 10				@12.5': Fine sand	
200	15		0	R-3	10 14 18	112	3		@15': Light grayish brown, slightly moist	
195	20		0	S-3	5 7 9					
190	25		0	R-4	23 24 29				@25': Dense, dark yellowish brown	
185	30									

The Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

GEOTECHNICAL BORING LOG LB-2

Project No.	11957.013	**Date Drilled**	8-31-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.015654, -118.225423	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
185	30		0	S-4		8 10 12				@30': Medium dense	
180	35		0	R-5		12 19 25					
175	40		0	S-5		11 18 21				@40': Dense	
										Total Depth = 41.5' **No groundwater encountered** **Backfilled with cement-bentonitie grout and patched with cold-mix asphalt**	
170	45										
165	50										
160	55										
155	60										

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

GEOTECHNICAL BORING LOG LB-3

Project No.	11957.013	**Date Drilled**	9-1-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	226'
Location	34.015716, -118.224952	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0								@ Surface: 10-inch Concrete	
225				B-1				SM	**Artificial Fill, undocumented (Afu)** @10": Silty SAND; brown, slightly moist, fine sand	CR
	5		13.1	S-1	2 2 2			SP	@5': Loose @6': Poorly Graded SAND; yellowish brown, moist, fine sand	
220			3.2	R-1	7 18 24	113	5	SP-SM Asphalt	@7.5': Poorly Graded SAND with Silt and Gravel; dense, brown, moist, fine to coarse sand, fine to coarse gravel @8.4': Asphalt, also noted in shoe of sampler	SA
	10		2	S-2	3 50/4"			SP Asphalt	@10': Poorly Graded SAND; very dense, dark brown, very moist, fine sand, few silt, partial recovery @10.5': Asphalt	
215			0	R-2	7 10 12	103	4	SM Asphalt	@12.5': Silty SAND; medium dense, dark brown, moist, fine sand @13': Asphalt	
	15		0	S-3	7 10 15			SP	**Quaternary Alluvium: (Qa)** @13.5': Poorly Graded SAND; light brown, moist, fine sand @15': Dense, yellowish brown, fine sand	
210										
	20		0	R-3	8 15 22	113	2		@20': Fine to coarse sand, little fine gravel, 4-inch thick interbed of Silty SAND; brown, moist, fine sand	SA
205										
	25		0	S-4	11 13 15				@25': Fine sand	
200										
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-3

Project No.	11957.013	**Date Drilled**	9-1-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	226'
Location	34.015716, -118.224952	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
195	30		0	R-4	18 27 35				@30': Fine and medium sand, few coarse gravel, 4-inch thick interbed of Silty SAND; brown, moist, fine sand	
190	35		0	S-5	14 19 23				@35': Predominantly fine sand, few medium and coarse sand	
185	40		0	R-5	16 21 27					
180	45								**Total Depth = 41.5'** **No groundwater encountered** **Backfilled with cement-bentonitie grout and patched with concrete**	
175	50									
170	55									
	60									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

GEOTECHNICAL BORING LOG LB-4

Project No.	11957.013	**Date Drilled**	9-1-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	224'
Location	34.01554, -118.22485	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0								*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
				B-1				SM	@ Surface: 5-inch Concrete **Artificial Fill, undocumented (Afu)** @5": Silty SAND; light brown, slightly moist, fine sand, few fine gravel	-200
220									@3': Brown, fine sand	
	5		0	R-1	2 3 6	94	6		@5': Loose, pockets of Poorly Graded SAND; brown, moist, fine and medium sand	
			.9	S-1	5 50/3"			Asphalt	@7.5': Very dense, partial recovery @8': Asphalt	
215										
	10		0	R-2	17 15 19	103	6	SM Asphalt SM	@10': Silty SAND; medium dense, dark brown, moist, fine sand @10.5': Asphalt @11': Silty SAND; light brown, moist, fine sand	SA
									Quaternary Alluvium: (Qa)	
			.3	S-2	4 5 6			SP	@11.5': Poorly Graded SAND; dark yellowish brown, moist, fine sand @12.5': Medium dense	
210										
	15		0	R-3	5 8 9	100	3			DS
									@16': Yellowish brown, predominantly fine sand, some medium and coarse sand	
205										
	20		0	S-3	6 6 7				@20': Predominantly fine sand, few medium sand	
200										
	25		0	R-4	8 16 25				@25': Dense, 6-inch thick interbed of Silty SAND; brown, moist, fine and medium sand	SA
								SW-SM	@25.5': Well Graded SAND with Silt; dense, light olive brown, moist, fine and medium sand, few coarse sand	
195										
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

GEOTECHNICAL BORING LOG LB-4

Project No.	11957.013	**Date Drilled**	9-1-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	224'
Location	34.01554, -118.22485	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	30		0	S-4	16 20 27			SP	@30': Poorly Graded SAND; very dense, yellowish brown, moist, fine and medium sand, few coarse subangular gravel	
190										
	35		0	R-5	14 22 26			SW-SM	@35': Well Graded SAND with Silt; dense, light olive brown, moist, fine and medium sand, few coarse sand	
185										
	40		0	S-5	14 18 22			SP	@40': Poorly Graded SAND; dense, yellowish brown, moist, fine and medium sand	
									Total Depth = 41.5' **No groundwater encountered** **Backfilled with cement-bentonitie grout and patched with concrete**	
180	45									
175										
	50									
170										
	55									
165										
	60									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

GEOTECHNICAL BORING LOG LB-5

Project No.	11957.013	**Date Drilled**	8-30-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.015521,-118.225242	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
215	0			B-1				SW-SM	@ Surface: 6-inch Asphalt over 6-inch Base **Artificial Fill, undocumented (Afu)** @1': Well Graded SAND with Silt and Gravel; grayish brown, moist, fine and medium sand, fine gravel, trace brick fragments @2': olive brown, fine and medium sand, coarse subrounded gravel, trace brick fragments	CN, DS, MD
210	5		.1	S-1	6 8 10			SP	**Quaternary Alluvium: (Qa)** @4': Poorly Graded SAND; light grayish brown, moist, fine sand, few fine and coarse subangular gravel @5': Medium dense, fine sand	
			0	R-1	5 10 17	104	4		@7.5': Yellowish brown, fine sand, few fine gravel	DS
205	10		0	S-2	4 4 4				@10': Dark yellowish brown, fine and medium sand @10.25': 4-inch thick interbed of Silty SAND; brown, moist, fine sand	-200
			0	R-2	7 11 18	125	3			
200	15		0	S-3	8 11 15				@15': Predominantly fine sand, little medium sand, trace fine subrounded gravel	
195	20		0	R-3	7 15 21				@20': Predominantly fine sand, some medium sand	
190	25		0	S-4	8 10 12				@25': Trace coarse subrounded gravel	
185	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

GEOTECHNICAL BORING LOG LB-5

Project No.	11957.013	**Date Drilled**	8-30-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.015521,-118.225242	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
185	30		0	R-4		9 15 18				@30': Predominantly fine sand, some medium sand	
180	35		0	S-5		10 11 13				@35': Fine sand	
175	40		0	R-5		15 21 27				@40': Dense @41.5': Few coarse subangular gravel	
170	45									**Total Depth = 41.5'** **No groundwater encountered** **Backfilled with cement-bentonitie grout and patched with cold-mix asphalt**	
165	50										
160	55										
155	60										

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

GEOTECHNICAL BORING LOG LB-6

Project No.	11957.013	**Date Drilled**	8-31-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.01573, -118.225525	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
215	0									@ Surface: 14-inch Asphalt over 4-inch Base	
				B-1					SM	**Artificial Fill, undocumented (Afu)** @1': Silty SAND; light brown, slightly moist, fine sand	DS, MD, CR
									SP	@2.5': Poorly Graded SAND; dark yellowish brown, moist, fine sand	
										@4': Dark brown	
210	5		.1	S-1		4 5 5				**Quaternary Alluvium: (Qa)** @5': Poorly Graded SAND; medium dense, dark yellowish brown, moist, fine sand	-200
			0	R-1		6 8 10	102	5			
205	10		0	S-2		4 9 12				@10': Trace coarse subrounded gravel	
			0	R-2		9 15 27	104	3	SW-SM	@12.5': Well Graded SAND with Silt; dense, grayish brown, moist, fine to medium sand, trace coarse sand, trace fine gravel	SA
200	15		0	S-3		11 13 15				@15': Predominantly fine sand, few medium sand	
195	20		0	R-3		16 19 23	112	3	SP	@20': Poorly Graded SAND; dense, dark yellowish brown, moist, fine sand	
190	25		0	S-4		7 9 11				@25': Medium dense, fine sand, trace coarse subrounded gravel	
185	30										

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

GEOTECHNICAL BORING LOG LB-6

Project No.	11957.013	**Date Drilled**	8-31-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.01573, -118.225525	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
185	30		0	R-4		10 12 15				@30': Fine sand	
180	35		0	S-5		5 6 7			CL-ML	@35': Sandy SILTY/Sandy lean CLAY; very stiff, olive brown, moist, low plasticity, fine sand	-200, AL
175	40		0	R-5		16 28 35			SP	@40': Hard @41.1': Poorly Graded SAND; dark yellowish brown, moist, predominantly fine sand, little medium sand	
170	45									**Total Depth = 41.5'** **No groundwater encountered** **Backfilled with cement-bentonitie grout and patched with cold-mix asphalt**	
165	50										
160	55										
155	60										

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-7

Project No.	11957.013	**Date Drilled**	8-30-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.015641, -118.225233	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
										This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
215	0			B-1					SP	@ Surface: 8-inch Asphalt over 4-inch Base **Artificial Fill, undocumented (Afu)** @1': Poorly Graded SAND; grayish brown, moist, fine sand, trace silt @2': Trace coarse subrounded gravel	EI
										Quaternary Alluvium: (Qa) @3.5': Poorly Graded SAND; yellowish brown, moist, fine sand	
210	5		0.2	R-1		4 9 15	116	2		@5': Medium dense, fine and medium sand	CN
			.1	S-1		2 6 9			SP-SM	@7.5': Poorly Graded SAND with Silt; medium dense, light brownish gray, moist, fine sand	-200
205	10		0	R-2		9 10 15	120	2	SP	@10': Poorly Graded SAND; medium dense, yellowish brown, moist, fine and medium sand, few fine gravel	
			0	S-2		5 7 12			SP-SM	@12.5': Poorly Graded SAND with Silt; medium dense, light grayish brown, fine sand, few fine gravel, trace silt	
200	15		0	R-3		11 15 18			SP	@15': Pooly Graded SAND; medium dense, yellowish brown, moist, predominantly fine sand, few medium sand, few fine subrounded gravel	
195	20		0	S-3		11 17 21				@20': Dense, fine sand	
190	25		0	R-4		12 20 26	114	2		@25': Fine sand, few fine gravel	
185	30										

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

GEOTECHNICAL BORING LOG LB-7

Project No.	11957.013	**Date Drilled**	8-30-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.015641, -118.225233	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
185	30		0	S-4		9 13 17				@30': Fine sand	
180	35		0	R-5		13 20 28					
175	40		0	S-5		12 15 18				@40': Light brown, fine sand, trace fine gravel and silt @41.5': Few coarse subangular gravel	
170	45									**Total Depth = 41.5'** **No groundwater encountered** **Backfilled with cement-bentonitie grout and patched with cold-mix asphalt**	
165	50										
160	55										
155	60										

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-8

Project No.	11957.013	**Date Drilled**	8-30-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.015796, -118.225213	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
										This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
215	0									@ Surface: 6-inch asphalt over 2-inch Concrete	
				B-1						**Artificial Fill, undocumented (Afu)**	SA, CR, MD
									GP	@8": Pea Gravel	
									SP-SM	@1': Poorly Graded SAND with Silt; light brown, moist, fine sand	
										@2': 2-inch thick interbed of Sandy Silty CLAY; dark brown, moist, low plasticity, micaceous, fine sand, FeO stains	
									SM	@3': Silty SAND; dark yellowish brown, moist, fine sand, few coarse subrounded gravel, trace glass debris	
210	5		0.2	S-1		2 6 5			SP	**Quaternary Alluvium: (Qa)** @4.5': Poorly Graded SAND; yellowish brown, moist, fine sand	
									SP-SM	@5': Poorly Graded SAND with Silt; loose, brown, moist, fine sand	
									SP	@5.5': Poorly Graded SAND; yellowish brown, moist, fine sand	
			0	R-1		4 4 6	106	4		@7.5': Medium dense, light brown, fine sand, few fine and coarse gravel	CN
205	10		0	S-2		4 5 8			SP-SM	@10': Poorly Graded SAND with Silt; medium dense, predominantly fine sand, few coarse sand, trace fine and coarse subangular gravel	-200
			0	R-2		6 9 12	118	4	SW-SM	@12.5': Well Graded SAND with Silt and Gravel; medium dense, olive brown, moist, fine to coarse sand, fine to coarse subangular gravel	SA
200	15		0	S-3		14 16 22			SP	@15': Dark yellowish brown, fine sand, few coarse gravel	
195	20		0	R-3		12 13 14	122	3	SW-SM	@20': Well Graded SAND with Silt and Gravel; dense, olive brown, moist, fine to coarse sand, fine to coarse subangular gravel	SA
190	25		0	S-4		11 19 47				@25': Very dense	
185	30										

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

GEOTECHNICAL BORING LOG LB-8

Project No.	11957.013	**Date Drilled**	8-30-21
Project	LADPW On-Call Asphalt Plant	**Logged By**	EDB
Drilling Co.	MR Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	215'
Location	34.015796, -118.225213	**Sampled By**	EDB

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
185	30		0	R-4	8 10 12			SP	@30': Poorly Graded SAND; medium dense, yellowish brown, moist, fine sand	
180	35		0	S-5	12 16 21				@35': Dense	
175	40		0	R-5	11 16 22				@40': Trace fine gravel	
170	45								**Total Depth = 41.5'** **No groundwater encountered** **Backfilled with cement-bentonitie grout and patched with cold-mix asphalt and concrete**	
165	50									
160	55									
155	60									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

Leighton

APPENDIX B

LABORATORY TEST RESULTS

Boring No.	LB-1	LB-4						
Sample No.	R-1	B-1						
Depth (ft.)	7.5	1-5						
Sample Type	Ring	Bulk						
Soil Identification	Grayish brown poorly-graded sand with silt (SP-SM)	Very dark grayish brown silty sand (SM)						
No Moisture Correction; ASTM D 1140 modified to include splitting the sample on the #4 sieve								
Total Sample Dry Weight Determination								
Dry Weight of Soil + Container (g)	663.2	1547.9						
Weight of Container (g)	72.8	222.3						
Dry Weight of Soil (g)	590.4	1325.6						
Sample Dry Weight Determination, Retained on Sieve #4								
Dry Weight of Sample + Cont. (g)	133.9	111.7						
Weight of Container (g)	78.4	76.6						
Weight of Dry Sample (g)	55.5	35.1						
Sample Dry Weight Determination, Passing Sieve #4								
Dry Weight of Sample + Cont. (g)	605.5	629.4						
Weight of Container (g)	72.8	77.1						
Weight of Dry Sample (g)	532.7	552.3						
After Wash								
Method (A or B)	A	A						
Dry Weight of Sample + Cont. (g)	574.7	529.4						
Weight of Container (g)	72.8	77.1						
Weight of Dry Sample (g)	501.9	452.3						
% Passing No. 4 Sieve	90.6	97.4						
% Retained No. 4 Sieve	9.4	2.6						
% Passing No. 200 Sieve	**5.2**	**17.6**						

Leighton

PERCENT PASSING
No. 200 SIEVE
ASTM D 1140

Project Name: Asphalt Plant
Project No.: 11957.013

Tested By: J. Domingo Date: 09/13/21

Boring No.	LB-1	LB-2	LB-5	LB-6	LB-6	LB-7		
Sample No.	S-5	S-1	S-2	S-1	S-5	S-1		
Depth (ft.)	35.0	7.5	10.0	5.0	35.0	7.5		
Sample Type	SPT	SPT	SPT	SPT	SPT	SPT		
Soil Identification	Olive silty clay with sand (CL-ML)s	Gray poorly-graded sand (SP)	Gray poorly-graded sand with silt (SP-SM)	Light olive gray poorly-graded sand (SP)	Olive sandy silty clay s(CL-ML)	Light brownish gray poorly-graded sand with silt (SP-SM)		
Moisture Correction								
Wet Weight of Soil + Container (g)	0.0	0.0	0.0	0.0	0.0	0.0		
Dry Weight of Soil + Container (g)	0.0	0.0	0.0	0.0	0.0	0.0		
Weight of Container (g)	1.0	1.0	1.0	1.0	1.0	1.0		
Moisture Content (%)	0.0	0.0	0.0	0.0	0.0	0.0		
Sample Dry Weight Determination								
Weight of Sample + Container (g)	752.3	871.2	977.2	1032.9	764.3	887.6		
Weight of Container (g)	108.6	236.6	219.2	245.5	107.6	206.0		
Weight of Dry Sample (g)	643.7	634.6	758.0	787.4	656.7	681.6		
Container No.:								
After Wash								
Method (A or B)	A	A	A	A	A	A		
Dry Weight of Sample + Cont. (g)	297.2	846.6	936.6	998.0	301.3	837.7		
Weight of Container (g)	108.6	236.6	219.2	245.5	107.6	206.0		
Dry Weight of Sample (g)	188.6	610.0	717.4	752.5	193.7	631.7		
% Passing No. 200 Sieve	**70.7**	**3.9**	**5.4**	**4.4**	**70.5**	**7.3**		
% Retained No. 200 Sieve	29.3	96.1	94.6	95.6	29.5	92.7		

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PERCENT PASSING
No. 200 SIEVE
ASTM D 1140

Project Name: Asphalt Plant

Project No.: 11957.013

Tested By: J. Domingo Date: 09/13/21

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-2
Sample No.: B-1
Soil Identification: Dark olive brown silty sand (SM)

Tested By: GEB/JD Date: 09/15/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 1-5

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	HR	P-233	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	3149.7	781.0	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	232.4	217.9	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	2917.3	563.1	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	P-233
	Wt. of Dry Soil + Container (g)	697.0
	Wt. of Container (g)	217.9
	Dry Wt. of Soil Retained on # 200 Sieve (g)	479.1

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5	0.0		100.0
1"	25.0	66.8		97.7
3/4"	19.0	115.6		96.0
1/2"	12.5	161.4		94.5
3/8"	9.5	232.9		92.0
#4	4.75	405.2		86.1
#8	2.36		30.3	81.5
#16	1.18		70.9	75.3
#30	0.600		138.0	65.0
#50	0.300		251.2	47.7
#100	0.150		383.2	27.5
#200	0.075		465.8	14.9
PAN				

GRAVEL: **14 %**
SAND: **71 %**
FINES: **15 %**
GROUP SYMBOL: **SM**

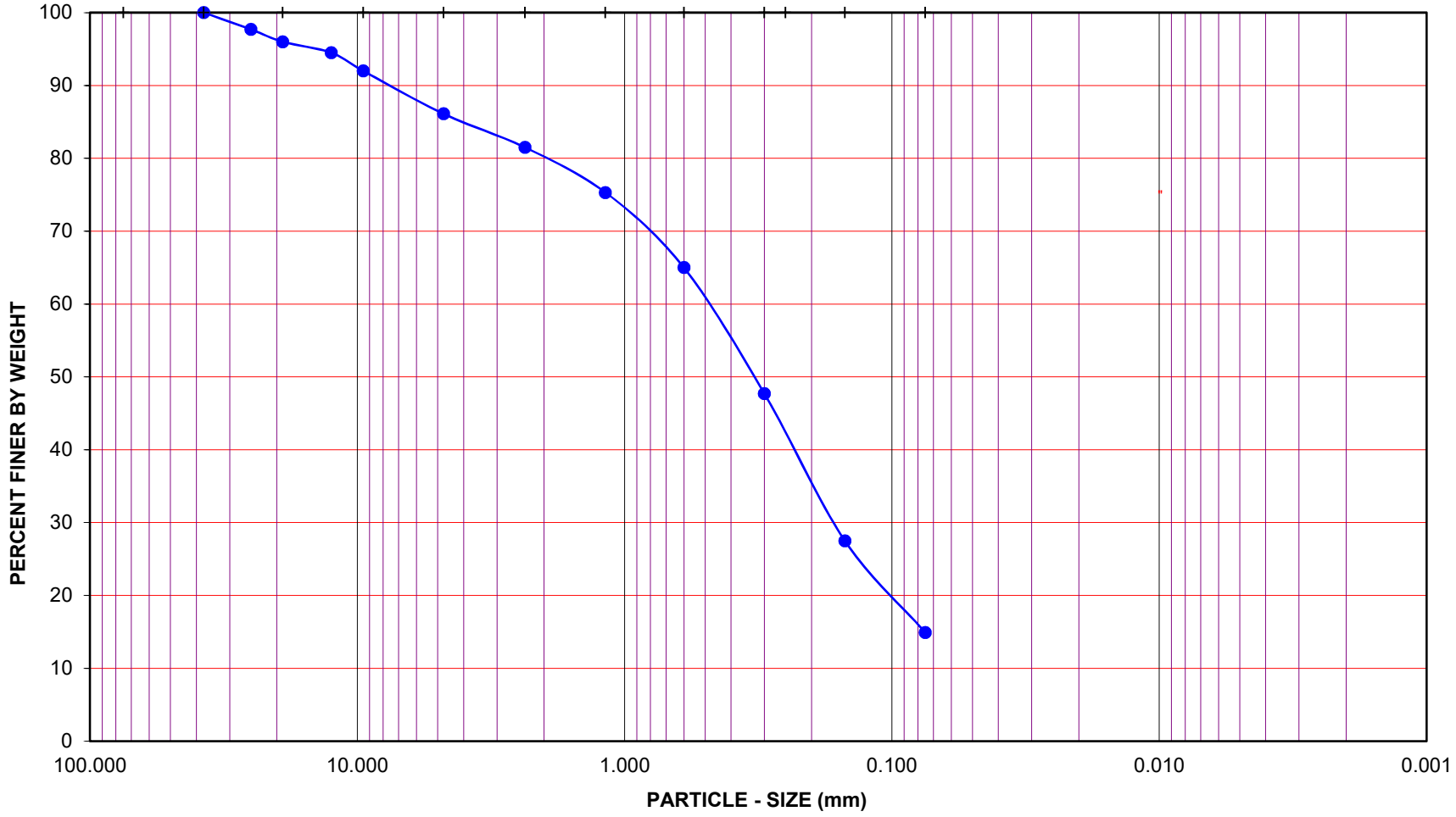
Cu = D60/D10 = _____
Cc = $(D30)^2/(D60*D10)$ = _____

Remarks: _____

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING — U.S. STANDARD SIEVE NUMBER — HYDROMETER

3.0" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-2 Sample No.: B-1

Depth (feet): 1-5 Soil Type : SM

Soil Identification: Dark olive brown silty sand (SM)

GR:SA:FI : (%) 14 : 71 : 15

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-3
Sample No.: R-1
Soil Identification: Olive brown poorly-graded sand with silt and gravel (SP-SM)g, AC noted

Tested By: J. Domingo Date: 09/15/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 7.5

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	BP-7	K-15	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	1125.2	579.1	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	294.3	77.8	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	830.9	501.3	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	K-15
	Wt. of Dry Soil + Container (g)	531.8
	Wt. of Container (g)	77.8
	Dry Wt. of Soil Retained on # 200 Sieve (g)	454.0

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5	0.0		100.0
1"	25.0	36.3		95.6
3/4"	19.0	89.4		89.2
1/2"	12.5	135.8		83.7
3/8"	9.5	178.6		78.5
#4	4.75	224.6		73.0
#8	2.36		25.0	69.4
#16	1.18		64.7	63.6
#30	0.600		135.5	53.3
#50	0.300		269.1	33.8
#100	0.150		391.2	16.0
#200	0.075		445.8	8.1
PAN				

GRAVEL: **27 %**
SAND: **65 %**
FINES: **8 %**
GROUP SYMBOL: **(SP-SM)g**

Cu = D60/D10 = 9.89
Cc = $(D30)^2/(D60*D10)$ = 0.84

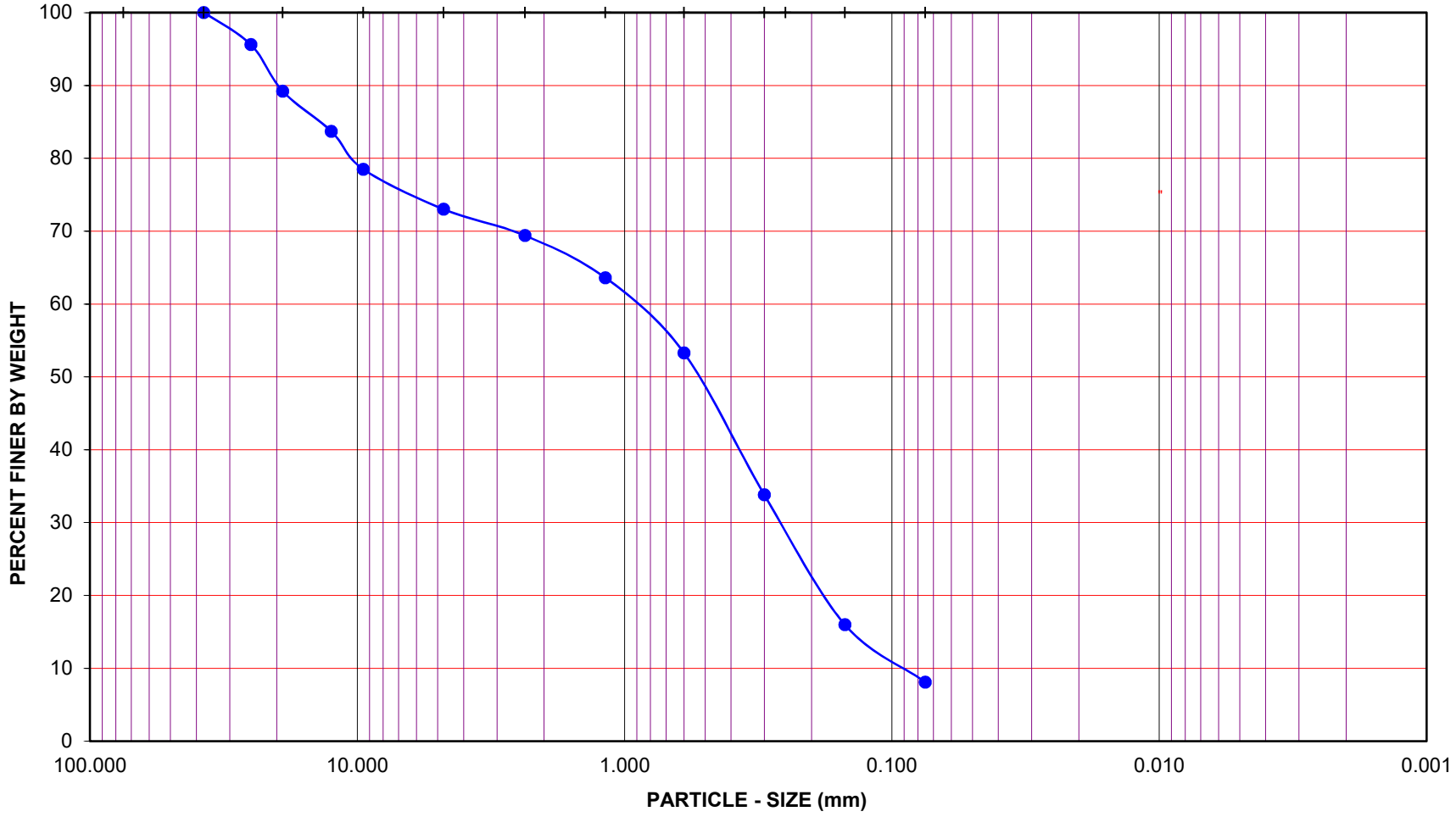
Remarks:

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING: 3.0" 1 1/2" 3/4" 3/8"

U.S. STANDARD SIEVE NUMBER: #4 #8 #16 #30 #50 #100 #200

HYDROMETER



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-3 Sample No.: R-1

Depth (feet): 7.5 Soil Type : (SP-SM)g

Soil Identification: Olive brown poorly-graded sand with silt and gravel (SP-SM)g, AC noted

GR:SA:FI : (%) 27 : 65 : 8

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

SA LB-3, R-1 @ 7.5

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-3
Sample No.: R-3
Soil Identification: Pale brown poorly-graded sand (SP)

Tested By: J. Domingo Date: 09/16/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 20.0

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	916	916	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	970.9	851.8	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	109.2	109.2	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	861.7	742.6	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	916
	Wt. of Dry Soil + Container (g)	826.9
	Wt. of Container (g)	109.2
	Dry Wt. of Soil Retained on # 200 Sieve (g)	717.7

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5			
1"	25.0	0.0		100.0
3/4"	19.0	22.0		97.4
1/2"	12.5	37.4		95.7
3/8"	9.5	60.8		92.9
#4	4.75	115.9		86.5
#8	2.36		80.2	77.2
#16	1.18		245.2	57.9
#30	0.600		456.7	33.3
#50	0.300		619.4	14.4
#100	0.150		687.0	6.5
#200	0.075		712.2	3.5
PAN				

GRAVEL: **14 %**
SAND: **82 %**
FINES: **4 %**
GROUP SYMBOL: **SP**

Cu = D60/D10 = 5.91
Cc = $(D30)^2/(D60*D10)$ = 0.98

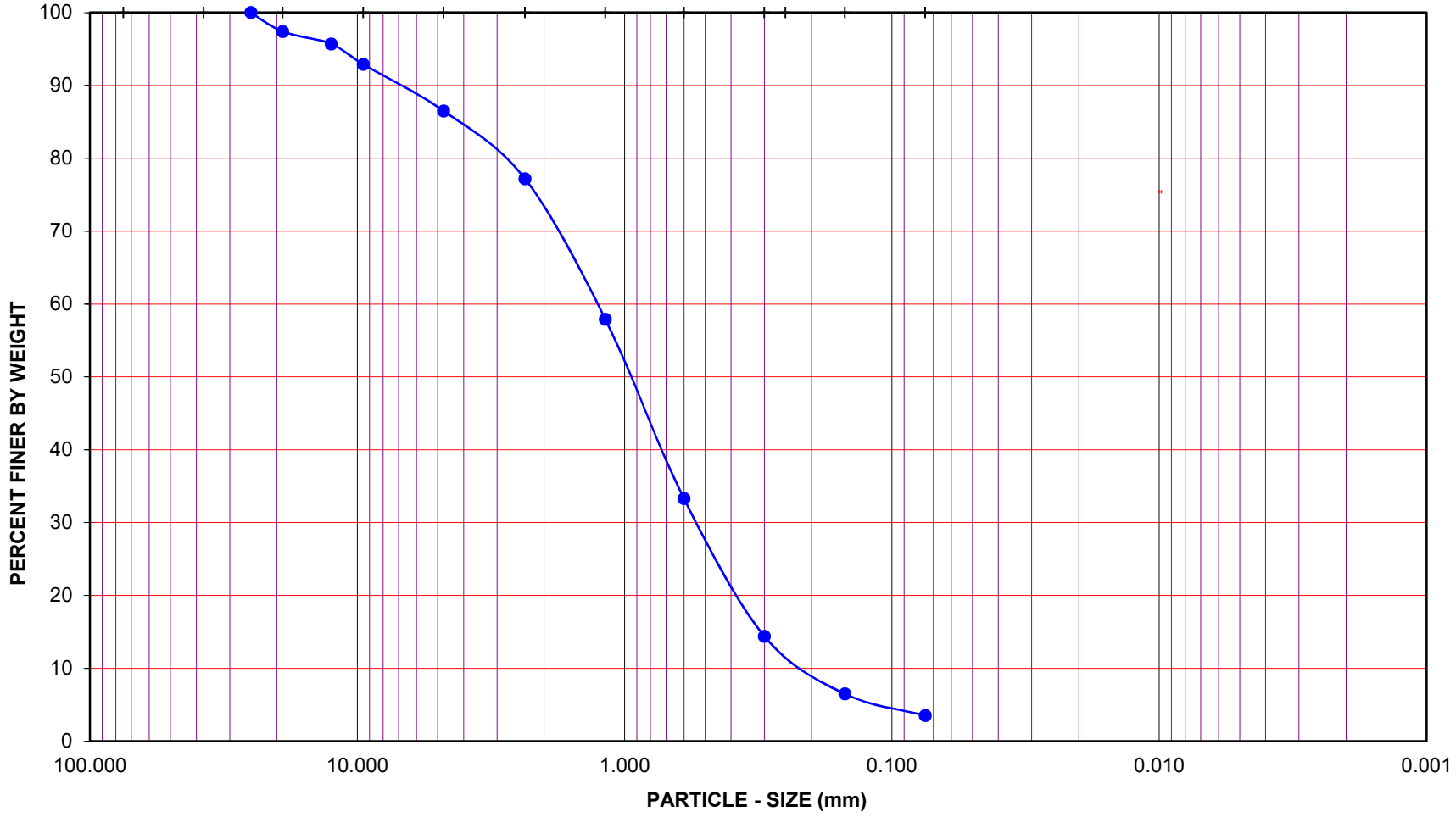
Remarks:

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING: 3.0" 1 1/2" 3/4" 3/8"

U.S. STANDARD SIEVE NUMBER: #4 #8 #16 #30 #50 #100 #200

HYDROMETER



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-3 Sample No.: R-3

Depth (feet): 20.0 Soil Type : SP

Soil Identification: Pale brown poorly-graded sand (SP)

GR:SA:FI : (%) 14 : 82 : 4

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D 6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-4
Sample No.: R-2
Soil Identification: Olive gray silty sand (SM)

Tested By: J. Domingo Date: 09/16/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 10.0

		Moisture Content of Total Air - Dry Soil	
Container No.:	979	Wt. of Air-Dry Soil + Cont. (g)	0.0
Wt. of Air-Dried Soil + Cont.(g)	871.5	Wt. of Dry Soil + Cont. (g)	0.0
Wt. of Container (g)	111.2	Wt. of Container No._____ (g)	1.0
Dry Wt. of Soil (g)	760.3	Moisture Content (%)	0.0

After Wet Sieve	Container No.	979
	Wt. of Dry Soil + Container (g)	744.5
	Wt. of Container (g)	111.2
	Dry Wt. of Soil Retained on # 200 Sieve (g)	633.3

U. S. Sieve Size (in.)	U. S. Sieve Size (mm.)	Cumulative Weight Dry Soil Retained (g)	Percent Passing (%)
1 1/2"	37.5		
1"	25.0		
3/4"	19.0		
1/2"	12.5		
3/8"	9.5	0.0	100.0
#4	4.75	3.7	99.5
#8	2.36	10.9	98.6
#16	1.18	31.8	95.8
#30	0.600	94.2	87.6
#50	0.300	257.5	66.1
#100	0.150	443.9	41.6
#200	0.075	609.6	19.8
PAN			

