



Exhibit A

ENT 46834 = 2024 PG 2 of 86

Title Report Legal Description

Commencing 4.20 chains East and 5.40 chains South of the Northwest corner of the Southeast quarter of Section 26, Township 5 South, Range 1 East, Salt Lake Base and Meridian; thence South 21.60 chains; thence East 3.10 chains; thence North 21.60 chains; thence West 3.10 chains to the beginning.

ALSO:

Commencing 4.2 chains East of the Northwest corner of the Southeast quarter of Section 26, Township 5 South, Range 1 East, Salt Lake Meridian; thence South 5.40 chains; thence East 3.10 chains; thence South 21.60 chains; thence East 1.03 chains; thence North 27.00 chains; thence West 4.13 chains to the beginning.

THIS IS THE SAME LEGAL DESCRIPTION PROVIDED BY: FIDELITY NATIONAL TITLE INSURANCE COMPANY

ISSUING AGENT: COTTONWOOD TITLE INSURANCE AGENCY, INC.

COMMITMENT DATE: JULY 2, 2021

FILE NO. 147516-DMP



**LETTER
ADDENDUM #1 AND REVIEW RESPONSE #1
PROPOSED 6800 NORTH INDUSTRIAL/
PROPOSED DEER PARK INDUSTRIAL
1100 SOUTH 50 WEST
AMERICAN FORK, UTAH**

Submitted To:

White Horse Developers
520 South 850 East, Suite A4
Lehi, Utah 84043

Submitted By:

GSH Geotechnical, Inc.
473 West 4800 South
Salt Lake City, Utah 84123

November 22, 2021

Job No. 3388-001-21



November 22, 2021
Job No. 3388-001-21

Mr. Jake Horan
White Horse Developers
520 South 850 East, Suite A4
Lehi, Utah 84043

Mr. Horan:

Re: Letter
Addendum #1 and Review Response #1
Proposed 6800 North Industrial/Proposed Deer Park Industrial
1100 South 50 West
American Fork, Utah

1. INTRODUCTION

1.1 GENERAL

This letter is to serve as an addendum to the previously completed geotechnical study for the above-mentioned site as well as in response to the review and questions posed by Mr. Alan Taylor, P.E. of Taylor Geotechnical on behalf of the City of American Fork. GSH previously completed a geotechnical study for the site dated May 14, 2021¹. GSH returned to the site on September 9, 2021, to conduct 4 additional borings and subsequent analysis for this addendum.

Since the issuance of the original report, one warehouse was added to the overall scope of the project on an additional parcel to the west of the original site. This addendum outlines the soil conditions and properties in the additional borings and any applicable recommendation changes. With the exception of the recommendations herein, all recommendations from the original report remain valid.

1.2 SUBSURFACE SOIL

Non-engineered fill soils were encountered in each additional boring, to depths of up to 6.5 feet beneath the existing ground surface. The non-engineered fill soils primarily consisted of clay with

¹ "Geotechnical Study, Proposed 6800 North Industrial, American Fork, Utah" prepared by GSH Geotechnical, Inc., GSH Job No. 2354-003-21.



varying silt, sand, and gravel content as well as sand with varying clay, silt, and gravel content. Natural soils were encountered below the non-engineered fill or the ground surface in each boring. The natural soils consisted primarily of clay with varying silt, sand, and gravel content as well as sand and gravel with varying clay and silt content.

The following sections provide updated recommendations for the treatment of non-engineered fills.

2. DISCUSSIONS AND RECOMMENDATIONS

2.1 SITE PREPARATION

Initial site preparation will consist of the removal of any existing debris, non-engineered fills, surface vegetation, root systems, topsoil, and any deleterious materials from beneath an area extending out at least 5 feet from the perimeter of the proposed structure footprint and 3 feet beyond rigid pavements and exterior flatwork areas. All existing utility locations should be reviewed to assess their impact on the proposed construction and abandoned and/or relocated as appropriate.

In situ, non-engineered fills may remain below flexible pavements if free of debris and deleterious materials, less than 3 feet in thickness, and if properly prepared. Proper preparation below pavements will consist of the scarification of the upper 12 inches below asphalt concrete (flexible pavement), followed by moisture preparation and re-compaction to the requirements of structural fill. Even with proper preparation, pavements established overlying non-engineered fills may encounter some long-term movements unless the non-engineered fills are completely removed.

GSH must be notified prior to the placement of structural site grading fills, floor slabs, footings, and pavements to verify that all loose/disturbed soils and non-engineered fills have been completely removed and/or properly prepared.

2.2 STRUCTURAL FILL

On-site soils, including existing non-engineered fills, may be re-utilized as structural site grading fill if they do not contain construction debris or deleterious material and meet the requirements of structural fill. Fine-grained soils will require very close moisture control and may be very difficult, if not impossible, to properly place and compact during wet and cold periods of the year.

2.3 PAVEMENTS

The natural clay soils and non-engineered fills will exhibit poor pavement support characteristics when saturated. All pavement areas must be prepared as previously discussed. Under no circumstances shall pavements be established over unprepared non-engineered fills, loose or disturbed soils, topsoil, surface vegetation, root systems, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. With the subgrade soils and the

projected traffic as discussed in Section 2, Proposed Construction in the original report, the following pavement sections are recommended:

Parking Areas

(Light Volume of Automobiles and Light Trucks,
 Occasional Medium-Weight Trucks,
 and No Heavy-Weight Trucks)
 [1-3 equivalent 18-kip axle loads per day]

Flexible Pavements:
 (Asphalt Concrete)

3.0 inches	Asphalt concrete
8.0 inches	Aggregate base
Over	Properly prepared fills, natural subgrade soils, and/or structural site grading fill extending to properly prepared fills and/or natural subgrade soils

Rigid Pavements:
 (Non-reinforced Concrete)

5.0 inches	Portland cement concrete (non-reinforced)
5.0 inches	Aggregate base
Over	Properly prepared natural subgrade soils, and/or structural site grading fill extending to properly prepared natural subgrade soils

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Primary Drive Lanes/Loading and Unloading Areas

(Moderate Volume of Automobiles, Light Trucks,
 and Medium-Weight Trucks,
 with a Light Volume of Heavyweight Trucks)
 [18 equivalent 18-kip axle loads per day]

Flexible Pavements:
 (Asphalt Concrete)

4.0 inches	Asphalt concrete
8.0 inches	Aggregate base
8.0 inches*	Aggregate subbase
Over	Properly prepared fills, natural subgrade soils, and/or structural site grading fill extending to properly prepared fills and/or natural subgrade soils

* Subbase may consist of granular site grading fills with a minimum California Bearing Ratio (CBR) of 30 percent.

Rigid Pavements:
 (Non-reinforced Concrete)

7.0 inches	Portland cement concrete (non-reinforced)
6.0 inches	Aggregate base
Over	Properly prepared natural subgrade soils, and/or structural site grading fill extending to properly prepared natural subgrade soils

In areas with tight maneuvering heavy vehicles, rigid pavements are recommended.

For dumpster pads, we recommend a pavement section consisting of 8.0 inches of Portland cement concrete, 12.0 inches of aggregate base, over properly prepared natural subgrade or site grading structural fills. Dumpster pads should not be constructed overlying non-engineered fills under any circumstances.

These above rigid pavement sections are for non-reinforced Portland cement concrete. Concrete should be designed in accordance with the American Concrete Institute (ACI) and joint details should conform to the Portland Cement Association (PCA) guidelines. The concrete should have a minimum 28-day unconfined compressive strength of 4,000 pounds per square inch and contain 6 percent \pm 1 percent air-entrainment.

The crushed stone should conform to applicable sections of the current Utah Department of Transportation (UDOT) Standard Specifications. All asphalt material and paving operations should meet applicable specifications of the Asphalt Institute and UDOT. A GSH technician shall observe placement and perform density testing of the base course material and asphalt.

Please note that the recommended pavement section is based on estimated post-construction traffic loading. If the pavement is to be constructed and utilized by construction traffic, the above pavement section may prove insufficient for heavy truck traffic, such as concrete trucks or tractor-trailers used for construction delivery. Unexpected distress, reduced pavement life, and/or premature failure of the pavement section could result if subjected to heavy construction traffic and the owner should be made aware of this risk. If the estimated traffic loading stated herein is not correct, GSH must review actual pavement loading conditions to determine if revisions to these recommendations are warranted.

2.4 SITE VISITS

GSH must verify that all topsoil/disturbed soils and any other unsuitable soils have been removed, that non-engineered fills have been removed and/or properly prepared, and that suitable soils have been encountered prior to placing site grading fills, footings, slabs, and pavements. Additionally, GSH must observe fill placement and verify in-place moisture content and density of fill materials placed at the site.

3. TAYLOR GEOTECHNICAL (TG) REVIEW RESPONSE

TG Comment 1

Section 3.3.1 General (page 4) of the May 14, 2021, GSH document states, "Lab testing was ongoing at the time this report was written. Upon completion, an updated version of this report containing lab results will be sent , along with any revised recommends."

TG recommends American Fork City request GSH provide the updated version of the report with the accompany lab work results (i.e. consolidations, gradations, Atterberg Limits, etc.).

GSH Review Response 1

Lab testing associated with the May 14, 2021, report as well as the additional borings conducted on September 9, 2021 and associated addendum are included as Attachment 1, Laboratory Testing.

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TG Comment 2

Section 5.1 Summary of Findings (page 7) of the May 14, 2021, GSH document states, "GSH is currently conducting a site-specific seismic response analysis and the results will be transmitted upon completion."

TG recommends American Fork City request GSH provide the site-specific seismic response analysis.

GSH Review Response 2

The site-specific seismic response analysis completed in association with the May 14, 2021, study is included as Attachment 2, Site-Specific Seismic Study.

TG Comment 3

Section 5.3 Groundwater (page 11) of the May 14, 2021, GSH document states, "Floor slabs must be placed a minimum of 4 feet from the stabilized groundwater elevation."

TG recommends American Fork City request GSH provide the stabilized groundwater elevation as measured from existing grade.

GSH Review Response 3

Stabilized groundwater elevations are presented in the following tables.

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Boring No.	Groundwater Depth (feet)
	May 13, 2021
B-1	4.8
B-2	Pipe Damaged
B-3	7.8
B-4	2.8
B-5	5.0
B-6	6.1
B-8	7.8
B-9	Pipe Damaged
B-10	7.1
B-12	4.6
B-15	3.6

Boring No.	Groundwater Depth (feet)
	September 17, 2021
B-1A	7.6
B-3A	9.3
B-4A	9.8

TG Comment 4

Section 5.9 Cement Types (page 17) of the May 14, 2021, GSH document states, "A representative soil sample was collected and sent for laboratory analysis for pH and sulfate content. As of the date of this report, results are still pending and will be transmitted when available and with corresponding cement recommendations, if applicable."

TG recommends American Fork City request GSH provide the laboratory results and corresponding cement recommendations.

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GSH Review Response 4

To determine if the site soils will react detrimentally with concrete, chemical tests were performed on a representative sample of the near-surface soil encountered at the site. The results of the chemical tests are tabulated below:

Boring No.	Depth (feet)	Soil Classification	pH	Total Water Soluble Sulfate (mg/kg-dry)
B-1	2.5	CL	7.37	247
B-1A	2.5	CL (Fill)	8.24	158

The laboratory tests indicate that the natural soils tested contain a negligible amount of water soluble sulfates. Based on our test results, concrete in contact with the on-site soil will have a low potential for sulfate reaction (ACI 318, Table 4.3.1). Therefore, all concrete which will be in contact with the site soils may be prepared using Type I or IA cement.

TG Comment 5

Section 4-2-2 of the American Fork City Sensitive Land Ordinance sub-item (10), states the report must be in accordance with the guidelines and recommendations of the "American Fork Sensitive Lands Geologic Hazards Study," Chapter 5 titled "Conclusions and Recommendations" prepared by RB&G Engineering, Inc., dated December 2006. The RB&G report specifies for facilities designed according to the IBC seismic provisions and located within the moderate or high liquefaction hazard zones identified on Figure 6 of the RB&G report, that the recommended Site Class be based on a site-specific subsurface investigation to a depth of at least 30 feet, supplemented by at least one investigation to a depth of at least 70 feet and located within 2,000 feet of the site. TG recommends American Fork City request GSH provide the recommended Site Class in accordance the American Fork City Sensitive Land Ordinance.

GSH Review Response 5

GSH completed a site-specific seismic response analysis in association with the May 14, 2021. Per this study, the site has been determined as a Site Class D – Stiff Soil Profile as defined in Chapter 20 of ASCE 7-16 (per Section 1613.3.2, Site Class Definitions, of IBC 2018).

TG Comment 6

TG recommends American Fork City request GSH update their ground motions and liquefaction analysis based on the IBC 2018 or ASCE 7-16.

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GSH Review Response 6

An updated ground motion table is presented in the site-specific seismic response analysis completed in association with the May 14, 2021, study. This study is included as Attachment 2, Site-Specific Seismic Study.

An updated liquefaction analysis will be provided to address the following comment “TG Comment 7”.

TG Comment 7

Section 5.10.5 Liquefaction (page 19) of the May 14, 2021, GSH document states, “Calculations were performed using the procedures described in the 2008 Soil Liquefaction During Earthquakes Monograph by Idriss and Boulanger³. Our calculations indicate the very, saturated sand layers encountered in Borings B-1, B-2, B-4 and B-12 could liquefy during the design seismic event. Calculated settlement associated with the liquefaction of each layer within the borings was on the order of 1 to 1.5 inches. This magnitude of settlement should be tolerable to design for life safety. Additionally, lateral spread and ground rupture are unlikely to occur.”

The subject document did not contain the calculations to substantiate there liquefaction induced settlement analysis. The document also did not substantiate the liquefaction induced lateral spread analysis.

TG recommends the American Fork City request the calculations that substantiate the liquefaction induced settlement and lateral spread analyses.

GSH Review Response 7

Calculations were performed using the procedures described in the 2008 Soil Liquefaction During Earthquakes Monograph by Idriss and Boulanger². Our calculations indicate the very loose to medium dense, saturated sand layers encountered in Borings B-1, B-2, B-6, and B-12 could liquefy during the design seismic event. Calculated settlement associated with the liquefaction of each layer within the borings was on the order of 1.16 to 2.1 inches.

The liquefaction calculations utilized to substantiate the liquefaction induced settlement are included as Attachment 3, Liquefaction Analysis.

Additionally, due to the lack of horizontal relief and change of topography throughout the site, lateral spread is unlikely to occur.

² Idriss, I. M., and Boulanger, R. W. (2008), Soil liquefaction during earthquakes: Monograph MNO-12, Earthquake Engineering Research Institute, Oakland, CA, 261 pp.

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TG Comment 8

Based on section 2-7-2 of the American Fork City Sensitive Land Ordinance, GSH should provide the historical high groundwater table for the subject site. TG recommends American Fork City request GSH provide the historical high groundwater table for the subject site and state the reference used.

GSH Review Response 8

GSH utilized waterdata.usgs.gov to review the historical high groundwater table for the subject. Historical high groundwater tables in wells directly adjacent to the northwest and northeast indicated were recorded as shallow as approximately 33 feet below the ground surface.

The historical high groundwater tables are included in Attachment 5, Historical High Groundwater Tables. However, these levels are unrealistically low. GSH recommends designing to an anticipated groundwater elevation of 3.6 feet, 1 foot higher than what was measured in the original study.

TG Comment 9

Since the site is below elevation 4593 feet, TG recommends American Fork City request GSH to address artesian conditions at the site.

GSH Review Response 9

GSH did not encounter artesian conditions within the borings performed in accordance with the May 14, 2021, report, nor within the additional borings performed to the maximum depths explored.

TG Comment 10

TG recommends American Fork City request GSH to provide calculations that substantiate their recommended allowable bearing capacity, estimated settlement, lateral resistance and lateral loading recommendations.

GSH Review Response 10

Calculations to substantiate the recommended allowable bearing capacity, estimated settlement, lateral resistance, and lateral loading recommendations are provided within Attachment 4, Engineering Calculations.

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TG Comment 11

In accordance with section 4-2-4 of the of the American Fork City Sensitive Land Ordinance, sub-item (7B), the report should be accompanied with the following Certificate statement sealed by the licensed professional that prepared the report:

I hereby certify that I am a licensed professional engineer or an engineering geologist, as those terms are defined in the "Sensitive Lands Ordinance" Section of the American Fork City Ordinances. I have examined the letter report/geologic report to which this certificate is attached and the information and conclusions contained therein are, without any reasonable reservation not stated therein, accurate and complete. All procedures and tests used in said letter report/geologic report meet minimum applicable professional standards.

The subject document did not contain the required certificate. TG recommends the City of American Fork request the required certificate for the subject document.

GSH Review Response 11

GSH did not encounter artesian conditions within the borings performed in accordance with the May 14, 2021, report, nor within the additional borings performed to the maximum depths explored.

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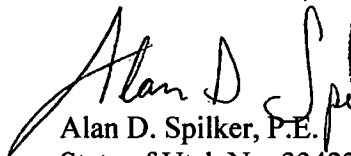


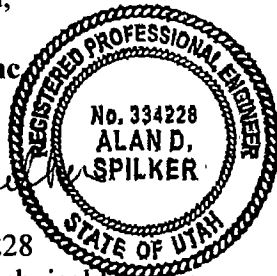
4. CLOSURE

If you have any questions or would like to discuss these items further, please feel free to contact us at (801) 685-9190.

Respectfully submitted,

GSH Geotechnical, Inc


 Alan D. Spilker, P.E.
 State of Utah No. 334228
 President/Senior Geotechnical Engineer



ADS ea

- Encl. Figures 1 and 1A, Vicinity Maps
 Figures 2, and 2A, Site Plans
 Figures 3A through 3O, Boring Logs
 Figures 4A through 4D, Additional Boring Logs
 Figure 5, Key to Boring Log (USCS)
 Attachment 1, Laboratory Testing
 Attachment 2, Site-Specific Seismic Study
 Attachment 3, Liquefaction Analysis
 Attachment 4, Engineering Calculations
 Attachment 5, Historical High Groundwater Tables

Addressee (email)

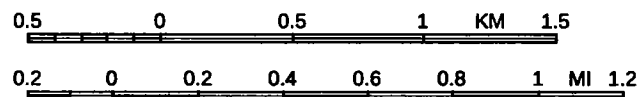
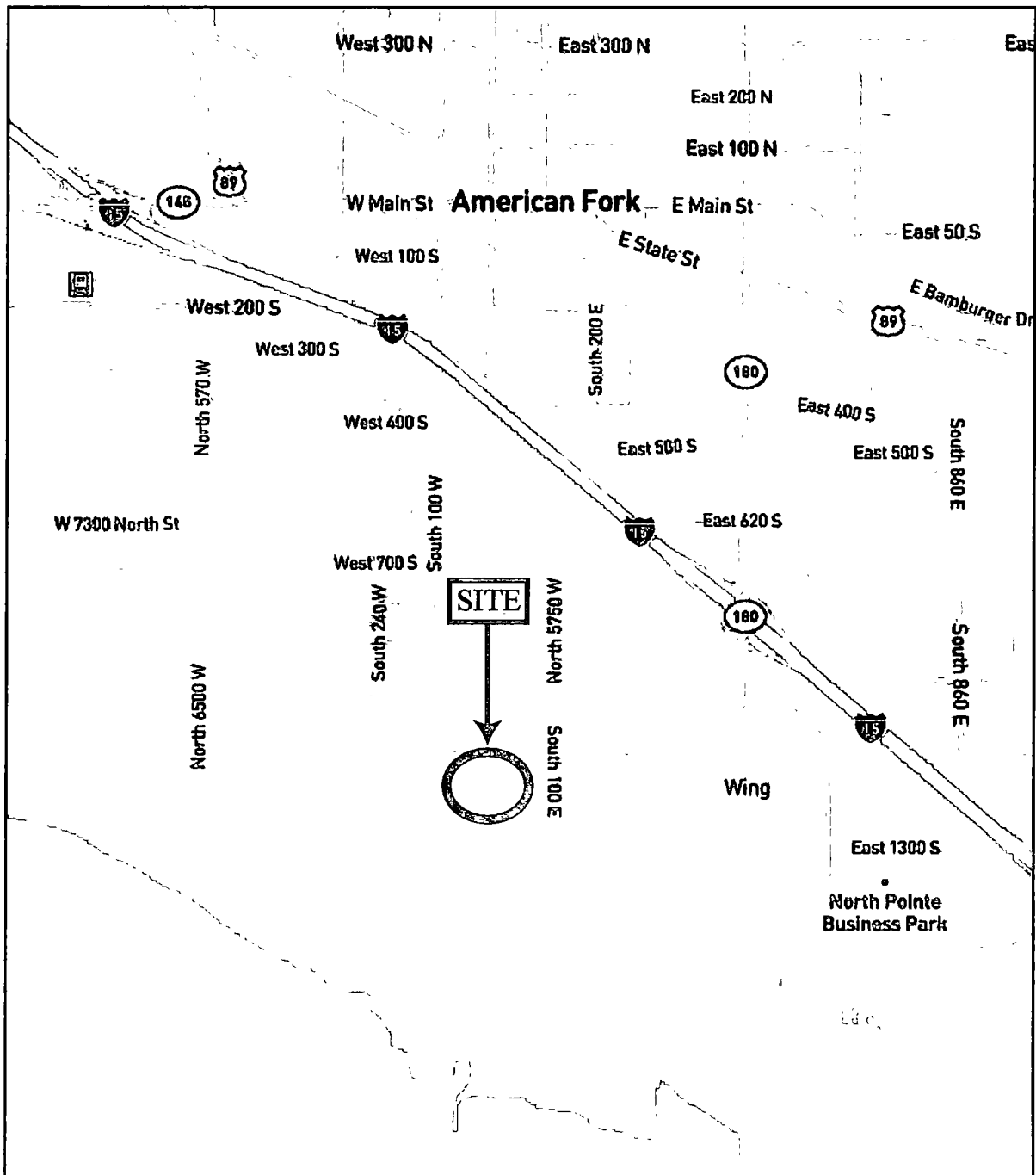
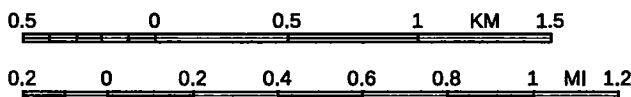
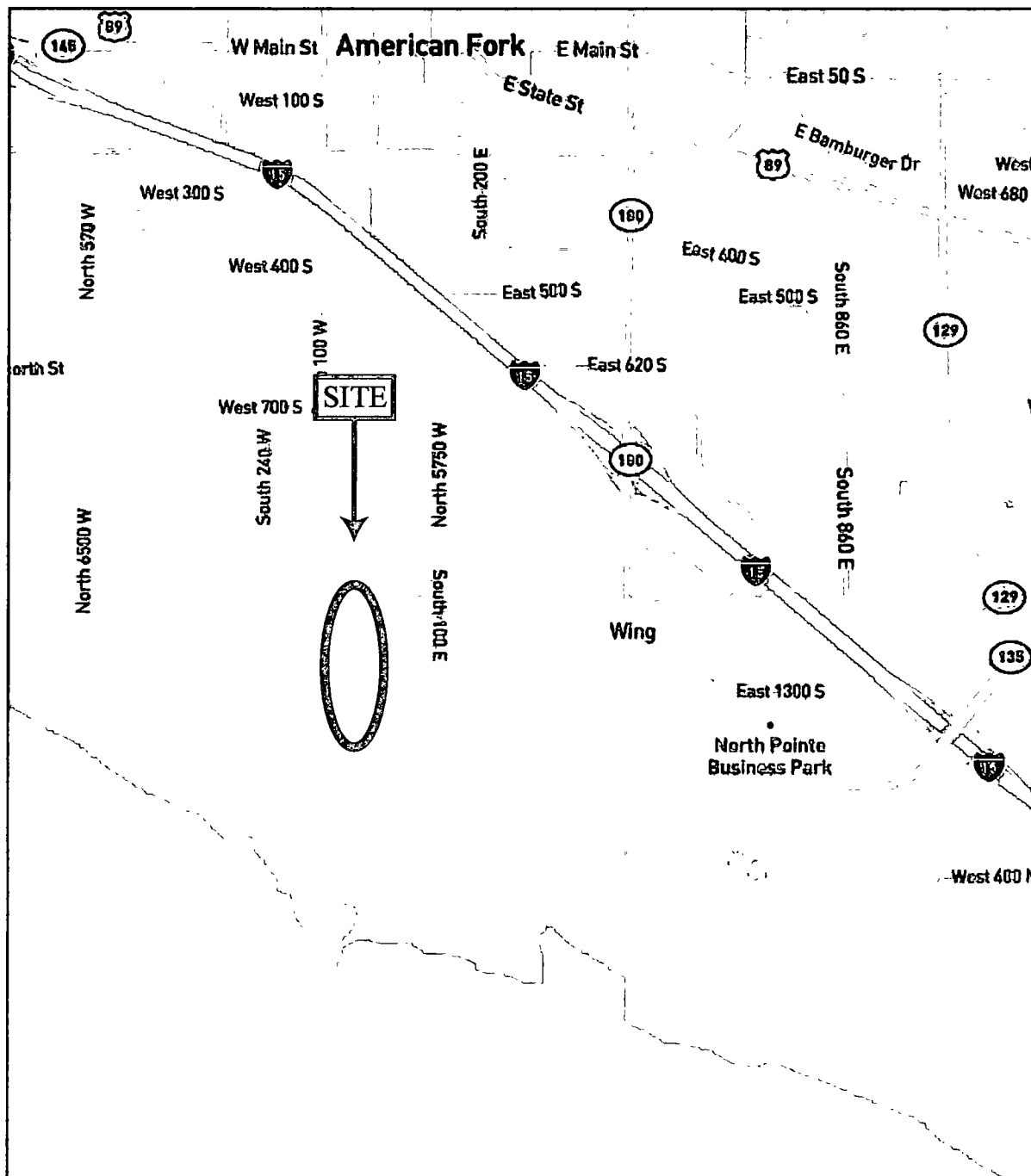


