GEOTECHNICAL ENGINEERING REPORT
LAKE AVENUE - LAKE RUN TO 6200 WEST
6000 WEST - 11800 SOUTH TO SOUTH JORDAN PARKWAY
6200 WEST - 11800 SOUTH TO LAKE AVENUE
DAYBREAK - SOUTH JORDAN, UTAH
PROJECT No. 15-817-05397
MARCH 11, 2016

Submitted To:

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TABLE OF CONTENTS

1.0 OBJECTIVES AND SCOPE 1
2.0 PROJECT DESCRIPTION 1
3.0 SITE DESCRIPTION 2
3.1 SITE CONDITIONS 2
3.2 GEOLOGY 2
4.0 FIELD EXPLORATION AND LABORATORY TESTING 2
4.1 FIELD EXPLORATIONS 2
4.2 LABORATORY TESTING 2
5.0 SUBSURFACE CONDITIONS 2
5.1 SOILS 2
5.2 GROUNDWATER 3
6.0 CONCLUSIONS AND RECOMMENDATIONS 3
6.1 GENERAL 3
6.2 EARTHWORK 3
6.2.1 Site Preparation 3
6.2.2 Excavations 4
6.2.3 Structural Fill 4
6.2.4 Fill Placement and Compaction Requirements 4
6.2.5 Utility Trench Backfill 5
6.2.6 Cut and Fill Slopes 5
6.3 PAVEMENT 5
7.0 DESIGN REVIEW AND CONSTRUCTION SERVICES 7
8.0 LIMITATIONS 8

FIGURES

FIGURE 1 VICINITY MAP
FIGURE 2 SITE MAP

APPENDICES

APPENDIX A FIELD EXPLORATION
Test Pit Logs ..... Figures A-1 to A-17
Soil Classification Chart & Legend ..... Figure A-18

APPENDIX B LABORATORY TESTING
Summary of Laboratory Test Results ..... Table B-1
Grain Size Distribution Curves
California Bearing Ratio Curves

March 11, 2016

Perigee Consulting
9067 South 1300 West, Suite 304
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Attention: Mr. Tyler White, PE

SUBJECT: **Geotechnical Engineering Report**
Lake Avenue - Lake Run to 6200 West
6000 West - 11800 South to South Jordan Parkway
6200 West - 11800 South to Lake Avenue
Daybreak - South Jordan, Utah
Project Number 15-817-05397

1.0 OBJECTIVES AND SCOPE

Amec Foster Wheeler Environment & Infrastructure, Inc. is pleased to submit this report summarizing the results of our geotechnical investigation for proposed sections of Lake Avenue between Lake Run and 6200 West, 6000 West between 11800 South and South Jordan Parkway, and 6200 West between 11800 South and Lake Avenue. The approximate location of the project area is shown on the Vicinity Map, Figure 1. The investigation was conducted in accordance with the scope of work outlined in our proposal PL15-016 dated August 27, 2015. The investigation consisted of subsurface explorations, laboratory testing, engineering analyses, and report preparation. This report summarizes the work accomplished and presents our conclusions and recommendations for design and construction of roads for the project.

2.0 PROJECT DESCRIPTION

The project will consist of constructing new primary roads for the planned Village 7 and Village 8 developments at Daybreak. Preliminary grading plans indicate that maximum cut and fill height will be less than 5 ft. The approximate lengths of the road segments investigated are presented in Table 1.

TABLE 1 - Summary of Proposed Road Segment Lengths

Road Description	Approximate Length, ft
Lake Avenue Between Lake Run and Mountain View Corridor (MVC)	2,600
Lake Avenue Between MVC and 6200 West	5,000
6000 West Between 11800 South and South Jordan Parkway	4,400
6200 West Between 11800 South and Lake Avenue	1,700

3.0 SITE DESCRIPTION

3.1 SITE CONDITIONS

At the time the field exploration program was performed, the project area was a vacant parcel of land. West of Mountain View Corridor, the land has historically been used primarily to raise dry crops. The general topographic gradient of the natural ground surface is downward to the east. The ground surface is typically lightly vegetated with grasses and weeds.

3.2 GEOLOGY

Based on our review of the available geologic literature[1] and our experience with other nearby projects, we anticipate the site is mantled with lacustrine sand and gravel deposited during Bonneville Lake cycle. A review of hazards maps for Salt Lake County[2] indicates that the project site is located in an area designated as very low in liquefaction potential and outside of special study areas for surface fault rupture.

4.0 FIELD EXPLORATION AND LABORATORY TESTING

4.1 FIELD EXPLORATIONS

Subsurface materials and conditions at the project site were investigated between December 30, 2015 and January 29, 2016 with 15 test pits excavated to depths of approximately 4 ft below existing site grades at the approximate locations shown on the Site Map, Figure 2. All field operations were observed by an experienced member of our staff who logged the materials and conditions encountered in each test pit and collected samples for testing in our laboratory. Additional information regarding the field exploration program is presented in Appendix A.

4.2 LABORATORY TESTING

Laboratory testing consisted of grain size distribution, Atterberg limits, modified Proctor, and California Bearing Ratio (CBR) testing. A description of the individual tests and test results are presented in Appendix B.

5.0 SUBSURFACE CONDITIONS

5.1 SOILS

For the purpose of discussion, the soils disclosed by the test pit excavations have been grouped into the following categories based on their physical properties.

1 Biek, R.F., Solomon, F.J., Keith, J.D., and Smith, T.W., 2004, Interim geologic map of the Copperton, Magna, and Tickville Spring quadrangles, Salt Lake and Utah Counties, Utah, UGS Open File Report 434, Plate 1, scale 1:24,000

2 Nelson, C.V., and Bryant, B.A., compilers, 1989, Surface rupture liquefaction potential special study areas Salt Lake County, Utah, scale 1:48,000

Clay and Silt: Lean clay was encountered at the ground surface along the Lake Avenue alignment in test pits LA-TP-01 through LA-TP-05 and LA-TP-07. Sandy silt was encountered in 6000W-TP-04 and lean clay was encountered in 6000W-TP-06 on 6000 West. Liquid limit values determined in our laboratory ranged from no value (NV) to 39 and plasticity indices ranged from non-plastic (NP) to 50. The amount of sand and gravel (material coarser than the No. 4 sieve) ranged from 18 to 45 percent. Unified Soil Classification System (USCS) Group Symbols include CL and ML.

Sand and Gravel: Sand and gravel containing varying amounts of silt and clay was encountered in test pits LA-TP-06, LA-TP-08, 6000W-TP-03, 6000W-TP-05, 6200W-TP-01, 6200W-TP-02, and 6200W-TP-03. The sand and gravel is typically brown, and damp to slightly moist. Some of the gravel layers contain subrounded cobbles up to 4-in. The relative density of the sand and gravel varies from medium dense to dense based on excavation effort. The percentage of silt and clay (finer than the No. 200 sieve) varies from 9 to 41 percent by dry weight. USCS Group Symbols include GC, GW-GM, and SC.

5.2 GROUNDWATER

Groundwater was not encountered in the test pits excavated during our field exploration. Fluctuations in groundwater levels can occur due to variations in precipitation, runoff, water levels in nearby ditches, and drainages can also influence the local groundwater table. Seasonal and longer-term groundwater fluctuations should be anticipated with the highest seasonal levels generally occurring during the late spring and summer months.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 GENERAL

The soils encountered at the site have variable pavement support properties, ranging from poor to good. Results of California Bearing Ratio (CBR) tests performed in our laboratory ranged from 2 to 13 for clay and silt soils and 9 to 84 for sand and gravel soil. The variable subgrade support properties requires that the pavement section is designed for a conservative CBR value. Alternatively the subgrade may be improved by overexcavation and replacement with granular materials to justify pavement design based on a CBR value of 10.

6.2 EARTHWORK

6.2.1 Site Preparation

The ground surface should be stripped of all vegetation, organic material, unsuitable fill, or any other deleterious material within building and pavement areas. Based on site observations made during the field exploration and our findings in the test pit excavations, very little stripping will be required due to vegetation alone. Upon completion of the site stripping, the exposed subgrade should be evaluated by a qualified soils engineer or engineering geologist. Proof rolling with rubber-tire construction equipment may be part of this evaluation. Any soft or loose

areas observed during the subgrade evaluation should be over-excavated to firm undisturbed native soil and backfilled with structural fill.

6.2.2 Excavations

We anticipate that excavation can be accomplished in the sand and gravel soils using heavy duty track-mounted excavation equipment. The contractor is solely responsible for designing and constructing stable, temporary evaluations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. All temporary slopes and shoring should conform to local, State, and Federal safety regulations.

6.2.3 Structural Fill

The term "structural fill" refers to fill materials used to support foundations and pavements or any other structural element such as slab-on-grade floors and sidewalks. Structural fill should be free from debris, vegetation, roots, other unsuitable material, frozen material, and excess moisture. Structural fill should also conform to the gradation and plasticity requirements shown in the Table 2.

TABLE 2 - Structural Fill Material Specifications

Structural Fill	Maximum Particle Size	LL	PI
AASHTO A-1-a through A-4	3 in.	40 max	10 max

Properly documented mass grading fill may be considered structural fill. Undocumented end dumped material is not considered structural fill and must be entirely removed and replaced. Within any landscaping area, non structural site grading fill may consist of cohesive or granular soils not containing excessive amounts of degradable material.

6.2.4 Fill Placement and Compaction Requirements

Structural fill should be compacted to at least 95 percent of the maximum dry density at a moisture content within plus or minus 3 percent of optimum as determined by ASTM D-1557 (Modified Proctor). Fill in landscaped areas should be compacted to a minimum of 85 percent of the maximum dry density as determined by ASTM D-1557.

Fill should be placed and compacted in lifts. The lift thickness should be appropriate for the type of equipment being used so that the entire lift thickness is compacted to the required level. With heavy compaction equipment, loose lift thickness should be limited to a maximum of 12 inches. Fill compaction should be tested frequently. The contractor should have sufficient testing early to verify that compaction methods are adequate to meet compaction requirements and regular additional testing to demonstrate consistent compaction.

6.2.5 Utility Trench Backfill

All backfill placed in utility trench excavations within the limits of the buildings and paved areas should consist of sand, sand and gravel, or crushed rock with a maximum size of up to 2-inches and with not more than 15 percent passing the No. 200 sieve (washed analysis). In our opinion, the granular backfill should be placed in 9-inch-thick lifts (loose) and compacted using vibratory plate compactors or tamping units to at least 92 percent of the maximum dry density as determined by ASTM D 1557. Flooding or jetting the backfilled trenches with water to achieve the recommended compaction should not be permitted.

6.2.6 Cut and Fill Slopes

Cut and fill slopes should be constructed no steeper than 2H:1V. More rapid grade transitions must be created using earth retention systems, such as conventional retaining walls or mechanically stabilized earth (MSE) walls.

6.3 PAVEMENT

Pavement subgrade will consist soils having variable subgrade support properties. The sand and gravel soils generally have good pavement support properties and the clayey and silty soils generally have poor pavement support properties.

Traffic information provided by WCEC Engineering was used to compute equivalent single axle load (ESAL) values for a 20-year design life using the procedures described in the Utah Department of Transportation Pavement Design Manual[3]. A summary of the traffic information and the computed ESAL values for each road segment is presented in Table 3.

TABLE 3 – Traffic Design Information

Street Name	Segment Limits	UDOT Functional Classification	AADT 2016	Design Life Years	Annual Growth Rate %	% Trucks	Total 18-kip ESALs
Lake Avenue	Lake Run To Grandville Ave	Minor Collector	750	20	7.2	5.0	226,856
	Grandville Ave to MVC	Minor Arterial	2,500	20	8.0	5.0	1,188,113
	MVC to 6000 W	Minor Collector	1,500	20	7.8	5.0	379,706
	6000 W to 6200 W	Local Street	500	20	5.9	2.0	40,183
6000 W	11800 S to South Jordan Parkway	Minor Collector	1,000	20	9.1	5.0	292,596
6200 W	11800 S to Lake Av	Local	500	20	5.9	5.0	78,711

Note – MVC = Mountain View Corridor

The design pavement sections are dependent upon accurate understanding of accurate traffic information. If the design ESAL values are significantly different than those presented above,

3 Utah Department of Transportation, 2008, Pavement Management and Pavement Design Manual, pp 14-22

Amec Foster Wheeler should be notified so that the pavement sections can be revised if necessary.

The parameters used in the pavement design are presented in Table 4 below.

TABLE 4 - Pavement Design Parameters

Design Parameter	Value
Initial Serviceability	4.2
Terminal Serviceability	2.5
Reliability	90%
Standard Deviation - Flexible	0.45
Structural Coefficient - AC	0.4
Structural Coefficient - Untreated Base Course	0.10
Structural Coefficient - Granular Borrow	0.08

The rationale behind the selection of a Design CBR for each road segment is presented in Table 5.

TABLE 5. Design CBR Selection

Street Segment	Test Pit / Sample	CBR	Design CBR	Rationale
Lake Avenue Between Lake Run and 6200 West	LA-TP-01 @ 1-4 ft	8	5	Average of CBR Values < 10
	LA-TP-02 @ 1-4 ft	4		
	LA-TP-03 @ 1-4 ft	2		
	LA-TP-04 @ 1-4 ft	4		
	LA-TP-05 @ 1-4 ft	3		
	LA-TP-06 @ 1-4 ft	9		
	LA-TP-07 @ 1-4 ft	13		
	LA-TP-08 @ 1-4 ft	17		
6000 West Between 11800 South and South Jordan Parkway	6000W-TP-01 @ 1-4 ft	6	7	Average of CBR Values < 10
	6000W-TP-03 @ 1-4 ft	77		
	6000W-TP-04 @ 1-4 ft	7		
	6000W-TP-05 @ 1-4 ft	12		
	6000W-TP-06 @ 1-4 ft	8		
6200 West Between 11800 South and Lake Avenue	6200W-TP-01 @ 1-4 ft	25	8	Low Value
	6200W-TP-02 @ 1-4 ft	8		
	6200W-TP-03 @1-4 ft	84		

Recommendations for pavement design are presented in Table 6 for each road segment based on the total design ESALs and CBR values.

TABLE 6 - Flexible Pavement Design for Streets

Street	Segment	UDOT Functional Class	Design 18-kip ESALs	Design CBR	Layer Thickness (inches)		
					Asphaltic Concrete	Base Course	Granular[1] Borrow
Lake Avenue	Lake Run to Grandville Avenue	Minor Collector	230,000	5	4.5	6	6
Alternate Section					4.5	10	--
Lake Avenue	Grandville Avenue to MVC	Minor Arterial	1,200,000	5	5.5	6	10
Alternate Section					5.5	14	--
Lake Avenue	MVC to 6000 W	Minor Collector	380,000	5	4.5	6	8
Alternate Section					4.5	12	--
Lake Avenue	6000 W to 6200 W	Local Street	42,000	5	3	6	6
Alternate Section					3	8	--
6000 West	11800 South to South Jordan Parkway	Minor Collector	300,000	7	4.5	6	6
Alternate Section					4.5	8	--
6200 West	11800 South to Lake Avenue	Local Street	80,000	8	3.5	6	--
Alternate Section					3	8	--

Note 1 - Granular Borrow Consists of Material Meeting AASHTO A-1-a Specifications

All pavement materials and workmanship should conform to Utah Department of Transportation (UDOT) or American Public Works Association (APWA) specifications.

