CMT ENGINEERING LABORATORIES

ENGINEERING •GEOTECHNICAL •ENVIRONMENTAL (ESA I & II) •
MATERIALS TESTING •SPECIAL INSPECTIONS •
ORGANIC CHEMISTRY • PAVEMENT
DESIGN •GEOLOGY

GEOTECHNICAL ENGINEERING STUDY

The Other Side Village

About 1850 West Indiana Avenue
Salt Lake City, Utah
CMT PROJECT NO. 17063

FOR:
The Other Side Academy
667 East 100 South
Salt Lake City, Utah 84102

March 17, 2022

March 23, 2022

Mr. Tim Stay
The Other Side Academy
667 East 100 South
Salt Lake City, Utah 84102

Subject: Geotechnical Engineering Study
The Other Side Village
About 1850 West Indiana Avenue
Salt Lake City, Utah
CMT Project No. 17063

Mr. Stay:

Submitted herewith is the report of our geotechnical engineering study for the subject site. This report contains the results of our findings and an engineering interpretation of the results with respect to the available project characteristics. It also contains recommendations to aid in the design and construction of the earth related phases of this project.

On January 13, 2022, February 10, 2022, and February 15, 2022 a CMT Engineering Laboratories (CMT) staff professional was on-site and supervised the excavation of 32 test pits extending to a depth of about 7 to 16 feet below the existing ground surface and the drilling of 3 bore holes extending to depths of about 16.5 to 51.5 feet below the existing ground surface. Soil samples were obtained during the field operations and subsequently transported to our laboratory for further testing and observation.

At the exploration locations across primarily the western half and southern third of the property, fill with varying debris and soil make up was present ranging from 1 to 16 feet thick. Observed groundwater levels were variable and shallow in depth. The upper 4 feet of fine-grained soils were slightly moderately pre-consolidated exhibiting low to moderate strength characteristics. Sidewall caving was often encountered at shallow depths and generally associated with shallow groundwater. The West Valley fault/Taylorsville Fault is mapped across the northern portion of the site. Overall, the site subsurface soil and groundwater conditions exhibit poor engineering characteristics with respect to planned construction. Conventional spread and/or continuous footings may be utilized to support the proposed structures, provided the recommendations in this report are followed. A detailed discussion of design and construction criteria is presented in this report.

We appreciate the opportunity to work with you at this stage of the project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at 801-590-0394.

Sincerely,
CMT Engineering Laboratories

Bryan N. Roberts, P.E.
Senior Geotechnical Engineer

Reviewed by:

Andrew M. Harris, P.E.
Geotechnical Division Manager

CMT ENGINEERING LABORATORIES

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1.0 INTRODUCTION

1.1 General

CMT Engineering Laboratories (CMT) was retained to conduct a geotechnical subsurface study for the proposed development of The Other Side Village campus. The parcel is situated on the north side of Indiana Avenue at about 1850 West in Salt Lake City, Utah, as shown in the **Vicinity Map** below.

VICINITY MAP

1.2 Objectives, Scope and Authorization

The objectives and scope of our study were planned in discussions among Mr. Lew Swain and Mr. Tim Stay of The Other Side Academy, and Mr. Andrew Harris of CMT Engineering Laboratories (CMT). In general, the objectives of this study were to define and evaluate the subsurface soil and groundwater conditions at the site, and provide appropriate foundation, earthwork, pavement and seismic recommendations to be utilized in the design and construction of the proposed development.

In accomplishing these objectives, our scope of work has included performing field exploration, which consisted of the excavating/logging/sampling of 32 test pits, the drilling/logging/sampling of 3 bore holes, performing laboratory testing on representative samples of the subsurface soils collected in the test pits, and conducting

an office program, which consisted of correlating available data, performing engineering analyses, and preparing this summary report. This scope of work was authorized by returning a signed copy of our proposal dated August 2, 2021.

1.3 Description of Proposed Construction

We understand that development of a single-family residential subdivision with associated community use and out-reach buildings, park pavilions, and retail strip structures including medical service shops, small market and community center(s) is planned for the site. Structures are likely to be 1 to 2 levels above grade. We anticipate structures will likely be constructed using conventional wood-framing, founded on spread footing, and with slab on grade floors established at or near existing site grades. An outdoor auditorium/amphitheater is also planned. Maximum continuous wall and column loads are anticipated to be 1 to 4 kips per lineal foot and 15 to 100 kips, respectively. If the loading conditions are different than we have projected, please notify us so that any appropriate modifications to our conclusions and recommendations contained herein can be made.

We also understand that pavements at the site will include public roadways, light-duty parking areas and internal drive lanes, which we anticipate will utilize asphalt pavement. Traffic is projected to consist of mostly automobiles and light trucks, a light to moderate number of daily medium-weight delivery trucks, occasional to light volume of heavy weight trucks, a weekly garbage truck, and an occasional fire truck.

Site development will require some earthwork in the form of minor cutting and filling. A site grading plan was not available at the time of this report, but we project that maximum cuts and fills may be on the order of 2 to 4 feet. If deeper cuts or fills are planned, CMT should be notified to provide additional recommendations, if needed.

1.4 Executive Summary

Proposed residences can be supported upon conventional spread and continuous wall foundations provided the recommendations in this report are followed. More heavily loaded footings will require some minimum thickness of select granular structure replacement fill (see Section 7.3 Settlement below) extending to suitable natural, stable soil. Overall, the site surface fill, and the subsurface soil and ground water conditions will exhibit relatively poor engineering characteristics. The most significant geotechnical aspects regarding site development include the following:

1. Fill soils were encountered at the surface ranging in thickness from about 1 to 16 feet thick at the test locations and are located primarily within the western half and southern third of the site property. These fills are variable in soil makeup and contain variable amounts of debris and are considered non-engineered. The fill depth and lateral extent must be anticipated to vary across the site.
2. The West Valley/Taylorsville Fault is currently mapped across the northern portion of the site property. A site-specific fault study would likely be required and is not part of this geotechnical site study scope of service.
3. Groundwater was observed during the field investigation as shallow as 2 feet below the ground surface with depths ranging between 2 and 9 feet during the fieldwork. Static groundwater levels were

measured within the installed, slotted, PVC pipes on March 17, 2022 between depths of about 1.7 to 7.3 feet below the ground surface. Groundwater must be anticipated to affect utility installation and some footing installation. Associated dewatering and subgrade stabilization must be anticipated.

4. Test pit sidewall caving was common near groundwater and where sandy soil layers were present.
5. Based on laboratory testing the upper about 4 feet of fine-grained soils exhibit low to moderately low strength characteristics and moderately high compressibility characteristics and will govern shallow bearing pressure.

CMT must assess that topsoil, undocumented fills, debris, disturbed or unsuitable soils have been removed and that suitable soils have been encountered prior to placing site grading fills, footings, slabs, and pavements.

New roadways may be supported over existing in-situ fill provided the fill is of limited thickness, does not contain significant amount of deleterious material, (roughly less that 10 percent by volume) and if properly prepared as outlined later in this report.

In the following sections, detailed discussions pertaining to the site are provided, including subsurface descriptions, geologic/seismic setting, earthwork, foundations, lateral resistance, lateral pressure, floor slabs, and pavements.

2.0 FIELD EXPLORATION

2.1 General

In order to define and evaluate the subsurface soil and groundwater conditions, 32 test pits were excavated with a backhoe at the site to a depth of approximately 7 to 16 feet below the existing ground surface and 3 bore holes were drilled at the site to depths of approximately 16.5 to 51.5 feet below the existing ground surface. Locations of the test pits and bore holes are shown on **Figure 1, Site Plan**, included in the Appendix. The field exploration was performed under the supervision of an experienced member of our geotechnical staff.

Representative soil samples were collected in the test pits by obtaining disturbed "grab" samples, cutting relatively undisturbed "block" samples, and utilizing a 2.5-inch outside diameter thin-wall drive sampler from within each test pit. The samples were placed in sealed plastic bags and containers prior to transport to the laboratory.

Samples of the subsurface soils encountered in the bore holes were collected at varying depths through the hollow stem drill augers. Relatively undisturbed samples of the subsurface soils were obtained by driving a split-spoon sampler with 2.5-inch outside diameter rings/liners into the undisturbed soils below the drill augers. Disturbed samples were collected utilizing a standard split spoon sampler. This standard split spoon sampler was driven 18 inches into the soils below the drill augers using a 140-pound hammer free-falling a distance of 30 inches. The number of hammer blows needed for each 6-inch interval was recorded. The sum of the hammer blows for the final 12 inches of penetration is known as a standard penetration test and this ‘blow count’ was recorded on the bore hole logs. The blow count provides a reasonable approximation of the relative density of

granular soils, but only a limited indication of the relative consistency of fine-grained soils because the consistency of these soils is significantly influenced by the moisture content.

The subsurface soils encountered in the test pits and bore holes were classified in the field based upon visual and textural examination, logged and described in general accordance with ASTM[1] D-2488. These field classifications were supplemented by subsequent examination and testing of select samples in our laboratory. Graphical representations of the subsurface conditions encountered are presented on each individual Test Pit Log, **Figures 2 through 33**, and on each individual Bore Hole Log, **Figures 34 through 36,** included in the Appendix. A Key to Symbols defining the terms and symbols used on the logs, is provided as **Figure 37** in the Appendix.