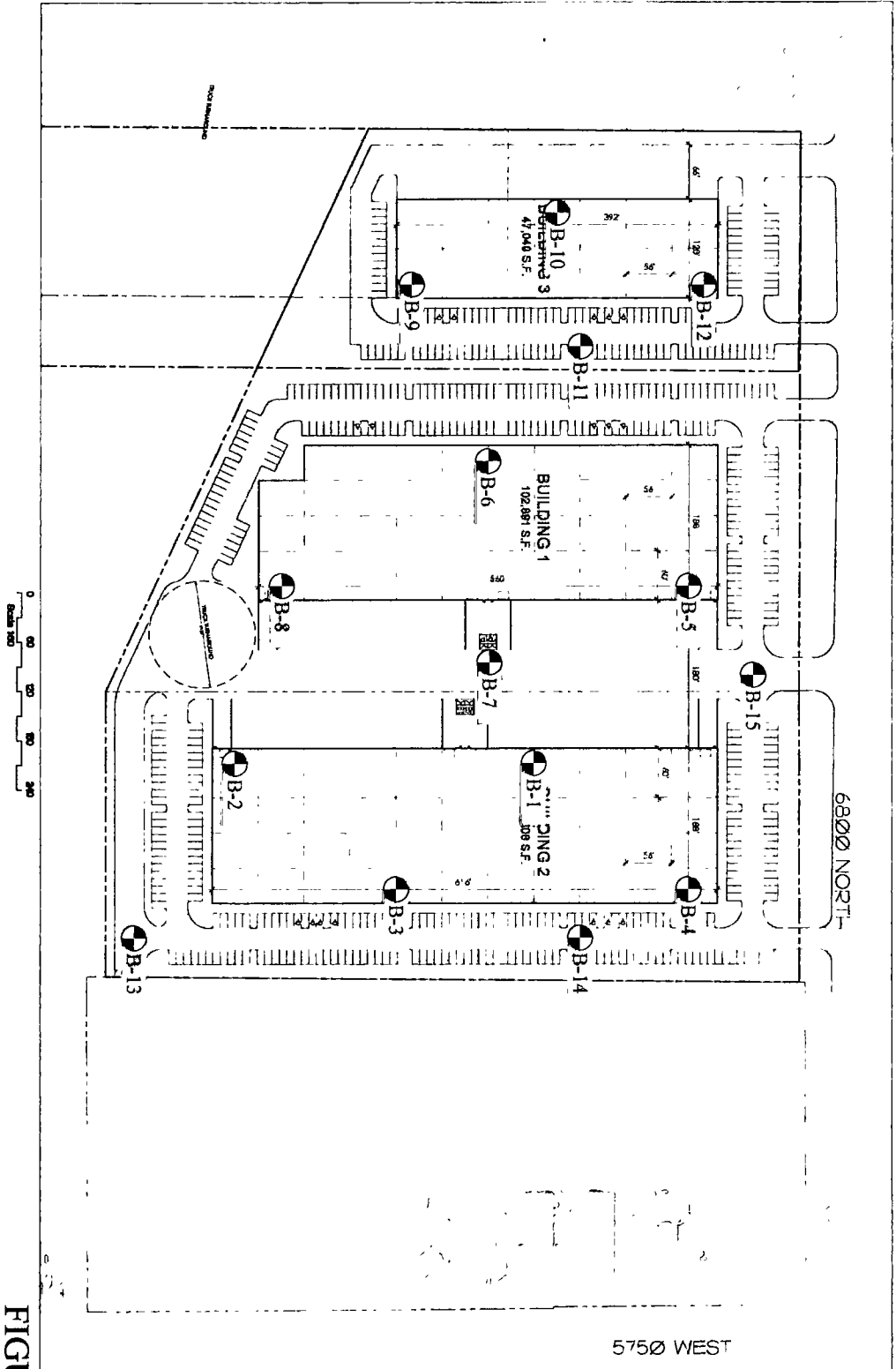
FIGURE 1
VICINITY MAP
 GS&H

REFERENCE:
ALL TRAILS - NATIONAL GEOGRAPHIC TERRAIN
DATED 2021



REFERENCE:
ALL TRAILS - NATIONAL GEOGRAPHIC TERRAIN
DATED 2021

FIGURE 1A
VICINITY MAP
 GSH



REFERENCE
ADAPTED FROM DRAWING ENTITLED
"MIKE HORAN - 6800 NORTH INDUSTRIAL AP"
BY AEURBIA, DATED 8 APR 2021

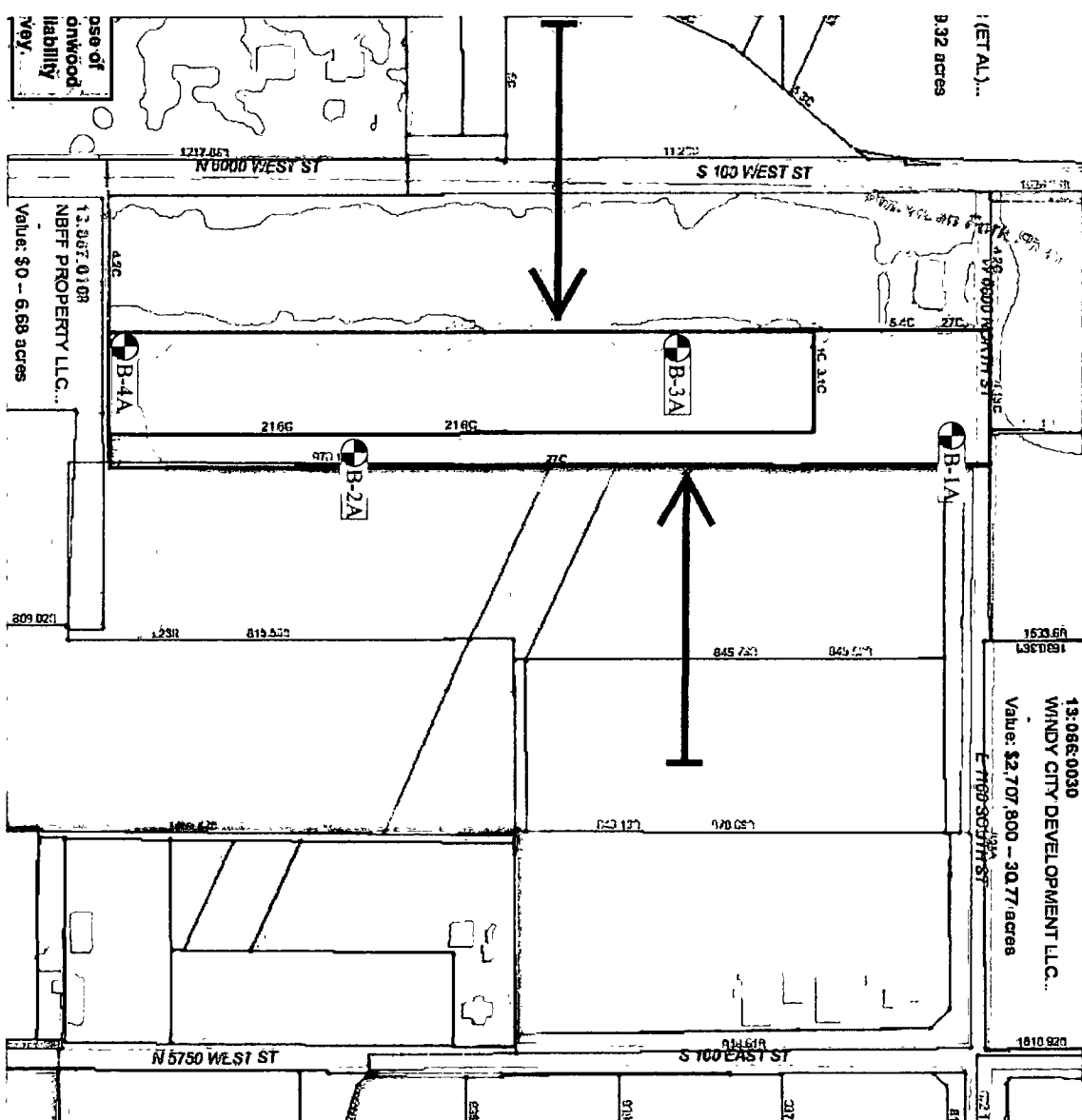









FIGURE 2A
SITE PLAN

		<h1 style="margin: 0;">BORING LOG</h1> <p style="margin: 0;">Page: 1 of 2</p>		<h2 style="margin: 0;">BORING: B-1</h2>	
CLIENT: Red Pine Construction			PROJECT NUMBER: 2354-003-21		
PROJECT: Proposed 6800 North Industrial			DATE STARTED: 4/22/21 DATE FINISHED: 4/22/21		
LOCATION: 5900 West 6800 North, American Fork, Utah			GSH FIELD REP.: JH		
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger			HAMMER: Automatic WEIGHT: 140 lbs DROP: 30"		
GROUNDWATER DEPTH: 4.8' (5/13/21)			ELEVATION: ---		

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								slightly moist soft
	CL	SILTY CLAY with some fine sand and occasional layers of silty fine sand up to 3" major roots (topsoil) to 6"; brown		2							
		grades with trace fine sand	-5	3							saturated
		grades with occasional layers of fine to coarse sandy fine gravel up to 6" thick	-10	26							
		grades with some fine sand with layers of silty fine sand up to 3" thick	-15	2							very soft
		grades fine sandy clay; tan	-20	2							
		grades silty clay with some fine sand; gray	-25								

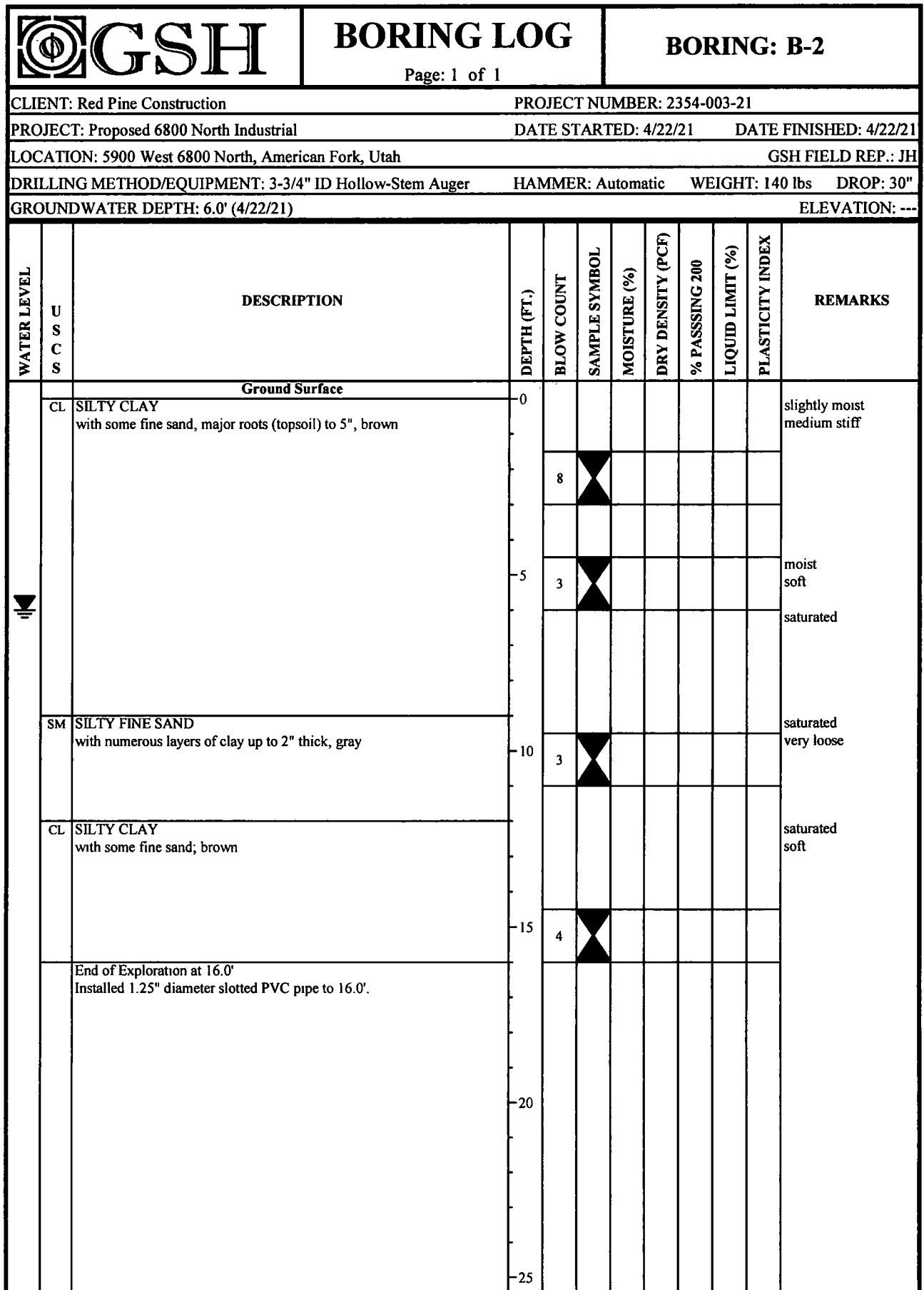
See Subsurface Conditions section in the report for additional information.

FIGURE 3A

		BORING LOG				BORING: B-1					
CLIENT: Red Pine Construction				PROJECT NUMBER: 2354-003-21							
PROJECT: Proposed 6800 North Industrial				DATE STARTED: 4/22/21			DATE FINISHED: 4/22/21				
WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		grades silty clay with some fine sand; gray	25	0							saturated very loose
	SP	FINE TO MEDIUM SAND with occasional layers of silty clay up to 3" thick; brown	30	3							
	CL	SILTY CLAY with some fine sand, brown	35	7							saturated medium stiff
		grades with trace fine sand, gray	40	4							soft
			45	4							
		grades brown	50	3							
		End of Exploration at 51.5' Installed 1.25" diameter slotted PVC pipe to 51.5'.									

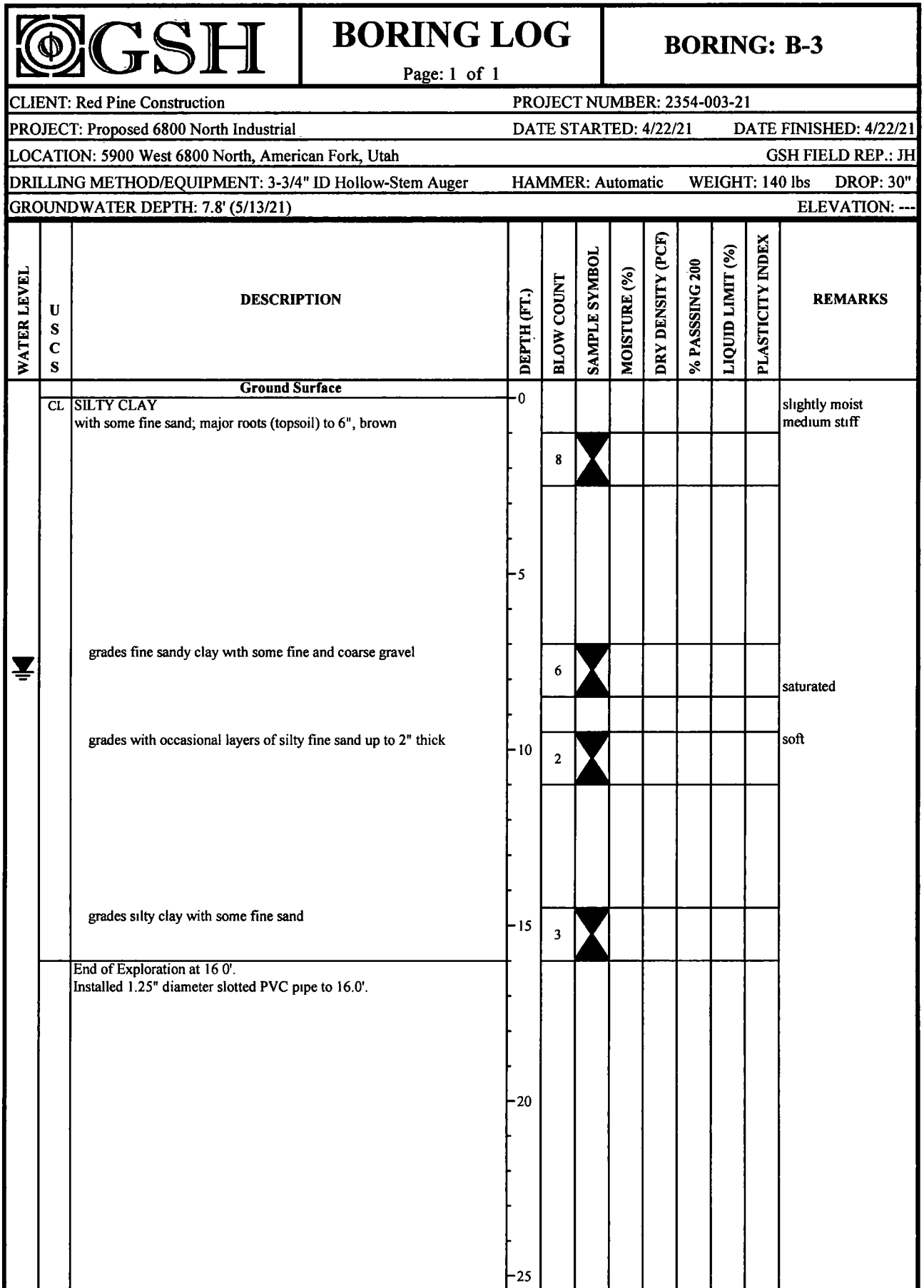
See Subsurface Conditions section in the report for additional information.

FIGURE 3A
(continued)









See Subsurface Conditions section in the report for additional information.

FIGURE 3B



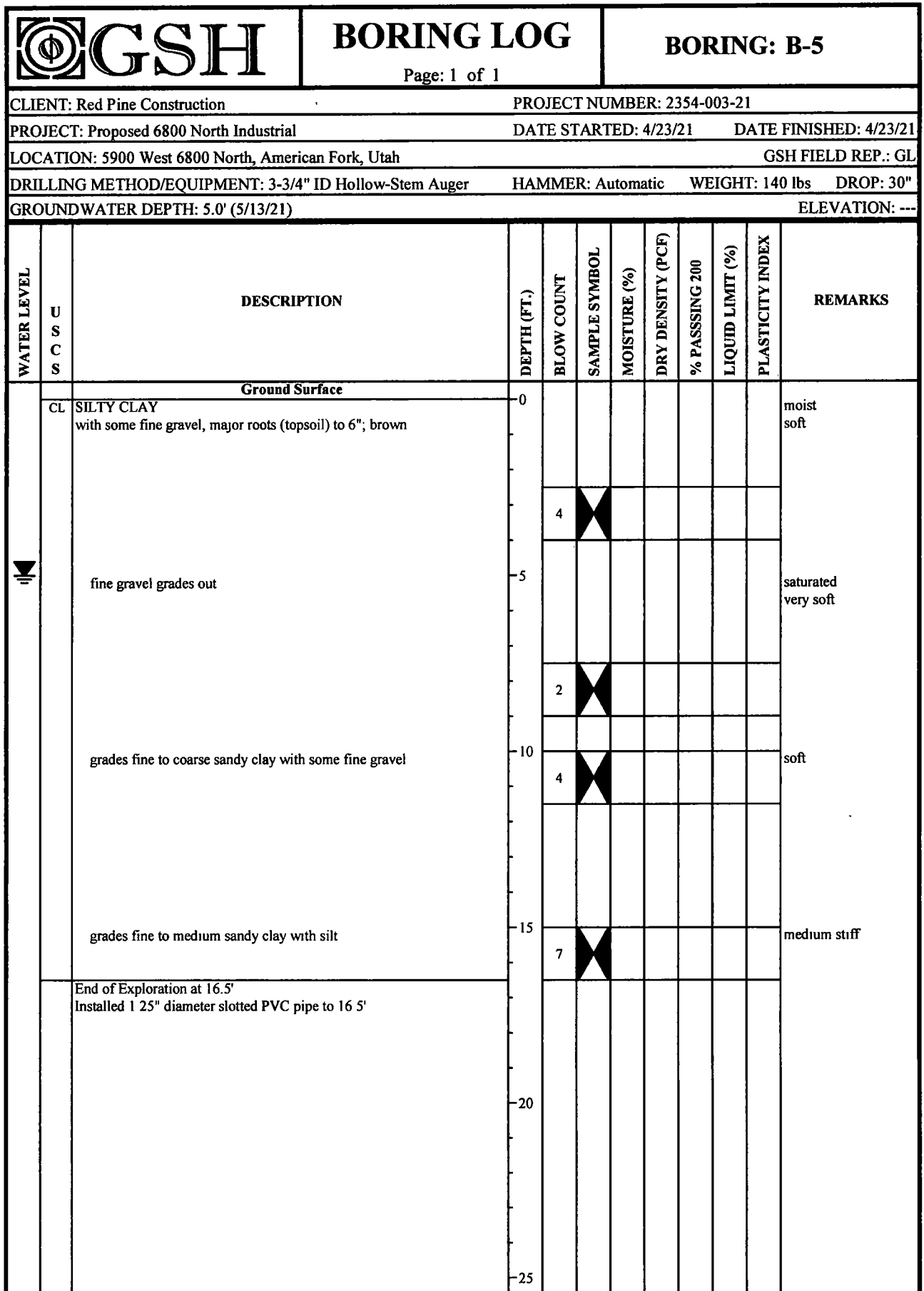
See Subsurface Conditions section in the report for additional information.