GRAVEL: **1 %**
SAND: **79 %**
FINES: **20 %**
GROUP SYMBOL: **SM**

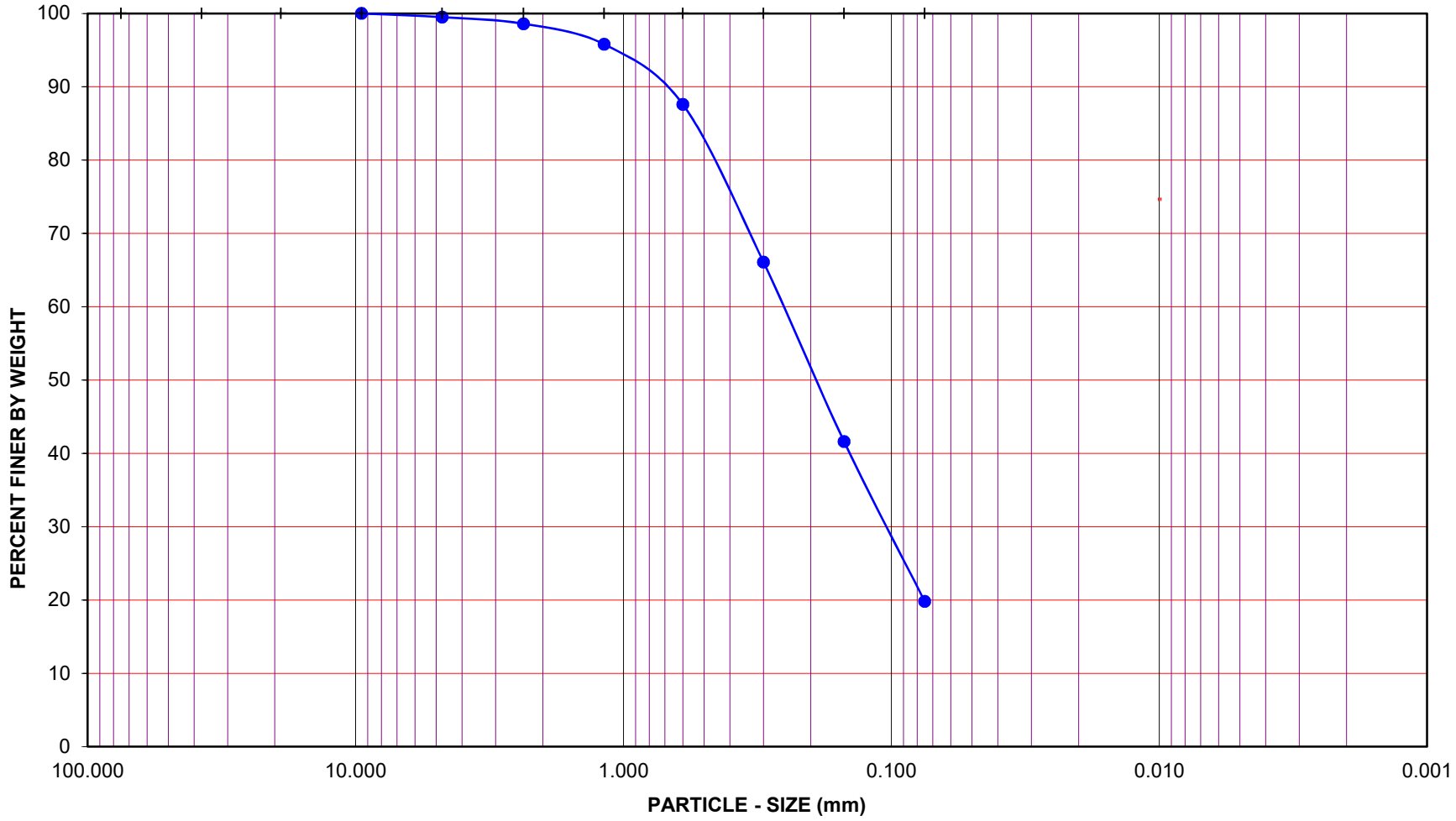
Cu = D60/D10 = _____
Cc = $(D30)^2/(D60*D10)$ = _____

Remarks: _____

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING — U.S. STANDARD SIEVE NUMBER — HYDROMETER

3.0" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-4 Sample No.: R-2

Depth (feet): 10.0 Soil Type : SM

Soil Identification: Olive gray silty sand (SM)

GR:SA:FI : (%) 1 : 79 : 20

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-4
Sample No.: R-4
Soil Identification: Light olive brown well-graded sand with silt (SW-SM)

Tested By: J. Domingo Date: 09/16/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 25.0

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	957	957	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	975.0	929.3	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	108.3	108.3	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	866.7	821.0	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	957
	Wt. of Dry Soil + Container (g)	872.2
	Wt. of Container (g)	108.3
	Dry Wt. of Soil Retained on # 200 Sieve (g)	763.9

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5			
1"	25.0			
3/4"	19.0	0.0		100.0
1/2"	12.5	15.7		98.2
3/8"	9.5	19.9		97.7
#4	4.75	44.1		94.9
#8	2.36		55.5	88.5
#16	1.18		185.0	73.5
#30	0.600		374.6	51.6
#50	0.300		549.3	31.4
#100	0.150		690.1	15.1
#200	0.075		753.7	7.8
PAN				

GRAVEL: **5 %**
SAND: **87 %**
FINES: **8 %**
GROUP SYMBOL: **SW-SM**

Cu = D60/D10 = 8.30
Cc = $(D30)^2/(D60*D10)$ = 1.07

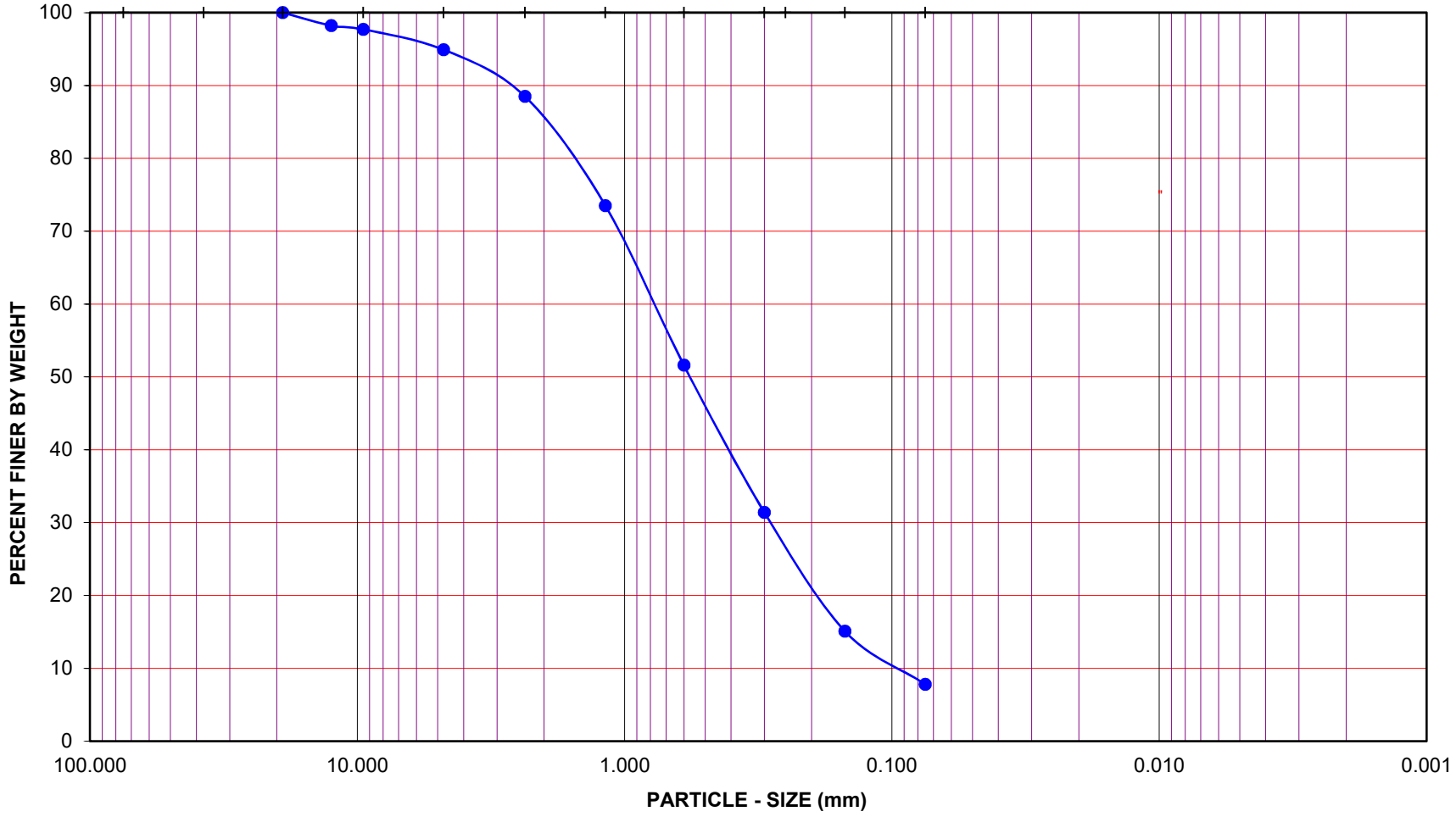
Remarks:

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING: 3.0" 1 1/2" 3/4" 3/8"

U.S. STANDARD SIEVE NUMBER: #4 #8 #16 #30 #50 #100 #200

HYDROMETER



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-4 Sample No.: R-4

Depth (feet): 25.0 Soil Type : SW-SM

Soil Identification: Light olive brown well-graded sand with silt (SW-SM)

GR:SA:FI : (%) 5 : 87 : 8

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-5
Sample No.: B-1
Soil Identification: Dark olive brown well-graded sand with silt and gravel (SW-SM)g, AC noted

Tested By: GEB/JD Date: 09/15/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 1-5

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	B-2	224	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	3688.2	779.0	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	229.8	223.9	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	3458.4	555.1	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	224
	Wt. of Dry Soil + Container (g)	728.6
	Wt. of Container (g)	223.9
	Dry Wt. of Soil Retained on # 200 Sieve (g)	504.7

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5	0.0		100.0
1"	25.0	95.4		97.2
3/4"	19.0	151.2		95.6
1/2"	12.5	276.8		92.0
3/8"	9.5	364.9		89.4
#4	4.75	608.2		82.4
#8	2.36		29.3	78.1
#16	1.18		84.2	69.9
#30	0.600		183.2	55.2
#50	0.300		319.2	35.0
#100	0.150		435.6	17.7
#200	0.075		499.0	8.3
PAN				

GRAVEL: **18 %**
SAND: **74 %**
FINES: **8 %**
GROUP SYMBOL: **(SW-SM)g**

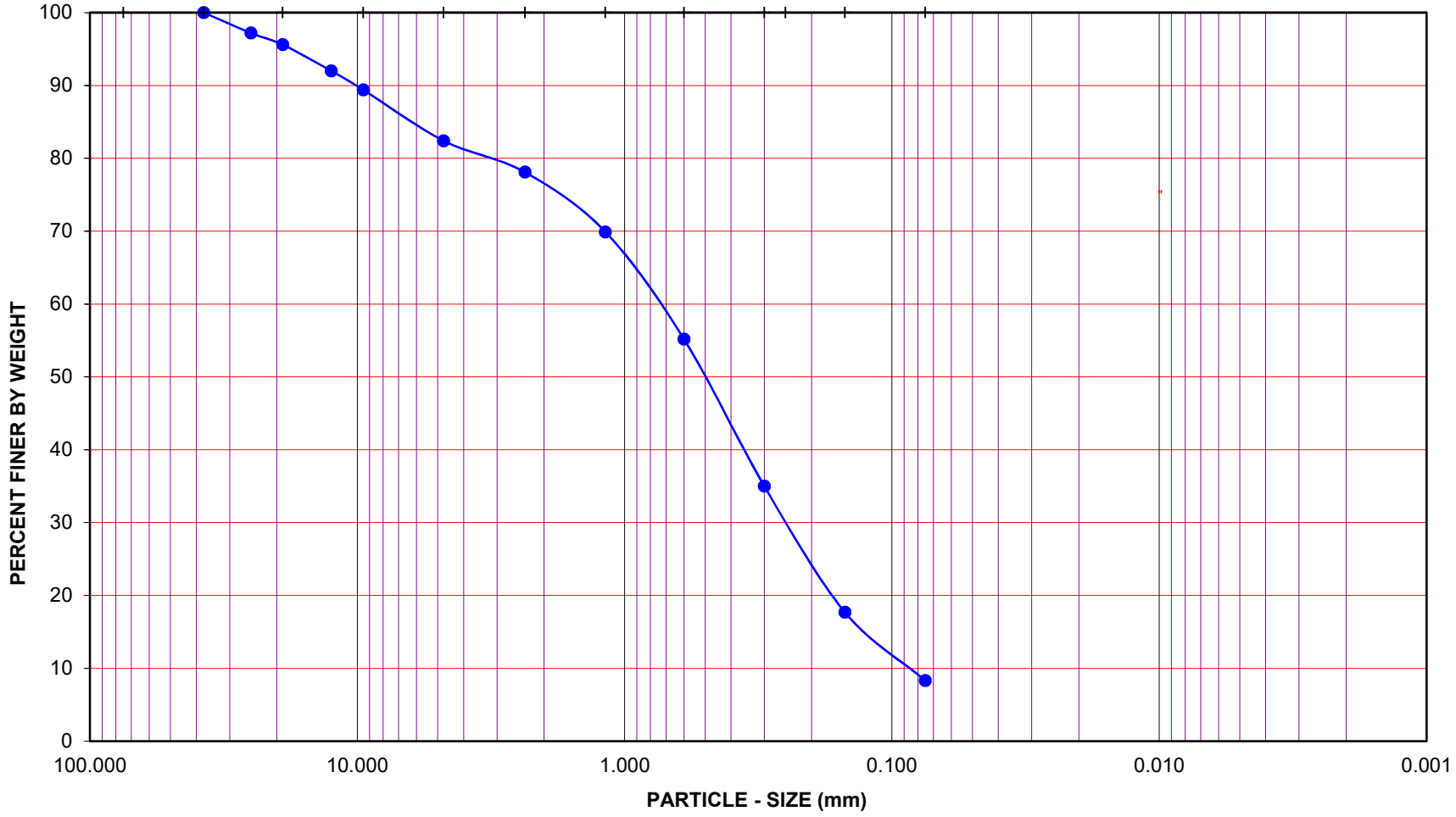
Cu = D60/D10 = 8.49
Cc = $(D30)^2/(D60*D10)$ = 1.00

Remarks:

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING | U.S. STANDARD SIEVE NUMBER | HYDROMETER

3.0" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-5 Sample No.: B-1

Depth (feet): 1-5 Soil Type : (SW-SM)g

Soil Identification: Dark olive brown well-graded sand with silt and gravel (SW-SM)g, AC noted

GR:SA:FI : (%) 18 : 74 : 8

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-6
Sample No.: R-2
Soil Identification: Light brownish gray well-graded sand with silt (SW-SM)

Tested By: J. Domingo Date: 09/16/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 12.5

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	2	VO	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	891.6	988.2	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	110.2	234.4	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	781.4	753.8	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	VO
	Wt. of Dry Soil + Container (g)	946.0
	Wt. of Container (g)	234.4
	Dry Wt. of Soil Retained on # 200 Sieve (g)	711.6

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5			
1"	25.0			
3/4"	19.0			
1/2"	12.5	0.0		100.0
3/8"	9.5	9.6		98.8
#4	4.75	26.4		96.6
#8	2.36		26.2	93.2
#16	1.18		168.0	75.1
#30	0.600		438.6	40.4
#50	0.300		601.6	19.5
#100	0.150		666.4	11.2
#200	0.075		702.9	6.5
PAN				

GRAVEL: **3 %**
SAND: **90 %**
FINES: **7 %**
GROUP SYMBOL: **SW-SM**

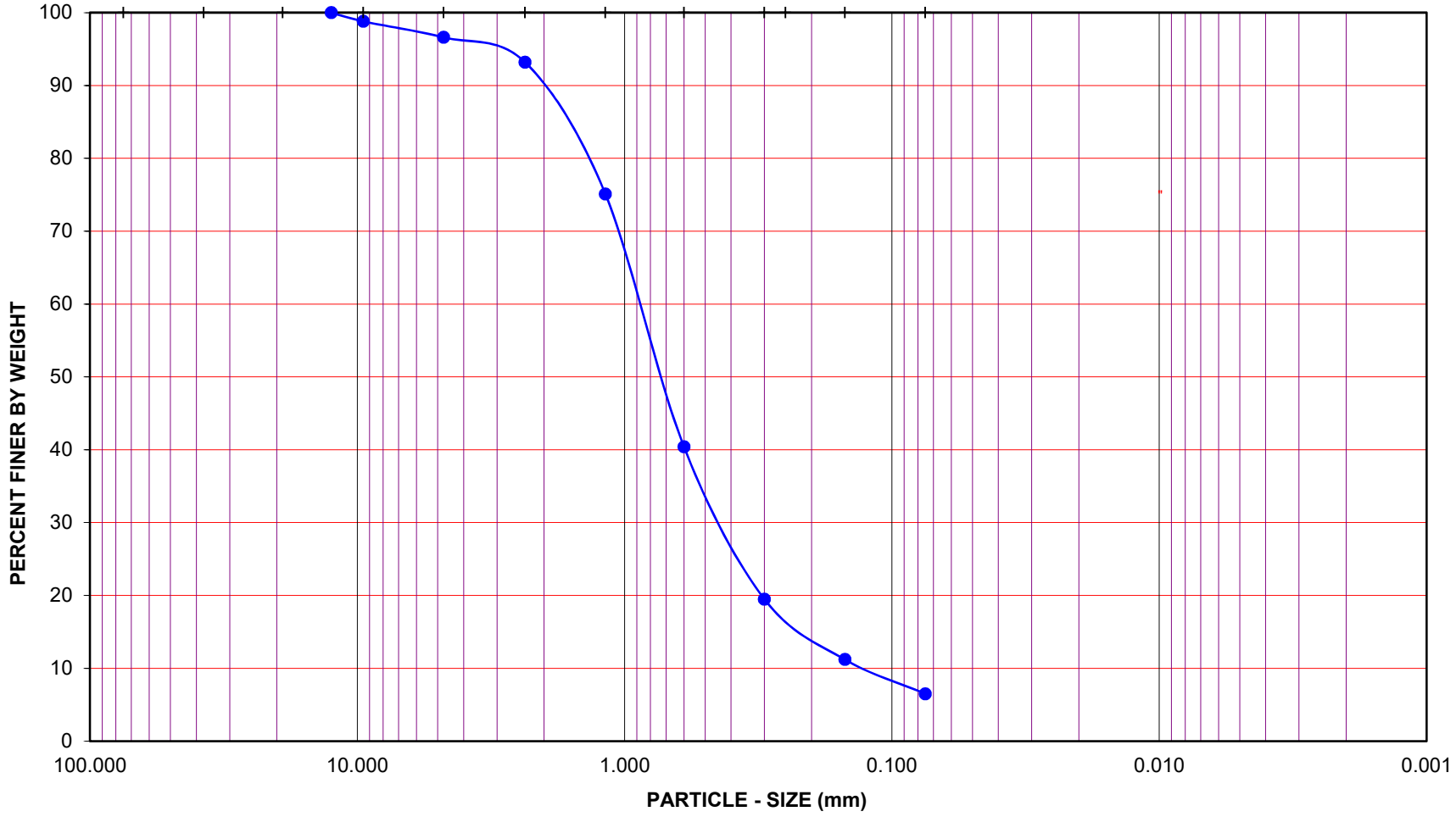
Cu = D60/D10 = 6.77
Cc = $(D30)^2/(D60*D10)$ = 1.69

Remarks:

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING — U.S. STANDARD SIEVE NUMBER — HYDROMETER

3.0" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-6 Sample No.: R-2

Depth (feet): 12.5 Soil Type : SW-SM

Soil Identification: Light brownish gray well-graded sand with silt (SW-SM)

GR:SA:FI : (%) 3 : 90 : 7

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

SA LB-6, R-2 @ 12.5

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-8
Sample No.: B-1
Soil Identification: Grayish brown silty sand (SM)

Tested By: O. Figueroa Date: 09/14/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 1-5

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	CP-19	P-6	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	1800.6	575.2	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	224.0	70.3	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	1576.6	504.9	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	P-6
	Wt. of Dry Soil + Container (g)	485.4
	Wt. of Container (g)	70.3
	Dry Wt. of Soil Retained on # 200 Sieve (g)	415.1

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5			
1"	25.0			
3/4"	19.0			
1/2"	12.5	0.0		100.0
3/8"	9.5	7.1		99.5
#4	4.75	18.0		98.9
#8	2.36		4.4	98.0
#16	1.18		16.6	95.6
#30	0.600		50.3	89.0
#50	0.300		164.0	66.8
#100	0.150		317.6	36.7
#200	0.075		407.7	19.0
PAN				

GRAVEL: **1 %**
SAND: **80 %**
FINES: **19 %**
GROUP SYMBOL: **SM**

Cu = D60/D10 = _____
Cc = $(D30)^2/(D60*D10)$ = _____

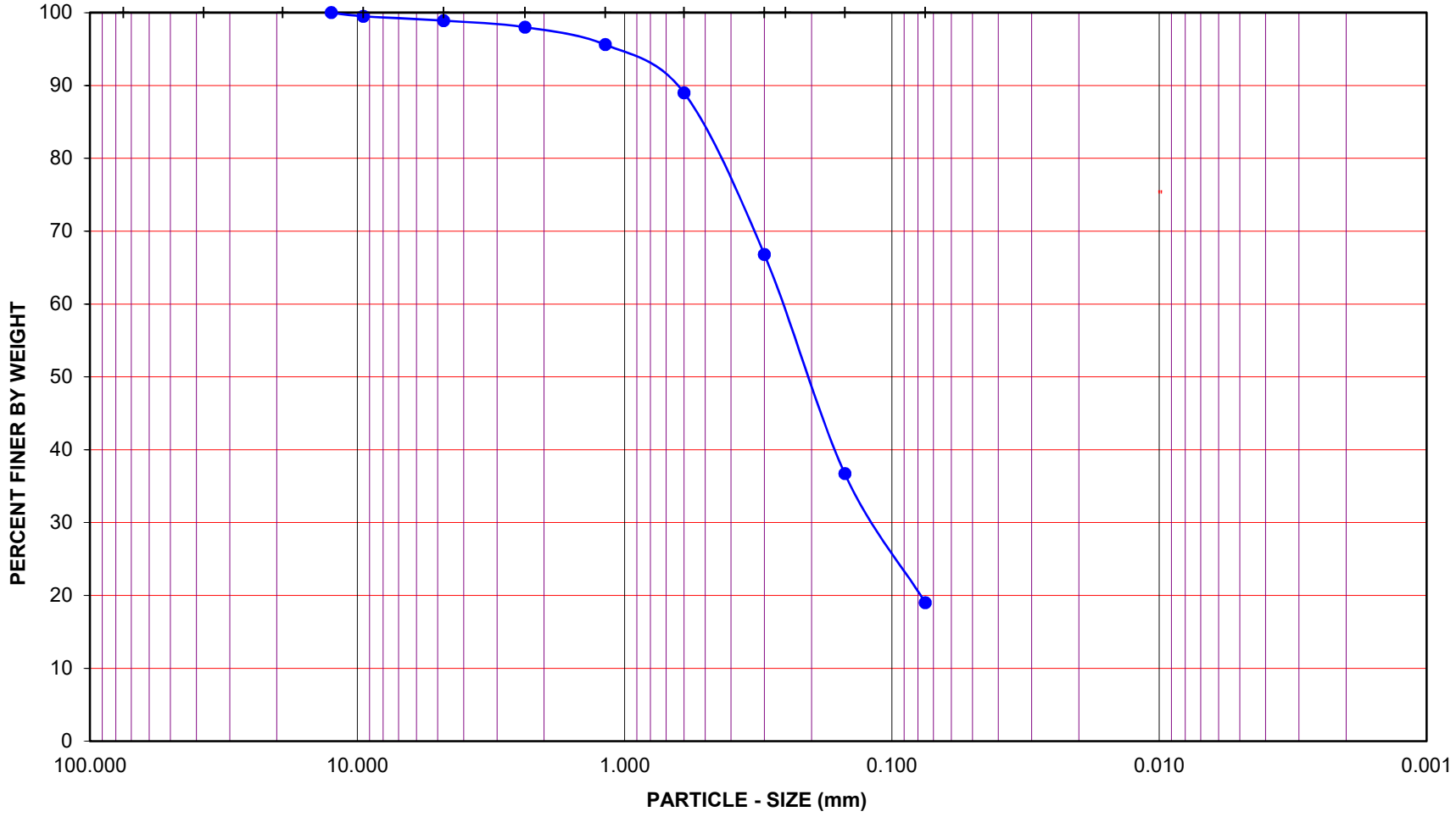
Remarks: _____

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING: 3.0" 1 1/2" 3/4" 3/8"

U.S. STANDARD SIEVE NUMBER: #4 #8 #16 #30 #50 #100 #200

HYDROMETER



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-8 Sample No.: B-1

Depth (feet): 1-5 Soil Type : SM

Soil Identification: Grayish brown silty sand (SM)

GR:SA:FI : (%) 1 : 80 : 19

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

SA LB-8, B-1 @ 1-5

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-8
Sample No.: R-2
Soil Identification: Olive brown well-graded sand with silt and gravel (SW-SM)g

Tested By: J. Domingo Date: 09/16/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 12.5

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	9545	XY	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	959.9	820.0	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	106.4	248.0	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	853.5	572.0	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	XY
	Wt. of Dry Soil + Container (g)	790.2
	Wt. of Container (g)	248.0
	Dry Wt. of Soil Retained on # 200 Sieve (g)	542.2

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5	0.0		100.0
1"	25.0	53.3		93.8
3/4"	19.0	53.3		93.8
1/2"	12.5	66.7		92.2
3/8"	9.5	87.0		89.8
#4	4.75	132.6		84.5
#8	2.36		83.2	72.2
#16	1.18		219.5	52.1
#30	0.600		337.0	34.7
#50	0.300		440.7	19.4
#100	0.150		513.2	8.7
#200	0.075		538.3	5.0
PAN				

GRAVEL: **16 %**
SAND: **79 %**
FINES: **5 %**
GROUP SYMBOL: **(SW-SM)g**

Cu = D60/D10 = 8.82
Cc = $(D30)^2/(D60*D10)$ = 0.98

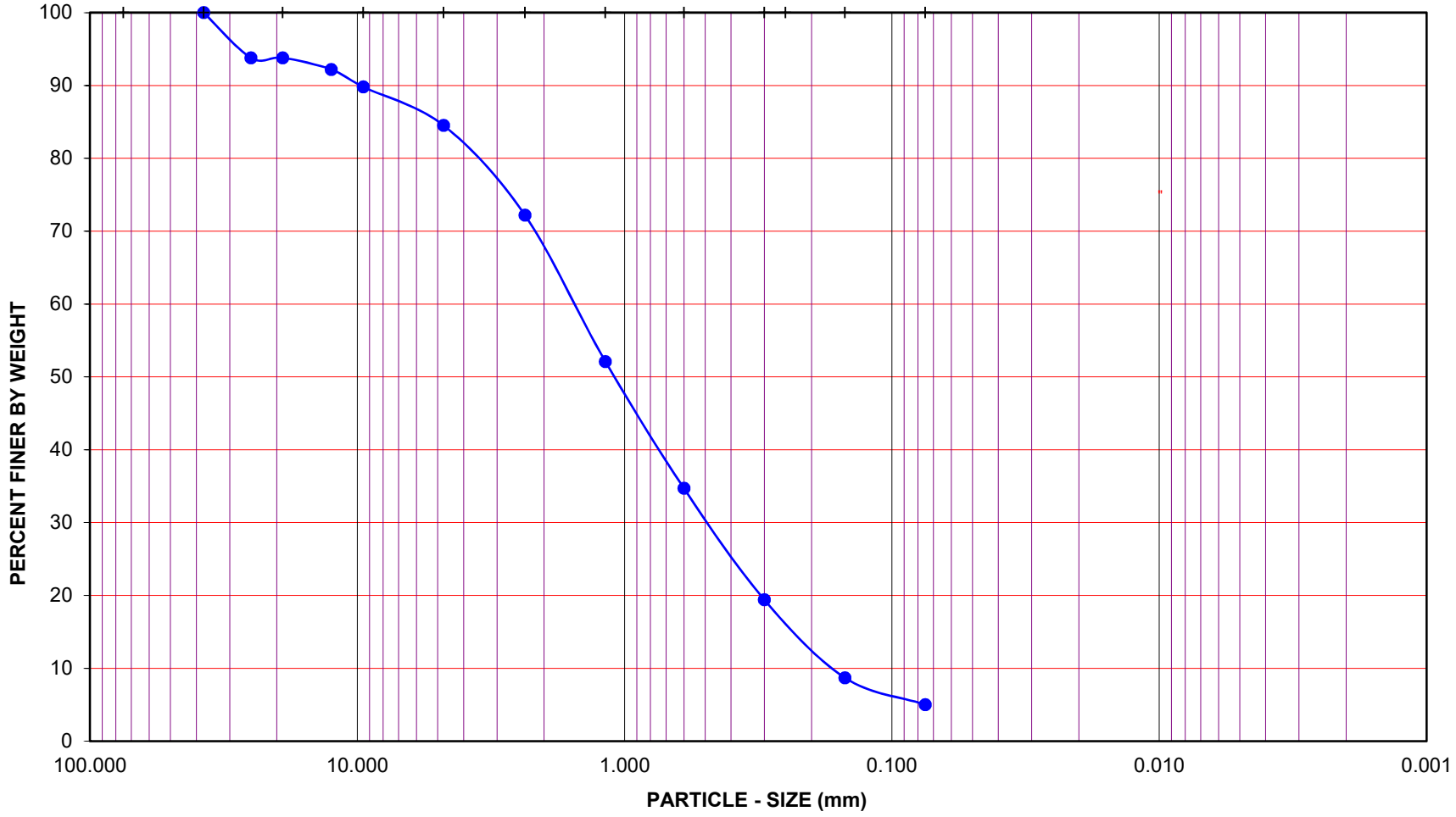
Remarks:

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING: 3.0" 1 1/2" 3/4" 3/8"

U.S. STANDARD SIEVE NUMBER: #4 #8 #16 #30 #50 #100 #200

HYDROMETER



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-8 Sample No.: R-2

Depth (feet): 12.5 Soil Type : (SW-SM)g

Soil Identification: Olive brown well-graded sand with silt and gravel (SW-SM)g

GR:SA:FI : (%) 16 : 79 : 5

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

SA LB-8, R-2 @ 12.5

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D6913

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-8
Sample No.: R-3
Soil Identification: Olive brown well-graded sand with silt and gravel (SW-SM)g

Tested By: J. Domingo Date: 09/16/21
Checked By: J. Ward Date: 10/01/21
Depth (feet): 20.0

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	57	GE	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	988.6	838.2	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	107.4	249.9	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	881.2	588.3	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	GE
	Wt. of Dry Soil + Container (g)	798.4
	Wt. of Container (g)	249.9
	Dry Wt. of Soil Retained on # 200 Sieve (g)	548.5

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5	0.0		100.0
1"	25.0	68.8		92.2
3/4"	19.0	77.5		91.2
1/2"	12.5	156.4		82.3
3/8"	9.5	176.7		79.9
#4	4.75	283.3		67.9
#8	2.36		122.5	53.8
#16	1.18		269.8	36.8
#30	0.600		386.2	23.3
#50	0.300		462.4	14.5
#100	0.150		510.3	9.0
#200	0.075		541.2	5.4
PAN				

GRAVEL: **32 %**
SAND: **63 %**
FINES: **5 %**
GROUP SYMBOL: **(SW-SM)g**

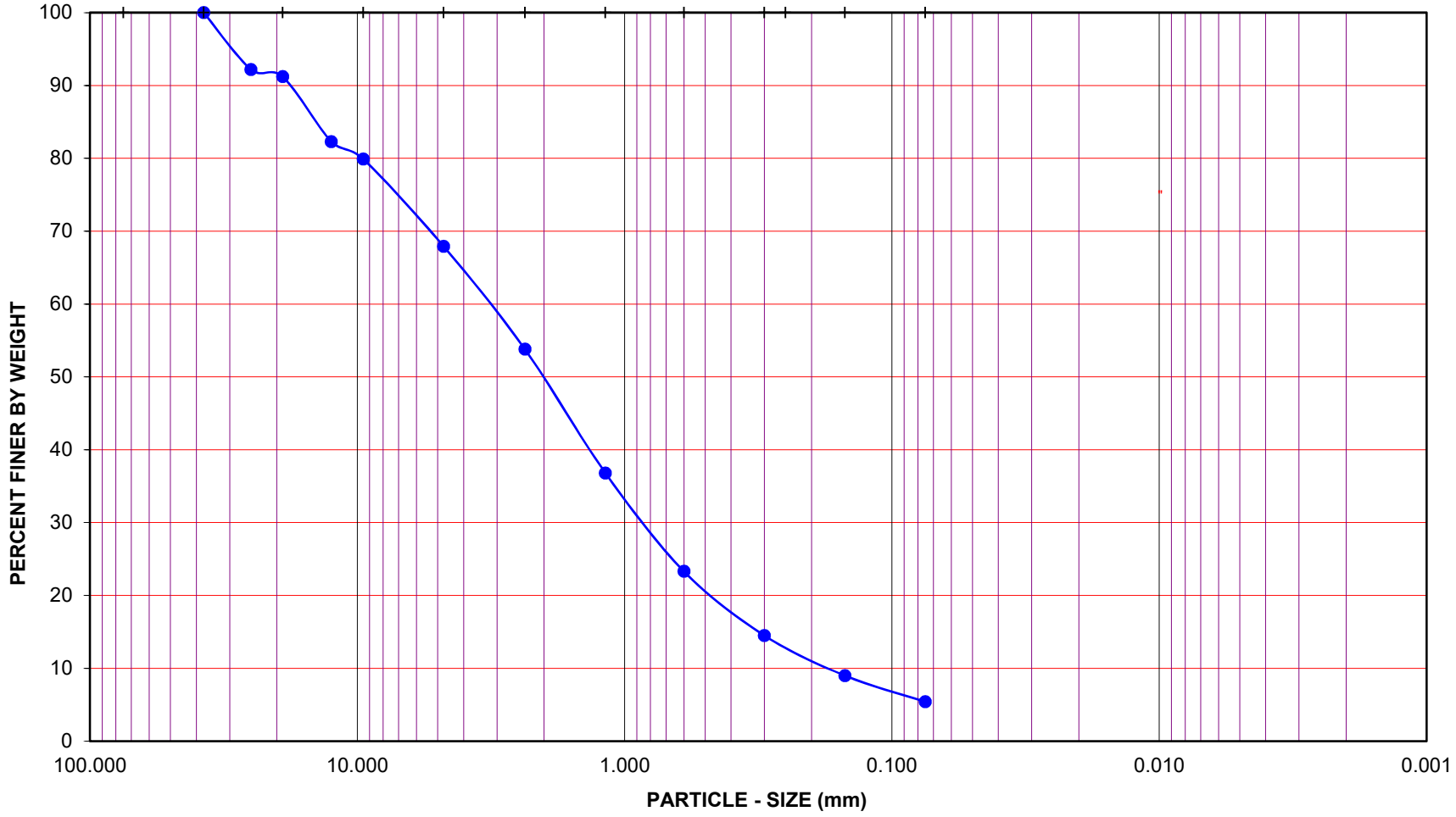
Cu = D60/D10 = 18.82
Cc = $(D30)^2/(D60*D10)$ = 1.42