Following completion of excavating operations, 1.25-inch diameter slotted PVC pipe was installed in test pits TP-7, TP-9, TP-13, TP-16, TP-17, TP-19, TP-21, TP-22, and TP-23 to allow subsequent water level measurements.

Upon completion of logging and sampling, the test pits were backfilled with the excavated soils. When backfilling, minimal to no effort was made to compact the backfill and no compaction testing was performed. Thus, the test pit backfill is considered undocumented/non-engineered fill and settlement of the backfill in the test pits over time should be anticipated.

2.2 Infiltration Testing

Infiltration testing was also performed as part of our field exploration within test pit TP-4 at a depth of about 4 feet below the existing ground surface. The testing consisted of creating and filling a small hole at that depth with water, and measuring the rate of water drop within the small hole over a certain time period (i.e., 10 minutes). This process was repeated multiple times until subsequent readings were the same. The results of this test indicate that the silty sand soils at this site have an infiltration rate of approximately 10 minutes per inch. This rate could increase (become slower) over time due to siltation, thus we recommend an appropriate factor of safety be applied for design.

3.0 LABORATORY TESTING

3.1 General

Selected samples of the subsurface soils were subjected to various laboratory tests to assess pertinent engineering properties, as follows:

1. Moisture Content, ASTM D-2216, Percent moisture representative of field conditions
2. Dry Density, ASTM D-2937, Dry unit weight representing field conditions
3. Atterberg Limits, ASTM D-4318, Plasticity and workability

[1]American Society for Testing and Materials

4. Gradation Analysis, ASTM D-1140/C-117, Grain Size Analysis
5. One Dimension Consolidation, ASTM D-2435, Consolidation properties

3.2 Lab Summary

Laboratory test results are presented on the test pit logs (**Figures 2 through 33**), bore hole logs (**Figures 34 through 36**), and in the following Lab Summary table:

LAB SUMMARY TABLE

TEST PIT/ BORE HOLE	DEPTH (feet)	SOIL CLASS	SAMPLE TYPE	MOISTURE CONTENT(%)	DRY DENSITY (pcf)	GRADATION			ATTERBERG LIMITS		
						GRAV.	SAND	FINES	LL	PL	PI
T-1	2.5	FILL/CL	bag	27.3				83.6			
TP-2	7	CL	bag	37.6				91.3			
TP-3	5	CL	bag	29.4					27	20	7
TP-7	5	CL	bag	26.1				79.5			
TP-8	2.5	SM	bag								NP
	7.5	CL	bag	47.4				98.0			
TP-9	4	CL	bag	28.0				77.7			
TP-11	8	SC-SM	bag	6.9				32.8			
TP-12	4	FILL/CL	bag	32.0	90			91.8			
TP-15	6	CL	Block	32.8	86						
TP-16	6	CL	Block	28.5	88			96.0			
TP-17	3	CL	bag	23.0				74.0			
TP-19	6	SM	bag	20.0				23.0			
TP-20	2.5	CL	TW	27.0	97				28	18	10
TP-23	2.5	CL	TW	23.0	106				24	16	8
TP-24	2.5	CL	bag	19.0				64.0			
TP-25	9	CL	bag	33.0				80.0			
TP-28	2.5	ML	TW	19.0	108				21	18	3
TP-29	4	CL-ML	bag	23.0				75.0			
TP-30	5	SP-SC	bag	36.0				7.0			
TP-32	2	CL	TW	26.0	95				33	14	19
B-2	5	CL	Rings	14.9	116						
B-3	7.5	CL	Rings	34.0	88						
	10	CL	SPT	35.8				83.3			
	25	CL	SPT	53.7				89.0	42	22	20
	30	CL	SPT	45.7				88.3			
	45	CL-SC	SPT	23.8				50.2			
	50	CL-SC	SPT	24.5				48.7			

3.3 One-Dimensional Consolidation Tests

A consolidation test was performed on each of 7 near surface fine-grained soil samples between depths of about 1.5 feet to about 8 feet below the ground surface. Results indicate that the fine-grained soils tested within the upper about 4 to 5 feet exhibit slightly moderate pre-consolidation and low strength characteristics grading moderately over consolidated with moderate strength characteristics below. Further the samples tested exhibited moderate to moderately high compressibility characteristics. Detailed results of the tests are maintained within our files and can be transmitted to you, upon your request.

4.0 GEOLOGIC & SEISMIC CONDITIONS

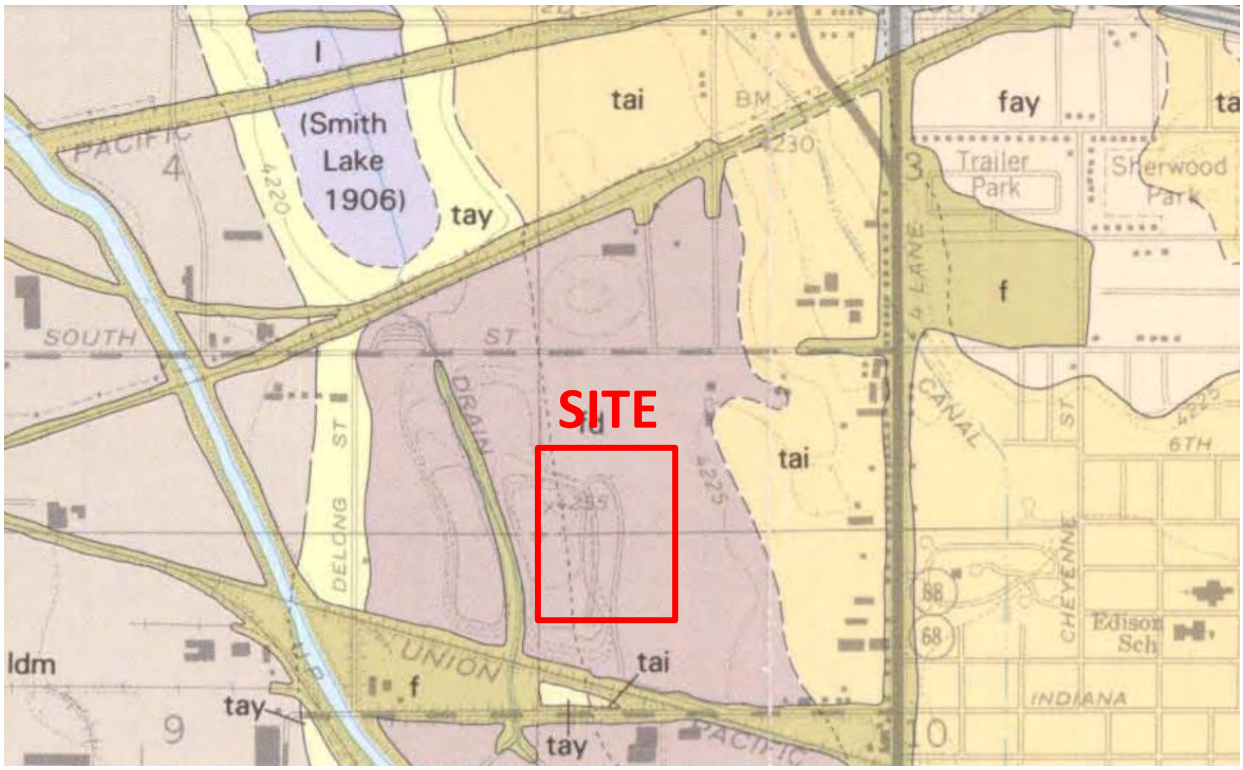
4.1 Geologic Setting

The subject site is located in the northern portion of the Salt Lake Valley in north-central Utah. The property sits at an elevation of approximately 4,230 to 4250 feet above sea level. The Salt Lake Valley is a deep, sediment-filled basin that is part of the Basin and Range Physiographic Province. The valley is bounded by the Wasatch Mountain Range on the east and the Oquirrh Mountain Range on the west. The valley was formed by extensional tectonic processes during the Tertiary and Quaternary geologic time periods. The subject site and surrounding areas are located within the Intermountain Seismic Belt, a zone of ongoing tectonism and seismic activity extending from southwestern Montana to southwestern Utah. The active (evidence of movement in the last 10,000 years) Wasatch Fault Zone is part of the Intermountain Seismic Belt and extends from southeastern Idaho to central Utah along the western base of the Wasatch Mountain Range.

Much of northwestern Utah, including the Salt Lake Valley, was also previously covered by the Pleistocene age Lake Bonneville. The Great Salt Lake, located to the northwest of the valley, is a remnant of this ancient fresh water lake. Lake Bonneville reached a high-stand elevation of between approximately 5,160 and 5,200 feet above sea level at between 18,500 and 17,400 years ago. Approximately 17,400 years ago, the lake breached its basin in southeastern Idaho and dropped relatively fast, by almost 300 feet, as water drained into the Snake River. Following this catastrophic release, the lake level continued to drop slowly over time, primarily driven by drier climatic conditions, until reaching the current level of the Great Salt Lake. Shoreline terraces formed at the high-stand elevation of the lake and several subsequent lower lake levels are visible in places on the mountain slopes surrounding the valleys of northwest Utah. Much of the sediment within the Salt Lake Valley was deposited as lacustrine sediments during both the transgressive (rise) and regressive (fall) phases of Lake Bonneville and in older, pre-Bonneville lakes that previously occupied the basin.