7.0 DESIGN REVIEW AND CONSTRUCTION SERVICES

We welcome the opportunity to review and discuss construction plans and specifications for this project as they are being developed. In addition, Amec Foster Wheeler should be retained to review all geotechnical-related portions of the plans and specifications to evaluate whether they are in conformance with the recommendations provided in our report. Additionally, to observe compliance with the intent of our recommendations, design concepts, and the plans and specifications, we are of the opinion that all construction operations dealing with earthwork and foundations should be observed by a representative of Amec Foster Wheeler. Our construction-

phase services will allow for timely design changes if site conditions are encountered that are different from those described in this report. If we do not have the opportunity to confirm our interpretations, assumptions, and analyses during construction, we cannot be responsible for the application of our recommendations to subsurface conditions that are different from those described in this report.

8.0 LIMITATIONS

This report has been prepared to aid the architect and engineer in the design of this project. The scope is limited to the specific project and location described herein, and our description of the project represents our understanding of the significant aspects of the project relevant to the design and construction of the earthwork, foundations, and floor slabs. In the event that any changes in the design and location of the building as outlined in this report are planned, we should be given the opportunity to review the changes and to modify or reaffirm the conclusions and recommendations of this report in writing.

The conclusions and recommendations submitted in this report are based on the data obtained from the test pits made at the locations indicated on the Site Map, Figure 2, and from other sources of information discussed in this report. In the performance of subsurface investigations, specific information is obtained at specific locations at specific times. However, it is acknowledged that variations in soil conditions may exist between explorations. This report does not reflect any variations that may occur between these explorations. The nature and extent of variation may not become evident until construction. If, during construction, subsurface conditions are different from those encountered in the explorations, we should be advised at once so that we can observe and review these conditions and reconsider our recommendations where necessary.

We appreciate the opportunity to provide this service for you. If you have any questions or require additional information, please do not hesitate to contact us.

Respectfully submitted,
Amec Foster Wheeler
Environment & Infrastructure, Inc.

REGISTERED PROFESSIONAL ENGINEER #349987-2202 DAVID K. FADLING 3/11/16 STATE OF UTAH

David K. Fadling, PE, PG
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Reviewed by:

3/11/16

Joe Zhao, PE, PhD
Senior Associate Engineer

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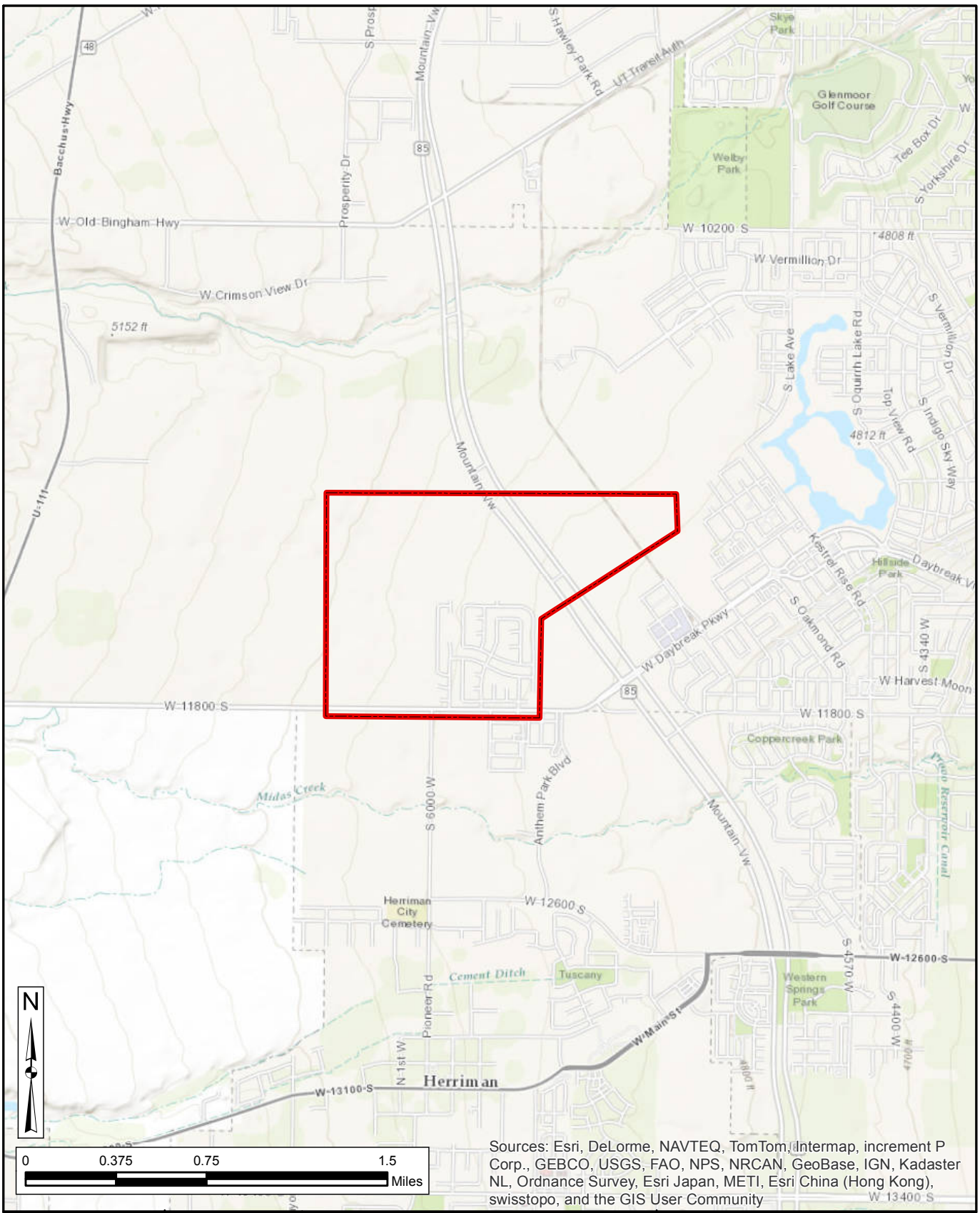

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Legend

Project Area

SCALE:	1 inch = 3,000 feet
DATE:	02/25/2016
PROJECT NO:	15-817-05397
DATUM/PROJECTION:	NAD 83 UTM 12
DWN BY:	BTM
CHK'D BY:	DKF

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PROJECT

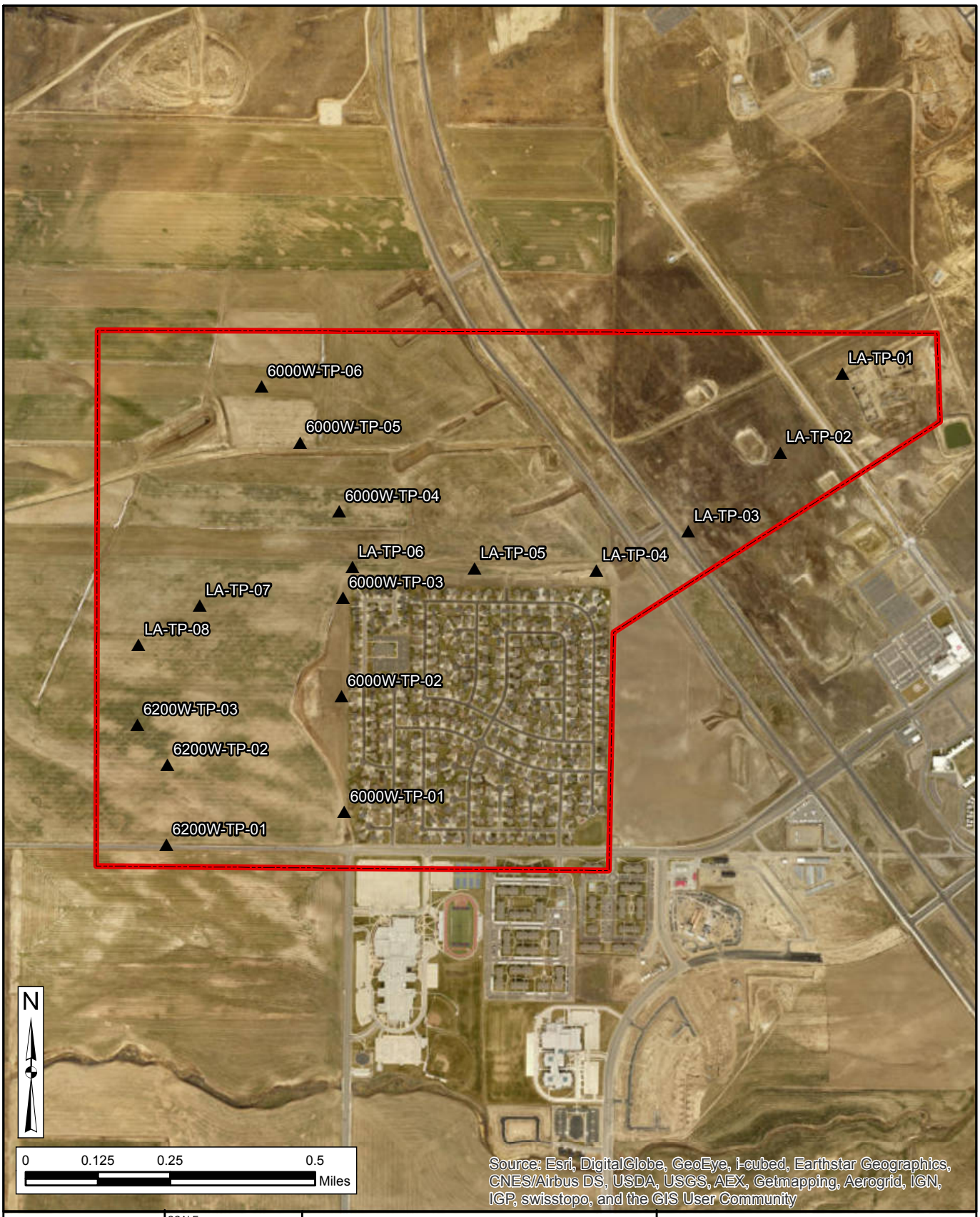
Lake Avenue, 6000W and 6200W
Daybreak - South Jordan, Utah

TITLE

Vicinity Map

FIGURE NO:

1



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Legend

Project Area

Test Pits

SCALE:	1 inch = 1,250 feet
DATE:	02/25/2016
PROJECT NO:	15-817-05397
DATUM/PROJECTION:	NAD 83 UTM 12
DWN BY:	BTM
CHK'D BY:	DKF

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Daybreak - South Jordan, Utah

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TITLE

Site Map

FIGURE NO:

2

APPENDIX A

FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

General

Subsurface materials and conditions at the project site were investigated between December 30, 2015 and January 29, 2016 with 17 test pits. The approximate locations of the explorations are shown on the Site Map, Figure 2. All field operations were observed by a member of our staff, who logged the materials and conditions encountered in each test pit and collected samples for testing in our laboratory. The following sections provide a detailed description of the explorations, sampling, and field testing completed for this project.

Test Pits

The test pits were excavated to depths of approximately 4 feet below existing site grades with a CAT 420D backhoe provided and operated by Gough Construction of West Jordan, Utah.

Logs of the test pits are presented on Figures A-1 through A-17, Test Pit Logs. Each log presents a descriptive summary of the various types of material encountered and notes the depth where the materials and/or characteristics of the materials change. To the right of the descriptive summary, the numbers and types of samples taken during the exploration operations are indicated. The terms used to describe the soils are defined on Figure A-18, Soil Classification Chart & Legend.

LOG OF TEST PIT NO. LA-TP-01

Project Name: **Lake Avenue**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **12/30/15**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4857.9 ft**
Latitude: **40.549° North**
Longitude: **112.017° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			0.5							
			Lean CLAY with Sand [CL] stiff, brown, moist, 6-in.-thick heavily rooted zone at ground surface				80	34	19	CBR = 8
			4.0							
	5		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	10									

Remarks:

Water Level Observations

▽		
▼		

The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-1

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK LAKE AVENUE.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. LA-TP-02

Project Name: **Lake Avenue**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **12/30/15**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4861.9 ft**
Latitude: **40.547° North**
Longitude: **112.019° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			0.5							
			Lean CLAY with Sand [CL] stiff, brown, moist, 6-in.-thick heavily rooted zone at ground surface				80	38	21	CBR = 4
			4.0							
	5		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	10									

Remarks:

Water Level Observations

▽		
▼		

The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-2

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK LAKE AVENUE.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. LA-TP-03

Project Name: **Lake Avenue**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **12/30/15**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4868.5 ft**
Latitude: **40.545° North**
Longitude: **112.022° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			0.5							
			Lean CLAY [CL] stiff, brown, moist, 6-in.-thick heavily rooted zone at ground surface				87	41	21	CBR = 2
			4.0							
			Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

▽		
▼		

The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-3

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK LAKE AVENUE.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. LA-TP-04

Project Name: **Lake Avenue**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/4/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4878.6 ft**
Latitude: **40.544° North**
Longitude: **112.025° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			0.5							
			Lean CLAY [CL] stiff, brown, moist, 6-in.-thick heavily rooted zone at ground surface				86	38	20	CBR = 4
			4.0							
			Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-4

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK LAKE AVENUE.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. LA-TP-05

Project Name: **Lake Avenue**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/4/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4903.6 ft**
Latitude: **40.544° North**
Longitude: **112.029° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			0.5							
			Lean CLAY with Sand [CL] stiff, brown, moist, 6-in.-thick heavily rooted zone at ground surface				84	39	21	CBR = 3
			4.0							
	5		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-5

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK LAKE AVENUE.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. LA-TP-06

Project Name: **Lake Avenue**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/4/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4931.2 ft**
Latitude: **40.544° North**
Longitude: **112.033° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Clayey GRAVEL with Sand [GC] medium dense, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				41	28	17	CBR = 9
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-6

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK LAKE AVENUE.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. LA-TP-07

Project Name: **Lake Avenue**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/4/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4960.1 ft**
Latitude: **40.543° North**
Longitude: **112.038° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Sandy Lean CLAY with Gravel [CL] stiff, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				51	30	16	CBR = 13
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-7

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK LAKE AVENUE.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. LA-TP-08

Project Name: **Lake Avenue**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/4/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4983.1 ft**
Latitude: **40.542° North**
Longitude: **112.040° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Clayey GRAVEL with Sand [GC] medium dense, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				21	27	16	CBR = 17
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-8

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK LAKE AVENUE.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6000W-TP-01

Project Name: **6000 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/4/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4929.8 ft**
Latitude: **40.538° North**
Longitude: **112.033° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Sandy Lean CLAY with Gravel [CL] stiff, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				55	31	14	CBR = 6
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-9

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6000W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6000W-TP-02

Project Name: **6000 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/4/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4929.0 ft**
Latitude: **40.541° North**
Longitude: **112.033° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Clayey GRAVEL with Sand [GC] medium dense, brown, moist, 12-in.thick heavily rooted and cultivated zone at ground surface							
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-10

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6000W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6000W-TP-03