FIGURE 3C

		BORING LOG Page: 1 of 1		BORING: B-4							
CLIENT: Red Pine Construction		PROJECT NUMBER: 2354-003-21									
PROJECT: Proposed 6800 North Industrial		DATE STARTED: 4/23/21		DATE FINISHED: 4/23/21							
LOCATION: 5900 West 6800 North, American Fork, Utah		GSH FIELD REP.: GL									
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger		HAMMER: Automatic		WEIGHT: 140 lbs DROP: 30"							
GROUNDWATER DEPTH: 2.8' (5/13/21)		ELEVATION: ---									
WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								slightly moist medium stiff
	CL	SILTY CLAY major roots (topsoil) to 5"; brown		5							saturated
	SP/ SM	FINE TO COARSE SAND with fine gravel and silt; brown	5	15							saturated dense
	CL	SILTY CLAY brown	10	14							saturated medium stiff
	SM	FINE TO COARSE SAND with silt; brown	15	2							saturated very loose
	CL	SILTY CLAY brown									saturated very soft
		End of Exploration at 16.0' Installed 1.25" diameter slotted PVC pipe to 16.0'.									
			20								
			25								

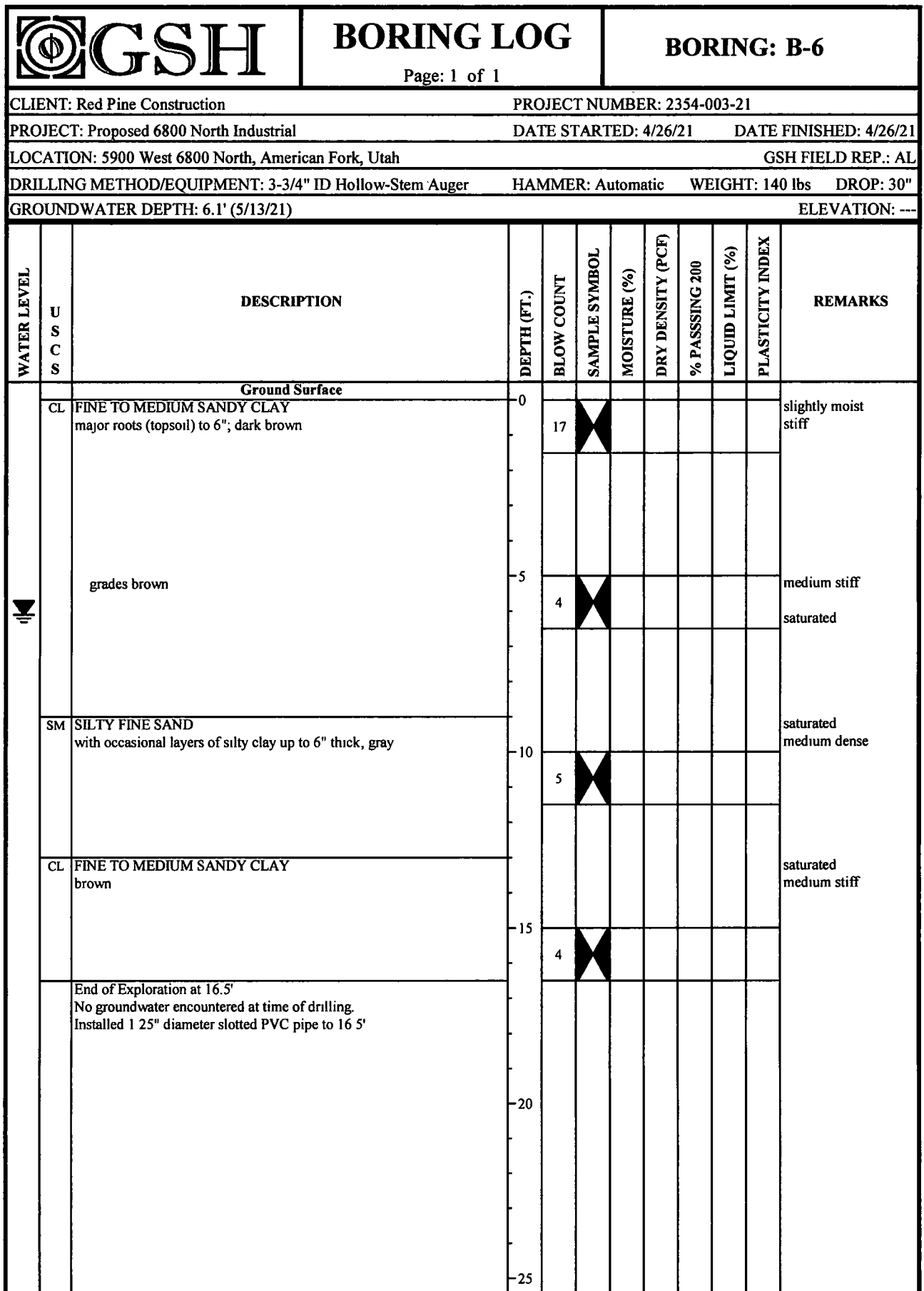
See Subsurface Conditions section in the report for additional information.

FIGURE 3D




See Subsurface Conditions section in the report for additional information.

FIGURE 3E



See Subsurface Conditions section in the report for additional information.

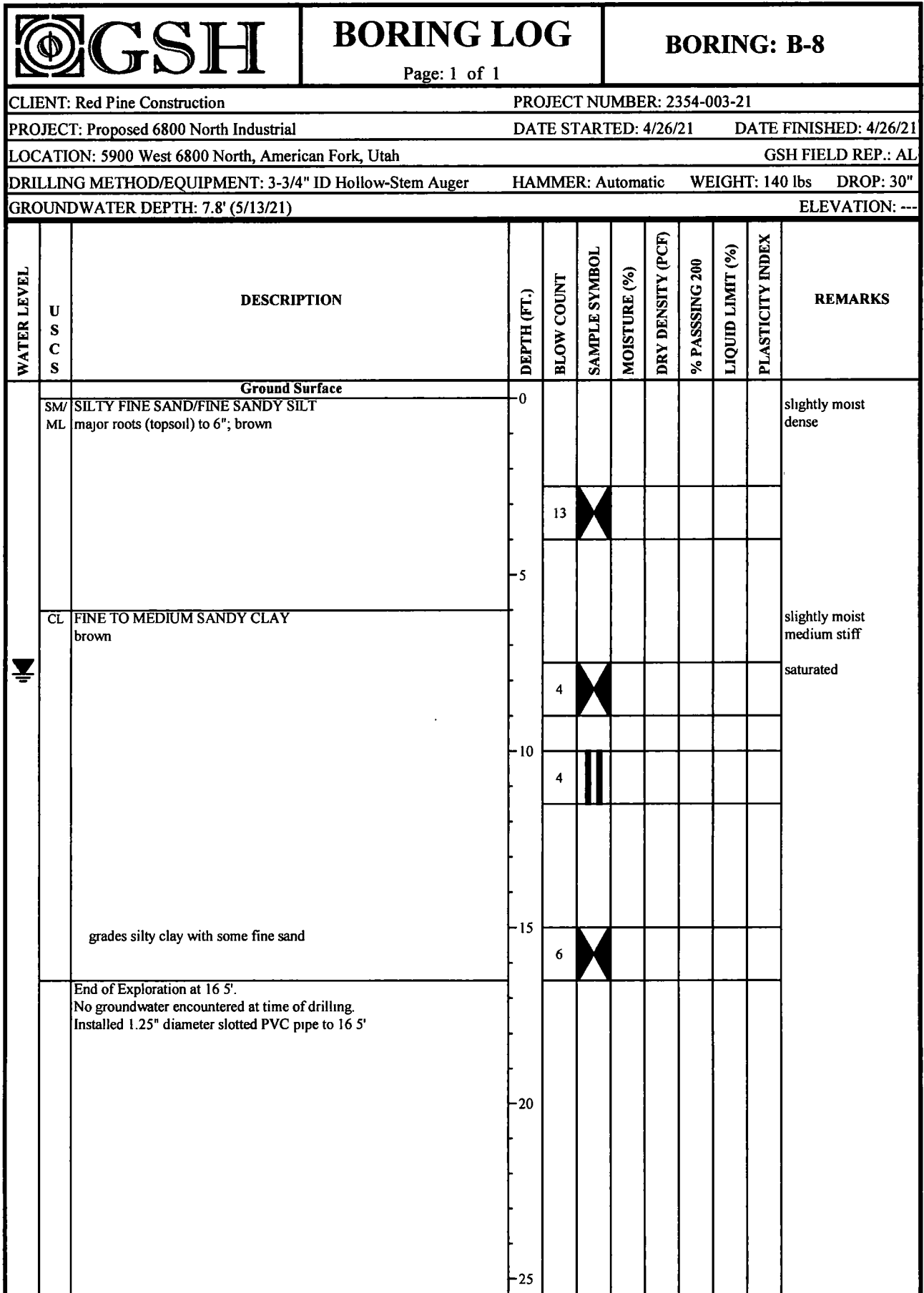
FIGURE 3F

		<h1 style="margin: 0;">BORING LOG</h1> <p style="margin: 0;">Page: 1 of 1</p>		<h2 style="margin: 0;">BORING: B-7</h2>	
CLIENT: Red Pine Construction			PROJECT NUMBER: 2354-003-21		
PROJECT: Proposed 6800 North Industrial			DATE STARTED: 4/26/21		DATE FINISHED: 4/26/21
LOCATION: 5900 West 6800 North, American Fork, Utah			GSH FIELD REP.: AL		
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger			HAMMER: Automatic	WEIGHT: 140 lbs	DROP: 30"
GROUNDWATER DEPTH: Not Encountered (4/26/21)			ELEVATION: ---		

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								slightly moist medium stiff
	CL	SILTY CLAY with fine to medium sand; major roots (topsoil) to 6"; brown									
		End of Exploration at 5 0'. No groundwater encountered at time of drilling.	5								
			10								
			15								
			20								
			25								

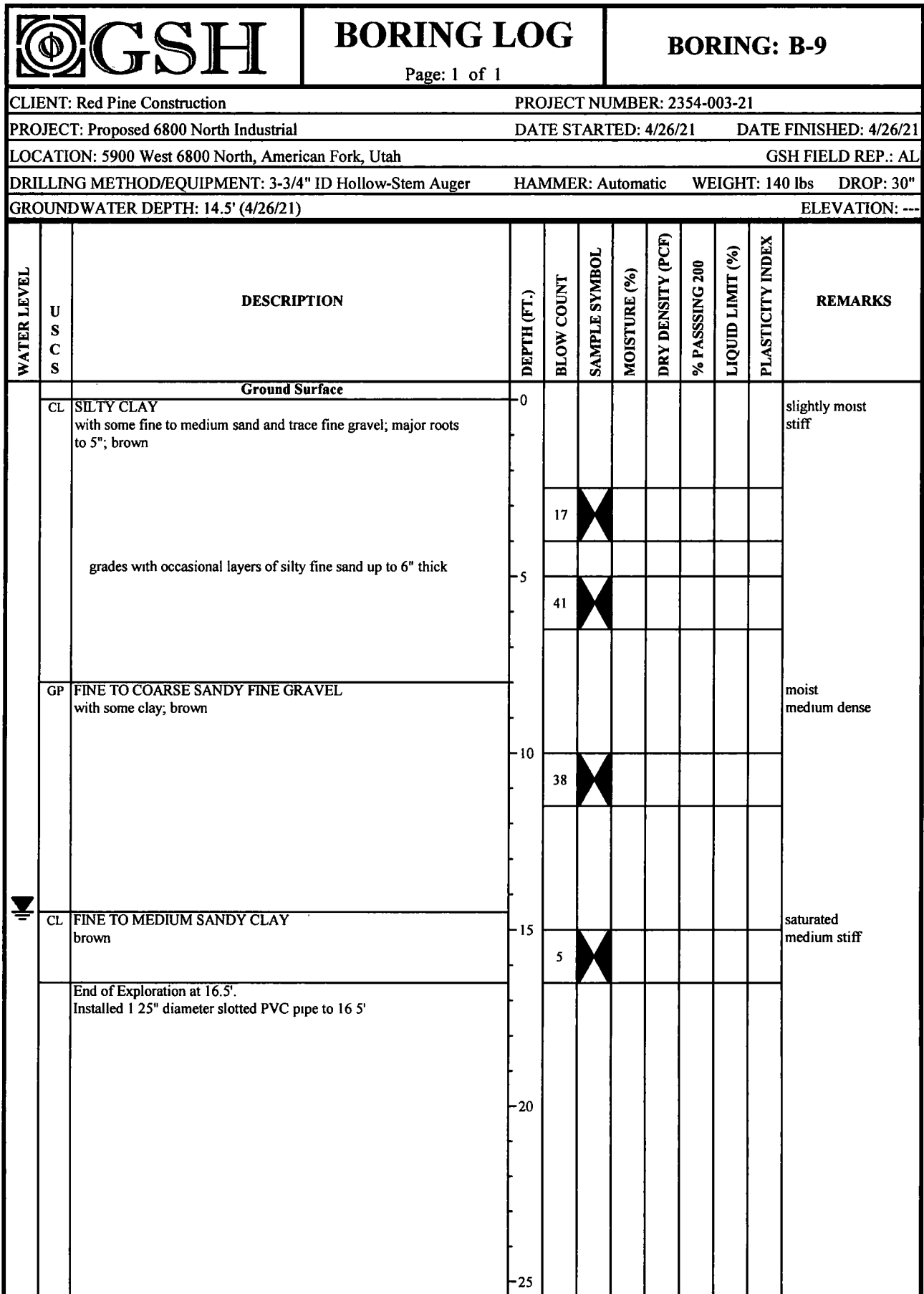
See Subsurface Conditions section in the report for additional information.

FIGURE 3G




See Subsurface Conditions section in the report for additional information.

FIGURE 3H




See Subsurface Conditions section in the report for additional information.

FIGURE 31

		BORING LOG Page: 1 of 1		BORING: B-10							
CLIENT: Red Pine Construction			PROJECT NUMBER: 2354-003-21								
PROJECT: Proposed 6800 North Industrial			DATE STARTED: 4/26/21		DATE FINISHED: 4/26/21						
LOCATION: 5900 West 6800 North, American Fork, Utah			GSH FIELD REP.: AL								
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger			HAMMER: Automatic	WEIGHT: 140 lbs	DROP: 30"						
GROUNDWATER DEPTH: 7.1' (5/13/21)			ELEVATION: ---								
WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								dry loose
	SM/SC	SILTY/CLAYEY FINE TO MEDIUM SAND with some fine gravel, major roots (topsoil) to 6"; brown		16	X						
			5								
	CL	SILTY CLAY with fine to medium sand and trace fine gravel, gray		2	X						saturated soft
		grades fine to medium sandy clay with some fine gravel	10	5	X						medium stiff
		grades silty clay with some fine to medium sand and trace fine gravel, gray to brown	15	9	X						
		End of Exploration at 16.5'. No groundwater encountered at time of drilling. Installed 1.25" diameter slotted PVC pipe to 16 5'	20								
			25								

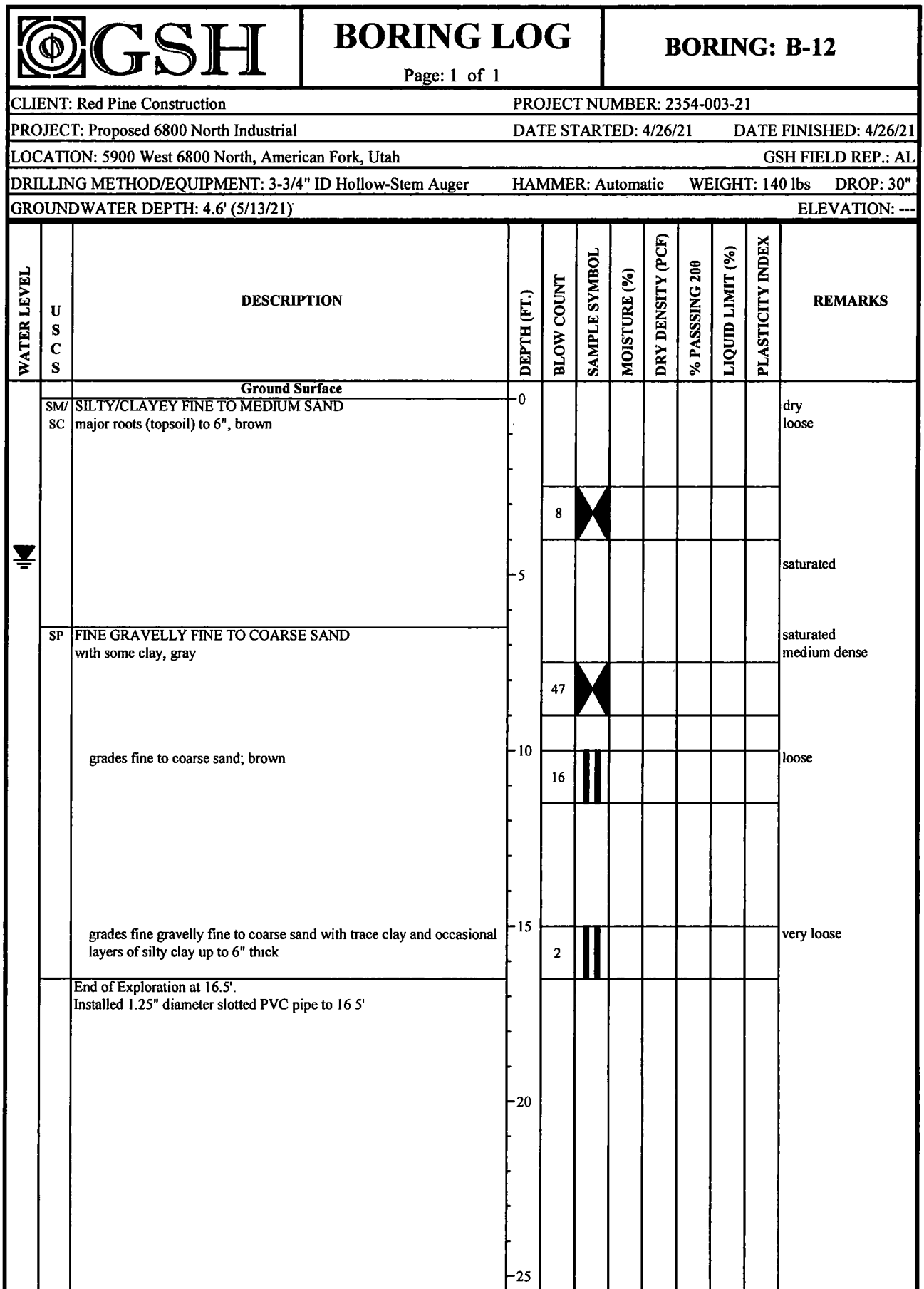
See Subsurface Conditions section in the report for additional information.

FIGURE 3J

		BORING LOG Page: 1 of 1		BORING: B-11							
CLIENT: Red Pine Construction			PROJECT NUMBER: 2354-003-21								
PROJECT: Proposed 6800 North Industrial			DATE STARTED: 4/26/21		DATE FINISHED: 4/26/21						
LOCATION: 5900 West 6800 North, American Fork, Utah			GSH FIELD REP.: AL								
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger			HAMMER: Automatic	WEIGHT: 140 lbs	DROP: 30"						
GROUNDWATER DEPTH: Not Encountered (4/26/21)			ELEVATION: ---								
WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								dry medium stiff
	CL	FINE TO MEDIUM SANDY CLAY with some fine gravel; major roots (topsoil) to 5"; brown									
		End of Exploration at 5 0'. No groundwater encountered at time of drilling	5								
			10								
			15								
			20								
			25								


See Subsurface Conditions section in the report for additional information.

FIGURE 3K




See Subsurface Conditions section in the report for additional information.

FIGURE 3L

		BORING LOG Page: 1 of 1		BORING: B-13							
CLIENT: Red Pine Construction			PROJECT NUMBER: 2354-003-21								
PROJECT: Proposed 6800 North Industrial			DATE STARTED: 4/26/21		DATE FINISHED: 4/26/21						
LOCATION: 5900 West 6800 North, American Fork, Utah			GSH FIELD REP.: AL								
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger			HAMMER: Automatic	WEIGHT: 140 lbs	DROP: 30"						
GROUNDWATER DEPTH: Not Encountered (4/26/21)			ELEVATION: ---								
WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								slightly moist medium stiff
	CL	SILTY CLAY with some fine sand and trace fine gravel; major roots (topsoil) to 6"; brown									
		End of Exploration at 5 0' No groundwater encountered at time of drilling	5								
			10								
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.



FIGURE 3M

		<h1 style="margin: 0;">BORING LOG</h1> <p style="margin: 0;">Page: 1 of 1</p>		<h2 style="margin: 0;">BORING: B-14</h2>	
CLIENT: Red Pine Construction			PROJECT NUMBER: 2354-003-21		
PROJECT: Proposed 6800 North Industrial			DATE STARTED: 4/26/21		DATE FINISHED: 4/26/21
LOCATION: 5900 West 6800 North, American Fork, Utah			GSH FIELD REP.: AL		
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger			HAMMER: Automatic	WEIGHT: 140 lbs	DROP: 30"
GROUNDWATER DEPTH: Not Encountered (4/26/21)			ELEVATION: ---		

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								slightly moist medium stiff
	CL	SILTY CLAY with some fine sand; major roots (topsoil) to 5", brown									
		End of Exploration at 5.0'. No groundwater encountered at time of drilling	5								
			10								
			15								
			20								
			25								

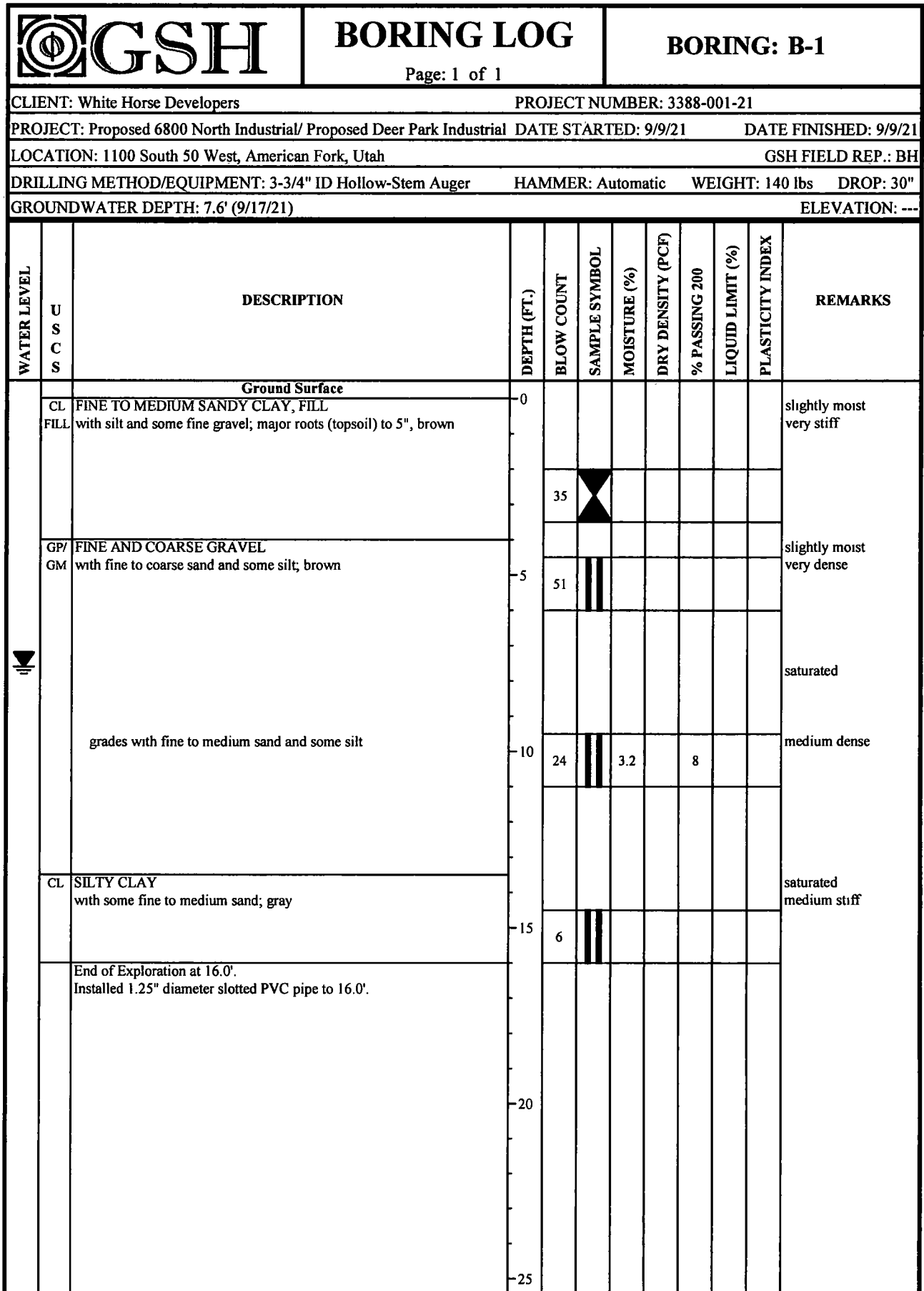
See Subsurface Conditions section in the report for additional information.