The geology of the USGS Salt Lake City North, Utah 7.5 Minute Quadrangle, that includes the location of the subject site, has been mapped by VanHorn[2]. The surficial geology at the location of the property and adjacent properties is mapped as “Dump” (Map Unit fd). Unit fd is described as “Mostly trash and garbage. Sanitary landfills have been covered with locally derived native material. Organic material in the deposits may generate methane gas.” Refer to the **Geologic Map**, shown below.

[2] Van Horn, R., 1982, Surficial Geologic Map of the Salt Lake City North Quadrangle, Salt Lake and Davis Counties, Utah; Utah Geological Survey, Scale 1:24,000.

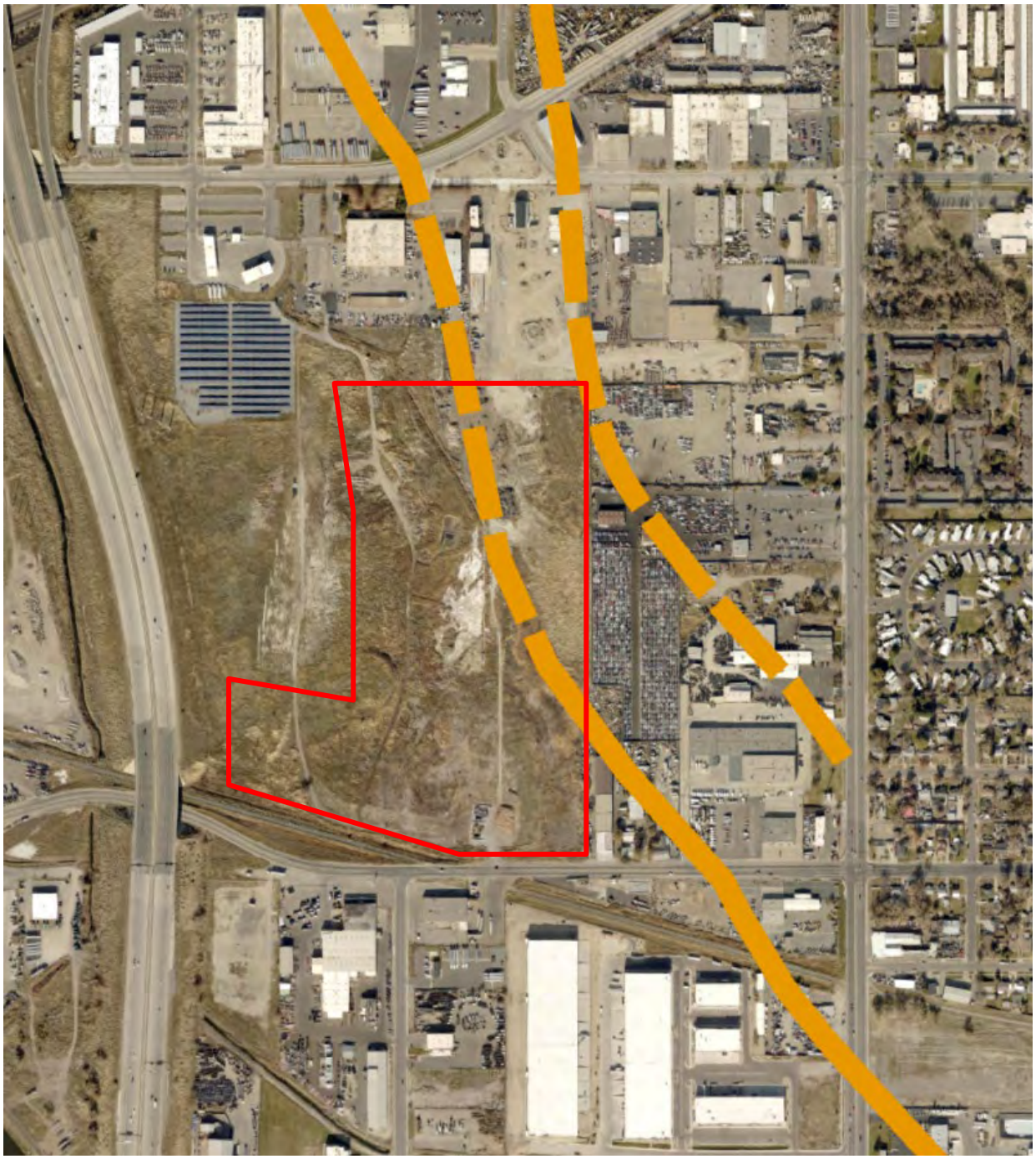


GEOLOGIC MAP

4.2 Faulting

A splay of The Taylorsville Fault, which is part of the West Valley Fault Zone, is mapped in northeast portions of the subject property[3] (see aerial overview below). A site-specific fault study should be completed for the site. CMT may provide these services upon request. Further seismic design issues are addressed in **Section 4.3** below.

[3] https://earthquake.usgs.gov/cfusion/qfault/show_report_AB_archive.cfm?fault_id=2386&section_id=a



Taylorsville Fault Mapping Across the Site

4.3 Seismicity

4.3.1 Site Class

Utah has adopted the International Building Code (IBC) 2018, which determines the seismic hazard for a site based upon 2014 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points). For site class definitions, IBC 2018 Section 1613.2.2 refers to Chapter 20, Site Classification Procedure for Seismic Design, of ASCE[4] 7-16, which stipulates that the average values of shear wave velocity, blow count and/or shear strength within the upper 100 feet (30 meters) be utilized to determine seismic site class. Based on average shear wave velocity data within the upper 30 meters ($V_{S,30}$) published by McDonald and Ashland[5], the subject site is located within unit description Q01S, which has a log-mean $V_{S,30}$ of 198 meters per second (650 feet per second). Thus, it is our opinion the site best fits Site Class D – Stiff Soil Profile (with data), which we recommend for seismic structural design.

4.3.2 Ground Motions

The 2014 USGS mapping utilized by the IBC provides values of peak ground, short period and long period spectral accelerations for the Site Class B/C boundary and the Risk-Targeted Maximum Considered Earthquake (MCE_R). This Site Class B/C boundary represents average bedrock values for the Western United States and must be corrected for local soil conditions at site grid coordinates of 40.7541 degrees north latitude and -111.9445 degrees west longitude. The following table and response spectra summarizes the peak ground, short period and long period accelerations for the MCE_R event, and incorporates appropriate soil correction factors for a Site Class D (with data) soil profile:

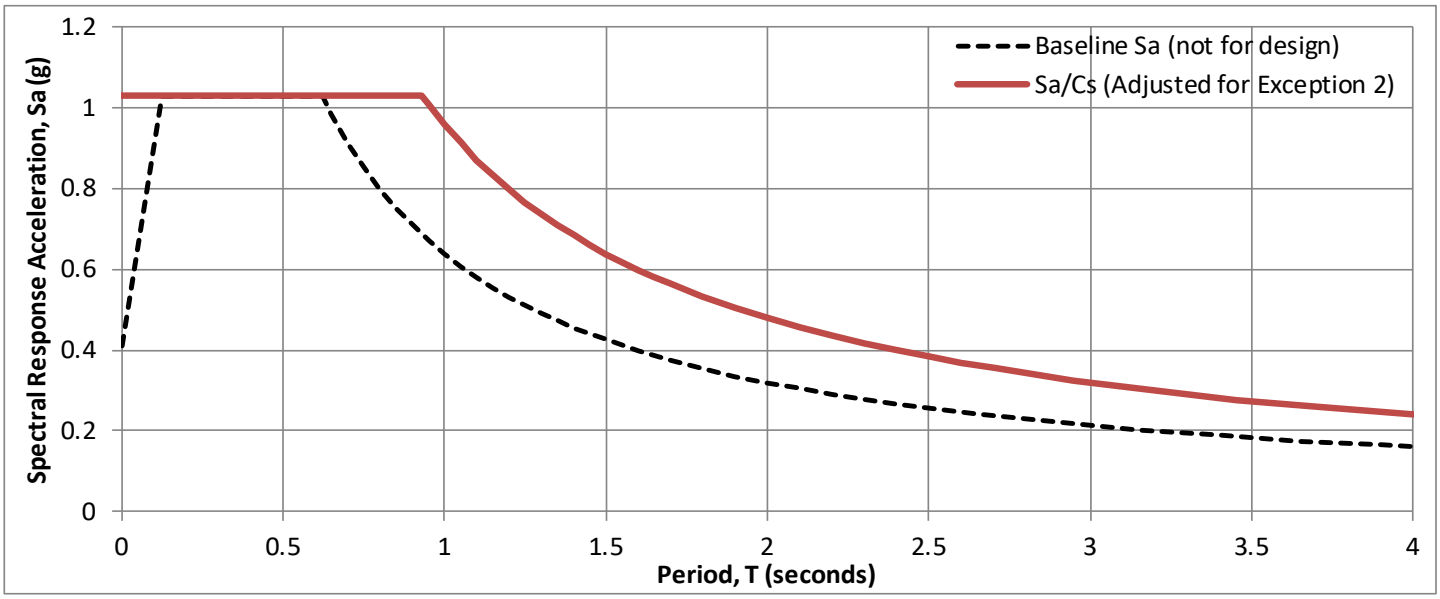
[4]American Society of Civil Engineers
[5] McDonald, G.N. and Ashland, F.X., 2008, "Earthquake Site-Conditions Map for the Wasatch Front Urban Corridor, Utah," Utah Geological Survey Special Study 125, 41 pp.