Project Name: **6000 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/4/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4928.5 ft**
Latitude: **40.543° North**
Longitude: **112.033° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Well-graded GRAVEL with Silt and Sand [GW-GM] medium dense, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				9	NP	NP	CBR = 77
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-11

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6000W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6000W-TP-04

Project Name: **6000 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/29/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.:
Latitude: **40.545° North**
Longitude: **112.033° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Sandy SILT [ML] stiff, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				65	NP	NP	CBR = 7
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-12

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6000W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6000W-TP-05

Project Name: **6000 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/29/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.:
Latitude: **40.547° North**
Longitude: **112.035° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Clayey SAND with Gravel [SC] medium dense, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				21	29	18	CBR = 12
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-13

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6000W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6000W-TP-06

Project Name: **6000 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/29/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.:
Latitude: **40.549° North**
Longitude: **112.036° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			1.0							
			Lean CLAY with Sand [CL] stiff, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				75	29	21	CBR = 8
			4.0							
	5		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-14

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6000W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6200W-TP-01

Project Name: **6200 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/19/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4968.1 ft**
Latitude: **40.537° North**
Longitude: **112.039° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Clayey GRAVEL with Sand [GC] medium dense, brown, moist, 12-in.thick heavily rooted and cultivated zone at ground surface				15	29	14	CBR = 25
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-15

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6200W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6200W-TP-02

Project Name: **6200 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/19/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4971.8 ft**
Latitude: **40.539° North**
Longitude: **112.039° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Clayey GRAVEL with Sand [GC] medium dense, brown, moist, 12-in.thick heavily rooted and cultivated zone at ground surface				31	33	15	CBR = 8
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-16

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6200W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

LOG OF TEST PIT NO. 6200W-TP-03

Project Name: **6200 West**
Location: **Daybreak**
South Jordan, Utah
Project No: **15-817-05397** Sheet 1 of 1

Date Excavated: **1/19/16**
Equipment Type: **CAT 420D**
Excavated By: **Gough Construction**
Logged By: **R. Maw**

Surface El.: **4978.3 ft**
Latitude: **40.540° North**
Longitude: **112.040° West**

Elevation, feet	Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Unit Dry Weight, pcf	Water Content, %	% Passing No. 200 Sieve	Liquid Limit	Plasticity Index	REMARKS
			Well-graded GRAVEL with Silt and Sand [GW-GM] medium dense, brown, moist, 12-in.-thick heavily rooted and cultivated zone at ground surface				9	NP	NP	CBR = 84
	1.0									
	4.0		Bottom of Test Pit at 4.0 ft Groundwater Not Encountered							
	5									
	10									

Remarks:

Water Level Observations

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The discussion in the report is necessary for a proper understanding of the nature of subsurface materials.

Figure A-17

AMEC.SLC.TEST PIT.2.LATLON DAYBREAK 6200W.GPJ AMEC.SLC.GENGEO.1.GDT 2/25/16

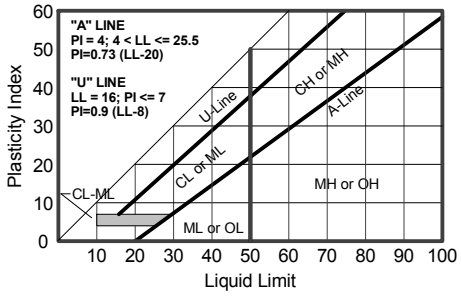
SOIL CLASSIFICATION CHART & LEGEND

MAJOR DIVISIONS				GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS Less than 50% passes No. 200 sieve	GRAVELS (50% or less of coarse fraction passes No. 4 sieve)	CLEAN GRAVELS (Less than 5% passing No. 200 sieve)			GW	Well graded gravels, gravel-sand mixtures, or sand-gravel-cobble mixtures
					GP	Poorly graded gravels, gravel-sand mixtures, or sand-gravel-cobble mixtures
		GRAVELS WITH FINES (More than 12% Passing No. 200 sieve)	Limits plot below "A" line & hatched zone on plasticity chart		GM	Silty gravels, gravel-sand-silt mixtures
			Limits plot above "A" line & hatched zone on plasticity chart		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (50% or more of coarse fraction passes No. 4 sieve)	CLEAN SANDS (Less than 5% passing No. 200 sieve)			SW	Well graded sands, gravelly sands
					SP	Poorly graded sands, gravelly sands
		SANDS WITH FINES (More than 12% Passing No. 200 sieve)	Limits plot below "A" line & hatched zone on plasticity chart		SM	Silty sands, sand-silt mixtures
			Limits plot above "A" line & hatched zone on plasticity chart		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	SILTS Limits Plot Below A Line	SILTS OF LOW PLASTICITY (Liquid Limit less than 50)			ML	Inorganic silts, clayey silts of low to medium plasticity
		SILTS OF HIGH PLASTICITY (Liquid Limit 50 or more)			MH	Inorganic silts, micaceous or diatomaceous silty soils, elastic silts
	CLAYS Limits Plot Above A Line	CLAYS OF LOW PLASTICITY (Liquid Limit less than 50)			CL	Inorganic clays of low to medium plasticity, gravelly, sandy, and silty clays
		CLAYS OF HIGH PLASTICITY (Liquid Limit 50 or more)			CH	Inorganic clays of high plasticity, fat clays, sandy clays of high plasticity
	ORGANICS SILTS AND CLAYS	ORGANIC SILTS AND CLAYS OF LOW PLASTICITY (Liquid Limit less than 50)			OL	Organic silts and clays of low to medium plasticity, sandy organic silts and clays
		ORGANIC SILTS AND CLAYS OF HIGH PLASTICITY (Liquid Limit 50 or more)			OH	Organic silts and clays of high to medium plasticity, sandy organic silts and clays
ORGANIC SOILS		PRIMARILY ORGANIC MATTER (dark in color and organic odor)			PT	Peat

NOTE: Coarse-grained soils with between 5% and 12% passing the No. 200 sieve and fine-grained soils with limits plotting in the gray zone on the plasticity chart have dual classifications.

- D - Dames and Moore Sampler 3.25" OD
- U - Dames and Moore Sampler 3.0" OD
- S - Split Spoon Sampler (SPT)
- T - Pushed Thin Walled Tube
- GS - Grab Sample
- BS - Bulk Sample
- DT - Driven Thin Wall
- C - Rock Core Sample
- CS - Continuous Soil Sample
- R - California Ring Sampler
- Water Level at Time of Drilling
- Stabilized Water Level
- **CBR** California Bearing Ratio
- **PP** Pocket Penetrometer, tsf
- **ST** Swell Test
- **VS** Vane Shear, psf
- **UC** Unconfined Compression, psf
- **NR** No Recovery

PLASTICITY CHART



Material	Particle Size	
	mm	Sieve sizes
Boulders	304.8 to 914.4	12 in to 36 in
Cobble	76.2 to 304.8	3 in to 12 in
Gravel		
Fine	4.76 to 19.1	3/4 in to 3 in
Coarse	19.1 to 76.2	#4 to 3/4 in
Sand		
Fine	2.00 to 4.76	#10 to #4
Medium	0.42 to 2.00	#40 to #10
Coarse	0.074 to 0.42	#200 to #40
Silt & Clay	<0.074	<#200

Figure A-18

APPENDIX B

LABORATORY TESTING

APPENDIX B

LABORATORY TESTING

General

All samples obtained from the field were transported to our laboratory for examination and testing. The physical characteristics were noted, and the field classifications were modified where necessary. The laboratory testing program was conducted to provide data for our engineering analyses. The laboratory program included determinations of grain size distribution, Atterberg limits, modified proctor, and California bearing ratio (CBR). The following sections describe the testing program in more detail. A summary of the laboratory test results is presented in Table B-1. Grain size distribution and CBR test results are also presented in graphical form.

Grain Size Distribution

Determinations of grain size distribution were conducted on selected samples of the on-site soil in general conformance with ASTM C136/C117. The oven-dried samples were weighed and vibrated through a series of different size sieves. The individual sieves were then weighed in order to calculate the percentage of gravel, sand and fine grained soil.

Atterberg Limits

Atterberg limit tests were performed in general accordance with ASTM D 4318 on representative samples of the native soils encountered at the site to verify field classifications.

Modified Proctor

The modified Proctor test was performed in general accordance with ASTM D 1557 in order to obtain a relative percent compaction curve for the material. This data was used in the California Bearing Ratio (CBR) test.

California Bearing Ratio (CBR) Test

The CBR test was performed in accordance with ASTM D 1883-05 in order to evaluate the mechanical properties of soil for the support of pavement. The test is performed by measuring the pressure required to penetrate the soil with a piston of know area. The result is a ratio of measured pressure for the soils tested over the pressure required to penetrate a standard crush rock soil (a known standard value).

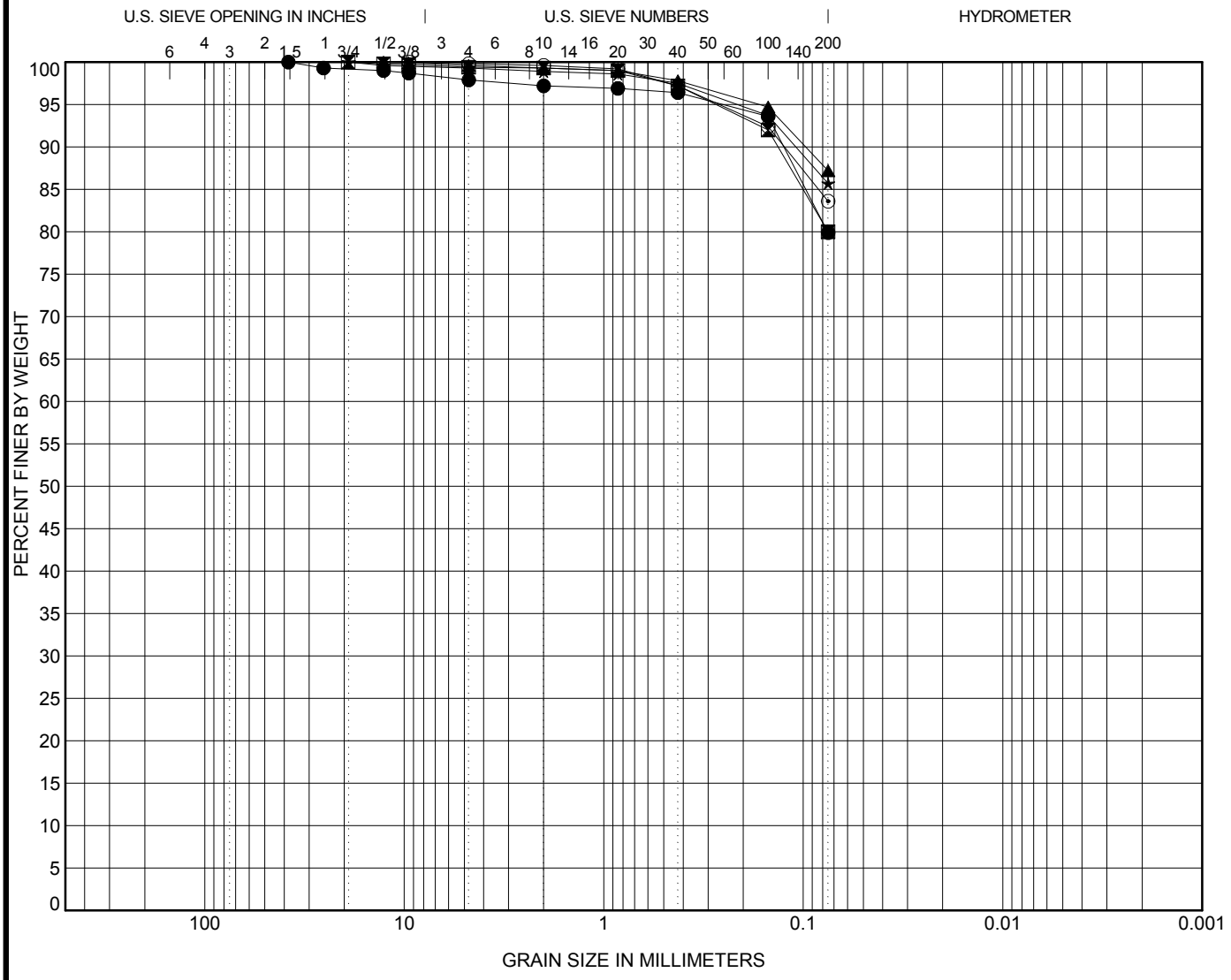
TABLE B-1
SUMMARY OF LABORATORY TEST RESULTS
LAKE AVENUE, 6000W, AND 6200W

Test Pit	Depth (ft)	Grain Size Distribution			Liquid Limit	Plasticity Index	Modified Proctor		California Bearing Ratio		Soil Description and USCS Group Symbol	Latitude deg	Longitude ft	Elevation ft
		Gravel %	Sand %	Silt and Clay %			Max Dry Density lb/ft^3	Optimum Moisture Content %	CBR %	Compaction %				
LA-TP-01	1-4	2.1	24.0	73.9	34	15	111.4	15.8	8	96	Lean Clay with Sand (CL)	40.549	-112.017	4857.9
LA-TP-02	1-4	0.6	19.4	80.0	38	17	103.7	19.3	4	96	Lean Clay with Sand (CL)	40.547	-112.019	4861.9
LA-TP-03	1-4	0.4	12.4	87.2	41	20	101.8	18.3	2	96	Lean Clay (CL)	40.545	-112.022	4868.5
LA-TP-04	1-4	0.7	13.6	85.7	38	18	106.9	18.0	4	96	Lean Clay (CL)	40.544	-112.025	4878.6
LA-TP-05	1-4	0.2	16.2	83.6	39	18	105.8	19.7	3	96	Lean Clay with Sand (CL)	40.544	-112.029	4903.6
LA-TP-06	1-4	39.1	20.3	40.5	28	11	121.7	11.0	9	96	Clayey Gravel with Sand (GC)	40.544	-112.033	4931.2
LA-TP-07	1-4	20.9	28.5	50.6	30	14	117.0	13.9	13	96	Sandy Lean Clay with Gravel (CL)	40.543	-112.038	4960.1
LA-TP-08	1-4	51.5	27.2	21.3	27	11	127.2	9.2	17	96	Clayey Gravel with Sand (GC)	40.542	-112.040	4983.1
6000W-TP-01	1-4	15.6	29.6	54.8	31	17	117.1	13.5	6	96	Sandy Lean Clay with Gravel (CL)	40.538	-112.033	4929.8
6000W-TP-03	1-4	60.7	30.4	8.9	NV	NP	131.7	7.7	77	96	Well Graded Gravel with Silt and Sand (GW-GM)	40.543	-112.033	4928.4
6000W-TP-04	1-4	12.3	32.5	65.2	NV	NP	119.5	11.8	7	96	Sandy Silt (ML)	40.545	-112.033	--
6000W-TP-05	1-4	30.3	48.4	21.3	29	11	125.5	10.2	12	96	Clayey Sand with Gravel (SC)	40.547	-112.035	--
6000W-TP-06	1-4	1.0	23.8	75.2	29	8	116.8	13.5	8	96	Lean Clay with Sand (CL)	40.548	-112.036	--
6200W TP-01	1-4	57.8	27.2	15.0	29	15	128.6	7.6	25	96	Clayey Gravel with Sand (GC)	40.537	-112.039	4968.1
6200W-TP-02	1-4	44.8	23.9	31.3	33	18	118.7	12.8	8	97	Clayey Gravel with Sand (GC)	40.539	-112.039	4971.8
6200W-TP-03	1-4	60.4	31.0	8.6	NV	NP	131.8	8.5	84	96	Well Graded Gravel with Silt and Sand (GW-GM)	40.540	-112.040	4978.3