FIGURE 3N

		BORING LOG		BORING: B-15							
		Page: 1 of 1									
CLIENT: Red Pine Construction		PROJECT NUMBER: 2354-003-21									
PROJECT: Proposed 6800 North Industrial		DATE STARTED: 4/26/21		DATE FINISHED: 4/26/21							
LOCATION: 5900 West 6800 North, American Fork, Utah		GSH FIELD REP.: AL									
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger		HAMMER: Automatic		WEIGHT: 140 lbs DROP: 30"							
GROUNDWATER DEPTH: 3.6' (5/13/21)		ELEVATION: ---									
WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								slightly moist medium dense
	GC	FINE SANDY FINE AND COARSE GRAVEL with clay, major roots (topsoil) to 6", brown									
											saturated
		End of Exploration at 5.0'. Installed 1.25" diameter slotted PVC pipe to 5 0'	5								
			10								
			15								
			20								
			25								


See Subsurface Conditions section in the report for additional information.

FIGURE 30










See Subsurface Conditions section in the report for additional information.

FIGURE 4A

		BORING LOG Page: 1 of 1		BORING: B-2							
CLIENT: White Horse Developers			PROJECT NUMBER: 3388-001-21								
PROJECT: Proposed 6800 North Industrial/ Proposed Deer Park Industrial			DATE STARTED: 9/9/21		DATE FINISHED: 9/9/21						
LOCATION: 1100 South 50 West, American Fork, Utah			GSH FIELD REP.: BH								
DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger			HAMMER: Automatic	WEIGHT: 140 lbs	DROP: 30"						
GROUNDWATER DEPTH: Not Encountered (9/9/21)			ELEVATION: ---								
WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	SM FILL	SILTY FINE SAND, FILL with trace clay and some fine and coarse gravel, major roots (topsoil) to 6"; brown		20							dry medium dense
	CL	FINE TO MEDIUM SANDY CLAY with silt and trace fine gravel; brown	5								slightly moist medium stiff
				4							
			10	7				43	21		
		End of Exploration at 11.0' No groundwater encountered at time of drilling									
			15								
			20								
			25								

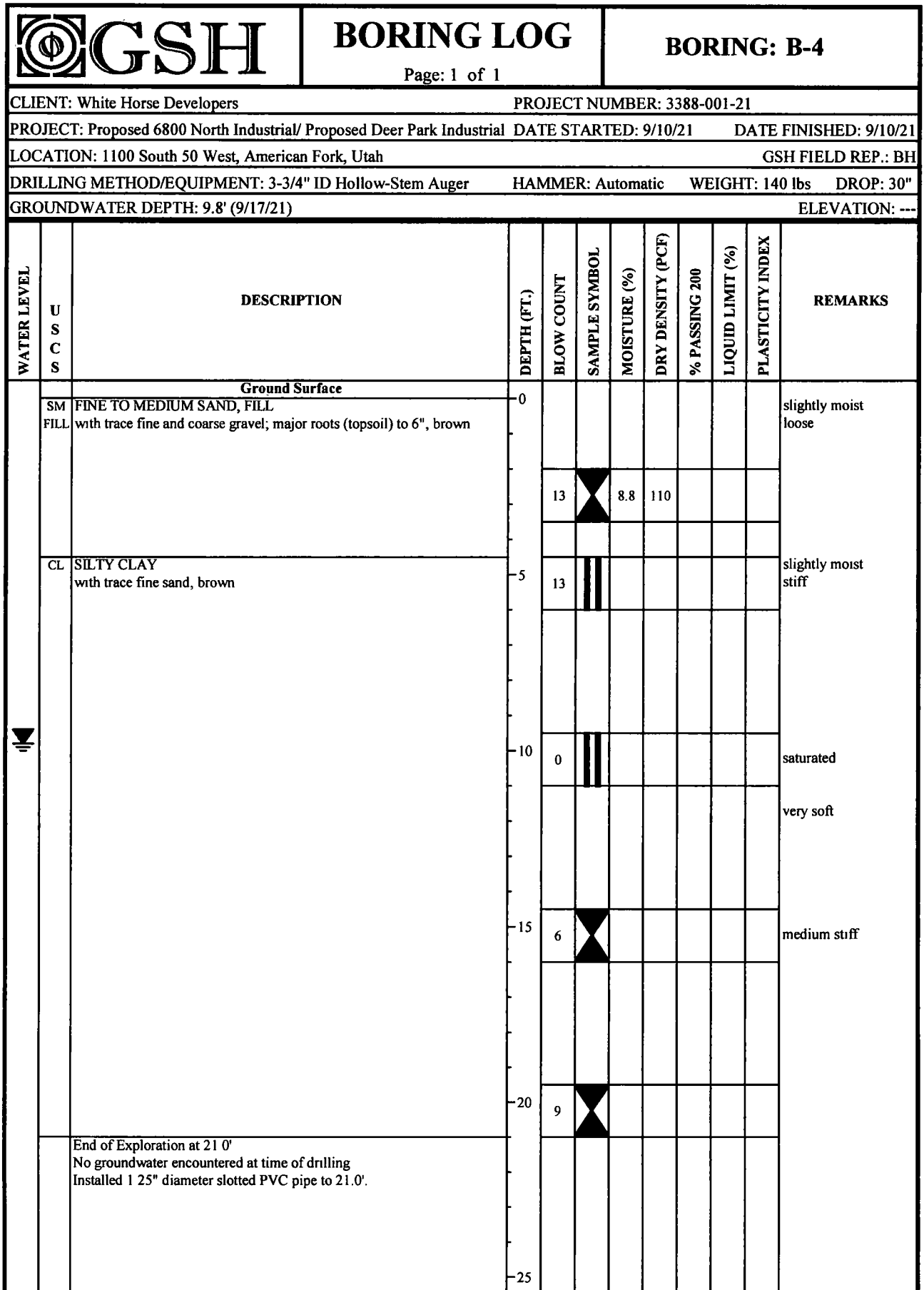
See Subsurface Conditions section in the report for additional information.

FIGURE 4B

 GSH		BORING LOG		BORING: B-3							
CLIENT: White Horse Developers				PROJECT NUMBER: 3388-001-21							
PROJECT: Proposed 6800 North Industrial/ Proposed Deer Park Industrial				DATE STARTED: 9/10/21				DATE FINISHED: 9/10/21			
WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		grades with some fine to medium silty sand	25	1							
		grades with trace fine sand	30	6					33	13	medium stiff
			35	6							
		grades gray	40	0					42	18	very soft
			45	1							
				1					46	21	
		End of Exploration at 50.0'. Installed 1.25" diameter slotted PVC pipe to 50 0'	50								

See Subsurface Conditions section in the report for additional information.

FIGURE 4C
(continued)



See Subsurface Conditions section in the report for additional information.

FIGURE 4D

CLIENT: White Horse Developers
PROJECT: Proposed 6800 North Industrial/ Proposed Deer Park Industrial
PROJECT NUMBER: 3388-001-21

KEY TO BORING LOG

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫

COLUMN DESCRIPTIONS

- ① **Water Level:** Depth to measured groundwater table. See symbol below.
- ② **USCS:** (Unified Soil Classification System) Description of soils encountered; typical symbols are explained below
- ③ **Description:** Description of material encountered, may include color, moisture, grain size, density/consistency,
- ④ **Depth (ft.):** Depth in feet below the ground surface
- ⑤ **Blow Count:** Number of blows to advance sampler 12" beyond first 6", using a 140-lb hammer with 30" drop.
- ⑥ **Sample Symbol:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.
- ⑦ **Moisture (%):** Water content of soil sample measured in laboratory; expressed as percentage of dryweight of
- ⑧ **Dry Density (pcf):** The density of a soil measured in laboratory; expressed in pounds per cubic foot.
- ⑨ **% Passing 200:** Fines content of soils sample passing a No. 200 sieve; expressed as a percentage.
- ⑩ **Liquid Limit (%):** Water content at which a soil changes from plastic to liquid behavior
- ⑪ **Plasticity Index (%):** Range of water content at which a soil exhibits plastic properties.
- ⑫ **Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel. May include other field and laboratory test results using the following abbreviations:

CEMENTATION

Weakly: Crumbles or breaks with handling or slight finger pressure.

Moderately: Crumbles or breaks with considerable finger pressure.

Strongly: Will not crumble or break with finger pressure.

MODIFIERS

Trace
<5%

Some
5-12%

With
> 12%

MOISTURE CONTENT (FIELD TEST).

Dry: Absence of moisture, dusty, dry to the touch.

Moist: Damp but no visible water.

Saturated: Visible water, usually soil below water table

Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on the logs apply only at the specific boring locations and at the time the borings were advanced, they are not warranted to be representative of subsurface conditions at other locations or times

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS SYMBOLS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS More than 50% of material is larger than No. 200 sieve size	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve.	CLEAN GRAVELS (little or no fines)	GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
		GRAVELS WITH FINES (appreciable amount of fines)	GP	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GM	Silty Gravels, Gravel-Sand-Silt Mixtures
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
	SANDS More than 50% of coarse fraction passing through No. 4 sieve	CLEAN SANDS (little or no fines)	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines
		SANDS WITH FINES (appreciable amount of fines)	SP	Poorly-Graded Sands, Gravelly Sands, Little or No Fines
			SM	Silty Sands, Sand-Silt Mixtures
			SC	Clayey Sands, Sand-Clay Mixtures
FINE-GRAINED SOILS More than 50% of material is smaller than No. 200 sieve size	SILTS AND CLAYS Liquid Limit less than 50%	ML	Inorganic Silts and Very Fine Sands, Rock Flour, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity	
		CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays	
		OL	Organic Silts and Organic Silty Clays of Low Plasticity	
	SILTS AND CLAYS Liquid Limit greater than 50%	MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Sands	
		CH	Inorganic Clays of High Plasticity, Fat Clays	
		OH	Organic Silts and Organic Clays of Medium to High Plasticity	
		HIGHLY ORGANIC SOILS		PT

STRATIFICATION:

DESCRIPTION	THICKNESS
Seam	up to 1/8"
Layer	1/8" to 12"

Occasional:
One or less per 6" of thickness

Numerous;
More than one per 6" of thickness

TYPICAL SAMPLER GRAPHIC SYMBOLS

Bulk/Bag Sample

Standard Penetration Split Spoon Sampler

Rock Core

No Recovery

STRATIFICATION:

DESCRIPTION	THICKNESS
Seam	up to 1/8"
Layer	1/8" to 12"
Occasional:	
One or less per 6" of thickness	
Numerous:	
More than one per 6" of thickness	

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Bulk/Bag Sample
- Standard Penetration Split Spoon Sampler
- Rock Core
- No Recovery
-

WATER SYMBOL

- Water Level

Note: Dual Symbols are used to indicate borderline soil classifications

FIGURE 5





ATTACHMENT 1

Laboratory Testing

200 Wash Results

Date:	9/14/21
Job #:	3388-001-21
Project:	Deer Park Industrial
Analyst:	NLW
Project Engineer:	ADS

Boring #:	B1A							
Sample #:	3							
Depth (ft):	10							
Pan Wt. (gr):	153.6							
Wet Weight Before Washing (Wet Soil + Pan)	369							
Dry Weight Before Washing (Dry Soil + Pan)	362.4							
Weight Retained After Washing (Dry Soil + Pan)	345.6							
Soil Description & Comments:								

% Moisture Content	3.2	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
% Retained #200 Sieve	92.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
% Passing #200 Sieve	8.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Soil Classification								

200 Wash Results

ENT 46834 = 2024 PG 44 of 86

Date:	5/11/21
Job #:	2354-003-21
Project:	6800 N Industrial
Analyst:	HB
Project Engineer:	ADS

Boring #:	B1	B2	B4	B6	B12	B12	B1	
Sample #:	7	3	2	3	3	4	3	
Depth (ft):	30	10	5	10	10	15	10	
Pan Wt. (gr):	142.2	124.1	126.3	130.1	128.6	142.2	152.5	
Wet Weight Before Washing (Wet Soil + Pan)	352.7	348.1	354.8	352.2	257.2	353.8	359.5	
Dry Weight Before Washing (Dry Soil + Pan)	308.2	302.9	333.5	312.9	228.6	308.3	318.1	
Weight Retained After Washing (Dry Soil + Pan)	233.7	221.1	299.6	252	217.5	234.8	237.2	
Soil Description & Comments:								

% Moisture Content	26.8	25.3	10.3	21.5	28.6	27.4	25.0	#DIV/0!
% Retained #200 Sieve	55.1	54.3	83.6	66.7	88.9	55.7	51.1	#DIV/0!
% Passing #200 Sieve	44.9	45.7	16.4	33.3	11.1	44.3	48.9	#DIV/0!
Soil Classification								

ATTERBERG LIMITS TEST



Project:	6800 N. Industrial				Job No.:	2354-003-21	Date:	5/11/21	
Boring/TP:	B1	Sample No.:	9	Depth:	40'	Engineer:	ADS	Tester:	HB
Soil Descr.:									

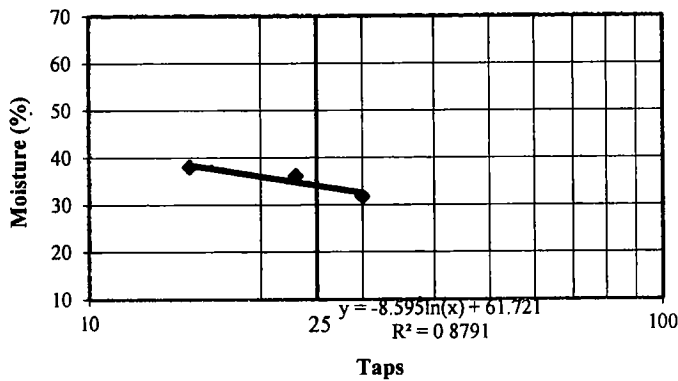
LIQUID LIMIT

Can No.	Au	W2	8
Taps	30	23	15
Can+wet soil	12.18	12.67	12.65
Can+dry soil	10.95	11.12	11.09
Can	7.07	6.82	6.98
Moisture (%)	31.70	36.05	37.96

PLASTIC LIMIT

Can No.	Hi
Can+wet soil	12.62
Can+dry soil	11.56
Can	6.96
Moisture (%)	23.04

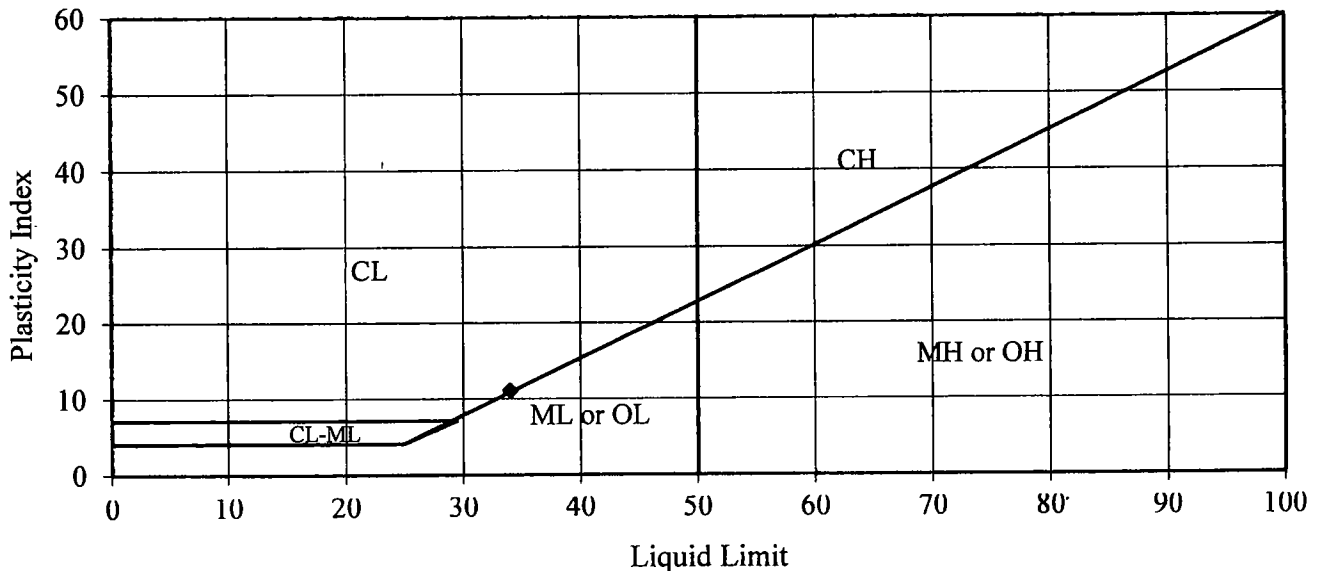
LIQUID LIMIT RESULTS



Moisture (%)

LL	34
PL	23
PI	11
USCS	CL

PLASTICITY CHART



ATTERBERG LIMITS TEST

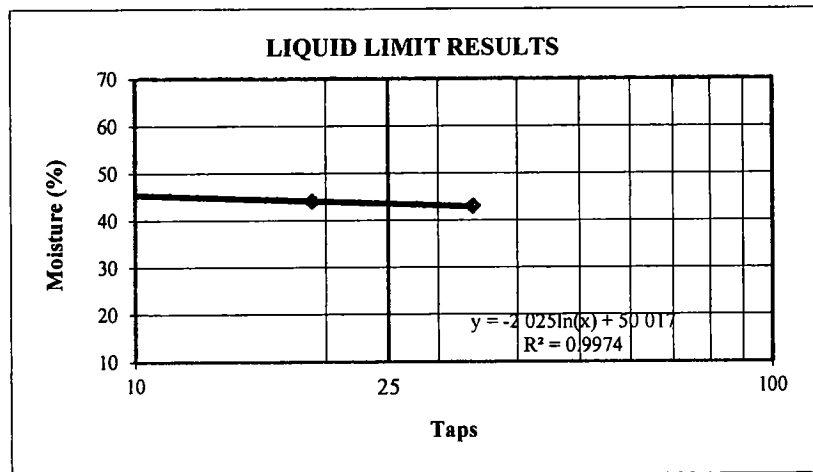
Project:	Deer Park Industrial					Job No.:	3388-007	Date:	9/14/21
Boring/TF	B2A	Sample N	3	Depth:	10	Engineer:	ADS	Tester:	NLW
Soil Desc									

LIQUID LIMIT

Can No.	6a	10	L7
Taps	34	19	9
Can+wet s	13.28	11.77	11.32
Can+dry s	11.37	10.31	9.92
Can	6.92	6.99	6.85
Moisture (%)	42.92	43.98	45.60

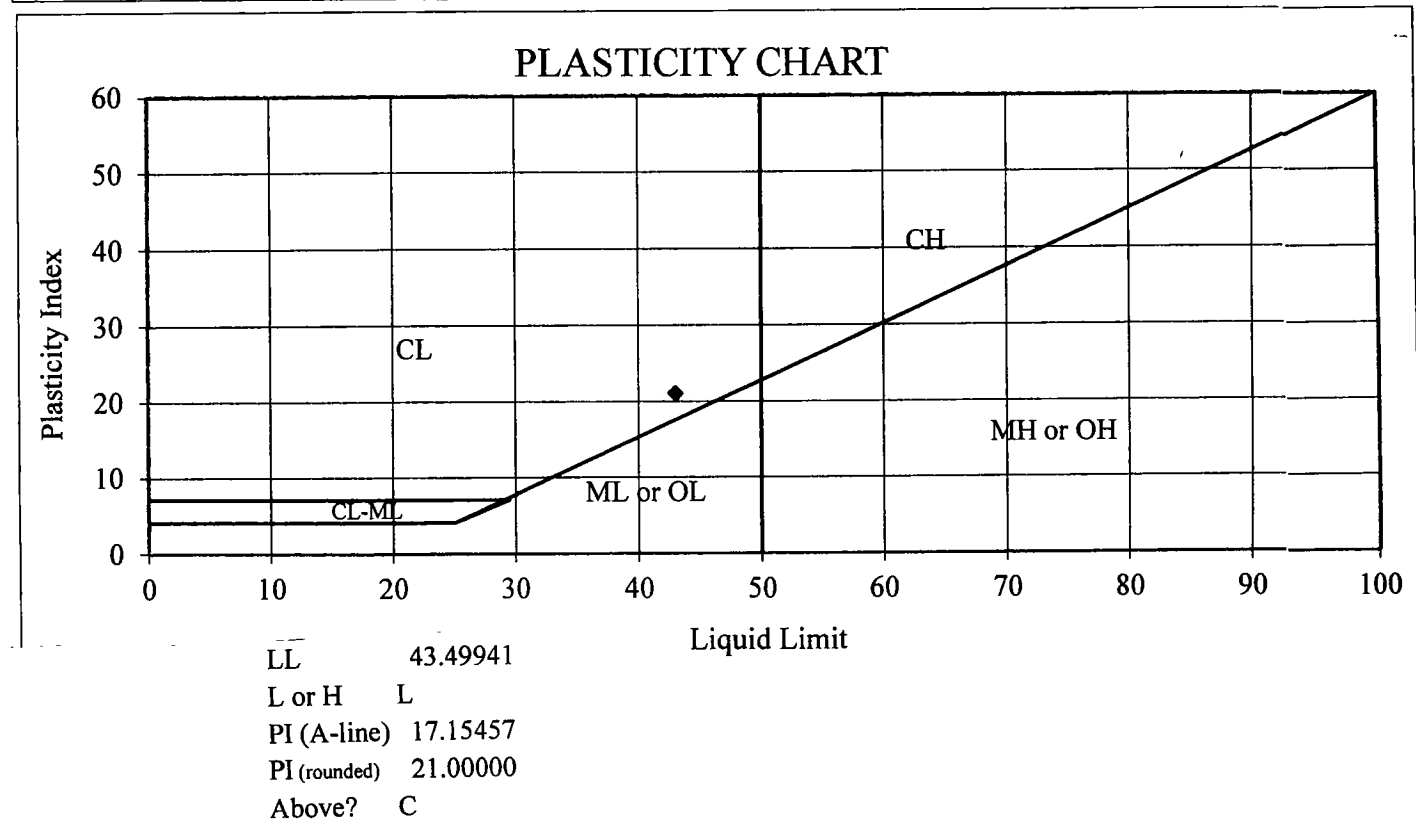
PLASTIC LIMIT

Can No.	A3
Can+wet s	16.52
Can+dry s	14.79
Can	6.91
Moisture (%)	21.95



Lines for Plasticity Char

	50	0
Moisture (%)	50	60
LL	43	
PL	22	
PI	21	
USCS	CL	
	0	4
	25	4
	29.5	7
	0	7
	100	60
	25	4