SPECTRAL ACCELERATION PERIOD, T	SITE CLASS B/C BOUNDARY [mapped values] (g)	SITE COEFFICIENT	SITE CLASS D* [adjusted for site class effects] (g)	MULTI-PLIER	DESIGN VALUES (g)
Peak Ground Acceleration	PGA = **0.696**	F_{pga} = 1.100	PGA_M = 0.766	1.000	PGA_M = 0.766
0.2 Seconds (Long Period Acceleration)	S_S = **1.542**	F_a = 1.000	S_{MS} = 1.542	0.667	S_{DS} = 1.028
	(no exceptions needed)	F_a = (N/A)	S_{MS} = (N/A)	0.667	S_{DS} = (N/A)
1.0 Second (Long Period Acceleration)	S_1 = **0.546**	F_v = N/A	S_{M1} = N/A	0.667	S_{D1} = N/A
	(Exception 2:)	F_v = (1.754)	S_{M1} = (0.958)	0.667	S_{D1} = (0.638)

NOTES: 1. TL (seconds): **8** *** Site Class D With Data**

2. Site Class: **D** **4. ASCE 7-16 Requires Site-Specific Ground Motion Hazard Analysis (Since S1≥0.2 sec) - OR Can Use Exception 2 (per §11.4.8) (Sa/Cs Plot Assumes R=Ie=1.0)**

3. Have data to verify? **yes**



As indicated in the above table, S_1 is greater than 0.2 seconds and a site-specific ground motion hazard analysis (GMHA) is required for the site, unless the Exception 2 values shown are used for seismic design. If a site-specific GMHA is desired instead of using the higher exception values for design, please contact CMT for a proposal to perform the GMHA.

4.3.3 Liquefaction

The site is located within an area designated by the Utah Geologic Survey[6] as having "High" liquefaction potential. Liquefaction is defined as the condition when saturated, loose, sandy soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event. Clayey soils, even if saturated, will generally not liquefy during a major seismic event.

The natural soils encountered below the groundwater consist primarily of silty and fine sandy CLAY and some clayey fine SAND soil layers extending to the full depth penetrated, about 51.5 feet at bore hole B-3. Laboratory

[6] Utah Geological Survey, "Liquefaction-Potential Map for a Part of Salt Lake County, Utah," Utah Geological Survey Public Information Series 25, August 1994. https://ugspub.nr.utah.gov/publications/public_information/pi-25.pdf

tests indicate the natural clay soil exhibit a plastic index of 7 percent or greater. Therefore, it is our opinion that the potential for liquefaction is low or unlikely to occur at this site during a design seismic event.

4.4 Other Geologic Hazards

The property is not located within a known or mapped potential debris flow, stream flooding[7], or rock fall hazard area.

5.0 SITE CONDITIONS

5.1 Surface Conditions

At the time of the field work the site consisted of a roughly 38 acres parcel which is presently undeveloped. Undocumented/non-engineered fill blankets much of the western and south portions of the site property based on the field explorations. Further the site surface is covered by various weeds grasses and small brush. The surface of the site is relatively flat and varies in elevation up to about 6 feet. Based upon aerial photos dating back to 1997 that are readily available on the internet, the site has been undeveloped and has had what appears to be occasional, isolated area grubbing and/or fill placing over this reviewed time span (see **Vicinity Map** in **Section 1.1** above).

5.2 Subsurface Soils

Surface fill of varying soil composition and containing varying debris was observed blanketing the site within the test pit and bore hole explorations, and was generally located across the western and southern portions of the site. The fill sequence varied in thickness from about 1 foot up to as much as about 16 feet at test pit TP-1 located at the southwest corner of the property and must be assumed to vary both laterally and with depth across the site. Topsoil with organics was observed ranging from several inches thick up to as much as about 2 feet at the remaining explorations located within the northeastern portion of the site.

Below the fill and topsoil, natural soils generally consisted of silty and fine sandy CLAY with occasional clayey and silty fine SAND soil layers several feet thick within the upper about 8 feet. Below about 8 feet the natural soils generally consisted of silty and fine sandy clay extending to the maximum depth penetrated of about 51.5 feet at bore hole B-3.

The natural fine-grained soils were moist to wet, brown and gray in color, and soft to medium stiff/loose to medium dense. Laboratory test results indicate that the fine-grained soils tested within the upper about 4 to 5 feet exhibit slightly moderate pre-consolidation and low strength characteristics grading to moderately over-consolidated with moderate strength characteristics below. Further the samples tested exhibited moderate to moderately high compressibility characteristics.

[7]https://msc.fema.gov/portal/search?AddressQuery=863%20South%201000%20East%2C%20Salt%20Lake%20City%2C%20Utah#searchresultsanchor

For a more descriptive interpretation of subsurface conditions, please refer to the test pit logs, **Figures 2 through 33**, and bore hole logs, **Figures 34 through 36**, which graphically represent the subsurface conditions encountered. The lines designating the interface between soil types on the logs generally represent approximate boundaries - in situ, the transition between soil types may be gradual.

5.3 Groundwater

Groundwater was observed across the site at the test locations between about 2 and 9 feet below the ground surface with the deeper water levels typically observed where additional fills have been spread across the site surface.

On March 16, 2022, CMT personnel returned to the site to measure static groundwater levels within installed, slotted PVC pipes. These readings are tabulated below.

Location	Static Water Level Measured on Thursday March 17, 2022 (Feet Below Ground Surface)
TP-7	4.0
TP-9	4.5
TP-13	3.7
TP-16	7.1
TP-17	1.7
TP-19	7.3
TP-21	2.1
TP-22	2.0
TP-23	7.2

Groundwater levels can fluctuate seasonally. Numerous factors such as heavy precipitation, irrigation of neighboring land, and other unforeseen factors, may also influence ground water elevations at the site. The detailed evaluation of these and other factors, which may be responsible for ground water fluctuations, is beyond the scope of this study.

5.4 Site Subsurface Variations

Based on the results of the subsurface explorations and our experience, variations in the continuity and nature of subsurface conditions should be anticipated. Due to the heterogeneous characteristics of natural soils, care should be taken in interpolating or extrapolating subsurface conditions between or beyond the exploratory locations. Further, non-engineered surface fill blanket much of the site surface and vary both in thickness and lateral extent across the site.

Also, when logging and sampling of the test pits was completed, the test pits were backfilled with the excavated soils but minimal to no effort was made to compact these soils. Thus, the test pit backfill is considered

undocumented/non-engineered fill and settlement of the backfill in the test pits over time should be anticipated.

6.0 SITE PREPARATION AND GRADING

6.1 General

All loose fill piles and any deleterious material/topsoil must be stripped from the site prior to construction.

Non-engineered fills were present across the surface at many of the exploration locations ranging in thickness between about 1 to 16 feet (averaging about 3 to 5 feet thick). All non-engineered fill must be completely removed below all building foundations. Similarly, fills containing deleterious material must be removed below all floor slabs and exterior pavements. If the in-situ fill is clean of degradable material and clean of large non-degradable debris, (i.e., crushed concrete greater than 4 inches in diameter) it may remain below the floor slabs and exterior pavements if properly prepared and some potential for post settlement is allowed/anticipated.

Proper preparation of suitable, in-situ fill soils in asphalt pavement areas shall consist of removing the upper 12 inches, scarifying the exposed soil to a minimum depth of 9 inches followed by moisture preparation and re-compacting the soils in place and structurally backfilling the removed 12 inches to the requirements outlined is section **6.4 Fill Placement and Compaction** below. Similarly, 24 inches of suitable, in-situ fill shall be prepared in 12-inch maximum lifts below new floor slabs and rigid pavement aprons. This may also consist of removing the given thickness of existing fill and replacing with imported granular structural fill. Where existing surface fill soils are less than 12 inches in total thickness then preparation shall consist of re-compacting or removing and replacing with import structural fill for the total thickness of surface fill present.

Where groundwater may be shallow, some dewatering and subgrade stabilization, as outlined later in this report, must be anticipated.

Subsequent to stripping and prior to the placement of floor slabs, foundations, structural site grading fills, exterior flatwork, and pavements, the exposed subgrade must be proofrolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If excessively soft or otherwise unsuitable soils are encountered beneath footings, they must be completely removed. If removal depth required is greater than 2 feet below footings, CMT must be notified to provide further recommendations. In pavement, floor slab, and outside flatwork areas, unsuitable natural soils should be removed to a maximum depth of 2 feet and replaced with compacted granular structural fill. Surface fills must be handled as described above.

The site should be examined by a CMT geotechnical engineer to assess that suitable natural soils have been exposed and/or existing fills have been properly prepared and any deleterious materials, loose and/or disturbed soils have been removed, prior to placing site grading fills, footings, slabs, and pavements.

Fill placed over large areas to raise overall site grades can induce settlements in the underlying natural soils. If more than 3 feet of site grading fill is anticipated over the natural ground surface, we should be notified to

assess potential settlements and provide additional recommendations as needed. These recommendations may include placement of the site grading fill far in advance to allow potential settlements to occur prior to construction.

6.2 Temporary Excavations

With shallow groundwater and near surface sandy soil layers, some excavation sidewall caving was observed during the test pit excavations. Excavations deeper than 8 feet are not anticipated at the site.

Relatively shallow groundwater was encountered and later measured at this site. We anticipate that excavations extending below depths of about 3 to 5 feet in general could encounter groundwater, and dewatering of such excavations may be required.