Notes: LA- Lake Avenue

GRAIN SIZE DISTRIBUTION

Project: Lake Avenue
Location: Daybreak
Project No: 15-817-05397



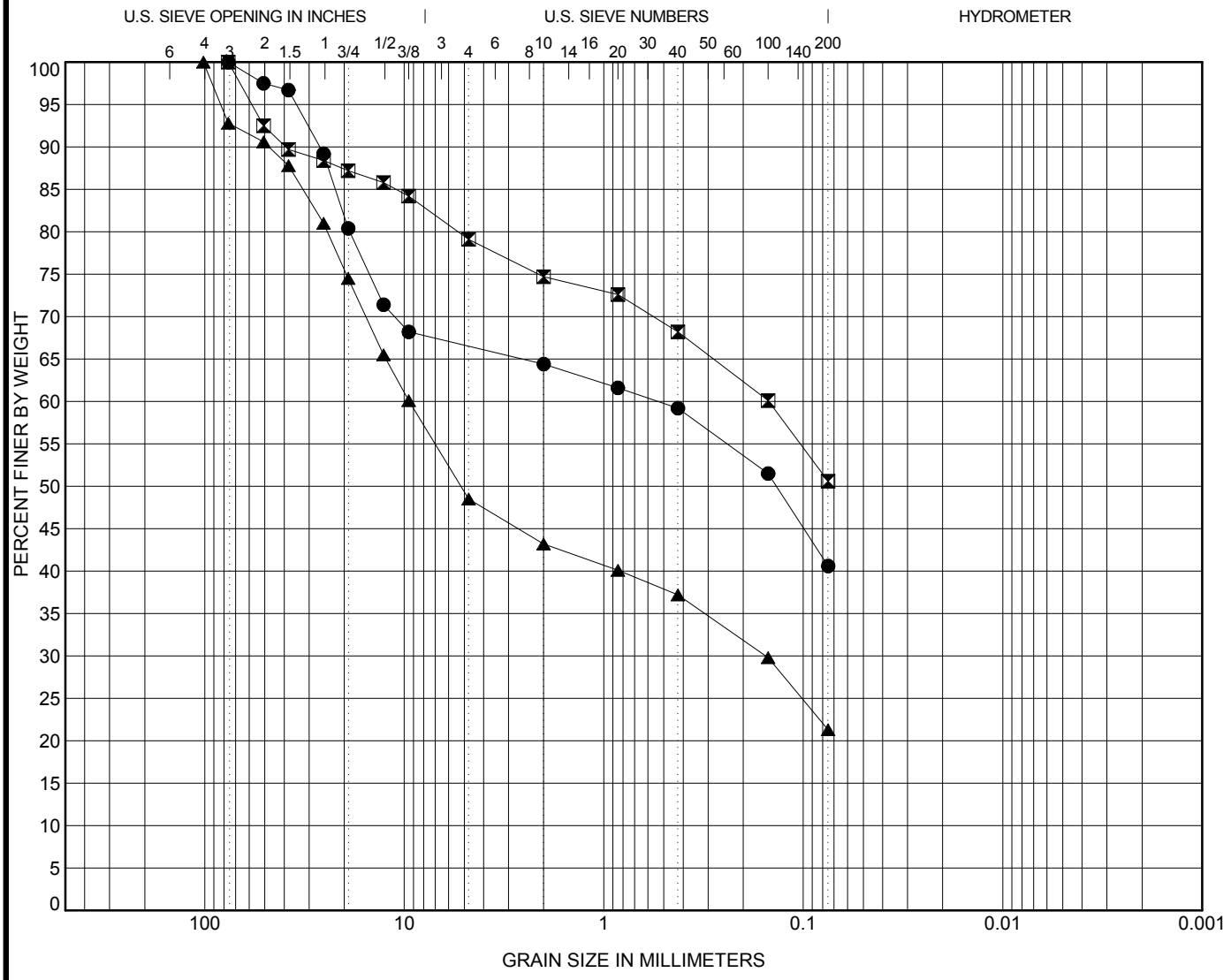
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	LA-TP-01	1.0	LEAN CLAY with SAND(CL)	34	15	19		
⊠	LA-TP-02	1.0	LEAN CLAY with SAND(CL)	38	17	21		
▲	LA-TP-03	1.0	LEAN CLAY(CL)	41	20	21		
★	LA-TP-04	1.0	LEAN CLAY(CL)	38	18	20		
⊙	LA-TP-05	1.0	LEAN CLAY with SAND(CL)	39	18	21		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	LA-TP-01	1.0	38.1				2.1	18.0	79.9	
⊠	LA-TP-02	1.0	19.1				0.6	19.4	80.0	
▲	LA-TP-03	1.0	12.7				0.4	12.4	87.2	
★	LA-TP-04	1.0	19				0.7	13.6	85.7	
⊙	LA-TP-05	1.0	9.5				0.2	16.2	83.6	

GRAIN SIZE DISTRIBUTION

Project: Lake Avenue
Location: Daybreak
Project No: 15-817-05397



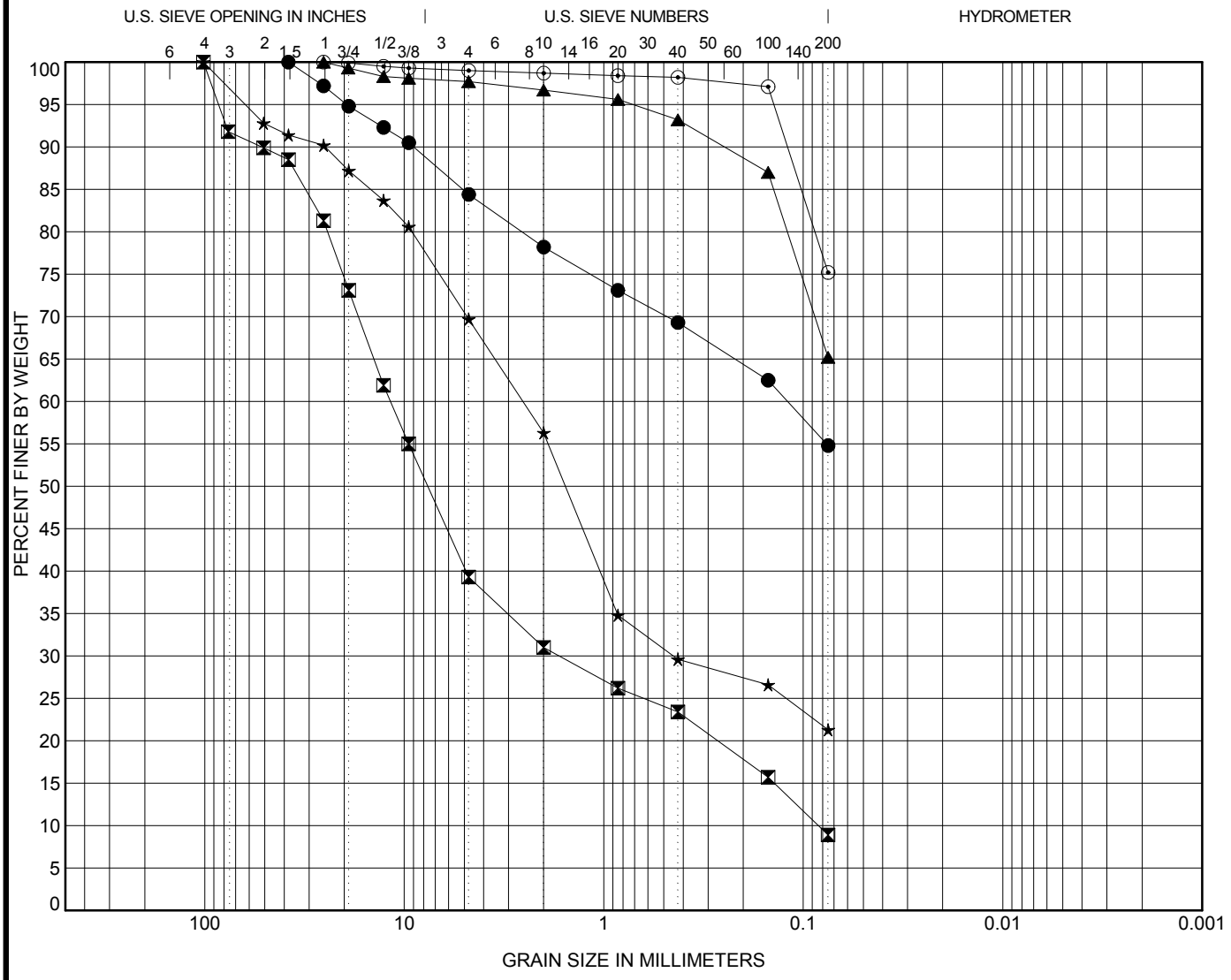
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	LA-TP-06	1.0	CLAYEY GRAVEL with SAND(GC)	28	11	17		
⊠	LA-TP-07	1.0	SANDY LEAN CLAY with GRAVEL(CL)	30	14	16		
▲	LA-TP-08	1.0	CLAYEY GRAVEL with SAND(GC)	27	11	16		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	LA-TP-06	1.0	76.2	0.535			33.4	25.9	40.6	
⊠	LA-TP-07	1.0	76.2	0.149			20.6	28.5	50.6	
▲	LA-TP-08	1.0	101.6	9.443	0.154		44.2	27.2	21.3	

GRAIN SIZE DISTRIBUTION

Project: 6000 West
Location: Daybreak
Project No: 15-817-05397



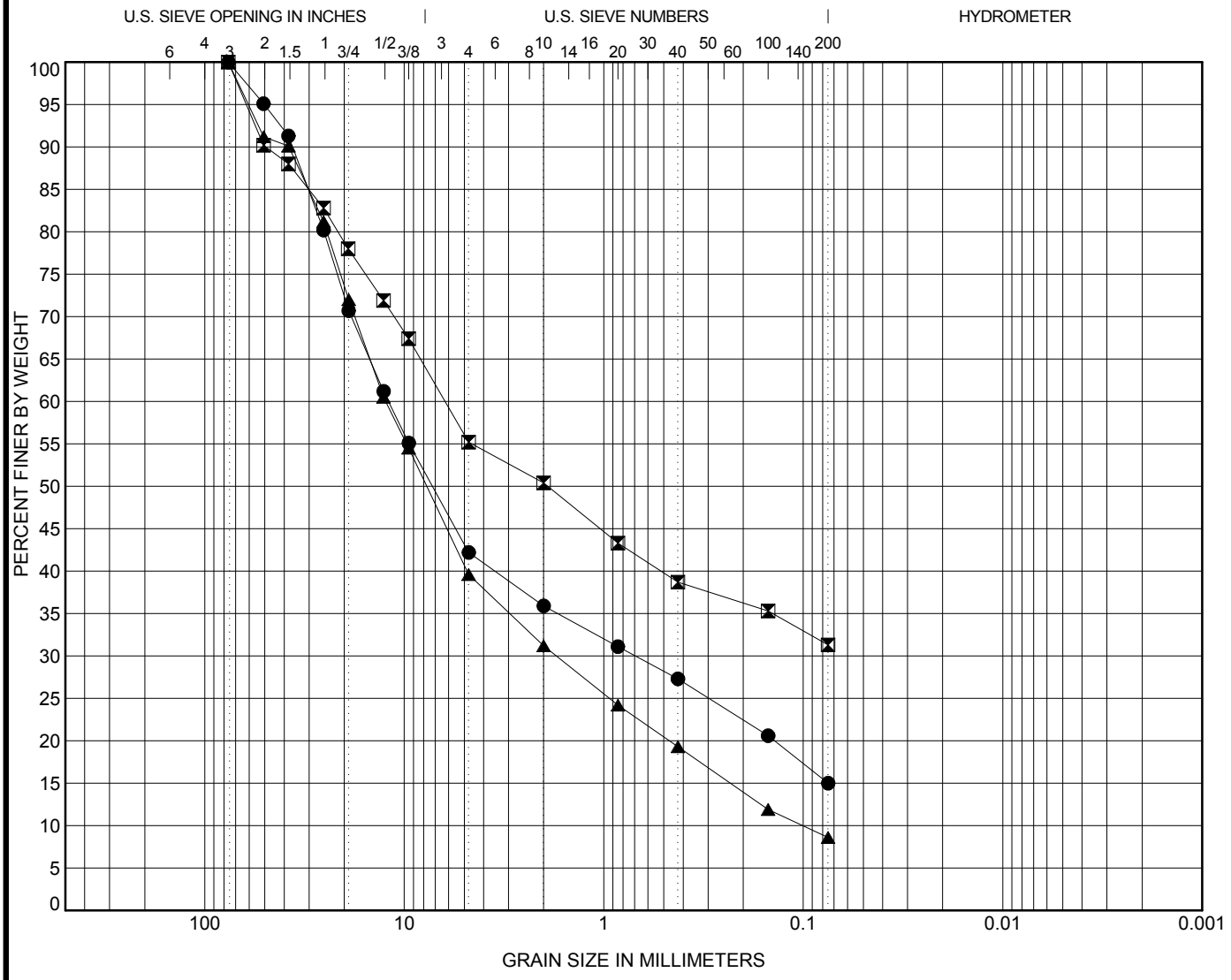
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	6000W-TP-01	1.0	SANDY LEAN CLAY with GRAVEL(CL)	31	17	14		
⊠	6000W-TP-03	1.0	WELL-GRADED GRAVEL with SILT and SAND(GW-GM)	NP	NP	NP	2.85	139.74
▲	6000W-TP-04	1.0	SANDY SILT(ML)	NP	NP	NP		
★	6000W-TP-05	1.0	CLAYEY SAND with GRAVEL(SC)	29	11	18		
⊙	6000W-TP-06	1.0	LEAN CLAY with SAND(CL)	29	8	21		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6000W-TP-01	1.0	38.1	0.12			15.6	29.6	54.8	
⊠	6000W-TP-03	1.0	101.6	11.724	1.673	0.084	52.4	30.4	8.9	
▲	6000W-TP-04	1.0	25.4				2.3	32.5	65.2	
★	6000W-TP-05	1.0	101.6	2.54	0.448		27.1	48.4	21.3	
⊙	6000W-TP-06	1.0	25.4				1.0	23.8	75.2	

GRAIN SIZE DISTRIBUTION

Project: 6200 West
Location: Daybreak
Project No: 15-817-05397



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	6200W-TP-01	1.0	CLAYEY GRAVEL with SAND(GC)	29	15	14		
⊠	6200W-TP-02	1.0	CLAYEY GRAVEL with SAND(GC)	33	18	15		
▲	6200W-TP-03	1.0	WELL-GRADED GRAVEL with SILT and SAND(GW-GM)	NP	NP	NP	2.39	123.18

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6200W-TP-01	1.0	76.2	11.995	0.695		57.6	27.2	15.0	
⊠	6200W-TP-02	1.0	76.2	6.239			44.4	23.9	31.3	
▲	6200W-TP-03	1.0	76.2	12.396	1.727	0.101	60.1	31.0	8.6	