Remarks:

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING — U.S. STANDARD SIEVE NUMBER — HYDROMETER

3.0" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200



Project Name: Asphalt Plant

Project No.: 11957.013

Boring No.: LB-8 Sample No.: R-3

Depth (feet): 20.0 Soil Type : (SW-SM)g

Soil Identification: Olive brown well-graded sand with silt and gravel (SW-SM)g

GR:SA:FI : (%) 32 : 63 : 5

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-21

ATTERBERG LIMITS
ASTM D 4318

Project Name:	Asphalt Plant	Tested By:	A. Santos	Date:	09/17/21
Project No. :	11957.013	Input By:	G. Bathala	Date:	09/20/21
Boring No.:	LB-1	Checked By:	J. Ward		
Sample No.:	S-5	Depth (ft.)	35.0		
Soil Identification:	Olive silty clay with sand (CL-ML)s				

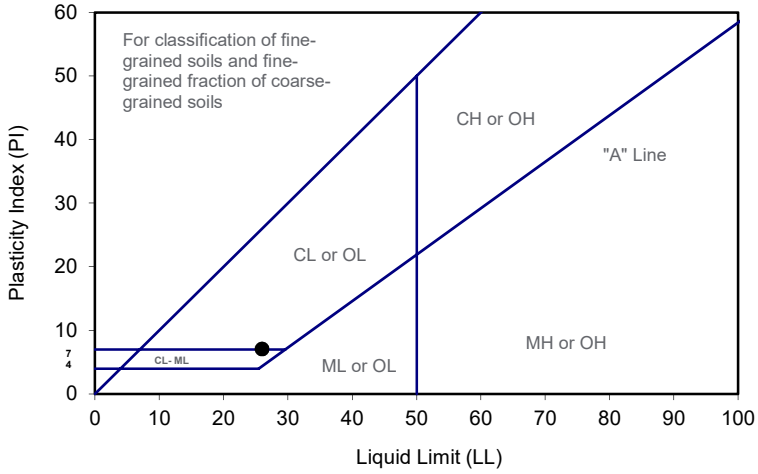
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			33	25	20	
Wet Wt. of Soil + Cont. (g)	10.20	11.01	21.74	19.47	19.90	
Dry Wt. of Soil + Cont. (g)	8.75	9.42	17.52	15.64	15.93	
Wt. of Container (g)	1.02	1.11	1.08	1.08	1.11	
Moisture Content (%) [Wn]	18.76	19.13	25.67	26.30	26.79	

Liquid Limit	**26**
Plastic Limit	**19**
Plasticity Index	**7**
Classification	**CL-ML**

PI at "A" - Line = 0.73(LL-20) 4.38

One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



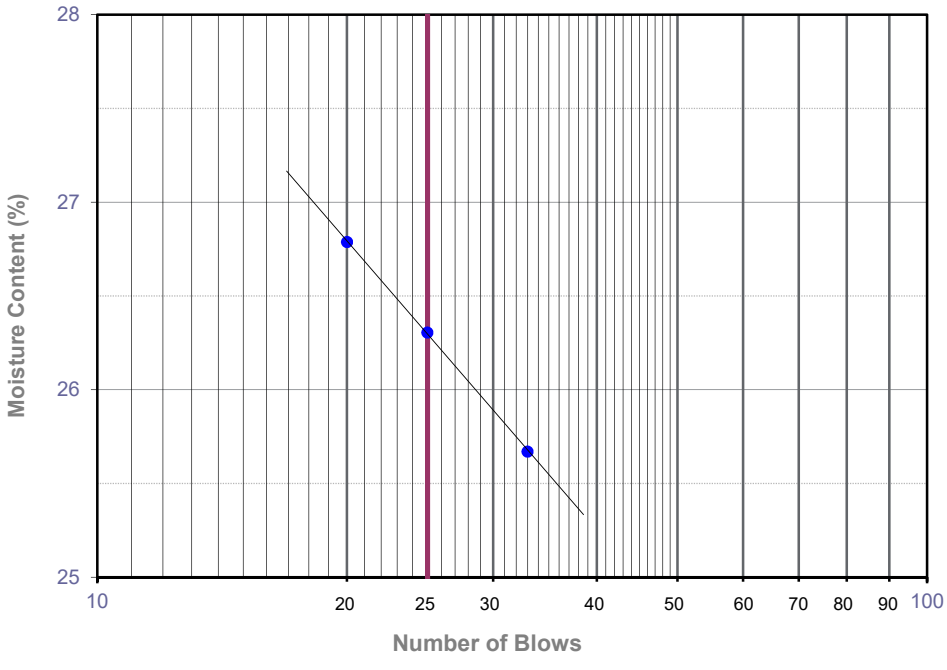
PROCEDURES USED

☐ Wet Preparation
Multipoint - Wet

☒ Dry Preparation
Multipoint - Dry

☒ Procedure A
Multipoint Test

☐ Procedure B
One-point Test



ATTERBERG LIMITS
ASTM D 4318

Project Name:	Asphalt Plant	Tested By:	A. Santos	Date:	09/17/21
Project No. :	11957.013	Input By:	G. Bathala	Date:	09/20/21
Boring No.:	LB-6	Checked By:	J. Ward		
Sample No.:	S-5	Depth (ft.)	35.0		
Soil Identification:	Olive sandy silty clay s(CL-ML)				

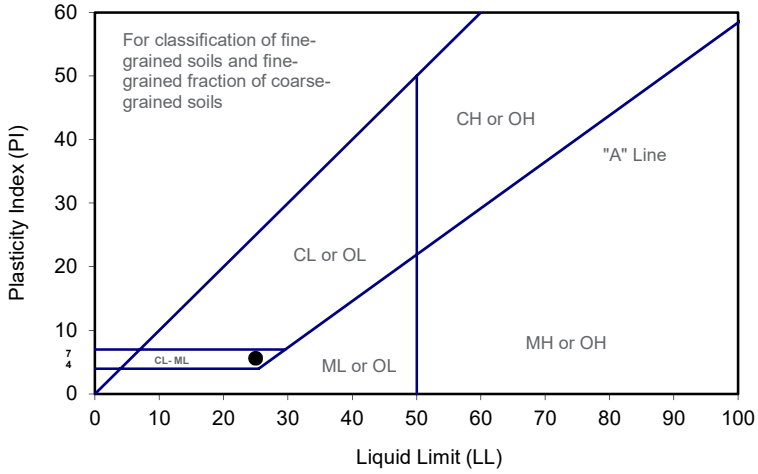
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			30	26	18	
Wet Wt. of Soil + Cont. (g)	11.20	12.79	20.17	21.52	17.88	
Dry Wt. of Soil + Cont. (g)	9.55	10.88	16.43	17.51	14.52	
Wt. of Container (g)	1.05	1.05	1.09	1.14	1.07	
Moisture Content (%) [Wn]	19.41	19.43	24.38	24.50	24.98	

Liquid Limit	**25**
Plastic Limit	**19**
Plasticity Index	**6**
Classification	**CL-ML**

PI at "A" - Line = 0.73(LL-20) 3.65

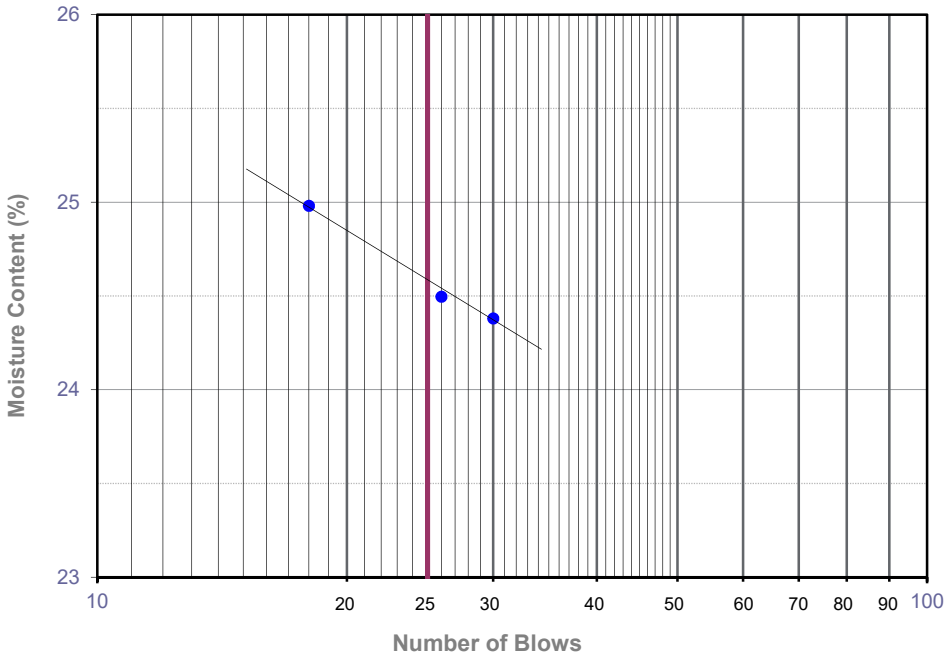
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

	Wet Preparation
	Multipoint - Wet
X	Dry Preparation
	Multipoint - Dry
X	Procedure A
	Multipoint Test
	Procedure B
	One-point Test

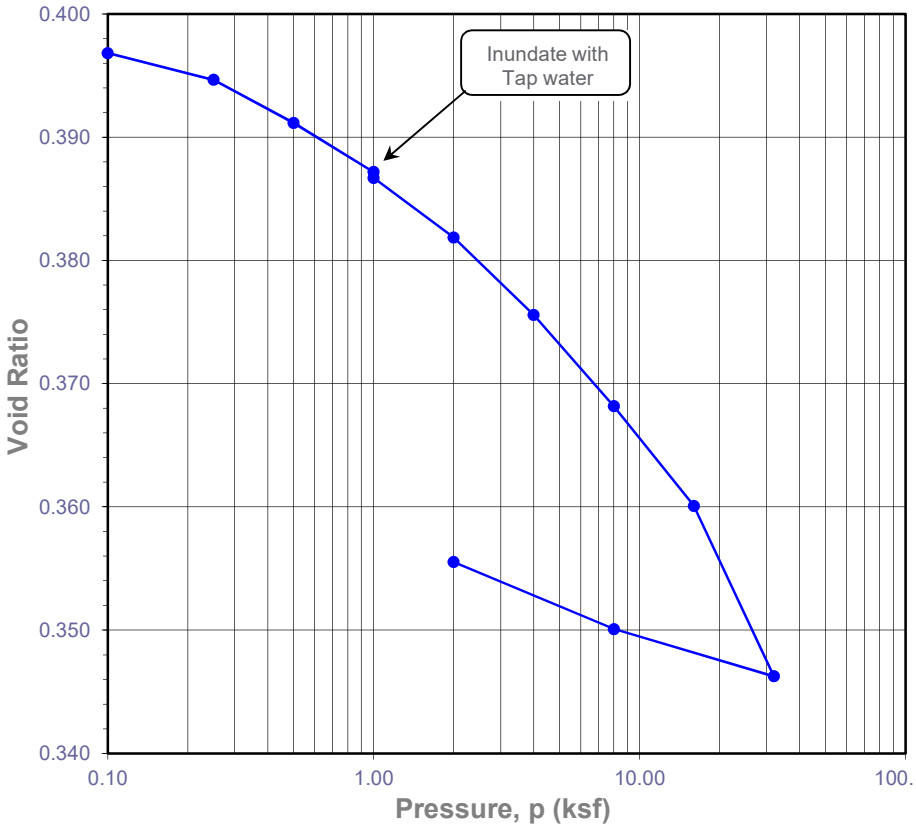


ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-2
Sample No.: B-1
Soil Identification: Dark olive brown silty sand (SM)

Tested By: G. Bathala Date: 09/15/21
Checked By: J. Ward Date: 09/29/21
Depth (ft.): 1-5
Sample Type: 95% Remold

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	202.62
Weight of Ring (g)	45.26
Height after consol. (in.)	0.9705
Before Test	
Wt.Wet Sample+Cont. (g)	150.36
Wt.of Dry Sample+Cont. (g)	141.63
Weight of Container (g)	38.30
Initial Moisture Content (%)	8.4
Initial Dry Density (pcf)	120.7
Initial Saturation (%)	57
Initial Vertical Reading (in.)	0.2840
After Test	
Wt.of Wet Sample+Cont. (g)	259.57
Wt. of Dry Sample+Cont. (g)	243.88
Weight of Container (g)	53.70
Final Moisture Content (%)	10.83
Final Dry Density (pcf)	124.2
Final Saturation (%)	82
Final Vertical Reading (in.)	0.2479
Specific Gravity (assumed)	2.70
Water Density (pcf)	62.43

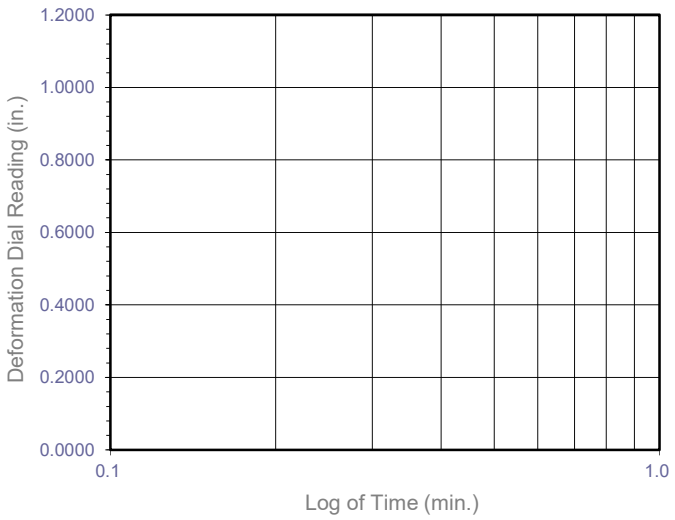


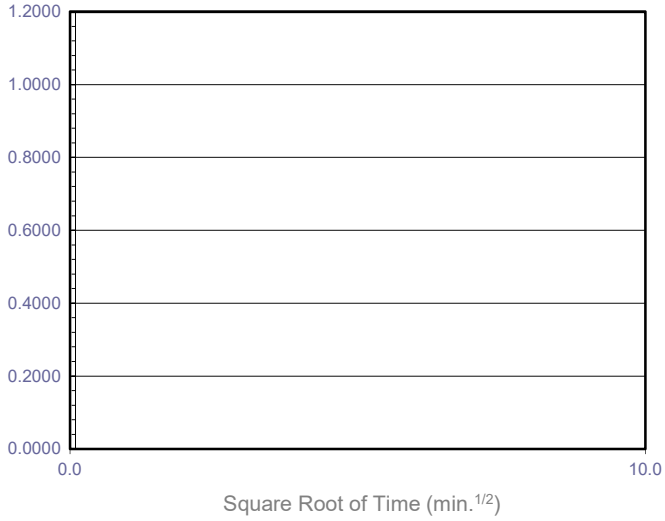
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.2840	1.0000	0.00	0.00	0.397	0.00
0.25	0.2820	0.9980	0.05	0.21	0.395	0.16
0.50	0.2789	0.9949	0.11	0.51	0.391	0.40
1.00	0.2752	0.9912	0.19	0.88	0.387	0.69
1.00	0.2749	0.9909	0.19	0.91	0.387	0.72
2.00	0.2703	0.9863	0.30	1.37	0.382	1.07
4.00	0.2644	0.9804	0.44	1.96	0.376	1.52
8.00	0.2570	0.9730	0.65	2.70	0.368	2.05
16.00	0.2486	0.9646	0.91	3.54	0.360	2.63
32.00	0.2361	0.9521	1.17	4.79	0.346	3.62
8.00	0.2416	0.9576	0.90	4.25	0.350	3.35
2.00	0.2479	0.9639	0.66	3.62	0.356	2.96

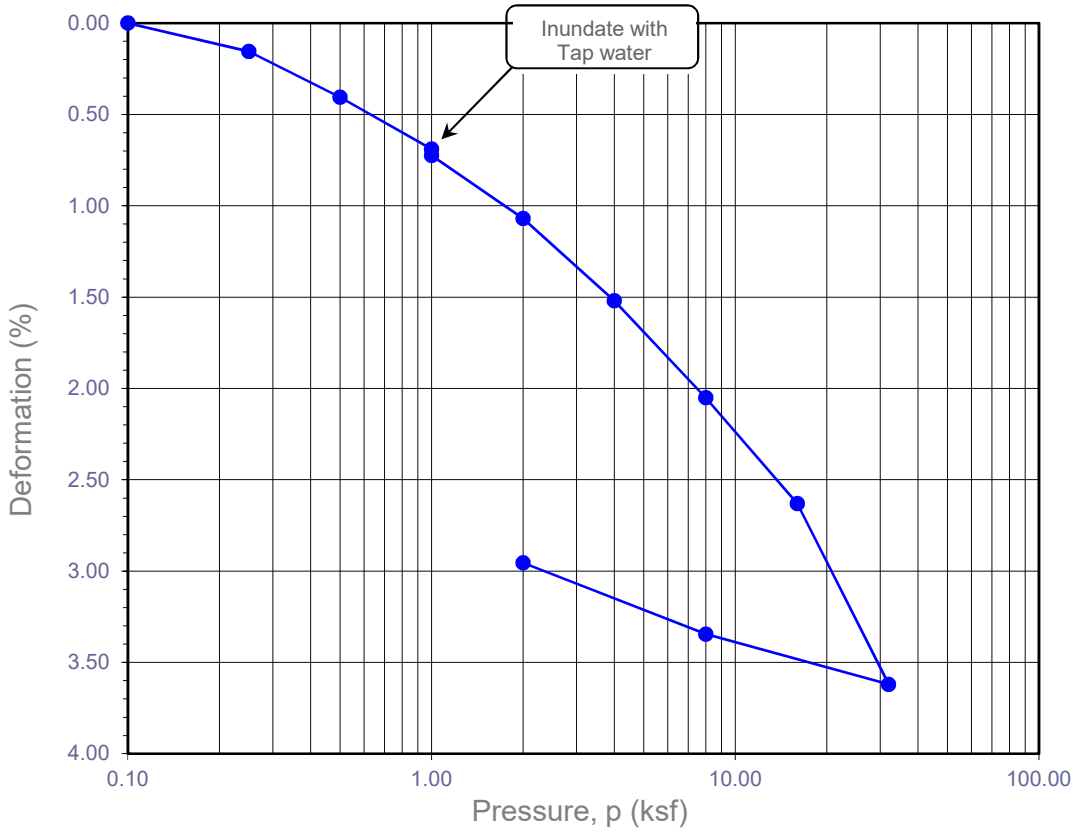
Time Readings

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)

Time Readings







Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
LB-2	**B-1**	**1-5**	**8.4**	**10.8**	**120.7**	**124.2**	**0.397**	**0.356**	**57**	**82**

Soil Identification: Dark olive brown silty sand (SM)

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11957.013

Asphalt Plant

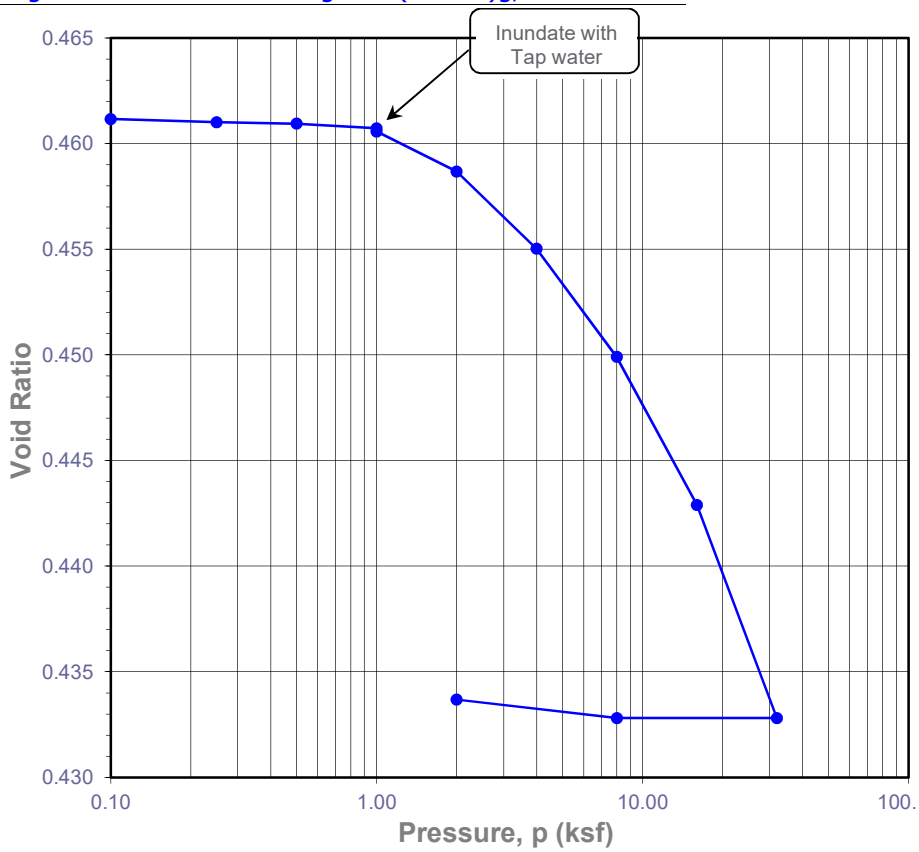
09-21

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-5
Sample No.: B-1
Soil Identification: Dark olive brown well-graded sand with silt and gravel (SW-SM)g, AC noted

Tested By: G. Bathala Date: 09/16/21
Checked By: J. Ward Date: 09/29/21
Depth (ft.): 1-5
Sample Type: 95% Remold

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	193.39
Weight of Ring (g)	42.88
Height after consol. (in.)	0.9812
Before Test	
Wt.Wet Sample+Cont. (g)	185.90
Wt.of Dry Sample+Cont. (g)	175.65
Weight of Container (g)	55.14
Initial Moisture Content (%)	8.5
Initial Dry Density (pcf)	115.4
Initial Saturation (%)	50
Initial Vertical Reading (in.)	0.3060
After Test	
Wt.of Wet Sample+Cont. (g)	264.07
Wt. of Dry Sample+Cont. (g)	247.71
Weight of Container (g)	66.37
Final Moisture Content (%)	11.82
Final Dry Density (pcf)	117.4
Final Saturation (%)	73
Final Vertical Reading (in.)	0.2801
Specific Gravity (assumed)	2.70
Water Density (pcf)	62.43

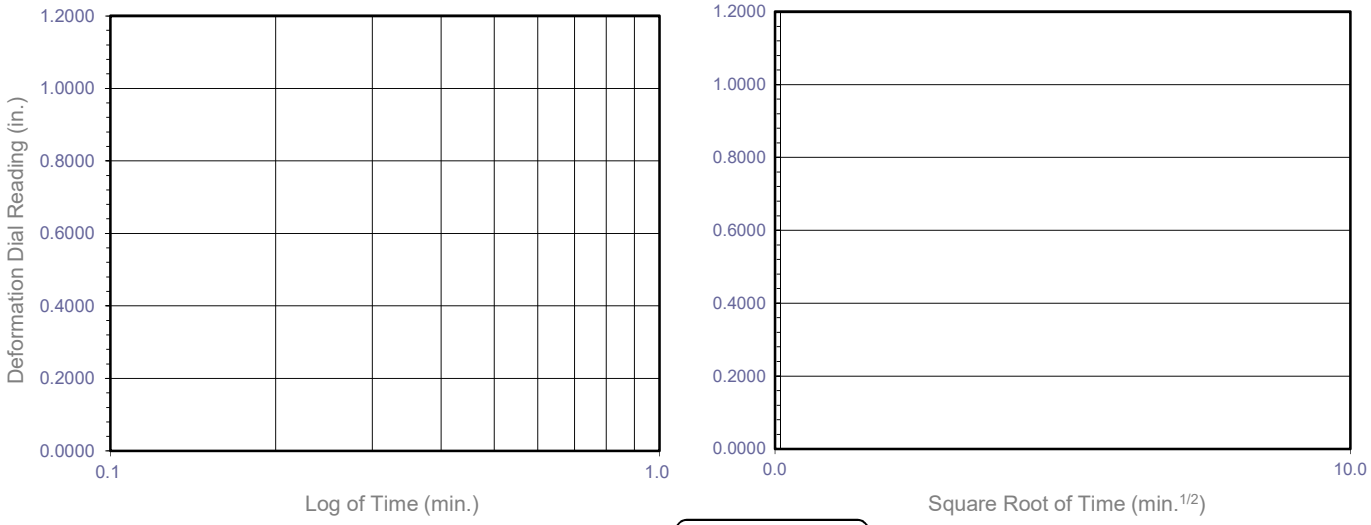


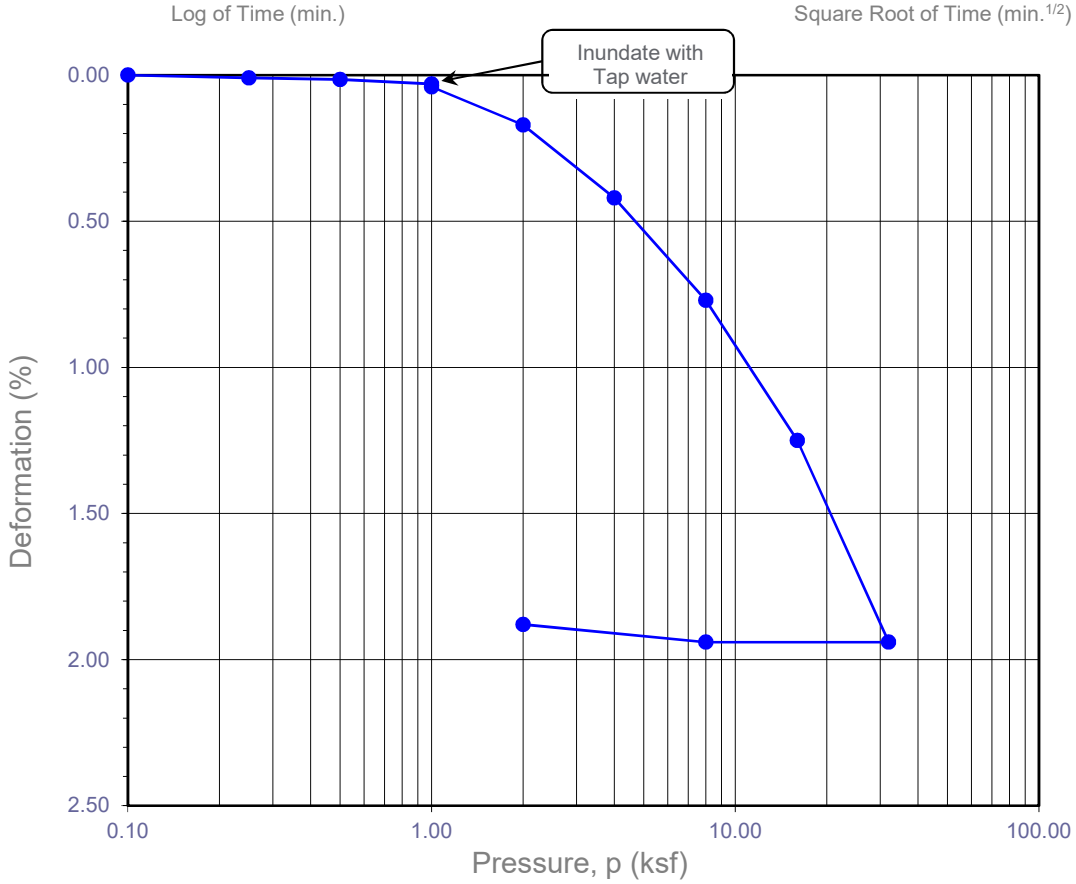
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.3060	1.0000	0.00	0.00	0.461	0.00
0.25	0.3059	0.9999	0.00	0.01	0.461	0.01
0.50	0.3043	0.9983	0.16	0.17	0.461	0.01
1.00	0.3026	0.9966	0.31	0.34	0.461	0.03
1.00	0.3025	0.9965	0.31	0.35	0.461	0.04
2.00	0.2996	0.9936	0.47	0.64	0.459	0.17
4.00	0.2954	0.9894	0.64	1.06	0.455	0.42
8.00	0.2902	0.9842	0.81	1.58	0.450	0.77
16.00	0.2835	0.9775	1.00	2.25	0.443	1.25
32.00	0.2745	0.9685	1.21	3.15	0.433	1.94
8.00	0.2771	0.9711	0.95	2.89	0.433	1.94
2.00	0.2801	0.9741	0.71	2.59	0.434	1.88

Time Readings

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)

Time Readings





Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
LB-5	**B-1**	**1-5**	**8.5**	**11.8**	**115.4**	**117.4**	**0.461**	**0.434**	**50**	**73**

Soil Identification: Dark olive brown well-graded sand with silt and gravel (SW-SM)g, AC noted

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11957.013

Asphalt Plant

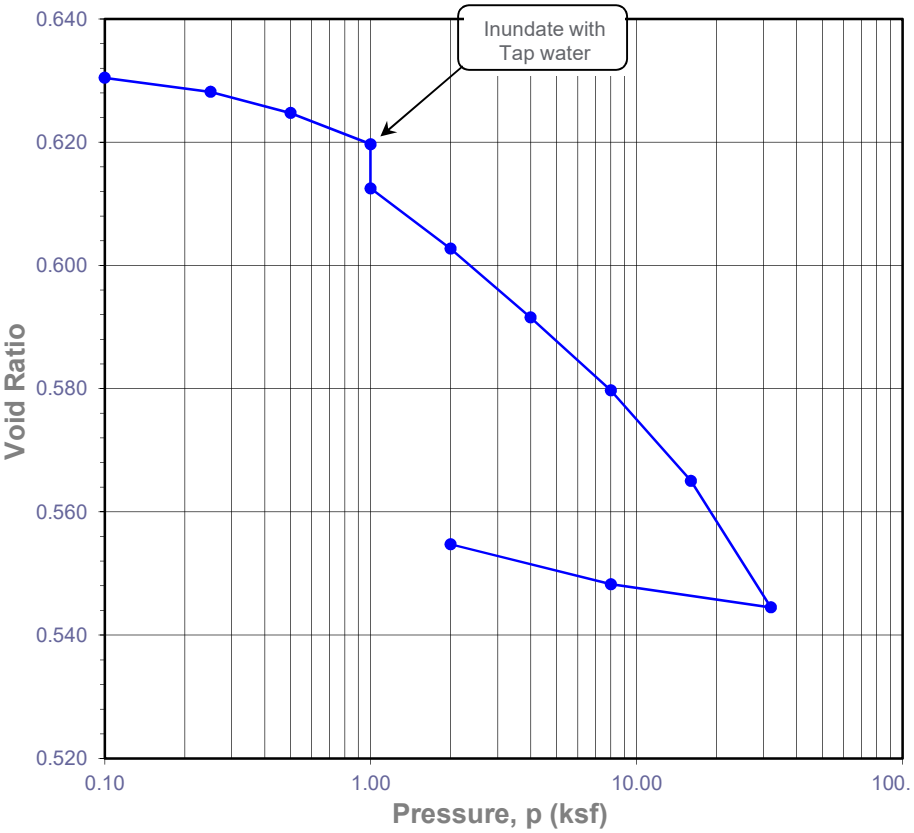
09-21

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-7
Sample No.: R-1
Soil Identification: Light olive brown poorly-graded sand with silt (SP-SM)

Tested By: GB/YN Date: 09/13/21
Checked By: J. Ward Date: 09/30/21
Depth (ft.): 5.0
Sample Type: Ring

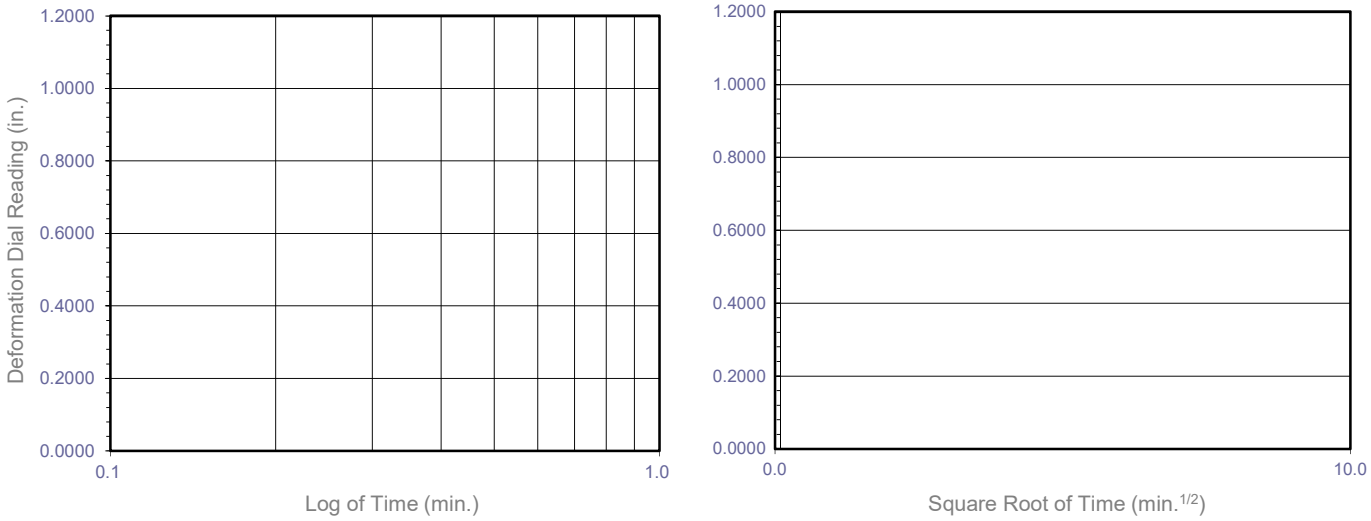
Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	173.32
Weight of Ring (g)	45.94
Height after consol. (in.)	0.9535
Before Test	
Wt.Wet Sample+Cont. (g)	169.60
Wt.of Dry Sample+Cont. (g)	166.83
Weight of Container (g)	55.15
Initial Moisture Content (%)	2.5
Initial Dry Density (pcf)	103.4
Initial Saturation (%)	11
Initial Vertical Reading (in.)	0.3080
After Test	
Wt.of Wet Sample+Cont. (g)	239.81
Wt. of Dry Sample+Cont. (g)	219.53
Weight of Container (g)	51.15
Final Moisture Content (%)	16.56
Final Dry Density (pcf)	106.8
Final Saturation (%)	77
Final Vertical Reading (in.)	0.2557
Specific Gravity (assumed)	2.70
Water Density (pcf)	62.43