The natural soils encountered at this site predominantly consisted of silty/fine sandy CLAY with occasional clayey/silt fine SAND layers within the upper about 8 feet. In clayey (cohesive) soils, temporary construction excavations not exceeding 4 feet in depth may be constructed with near-vertical side slopes. Temporary excavations up to 8 feet deep, above or below groundwater, may be constructed with side slopes no steeper than one-half horizontal to one vertical (0.75H:1V).

For sandy/gravelly (cohesionless) soils, temporary construction excavations not exceeding 4 feet in depth and not encountering groundwater should be no steeper than one-half horizontal to one vertical (0.5H:1V). Excavations encountering saturated cohesionless soils will be very difficult to maintain, and will require very flat side slopes and/or shoring, bracing and dewatering.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated. All excavations should be made following OSHA safety guidelines.

6.3 Fill Material

Structural fill is defined as all fill which will ultimately be subjected to structural loadings, such as imposed by footings, floor slabs, pavements, etc. Structural fill will be required as backfill over foundations and utilities, as site grading fill, and as replacement fill below footings. All structural fill must be free of sod, rubbish, topsoil, frozen soil, and other deleterious materials.

Following are our recommendations for the various fill types we anticipate will be used at this site:

Fill Material Type	Description/Recommended Specification
Select Structural Fill	Placed below structures, flatwork and pavement. Imported structural fill should consist of well-graded sand/gravel mixture, with maximum particle size of 4 inches, a minimum 70% passing 3/4-inch sieve, a maximum 20% passing the No. 200 sieve, and a maximum Plasticity Index of 10.
Site Grading Fill	Placed over larger areas to raise the site grade. Sandy to gravelly soil, with a maximum particle size of 6 inches, a minimum 70% passing 3/4-inch sieve, and a maximum 40% passing No. 200 sieve.
Non-Structural Fill	Placed below non-structural areas, such as landscaping. On-site soils or imported soils, with a maximum particle size of 8 inches, including silt/clay soils not containing excessive amounts of degradable/organic material.
Stabilization Fill	Placed to stabilize soft areas prior to placing structural fill and/or site grading fill. Coarse angular gravels and cobbles 1 inch to 8 inches in size. May also use 1.5- to 2.0-inch gravel placed on stabilization fabric, such as Mirafi RS280i, or equivalent (see **Section 6.6**).

On-site fine-grained soils (clay/silt) are not suitable for use as structural fill, but may be used as site grading fill and non-structural fill. Note that these fine-grained soils are moisture-sensitive, which means they are inherently more difficult to work with in proper moisture conditioning (they are very sensitive to changes in moisture content), requiring very close moisture control during placement and compaction. This will be very difficult, if not impossible, during wet and cold periods of the year.

All fill material should be approved by a CMT geotechnical engineer prior to placement.

6.4 Fill Placement and Compaction

The various types of compaction equipment available have their limitations as to the maximum lift thickness that can be compacted. For example, hand operated equipment is limited to lifts of about 4 inches and most "trench compactors" have a maximum, consistent compaction depth of about 6 inches. Large rollers, depending on soil and moisture conditions, can achieve compaction at 8 to 12 inches. The full thickness of each lift should be compacted to at least the following percentages of the maximum dry density as determined by ASTM D-1557 (or AASHTO[8] T-180) in accordance with the following recommendations:

[8] American Association of State Highway and Transportation Officials

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending at least 5 feet beyond the perimeter of structures, and below flatwork and pavement (applies to structural fill and site grading fill)	0 to 5 5 to 8	95 98
Site grading fill outside area defined above	0 to 5 5 to 8	92 95
Utility trenches within structural areas	--	96
Pavement/floor slab Subgrade preparation	18 to 24 inches	95
Roadbase and subbase	-	96
Non-structural fill	0 to 5 5 to 8	90 92

Structural fills greater than 8 feet thick are not anticipated at the site. For best compaction results, we recommend that the moisture content for structural fill/backfill be within 2% of optimum. Field density tests should be performed on each lift as necessary to verify that proper compaction is being achieved.

6.5 Utility Trenches

With shallow groundwater, utility installation may likely require dewatering/stabilization/bracing of the soils encountered. For the bedding zone around the utility, we recommend utilizing gravel bedding fill material that meets current APWA[9] requirements.

All utility trench backfill material below structurally loaded facilities (foundations, floor slabs, flatwork, parking lots/drive areas, etc.) should be placed at the same density requirements established for structural fill in the previous section.

Most utility companies and local governments are requiring Type A-1a or A-1b (AASHTO Designation) soils (sand/gravel soils with limited fines) be used as backfill over utilities within public rights of way, and the backfill be compacted over the full depth above the bedding zone to at least 96% of the maximum dry density as determined by AASHTO T-180 (ASTM D-1557).

Where the utility does not underlie structurally loaded facilities and public rights of way, on-site fill and natural soils may be utilized as trench backfill above the bedding layer, provided they are free of deleterious material, properly moisture conditioned and compacted to the minimum requirements stated above in **Section 6.4**.

6.6 Stabilization

The natural silt/clay soils at this site will likely be susceptible to rutting and pumping. The likelihood of disturbance or rutting and/or pumping of the existing natural soils is a function of the load applied to the surface, as well as the frequency of the load. Consequently, rutting and pumping can be minimized by avoiding concentrated traffic, minimizing the load applied to the surface by using lighter equipment and/or partial loads,

[9] American Public Works Association

by working in drier times of the year, or by providing a working surface for the equipment. Rubber-tired equipment particularly, because of high pressures, promotes instability in moist/wet, soft soils.

If rutting or pumping occurs, traffic should be stopped and the disturbed soils should be removed and replaced with stabilization material. Typically, a minimum of 18 inches of the disturbed soils must be removed to be effective. However, deeper removal is sometimes required.

To stabilize soft subgrade conditions (if encountered), a mixture of coarse, clean, angular gravels and cobbles and/or 1.5- to 2.0-inch clean gravel should be utilized, as indicated above in **Section 6.3**. Often the amount of gravelly material can be reduced with the use of a geotextile fabric such as Mirafi RS280i or equivalent. Its use will also help avoid mixing of the subgrade soils with the gravelly material. After excavating the soft/disturbed soils, the fabric should be spread across the bottom of the excavation and up the sides a minimum of 18 inches. Otherwise, it should be placed in accordance with the manufacturer's recommendation, including proper overlaps. The gravel material can then be placed over the fabric in compacted lifts as described above.

7.0 FOUNDATION RECOMMENDATIONS

The following recommendations have been developed on the basis of the previously described project characteristics, including the maximum loads discussed in **Section 1.3**, the subsurface conditions observed in the field and the laboratory test data, and standard geotechnical engineering practice.

7.1 Foundation Recommendations

Based on our geotechnical engineering analyses, the proposed structure(s) may be supported upon conventional spread and continuous wall foundations placed on suitable natural soils or structural fill extending to suitable, stable natural soils utilizing a net bearing pressure of 1,200 pounds (governed by poorly consolidated near surface clay soils within the upper 4 to 5 feet which exhibit low strength and high compressibility characteristics) or 1,500 per square foot if supported over a minimum 12 inches of select structural replacement fill extending to suitable natural, stable soil. In order to control total and differential settlements, more heavily loaded footings must be underlain by some minimal thickness of granular structural replacement fill, as outlined below in **Section 7.3**.

The term "net bearing pressure" refers to the pressure imposed by the portion of the structure located above lowest adjacent final grade, thus the weight of the footing and backfill to lowest adjacent final grade need not be considered. The allowable bearing pressure may be increased by 1/2 for temporary loads such as wind and seismic forces.

We also recommend the following:

1. Exterior footings subject to frost should be placed at least 30 inches below final grade.
2. Interior footings not subject to frost should be placed at least 16 inches below grade.

3. Continuous footing widths should be maintained at a minimum of 18 inches for commercial and institutional structures. For the small residential cottages, a continuous footing width of 10 inches must be maintained.
4. Spot footings should be a minimum of 24 inches wide.

7.2 Installation

Under no circumstances shall the footings be established upon non-engineered fills, loose or disturbed soils, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. If unsuitable soils are encountered, they must be completely removed and replaced with compacted structural fill.

Excavation bottoms should be examined by a geotechnical engineer from CMT to confirm that suitable bearing soils have been exposed.

All structural fill should meet the requirements for such, and should be placed and compacted in accordance with **Section 6** above. The width of structural replacement fill below footings should be equal to the width of the footing plus 1 foot for each foot of fill thickness. For instance, if the footing width is 2 feet and the structural fill depth beneath the footing is 2 feet, the fill replacement width should be 4 feet, centered beneath the footing.

7.3 Estimated Settlement

Settlements of foundations designed and installed in accordance with the above criteria and recommendations, supporting the loads discussed in Section 3, Description of Proposed Construction, can be controlled to within about 1 inch or less if heavily loaded footings are underlain by some thickness of granular structural fill per the table below.

Approximately 40 percent of the quoted settlement should occur during construction.