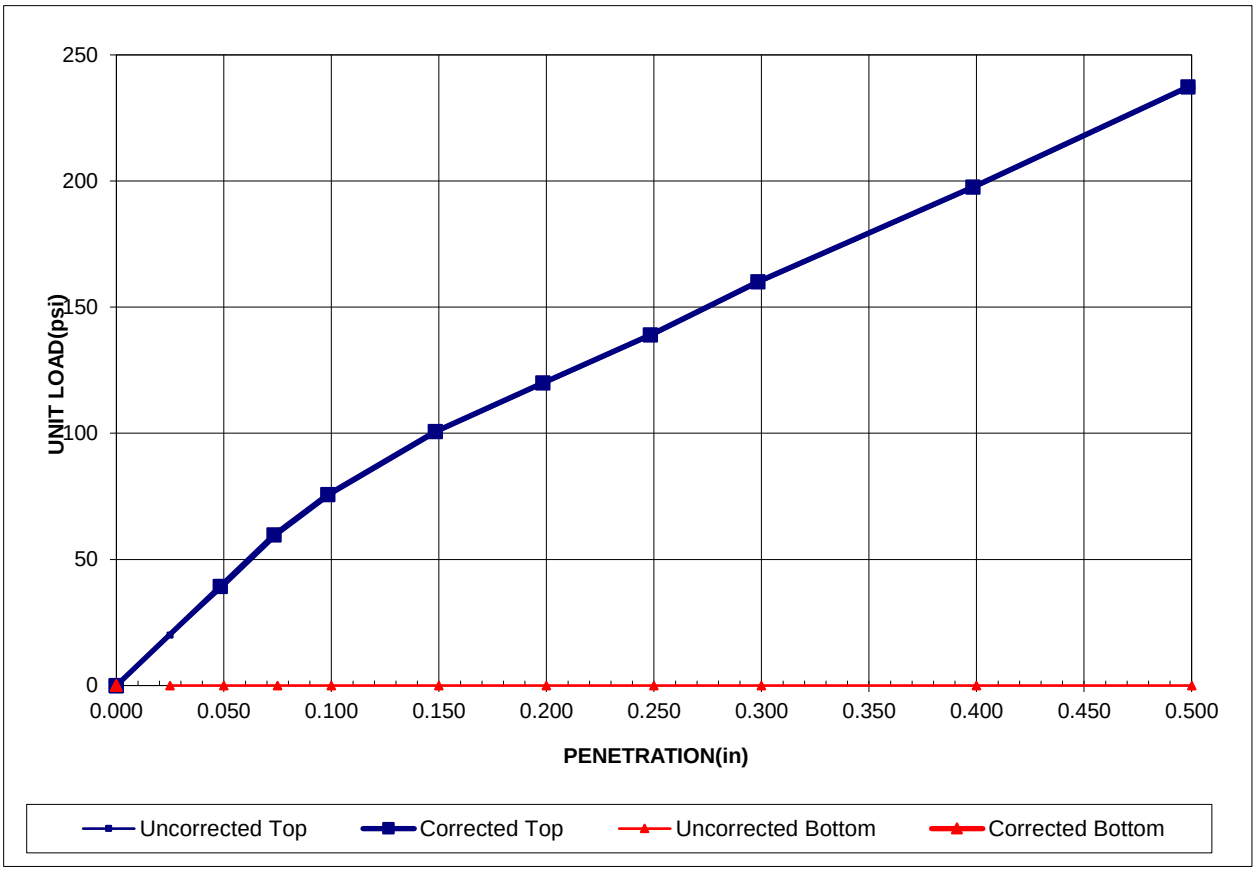
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	LA-TP-01	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	111.4	106.8	108.3
MOISTURE, %	15.8	15.2	19.2

PERCENT SWELL 0.7%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	8	
0.2	8	

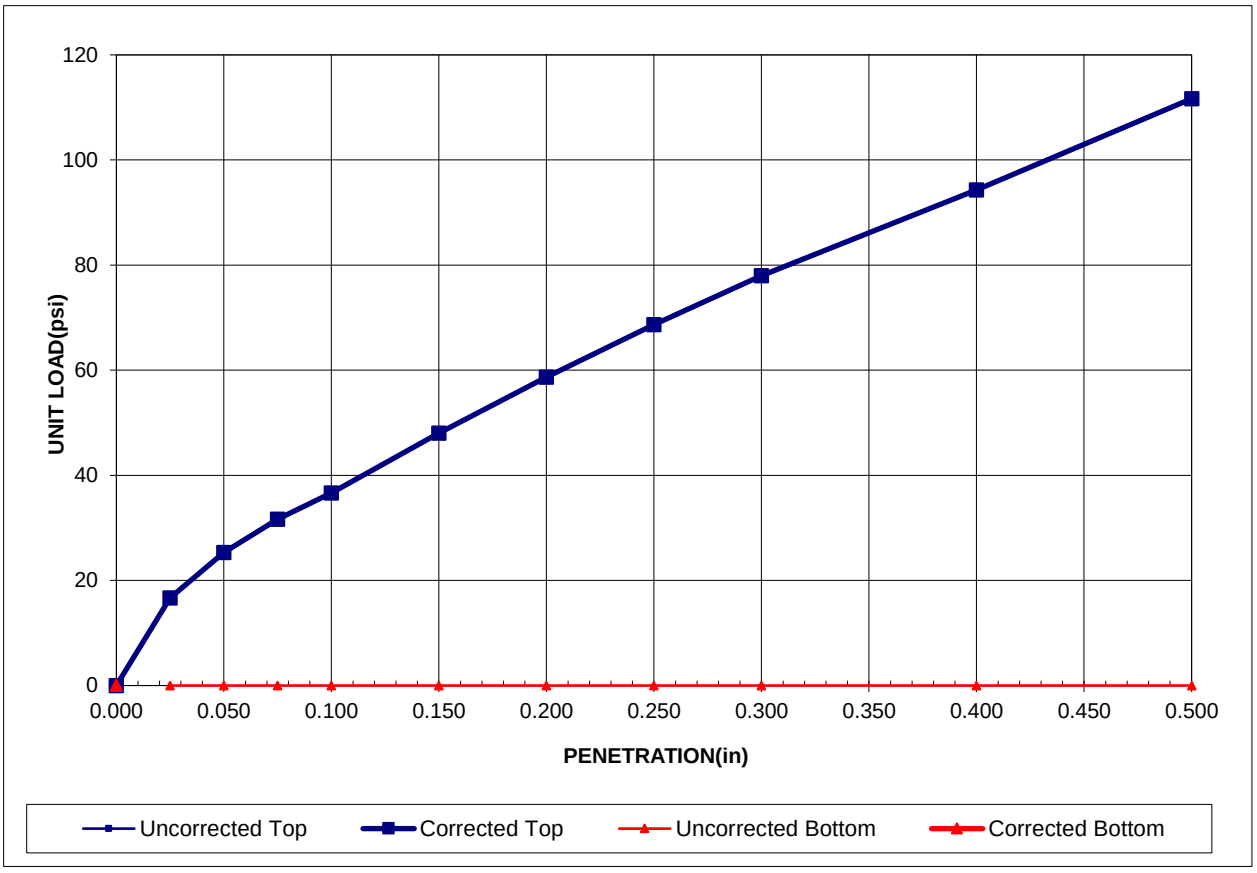
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	LA-TP-02	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	103.7	99.7	99.9
MOISTURE, %	19.3	18.9	26.3

PERCENT SWELL 1.0%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	4	
0.2	4	

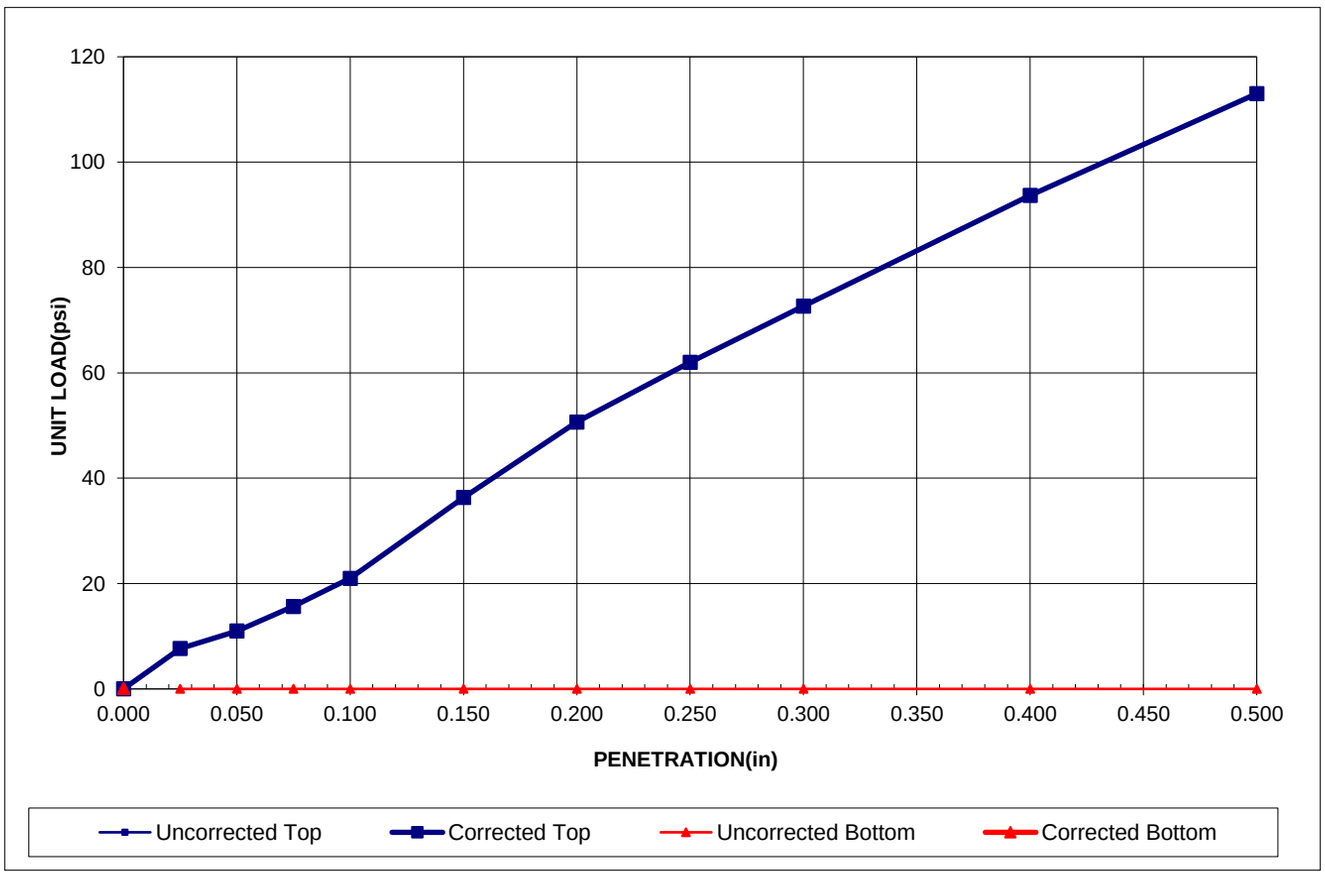
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	LA-TP-03	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	101.8	97.5	102.4
MOISTURE, %	18.3	18.0	20.5

PERCENT SWELL 0.9%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	2	
0.2	3	

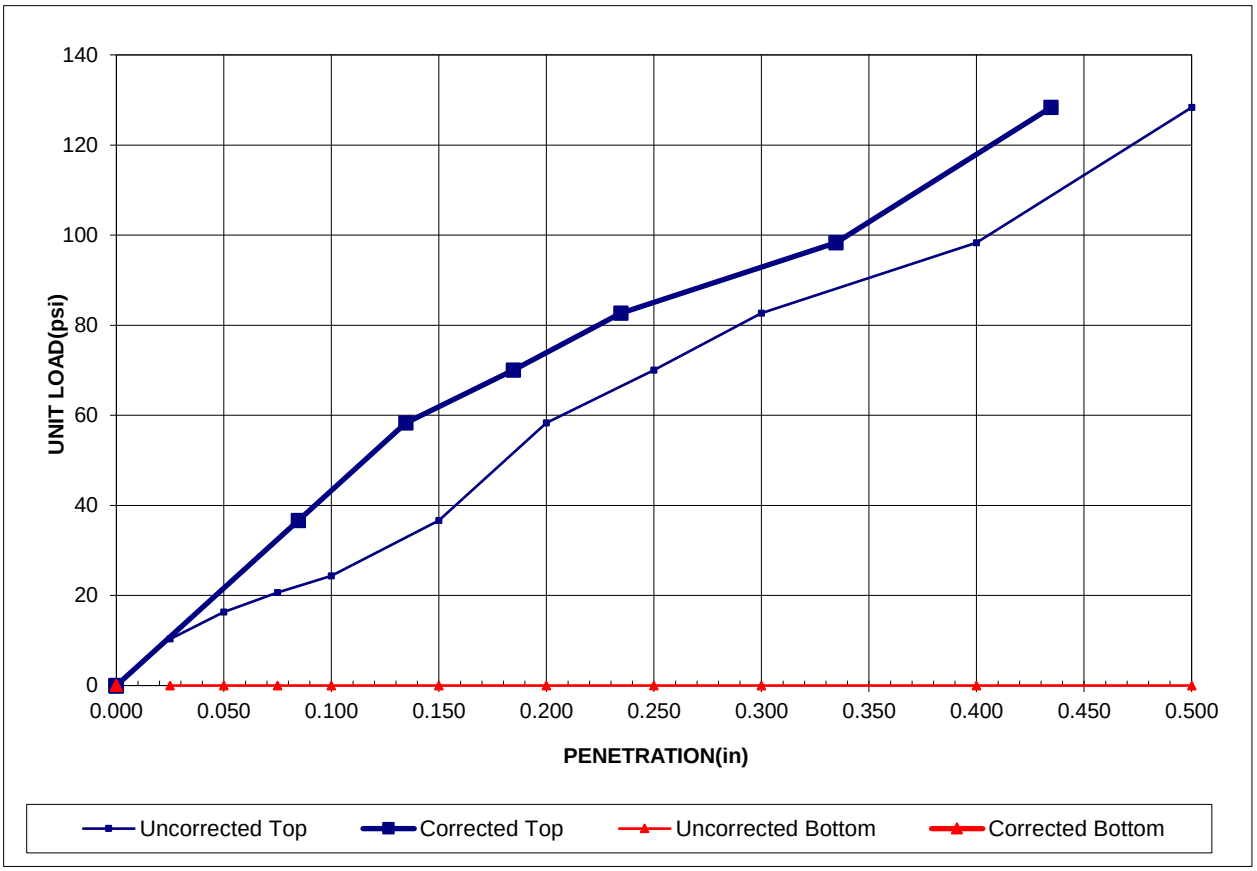
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	LA-TP-04	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	106.9	102.9	102.6
MOISTURE, %	18	17.4	26.3