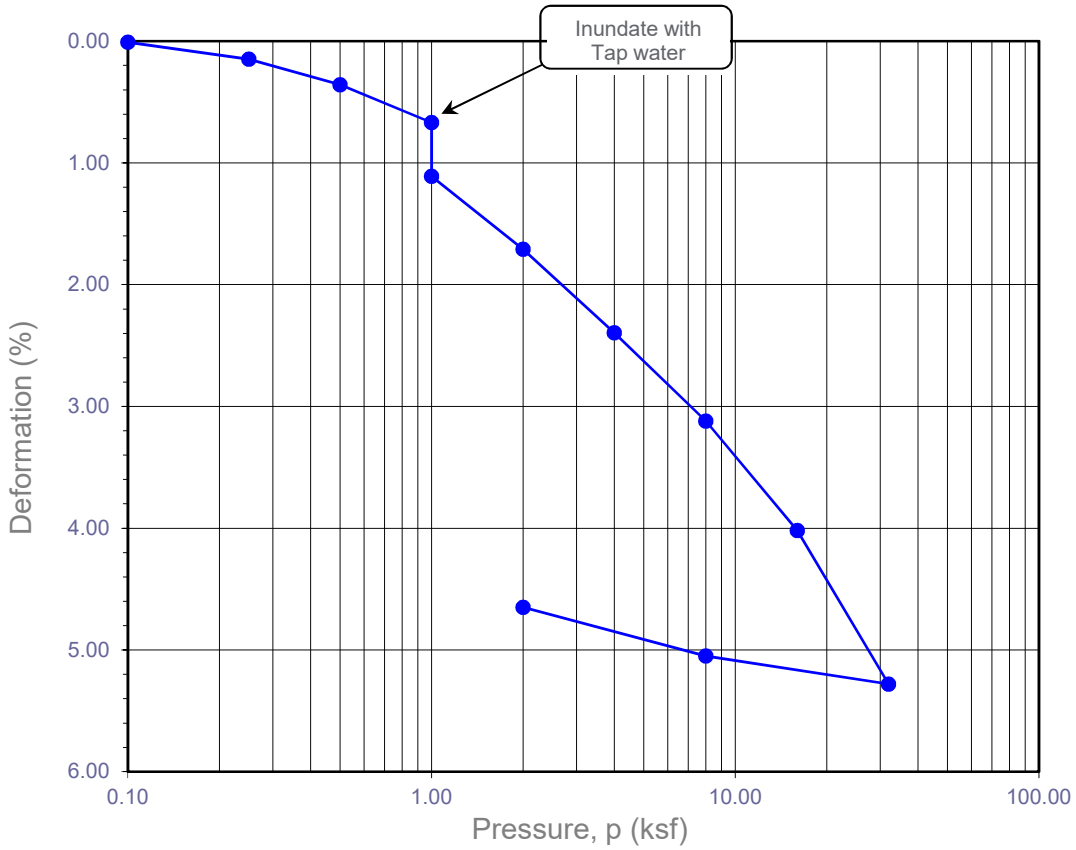


Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.3079	0.9999	0.00	0.01	0.630	0.01
0.25	0.3062	0.9982	0.03	0.18	0.628	0.15
0.50	0.3038	0.9958	0.06	0.42	0.625	0.36
1.00	0.3001	0.9921	0.12	0.79	0.620	0.67
1.00	0.2957	0.9877	0.12	1.23	0.613	1.11
2.00	0.2887	0.9807	0.22	1.93	0.603	1.71
4.00	0.2806	0.9726	0.35	2.75	0.592	2.40
8.00	0.2715	0.9635	0.53	3.65	0.580	3.12
16.00	0.2604	0.9524	0.74	4.76	0.565	4.02
32.00	0.2454	0.9374	0.98	6.26	0.545	5.28
8.00	0.2501	0.9421	0.74	5.79	0.548	5.05
2.00	0.2557	0.9477	0.58	5.23	0.555	4.65

Time Readings				
Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)

Time Readings





Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
LB-7	**R-1**	**5.0**	**2.5**	**16.6**	**103.4**	**106.8**	**0.631**	**0.555**	**11**	**77**

Soil Identification: Light olive brown poorly-graded sand with silt (SP-SM)

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11957.013

Asphalt Plant

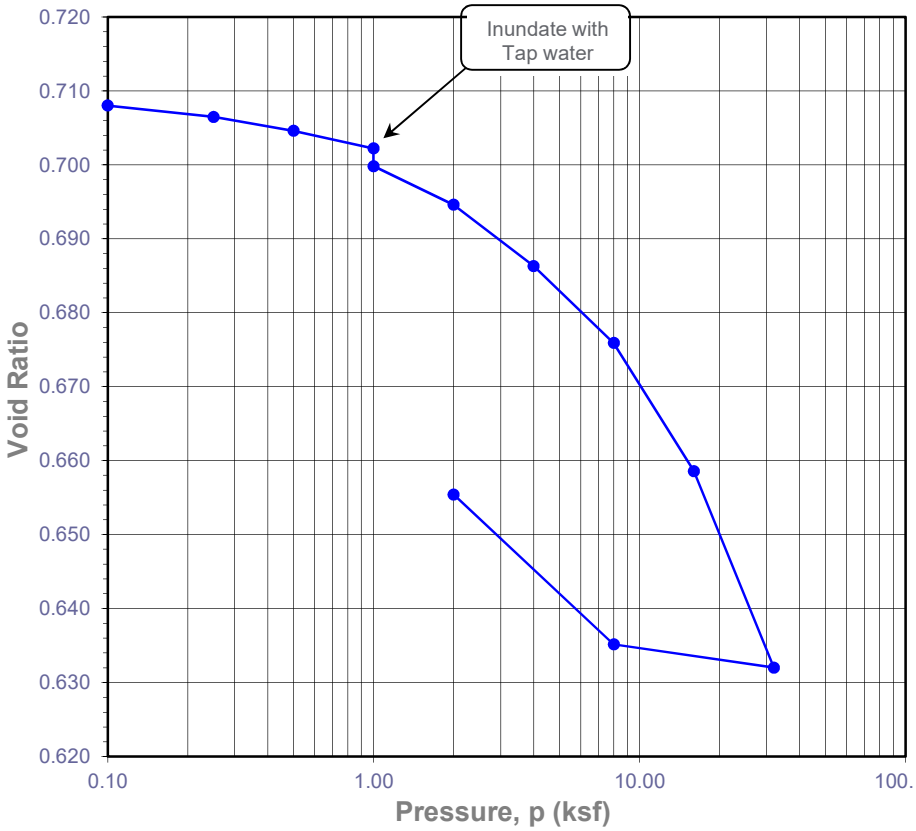
09-21

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project Name: Asphalt Plant
Project No.: 11957.013
Boring No.: LB-8
Sample No.: R-1
Soil Identification: Light olive brown poorly-graded sand with silt (SP-SM)

Tested By: GB/YN Date: 09/13/21
Checked By: J. Ward Date: 09/30/21
Depth (ft.): 7.5
Sample Type: Ring

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	169.42
Weight of Ring (g)	45.84
Height after consol. (in.)	0.9691
Before Test	
Wt.Wet Sample+Cont. (g)	200.76
Wt.of Dry Sample+Cont. (g)	195.34
Weight of Container (g)	64.85
Initial Moisture Content (%)	4.2
Initial Dry Density (pcf)	98.7
Initial Saturation (%)	16
Initial Vertical Reading (in.)	0.3191
After Test	
Wt.of Wet Sample+Cont. (g)	258.38
Wt. of Dry Sample+Cont. (g)	241.70
Weight of Container (g)	77.78
Final Moisture Content (%)	14.13
Final Dry Density (pcf)	101.3
Final Saturation (%)	57
Final Vertical Reading (in.)	0.2793
Specific Gravity (assumed)	2.70
Water Density (pcf)	62.43

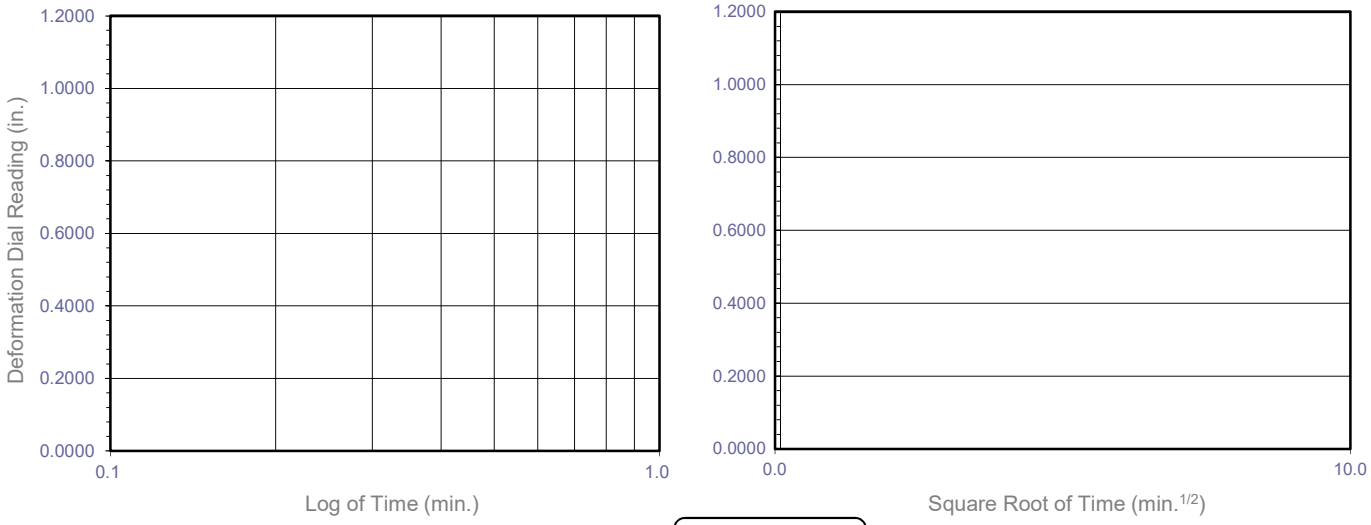


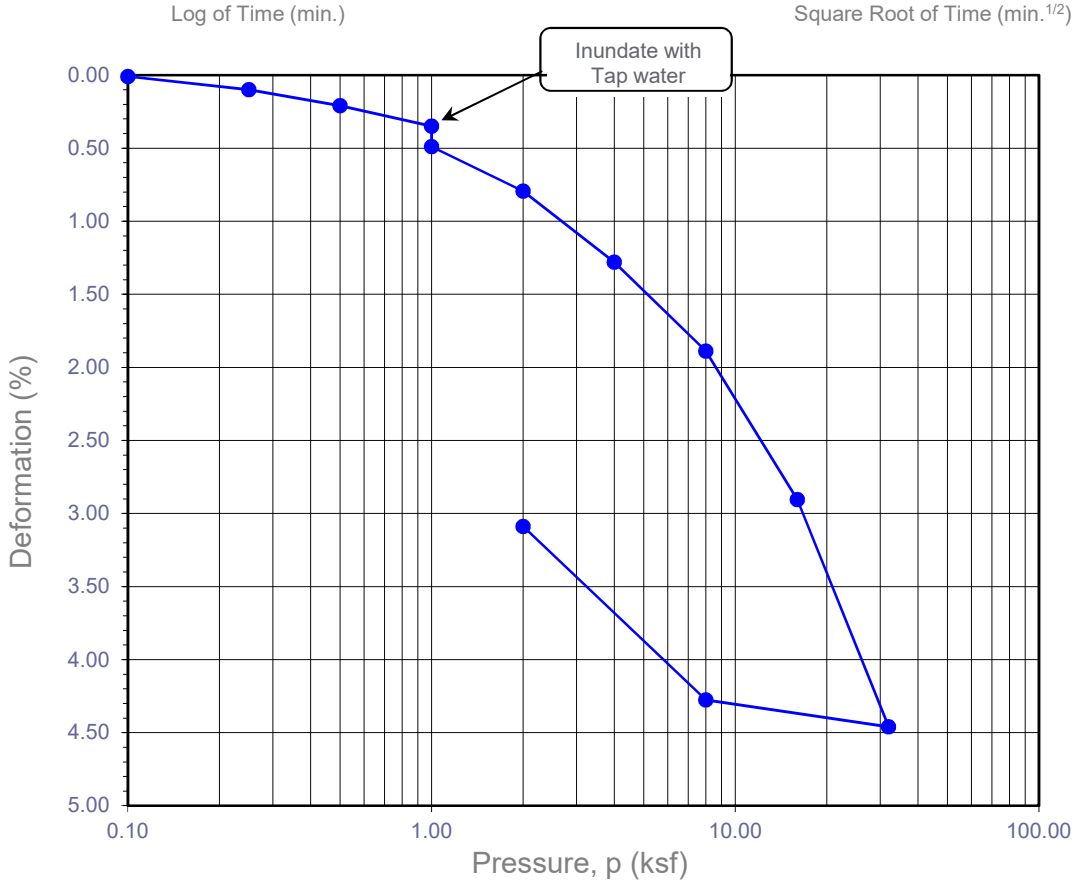
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.3190	0.9999	0.00	0.01	0.708	0.01
0.25	0.3177	0.9986	0.04	0.14	0.706	0.10
0.50	0.3161	0.9970	0.09	0.30	0.705	0.21
1.00	0.3136	0.9945	0.20	0.55	0.702	0.35
1.00	0.3122	0.9931	0.20	0.69	0.700	0.49
2.00	0.3074	0.9883	0.38	1.17	0.695	0.79
4.00	0.3004	0.9813	0.59	1.87	0.686	1.28
8.00	0.2917	0.9726	0.85	2.74	0.676	1.89
16.00	0.2790	0.9599	1.11	4.02	0.659	2.91
32.00	0.2605	0.9414	1.40	5.86	0.632	4.46
8.00	0.2651	0.9460	1.13	5.40	0.635	4.27
2.00	0.2793	0.9602	0.89	3.98	0.655	3.09

Time Readings

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)

Time Readings





Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
LB-8	**R-1**	**7.5**	**4.2**	**14.1**	**98.7**	**101.3**	**0.708**	**0.655**	**16**	**57**

Soil Identification: Light olive brown poorly-graded sand with silt (SP-SM)

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11957.013

Asphalt Plant

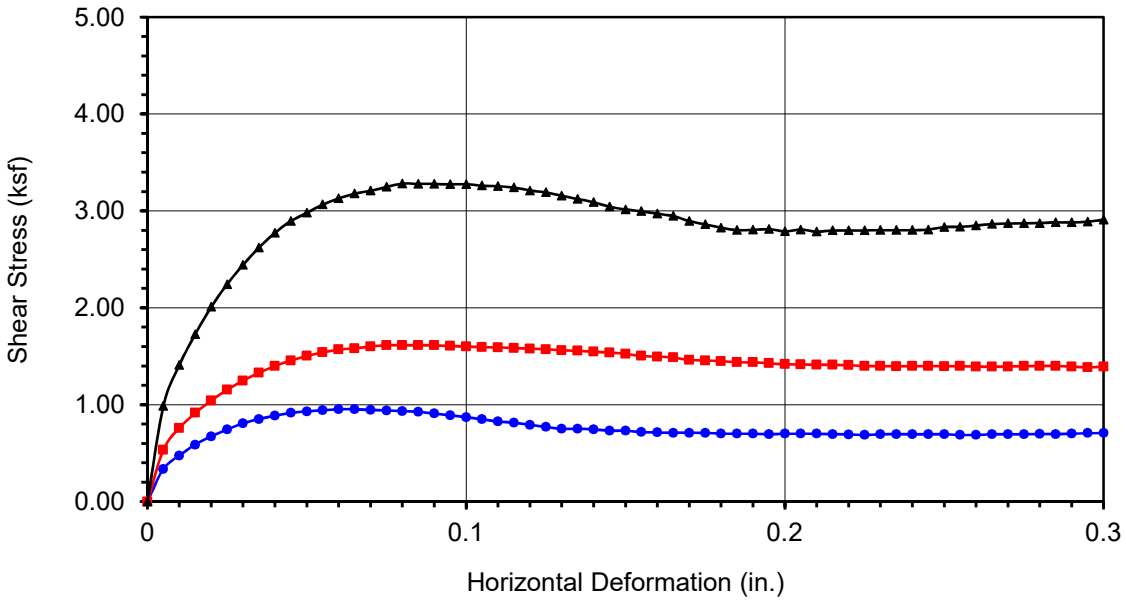
09-21

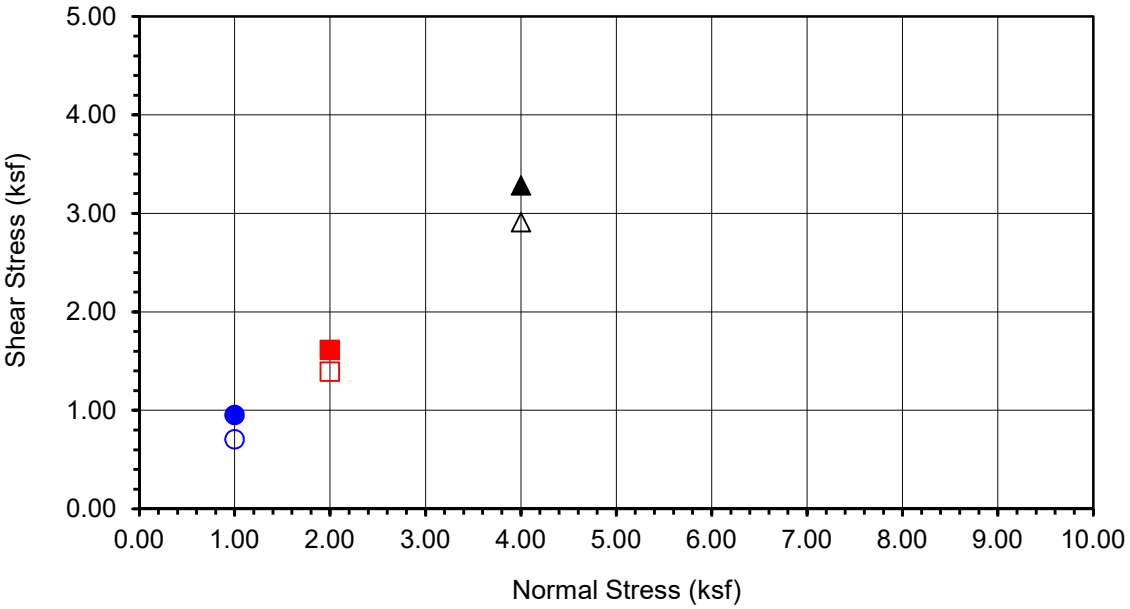
DIRECT SHEAR TEST
Consolidated Drained - ASTM D 3080

Project Name:	Asphalt Plant	Tested By:	G. Bathala	Date:	09/15/21
Project No.:	11957.013	Checked By:	J. Ward	Date:	09/30/21
Boring No.:	LB-2	Sample Type:	Ring		
Sample No.:	R-1	Depth (ft.):	5.0		

Soil Identification: Light olive brown silty sand (SM)

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	175.56	175.21	179.63
Weight of Ring(gm):	42.78	41.98	44.82
Before Shearing			
Weight of Wet Sample+Cont.(gm):	209.19	209.19	209.19
Weight of Dry Sample+Cont.(gm):	200.58	200.58	200.58
Weight of Container(gm):	70.02	70.02	70.02
Vertical Rdg.(in): Initial	0.0000	0.2580	0.2478
Vertical Rdg.(in): Final	-0.0108	0.2761	0.2700
After Shearing			
Weight of Wet Sample+Cont.(gm):	218.51	201.44	215.62
Weight of Dry Sample+Cont.(gm):	199.09	182.32	196.61
Weight of Container(gm):	74.55	59.17	69.88
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-2**
Sample No.	**R-1**
Depth (ft)	**5**
Sample Type:	
Ring	
Soil Identification:	
Light olive brown silty sand (SM)	

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 0.953	■ 1.613	▲ 3.282
Shear Stress @ End of Test (ksf)	○ 0.707	□ 1.393	△ 2.908
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	6.59	6.59	6.59
Dry Density (pcf)	103.6	103.9	105.2
Saturation (%)	28.4	28.6	29.5
Soil Height Before Shearing (in.)	0.9892	0.9819	0.9778
Final Moisture Content (%)	15.6	15.5	15.0

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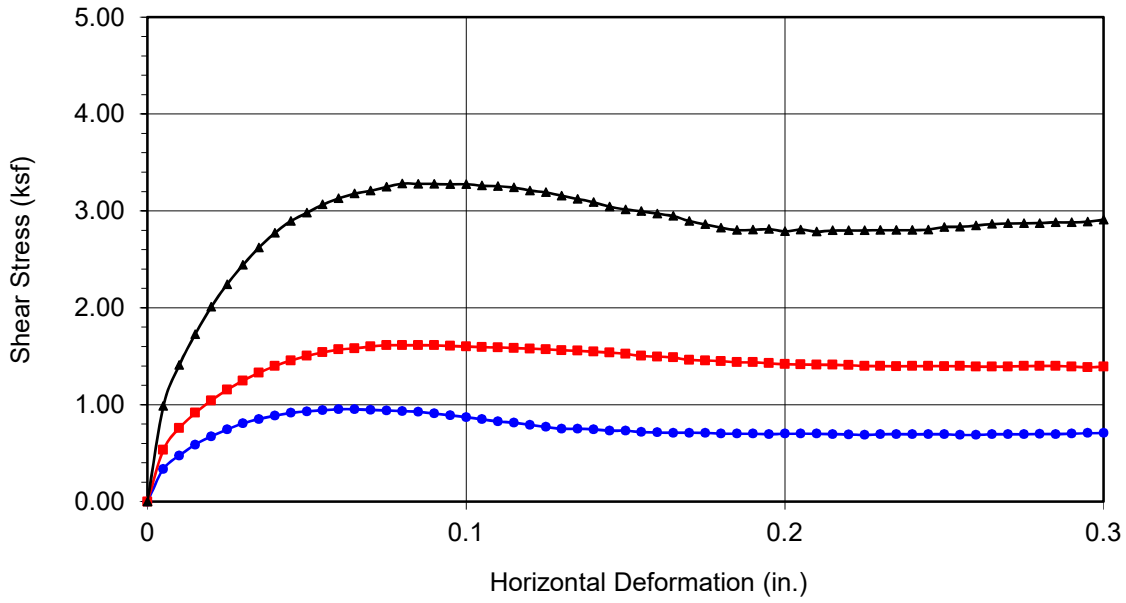
DIRECT SHEAR TEST RESULTS

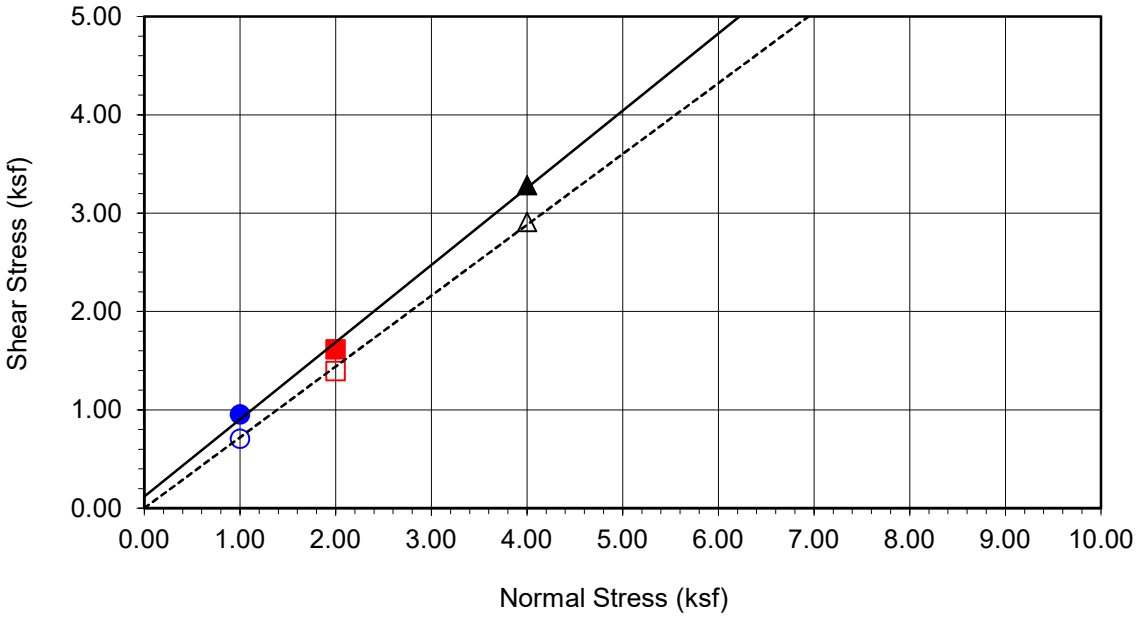
Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

09-21





Boring No.	**LB-2**
Sample No.	**R-1**
Depth (ft)	**5**
Sample Type:	Ring
Soil Identification: Light olive brown silty sand (SM)	

Strength Parameters

	C (psf)	ϕ (°)
Peak	119	38
Ultimate	0	36

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 0.953	■ 1.613	▲ 3.282
Shear Stress @ End of Test (ksf)	○ 0.707	□ 1.393	△ 2.908
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	6.59	6.59	6.59
Dry Density (pcf)	103.6	103.9	105.2
Saturation (%)	28.4	28.6	29.5
Soil Height Before Shearing (in.)	0.9892	0.9819	0.9778
Final Moisture Content (%)	15.6	15.5	15.0

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

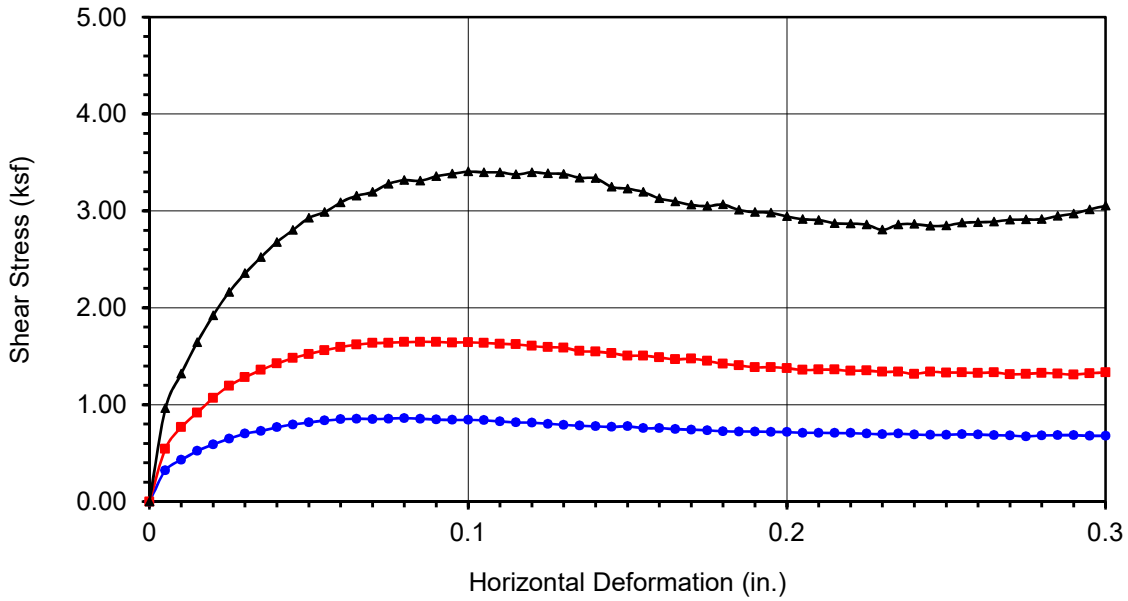
09-21

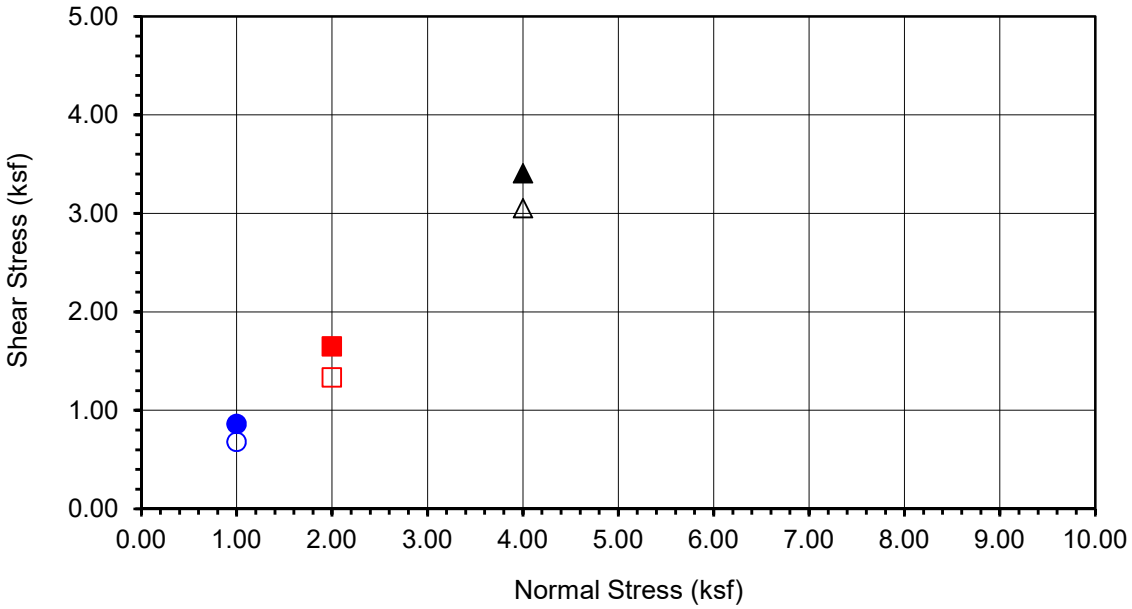
DIRECT SHEAR TEST
Consolidated Drained - ASTM D 3080

Project Name:	Asphalt Plant	Tested By:	G. Bathala	Date:	09/16/21
Project No.:	11957.013	Checked By:	J. Ward	Date:	09/30/21
Boring No.:	LB-4	Sample Type:	Ring		
Sample No.:	R-3	Depth (ft.):	15.0		

Soil Identification: Light yellowish brown poorly-graded sand (SP)

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	166.39	166.52	169.63
Weight of Ring(gm):	45.72	45.37	45.87
Before Shearing			
Weight of Wet Sample+Cont.(gm):	191.11	191.11	191.11
Weight of Dry Sample+Cont.(gm):	187.87	187.87	187.87
Weight of Container(gm):	59.17	59.17	59.17
Vertical Rdg.(in): Initial	0.2385	0.2393	0.0000
Vertical Rdg.(in): Final	0.2482	0.2573	-0.0228
After Shearing			
Weight of Wet Sample+Cont.(gm):	185.63	202.31	197.06
Weight of Dry Sample+Cont.(gm):	163.79	180.22	176.06
Weight of Container(gm):	51.14	66.38	61.68
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-4**
Sample No.	**R-3**
Depth (ft)	**15**
Sample Type:	
Ring	
Soil Identification:	
Light yellowish brown poorly-graded sand (SP)	

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 0.861	■ 1.647	▲ 3.405
Shear Stress @ End of Test (ksf)	○ 0.679	□ 1.333	△ 3.053
Deformation Rate (in./min.)	0.0050	0.0050	0.0050
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	2.52	2.52	2.52
Dry Density (pcf)	97.9	98.3	100.4
Saturation (%)	9.4	9.5	10.0
Soil Height Before Shearing (in.)	0.9903	0.9820	0.9772
Final Moisture Content (%)	19.4	19.4	18.4

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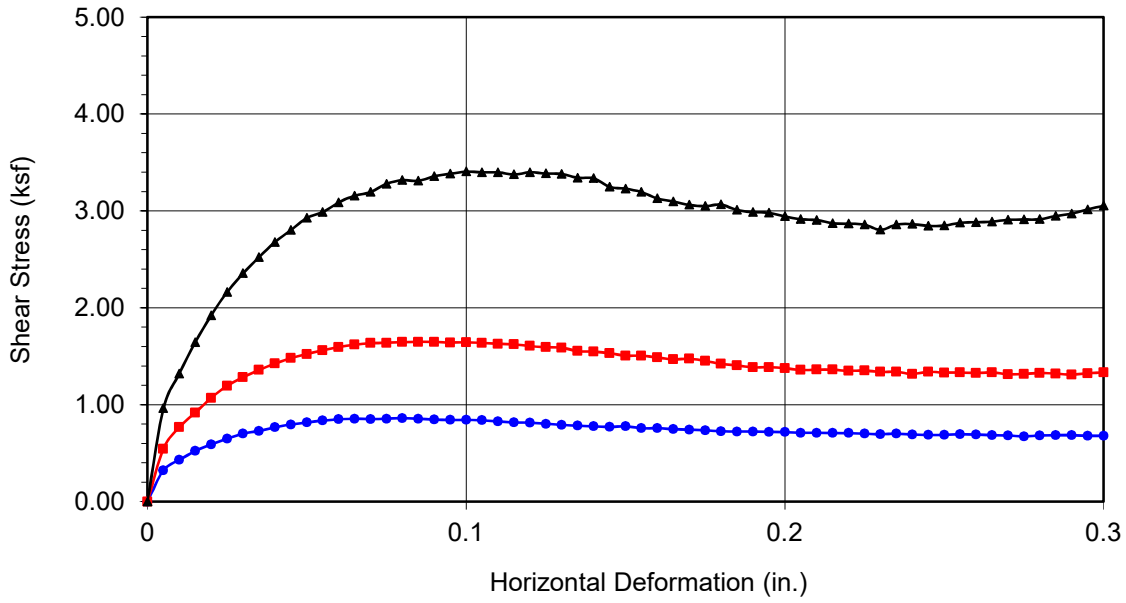
DIRECT SHEAR TEST RESULTS