FOUNDATION TYPE	BEARING PRESSURE (psf)	LOADING (pounds)	MINIMUM THICKNESS OF NATURAL SAND AND GRAVEL OR REPLACEMENT STRUCTURAL FILL (feet)
Spread	1,200	Up to 100,000	0.0
Spread	1,500	Up to 50,000	1.0
Spread	1,500	50,000+ to 100,000	1.5
Wall	1,200	Up to 5,000 pounds per lineal foot	0.0
Wall	1,500	Up to 5,000 pounds per lineal foot	1.0

7.4 Lateral Resistance

Lateral loads imposed upon foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footings and the supporting soils. In determining frictional resistance, a coefficient of 0.30 for natural silt/clay soils or 0.40 for select structural fill, may be utilized for design. Passive resistance provided by properly placed and compacted structural fill above the water table may be considered equivalent to a fluid with a density of 250 pcf. A combination of passive earth resistance and friction may be utilized if the passive component of the total is divided by 1.5.

8.0 LATERAL EARTH PRESSURES

At this time, we understand that the structures are anticipated to be constructed slab on grade. However, for shallow retaining walls or utility boxes the following lateral pressure discussion is provided. Parameters, as presented within this section, are for backfills which will consist of drained granular soil placed and compacted in accordance with the recommendations presented herein.

The lateral pressures imposed upon subgrade facilities will depend upon the relative rigidity and movement of the backfilled structure. Following are the recommended lateral pressure values, which also assume that the soil surface behind the wall is horizontal and that the backfill within 3 feet of the wall will be compacted with hand-operated compacting equipment.

CONDITION	STATIC (psf/ft)*	SEISMIC (psf)*
Active Pressure (wall is allowed to yield, i.e. move away from the soil, with a minimum 0.001H movement/rotation at the top of the wall, where "H" is the total height of the wall)	43	50
At-Rest Pressure (wall is not allowed to yield)	64	N/A
Passive Pressure (wall moves into the soil)	350	205

*Equivalent Fluid Pressure (applied at 1/3 Height of Wall)

*Equivalent Fluid Pressure (added to static and applied at 1/3 Height of Wall)

9.0 FLOOR SLABS

Floor slabs may be established upon suitable, undisturbed, natural soils, properly prepared in-situ fill as outlined in section **6.0 Site Preparation** above, or structural fill extending to suitable natural soils/properly prepared fill. Under no circumstances shall floor slabs be established directly on any topsoil, un prepared fills, loose or disturbed soils, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water.

In order to facilitate curing of the concrete, we recommend that floor slabs be directly underlain by at least 4 inches of "free-draining" fill, such as "pea" gravel or 3/4-inch quarters to 1-inch minus, clean, gap-graded gravel. To help control normal shrinkage and stress cracking, the floor slabs should have the following features:

1. Adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints;
2. Frequent crack control joints; and
3. Non-rigid attachment of the slabs to foundation walls and bearing slabs.

The top of habitable floor slabs should be established a minimum 3 feet above static groundwater or a minimum 1.5 feet above the water levels controlled by subdrains.

10.0 DRAINAGE RECOMMENDATIONS

It is important to the long-term performance of foundations and floor slabs that water not be allowed to collect near the foundation walls and infiltrate into the underlying soils. We recommend the following:

1. All areas around structures should be sloped to provide drainage away from the foundations. Where possible we recommend a minimum slope of 6 inches in the first 10 feet away from the structure.

2. All roof drainage should be collected in rain gutters with downspouts designed to discharge at least 10 feet from the foundation walls or well beyond the backfill limits, whichever is greater.

3. Adequate compaction of the foundation backfill should be provided. We suggest a minimum of 90% of the maximum laboratory density as determined by ASTM D-1557. Water consolidation methods should not be used under any circumstances.

4. Sprinklers should be aimed away from the foundation walls. The sprinkling systems should be designed with proper drainage and be well-maintained. Over watering should be avoided.

5. Other precautions may become evident during construction.

11.0 PAVEMENTS

We anticipate the natural clayey soils and fine-grained fill soils will exhibit poor pavement support characteristics when saturated or nearly saturated. Based on our laboratory testing experience with similar soils, our pavement design is based upon a California Bearing Ratio (CBR) of 4 for the natural clay soils.

Site pavements are anticipated to consist primarily of flexible (asphalt concrete) pavement. All pavement areas must be prepared as discussed above in **Section 6.1**.

Given the projected traffic as discussed above in **Section 1.3**, the following pavement sections are recommended for the given ESAL's (18-kip equivalent single-axle loads) per day:

MATERIAL	PAVEMENT SECTION THICKNESS (inches)			
	PARKING AREAS (1-2 ESAL per day)		INTERNAL ROADS AND DRIVE AREAS (4 ESAL'S per day)	
Asphalt	**3**	**3**	**3**	**3**
Road-Base	**8**	**4**	**10**	**5**
Subbase	**0**	**6**	**0**	**7**
Total Thickness	**11**	**13**	**13**	**15**

Untreated base course (UTBC) should conform to city specifications, or to 1-inch-minus UDOT specifications for A–1-a/NP, and have a minimum CBR value of 70%. Subbase shall be granular and have a minimum CBR value of 40 percent. Roadbase and subbase material should be compacted as recommended above in **Section 6.4**. Asphalt material generally should conform to APWA requirements, having a ½-inch maximum aggregate size, a 75-gyration Superpave mix containing no more than 15% of recycled asphalt (RAP) and a PG58-28 binder.

Site 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 ±1% air-entrainment.

For dumpster pads, we recommend a pavement section consisting of 6.5 inches of Portland cement concrete and 5 inches of aggregate base over properly prepared suitable natural subgrade or site grading structural fills extending to suitable natural soils. Dumpster pads constructed overlying undocumented fills must be heavily reinforced.

12.0 QUALITY CONTROL

We recommend that CMT be retained as part of a comprehensive quality control testing and observation program. With CMT on-site we can help facilitate implementation of our recommendations and address, in a timely manner, any subsurface conditions encountered which vary from those described in this report. Without such a program CMT cannot be responsible for application of our recommendations to subsurface conditions which may vary from those described herein. This program may include, but not necessarily be limited to, the following:

12.1 Field Observations

Observations should be completed during all phases of construction such as site preparation, foundation excavation, structural fill placement and concrete placement.

12.2 Fill Compaction

Compaction testing by CMT is required for all structural supporting fill materials. Maximum Dry Density (Modified Proctor, ASTM D-1557) tests should be requested by the contractor immediately after delivery of any

fill materials. The maximum density information should then be used for field density tests on each lift as necessary to ensure that the required compaction is being achieved.

12.3 Excavations

All excavation procedures and processes should be observed by a geotechnical engineer from CMT or their representative. In addition, for the recommendations in this report to be valid, all backfill and structural fill placed in trenches and all pavements should be density tested by CMT. We recommend that freshly mixed concrete be tested by CMT in accordance with ASTM designations.

13.0 LIMITATIONS

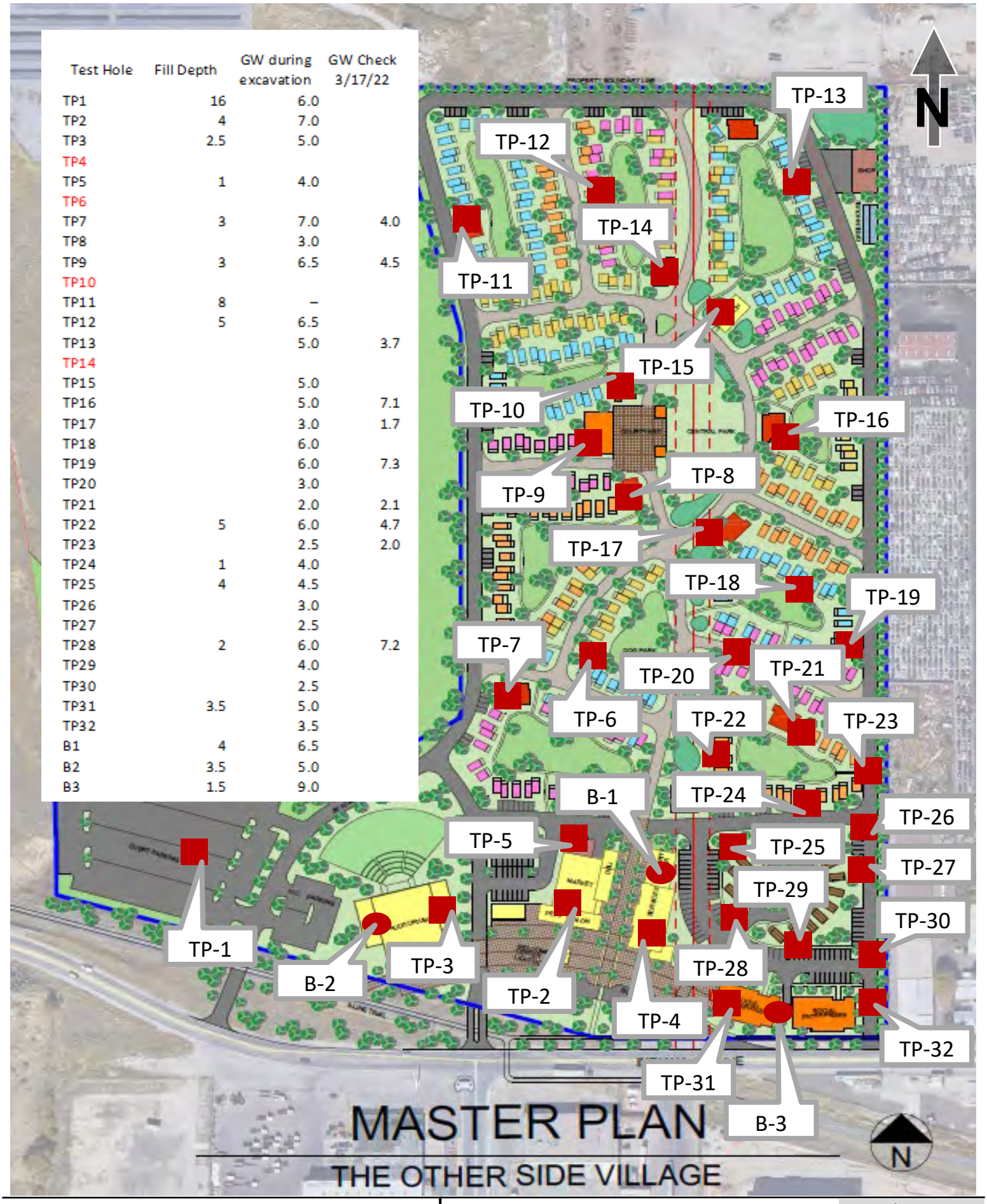
The recommendations provided herein were developed by evaluating the information obtained from the subsurface explorations and soils encountered therein. The exploration logs reflect the subsurface conditions only at the specific location at the particular time designated on the logs. Soil and ground water conditions may differ from conditions encountered at the actual exploration locations. The nature and extent of any variation in the explorations may not become evident until during the course of construction. If variations do appear, it may become necessary to re-evaluate the recommendations of this report after we have observed the variation.