ATTERBERG LIMITS TEST

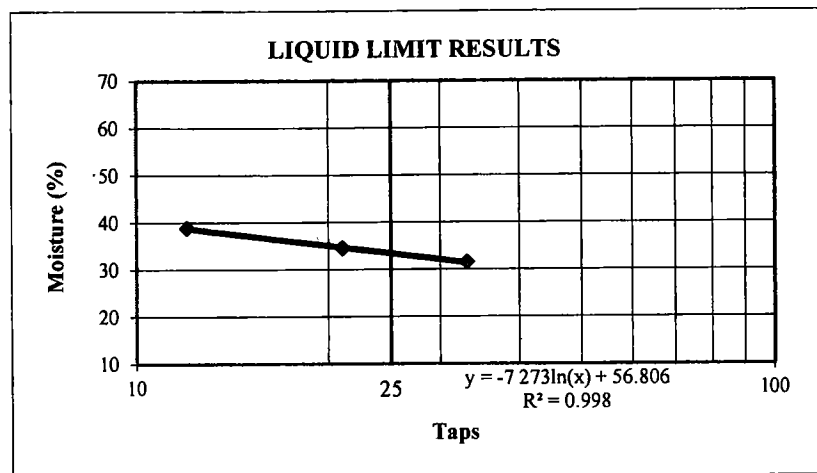
Project:	Deer Park Industrial			Job No.:	3388-007	Date:	9/14/21
Boring/TF	B3A	Sample N	7	Depth:	30	Engineer:	ADS
Soil Desc							

LIQUID LIMIT

Can No.	W2	YLW	11
Taps	33	21	12
Can+wet s	13.23	12.90	13.44
Can+dry s	11.70	11.39	11.60
Can	6.84	7.01	6.86
Moisture (%)	31.48	34.47	38.82

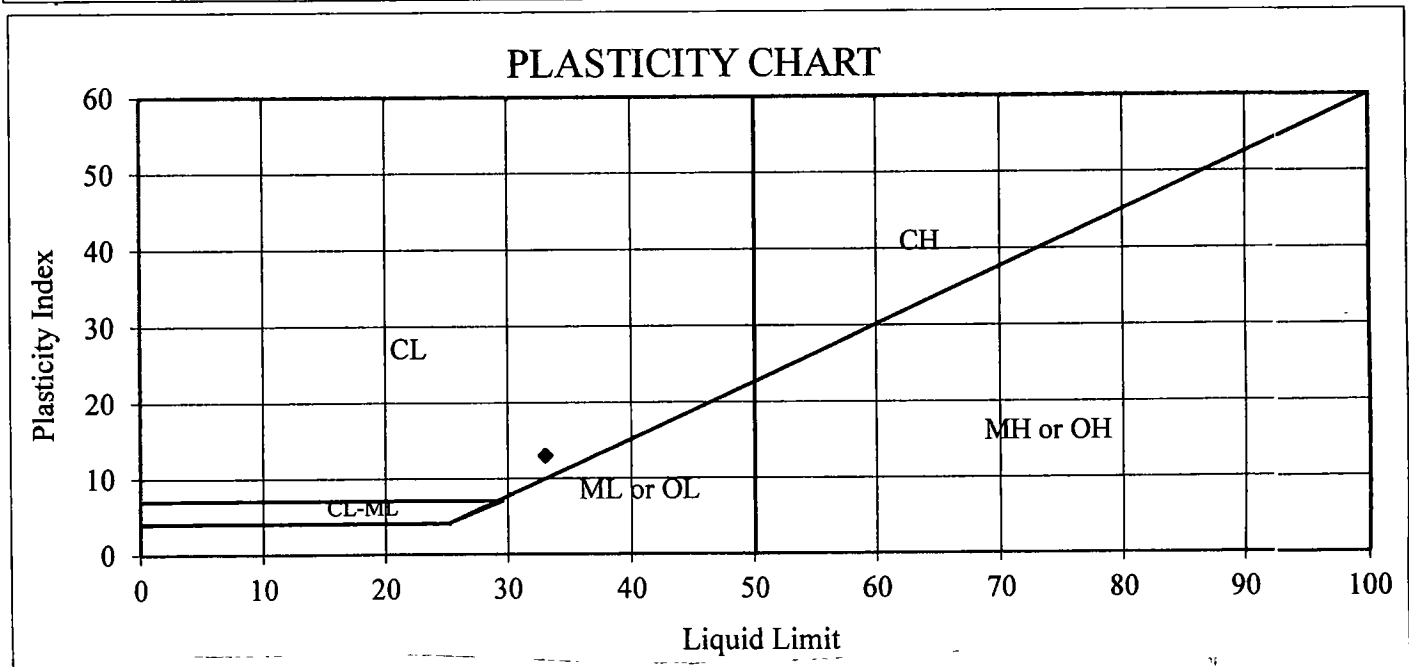
PLASTIC LIMIT

Can No.	BLK
Can+wet s	13.84
Can+dry s	12.68
Can	6.90
Moisture (%)	20.07



Lines for Plasticity Chart

	Moisture (%)	50	0
		50	60
LL	33		
PL	20	0	4
PI	13	25	4
		29.5	7
USCS	CL	0	7
		100	60
		25	4



ATTERBERG LIMITS TEST



Project:	Deer Park Industrial					Job No.:	3388-007-21	Date:	9/14/21
Boring/TP:	B3A	Sample No.:	5	Depth:	20	Engineer:	ADS	Tester:	NLW
Soil Descr.:									

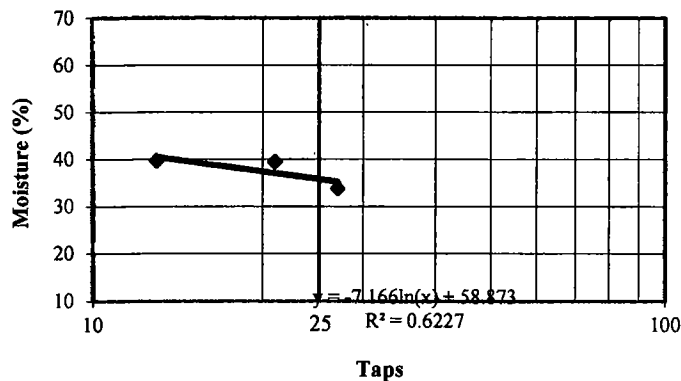
LIQUID LIMIT

Can No.	8	A4	Zoo
Taps	27	21	13
Can+wet soil	15.40	12.73	14.02
Can+dry soil	13.31	11.13	12.02
Can	7.11	7.07	6.98
Moisture (%)	33.71	39.41	39.68

PLASTIC LIMIT

Can No.	14
Can+wet soil	14.00
Can+dry soil	12.97
Can	7.16
Moisture (%)	17.73

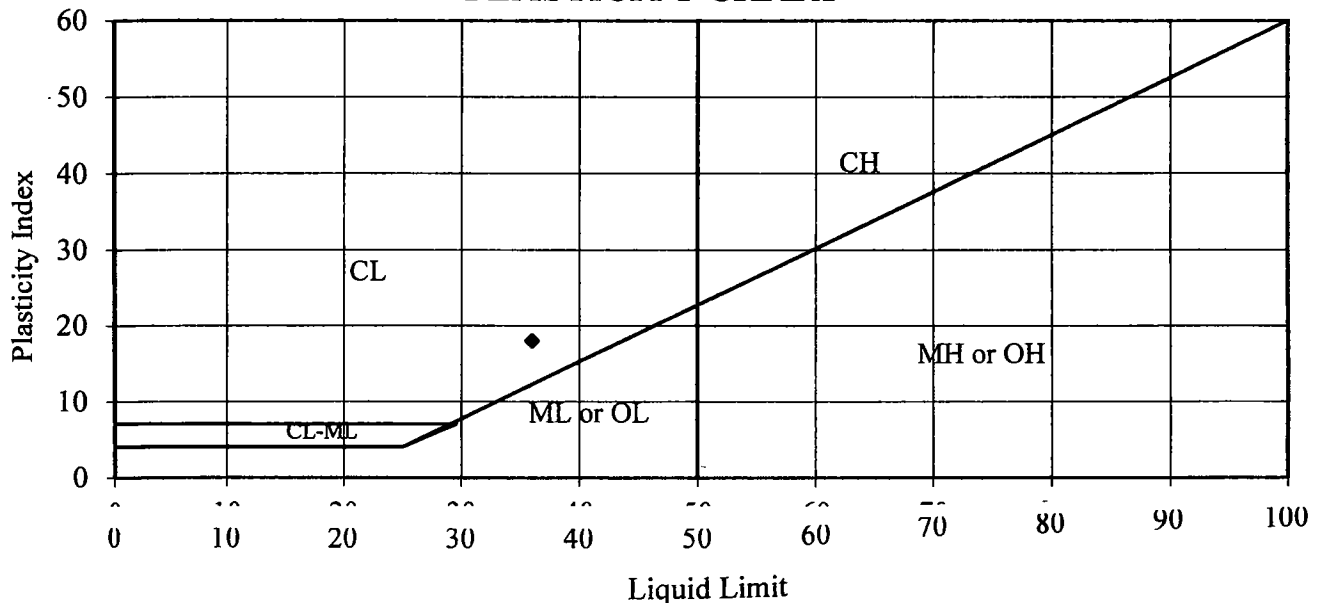
LIQUID LIMIT RESULTS



Moisture (%)

LL	36
PL	18
PI	18
USCS	CL

PLASTICITY CHART



ATTERBERG LIMITS TEST

Project:	Deer Park Industrial				Job No.:	3388-007	Date:	9/14/21	
Boring/TH	B3A	Sample N	9	Depth:	40	Engineer:	ADS	Tester:	NLW
Soil Desc									

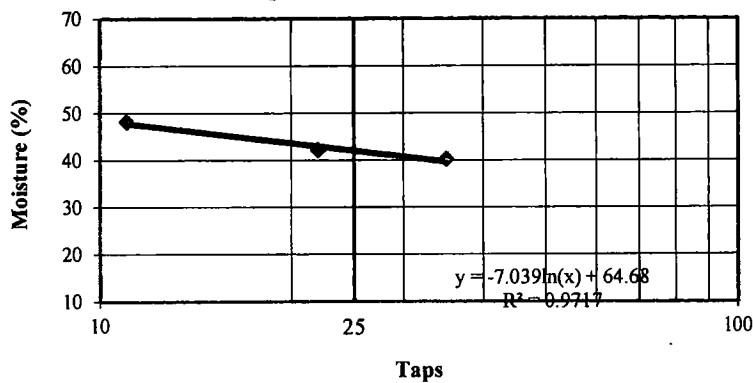
LIQUID LIMIT

Can No.	QTP	CAT	A2
Taps	35	22	11
Can+wet s	13.30	13.31	13.26
Can+dry s	11.49	11.44	11.21
Can	6.98	7.00	6.95
Moisture (%)	40.13	42.12	48.12

PLASTIC LIMIT

Can No.	B4
Can+wet s	12.95
Can+dry s	11.78
Can	6.94
Moisture (%)	24.17

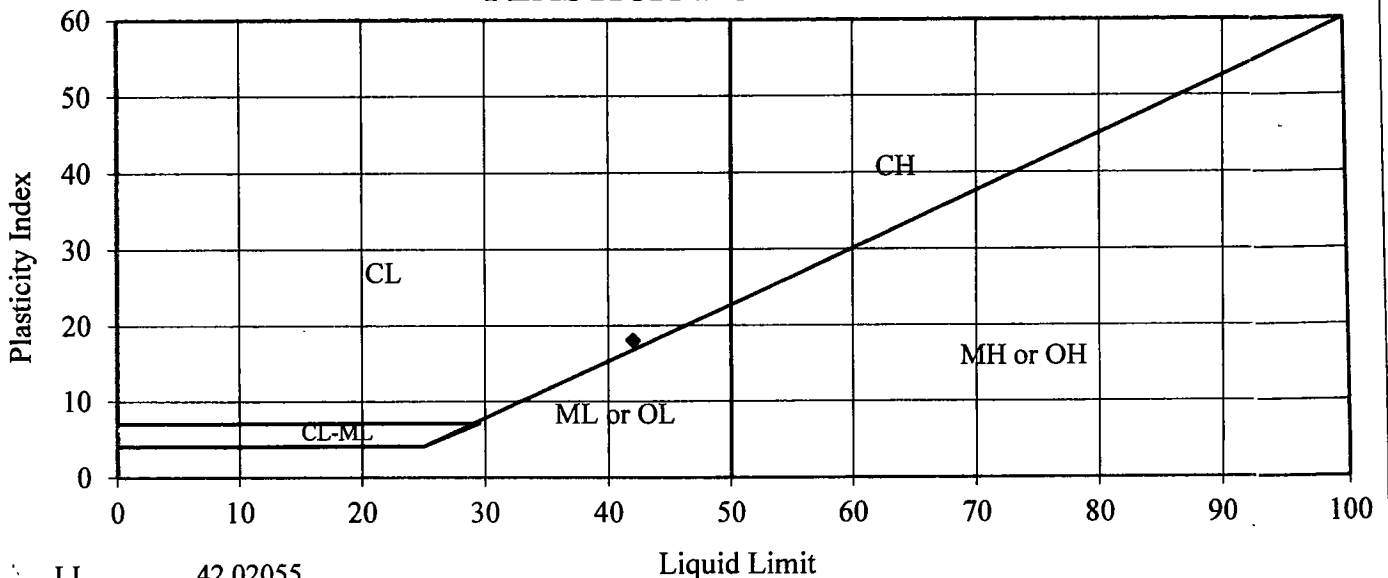
LIQUID LIMIT RESULTS



Lines for Plasticity Chart

Moisture (%)	50	0
LL	42	
PL	24	
PI	18	
USCS	CL	
	0	4
	25	4
	29.5	7
	0	7
	100	60
	25	4

PLASTICITY CHART



ATTERBERG LIMITS TEST

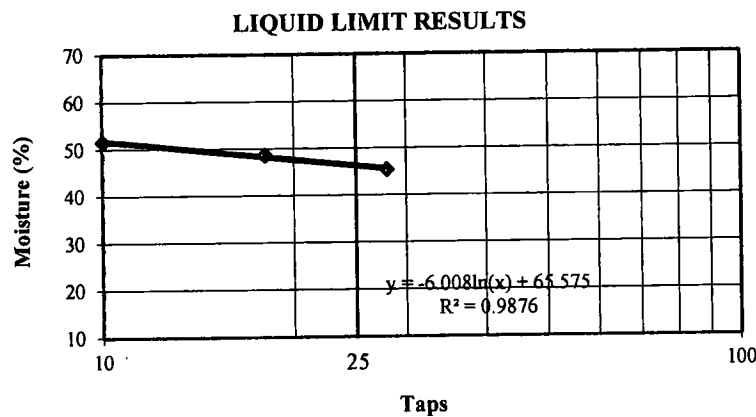
Project:	Deer Park Industrial					Job No.:	3388-007	Date:	9/14/21
Boring/TF	B3A	Sample N	11	Depth:	50	Engineer:	ADS	Tester:	NLW
Soil Desc									

LIQUID LIMIT

Can No.	116	Hey	SN
Taps	28	18	10
Can+wet s	13.29	13.43	13.65
Can+dry s	11.35	11.33	11.35
Can	7.07	7.01	6.89
Moisture (%)	45.33	48.61	51.57

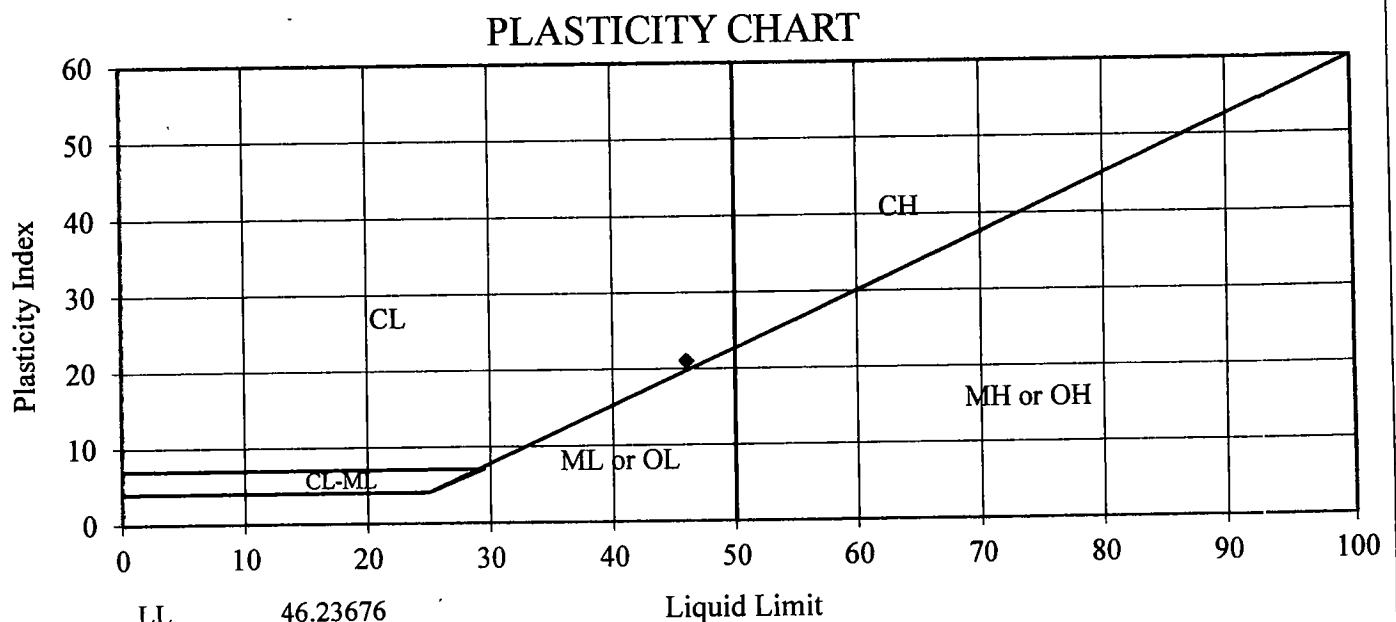
PLASTIC LIMIT

Can No.	16
Can+wet s	13.30
Can+dry s	12.03
Can	6.97
Moisture (%)	25.10

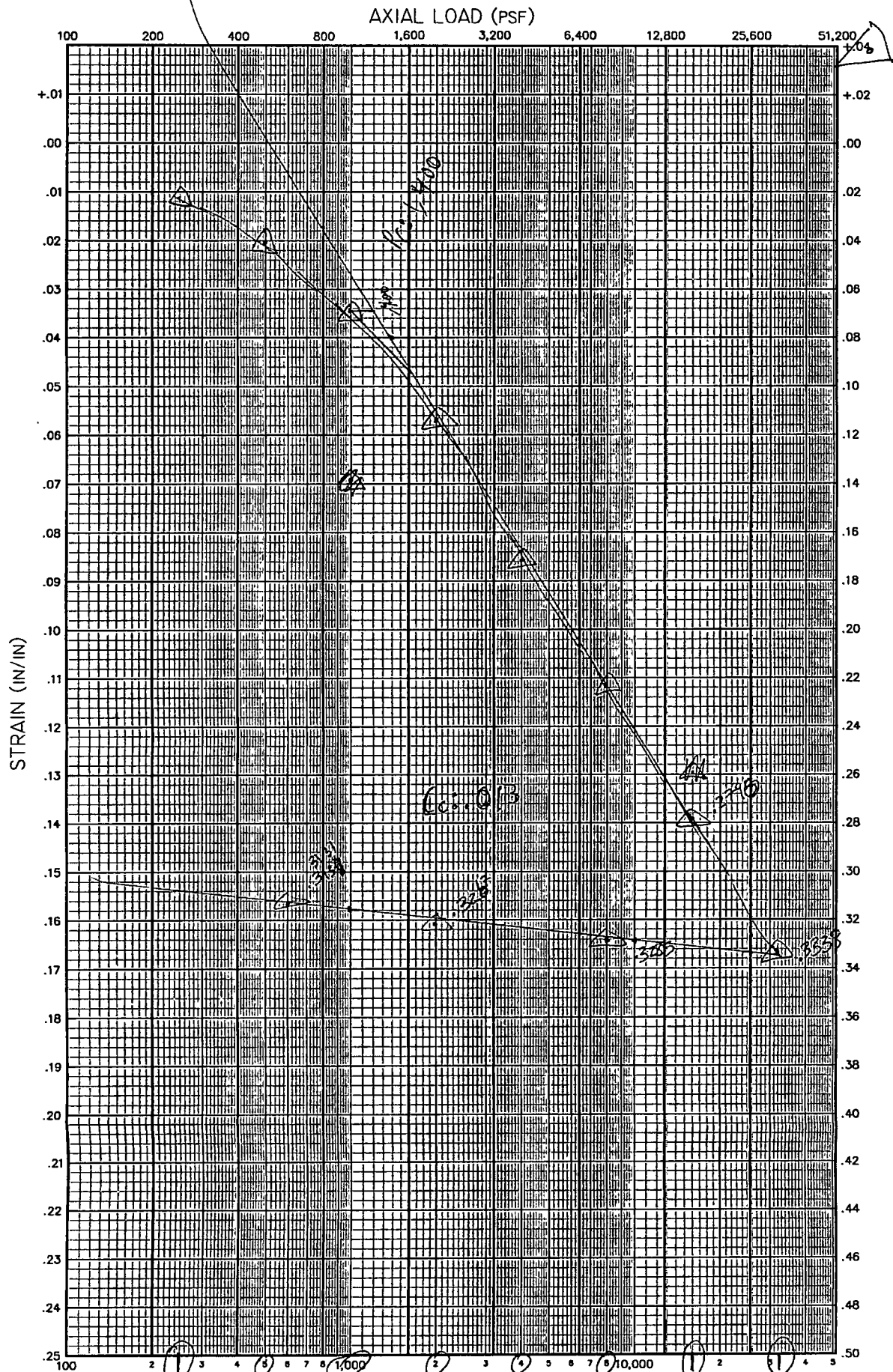


Lines for Plasticity Chart

	50	0
Moisture (%)	50	60
LL	46	
PL	25	
PI	21	
USCS	CL	
	100	60
	25	4



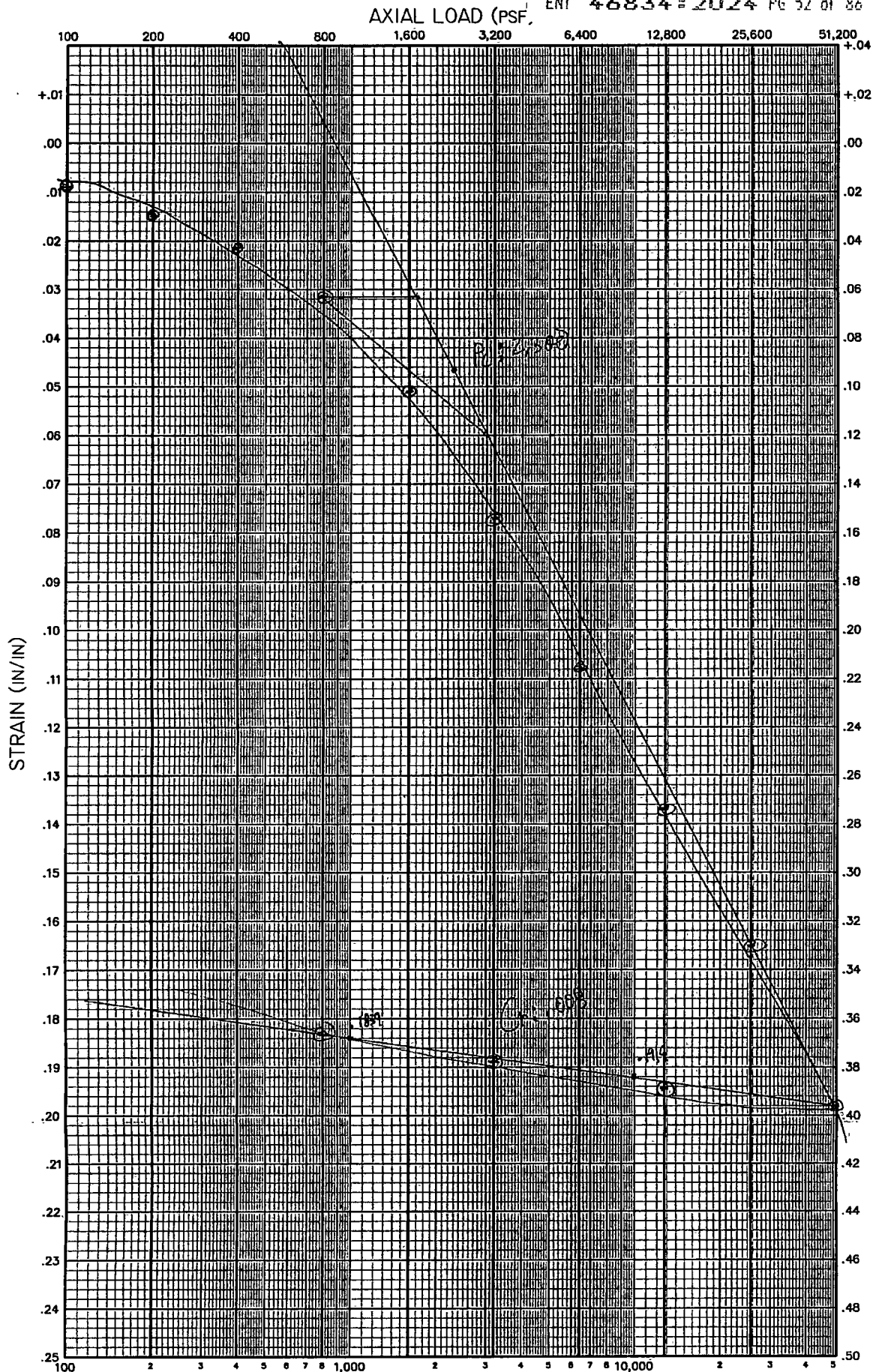
LL 46.23676
L or H L
PI (A-line) 19.15283
PI (rounded) 21.00000
Above? C
CL