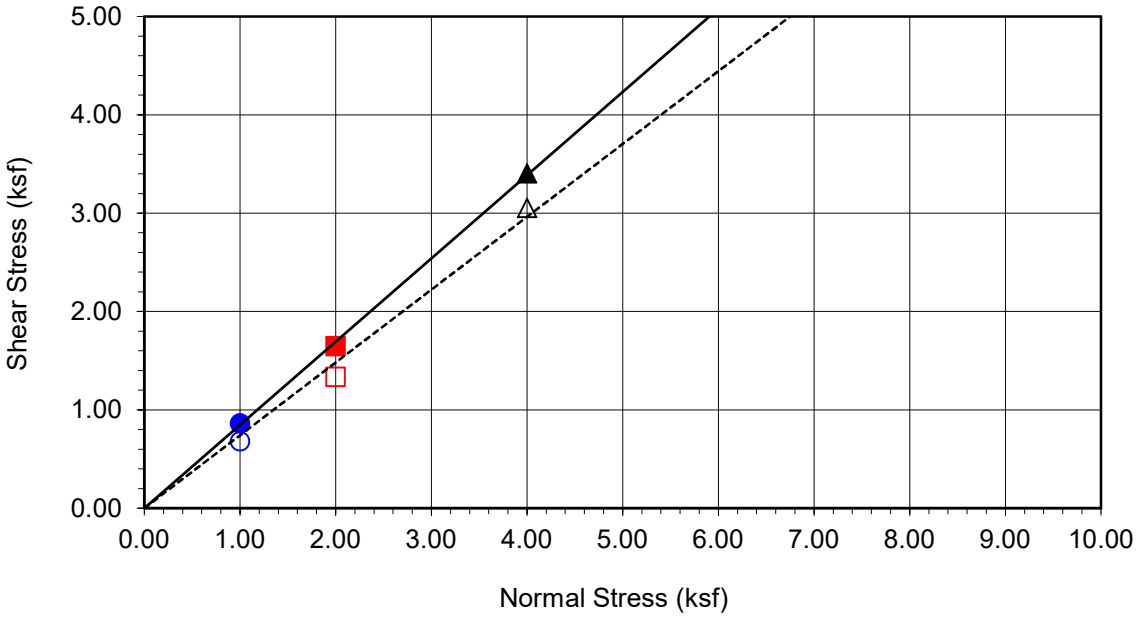
Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

09-21





Boring No.	**LB-4**
Sample No.	**R-3**
Depth (ft)	**15**
Sample Type:	Ring
Soil Identification: Light yellowish brown poorly-graded sand (SP)	

Strength Parameters

	C (psf)	ϕ (°)
Peak	0	40
Ultimate	0	37

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 0.861	■ 1.647	▲ 3.405
Shear Stress @ End of Test (ksf)	○ 0.679	□ 1.333	△ 3.053
Deformation Rate (in./min.)	0.0050	0.0050	0.0050
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	2.52	2.52	2.52
Dry Density (pcf)	97.9	98.3	100.4
Saturation (%)	9.4	9.5	10.0
Soil Height Before Shearing (in.)	0.9903	0.9820	0.9772
Final Moisture Content (%)	19.4	19.4	18.4

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

09-21

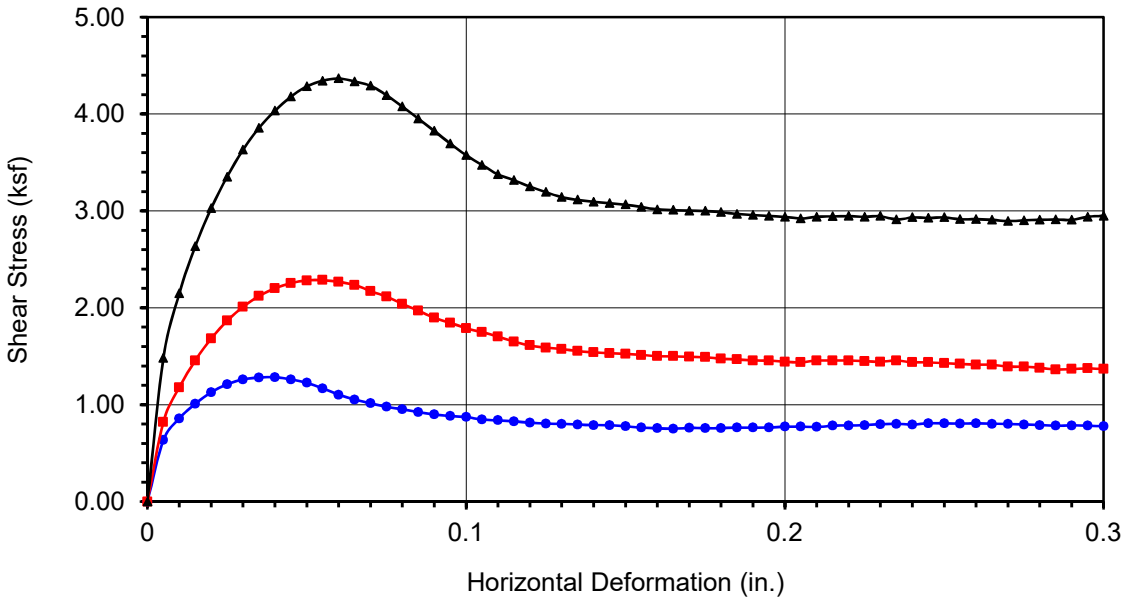
DIRECT SHEAR TEST

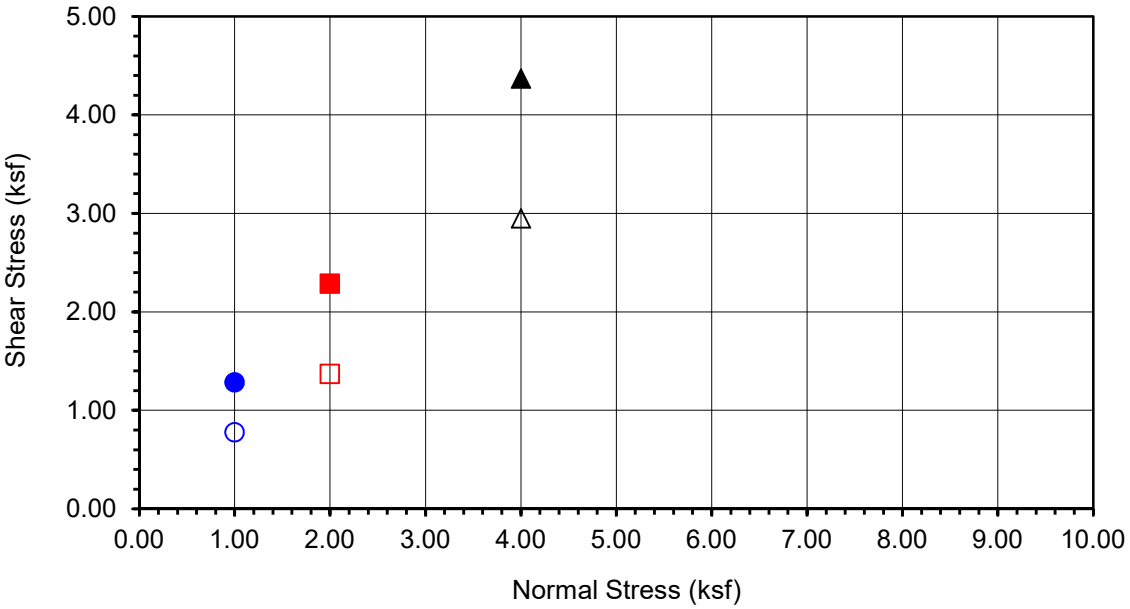
Consolidated Drained - ASTM D 3080

Project Name:	Asphalt Plant	Tested By:	G. Bathala	Date:	09/16/21
Project No.:	11957.013	Checked By:	J. Ward	Date:	10/01/21
Boring No.:	LB-5	Sample Type:	95% Remold		
Sample No.:	B-1	Depth (ft.):	1-5		

Soil Identification: Dark olive brown well-graded sand with silt and gravel (SW-SM)g, AC noted

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	193.86	193.91	193.96
Weight of Ring(gm):	45.42	44.64	44.28
Before Shearing			
Weight of Wet Sample+Cont.(gm):	185.90	185.90	185.90
Weight of Dry Sample+Cont.(gm):	175.65	175.65	175.65
Weight of Container(gm):	55.14	55.14	55.14
Vertical Rdg.(in): Initial	0.2679	0.2802	0.0000
Vertical Rdg.(in): Final	0.2744	0.2923	-0.0193
After Shearing			
Weight of Wet Sample+Cont.(gm):	189.91	215.45	218.06
Weight of Dry Sample+Cont.(gm):	171.65	197.27	200.43
Weight of Container(gm):	38.36	64.60	66.55
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-5**
Sample No.	**B-1**
Depth (ft)	**1-5**
Sample Type: 95% Remold	
Soil Identification: Dark olive brown well-graded sand with silt and gravel (SW-SM)g, AC noted	

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 1.283	■ 2.286	▲ 4.367
Shear Stress @ End of Test (ksf)	○ 0.777	□ 1.368	△ 2.949
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.51	8.51	8.51
Dry Density (pcf)	113.8	114.4	114.7
Saturation (%)	47.7	48.5	48.9
Soil Height Before Shearing (in.)	0.9935	0.9879	0.9807
Final Moisture Content (%)	13.7	13.7	13.2

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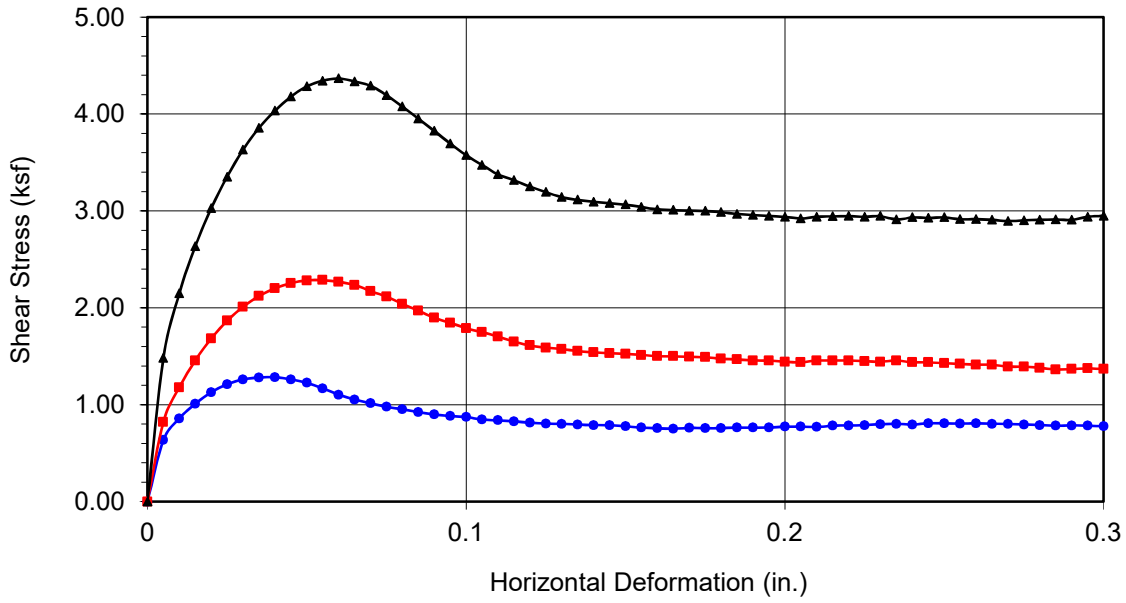
DIRECT SHEAR TEST RESULTS

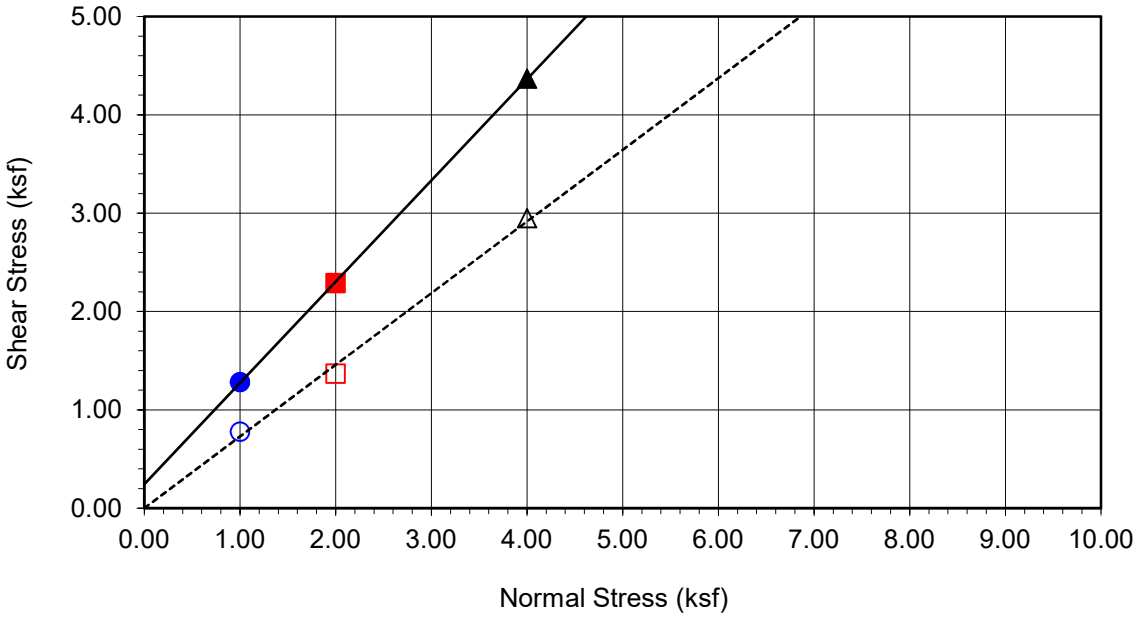
Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

09-21





Boring No.	**LB-5**
Sample No.	**B-1**
Depth (ft)	**1-5**
Sample Type:	95% Remold

Soil Identification:
Dark olive brown well-graded sand with silt and gravel (SW-SM)g, AC noted

Strength Parameters

	C (psf)	ϕ (°)
Peak	243	46
Ultimate	0	36

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 1.283	■ 2.286	▲ 4.367
Shear Stress @ End of Test (ksf)	○ 0.777	□ 1.368	△ 2.949
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.51	8.51	8.51
Dry Density (pcf)	113.8	114.4	114.7
Saturation (%)	47.7	48.5	48.9
Soil Height Before Shearing (in.)	0.9935	0.9879	0.9807
Final Moisture Content (%)	13.7	13.7	13.2

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DIRECT SHEAR TEST RESULTS
Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

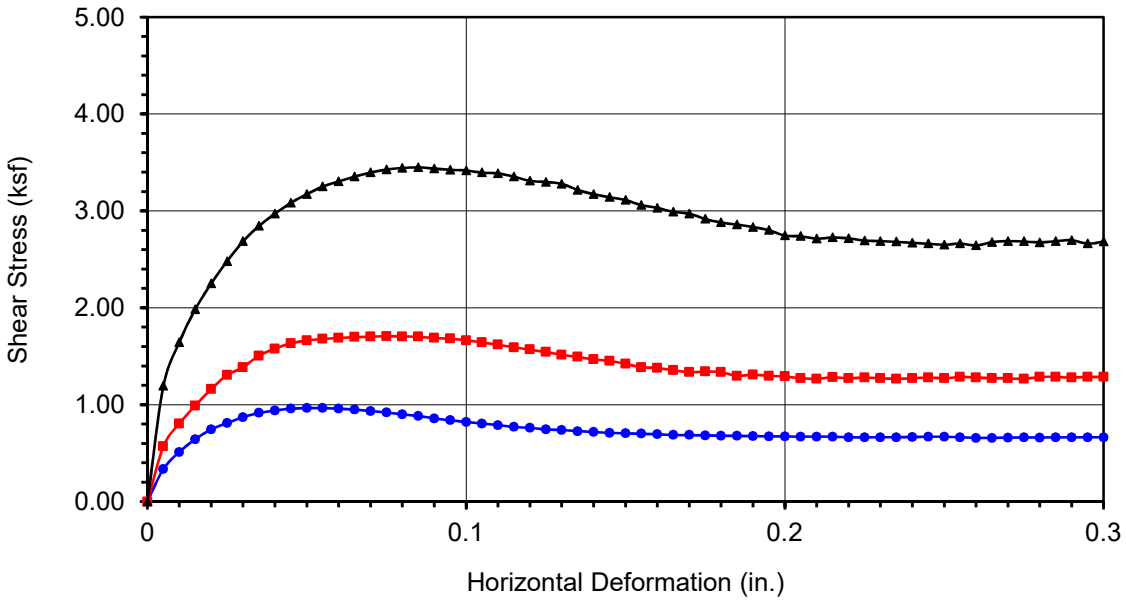
09-21

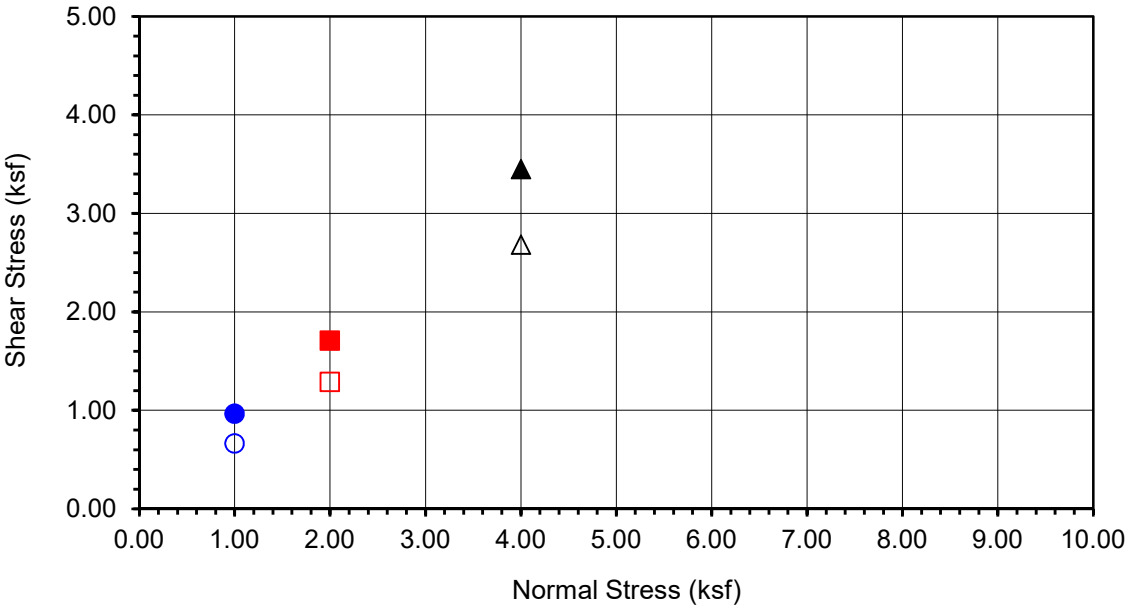
DIRECT SHEAR TEST
Consolidated Drained - ASTM D 3080

Project Name:	Asphalt Plant	Tested By:	G. Bathala	Date:	09/20/21
Project No.:	11957.013	Checked By:	J. Ward	Date:	10/01/21
Boring No.:	LB-5	Sample Type:	Ring		
Sample No.:	R-1	Depth (ft.):	7.5		

Soil Identification: Light olive brown poorly-graded sand (SP)

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	167.28	174.07	175.02
Weight of Ring(gm):	42.97	45.75	45.19
Before Shearing			
Weight of Wet Sample+Cont.(gm):	184.83	184.83	184.83
Weight of Dry Sample+Cont.(gm):	180.48	180.48	180.48
Weight of Container(gm):	65.19	65.19	65.19
Vertical Rdg.(in): Initial	0.0000	0.2382	0.2645
Vertical Rdg.(in): Final	-0.0072	0.2533	0.2825
After Shearing			
Weight of Wet Sample+Cont.(gm):	199.01	214.46	209.07
Weight of Dry Sample+Cont.(gm):	177.73	192.58	188.69
Weight of Container(gm):	64.61	74.56	69.88
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-5**
Sample No.	**R-1**
Depth (ft)	**7.5**
Sample Type: Ring	
Soil Identification: Light olive brown poorly-graded sand (SP)	

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 0.965	■ 1.707	▲ 3.449
Shear Stress @ End of Test (ksf)	○ 0.663	□ 1.286	△ 2.682
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	3.77	3.77	3.77
Dry Density (pcf)	99.6	102.8	104.0
Saturation (%)	14.7	15.9	16.4
Soil Height Before Shearing (in.)	0.9928	0.9849	0.9820
Final Moisture Content (%)	18.8	18.5	17.2

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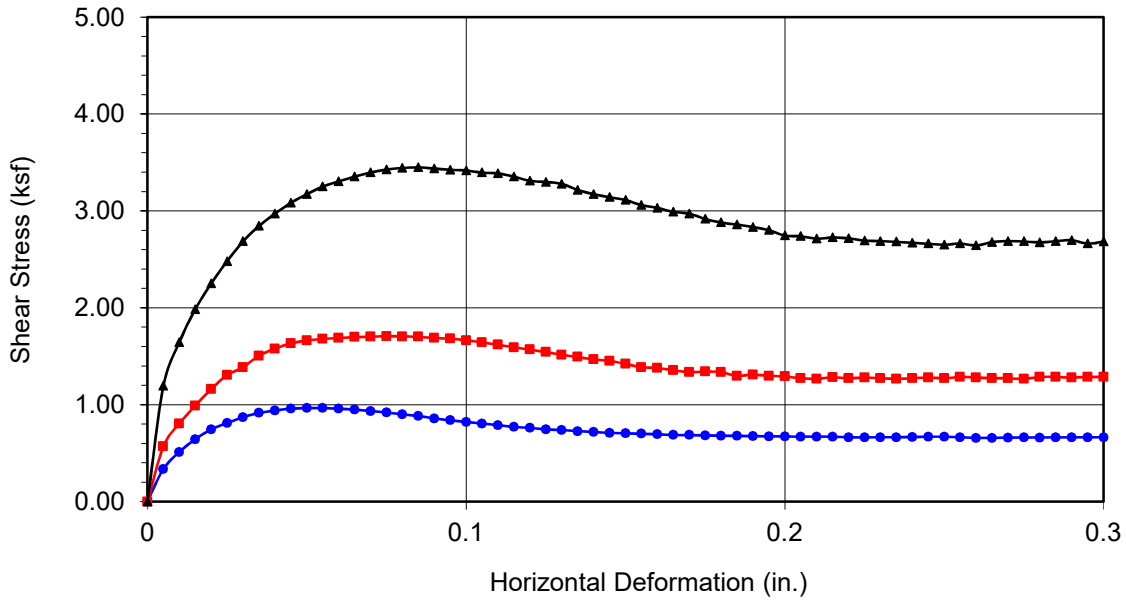
DIRECT SHEAR TEST RESULTS

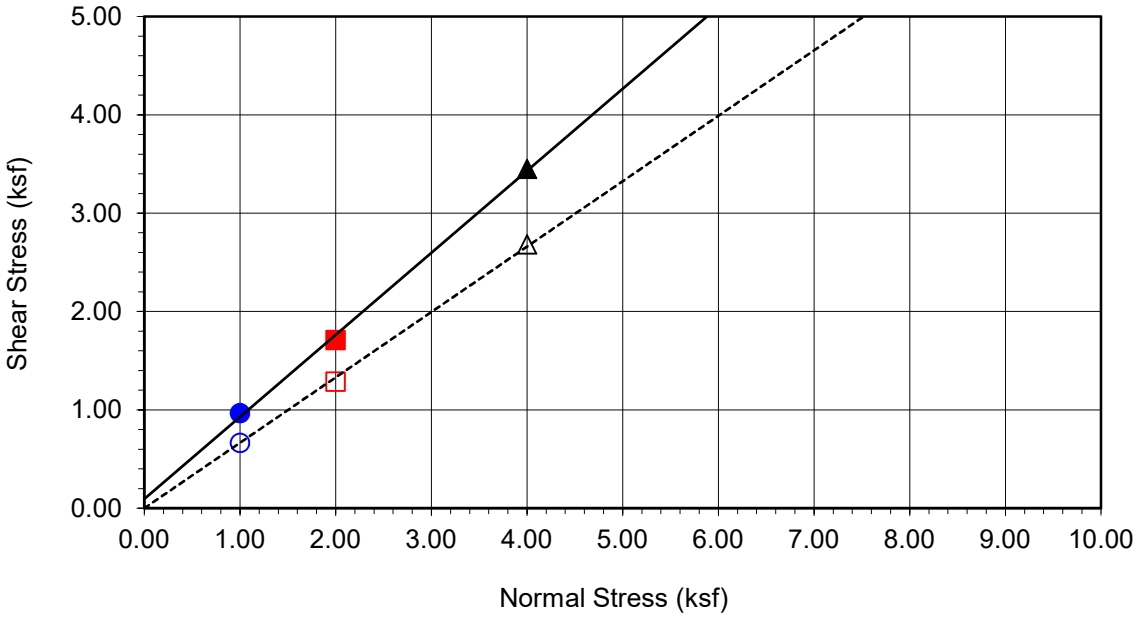
Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

09-21





Boring No.	**LB-5**
Sample No.	**R-1**
Depth (ft)	**7.5**
Sample Type:	Ring
Soil Identification: Light olive brown poorly-graded sand (SP)	

Strength Parameters

	C (psf)	ϕ (°)
Peak	94	40
Ultimate	0	34

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 0.965	■ 1.707	▲ 3.449
Shear Stress @ End of Test (ksf)	○ 0.663	□ 1.286	△ 2.682
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	3.77	3.77	3.77
Dry Density (pcf)	99.6	102.8	104.0
Saturation (%)	14.7	15.9	16.4
Soil Height Before Shearing (in.)	0.9928	0.9849	0.9820
Final Moisture Content (%)	18.8	18.5	17.2

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

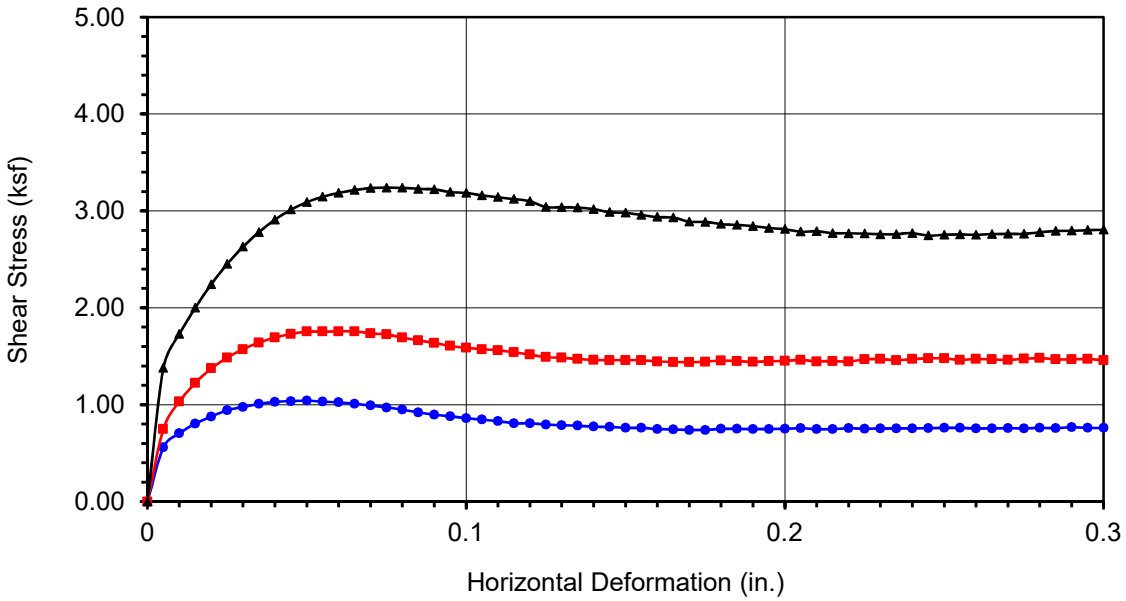
09-21

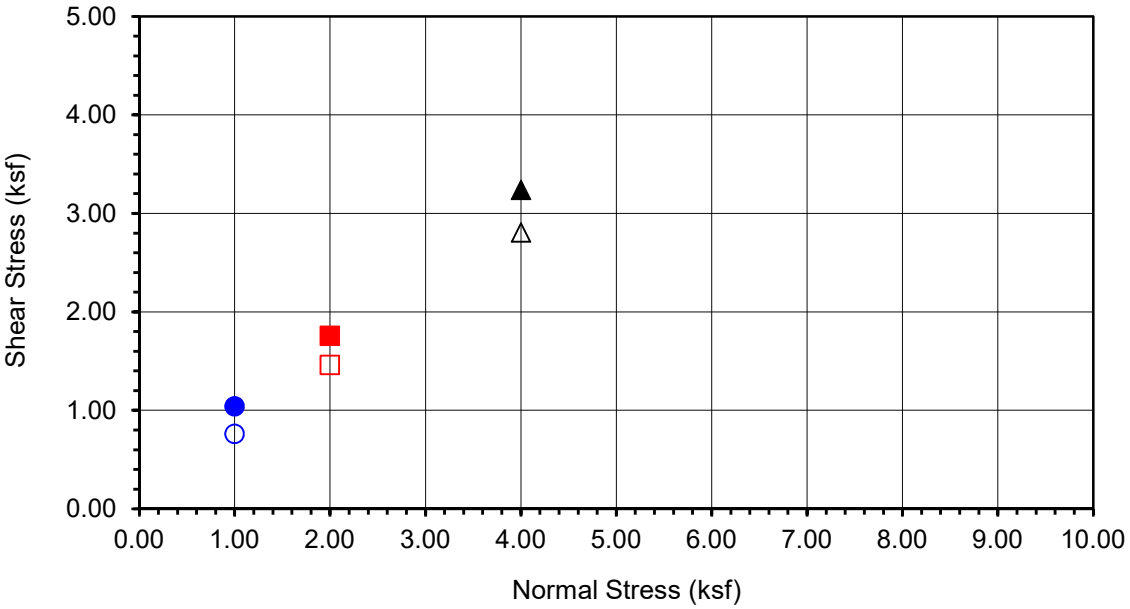
DIRECT SHEAR TEST
Consolidated Drained - ASTM D 3080

Project Name:	Asphalt Plant	Tested By:	G. Bathala	Date:	09/20/21
Project No.:	11957.013	Checked By:	J. Ward	Date:	10/01/21
Boring No.:	LB-6	Sample Type:	95% Remold		
Sample No.:	B-1	Depth (ft.):	1-5		

Soil Identification: Olive gray silty sand with gravel (SM)g

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	187.18	187.83	188.24
Weight of Ring(gm):	44.95	45.43	45.70
Before Shearing			
Weight of Wet Sample+Cont.(gm):	158.23	158.23	158.23
Weight of Dry Sample+Cont.(gm):	148.35	148.35	148.35
Weight of Container(gm):	38.31	38.31	38.31
Vertical Rdg.(in): Initial	0.0000	0.2706	0.2868
Vertical Rdg.(in): Final	-0.0096	0.2867	0.3175
After Shearing			
Weight of Wet Sample+Cont.(gm):	182.24	211.10	203.30
Weight of Dry Sample+Cont.(gm):	164.13	193.36	185.80
Weight of Container(gm):	38.36	66.71	59.18
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-6**
Sample No.	**B-1**
Depth (ft)	**1-5**
Sample Type: 95% Remold	
Soil Identification: Olive gray silty sand with gravel (SM)g	

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 1.041	■ 1.757	▲ 3.238
Shear Stress @ End of Test (ksf)	○ 0.761	□ 1.459	△ 2.804
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.98	8.98	8.98
Dry Density (pcf)	108.5	108.7	108.8
Saturation (%)	43.8	44.0	44.1
Soil Height Before Shearing (in.)	0.9904	0.9839	0.9693
Final Moisture Content (%)	14.4	14.0	13.8

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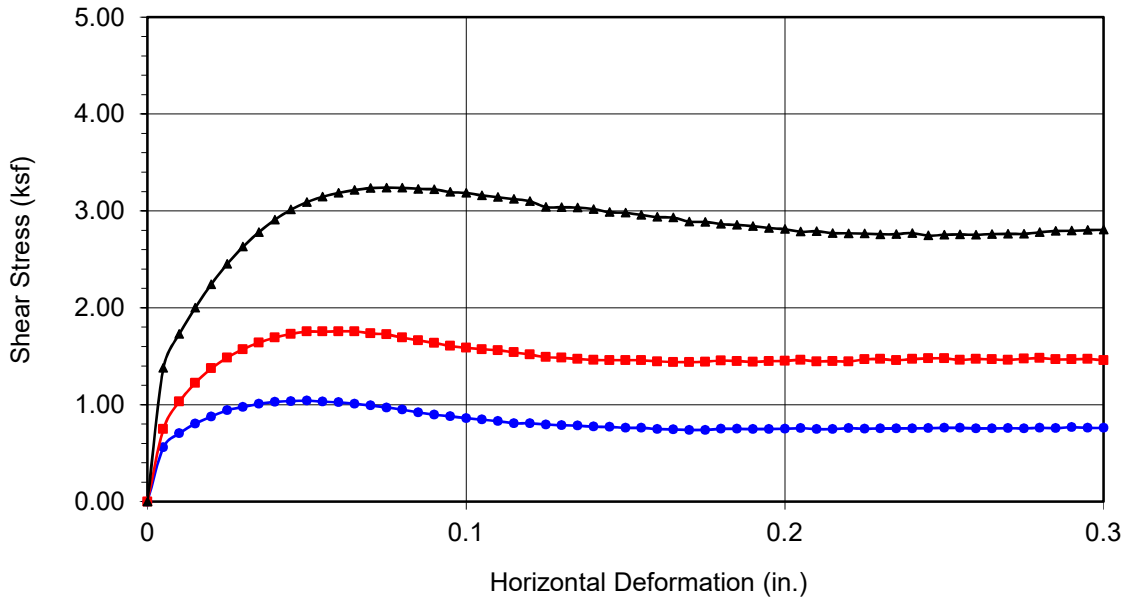
DIRECT SHEAR TEST RESULTS