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

We appreciate the opportunity to be of service to you on this project. CMT offers a full range of Geotechnical Engineering, Geological, Material Testing, Special Inspection services, and Phase I and II Environmental Site Assessments. With offices throughout Utah, Idaho and Arizona, our staff is capable of efficiently serving your project needs. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 590-0394. To schedule materials testing, please call (801) 381-5141.

APPENDIX

SUPPORTING
DOCUMENTATION



Test Hole	Fill Depth	GW during excavation	GW Check 3/17/22
TP1	16	6.0	
TP2	4	7.0	
TP3	2.5	5.0	
TP4			
TP5	1	4.0	
TP6			
TP7	3	7.0	4.0
TP8		3.0	
TP9	3	6.5	4.5
TP10			
TP11	8	–	
TP12	5	6.5	
TP13		5.0	3.7
TP14			
TP15		5.0	
TP16		5.0	7.1
TP17		3.0	1.7
TP18		6.0	
TP19		6.0	7.3
TP20		3.0	
TP21		2.0	2.1
TP22	5	6.0	4.7
TP23		2.5	2.0
TP24	1	4.0	
TP25	4	4.5	
TP26		3.0	
TP27		2.5	
TP28	2	6.0	7.2
TP29		4.0	
TP30		2.5	
TP31	3.5	5.0	
TP32		3.5	
B1	4	6.5	
B2	3.5	5.0	
B3	1.5	9.0	

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

CMT ENGINEERING LABORATORIES

Site Map

Date:	22-Feb-22
Job #	17063

Figure: 1

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-1

Total Depth: 16'
Water Depth: 6'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Fill; brown silty sandy clay with various debris										
		moist,										
2				23	27.3				83.6			
4												
6 ▽		wet										
8												
10												
12												
14												
16		END AT 16'										
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 6 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 2

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-2

Total Depth: 10'
Water Depth: 7'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Fill; brown silty clay with organics and various debris										
4		Tan Oxidized Silty Sandy CLAY (CL) moist, medium stiff		1								
6												
8		wet		2	37.6				71.3			
10		END AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 7 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 3

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-3

Total Depth: 10'
Water Depth: 5'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Fill; brown silty clay with organics										
2		Gray/Tan Oxidized Silty Sandy CLAY (CL)		3								
4												
		Gray Blue Silty CLAY (CL) with some sand wet		4	29.4					27	20	7
6												
8												
10		END AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 4

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-4

Total Depth: #VALUE!
Water Depth: (see Remarks)
Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Observed, not documented										
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 5

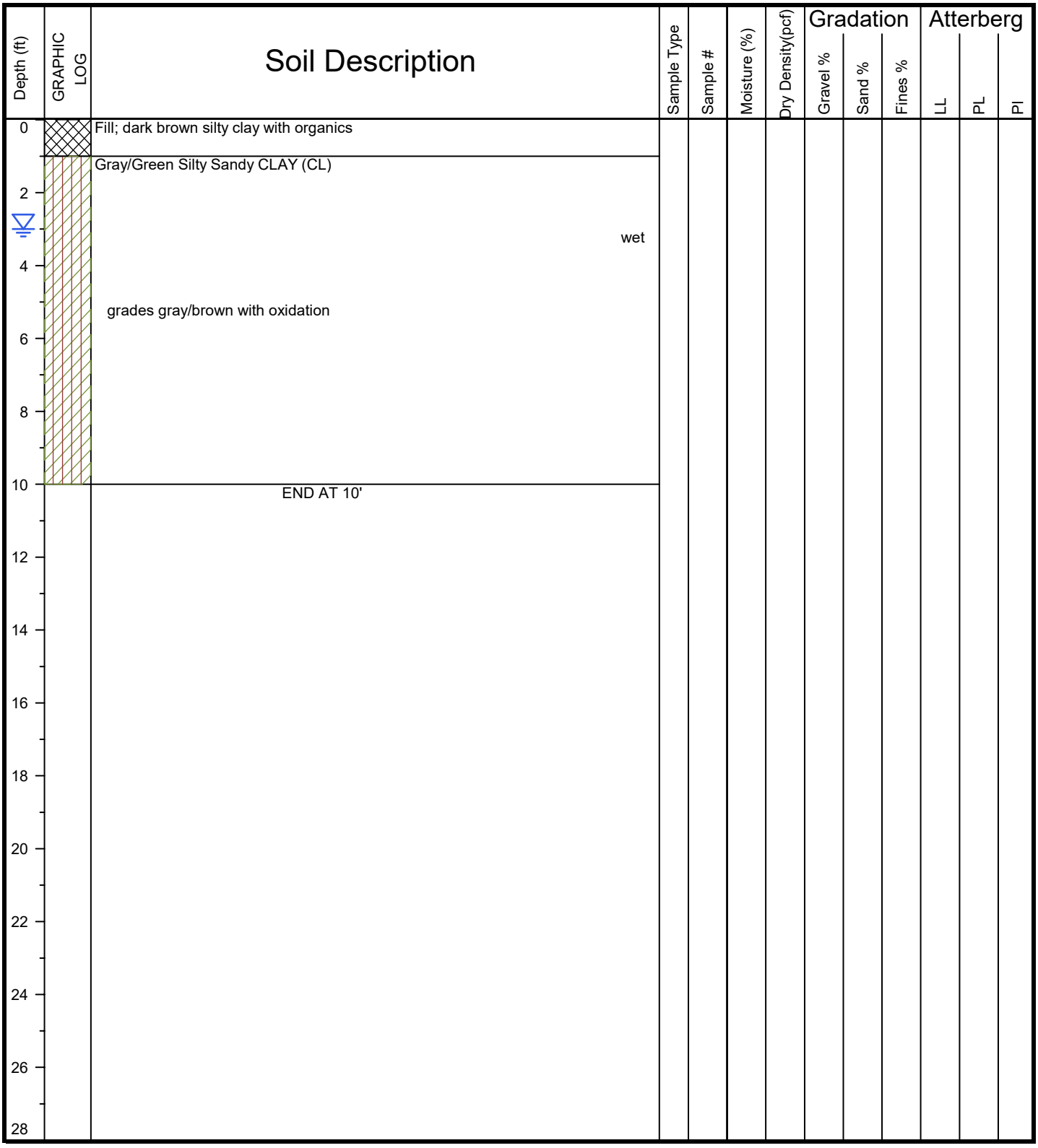
Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-5

Total Depth: 10'
Water Depth: 3'

Date: 2/10/22
Job #: 17063



Remarks: Groundwater encountered during excavation at depth of 3 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 6

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-6

Total Depth: #VALUE!
Water Depth: (see Remarks)
Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Observed, not documented										
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 7