CONSOLIDATION TEST RESULTS



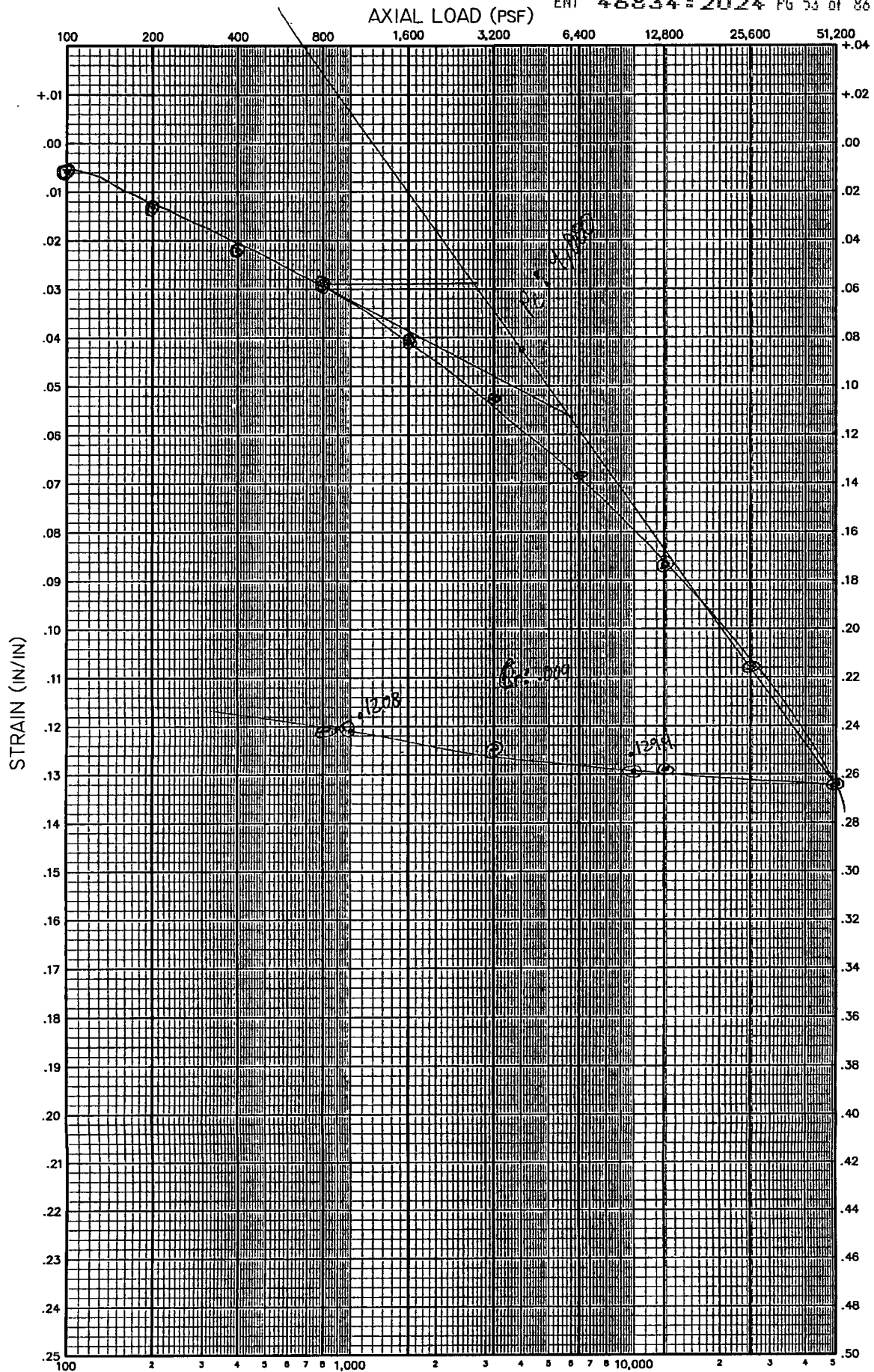
JOB NO. 2354-003-21 JOB NAME 6800 N. Industrial
 BORING NO. 32 DEPTH 2.5 TESTED BY HB DATE 5/11/21



CONSOLIDATION TEST RESULTS



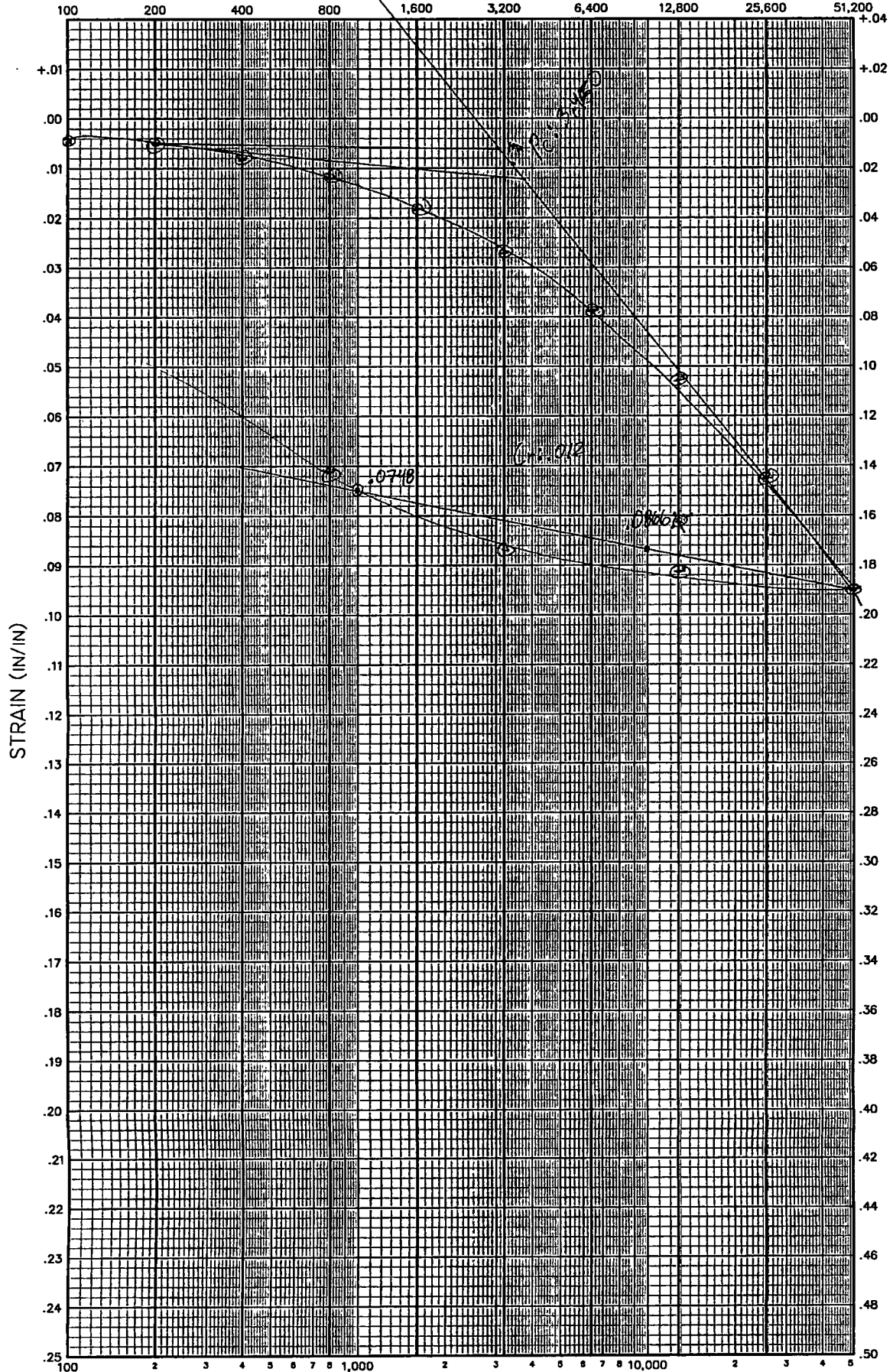
JOB No. 2354-003-21 JOB NAME 6800 N Industrial
 BORING No.: B2 DEPTH 5 TESTED BY HB DATE 5/11/21



CONSOLIDATION TEST RESULTS



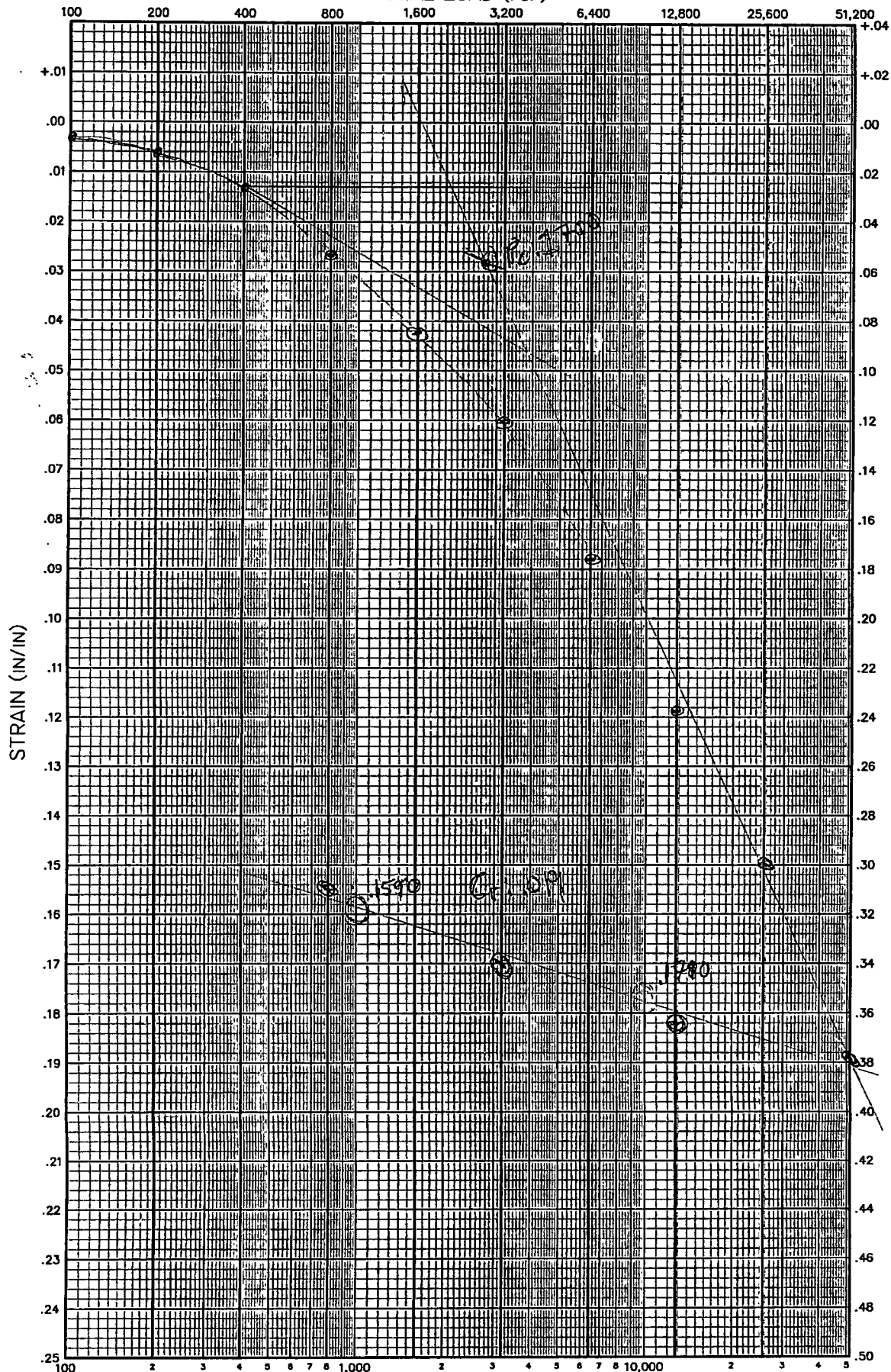
JOB No. 2354-003-21 JOB NAME 6800 N. Industrial
 BORING No. B2 DEPTH 10' TESTED BY KB DATE 5/11/21



CONSOLIDATION TEST RESULTS



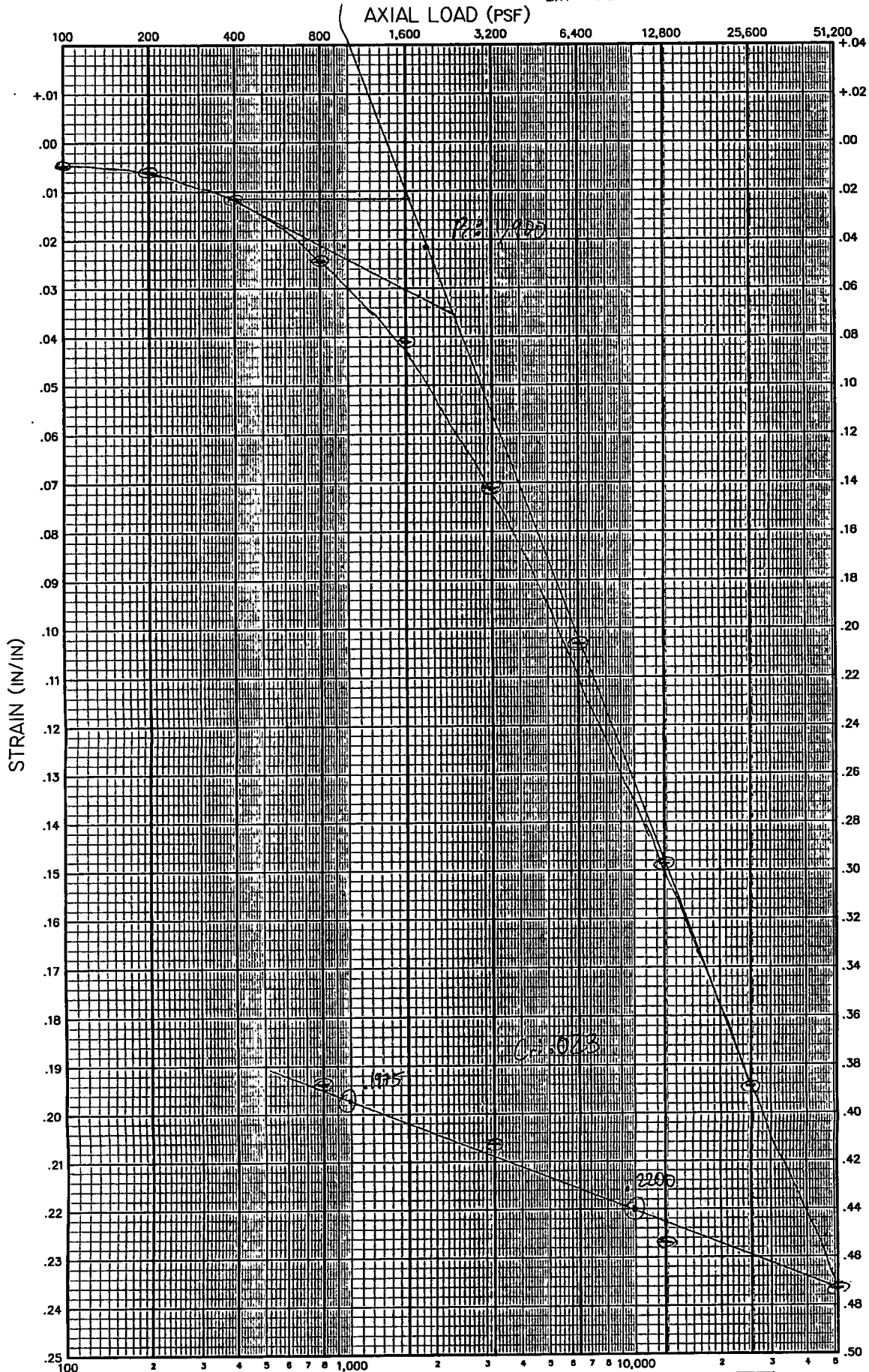
JOB NO. 2354-003-21 JOB NAME 6800 N. Industrial
 BORING NO: B4 DEPTH 15' TESTED BY HS DATE 5/11/21



CONSOLIDATION TEST RESULTS



JOB NO. 3388-007-21 JOB NAME Deer Park Industrial
BORING NO. B4 DEPTH 15 TESTED BY RLW DATE 9/14



CONSOLIDATION TEST RESULTS



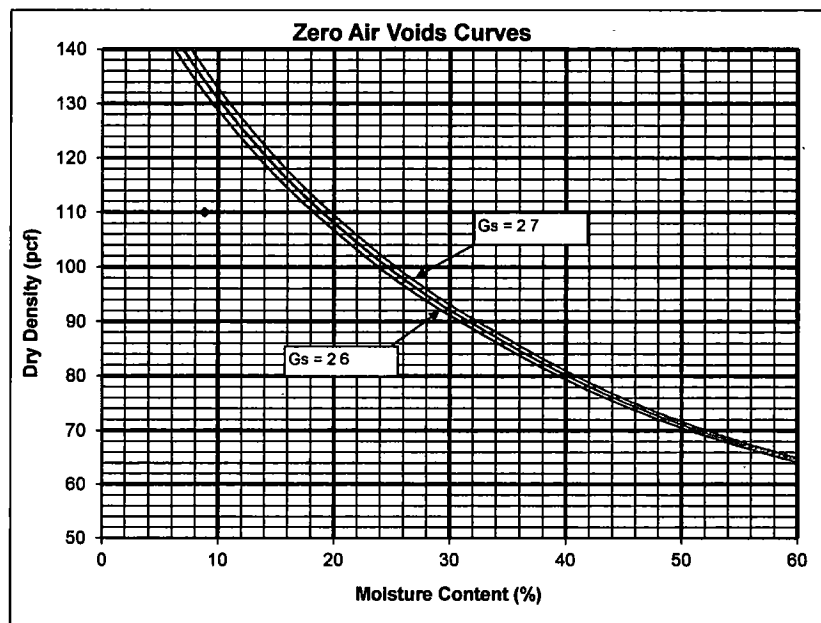
JOB NO. 3388-007-21 JOB NAME Deer park Industrial
 BORING NO. 134 DEPTH 20' TESTED BY NILW DATE 9/14

Moisture & Density Test Results

ENT 46834 = 2024 PG 57 of 86

Date:	9/14/21	
Job #:	3388-001-21	
Project:	Deer Park Industrial	
Analyst:	NLW	
Project Engineer:	ADS	Assumed Gs: 2.7

Boring #:	B4A							
Sample #:	1							
Depth (ft):	2.5							
Pan Wt. (gr):	153.7							
Wet Soil + Rings + Pan Wt (gr):	532.9							
# of rings	2							
Dry Soil + Rings + Pan Wt. (gr):	509.4							
Sample type:	rings				rings	rings	rings	rings
Wet Soil Weight (gr):	289.2	0	0	0	0	0	0	0
Wet Density (pcf):	119.7	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Dry Density (pcf):	110.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Assumed Density (pcf):	136.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Saturation (%):	44.9	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Dry Wt. (gr):	265.7	0	0	0	0	0	0	0
Wt. Of Water (gr):	23.5	0	0	0	0	0	0	0
Moisture (%):	8.8	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Soil Classification:								
Soil Description & Comments:								
Wet Density (pcf):	119.7	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Dry Density (pcf):	110.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Moisture (%):	8.8	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!