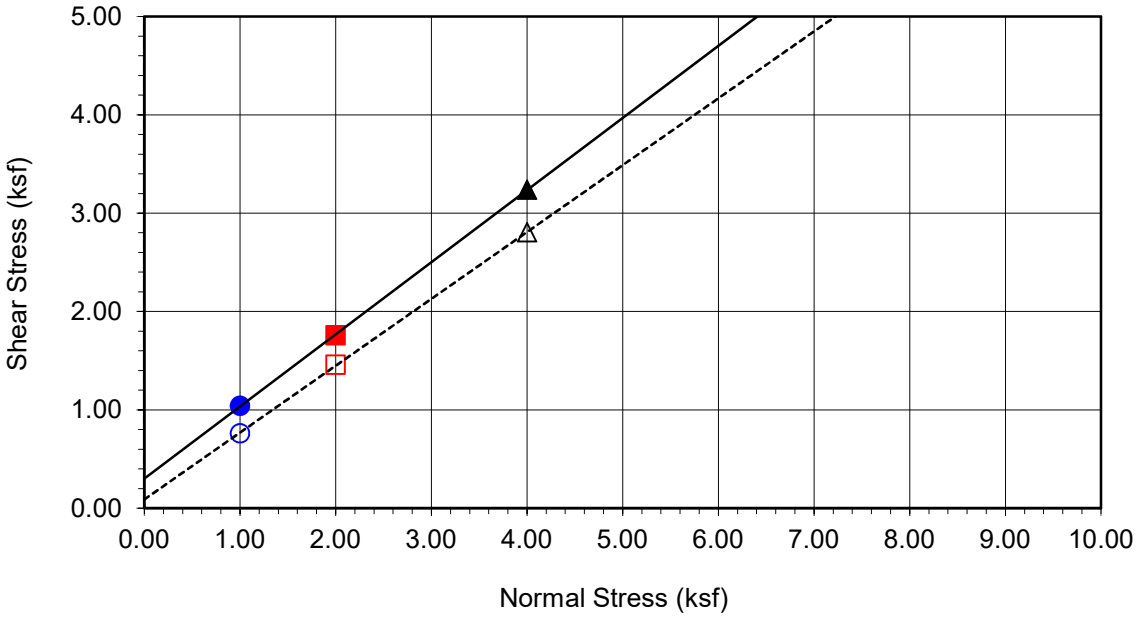
Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

09-21





Boring No.	**LB-6**
Sample No.	**B-1**
Depth (ft)	**1-5**
Sample Type:	95% Remold
Soil Identification:	Olive gray silty sand with gravel (SM)g

Strength Parameters

	C (psf)	ϕ (°)
Peak	301	36
Ultimate	88	34

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 1.041	■ 1.757	▲ 3.238
Shear Stress @ End of Test (ksf)	○ 0.761	□ 1.459	△ 2.804
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.98	8.98	8.98
Dry Density (pcf)	108.5	108.7	108.8
Saturation (%)	43.8	44.0	44.1
Soil Height Before Shearing (in.)	0.9904	0.9839	0.9693
Final Moisture Content (%)	14.4	14.0	13.8

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11957.013

Asphalt Plant

09-21

EXPANSION INDEX of SOILS
ASTM D 4829

Project Name:	Asphalt Plant	Tested By:	G. Berdy	Date:	09/14/21
Project No.:	11957.013	Checked By:	J. Ward	Date:	09/30/21
Boring No.:	LB-7	Depth (ft.):	1-5		
Sample No.:	B-1				
Soil Identification:	Olive poorly-graded sand (SP)				

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN		Before Test	After Test
Specimen Diameter	(in.)	4.01	4.01
Specimen Height	(in.)	1.0000	0.9995
Wt. Comp. Soil + Mold	(g)	601.30	431.30
Wt. of Mold	(g)	187.70	0.00
Specific Gravity (Assumed)		2.70	2.70
Container No.		O	O
Wet Wt. of Soil + Cont.	(g)	819.60	619.00
Dry Wt. of Soil + Cont.	(g)	751.90	567.15
Wt. of Container	(g)	0.00	187.70
Moisture Content	(%)	9.00	13.66
Wet Density	(pcf)	124.8	130.2
Dry Density	(pcf)	114.5	114.5
Void Ratio		0.473	0.472
Total Porosity		0.321	0.321
Pore Volume	(cc)	66.5	66.4
Degree of Saturation (%) [S_{meas}]		**51.4**	78.1

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
09/14/21	10:13	1.0	0	0.5930
09/14/21	10:23	1.0	10	0.5925
Add Distilled Water to the Specimen				
09/14/21	10:56	1.0	33	0.5930
09/15/21	6:05	1.0	1182	0.5925
09/15/21	7:11	1.0	1248	0.5925

Expansion Index (EI_{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**0**

TESTS for SULFATE CONTENT
CHLORIDE CONTENT and pH of SOILS

Project Name: Asphalt Plant | Tested By : GEB/OHF | Date: 09/13/21

Project No. : 11957.013 | Checked By: J. Ward | Date: 09/29/21

Boring No.	LB-2	LB-3	LB-6	LB-8
Sample No.	B-1	B-1	B-1	B-1
Sample Depth (ft)	1-5	1-5	1-5	1-5
Soil Identification:	Dark olive brown SM	Olive (SM)g, organics & oil noted	Olive gray (SM)g	Grayish brown SM
Wet Weight of Soil + Container (g)	0.00	212.75	221.05	0.00
Dry Weight of Soil + Container (g)	0.00	205.96	215.79	0.00
Weight of Container (g)	1.00	57.23	60.37	1.00
Moisture Content (%)	0.00	4.57	3.38	0.00
Weight of Soaked Soil (g)	100.63	100.30	100.10	100.03

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	15	0	303	92
Crucible No.	21	19	8	16
Furnace Temperature (°C)	860	860	860	860
Time In / Time Out	8:00/8:45	8:00/8:45	8:00/8:45	8:00/8:45
Duration of Combustion (min)	45	45	45	45
Wt. of Crucible + Residue (g)	22.1751	19.8615	20.3936	18.4719
Wt. of Crucible (g)	22.1680	19.8597	20.3909	18.4703
Wt. of Residue (g) (A)	0.0071	0.0018	0.0027	0.0016
PPM of Sulfate (A) x 41150	292.17	74.07	111.11	65.84
PPM of Sulfate, Dry Weight Basis	**292**	**78**	**115**	**66**

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	30	15	15	5
ml of AgNO3 Soln. Used in Titration (C)	0.9	0.7	0.4	0.4
PPM of Chloride (C -0.2) * 100 * 30 / B	70	100	40	120
PPM of Chloride, Dry Wt. Basis	**70**	**105**	**41**	**120**

pH TEST, DOT California Test 643

pH Value	**7.81**	**9.21**	**7.77**	**7.64**
Temperature °C	21.1	20.3	21.0	20.8

SOIL RESISTIVITY TEST
DOT CA TEST 643

Project Name:	Asphalt Plant		Tested By :	G. Berdy	Date: 09/15/21
Project No. :	11957.013		Checked By:	J. Ward	Date: 09/29/21
Boring No.:	LB-2		Depth (ft.) :	1-5	
Sample No. :	B-1				

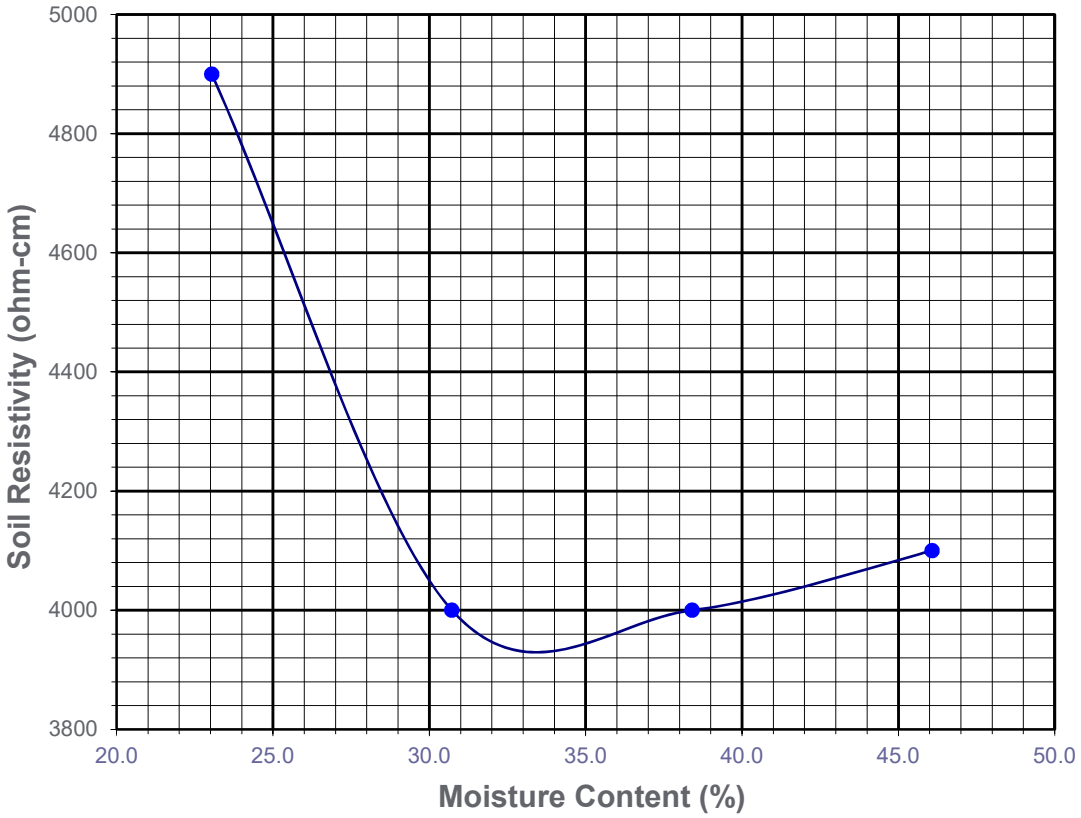
Soil Identification:* Dark olive brown SM

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	30	23.04	4900	4900
2	40	30.72	4000	4000
3	50	38.40	4000	4000
4	60	46.08	4100	4100
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	0.00
Dry Wt. of Soil + Cont. (g)	0.00
Wt. of Container (g)	1.00
Container No.	
Initial Soil Wt. (g) (Wt)	130.20
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
3930	**33.4**	**292**	**70**	**7.81**	**21.1**



SOIL RESISTIVITY TEST
DOT CA TEST 643

Project Name:	Asphalt Plant	Tested By :	G. Berdy	Date:	09/15/21
Project No. :	11957.013	Checked By:	J. Ward	Date:	09/29/21
Boring No.:	LB-3	Depth (ft.) :	1-5		
Sample No. :	B-1				

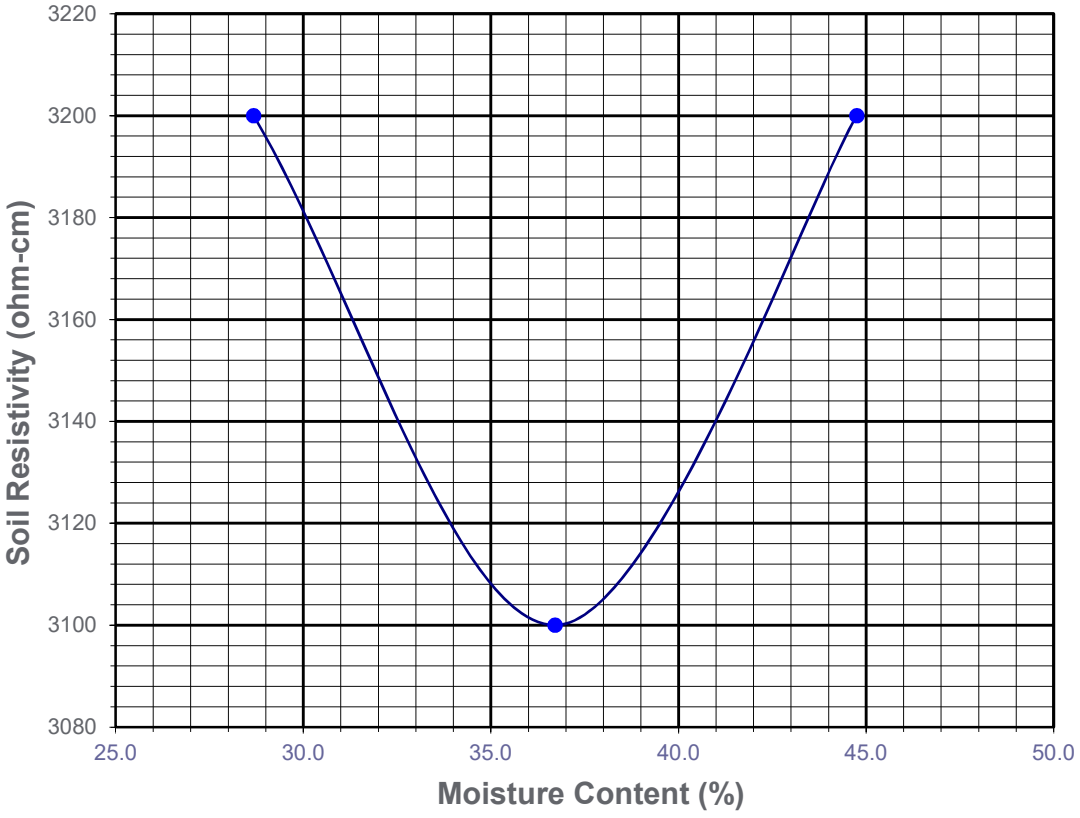
Soil Identification:* Olive (SM)g, organics & oil noted

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	30	28.68	3200	3200
2	40	36.71	3100	3100
3	50	44.75	3200	3200
4				
5				

Moisture Content (%) (MCi)	4.57
Wet Wt. of Soil + Cont. (g)	212.75
Dry Wt. of Soil + Cont. (g)	205.96
Wt. of Container (g)	57.23
Container No.	
Initial Soil Wt. (g) (Wt)	130.10
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
3100	**36.7**	**78**	**105**	**9.21**	**20.3**



SOIL RESISTIVITY TEST
DOT CA TEST 643

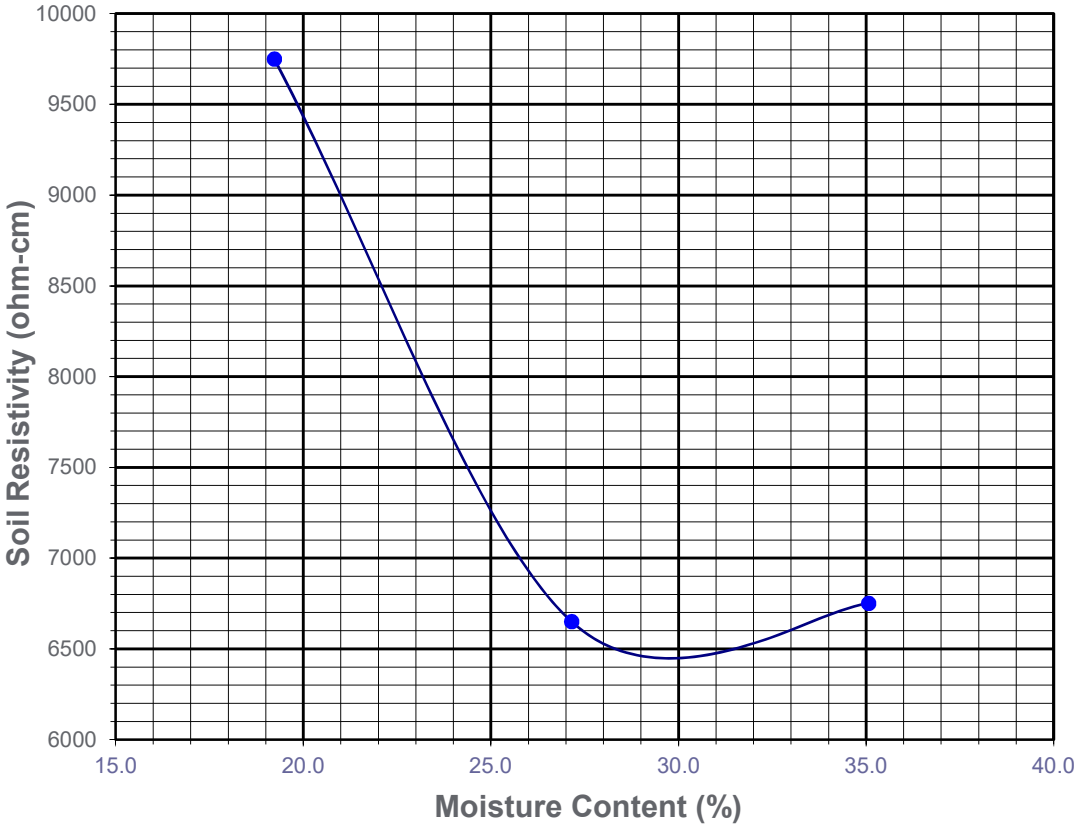
Project Name:	Asphalt Plant		Tested By :	G. Berdy	Date: 09/15/21
Project No. :	11957.013		Checked By:	J. Ward	Date: 09/29/21
Boring No.:	LB-6		Depth (ft.) :	1-5	
Sample No. :	B-1				
Soil Identification:*	Olive gray (SM)g				

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	20	19.23	9750	9750
2	30	27.15	6650	6650
3	40	35.07	6750	6750
4				
5				

Moisture Content (%) (MCi)	3.38
Wet Wt. of Soil + Cont. (g)	221.05
Dry Wt. of Soil + Cont. (g)	215.79
Wt. of Container (g)	60.37
Container No.	
Initial Soil Wt. (g) (Wt)	130.50
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
6450	**29.8**	**115**	**41**	**7.77**	**21.0**



SOIL RESISTIVITY TEST
DOT CA TEST 643

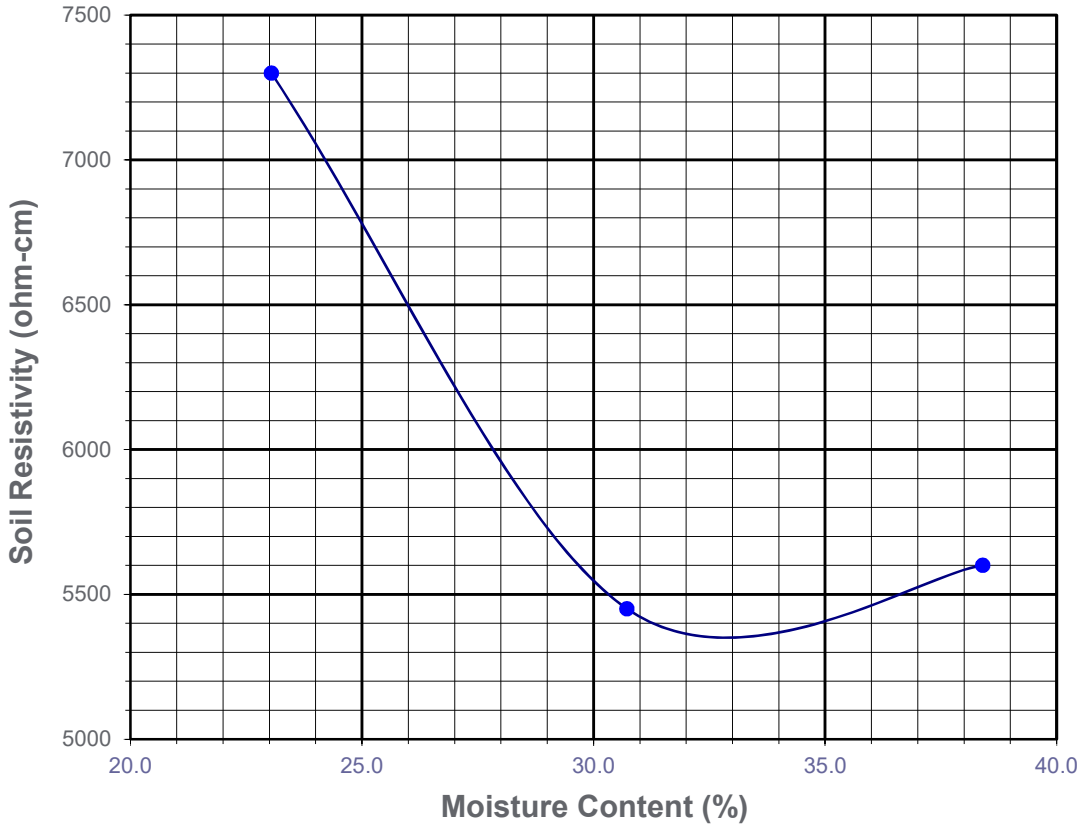
Project Name:	Asphalt Plant		Tested By :	G. Berdy	Date: 09/15/21
Project No. :	11957.013		Checked By:	J. Ward	Date: 09/29/21
Boring No.:	LB-8		Depth (ft.) :	1-5	
Sample No. :	B-1				
Soil Identification:*	Grayish brown SM				

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	30	23.04	7300	7300
2	40	30.72	5450	5450
3	50	38.40	5600	5600
4				
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	0.00
Dry Wt. of Soil + Cont. (g)	0.00
Wt. of Container (g)	1.00
Container No.	
Initial Soil Wt. (g) (Wt)	130.20
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
5350	**32.9**	**66**	**120**	**7.64**	**20.8**



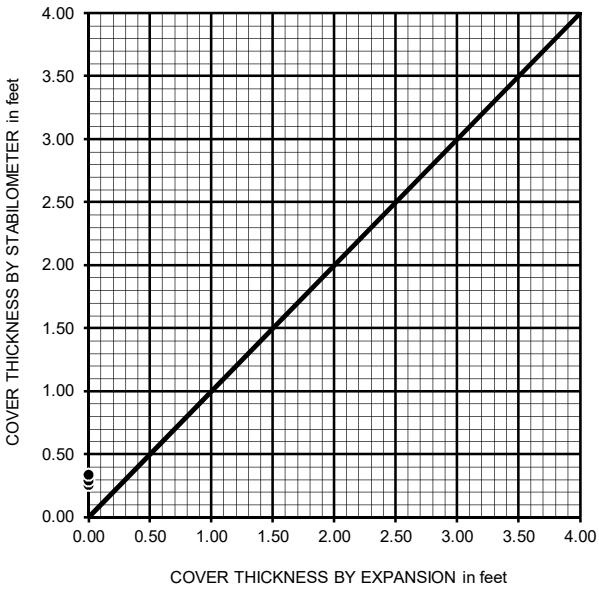
R-VALUE TEST RESULTS
DOT CA Test 301

PROJECT NAME:	Asphalt Plant	PROJECT NUMBER:	11957.013
BORING NUMBER:	LB-1	DEPTH (FT.):	1-5
SAMPLE NUMBER:	B-1	TECHNICIAN:	O. Figueroa
SAMPLE DESCRIPTION:	Very dark brown (SP-SM)g	DATE COMPLETED:	9/15/2021

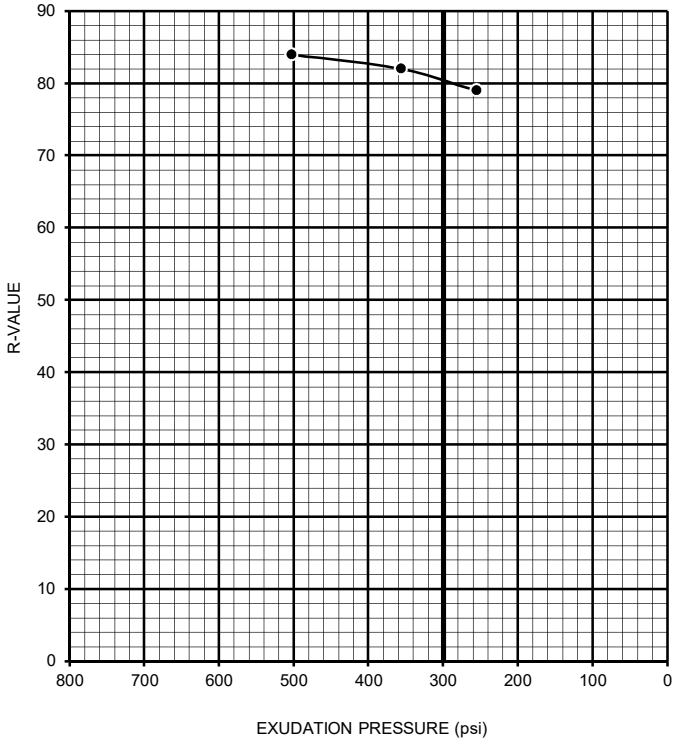
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %	7.4	7.8	8.2
HEIGHT OF SAMPLE, Inches	2.52	2.48	2.53
DRY DENSITY, pcf	123.2	123.1	122.7
COMPACTOR PRESSURE, psi	350	300	275
EXUDATION PRESSURE, psi	503	356	255
EXPANSION, Inches x 10exp-4	0	0	0
STABILITY Ph 2,000 lbs (160 psi)	15	17	19
TURNS DISPLACEMENT	4.60	4.70	4.85
R-VALUE UNCORRECTED	84	82	79
R-VALUE CORRECTED	84	82	79

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	0.26	0.29	0.34
EXPANSION PRESSURE THICKNESS, ft.	0.00	0.00	0.00

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION:	N/A
R-VALUE BY EXUDATION:	80
EQUILIBRIUM R-VALUE:	80

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Asphalt Plant	Tested By:	O. Figueroa	Date:	09/14/21
Project No.:	11957.013	Checked By:	A. Santos	Date:	09/15/21
Boring No.:	LB-2	Depth (ft.):	1-5		
Sample No.:	B-1				
Soil Identification:	Dark olive brown silty sand (SM)				

Note: Corrected dry density calculation assumes specific gravity of 2.70 and moisture content of 1.0% for oversize particles

Preparation Method:	X	Moist	Scalp Fraction (%)		Rammer Weight (lb.) =	10.0
		Dry	#3/4		Height of Drop (in.) =	18.0
Compaction Method	X	Mechanical Ram	#3/8			
		Manual Ram	#4	13.9	Mold Volume (ft³)	0.03320

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3843	3939	3913			
Weight of Mold (g)	1862	1862	1862			
Net Weight of Soil (g)	1981	2077	2051			
Wet Weight of Soil + Cont. (g)	444.0	470.9	486.8			
Dry Weight of Soil + Cont. (g)	420.9	437.1	442.5			
Weight of Container (g)	38.8	38.0	38.0			
Moisture Content (%)	6.05	8.47	10.95			
Wet Density (pcf)	131.5	137.9	136.2			
Dry Density (pcf)	124.0	127.2	122.7			

Maximum Dry Density (pcf)	**127.2**	**Optimum Moisture Content (%)**	**8.4**
Corrected Dry Density (pcf)	**131.7**	**Corrected Moisture Content (%)**	**7.4**

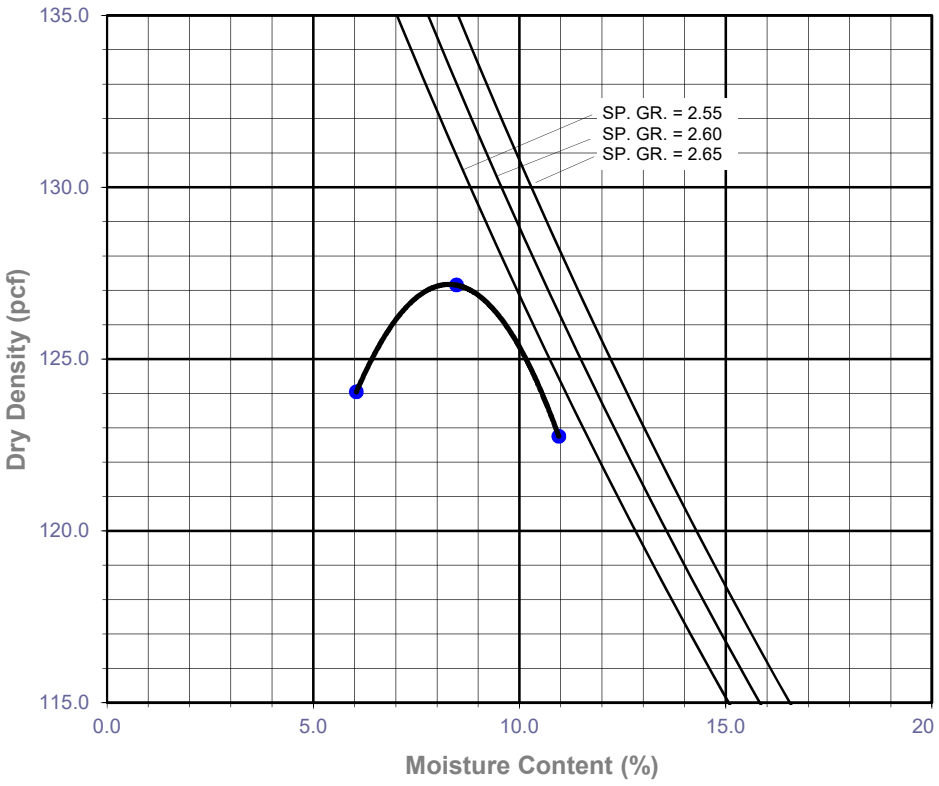
[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
14:71:15
GR:SA:FI

Atterberg Limits:
LL,PL,PI



MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Asphalt Plant	Tested By:	O. Figueroa	Date:	09/15/21
Project No.:	11957.013	Checked By:	A. Santos	Date:	09/16/21
Boring No.:	LB-5	Depth (ft.):	1-5		
Sample No.:	B-1				
Soil Identification:	Dark olive brown well-graded sand with silt and gravel (SW-SM)g, AC noted				

Note: Corrected dry density calculation assumes specific gravity of 2.70 and moisture content of 1.0% for oversize particles

Preparation Method:	X	Moist	Scalp Fraction (%)		Rammer Weight (lb.) =	10.0
		Dry	#3/4		Height of Drop (in.) =	18.0
Compaction Method	X	Mechanical Ram	#3/8			
		Manual Ram	#4	17.6	Mold Volume (ft³)	0.03320

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3720	3817	3881	3821		
Weight of Mold (g)	1862	1862	1862	1862		
Net Weight of Soil (g)	1858	1955	2019	1959		
Wet Weight of Soil + Cont. (g)	423.1	474.5	493.6	536.5		
Dry Weight of Soil + Cont. (g)	408.0	447.5	455.7	485.2		
Weight of Container (g)	39.1	39.4	39.1	39.1		
Moisture Content (%)	4.09	6.62	9.10	11.50		
Wet Density (pcf)	123.4	129.8	134.1	130.1		
Dry Density (pcf)	118.5	121.8	122.9	116.7		

Maximum Dry Density (pcf)	**123.1**	**Optimum Moisture Content (%)**	**8.5**
Corrected Dry Density (pcf)	**129.2**	**Corrected Moisture Content (%)**	**7.2**

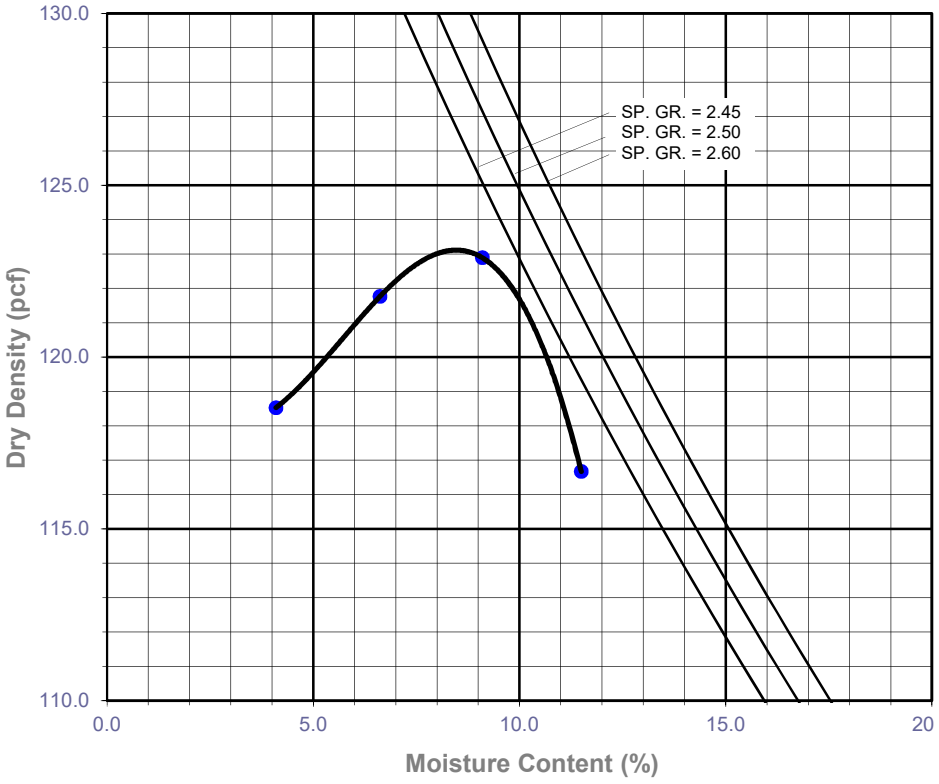
X Procedure A
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

☐ Procedure B
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

☐ Procedure C
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
18:74:8
GR:SA:FI

Atterberg Limits:
LL,PL,PI



MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Asphalt Plant	Tested By:	J. Gonzalez	Date:	09/16/21
Project No.:	11957.013	Checked By:	A. Santos	Date:	09/17/21
Boring No.:	LB-6	Depth (ft.):	1-5		
Sample No.:	B-1				
Soil Identification:	Olive gray silty sand with gravel (SM)g				

Note: Corrected dry density calculation assumes specific gravity of 2.70 and moisture content of 1.0% for oversize particles

Preparation Method:	X	Moist	Scalp Fraction (%)		Rammer Weight (lb.) =	10.0
		Dry	#3/4		Height of Drop (in.) =	18.0
Compaction Method	X	Mechanical Ram	#3/8			
		Manual Ram	#4	15.0	Mold Volume (ft³)	0.03330

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3648	3710	3739	3704		
Weight of Mold (g)	1850	1850	1850	1850		
Net Weight of Soil (g)	1798	1860	1889	1854		
Wet Weight of Soil + Cont. (g)	558.1	513.5	539.1	584.3		
Dry Weight of Soil + Cont. (g)	531.0	476.9	492.3	520.7		
Weight of Container (g)	40.0	37.1	39.4	39.5		
Moisture Content (%)	5.52	8.32	10.33	13.22		
Wet Density (pcf)	119.0	123.1	125.1	122.7		
Dry Density (pcf)	112.8	113.7	113.3	108.4		

Maximum Dry Density (pcf)	**113.8**	**Optimum Moisture Content (%)**	**9.0**
Corrected Dry Density (pcf)	**119.6**	**Corrected Moisture Content (%)**	**7.8**