PERCENT SWELL 1.1%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	4	
0.2	5	

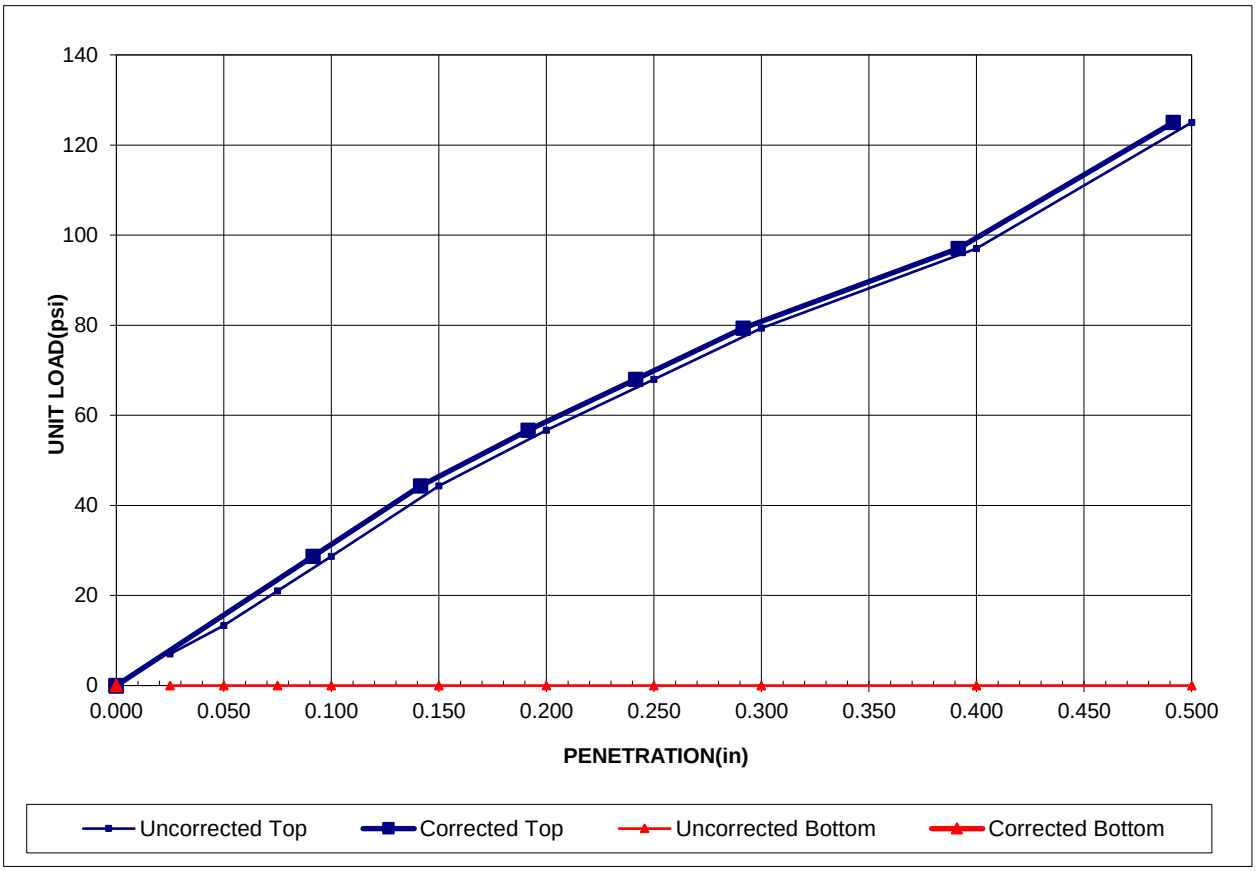
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	LA-TP-05	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	105.8	101.8	104.6
MOISTURE, %	19.7	19.1	26.3

PERCENT SWELL 1.1%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	3	
0.2	4	

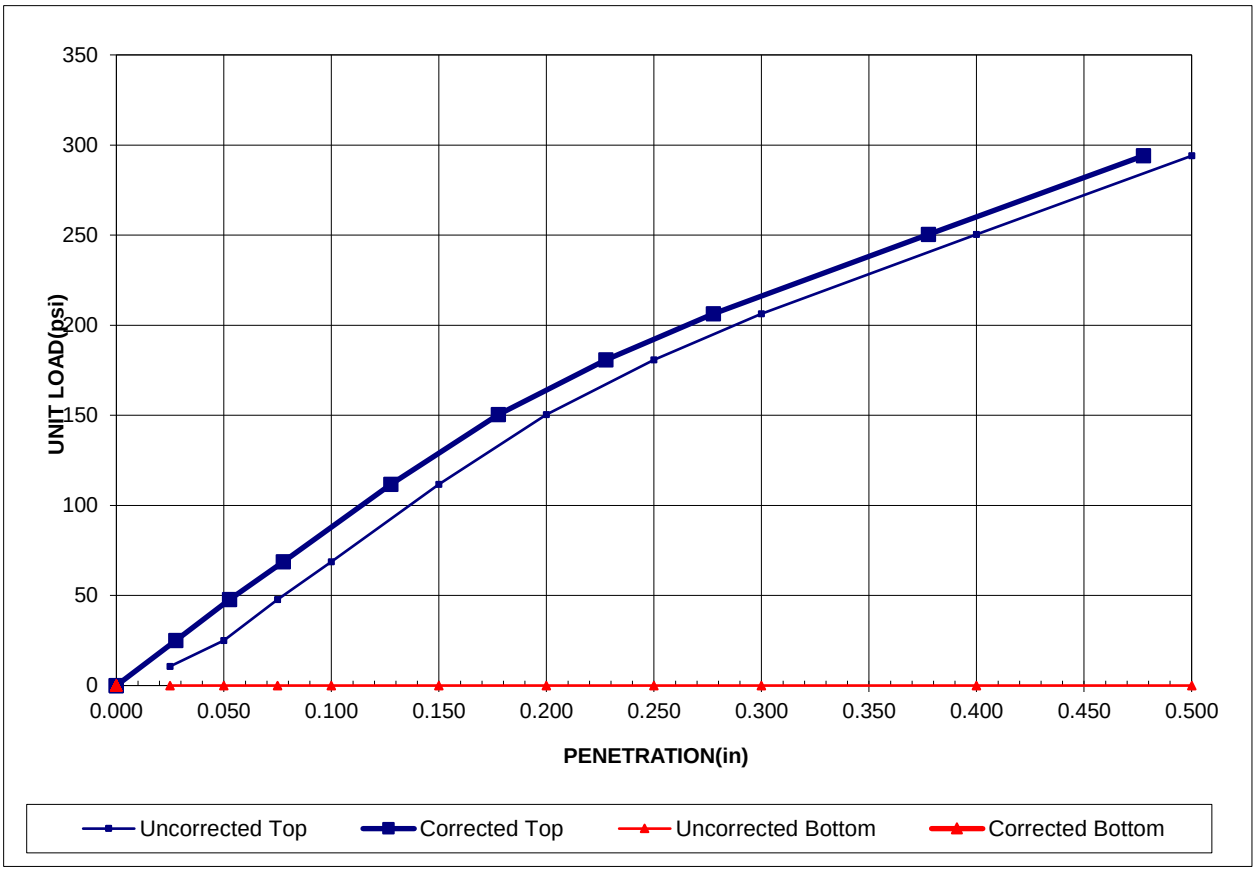
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	LA-TP-06	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	121.7	117.3	119.0
MOISTURE, %	11	10.5	14.5

PERCENT SWELL 0.4%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	9	
0.2	11	

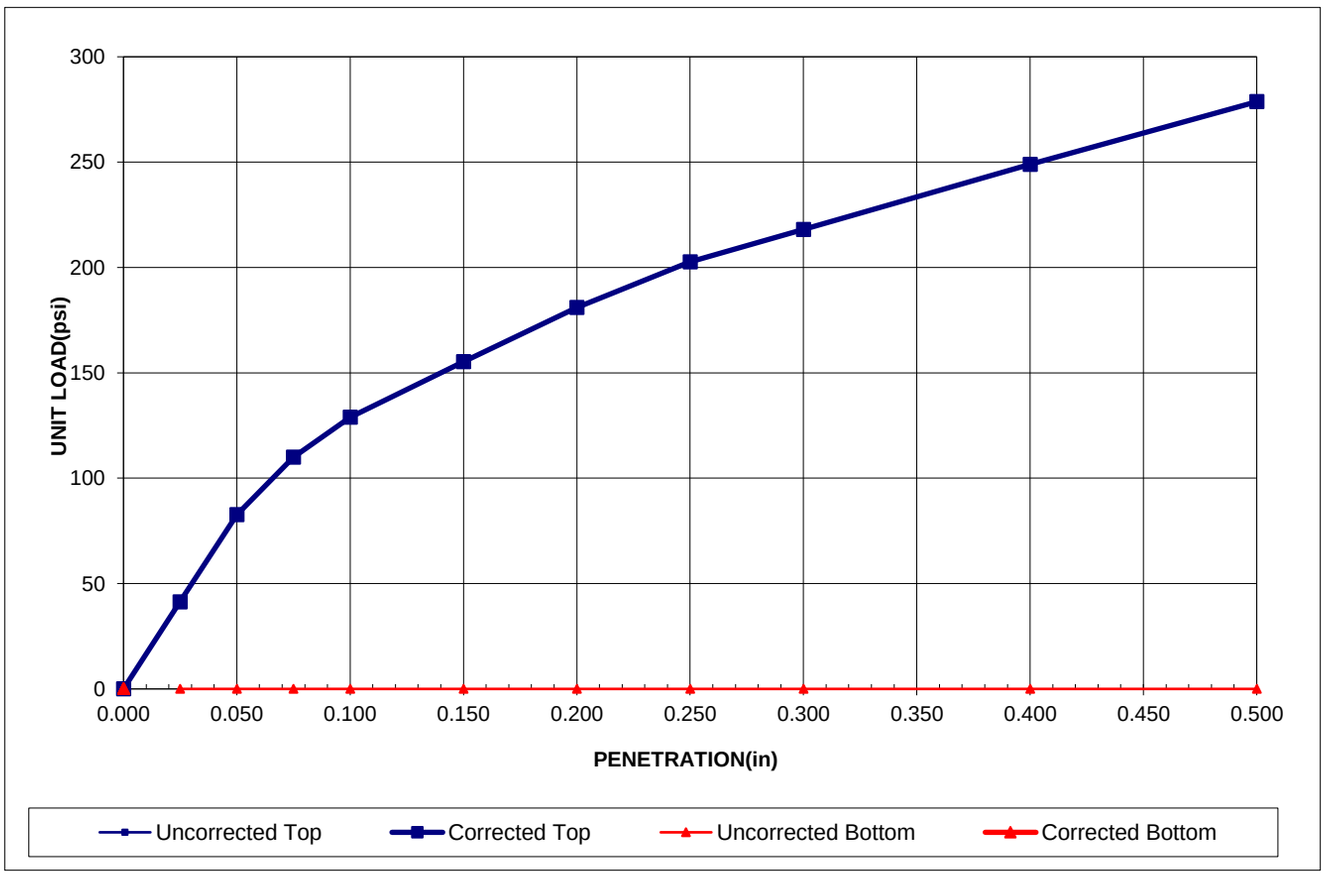
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	LA-TP-07	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	117	111.9	112.9
MOISTURE, %	13.9	13.8	16.9

PERCENT SWELL 0.5%



	CORRECTED CBR-VALUE	
PENETRATION	TOP	BOTTOM
0.1	13	
0.2	12	

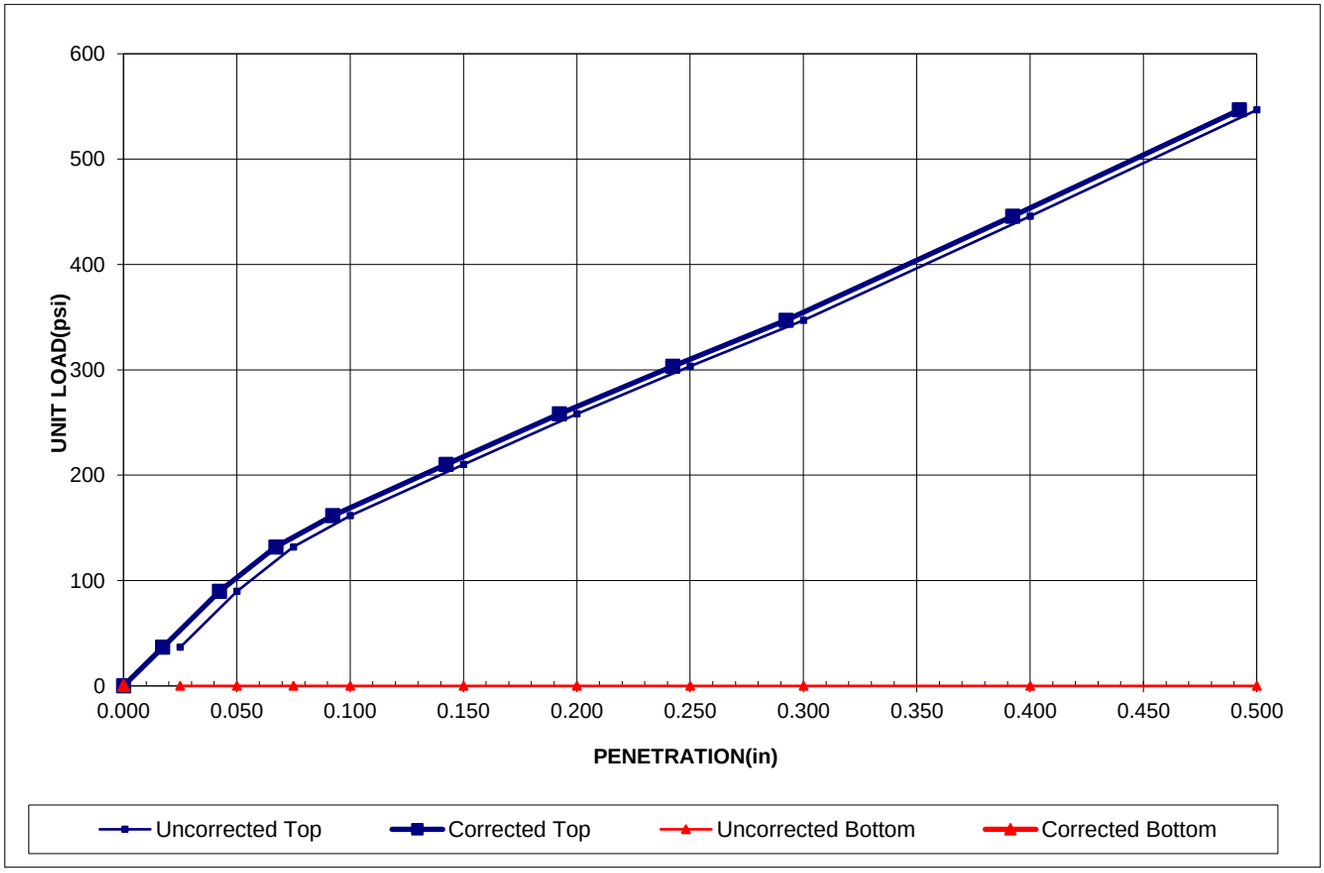
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	LA-TP-08	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	127.2	122.1	124.2
MOISTURE, %	9.2	8.6	9.5