Date:
Job #:
Project:
Analyst:
Project Engineer:

[illegible]

Date:
Job #:
Project:
Analyst:
Project Engineer:

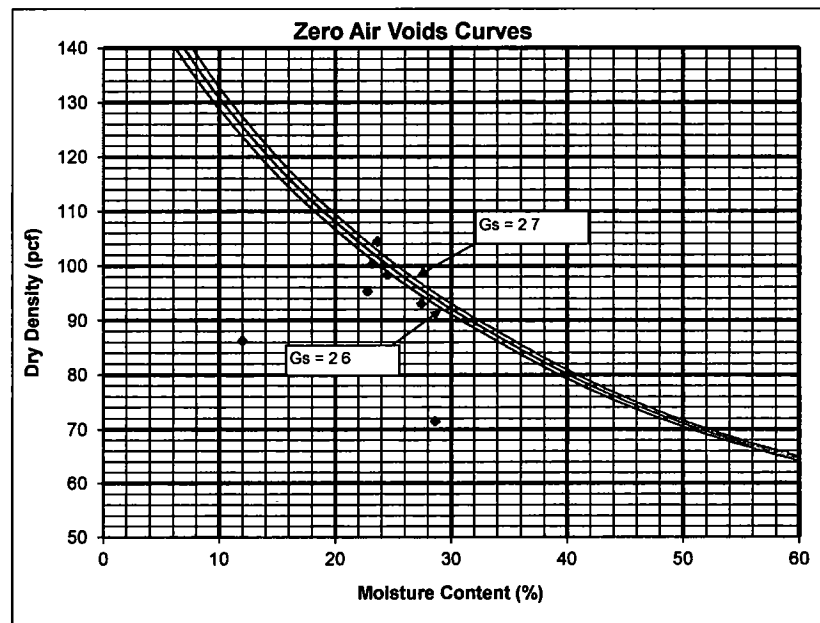
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Moisture & Density Test Results

ENT 46834 = 2024 PG 60 of 86

Date:	5/11/21	
Job #:	2354-003-21	
Project:	6800 N Industrial	
Analyst:	HB	
Project Engineer:	ADS	Assumed Gs: 2.7

Boring #:	B6	B2	B4	B8	B9	B10	B12	
Sample #:	3	1	1	3	2	3	1	
Depth (ft):	10	2.5	2.5	7.5	5	10	2.5	
Pan Wt. (gr):	129.2	136.1	130.9	126.4	127.8	129.1	137.1	
Wet Soil + Rings + Pan Wt (gr):	531.2	508.7	442.9	515.1	513.5	505.5	460.3	
# of rings	2	2	2	2	2	2	2	
Dry Soil + Rings + Pan Wt. (gr):	471.5	456.2	393.5	458.8	455.3	443.8	435.3	
Sample type:	rings	rings	rings	rings	rings	rings	rings	rings
Wet Soil Weight (gr):	312	282.6	222	298.7	295.7	286.4	233.2	0
Wet Density (pcf):	129.2	117.0	91.9	123.7	122.4	118.6	96.6	#DIV/0!
Dry Density (pcf):	104.5	95.3	71.5	100.4	98.3	93.0	86.2	#DIV/0!
Assumed Density (pcf):	102.8	104.3	95.0	103.5	101.4	96.8	127.2	#DIV/0!
Saturation (%):	104.2	80.2	56.9	92.4	92.7	91.4	34.0	#DIV/0!
Dry Wt. (gr):	252.3	230.1	172.6	242.4	237.5	224.7	208.2	0
Wt. Of Water (gr):	59.7	52.5	49.4	56.3	58.2	61.7	25	0
Moisture (%):	23.7	22.8	28.6	23.2	24.5	27.5	12.0	#DIV/0!
Soil Classification:								
Soil Description & Comments:								
Wet Density (pcf):	129.2	117.0	91.9	123.7	122.4	118.6	96.6	#DIV/0!
Dry Density (pcf):	104.5	95.3	71.5	100.4	98.3	93.0	86.2	#DIV/0!
Moisture (%):	23.7	22.8	28.6	23.2	24.5	27.5	12.0	#DIV/0!



Date:
Job #:
Project:
Analyst:
Project Engineer:

[illegible]

Date:
Job #:
Project:
Analyst:
Project Engineer:

[illegible]



ATTACHMENT 2

Site-Specific Seismic Study



**REPORT
SITE-SPECIFIC SEISMIC STUDY
PROPOSED 6800 NORTH INDUSTRIAL
5900 WEST 6800 NORTH
AMERICAN FORK, UTAH**

Submitted To:

Red Pine Construction
520 South 850 East, Suite A4
Lehi, Utah 84043

Submitted By:

GSH Geotechnical, Inc.
473 West 4800 South
Salt Lake City, Utah 84123

July 28, 2021

Job No. 2354-004-21

July 28, 2021
Job No. 2354-004-21

Mr. Mike Horan
Red Pine Construction
520 South 850 East, Suite A4
Lehi, Utah 84043

Mr. Horan:

Re: Summary Report
Site-Specific Seismic Study
Proposed 6800 North Industrial
5900 West 6800 North
American Fork, Utah

1. INTRODUCTION

1.1 GENERAL

This report presents the results of our site-specific seismic study performed at the site of the proposed 6800 North Industrial to be located near 5900 West 6800 North in American Fork, Utah. GSH Geotechnical, Inc (GSH) completed a geotechnical study¹ for the site. Data from the geotechnical study along with a geophysical survey was used for this site-specific seismic study.

The shear-wave velocity profile for the upper 350 feet at the site (including \bar{v}_{s30} for the upper 100 feet) was determined utilizing boring data from our geotechnical study and a geophysical survey consisting of Refraction Microtremor (ReMi) testing.

The ground motion hazard and design ground motion response spectra at the site were developed utilizing a site-specific site response analysis (SRA). The analysis was completed in accordance with the procedures presented in ASCE 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7-16) and Supplement 1 to ASCE 7-16.

¹ "Report, Geotechnical Study, Proposed 6800 North Industrial, 5900 West 6800 North, American Fork, Utah." GSH Job No. 2093-004-19. Dated May 14, 2021.

1.2 OBJECTIVES AND SCOPE

The objectives and scope of the study were planned in discussions between Mr. Mike Horan of Red Pine Construction and Mr. Alan Spilker, PE of GSH.

In general, the objectives of this study were to:

1. Further define the subsurface conditions at the site, including a shear-wave profile to a depth of 350 feet.
2. Develop site-specific and design ground motion response spectra for the site.

In accomplishing these objectives, our scope has included the following:

1. A review of available subsurface information from the geotechnical study completed for the site.
2. A field program consisting of the completion of a Refraction Microtremor (ReMi) geophysical exploration to a depth of 350 feet including the development of \bar{v}_{s30} for the upper 100 feet.
3. Performance of a site-specific site response analysis (SRA) in accordance with the ASCE 7-16 Section 21.1, Site Response Analysis.
4. Development of site-specific and design ground motion response spectra for the site in accordance with the ASCE 7-16 Section 21.3, Design Response Spectrum.

1.3 AUTHORIZATION

Authorization was provided by returning a signed copy of the Professional Services Agreement No. 21-0434 dated April 12, 2021.

1.4 PROFESSIONAL STATEMENTS

Supporting data upon which our recommendations are based are presented in subsequent sections of this report. Recommendations presented herein are governed by the physical properties of the soils encountered in the geophysical testing, exploration borings, and projected groundwater conditions. If subsurface conditions other than those described in this report are encountered, GSH must be informed so that our recommendations can be reviewed and amended, if necessary.

Our professional services have been performed, our findings developed, and our recommendations prepared in accordance with generally accepted engineering principles and practices in this area at this time.

2. PROPOSED CONSTRUCTION

The site is proposed to be developed with 3 warehouse structures and associated pavements. The structures are anticipated to be one extended level, constructed slab-on-grade, have footprints of 47,040 square feet to 115,808 square feet, and be supported upon conventional spread and continuous wall footings. Paved parking areas and drive lanes are planned around the structure.

Based on information provided by the structural engineer the structure's fundamental period will be approximately 0.4 seconds.

3. SITE CONDITIONS

3.1 SURFACE

The site is located at approximately 5900 West 6800 North in American Fork, Utah. The topography of the site is relatively flat, grading down to the south with a total relief of approximately 6 to 9 feet. Site vegetation consists of agricultural grass fields with undeveloped/vacant grass land in the western portion of the site.

The site is bounded to the north by 6800 North Street followed by agricultural fields; to the east by single-family residential structures along with agricultural fields; to the south by agricultural fields and vacant/undeveloped brush/grass land; and to the west by vacant/undeveloped brush/grass land followed by 100 West Street and a single-family residential structure adjacent to the northwest corner of the site.

3.2 SUBSURFACE SOIL AND GROUNDWATER

The following paragraphs provide generalized descriptions of the subsurface profiles and soil conditions encountered within the borings conducted during the geotechnical study. As previously noted, soil conditions may vary in unexplored locations.

The borings were completed to depths ranging from 5.0 to 51.5 feet. The soil conditions encountered in each of the borings, to the depths completed, were generally similar across the boring locations.

- Natural soils were encountered below the non-engineered fill or the ground surface in each boring. The natural soils consisted primarily of clay with varying silt, sand, and gravel content and sand with varying clay, silt, and gravel content.

The natural clay soils were very soft to stiff, dry to saturated, brown, dark brown, gray, and tan in color. The natural sand soils were very loose to medium dense, dry to saturated, and gray and brown in color.

Groundwater was measured as shallow as 2.8 feet below the existing ground surface during the geotechnical study for the site.

For a more descriptive interpretation of subsurface conditions, please refer our geotechnical report completed for the site (GSH Job No. 2354-003-21).

3.3 SHEAR WAVE VELOCITY PROFILE

The site shear-wave velocity profile was completed utilizing geophysical exploration. The testing consisted of Refraction Microtremor (ReMi) testing. Testing is performed at the surface using a series of geophone sensors and a seismic source. A wavefield transformation is performed on the recorded geophone movements. The transformation is then utilized to create a shear-wave dispersion curve to model the subsurface shear-wave velocity profile.

The location of the ReMi line on the site is presented on Figure 1, Site Plan. The borings completed in conjunction with the geotechnical study are also shown on Figure 1.

The site classification for ASCE 7-16 was Site Class F in the geotechnical report due to potentially liquefiable soils at the site. As a follow up to the geotechnical report the ReMi testing results were analyzed to a depth of 350 feet with a resulting \bar{v}_{s30} value of 653 ft/s. This characterizes the site as a Site Class D, Stiff Soil Profile as defined in Chapter 20 of ASCE 7-16.

The shear-wave velocity results are provided on attached Figure 2, Shear-Wave Velocity Profile.

3.4 GEOLOGIC SETTING

The site is located in the Utah Valley, which is in the Basin and Range Physiographic Province. The Utah Valley is near (west of) the transition between the Basin and Range Physiographic Province to the west and the Middle Rocky Mountain Physiographic Province to the east. The Basin and Range Province is characterized by generally north-trending valleys and mountain ranges that have formed by displacement along normal faults. The Wasatch Fault forms the boundary between the 2 provinces and has been active for approximately 10 million years. The Middle Rocky Mountains were formed during a period of regional compression that occurred in Cretaceous time, about 75 to 70 million years ago (Hunt, 1967). The surficial geology of the area is characterized by materials deposited within the past 30,000 years by late Pleistocene Lake Bonneville (Currey and Oviatt, 1985), and young lacustrine and deltaic deposits (Holocene to upper Pleistocene) deposited on delta margins as the lake receded to its present Great Salt Lake levels (Hylland et al., 2014). As the ancient lake(s) receded, streams began to regrade through shoreline deltas formed at the mouths of major Wasatch Range canyons and the eroded material was deposited in the basin as a series of recessional deltas, alluvial fans, and shoreline sequences. Toward the east-central portion of the valley where the site is located, shallow-water sediments of clay, silt, and sand predominate.

The primary surficial geology of most of the site as interpreted by Solomon and others (2009) primarily consists of "Lacustrine silt and clay" (**Qlmp**). Most of the west and some of the east perimeter of the site consists of "Younger alluvial-fan deposits, undivided" (**Qafy**).

3.5 FAULTING

There are a number of mapped faults near the site. The faults are primarily normal mechanism. Some of the faults included are the Utah Lake Faults (mapped 1.22 miles south of the site), the Provo section of the Wasatch fault zone (mapped 4.13 miles northeast of the site), the Salt Lake City section of the Wasatch fault zone (mapped 9.79 miles north of the site), and the Nephi section of the Wasatch fault zone (mapped 18.91 miles south-southeast of the site).

4. SITE RESPONSE ANALYSIS

A soil model was developed from the boring, laboratory, and ReMi data from this study and the geotechnical study for the site.

A series of earthquake time histories were selected and scaled to match the MCE_R response spectrum at the base of the soil column. Histories were selected from events with similar magnitudes, distances and spectral shape in the period ranges of significance for the proposed structure (approximately 0.4 seconds). These ground motion time histories were input at the base of the soil column model as outcrop motions, propagated through the soil column model, and calculated as surface ground motions. The results of the SRA analysis are presented in the table in the following section.

5. DESIGN RESPONSE SPECTRUM

The response spectrum produced from the site-specific seismic analysis was compared with the minimum code spectrum values per ASCE 7-16 Section 21.3, including updates presented in Supplement 1 to ASCE 7-16. This process includes taking the 2014 mapped values from the USGS and utilizing F_a from Table 11.4-1 and 2.5 as F_v to obtain the modified accelerations, then reducing them by 20 percent to obtain the code minimum spectral accelerations.

The site-specific response spectrum is lower than the minimum code spectrum at select periods; therefore, the minimum code spectrum governs the design spectrum for the site at these periods. These values are presented in the table on the following page:

Period (sec)	Code 80% Minimum Spectral Acceleration (g)	Site-Specific Spectral Acceleration (g)	Code Modified* Site-Specific Spectral Acceleration (g)	Design Spectral Acceleration (2/3 of Code Modified Site-Specific Acceleration) (g)
0.05	0.572	0.445	0.572	0.381
0.1	0.739	0.476	0.739	0.493
0.2	1.010	0.694	1.010	0.673
0.3	1.010	1.027	1.027	0.685
0.4	1.010	0.937	1.010	0.673
0.5	1.010	1.027	1.027	0.685
0.6	1.010	1.148	1.148	0.766
0.8	1.010	1.046	1.046	0.698
1.0	0.914	0.992	0.992	0.662
1.2	0.762	0.967	0.967	0.645
1.4	0.653	0.755	0.755	0.503
1.6	0.572	0.606	0.606	0.404
1.8	0.508	0.480	0.508	0.339
2.0	0.457	0.390	0.457	0.305
3.0	0.305	0.214	0.305	0.203
4.0	0.229	0.125	0.229	0.153
5.0	0.183	0.080	0.183	0.122

*The greater of the site-specific and the code minimum spectral acceleration.

6. DESIGN ACCERATION PARAMETERS

The site-specific response spectrum was analyzed in accordance with the procedure outlined in ASCE 7-16 Section 21.4 to produce the design acceleration parameters presented in the table below:

Site-Specific Parameter	Spectral Acceleration Value (g)
S _{DS}	0.689
S _{D1}	0.774

7. CLOSURE

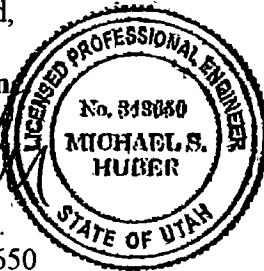
If you have any questions or would like to discuss these items further, please feel free to contact us at (801) 685-9190.

Respectfully submitted,

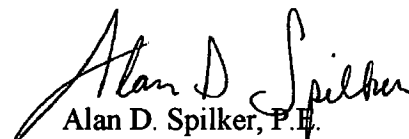
GSH Geotechnical, Inc.



Michael S. Huber, P.E.
State of Utah No. 343650
Vice President/Senior Geotechnical Engineer



Reviewed by:



Alan D. Spilker, P.E.
State of Utah No. 334228
President/Senior Geotechnical Engineer

MSH/ADS:ea

Encl.

Figure 1, Site Plan
Figure 2, Shear-Wave Velocity Profile

Addressee (email)

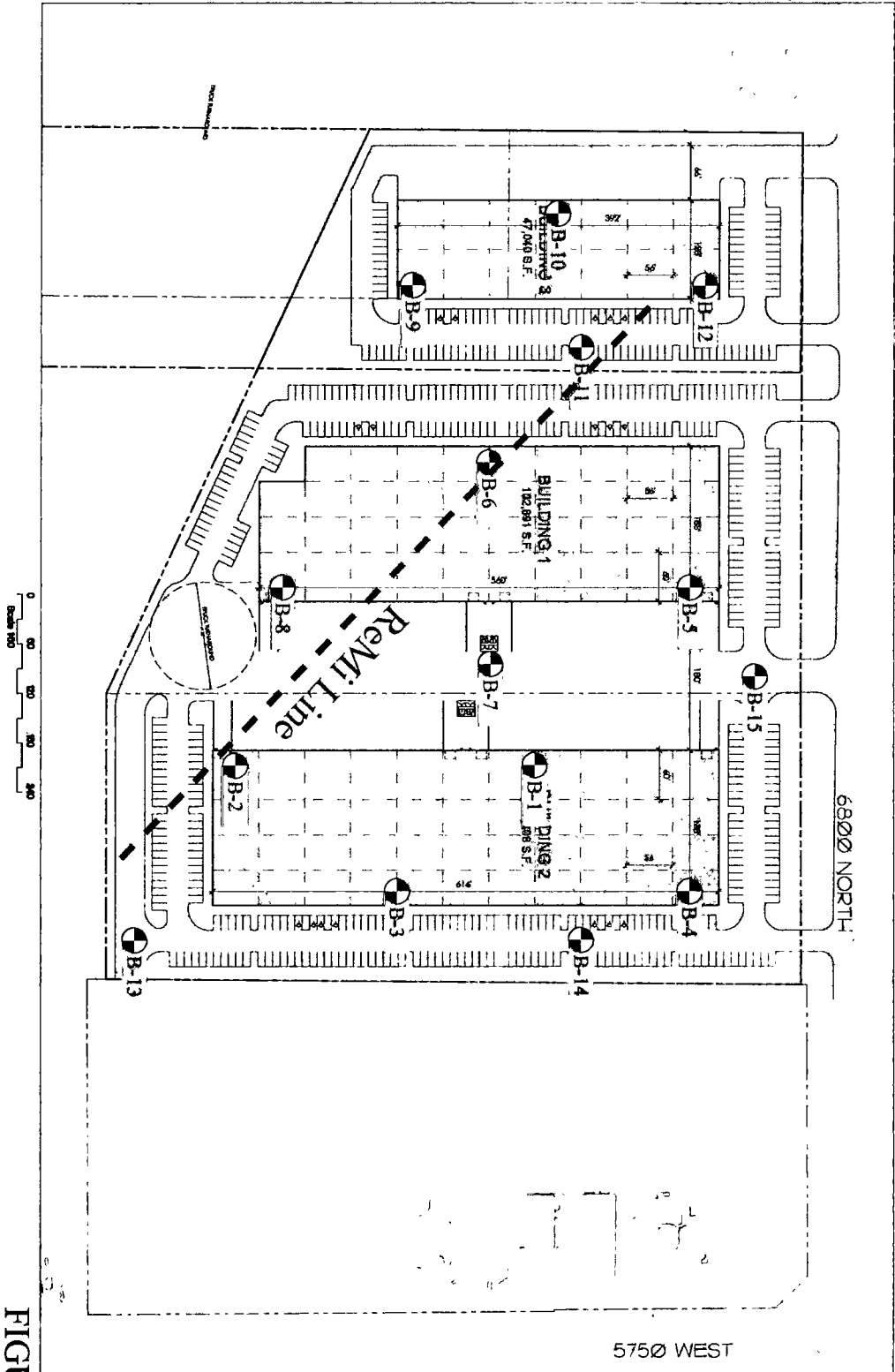
Geologic References

Currey, D.R., and Oviatt, C.G., 1985, Durations, average rates, and probable causes of Lake Bonneville expansion, still-stands, and contractions during the last deep-lake cycle, 32,000 to 10,000 years ago, in Kay, P.A., and Diaz, H.F., (eds.), Problems of and prospects for predicting Great Salt Lake levels - Processing of a NOAA Conference, March 26-28, 1985: Salt Lake City, Utah.

Hunt, C.B., 1967, Physiography of the United States: San Francisco, W.H. Freeman, 480 p.

Hylland, M. D., DuRoss, C.B., McDonald, G.N., Olig, S.S., Oviatt, C.G., Mahan, S.A., Crone, A.J., and Personius, S.F., 2014, Late Quaternary paleoseismology of the West Valley fault zone, Utah: Insights from the Baileys Lake trench site, *in* DuRoss, C.B. and Hylland, M.D., Evaluating surface faulting chronologies of graben-bounding faults in Salt Lake Valley, Utah—new paleoseismic data from the Salt Lake City segment of the Wasatch fault zone and the West Valley fault zone—Paleoseismology of Utah, Volume 24: Utah Geological Survey Special Study 149, p. 41–76, 8 appendices, 1 plate.

Solomon, Barry J., Biek, Robert F., and Ritter, Scott M., 2009, Geologic Map of the Pelican Point Quadrangle, Utah County, Utah. Utah Geologic Survey, Plate 1.



REFERENCE
ADAPTED FROM DRAWING ENTITLED
"MIKE HORAN - 6800 NORTH INDUSTRIAL AP"
BY AEURBIA, DATED 8 APR 2021

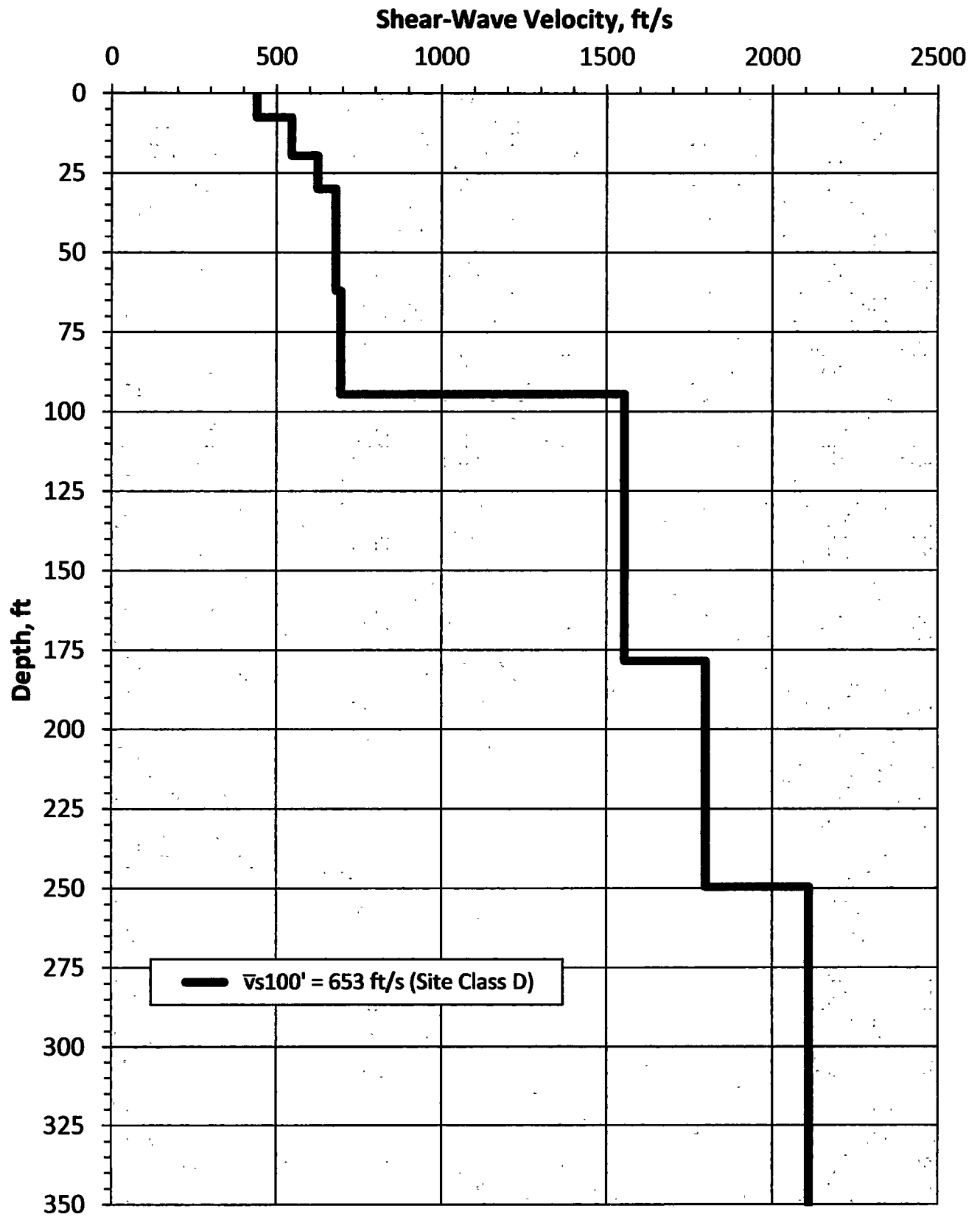


FIGURE 2 6800 North Industrial 2354-004-21



ENT 46834-2024 PG 75 of 86

ATTACHMENT 3

Liquefaction Analysis



ENT 46834-2024 PG 77 of 86

ATTACHMENT 4

Engineering Calculations

Inputs	Spot	Strip
nc	5.14	5.14
nq	1	1
ng	0.5	0.5
b (ft)	2	1.5
phi (deg)	34	34
df (ft)	1.5	2.5
c (psf)	1000	1000
fos	3	3
g (pcf)	120	120
Shape		
nc	1.25	1
ng	0.85	1
Calculations		
C	51	45
G	6425	5140
Q	180	300
qult (psf)	6656	5485
qallow (psf)	2218	1828
qdesign (psf)	1500	1500

LATERAL EARTH PRESSURES

Project	Propose 6800 N Industrial AF	Date Printed	5.13.2021
Job No.	2354-003-21	Engineer	ADS

Input parameters:

120.00	Unit Wt of soil, pcf
4	Ht of wall, ft
32	ϕ , Peak soil friction angle, deg
0.00	θ , Wall/slope face inclination from vertical, deg
0.00	β , Backslope angle from horizontal, degree
0.5	Reduction in Horizontal Acceleration (typically 0.5 but can vary from 0.33 to 1.0)
0.330	K_h , Horizontal Seismic Coeff, g (2/3 of MCE) (Design Value)

Results:

Condition	Static	Seismic
	pcf	psf*
Active	37	25
At-Rest	56	79
Mod Yield	47	52

*uniform pressure

Seismic Details.