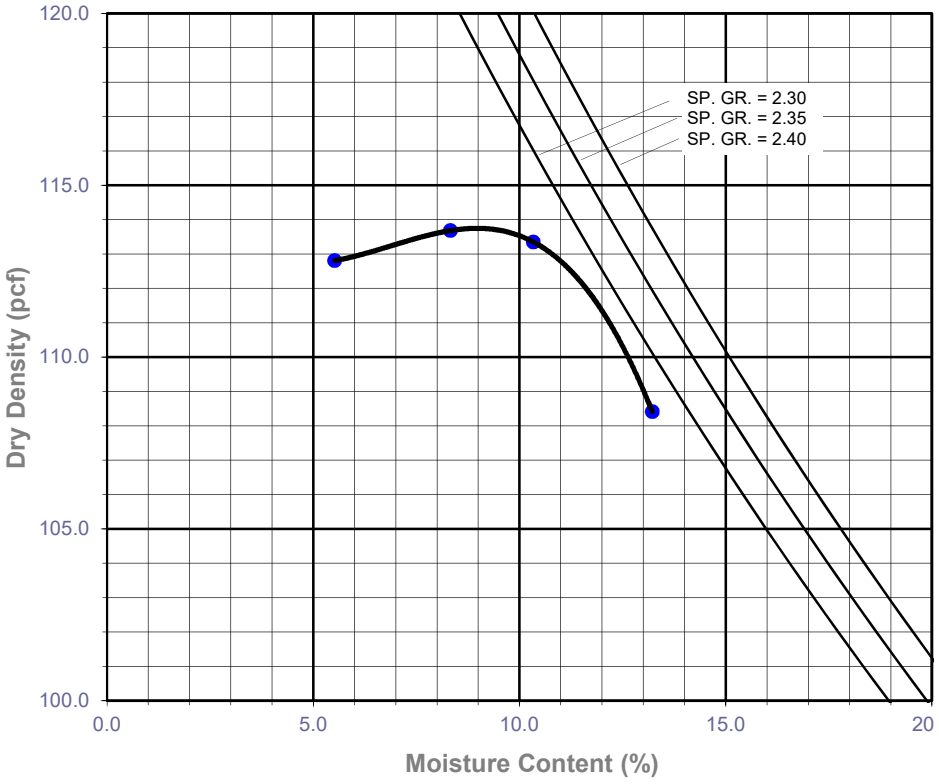
[X] Procedure A
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] Procedure B
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[ ] Procedure C
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
GR:SA:FI

Atterberg Limits:
LL,PL,PI



MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Asphalt Plant	Tested By:	J. Gonzalez	Date:	09/16/21
Project No.:	11957.013	Checked By:	J. Ward	Date:	10/01/21
Boring No.:	LB-8	Depth (ft.):	1-5		
Sample No.:	B-1				
Soil Identification:	Grayish brown silty sand (SM)				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07490 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6963	7182	7252			
Weight of Mold (g)	2705	2705	2705			
Net Weight of Soil (g)	4258	4477	4547			
Wet Weight of Soil + Cont. (g)	1073.8	1088.9	1060.8			
Dry Weight of Soil + Cont. (g)	1027.5	1017.3	968.7			
Weight of Container (g)	88.9	87.8	88.8			
Moisture Content (%)	4.93	7.70	10.47			
Wet Density (pcf)	125.3	131.8	133.8			
Dry Density (pcf)	119.4	122.4	121.2			

Maximum Dry Density (pcf) **122.4** **Optimum Moisture Content (%)** **8.3**

PROCEDURE USED

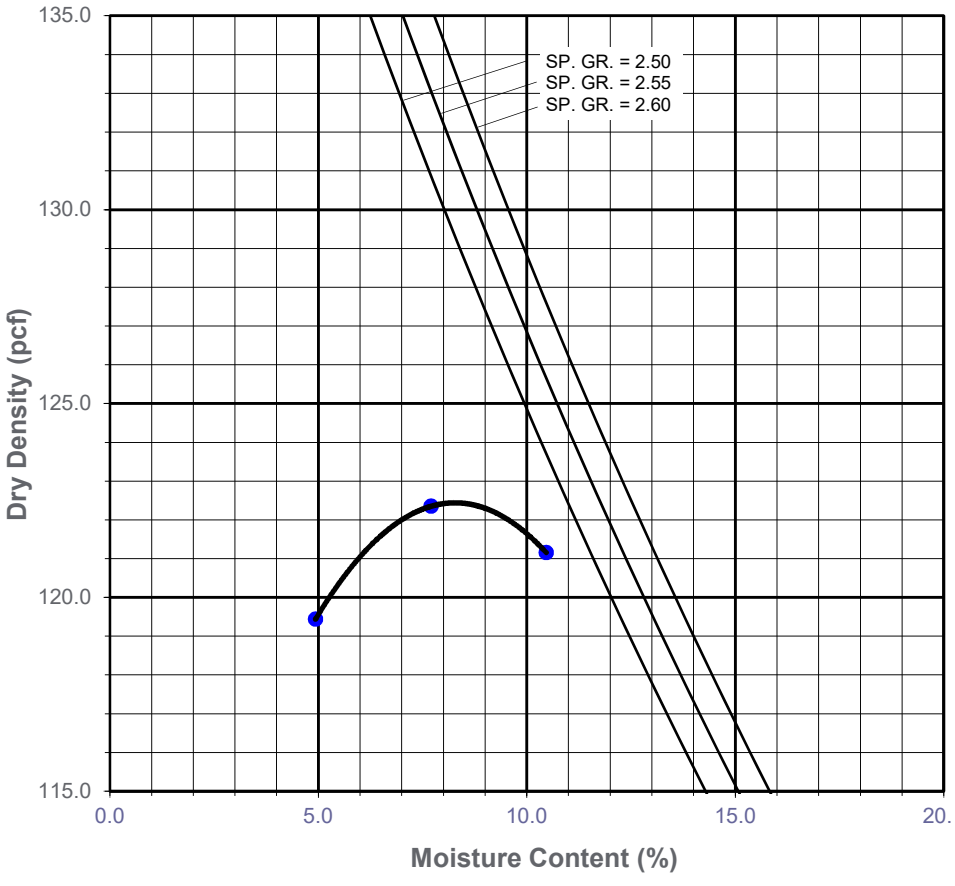
[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
1:80:19
GR:SA:FI

Atterberg Limits:
LL,PL,PI



APPENDIX C

ANALYTICAL TEST RESULTS

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JONES ENVIRONMENTAL
LABORATORY RESULTS

Client:	Leighton Consulting	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/2/2021
Project Address:	2601 E. 25th St.	**Physical State:**	Soil
	Los Angeles, CA		

ANALYSES REQUESTED

Soil:

1. EPA 8015M – Extended Range Hydrocarbons
2. EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics
3. EPA 6010B by 3050B and EPA 7471A – CAM 17 Metals

Approval:

Colby Wakeman
QA/QC Manager

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JONES ENVIRONMENTAL
LABORATORY RESULTS

Client:	Leighton Consulting	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/2/2021
Project Address:	2601 E. 25th St.	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8015M - Extended Range Hydrocarbons

Sample ID:	**LB-8 & 7**	**LB-6 & 2**		
Jones ID:	**ST-18103-01**	**ST-18103-02**	**Reporting Limit**	**Units**
Carbon Chain Range				
C10 - C11	ND	ND	1.0	mg/kg
C12 - C13	ND	ND	1.0	mg/kg
C14 - C15	ND	ND	1.0	mg/kg
C16 - C17	ND	ND	1.0	mg/kg
C18 - C19	ND	ND	1.0	mg/kg
C20 - C23	ND	**21.8**	1.0	mg/kg
C24 - C27	ND	**39.2**	1.0	mg/kg
C28 - C31	ND	**85.1**	1.0	mg/kg
C32 - C35	ND	**125**	1.0	mg/kg
C36 - C39	ND	**168**	1.0	mg/kg
C40 - C43	ND	**184**	1.0	mg/kg
C13 - C22	ND	ND	10.0	mg/kg
C23 - C40	ND	**469**	10.0	mg/kg
Dilution Factor	1	1		
Surrogate Recovery:			**QC Limits**	
Hexacosane	83%	76%	30 - 120	
Batch:	FID7 _090221 _01	FID7 _090221 _01		

ND = Value less than reporting limit

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/2/2021
Project Address:	2601 E. 25th St.	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8015M - Extended Range Hydrocarbons

Sample ID:	**METHOD BLANK #1**		
Jones ID:	**MB1-090221FID7**	**Reporting Limit**	**Units**
Carbon Chain Range			
C10 - C11	ND	1.0	mg/kg
C12 - C13	ND	1.0	mg/kg
C14 - C15	ND	1.0	mg/kg
C16 - C17	ND	1.0	mg/kg
C18 - C19	ND	1.0	mg/kg
C20 - C23	ND	1.0	mg/kg
C24 - C27	ND	1.0	mg/kg
C28 - C31	ND	1.0	mg/kg
C32 - C35	ND	1.0	mg/kg
C36 - C39	ND	1.0	mg/kg
C40 - C43	ND	1.0	mg/kg
C13 - C22	ND	10.0	mg/kg
C23 - C40	ND	10.0	mg/kg
Dilution Factor	1		
Surrogate Recovery:		**QC Limits**	
Hexacosane	96%	30 - 120	
Batch:	FID7_090221_01		

ND = Value less than reporting limit

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/2/2021
Project Address:	2601 E. 25th St.	**Physical State:**	Soil
	Los Angeles, CA		

BATCH: **FID7 _090221 _01** **Prepared:** 9/2/2021 **Analyzed:** 9/2/2021

EPA 8015M - Extended Range Hydrocarbons

	Result	Spike Level	% Recovery	% RPD	% Recovery Limits	Units
LCS:	LCS1-090221FID7	**SAMPLE SPIKED:**	CLEAN SOIL			
Analyte:						
Diesel (C10 - C28)	**443**	500	89%		60 - 140	mg/kg
Surrogate Recovery:						
Hexacosane			101%		30 - 120	
LCSD:	LCSD1-090221FID7	**SAMPLE SPIKED:**	CLEAN SOIL			
Analyte:						
Diesel (C10 - C28)	**440**	500	88%	0.7%	60 - 140	mg/kg
Surrogate Recoveries:						
Hexacosane			93%		30 - 120	
CCV:	CCV1-090221FID7					
Analyte:						
Diesel (C10 - C28)	**1200**	1000	120%		80 - 120	mg/kg

LCS = Laboratory Control Sample
LCSD= Laboratory Control Sample Duplicate
CCV = Continuing Calibration Verification
RPD = Relative Percent Difference

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JONES ENVIRONMENTAL LABORATORY RESULTS

Client:	Leighton Consulting	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30,31/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/1/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sample ID:	**LB-8&7**	**LB-6&2**		
Jones ID:	**ST-18103-01**	**ST-18103-02**	**Reporting Limit**	**Units**
Analytes:				
Benzene	ND	ND	1.0	µg/kg
Bromobenzene	ND	ND	1.0	µg/kg
Bromodichloromethane	ND	ND	1.0	µg/kg
Bromoform	ND	ND	1.0	µg/kg
n-Butylbenzene	ND	ND	1.0	µg/kg
sec-Butylbenzene	ND	ND	1.0	µg/kg
tert-Butylbenzene	ND	ND	1.0	µg/kg
Carbon tetrachloride	ND	ND	1.0	µg/kg
Chlorobenzene	ND	ND	1.0	µg/kg
Chloroform	ND	ND	1.0	µg/kg
2-Chlorotoluene	ND	ND	1.0	µg/kg
4-Chlorotoluene	ND	ND	1.0	µg/kg
Dibromochloromethane	ND	ND	1.0	µg/kg
1,2-Dibromo-3-chloropropane	ND	ND	1.0	µg/kg
1,2-Dibromoethane (EDB)	ND	ND	1.0	µg/kg
Dibromomethane	ND	ND	1.0	µg/kg
1,2- Dichlorobenzene	ND	ND	1.0	µg/kg
1,3-Dichlorobenzene	ND	ND	1.0	µg/kg
1,4-Dichlorobenzene	ND	ND	1.0	µg/kg
1,1-Dichloroethane	ND	ND	1.0	µg/kg
1,2-Dichloroethane	ND	ND	1.0	µg/kg
1,1-Dichloroethene	ND	ND	1.0	µg/kg
cis-1,2-Dichloroethene	ND	ND	1.0	µg/kg
trans-1,2-Dichloroethene	ND	ND	1.0	µg/kg
1,2-Dichloropropane	ND	ND	1.0	µg/kg
1,3-Dichloropropane	ND	ND	1.0	µg/kg
2,2-Dichloropropane	ND	ND	1.0	µg/kg
1,1-Dichloropropene	ND	ND	1.0	µg/kg
cis-1,3-Dichloropropene	ND	ND	1.0	µg/kg

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sample ID:	**LB-8&7**	**LB-6&2**		
Jones ID:	**ST-18103-01**	**ST-18103-02**	**Reporting Limit**	**Units**
Analytes:				
trans-1,3-Dichloropropene	ND	ND	1.0	µg/kg
Ethylbenzene	ND	ND	1.0	µg/kg
Freon 11	ND	ND	5.0	µg/kg
Freon 12	ND	ND	5.0	µg/kg
Freon 113	ND	ND	5.0	µg/kg
Hexachlorobutadiene	ND	ND	1.0	µg/kg
Isopropylbenzene	ND	ND	1.0	µg/kg
4-Isopropyltoluene	ND	ND	1.0	µg/kg
Methylene chloride	ND	ND	1.0	µg/kg
Naphthalene	**1.9**	ND	1.0	µg/kg
n-Propylbenzene	ND	ND	1.0	µg/kg
Styrene	ND	ND	1.0	µg/kg
1,1,1,2-Tetrachloroethane	ND	ND	1.0	µg/kg
1,1,2,2-Tetrachloroethane	ND	ND	1.0	µg/kg
Tetrachloroethene	ND	ND	1.0	µg/kg
Toluene	ND	**1.5**	1.0	µg/kg
1,2,3-Trichlorobenzene	ND	ND	1.0	µg/kg
1,2,4-Trichlorobenzene	ND	ND	1.0	µg/kg
1,1,1-Trichloroethane	ND	ND	1.0	µg/kg
1,1,2-Trichloroethane	ND	ND	1.0	µg/kg
Trichloroethene	ND	ND	1.0	µg/kg
1,2,3-Trichloropropane	ND	ND	1.0	µg/kg
1,2,4-Trimethylbenzene	ND	ND	1.0	µg/kg
1,3,5-Trimethylbenzene	ND	ND	1.0	µg/kg
Vinyl chloride	ND	ND	1.0	µg/kg
m,p-Xylene	ND	ND	2.0	µg/kg
o-Xylene	ND	ND	1.0	µg/kg
Methyl-tert-butylether	ND	ND	5.0	µg/kg
Ethyl-tert-butylether	ND	ND	5.0	µg/kg
Di-isopropylether	ND	ND	5.0	µg/kg
tert-amylmethylether	ND	ND	5.0	µg/kg
tert-Butylalcohol	ND	ND	50.0	µg/kg
Gasoline Range Organics (C4-C12)	ND	ND	0.20	mg/kg
Dilution Factor	1	1		
Surrogate Recoveries:			**QC Limits**	
Dibromofluoromethane	99%	101%	60 - 140	
Toluene-d_8	94%	92%	60 - 140	
4-Bromofluorobenzene	98%	93%	60 - 140	
Batch:	VOC3_090121_01	VOC3_090121_01		

ND = Value less than reporting limit

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JONES ENVIRONMENTAL LABORATORY RESULTS

Client:	Leighton Consulting	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30,31/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/1/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sample ID:	**METHOD BLANK #1**		
Jones ID:	**090121-V3MB1**	**Reporting Limit**	**Units**
Analytes:			
Benzene	ND	1.0	µg/kg
Bromobenzene	ND	1.0	µg/kg
Bromodichloromethane	ND	1.0	µg/kg
Bromoform	ND	1.0	µg/kg
n-Butylbenzene	ND	1.0	µg/kg
sec-Butylbenzene	ND	1.0	µg/kg
tert-Butylbenzene	ND	1.0	µg/kg
Carbon tetrachloride	ND	1.0	µg/kg
Chlorobenzene	ND	1.0	µg/kg
Chloroform	ND	1.0	µg/kg
2-Chlorotoluene	ND	1.0	µg/kg
4-Chlorotoluene	ND	1.0	µg/kg
Dibromochloromethane	ND	1.0	µg/kg
1,2-Dibromo-3-chloropropane	ND	1.0	µg/kg
1,2-Dibromoethane (EDB)	ND	1.0	µg/kg
Dibromomethane	ND	1.0	µg/kg
1,2- Dichlorobenzene	ND	1.0	µg/kg
1,3-Dichlorobenzene	ND	1.0	µg/kg
1,4-Dichlorobenzene	ND	1.0	µg/kg
1,1-Dichloroethane	ND	1.0	µg/kg
1,2-Dichloroethane	ND	1.0	µg/kg
1,1-Dichloroethene	ND	1.0	µg/kg
cis-1,2-Dichloroethene	ND	1.0	µg/kg
trans-1,2-Dichloroethene	ND	1.0	µg/kg
1,2-Dichloropropane	ND	1.0	µg/kg
1,3-Dichloropropane	ND	1.0	µg/kg
2,2-Dichloropropane	ND	1.0	µg/kg
1,1-Dichloropropene	ND	1.0	µg/kg
cis-1,3-Dichloropropene	ND	1.0	µg/kg

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sample ID:	**METHOD BLANK #1**		
Jones ID:	**090121-V3MB1**	**Reporting Limit**	**Units**
Analytes:			
trans-1,3-Dichloropropene	ND	1.0	µg/kg
Ethylbenzene	ND	1.0	µg/kg
Freon 11	ND	5.0	µg/kg
Freon 12	ND	5.0	µg/kg
Freon 113	ND	5.0	µg/kg
Hexachlorobutadiene	ND	1.0	µg/kg
Isopropylbenzene	ND	1.0	µg/kg
4-Isopropyltoluene	ND	1.0	µg/kg
Methylene chloride	ND	1.0	µg/kg
Naphthalene	ND	1.0	µg/kg
n-Propylbenzene	ND	1.0	µg/kg
Styrene	ND	1.0	µg/kg
1,1,1,2-Tetrachloroethane	ND	1.0	µg/kg
1,1,2,2-Tetrachloroethane	ND	1.0	µg/kg
Tetrachloroethene	ND	1.0	µg/kg
Toluene	ND	1.0	µg/kg
1,2,3-Trichlorobenzene	ND	1.0	µg/kg
1,2,4-Trichlorobenzene	ND	1.0	µg/kg
1,1,1-Trichloroethane	ND	1.0	µg/kg
1,1,2-Trichloroethane	ND	1.0	µg/kg
Trichloroethene	ND	1.0	µg/kg
1,2,3-Trichloropropane	ND	1.0	µg/kg
1,2,4-Trimethylbenzene	ND	1.0	µg/kg
1,3,5-Trimethylbenzene	ND	1.0	µg/kg
Vinyl chloride	ND	1.0	µg/kg
m,p-Xylene	ND	2.0	µg/kg
o-Xylene	ND	1.0	µg/kg
Methyl-tert-butylether	ND	5.0	µg/kg
Ethyl-tert-butylether	ND	5.0	µg/kg
Di-isopropylether	ND	5.0	µg/kg
tert-amylmethylether	ND	5.0	µg/kg
tert-Butylalcohol	ND	50.0	µg/kg
Gasoline Range Organics (C4-C12)	ND	0.20	mg/kg
Dilution Factor	1		

Surrogate Recoveries:		**QC Limits**
Dibromofluoromethane	100%	60 - 140
Toluene-d_8	94%	60 - 140
4-Bromofluorobenzene	99%	60 - 140

Batch:	VOC3_090121_01

ND = Value less than reporting limit

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30,31/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/1/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

GC#:	**VOC3_090121_01**					
Jones ID:	090121-V3LCS1	090121-V3LCSD1			090121-V3CCV1	
Parameter	LCS Recovery (%)	LCSD Recovery (%)	RPD	Acceptability Range (%)	CCV	Acceptability Range (%)
Vinyl chloride	98%	99%	0.6%	60 - 140	88%	80 - 120
1,1-Dichloroethene	115%	115%	0.5%	60 - 140	106%	80 - 120
Cis-1,2-Dichloroethene	115%	115%	0.4%	70 - 130	114%	80 - 120
1,1,1-Trichloroethane	108%	107%	1.2%	70 - 130	115%	80 - 120
Benzene	111%	110%	0.8%	70 - 130	117%	80 - 120
Trichloroethene	101%	102%	0.3%	70 - 130	109%	80 - 120
Toluene	111%	110%	0.5%	70 - 130	114%	80 - 120
Tetrachloroethene	105%	109%	3.8%	70 - 130	114%	80 - 120
Chlorobenzene	116%	112%	3.8%	70 - 130	119%	80 - 120
Ethylbenzene	95%	95%	0.6%	70 - 130	115%	80 - 120
1,2,4 Trimethylbenzene	107%	101%	5.7%	70 - 130	120%	80 - 120
Gasoline Range Organics (C4-C12)	106%	104%	1.9%	70 - 130		
Surrogate Recovery:						
Dibromofluoromethane	99%	98%		60 - 140	103%	80 - 120
Toluene-d_8	95%	97%		60 - 140	108%	80 - 120
4-Bromofluorobenzene	97%	100%		60 - 140	109%	80 - 120

LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
CCV = Continuing Calibration Verification
RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 20%

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JONES ENVIRONMENTAL
LABORATORY RESULTS

Client:	Leighton Consulting, Inc.	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30-31/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

EPA 6010B by 3050 - Title 22 CAM 17 Trace Metals by ICP-OES

Sample ID:	**LB-8@7**	**LB-6@2**		
Jones ID:	**ST-18103-01**	**ST-18103-02**	**Reporting Limit**	**Units**
Analytes:				
Silver, Ag	ND	ND	0.5	mg/kg
Arsenic, As	ND	ND	5.0	mg/kg
Barium, Ba	**48.6**	**54.6**	2.0	mg/kg
Beryllium, Be	ND	ND	0.5	mg/kg
Cadmium, Cd	**0.7**	**1.0**	0.5	mg/kg
Cobalt, Co	**3.3**	**4.9**	0.5	mg/kg
Chromium, Cr	**4.6**	**7.0**	0.5	mg/kg
Copper, Cu	**4.5**	**6.3**	0.5	mg/kg
Molybdenum, Mo	ND	ND	0.5	mg/kg
Nickel, Ni	**3.0**	**5.3**	1.0	mg/kg
Lead, Pb	**1.1**	**5.6**	0.5	mg/kg
Antimony, Sb	ND	ND	5.0	mg/kg
Selenium, Se	ND	ND	5.0	mg/kg
Thallium, Tl	ND	ND	5.0	mg/kg
Vanadium, V	**12.8**	**18.8**	0.5	mg/kg
Zinc, Zn	**18.2**	**30.8**	0.5	mg/kg
Dilution Factor	1	1		
Batch:	I21090101	I21090101		

EPA 7471A - Mercury by Cold Vapor Atomic Absorption

Sample ID:	**LB-8@7**	**LB-6@2**		
Jones ID:	**ST-18103-01**	**ST-18103-02**	**Reporting Limit**	**Units**
Mercury, Hg	**0.056**	**0.052**	0.020	mg/kg
Dilution Factor	1	1		
Batch:	H21090101	H21090101		

ND = Value less than reporting limit

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting, Inc.	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30-31/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

BATCH: **I21090101** **Prepared:** 9/1/2021 **Analyzed:** 9/2/2021

EPA 6010B by 3050 - Title 22 CAM 17 Trace Metals by ICP-OES

Analytes:	Result	Spike Level	% REC	% REC Limits	% RPD	Reporting Limit	Units
METHOD BLANK:	**I210901-MB1**						
Silver, Ag	ND					0.5	mg/kg
Arsenic, As	ND					5.0	mg/kg
Barium, Ba	ND					2.0	mg/kg
Beryllium, Be	ND					0.5	mg/kg
Cadmium, Cd	ND					0.5	mg/kg
Cobalt, Co	ND					0.5	mg/kg
Chromium, Cr	ND					0.5	mg/kg
Copper, Cu	ND					0.5	mg/kg
Molybdenum, Mo	ND					0.5	mg/kg
Nickel, Ni	ND					1.0	mg/kg
Lead, Pb	ND					0.5	mg/kg
Antimony, Sb	ND					5.0	mg/kg
Selenium, Se	ND					5.0	mg/kg
Thallium, Tl	ND					5.0	mg/kg
Vanadium, V	ND					0.5	mg/kg
Zinc, Zn	ND					0.5	mg/kg

ND= Not Detected

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting, Inc.	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30-31/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

BATCH: **I21090101** **Prepared:** 9/1/2021 **Analyzed:** 9/2/2021

EPA 6010B by 3050 - Title 22 CAM 17 Trace Metals by ICP-OES

Analytes:	Result	Spike Level	% REC	% RPD	% REC Limits	Units
LCS:	**I210901-LCS1**					
Barium, Ba	**205**	200	103%		80 - 120	mg/kg
Cobalt, Co	**53.0**	50.0	106%		80 - 120	mg/kg
Lead, Pb	**50.9**	50.0	102%		80 - 120	mg/kg
Selenium, Se	**198**	200	99%		80 - 120	mg/kg
Zinc, Zn	**47.3**	50.0	95%		80 - 120	mg/kg
LCSD:	**I210901-LCSD1**					
Barium, Ba	**201**	200	101%	2.0%	80 - 120	mg/kg
Cobalt, Co	**52.5**	50.0	105%	0.9%	80 - 120	mg/kg
Lead, Pb	**50.9**	50.0	102%		80 - 120	mg/kg
Selenium, Se	**196**	200	98%	1.0%	80 - 120	mg/kg
Zinc, Zn	**46.2**	50.0	92%	2.4%	80 - 120	mg/kg
CCV:	**I210901-CCV1**					
Barium, Ba	**1.00**	1.00	100%		90-110	mg/L
Cobalt, Co	**1.02**	1.00	102%		90-110	mg/L
Lead, Pb	**1.01**	1.00	101%		90-110	mg/L
Selenium, Se	**1.04**	1.00	104%		90-110	mg/L
Zinc, Zn	**1.00**	1.00	100%		90-110	mg/L

CCV = Continuing Calibration Verification
LCS = Laboratory Control Sample
LCSD= Laboratory Control Sample Duplicate

ND= Not Detected
RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 15%

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting, Inc.	**Report date:**	9/3/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18103
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	8/30-31/2021
		Date Received:	8/31/2021
Project:	Asphalt Plant	**Date Analyzed:**	
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

BATCH: **H21090101** **Prepared:** 9/1/2021 **Analyzed:** 9/1/2021

EPA 7471A - Mercury by Cold Vapor Atomic Absorption

Analytes:	Result	Spike Level	% REC	% RPD	% REC Limits	Reporting Limit	Units
METHOD BLANK:	**H210901-MB1**						
Mercury, Hg	ND					0.020	mg/kg
LCS:	**H210901-LCS1**						
Mercury, Hg	**1.10**	1.00	110%		80 - 120		mg/kg
LCSD:	**H210901-LCSD1**						
Mercury, Hg	**1.11**	1.00	111%	**0.9%**	80 - 120		mg/kg
CCV:	**H210901-CCV1**						
Mercury, Hg	**5.10**	5.00	102%		90-110		µg/L

ND= Not Detected
RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 15%

LCS = Laboratory Control Sample
LCSD= Laboratory Control Sample Duplicate
CCV = Continuing Calibration Verification
RPD = Relative Percent Difference

Chain-of-Custody Record

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Turn Around Requested:
- ☐ Immediate Attention - 200%
- ☐ Rush 24 Hours - 100%
- ☐ Rush 48 Hours - 50%
- ☐ Rush 72 Hours - 25%
- ☐ Rush 96 Hours - 10%
- ☒ Normal - No Surcharge

LAB USE ONLY
Jones Project # ST-18103
Page 1 of 1

Client	Leighton Consulting
Project Name	Asphalt Plant
Project Address	2601 E 25th Street, Los Angeles CA
Email	EDominguez@leightongroup.com
Phone	213-507-3720
Report To	**Sampler**
Date	8/31/21
Client Project #	11957.013

Sample Container / Preservative Abbreviations
AS - Acetate Sleeve
SS - Stainless Steel Sleeve
BS - Brass Sleeve
G - Glass
AB - Amber Bottle
P - Plastic
SOBI - Sodium Bisulfate
MeOH - Methanol
HCl - Hydrochloric Acid
HNO3 - Nitric Acid
O - Other (See Notes)

Report Options
EDD ____
EDF* - 10% Surcharge____
*Global ID _____

Sample ID	Sample Collection Date	Sample Collection Time	Laboratory Sample ID	Preservative	Sample Container	Sample Matrix: Soil (S), Sludge (SL), Aqueous (A), Free Product (FP)	Analysis Requested: 8015	8260	CAM 17	Number of Containers	Notes & Special Instructions
LB-8&7	8/30/21	3:15 PM	ST-18103-01		~~G~~	S	X	X	X	1	
LB-6&2	8/31/21	12:00 PM	ST-18103-02		~~G~~	S	X	X	X	1	

Relinquished By (Signature)	**Printed Name**	**Received By (Signature)**	**Printed Name**
	Eduardo Dominguez	Juan Camacho	Juan Camacho
Company	**Date** / **Time**	**Company**	**Date** / **Time**
Leighton Consulting	8/31/21 1431	Jones Env.	8-31-21 1431
Relinquished By (Signature)	**Printed Name**	**Received By Laboratory (Signature)**	**Printed Name**
Company	**Date:** / **Time**	**Company**	**Date** / **Time**

Total Number of Containers: 2

Client signature on this Chain of Custody form constitutes acknowledgement that the above analyses have been requested, and the information provided herein is correct and accurate.

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SAMPLE RECEIPT FORM

Jones ID: ST-18103

CLIENT: Leighton
PROJECT: Asphalt plant
DATE/TIME: 8-31-21 1431
RECEIVED BY:

Delivered by: ☑ Client ☐ Jones Courier ☐ UPS / FedEx / USPS ☐ Other

TEMPERATURE: Number of coolers received: 1

Temperature	Cooler #1	11.0 °C ± 0.1°C	Blank	Sample
Temperature	Cooler #2	____.____ °C ± 0.1°C	Blank	Sample

Temp Criteria: 0 ≤ 6°C (NO frozen containers) Criteria met? ☐ Yes ☑ No

If criteria is not met:

Sample(s) received on ice? ☑ Yes ☐ No*

Sample(s) received chilled on same day of sampling? ☐ Yes ☐ No*

Ambient Temperature: 27.0 °C Checked by: JC

SAMPLE CONDITION:	YES	NO*	N/A
Chain of Custody (COC) received filled out completely	☑	☐*	☐
Total number of containers received match COC	☑	☐*	☐
Sample container label(s) consistent with COC	☑	☐*	☐
Sample container(s) intact and in good condition	☑	☐*	☐
Proper containers and sufficient volume for analyses requested on COC	☑	☐*	☐
Proper preservative indicated on COC/containers for analyses requested	☐	☐*	☑
Volatile analysis container(s) free of headspace (EPA 8260 water)	☐	☐*	☑
Custody Seals Intact on Cooler/Sample	☐	☐*	☑

CONTAINER TYPE:

Solid:
VOAs: ____
Glass Jar: 2
Sleeve: ____
Other: ____

Aqueous:
Amber Bottle: ____
VOAs: ____
Poly Bottle: ____

Air / Soil Gas:
Tedlar Bag: ____
6 hr
72 hr
5 Day
Summa:
(1L) ____ (6L) ____

MILEAGE:
Round Trip Mileage: _____ Travel Time: _____ On Site Time: _____

Complete Non-Conformance if checked

Checked by: JC

02.12.2021 - Version 5.0

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JONES ENVIRONMENTAL
LABORATORY RESULTS

Client:	Leighton Consulting	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

ANALYSES REQUESTED

Soil:

1. EPA 8015M – Extended Range Hydrocarbons
2. EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics
3. EPA 6010B by 3050B and EPA 7471A – CAM 17 Metals

Approval:

Colby Wakeman
QA/QC Manager

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JONES ENVIRONMENTAL
LABORATORY RESULTS

Client:	Leighton Consulting	**Report date:**	9/7/2021
Client Address:	17781 Cowan Irvine, CA	**Jones Ref. No.:** **Client Ref. No.:**	ST-18119 11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3/2021
Project Address:	2601 E. 25th Street Los Angeles, CA	**Physical State:**	Soil

EPA 8015M - Extended Range Hydrocarbons

Sample ID:	**LB-3 & 4**		
Jones ID:	**ST-18119-01**	**Reporting Limit**	**Units**
Carbon Chain Range			
C10 - C11	ND	1.0	mg/kg
C12 - C13	ND	1.0	mg/kg
C14 - C15	ND	1.0	mg/kg
C16 - C17	ND	1.0	mg/kg
C18 - C19	ND	1.0	mg/kg
C20 - C23	ND	1.0	mg/kg
C24 - C27	ND	1.0	mg/kg
C28 - C31	ND	1.0	mg/kg
C32 - C35	ND	1.0	mg/kg
C36 - C39	ND	1.0	mg/kg
C40 - C43	ND	1.0	mg/kg
C13 - C22	ND	10.0	mg/kg
C23 - C40	ND	10.0	mg/kg
Dilution Factor	1		
Surrogate Recovery:		**QC Limits**	
Hexacosane	118%	30 - 120	
Batch:	FID7 _090321 _01		

ND = Value less than reporting limit

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8015M - Extended Range Hydrocarbons

Sample ID:	**METHOD BLANK #1**		
Jones ID:	**MB1-090321FID7**	**Reporting Limit**	**Units**
Carbon Chain Range			
C10 - C11	ND	1.0	mg/kg
C12 - C13	ND	1.0	mg/kg
C14 - C15	ND	1.0	mg/kg
C16 - C17	ND	1.0	mg/kg
C18 - C19	ND	1.0	mg/kg
C20 - C23	ND	1.0	mg/kg
C24 - C27	ND	1.0	mg/kg
C28 - C31	ND	1.0	mg/kg
C32 - C35	ND	1.0	mg/kg
C36 - C39	ND	1.0	mg/kg
C40 - C43	ND	1.0	mg/kg
C13 - C22	ND	10.0	mg/kg
C23 - C40	ND	10.0	mg/kg
Dilution Factor	1		
Surrogate Recovery:		**QC Limits**	
Hexacosane	120%	30 - 120	
Batch:	FID7 _090321 _01		

ND = Value less than reporting limit

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

BATCH: **FID7 _090321 _01** **Prepared:** 9/3/2021 **Analyzed:** 9/3/2021

EPA 8015M - Extended Range Hydrocarbons

	Result	Spike Level	% Recovery	% RPD	% Recovery Limits	Units
LCS:	LCS1-090321FID7	**SAMPLE SPIKED:**	CLEAN SOIL			
Analyte:						
Diesel (C10 - C28)	**447**	500	89%		60 - 140	mg/kg
Surrogate Recovery:						
Hexacosane			119%		30 - 120	
LCSD:	LCSD1-090321FID7	**SAMPLE SPIKED:**	CLEAN SOIL			
Analyte:						
Diesel (C10 - C28)	**452**	500	90%	1.1%	60 - 140	mg/kg
Surrogate Recoveries:						
Hexacosane			118%		30 - 120	
CCV:	CCV1-090321FID7					
Analyte:						
Diesel (C10 - C28)	**1200**	1000	120%		80 - 120	mg/kg