PERCENT SWELL 0.2%



	CORRECTED CBR-VALUE	
PENETRATION	TOP	BOTTOM
0.1	17	
0.2	18	

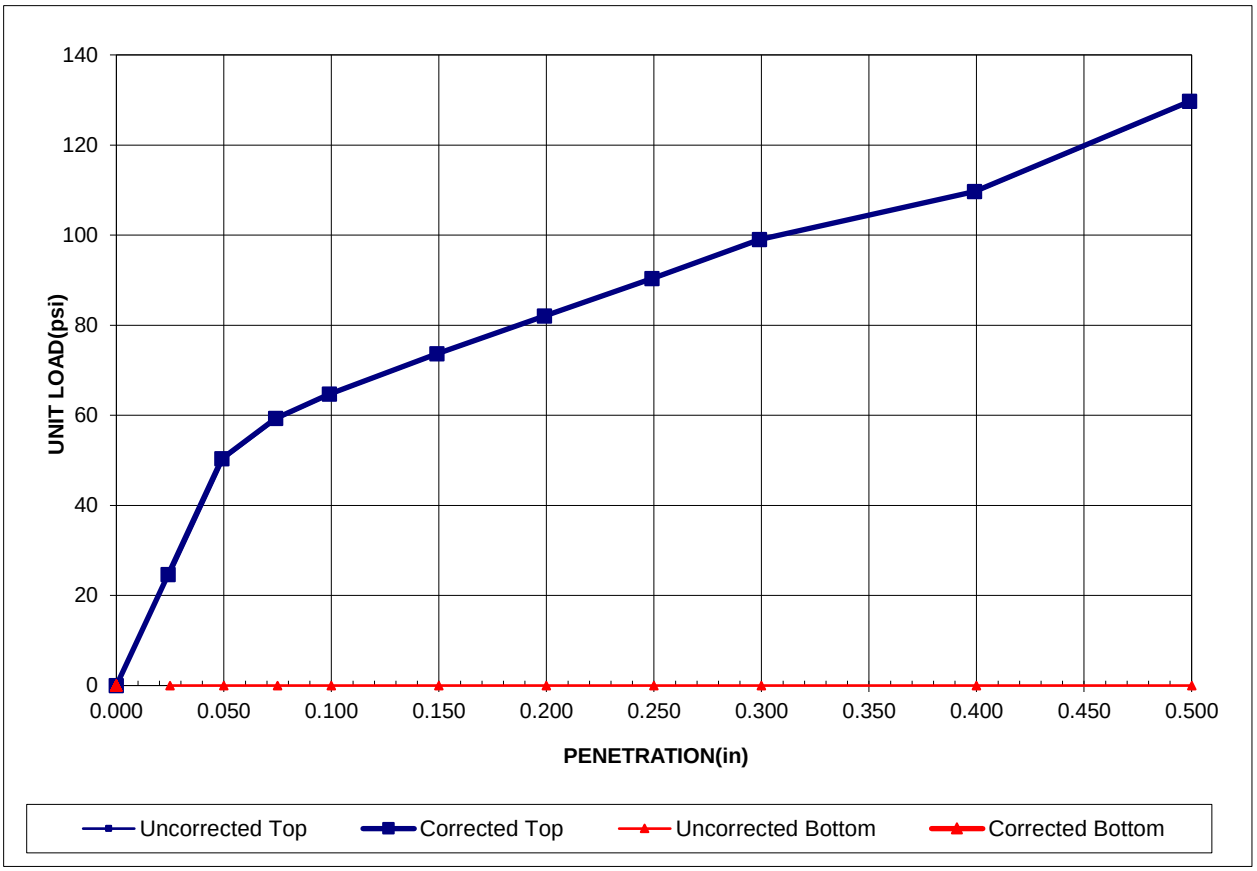
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	6000W-TP-01	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	117.1	112.9	113.4
MOISTURE, %	13.5	13.0	17.3

PERCENT SWELL 1.0%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	6	
0.2	5	

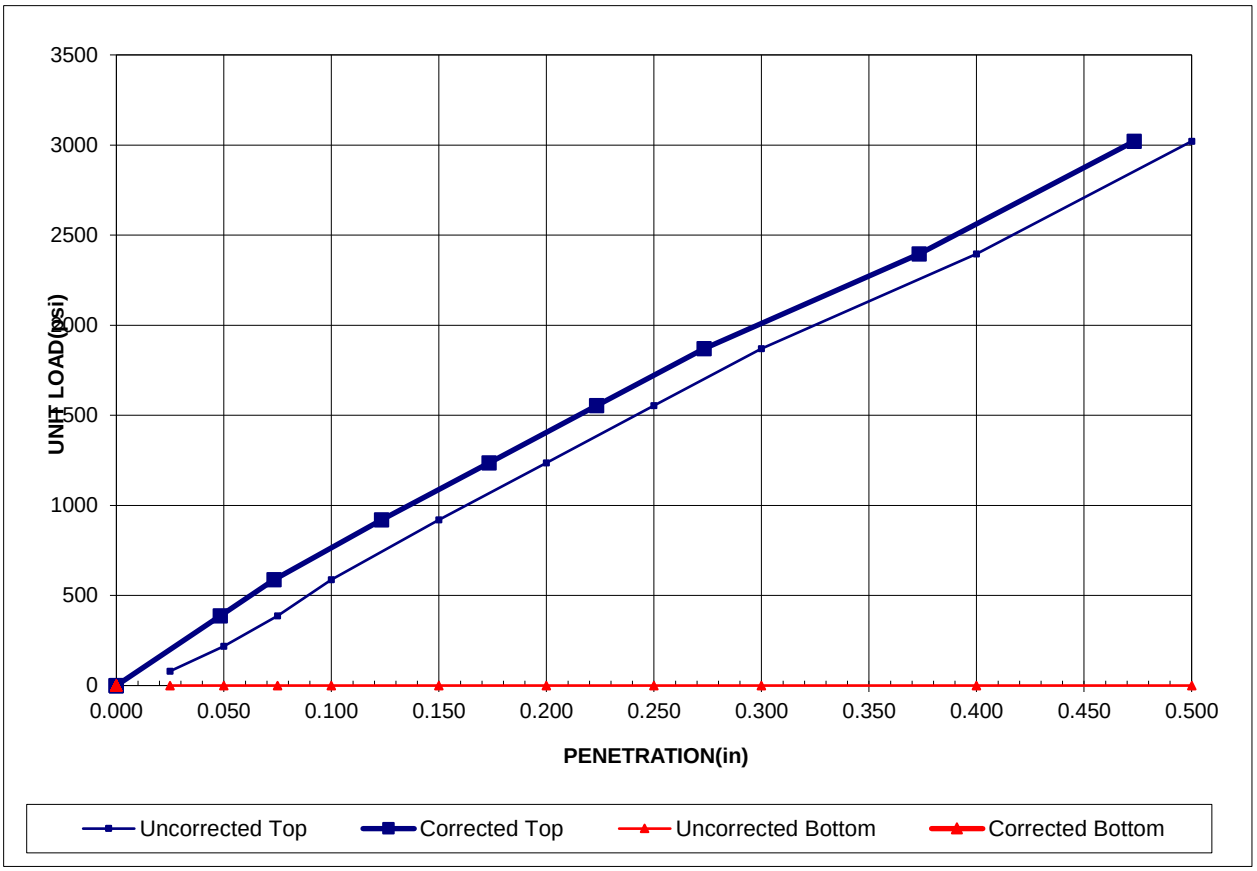
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	6000W-TP-03	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	131.7	126.4	130.0
MOISTURE, %	7.7	7.1	8.0

PERCENT SWELL 0.5%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	77	
0.2	94	

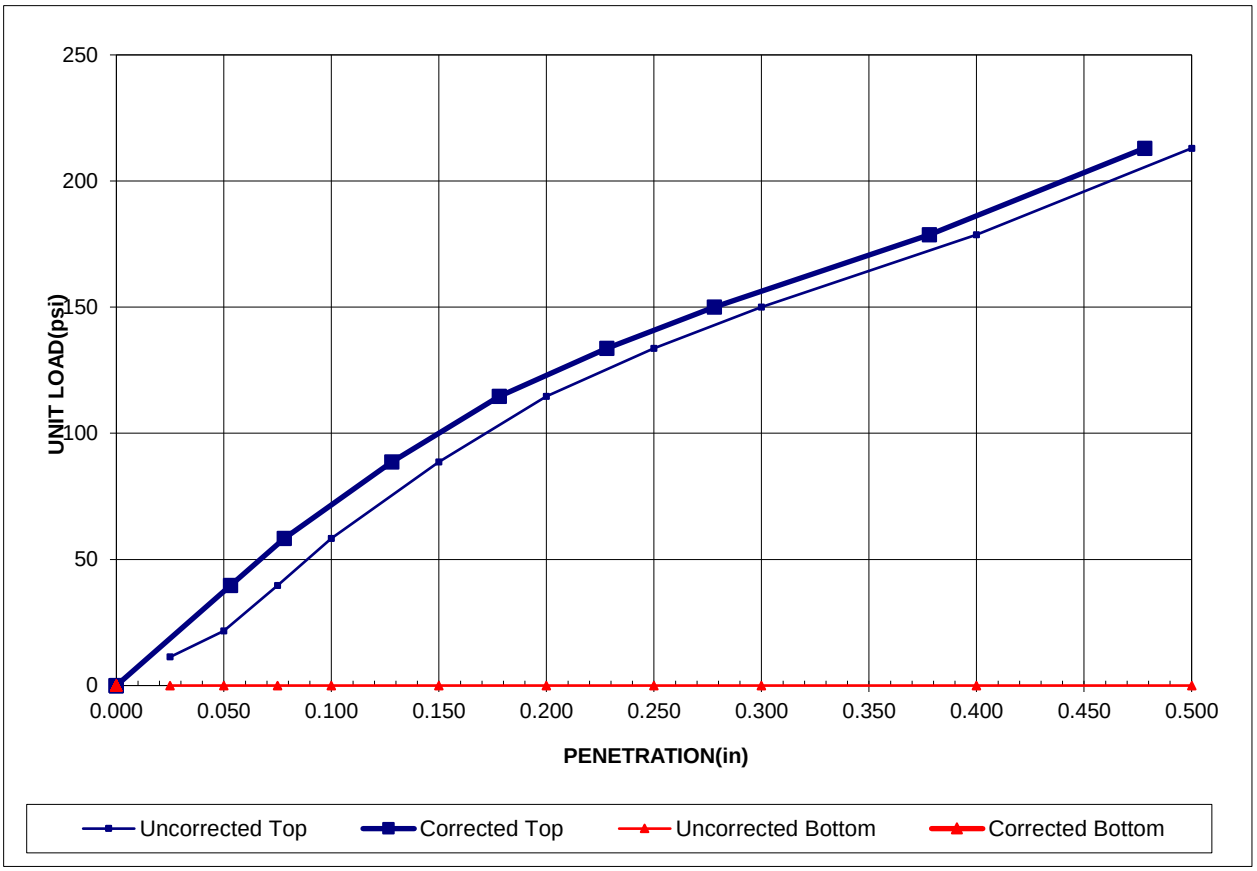
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	6000W-TP-04	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	119.5	115.0	116.5
MOISTURE, %	11.8	10.9	15.4

PERCENT SWELL 0.2%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	7	
0.2	8	

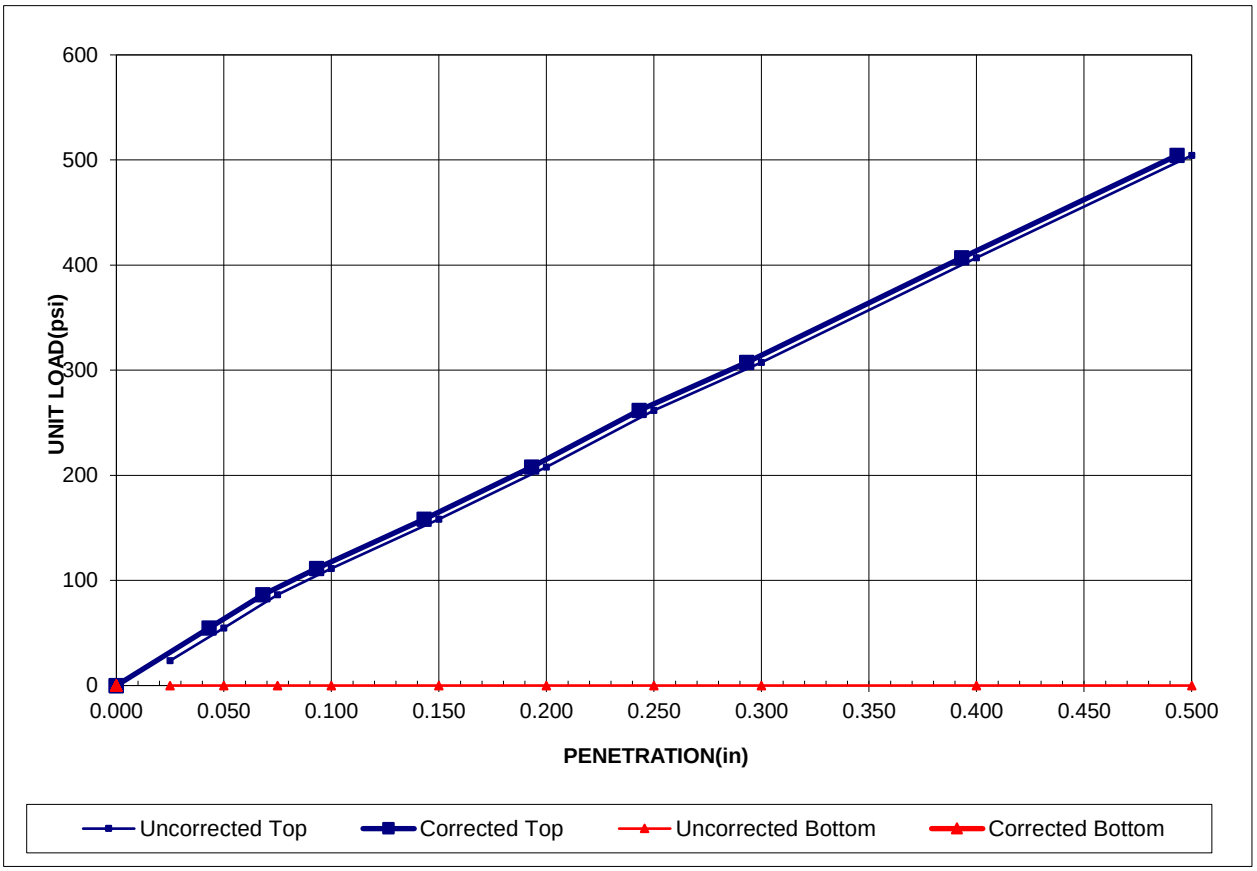
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	6000W-TP-05	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	125.5	120.9	123.0
MOISTURE, %	10.2	10.1	12.0

PERCENT SWELL 1.0%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	12	
0.2	14	