Method	Force	Uniform Pressure	
M-O	99	25	active
Wood*	317	79	at-rest
Average	208	52	mod yielding

*applicable for for $L/H > 4$ and $u = 0.3$ - if not applicable use chart on pg 485 of Kramer

Square Foundation

Assumed Bearing Capacity
Column Load
Width of Footing
Unit Weight

BC= 1500 psf
L= 220 kips
b= 12.11 feet
γ= 118 pcf

Depth of Footing (ft)= 1.5

Depth of Water (ft)= 3

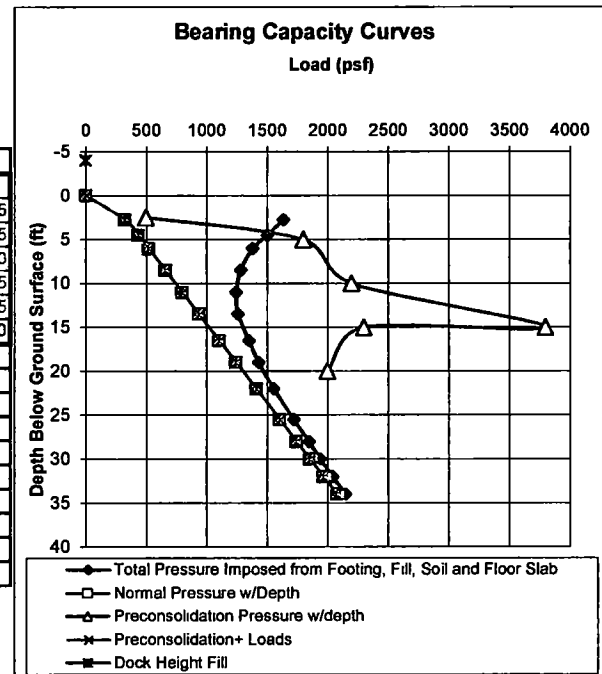
Note if water table was not encountered this number has to be greater than the maximum depth you are calculating pressures for.

Depth Below Ground Surface	Average Depth Below Ground Surface	Average Depth Below Found * D	D/ width of Found	Influence of found load (from table)	P'o	ΔP+P'o	(ΔP+P'o) P'o	Log ()	Cc	Thickness of Depth Increment	Unit Settlement	Total Settlement
Feet	Feet	Feet		%	PSF	PSF				Inches	Inches	Inches
0.0	0.0	0.0	0.00	0.00	0	0	0.00	0.000	0.003	18.0	0.00	0.00
1.5	2.8	1.3	0.10	0.88	325	1637	5.04	0.703	0.003	30.0	0.06	0.06
4.0	4.5	3.0	0.25	0.71	437	1502	3.43	0.536	0.013	12.0	0.08	0.15
5.0	6.0	4.5	0.37	0.58	521	1383	2.66	0.424	0.008	24.0	0.08	0.23
7.0	8.5	7.0	0.58	0.42	660	1282	1.94	0.289	0.008	36.0	0.08	0.31
10.0	11.0	9.5	0.78	0.30	799	1245	1.56	0.193	0.009	24.0	0.04	0.35
12.0	13.5	12.0	0.99	0.22	938	1261	1.34	0.129	0.009	36.0	0.04	0.39
15.0	16.5	15.0	1.24	0.16	1105	1352	1.22	0.088	0.019	36.0	0.06	0.45
18.0	19.0	17.5	1.45	0.12	1244	1431	1.15	0.061	0.019	24.0	0.03	0.48
20.0	22.0	20.5	1.69	0.10	1410	1555	1.10	0.042	0.023	48.0	0.05	0.53
24.0	25.5	24.0	1.98	0.08	1605	1720	1.07	0.030	0.023	36.0	0.02	0.55
27.0	28.0	26.5	2.19	0.07	1744	1845	1.06	0.025	0.023	24.0	0.01	0.57
29.0	30.0	28.5	2.35	0.06	1855	1941	1.05	0.020	0.023	24.0	0.01	0.58
31.0	32.0	30.5	2.52	0.05	1966	2041	1.04	0.016	0.023	24.0	0.01	0.59
33.0	34.0	32.5	2.68	0.05	2078	2147	1.03	0.014	0.023	24.0	0.01	0.60
Total Settlement											0.60	Inches

35.0

Preload 0 psf
Floorslab 0 psf

ΔP+P'o+L oads	Average Depth Below Ground Surface	P'o	P'o + Loads	Average Depth Below Ground Surface	Preconsolidation Pressures	Depth
PSF	Feet	PSF	PSF	Feet	PSF	Feet
0	-4					
0	0	0	0	0	500	2.5
1637	2.75	325	324.5	2.75	1,800	5
1502	4.5	437	437.4	4.5	2200	10
1383	6	521	520.8	6	3800	15
1282	8.5	660	659.8	8.5	2300	15
1245	11	799	798.8	11	2000	20
1261	13.5	938	937.8	13.5		
1352	16.5	1105	1104.6	16.5		
1431	19	1244	1243.6	19		
1555	22	1410	1410.4	22		
1720	25.5	1605	1605	25.5		
1845	28	1744	1744	28		
1941	30	1855	1855.2	30		
2041	32	1966	1966.4	32		
2147	34	2078	2077.6	34		
0	0	0	0	0		



Strip Foundation

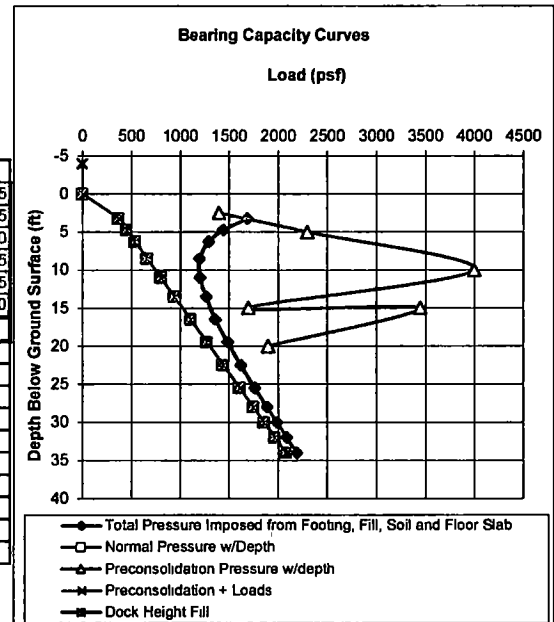
Assumed Bearing Capacity	BC=	1500	psf
Wall Load	L=	8	kips/ft
Width of Footing	b=	5.33	feet
Unit Weight	γ =	118	pcf
	Depth of Footing (ft)=	2.5	
	Depth of Water (ft) =	3	

Note if water table was not encountered this number has to be greater than the maximum depth you are calculating pressures for.

Depth Below Ground Surface	Average Depth Below Ground Surface	Average Depth Below Found * D	D/ width of Found	Influence of found load (from table)	P'o	$\Delta P + P'o$	$\frac{(\Delta P + P'o)}{P'o}$	Log ()	Cc	Thickness of Depth Increment	Unit Settlement	Total Settlement
Feet	Feet	Feet		%	PSF	PSF				Inches	Inches	Inches
0.0	0.0	0.0	0.00	0.00	0	0	0.00	0.000	0.003	30.0	0.00	0.00
2.5	3.3	0.8	0.14	0.88	368	1686	4.58	0.661	0.003	18.0	0.04	0.04
4.0	4.8	2.3	0.42	0.66	451	1440	3.19	0.504	0.013	18.0	0.12	0.15
5.5	6.3	3.8	0.70	0.50	535	1291	2.41	0.383	0.008	18.0	0.08	0.21
7.0	8.5	6.0	1.13	0.36	680	1197	1.81	0.259	0.008	36.0	0.07	0.28
10.0	11.0	8.5	1.59	0.27	799	1200	1.50	0.177	0.009	24.0	0.04	0.32
12.0	13.5	11.0	2.06	0.22	938	1266	1.35	0.130	0.009	36.0	0.04	0.36
15.0	16.5	14.0	2.63	0.17	1105	1357	1.23	0.089	0.019	36.0	0.06	0.42
18.0	19.5	17.0	3.19	0.14	1271	1487	1.17	0.068	0.019	36.0	0.05	0.47
21.0	22.5	20.0	3.75	0.12	1438	1620	1.13	0.052	0.023	36.0	0.04	0.51
24.0	25.5	23.0	4.31	0.10	1605	1761	1.10	0.040	0.023	36.0	0.03	0.55
27.0	28.0	25.5	4.78	0.09	1744	1885	1.08	0.034	0.023	24.0	0.02	0.57
29.0	30.0	27.5	5.16	0.09	1855	1985	1.07	0.029	0.023	24.0	0.02	0.58
31.0	32.0	29.5	5.53	0.08	1966	2086	1.06	0.026	0.023	24.0	0.01	0.60
33.0	34.0	31.5	5.91	0.07	2078	2189	1.05	0.023	0.023	24.0	0.01	0.61
Total settlement											0.61	Inches

35
 Preload 0 psf
 Floorslab 0 psf

$\Delta P + P'o + Lo$	Average Depth Below Ground Surface	P'o	P'o + Loads	Average Depth Below Ground Surface	Preconsolidation Pressures	Depth
PSF	Feet	PSF	PSF	Feet	PSF	Feet
0	-4	0	0	0	1,400	2.5
0	0	0	0	0	2,300	5
1686	3.25	368	367.9	3.25	4000	10
1440	4.75	451	451.3	4.75	1700	15
1291	6.25	535	534.7	6.25		
1197	8.5	680	659.8	8.5	3450	15
1200	11	799	798.8	11	1900	20
1266	13.5	938	937.8	13.5		
1357	16.5	1105	1104.6	16.5		
1487	19.5	1271	1271.4	19.5		
1620	22.5	1438	1438.2	22.5		
1761	25.5	1605	1605	25.5		
1885	28	1744	1744	28		
1985	30	1855	1855.2	30		
2086	32	1966	1966.4	32		
2189	34	2078	2077.6	34		
0	0	0	0	0		
0	0	0	0	0		





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ATTACHMENT 5

Historical High Groundwater Tables



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National Water Information System: Web Interface

USGS Water Resources

Data Category:

Groundwater


Geographic Area:

United States

GO

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- [Full News](#) 

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 Important: [Next Generation Monitoring Location Page](#)

Search Results -- 1 sites found

site_no list =

- 402117111474701

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

USGS 402117111474701 (D- 5- 1)26dba- 1

Available data for this site

Groundwater: Field measurements

GO

Utah County, Utah

Hydrologic Unit Code 16020201

Latitude 40°21'17", Longitude 111°47'47" NAD27

Land-surface elevation 4,515.00 feet above NGVD29

The depth of the well is 160 feet below land surface.

The depth of the hole is 160 feet below land surface.

Output formats

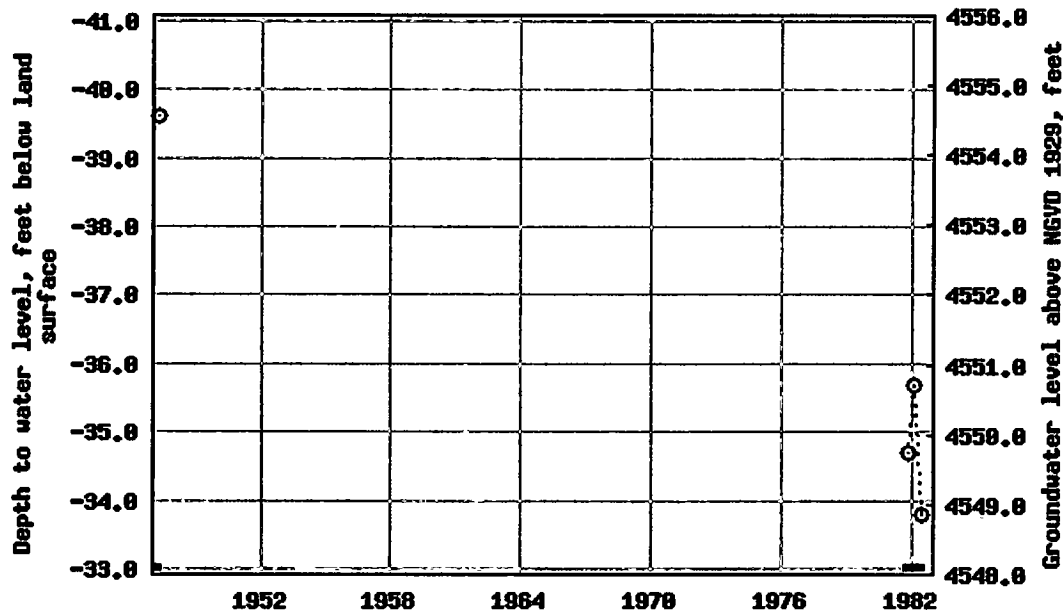
[Table of data](#)

[Tab-separated data](#)

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[Reselect period](#)

USGS 402117111474701 (D- 5- 1)26dba- 1



— Period of approved data

Breaks in the plot represent a gap of at least one year between field measurements.
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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2021-10-04 15:19:07 EDT

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USGS Home
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National Water Information System: Web Interface

USGS Water Resources

Data Category:

Groundwater

Geographic Area:

United States

GO

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- [Full News](#) 

Groundwater levels for the Nation

 Important: [Next Generation Monitoring Location Page](#)

Search Results -- 1 sites found

site_no list =

- 402118111475901

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

USGS 402118111475901 (D- 5- 1)26dbb- 1

Available data for this site

Groundwater: Field measurements

GO

Utah County, Utah

Hydrologic Unit Code 16020201

Latitude 40°21'18", Longitude 111°47'59" NAD27

Land-surface elevation 4,515.00 feet above NGVD29

The depth of the well is 98.0 feet below land surface.

Output formats

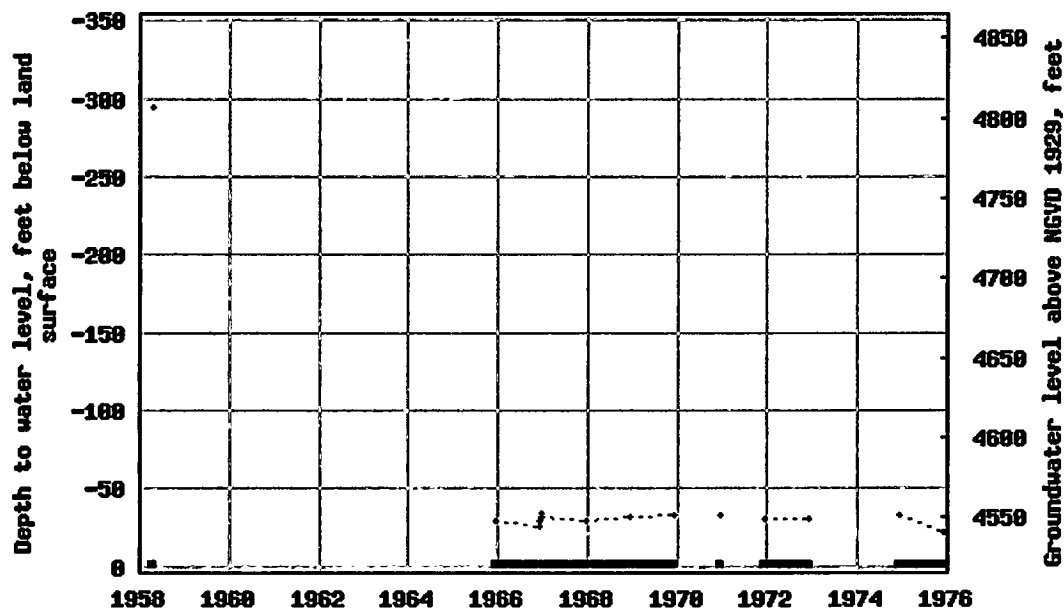
[Table of data](#)

[Tab-separated data](#)

[Graph of data](#)

[Reselect period](#)

USGS 402118111475981 (0- 5- 1)26dbb- 1



Breaks in the plot represent a gap of at least one year between field measurements.
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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



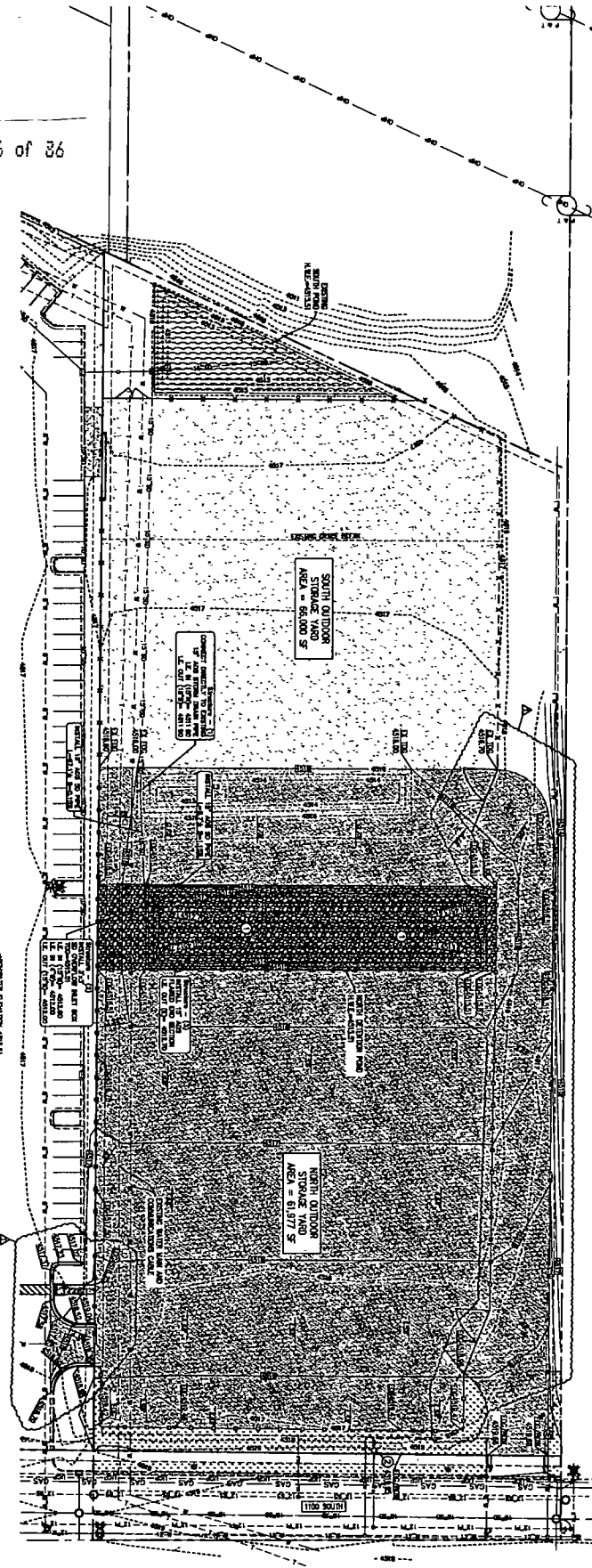
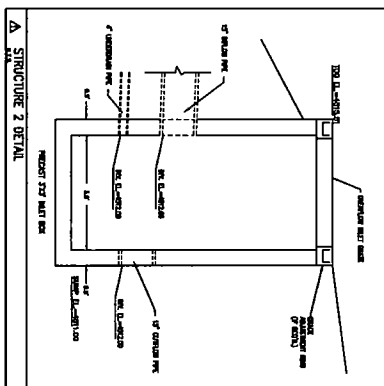
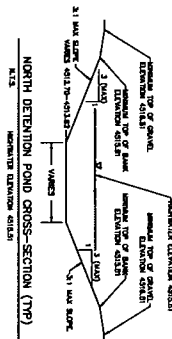
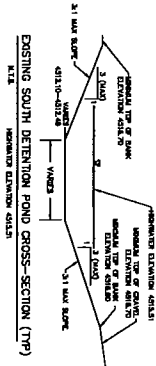
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0.55 0.47 nadww02

EXHIBIT C

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EXISTING & PROPOSED DATA SHEET
 ① PROPOSED 4" PERFORATED AND UNDERDRAIN PIPE
 ② PROPOSED 1" 1/4" ALUMINUM PER 14.5% SE. DETAIL ON SHEET C-10 SEE PROVISION PLANS FOR CONTRIBUTION TO SUBORDINATE PRESENTATION.

SHEET LEGEND
 DETENTION AREA

Benchmark Info
 THE BENCHMARK POINT FOR THIS PROJECT IS THE
 BENCH MARK CORNER OF SECTION 32
 10.0' N 1/4, 32.0' E
 10.0' N 1/4, 32.0' E
 DRAINAGE AREA IS DERIVED FROM
 UTM TOWNSHIP SYSTEM



DEER PARK LOT 3 - NORTH STORAGE YARD
 51 WEST 1100 SOUTH, AMERICAN FORK, UTAH
 GRADING & DRAINAGE PLAN

CIR CIVIL ENGINEERING & SURVEYING
 10718 S BECHTOLD LANE, SUITE 102
 South Jordan, Utah • 801-448-4238

NO.	REVISIONS	BY	DATE
1	CITY COMMENTS		
2	CITY COMMENTS		
3			
4			
5			
6			
7			
8			
9			
10			

blueState
 800-451-4511
 PROJECT NO. C2.1
 SHEET NO. 86
 PROJECT BY DATE
 12-10-2024
 12-10-2024