LCS = Laboratory Control Sample
LCSD= Laboratory Control Sample Duplicate
CCV = Continuing Calibration Verification
RPD = Relative Percent Difference

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JONES ENVIRONMENTAL LABORATORY RESULTS

Client:	Leighton Consulting	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3/2021
Project Address:	2601 E. 25th St.	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sample ID: **LB-3 & 4**

Jones ID:	**ST-18119-01**	**Reporting Limit**	**Units**
Analytes:			
Benzene	ND	1.0	µg/kg
Bromobenzene	ND	1.0	µg/kg
Bromodichloromethane	ND	1.0	µg/kg
Bromoform	ND	1.0	µg/kg
n-Butylbenzene	ND	1.0	µg/kg
sec-Butylbenzene	ND	1.0	µg/kg
tert-Butylbenzene	ND	1.0	µg/kg
Carbon tetrachloride	ND	1.0	µg/kg
Chlorobenzene	ND	1.0	µg/kg
Chloroform	ND	1.0	µg/kg
2-Chlorotoluene	ND	1.0	µg/kg
4-Chlorotoluene	ND	1.0	µg/kg
Dibromochloromethane	ND	1.0	µg/kg
1,2-Dibromo-3-chloropropane	ND	1.0	µg/kg
1,2-Dibromoethane (EDB)	ND	1.0	µg/kg
Dibromomethane	ND	1.0	µg/kg
1,2- Dichlorobenzene	ND	1.0	µg/kg
1,3-Dichlorobenzene	ND	1.0	µg/kg
1,4-Dichlorobenzene	ND	1.0	µg/kg
1,1-Dichloroethane	ND	1.0	µg/kg
1,2-Dichloroethane	ND	1.0	µg/kg
1,1-Dichloroethene	ND	1.0	µg/kg
cis-1,2-Dichloroethene	ND	1.0	µg/kg
trans-1,2-Dichloroethene	ND	1.0	µg/kg
1,2-Dichloropropane	ND	1.0	µg/kg
1,3-Dichloropropane	ND	1.0	µg/kg
2,2-Dichloropropane	ND	1.0	µg/kg
1,1-Dichloropropene	ND	1.0	µg/kg
cis-1,3-Dichloropropene	ND	1.0	µg/kg

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sample ID: **LB-3 & 4**

Jones ID: **ST-18119-01**

Analytes:		Reporting Limit	Units
trans-1,3-Dichloropropene	ND	1.0	µg/kg
Ethylbenzene	ND	1.0	µg/kg
Freon 11	ND	5.0	µg/kg
Freon 12	ND	5.0	µg/kg
Freon 113	ND	5.0	µg/kg
Hexachlorobutadiene	ND	1.0	µg/kg
Isopropylbenzene	ND	1.0	µg/kg
4-Isopropyltoluene	ND	1.0	µg/kg
Methylene chloride	ND	1.0	µg/kg
Naphthalene	ND	1.0	µg/kg
n-Propylbenzene	ND	1.0	µg/kg
Styrene	ND	1.0	µg/kg
1,1,1,2-Tetrachloroethane	ND	1.0	µg/kg
1,1,2,2-Tetrachloroethane	ND	1.0	µg/kg
Tetrachloroethene	ND	1.0	µg/kg
Toluene	ND	1.0	µg/kg
1,2,3-Trichlorobenzene	ND	1.0	µg/kg
1,2,4-Trichlorobenzene	ND	1.0	µg/kg
1,1,1-Trichloroethane	ND	1.0	µg/kg
1,1,2-Trichloroethane	ND	1.0	µg/kg
Trichloroethene	ND	1.0	µg/kg
1,2,3-Trichloropropane	ND	1.0	µg/kg
1,2,4-Trimethylbenzene	ND	1.0	µg/kg
1,3,5-Trimethylbenzene	ND	1.0	µg/kg
Vinyl chloride	ND	1.0	µg/kg
m,p-Xylene	ND	2.0	µg/kg
o-Xylene	ND	1.0	µg/kg
Methyl-tert-butylether	ND	5.0	µg/kg
Ethyl-tert-butylether	ND	5.0	µg/kg
Di-isopropylether	ND	5.0	µg/kg
tert-amylmethylether	ND	5.0	µg/kg
tert-Butylalcohol	ND	50.0	µg/kg
Gasoline Range Organics (C4-C12)	ND	0.20	mg/kg

Dilution Factor 1

Surrogate Recoveries:		QC Limits
Dibromofluoromethane	99%	60 - 140
Toluene-d_8	95%	60 - 140
4-Bromofluorobenzene	102%	60 - 140

Batch: VOC3-090321-01

ND = Value less than reporting limit

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JONES ENVIRONMENTAL LABORATORY RESULTS

Client:	Leighton Consulting	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3/2021
Project Address:	2601 E. 25th St.	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sample ID:	**METHOD BLANK #1**		
Jones ID:	**090321-V3MB1**	**Reporting Limit**	**Units**
Analytes:			
Benzene	ND	1.0	µg/kg
Bromobenzene	ND	1.0	µg/kg
Bromodichloromethane	ND	1.0	µg/kg
Bromoform	ND	1.0	µg/kg
n-Butylbenzene	ND	1.0	µg/kg
sec-Butylbenzene	ND	1.0	µg/kg
tert-Butylbenzene	ND	1.0	µg/kg
Carbon tetrachloride	ND	1.0	µg/kg
Chlorobenzene	ND	1.0	µg/kg
Chloroform	ND	1.0	µg/kg
2-Chlorotoluene	ND	1.0	µg/kg
4-Chlorotoluene	ND	1.0	µg/kg
Dibromochloromethane	ND	1.0	µg/kg
1,2-Dibromo-3-chloropropane	ND	1.0	µg/kg
1,2-Dibromoethane (EDB)	ND	1.0	µg/kg
Dibromomethane	ND	1.0	µg/kg
1,2- Dichlorobenzene	ND	1.0	µg/kg
1,3-Dichlorobenzene	ND	1.0	µg/kg
1,4-Dichlorobenzene	ND	1.0	µg/kg
1,1-Dichloroethane	ND	1.0	µg/kg
1,2-Dichloroethane	ND	1.0	µg/kg
1,1-Dichloroethene	ND	1.0	µg/kg
cis-1,2-Dichloroethene	ND	1.0	µg/kg
trans-1,2-Dichloroethene	ND	1.0	µg/kg
1,2-Dichloropropane	ND	1.0	µg/kg
1,3-Dichloropropane	ND	1.0	µg/kg
2,2-Dichloropropane	ND	1.0	µg/kg
1,1-Dichloropropene	ND	1.0	µg/kg
cis-1,3-Dichloropropene	ND	1.0	µg/kg

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sample ID:	**METHOD BLANK #1**		
Jones ID:	**090321-V3MB1**	**Reporting Limit**	**Units**
Analytes:			
trans-1,3-Dichloropropene	ND	1.0	µg/kg
Ethylbenzene	ND	1.0	µg/kg
Freon 11	ND	5.0	µg/kg
Freon 12	ND	5.0	µg/kg
Freon 113	ND	5.0	µg/kg
Hexachlorobutadiene	ND	1.0	µg/kg
Isopropylbenzene	ND	1.0	µg/kg
4-Isopropyltoluene	ND	1.0	µg/kg
Methylene chloride	ND	1.0	µg/kg
Naphthalene	ND	1.0	µg/kg
n-Propylbenzene	ND	1.0	µg/kg
Styrene	ND	1.0	µg/kg
1,1,1,2-Tetrachloroethane	ND	1.0	µg/kg
1,1,2,2-Tetrachloroethane	ND	1.0	µg/kg
Tetrachloroethene	ND	1.0	µg/kg
Toluene	ND	1.0	µg/kg
1,2,3-Trichlorobenzene	ND	1.0	µg/kg
1,2,4-Trichlorobenzene	ND	1.0	µg/kg
1,1,1-Trichloroethane	ND	1.0	µg/kg
1,1,2-Trichloroethane	ND	1.0	µg/kg
Trichloroethene	ND	1.0	µg/kg
1,2,3-Trichloropropane	ND	1.0	µg/kg
1,2,4-Trimethylbenzene	ND	1.0	µg/kg
1,3,5-Trimethylbenzene	ND	1.0	µg/kg
Vinyl chloride	ND	1.0	µg/kg
m,p-Xylene	ND	2.0	µg/kg
o-Xylene	ND	1.0	µg/kg
Methyl-tert-butylether	ND	5.0	µg/kg
Ethyl-tert-butylether	ND	5.0	µg/kg
Di-isopropylether	ND	5.0	µg/kg
tert-amylmethylether	ND	5.0	µg/kg
tert-Butylalcohol	ND	50.0	µg/kg
Gasoline Range Organics (C4-C12)	ND	0.20	mg/kg
Dilution Factor	1		
Surrogate Recoveries:		**QC Limits**	
Dibromofluoromethane	99%	60 - 140	
Toluene-d_8	96%	60 - 140	
4-Bromofluorobenzene	99%	60 - 140	
Batch:	VOC3-090321-01		

ND = Value less than reporting limit

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3/2021
Project Address:	2601 E. 25th St.	**Physical State:**	Soil
	Los Angeles, CA		

EPA 8260B by 5035 – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

GC#:	**VOC3-090321-01**					
Jones ID:	090321-V3LCS1	090321-V3LCSD1			090321-V3CCV1	
Parameter	LCS Recovery (%)	LCSD Recovery (%)	RPD	Acceptability Range (%)	CCV	Acceptability Range (%)
Vinyl chloride	140%	132%	6.0%	60 - 140	108%	80 - 120
1,1-Dichloroethene	110%	110%	0.6%	60 - 140	97%	80 - 120
Cis-1,2-Dichloroethene	110%	108%	1.3%	70 - 130	107%	80 - 120
1,1,1-Trichloroethane	98%	103%	4.5%	70 - 130	95%	80 - 120
Benzene	104%	109%	4.1%	70 - 130	99%	80 - 120
Trichloroethene	94%	97%	3.1%	70 - 130	93%	80 - 120
Toluene	108%	109%	0.6%	70 - 130	98%	80 - 120
Tetrachloroethene	107%	106%	1.1%	70 - 130	95%	80 - 120
Chlorobenzene	110%	112%	1.4%	70 - 130	103%	80 - 120
Ethylbenzene	94%	92%	1.8%	70 - 130	92%	80 - 120
1,2,4 Trimethylbenzene	109%	107%	1.5%	70 - 130	99%	80 - 120
Gasoline Range Organics (C4-C12)	104%	104%	0.4%	70 - 130		
Surrogate Recovery:						
Dibromofluoromethane	99%	97%		60 - 140	101%	80 - 120
Toluene-d_8	94%	97%		60 - 140	105%	80 - 120
4-Bromofluorobenzene	99%	98%		60 - 140	114%	80 - 120

LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
CCV = Continuing Calibration Verification
RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 20%

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JONES ENVIRONMENTAL
LABORATORY RESULTS

Client:	Leighton Consulting, Inc.	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3,7/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

EPA 6010B by 3050 - Title 22 CAM 17 Trace Metals by ICP-OES

Sample ID:	**LB-3&4**		
Jones ID:	**ST-18119**	**Reporting Limit**	**Units**
Analytes:			
Silver, Ag	ND	0.5	mg/kg
Arsenic, As	ND	5.0	mg/kg
Barium, Ba	**59.8**	0.5	mg/kg
Beryllium, Be	ND	0.5	mg/kg
Cadmium, Cd	**0.6**	0.5	mg/kg
Cobalt, Co	**4.7**	0.5	mg/kg
Chromium, Cr	**6.7**	0.5	mg/kg
Copper, Cu	**6.8**	0.5	mg/kg
Molybdenum, Mo	ND	0.5	mg/kg
Nickel, Ni	**4.8**	0.5	mg/kg
Lead, Pb	**2.1**	0.5	mg/kg
Antimony, Sb	ND	5.0	mg/kg
Selenium, Se	ND	5.0	mg/kg
Thallium, Tl	ND	5.0	mg/kg
Vanadium, V	**17.7**	0.5	mg/kg
Zinc, Zn	**29.4**	0.5	mg/kg
Dilution Factor	1		
Batch:	I21090301		

EPA 7471A - Mercury by Cold Vapor Atomic Absorption

Sample ID:	**LB-3&4**		
Jones ID:	**ST-18119**	**Reporting Limit**	**Units**
Mercury, Hg	**0.033**	0.020	mg/kg
Dilution Factor	1		
Batch:	H21090301		

ND = Value less than reporting limit

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting, Inc.	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3,7/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

BATCH: **I21090301** **Prepared:** 9/3/2021 **Analyzed:** 9/7/2021

EPA 6010B by 3050 - Title 22 CAM 17 Trace Metals by ICP-OES

Analytes:	Result	Spike Level	% REC	% REC Limits	% RPD	Reporting Limit	Units
METHOD BLANK:	**I210903-MB1**						
Silver, Ag	ND					0.5	mg/kg
Arsenic, As	ND					5.0	mg/kg
Barium, Ba	ND					0.5	mg/kg
Beryllium, Be	ND					0.5	mg/kg
Cadmium, Cd	ND					0.5	mg/kg
Cobalt, Co	ND					0.5	mg/kg
Chromium, Cr	ND					0.5	mg/kg
Copper, Cu	ND					0.5	mg/kg
Molybdenum, Mo	ND					0.5	mg/kg
Nickel, Ni	ND					0.5	mg/kg
Lead, Pb	ND					0.5	mg/kg
Antimony, Sb	ND					5.0	mg/kg
Selenium, Se	ND					5.0	mg/kg
Thallium, Tl	ND					5.0	mg/kg
Vanadium, V	ND					0.5	mg/kg
Zinc, Zn	ND					0.5	mg/kg

ND= Not Detected

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting, Inc.	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3,7/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

BATCH: **I21090301** **Prepared:** 9/3/2021 **Analyzed:** 9/7/2021

EPA 6010B by 3050 - Title 22 CAM 17 Trace Metals by ICP-OES

Analytes:	Result	Spike Level	% REC	% RPD	% REC Limits	Units
LCS:	**I210903-LCS1**					
Barium, Ba	**203**	200	102%		80 - 120	mg/kg
Cobalt, Co	**52.8**	50.0	106%		80 - 120	mg/kg
Lead, Pb	**50.0**	50.0	100%		80 - 120	mg/kg
Selenium, Se	**183**	200	92%		80 - 120	mg/kg
Zinc, Zn	**45.6**	50.0	91%		80 - 120	mg/kg
LCSD:	**I210903-LCSD1**					
Barium, Ba	**202**	200	101%	0.5%	80 - 120	mg/kg
Cobalt, Co	**51.8**	50.0	104%	1.9%	80 - 120	mg/kg
Lead, Pb	**48.8**	50.0	98%	2.4%	80 - 120	mg/kg
Selenium, Se	**179**	200	90%	2.2%	80 - 120	mg/kg
Zinc, Zn	**45.5**	50.0	91%	0.2%	80 - 120	mg/kg
CCV:	**I210903-CCV1**					
Barium, Ba	**0.99**	1.00	99%		90-110	mg/L
Cobalt, Co	**1.07**	1.00	107%		90-110	mg/L
Lead, Pb	**1.02**	1.00	102%		90-110	mg/L
Selenium, Se	**1.02**	1.00	102%		90-110	mg/L
Zinc, Zn	**0.98**	1.00	98%		90-110	mg/L

CCV = Continuing Calibration Verification
LCS = Laboratory Control Sample
LCSD= Laboratory Control Sample Duplicate

ND= Not Detected
RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 15%

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Leighton Consulting, Inc.	**Report date:**	9/7/2021
Client Address:	17781 Cowan	**Jones Ref. No.:**	ST-18119
	Irvine, CA	**Client Ref. No.:**	11957.013
Attn:	Brynn McCulloch	**Date Sampled:**	9/1/2021
		Date Received:	9/2/2021
Project:	Asphalt Plant	**Date Analyzed:**	9/3,7/2021
Project Address:	2601 E. 25th Street	**Physical State:**	Soil
	Los Angeles, CA		

BATCH: **H21090301** **Prepared:** 9/3/2021 **Analyzed:** 9/3/2021

EPA 7471A - Mercury by Cold Vapor Atomic Absorption

Analytes:	Result	Spike Level	% REC	% RPD	% REC Limits	Reporting Limit	Units
METHOD BLANK:	**H210903-MB1**						
Mercury, Hg	ND					0.020	mg/kg
LCS:	**H210903-LCS1**						
Mercury, Hg	**1.10**	1.00	110%		80 - 120		mg/kg
LCSD:	**H210903-LCSD1**						
Mercury, Hg	**1.11**	1.00	111%	**0.9%**	80 - 120		mg/kg
CCV:	**H210903-CCV1**						
Mercury, Hg	**5.08**	5.00	102%		90-110		µg/L

ND= Not Detected
RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 15%

LCS = Laboratory Control Sample
LCSD= Laboratory Control Sample Duplicate
CCV = Continuing Calibration Verification
RPD = Relative Percent Difference

Chain-of-Custody Record

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11007 Forest Pl.
Santa Fe Springs, CA 90670
(714) 449-9937
reports@jonesenv.com
www.jonesenv.com

Turn Around Requested:
- ☐ Immediate Attention - 200%
- ☐ Rush 24 Hours - 100%
- ☐ Rush 48 Hours - 50%
- ☐ Rush 72 Hours - 25%
- ☐ Rush 96 Hours - 10%
- ☑ Normal - No Surcharge

LAB USE ONLY
Jones Project # ST-18119
Page ____ of ____

Client	Leighton Consulting
Project Name	Asphalt Plant
Project Address	2601 E 25th Street, Los Angeles, CA
Email	Edominguez@leightongroup.com
Phone	213-507-3720
Report To	**Sampler**
Date	9/2/21
Client Project #	11957.013

Sample Container / Preservative Abbreviations
AS - Acetate Sleeve
SS - Stainless Steel Sleeve
BS - Brass Sleeve
G - Glass
AB - Amber Bottle
P - Plastic
SOBI - Sodium Bisulfate
MeOH - Methanol
HCl - Hydrochloric Acid
HNO3 - Nitric Acid
O - Other (See Notes)

Report Options
EDD ____
EDF* - 10% Surcharge____
*Global ID _____

Analysis Requested

Sample ID	Sample Collection Date	Sample Collection Time	Laboratory Sample ID	Preservative	Sample Container	Sample Matrix: Soil (S), Sludge (SL), Aqueous (A), Free Product (FP)	TPHcc (8015B)	VOCs (8260B)	Methane (60103/7471A)	Number of Containers	Notes & Special Instructions
LB-3@4	9/1/21	9:30			G	S	X	X	X		

Relinquished By (Signature)	**Printed Name**		**Received By (Signature)**	**Printed Name**	
Eduardo Dominguez	Eduardo Dominguez		Jacqueline	Jacqueline	
Company	**Date**	**Time**	**Company**	**Date**	**Time**
Leighton Consulting	9/2/21	9:27		09-02-21	9:40
Relinquished By (Signature)	**Printed Name**		**Received By Laboratory (Signature)**	**Printed Name**	
Company	**Date:**	**Time**	**Company**	**Date**	**Time**

Total Number of Containers

Client signature on this Chain of Custody form constitutes acknowledgement that the above analyses have been reqested, and the information provided herein is correct and accurate.

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SAMPLE RECEIPT FORM

Jones ID: ST-18119

CLIENT: LEIGHTON
PROJECT: ASPHALT PLANT

DATE/TIME: 9-22-21
RECEIVED BY: JL

Delivered by: ☑ Client ☐ Jones Courier ☐ UPS / FedEx / USPS ☐ Other _____

TEMPERATURE: Number of coolers received: 1

Temperature Cooler #1 19.5 °C ± 0.1°C Blank (Sample)

Temperature Cooler #2 _____ °C ± 0.1°C Blank Sample

Temp Criteria: 0 ≤ 6°C (NO frozen containers) Criteria met? ☐ Yes ☐ No

If criteria is not met:

Sample(s) received on ice? ☐ Yes ☐ No*

Sample(s) received chilled on same day of sampling? ☐ Yes ☐ No*

Ambient Temperature: 23.3 °C Checked by: JL

SAMPLE CONDITION:	YES	NO*	N/A
Chain of Custody (COC) received filled out completely	☑	☐*	☐
Total number of containers received match COC	☑	☐*	☐
Sample container label(s) consistent with COC	☑	☐*	☐
Sample container(s) intact and in good condition	☑	☐*	☐
Proper containers and sufficient volume for analyses requested on COC	☑	☐*	☐
Proper preservative indicated on COC/containers for analyses requested	☑	☐*	☐
Volatile analysis container(s) free of headspace (EPA 8260 water)	☐	☐*	☑
Custody Seals Intact on Cooler/Sample	☐	☐*	☑

CONTAINER TYPE:

Solid:
VOAs: ____
Glass Jar: 1
Sleeve: ____
Other: ____

Aqueous:
Amber Bottle: ____
VOAs: ____
Poly Bottle: ____

Air / Soil Gas:
Tedlar Bag: ____
6 hr
72 hr
5 Day
Summa:
(1L) ____ (6L) ____

MILEAGE:

Round Trip Mileage: _____ Travel Time: _____ On Site Time: _____

Complete Non-Conformance If checked

Checked by: CM

02.12.2021 - Version 5.0

APPENDIX B

Summary of Historical Aerial Photograph Review:

Excerpts from the Phase I Environmental Assessment Report

by Ninyo and Moore dated September 8, 2021, and

Environmental Site Investigation Report by Leighton

dated November 11, 2021 (rev. December 8)

Excerpts from Ninyo and Moore Phase I ESA Report dated September 8, 2021.

Table 7 – Aerial Photographs Summary

Date	Source	Summary
1923 1928	A	The site and vicinity were used primarily for industrial purposes with some vacant areas in the site vicinity. Four structures were developed on the northeastern, central, and southern portions of the site. A railroad ROW was present to the north of the site, and two other railroad ROWs traversed the northwestern portion of the site and the northeastern corner of the site. East 24th Street and East 25th Street were present northwest and south of the south, respectively. Northwest of the site, adjacent to East 24th Street, was developed with industrial buildings and several aboveground storage tanks.
1938	A	The southern adjoining property was developed with some structures. A water tower is present southeast of the site.
1948	A	By 1948, the structures located near the northeastern and southeastern portions of the site were demolished.
1952 1964 1970 1972 1983	A	By 1952, the structure in the middle of the site was demolished. The current concrete platform with a canopy were present along the eastern portion of the site. The railroad ROW to the north of the site, and the two railroad ROWs that traversed the northwestern portion of the site were no longer present at the site. The vicinities to the south, east, and west were developed with industrial structures, and parking lots were developed in the immediate vicinities to the south of the site. The aboveground storage tanks located an adjacent property located northwest of the site were removed.
1989	A	Two structures along the western side of the site were demolished.
1994 2002	A,B	Structures on the adjacent property located northwest of the site were demolished. Seven small square structures, possible containers were present at the site along the western end of the concrete platform. Additional commercial/industrial development in the site vicinity.
2005	A,B	One small square structure remains at the site along the western side of the concrete platform. A large structure was developed at an adjacent property located on the southwestern corner of 25th and Harriet Streets. Large containers are present at the adjacent property located northwest of the site.
2009 2012 2016	A,B	The site and adjoining properties are similar to that observed during the site reconnaissance.

Sources:
A – EDR
B – Google Earth

The site and vicinity were used for industrial purposes from 1923 to present day. By 1923, four structures were developed on the northeastern, central, and southern portions of the site, and a railroad ROW was present to the north of the site, and two other railroad ROWs traversed the northwestern portion of the site and the northeastern corner of the site. The current concrete ramp and metal canopy structure were developed in the eastern portion of the site by 1952. By 1989, the historical buildings on the site were demolished. The site currently consists of a concrete platform with a steel canopy and supports located along the eastern portion of the site, and a storage room located below the concrete platform.

Excerpts from Leighton Environmental Investigation Report dated November 11, 2021 and revised December 8, 2021

1.2.1 Historic Aerial Photograph Review

Historical aerial photographs provided by EDR were reviewed for information regarding past Site uses and are included in Appendix A.

1923: The Site is observed to be developed with four structures – two in the northeast portion of the Site, one in the central portion, and one in southern portion and surrounding properties are observed to be residential properties. Two railroad spurs transected the Site – one northwest-southeast trending spur running diagonally across the Site and passing through the building located in the central portion of the Site and a second

northwest-southeast trending spur running diagonally across the northeast corner of the Site. Industrial properties are observed to the north and east. Railroad ROW is also observed to the north of the Site. What appear to be residential properties are observed to the west and south of the Site.

1928: Significant land use changes are not observed on the Site. What appears to be one small additional structure is observed in the northwest corner of the Site. The surrounding area is primarily developed for industrial use.

1938: Significant land use changes are not observed on the Site and surrounding properties.

1948: Significant land use changes are not observed on the Site; however, the two structures previously observed in the northeast portion of the Site have been demolished. The railroad to the north of the Site has also been demolished.

1952: The Site is observed to be developed with the present-day concrete pad structure in the eastern portion. The historic structure located in the central portion of the Site, containing a railroad spur, has been demolished. This area now appears to be used for equipment and vehicle storage. The eastern half of the southern structure has been demolished to accommodate construction of the present-day concrete pad structure. The small structure located in the northwest portion of the Site remains. Industrial properties are observed to the north, south, east, and west of the Site.

1964: The Site is observed to be developed with the present-day concrete pad structure in the eastern portion, a small structure in the northwest portion, and an elongated structure in the southern portion. The historic railroad spurs are no longer observed transecting the Site. Vehicle parking is observed along the southern boundary of the Site. Industrial properties are observed to the north, south, east, and west of the Site.

1970: Significant land use changes are not observed on the Site and surrounding properties; however, the Site appears to be asphalt paved.

1972 and **1983**: Significant land use changes are not observed on the Site or surrounding properties.

1989: Significant land use changes are not observed on the Site or surrounding properties, with the exception of the structures located in the southern and northwest portions of the Site have been demolished. Railroad ROW is observed to the north of the Site.

1994: Significant land use changes are not observed on the Site or surrounding properties. A large stockpile of asphalt material is observed in the central portion of the Site.

2002: Significant land use changes are not observed on the Site or surrounding properties. Several square structures or pieces of equipment are observed in the central portion of the Site. These appear to be temporary and are not observed in the subsequent aerial photographs.

2005: Significant land use changes are not observed on the subject site or surrounding properties. A ramp leading to the top of the concrete pad structure has been constructed along the southern boundary of the Site.

2009, 2012, and **2016**: Significant land use changes are not observed on the Site or surrounding properties.

APPENDIX C

Geophysical Survey by

GeoVision Geophysical Services dated December 8, 2021

GEOVision
geophysical services

December 8, 2021
Project Number 21233

Brynn McCulloch
Leighton Consulting, Inc
17781 Cowan
Irvine, CA 92614

Subject: **Geophysical Investigation on Portions of 2601 East 25th Street Los Angeles, California**

Dear Ms. McCulloch

A geophysical investigation was conducted on the 9th of July and 3rd of December, 2021, on portions of the Bureau of Engineering site located at 2601 East 25th Street in Los Angeles, CA. The purpose of the investigation was to identify underground utilities for fifteen proposed boring location and locate and map utilities in an approximately 100 by 150 foot area.

Geophysical methods applied to this investigation included the electromagnetic (EM), utility locating methods.

METHODOLOGY

EM utility locating equipment included a GSSI SIR3000 with 400 MHz antenna, a Fisher TW6 EM metal detector, a Metrotech 810 utility locator and a Radio Detection RD 8000 EM utility locator.

Details on these geophysical methods can be found in the attached application notes titled "Utility Clearance and Mapping Using Electromagnetic Methods".

FIELD PROCEDURES

Metallic pipes apparent from surface features such as manholes, gas pumps, valve boxes, pipe stickups, etc. were traced and marked by connecting directly to the utility and applying an 8 kHz signal. A matched frequency receiver was then used to delineate the surface trace of the pipe.

The site was scanned with an RD 8000 in passive 60 Hz mode to locate any active electrical lines drawing a current. The non-reinforced areas of the site were scanned with a Fisher TW-6 deep search metal detector to locate abandoned metallic conduits that had no physical expression.

GPR data were collected throughout each boring location semi-continuously along south to north and west to east profiles spaced approximately 5-feet apart in an attempt to delineate the non-metallic lines. All GPR records were reviewed on site.

All utilities located by the geophysical survey were marked on the ground with surveyor's paint and whiskers. Electric lines were marked in red, storm drains and sewer in green, natural gas in yellow, water in blue, and unknown pipes in pink.

RESULTS

Detected utilities and subsurface anomalies are presented in Figure 1.

If you have any questions concerning this investigation, please call Mr. Riches at 818-734-6609.

Sincerely,

Mark Riches, P.GP. 1025
Vice President
GEO*Vision* Geophysical Services

Attachments:

Figure 1: Site Map with Geophysical Interpretation

Application Note – Utility Clearance and Mapping Using Electromagnetic Methods

FIGURES

NOTE: All the geophysical methods have limitations dependent on instrumentation used, soil conditions, and local cultural noise and other interference. The interpretation of geophysical conditions presented above comprises a declaration of the geophysicist's professional judgement using methods and a degree of care and skill ordinarily exercised, under similar circumstances, by reputable members of their profession practicing in the same or similar locality. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations or ordinances. If you require further information about the limitations of the instruments and/or methods used on this project please contact GEOVision Geophysical Services.

0 10 20 30
(feet)

LEGEND

= BOUNDARY OF GEOPHYSICAL SURVEY

= RAILROAD TRACK

L = UNKNOWN

= REINFORCED CONCRETE

39” = APPROXIMATE DEPTH (+/– 10%) BELOW GROUND SURFACE TO TOP OF PIPE AT THIS LOCATION (SD AND SS INVERT DEPTH).

NOTE: UTILITES IN CALIFORNIA STATE PLANE NAD 83, ZONE 0405 (US SURVEY FEET)

GEOVision geophysical services

Project No.	21233
Date	Dec 06,2021
Developed by	M GARCIA
Drawn by	S ORTEGA
Approved by	M RICHES P.GP.
File Name	Q:\21233\21233-1.dwg

FIGURE 1
SITE MAP WITH GEOPHYSICAL INTERPRETATION

2601 EAST 25TH STREET
LOS ANGELES, CA

PREPARED FOR
LEIGHTON GROUP, INC.

APPLICATION NOTES

UTILITY CLEARANCE AND MAPPING USING ELECTROMAGNETIC METHODS

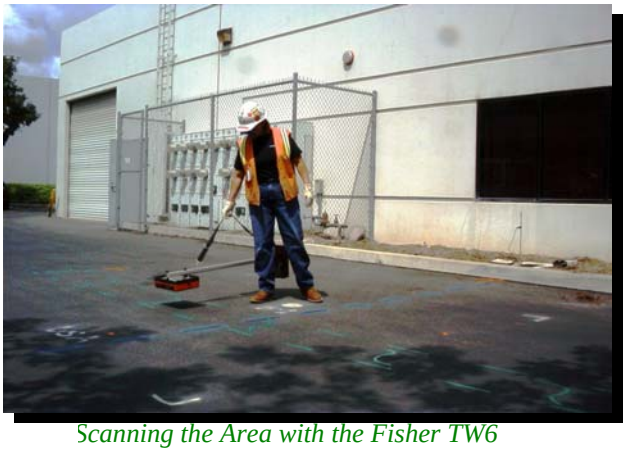
GEO*Vision* geophysical services

In complex urban settings **GEO***Vision* commonly uses electromagnetic (EM) utility locating techniques to clear proposed boring, trenching and excavation locations.

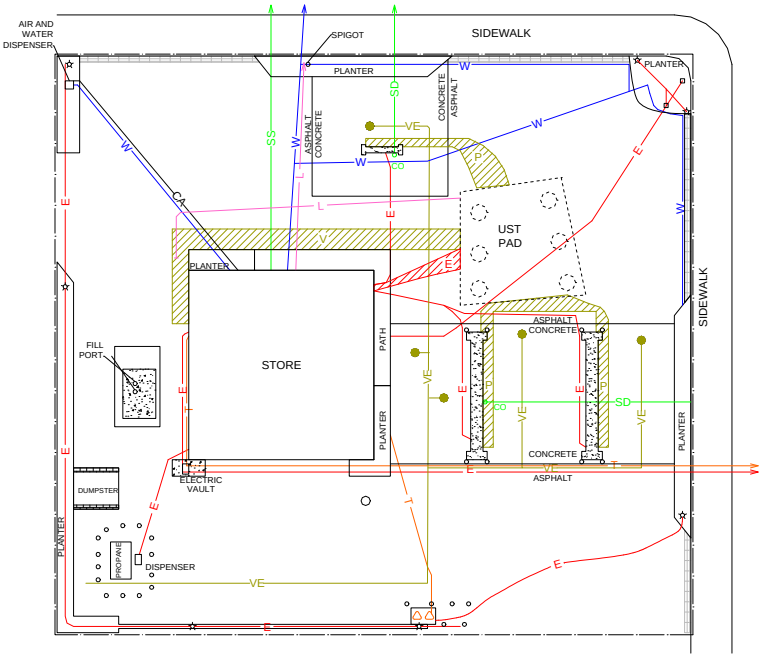
GEO*Vision* area clearance procedures:

1. Visually inspect area for manholes, valve boxes etc as well as review available utility plans
2. Each identified utility will be traced out using EM utility-locating instruments (RD-8000 and Metrotech 810)
3. Scan the area in passive 50/60 HZ and radio modes to locate active electrical lines and other lines carrying a passive radio signal.
4. Screen the area using Fisher TW-6 to identify abandoned conduits
5. Insert transmitting sonde and camera into sanitary sewers and storm drains and delineate their surface trace with a matched frequency receiver
6. Conduct perpendicular GPR traverses through the area to detect non-metallic lines (GSSI SIR10B, SIR20, SIR2000, or SIR3000)
7. Hold EM utility locator transmitter at various locations in area and circle at about a 40-foot radius with the receiver
8. Mark all identified lines on the ground in color code established by American Public Works Association and map site.

Ground Penetrating Radar and 50/60HZ



Scanning the Area with the Fisher TW6



Spinning The Boring With The Metrotech 810

1124 Olympic Drive, Corona, California 92881. Telephone: (951) 549-1234. Fax: (951) 549-1236
19205 Parthenia Street, Unit D. Northridge, California 91324. Telephone: (818) 734-6609
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