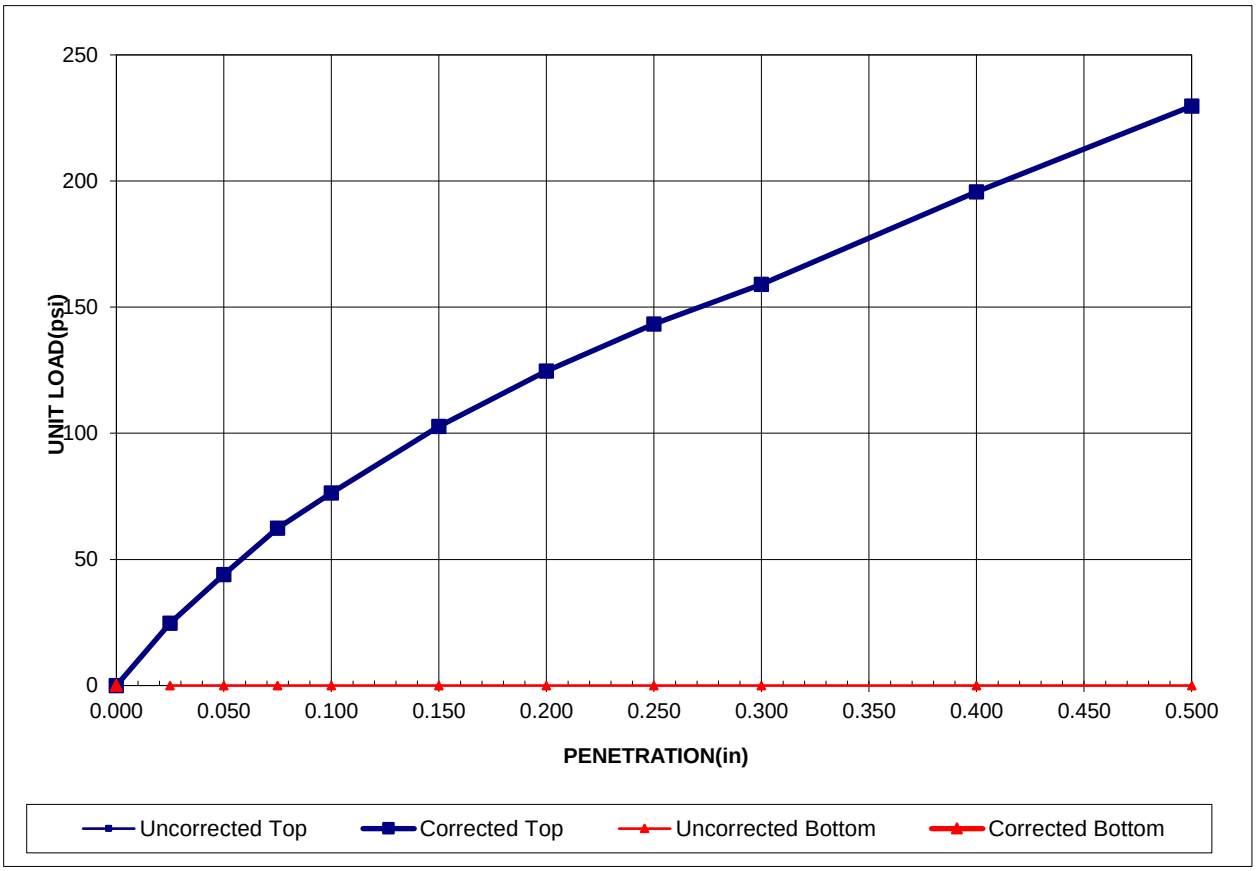
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	6000W-TP-06	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	116.8	111.5	112.7
MOISTURE, %	13.5	13.7	18.5

PERCENT SWELL 0.8%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	8	
0.2	8	

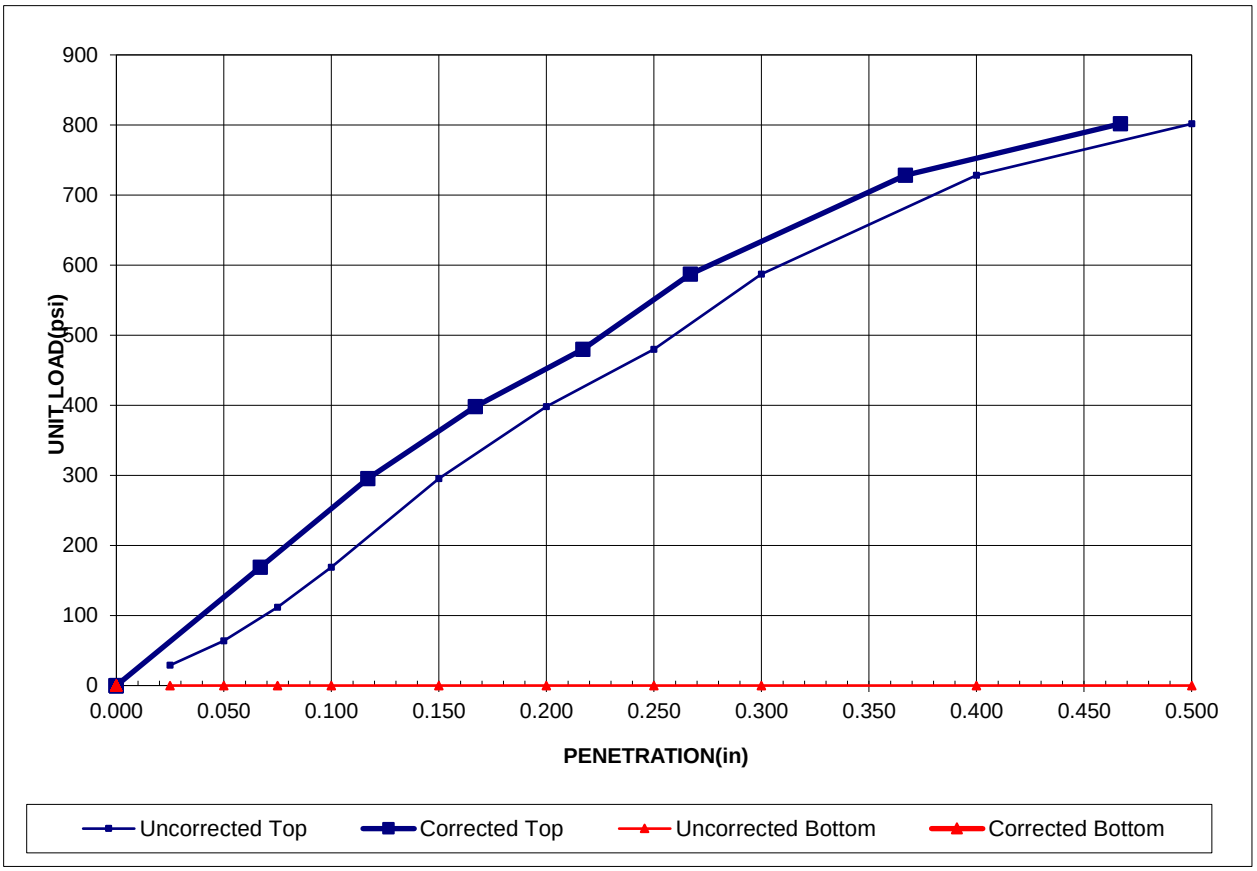
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	6200W-TP-01	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	128.6	123.2	124.8
MOISTURE, %	7.6	7.5	9.9

PERCENT SWELL 0.2%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	25	
0.2	30	

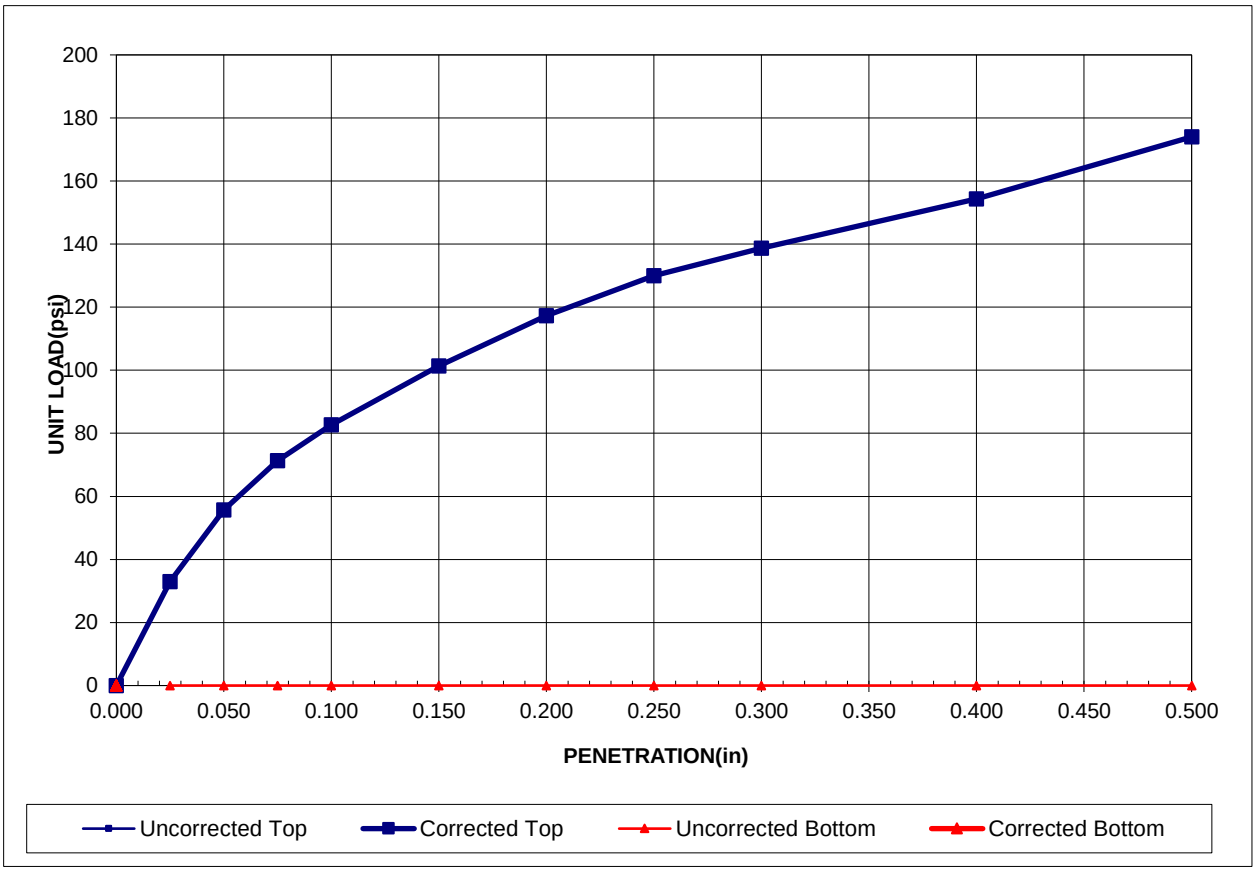
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	6200W-TP-02	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 97%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	118.7	114.6	118.0
MOISTURE, %	12.8	12.1	14.2

PERCENT SWELL 0.6%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	8	
0.2	8	

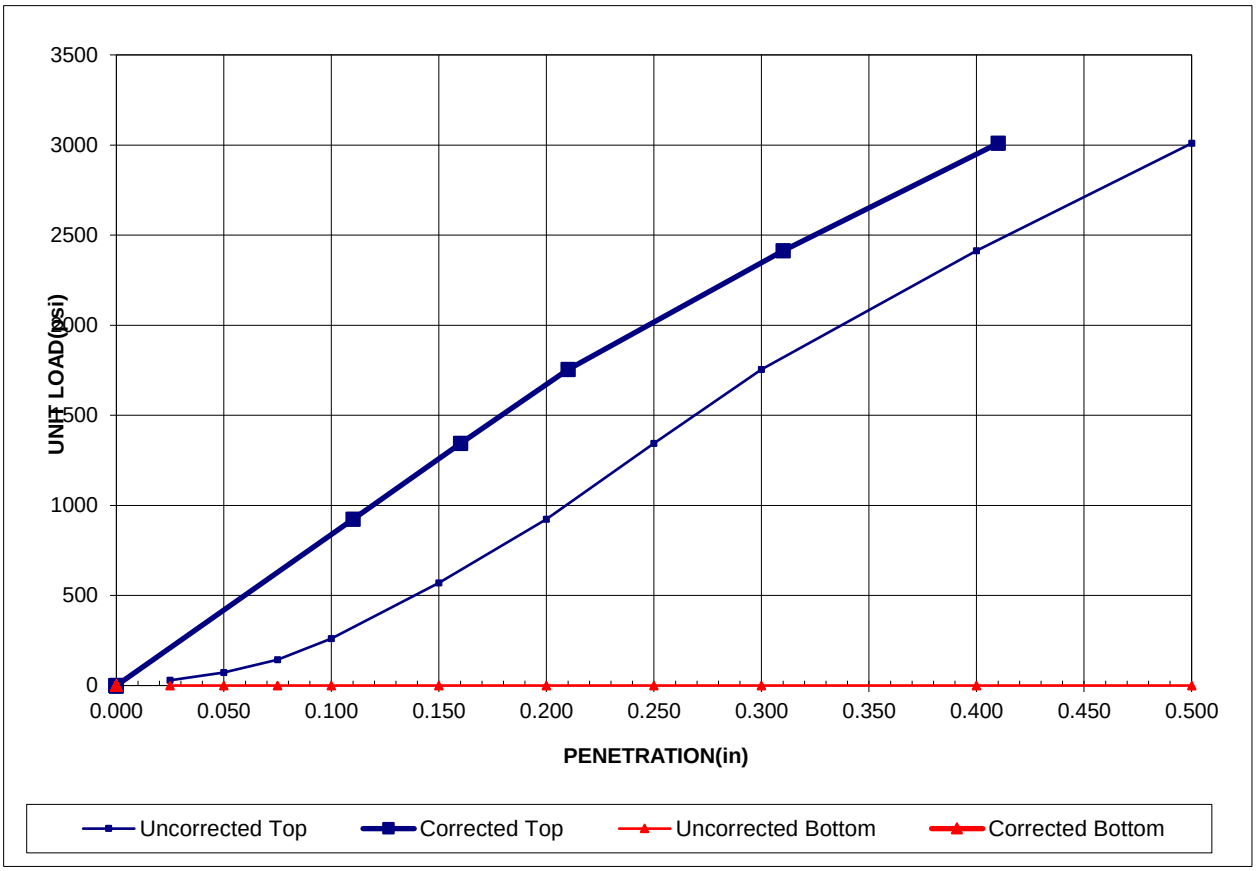
PROJECT NO:	1581705397	**WORK ORDER NO:**	
PROJECT NAME:	Lake Avenue, 6000W, and 6200W	**LAB NO:**	9102
LOCATION:	6200W-TP-03	**DATE SAMPLED:**	

CALIFORNIA BEARING RATIO OF LABORATORY-COMPACTED SOILS (ASTM D1883D)

COMPACTION: 96%
PROCEDURE: 5 lifts at 56 blows/lift
SURCHARGE WEIGHT: 10 lb

	ASTM PROCTOR	BEFORE SOAK	AFTER SOAK
DRY DENSITY	131.8	127.0	128.7
MOISTURE, %	8.5	8.4	9.2

PERCENT SWELL 0.4%



PENETRATION	CORRECTED CBR-VALUE TOP	BOTTOM
0.1	84	
0.2	111	