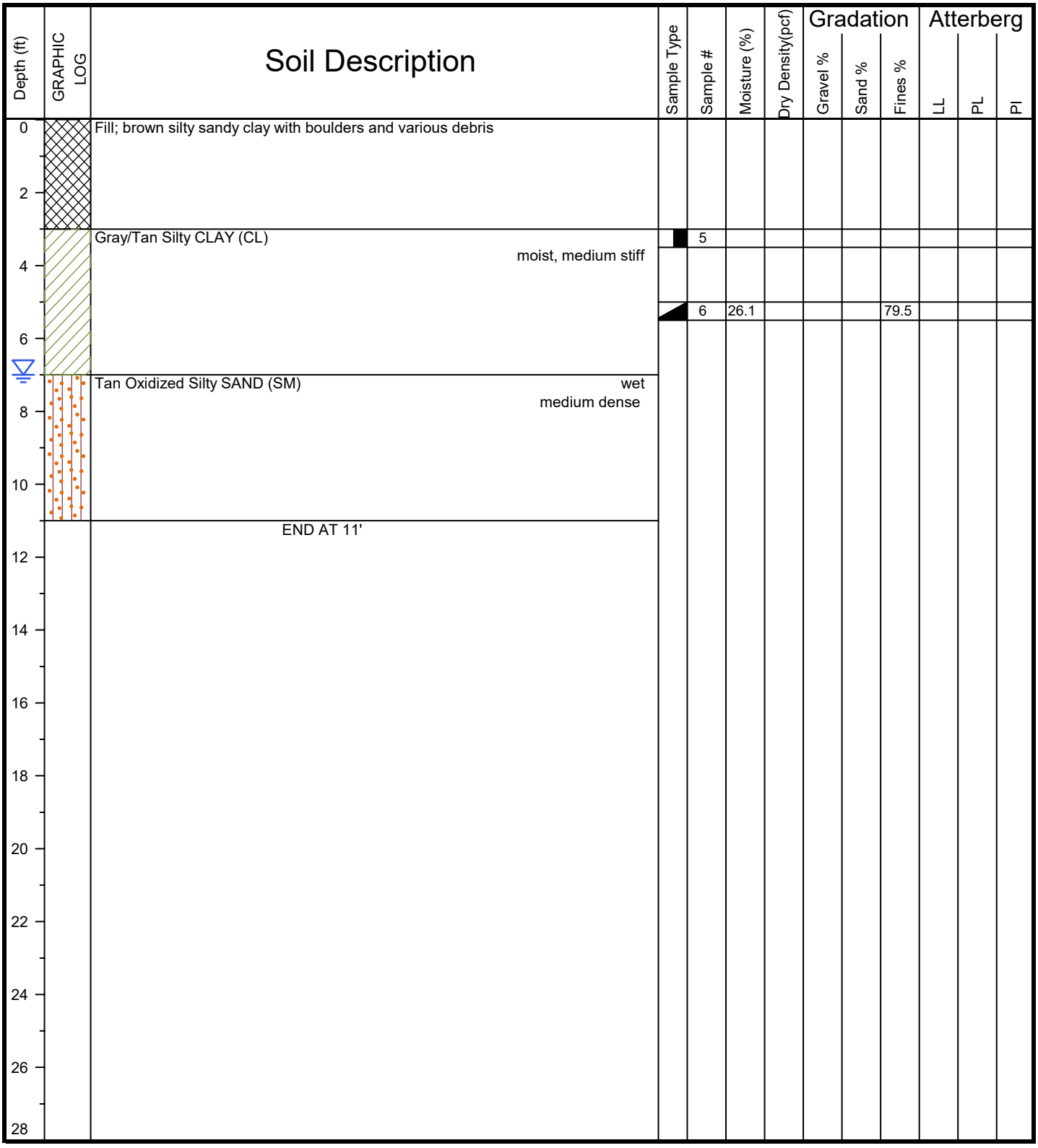
Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-7

Total Depth: 11'
Water Depth: 7'

Date: 2/10/22
Job #: 17063



Remarks: Groundwater encountered during excavation at depth of 7 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 8

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-8

Total Depth: 8'
Water Depth: 3'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; dark brown silty clay with organics and some sand very moist, loose										
		Tan Silty Clayey SAND (SM-SC) very moist, loose										
2				7							NP	NP
		wet										
4												
				8								
6												
		Black/Blue Silty CLAY (CL)		9	47.4				98			
8		END AT 8' CAVING AND SURFACE WATER										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 3 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 9

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-9

Total Depth: 11'
Water Depth: 6.5'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Fill; brown silty sandy clay with organics and various debris										
2												
4		Gray Oxidized Silty Sandy CLAY (CL) moist, medium stiff		10	28				77.7			
6		wet										
8		Tan CLAY (CL) with coarse sand wet, loose		11								
10												
		END AT 11'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 6.5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 10

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-10

Total Depth: #VALUE!
Water Depth: (see Remarks)
Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Observed, not documented										
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 11

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-11

Total Depth: 12'
Water Depth: (see Remarks)
Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Fill; brown silty sandy clay with various debris, organics and boulders										
8		Brown Silty Clayey SAND (SM-SC) with some gravel slightly moist, loose		12	6.9				32.8			
10		Gray/Tan Silty Sandy CLAY (CL) very moist, medium stiff		13								
12		END AT 12'										

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 12

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-12

Total Depth: 11'
Water Depth: 6.5'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Fill; brown silty sandy clay with various debris and boulders										
4			■	14	32	90			91.8			
6		Tan/Gray Oxidized Silty Sandy CLAY (CL) moist, medium stiff wet										
8		Tan Gray Clayey Coarse SAND (SC) wet, loose	◢	15								
10		Tan Gray Oxidized Silty CLAY (CL) wet, medium stiff	◢	16								
		END AT 11'										

Remarks: Groundwater encountered during excavation at depth of 6.5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 13

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-13

Total Depth: 7'
Water Depth: 5'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; sandy clay with organics and roots										
		Tan Coarse SAND (SP) with gravel and cemented sand										
2				17								
4												
		wet		18								
6												
		END AT 7'										
8		MAJOR CAVING AT 7'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 14

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-14

Total Depth: #VALUE!
Water Depth: (see Remarks)
Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Observed, not documented										
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 15

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-15

Total Depth: 9'
Water Depth: 5'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; dark brown silty clay with organics and roots — moist, medium stiff										
2		Tan Silty Sandy CLAY (CL) — moist, medium stiff		19								
4												
6		grades with more clay — wet		20	32.8	86						
8												
		END AT 9'										
10		MAJOR CAVING AT 9'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 16

Other Side Village

About 1850 West Indiana Avenue, Ogden, Utah

Test Pit Log TP-16

Total Depth: 10'
Water Depth: 5'

Date: 2/10/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; dark brown silty sandy clay										
2		Brown Silty CLAY (CL) moist, medium stiff		21								
4												
6		grades silty sandy clay with some coarse sand wet stiff		22	28.5	88			96			
8												
10		END AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 17

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-17

Total Depth: 9'
Water Depth: 3'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; dark brown silty clay moist, soft										
2		Brown/Gray Sandy CLAY (CL) loose wet		1	23				74			
4												
6												
8		Brown/Gray Coarse SAND (SP-SC) with some clay wet, loose		2								
		END AT 9'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 3 feet.
Slotted PVC pipe installed to depth of 8 feet to facilitate water level measurements.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 18

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-18

Total Depth: 9'
Water Depth: 6'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; dark brown silty clay										
2		Light Brown SAND (SP-SM) with silt moist, loose		3								
4												
6		Brown/Gray CLAY (CL) with sand wet medium stiff		4								
8												
		END AT 9'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 6 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 19

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-19

Total Depth: 9'
Water Depth: 6'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; dark brown silty clay										
2		Brown/Gray Silty SAND (SM) moist, medium dense		5								
4												
6		grades brown wet		6	20				23			
8												
		END AT 9'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 6 feet.
Slotted PVC pipe installed to depth of 8 feet to facilitate water level measurements.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 20

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-20

Total Depth: 9'
Water Depth: 3'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; dark brown silty clay										
		Grayish Brown Clayey SAND (SC-CL) layered with sandy to silty clay very moist, soft/loose										
2				7	27	97				28	18	10
		wet										
4												
6		Dark Gray Silty CLAY (CL) wet, very soft		8								
8												
		END AT 9'										
10		CAVING AT 4'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 3 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 21

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-21

Total Depth: 7'
Water Depth: 2'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; dark brown silty clay with organics — moist, soft										
2		Gray Silty CLAY (CL) with pinholes — wet, medium stiff		9								
4				10								
6		Brown Clayey Coarse SAND (SC) — wet, loose		11								
		END AT 7'										
		CAVING AT 2'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 2 feet.
Slotted PVC pipe installed to depth of 8 feet to facilitate water level measurements.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 22

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-22

Total Depth: 9'
Water Depth: 6'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Fill; brown silt with sand, clay, roots and debris slightly moist to moist, medium stiff to soft										
2												
4												
		Light Brown Sandy Clay to Clayey Sand (CL-SC) medium stiff wet		12								
6		grades with more sand										
		Gray Silty SAND (SM) with oxidation staining wet, medium dense		13								
8												
		END AT 9' CAVING AT 4'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 6 feet.
Slotted PVC pipe installed to depth of 8 feet to facilitate water level measurements.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 23

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-23

Total Depth: 8.5'
Water Depth: 2'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; black silty clay with organics										
		Grayish Brown Silty CLAY (CL)										
		very moist to wet, soft										
2		wet		14	23	106				24	16	8
		grades with sand layers up to 3" thick										
4												
6		Grayish Brown Clayey to Silty SAND (SC-SM)										
		wet, loose		15								
8		END AT 8.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 2 feet.
Slotted PVC pipe installed to depth of 8 feet to facilitate water level measurements.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 24

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-24

Total Depth: 9'
Water Depth: 4'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Fill; brown silty clay with sand, concrete debris and organics moist, loose/soft										
2		Grayish Brown Fine Sandy CLAY (CL) very moist, medium stiff		16	19				64			
4 ▽		Gray Coarse SAND (SP) wet		17								
6												
8		Dark Gray Silty CLAY (CL) wet, soft										
10		END AT 9' CAVING AT 1'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 4 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 25

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-25

Total Depth: 10'
Water Depth: 4'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Fill; brown silty to clayey sand with debris and organics moist, loose										
4		Gray Clayey SAND (SC) wet medium dense to loose		18								
8		Brown Sandy CLAY (CL) with laminations wet, loose		19	33				80			
10		END AT 10' CAVING AT 4'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 4 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 26

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-26

Total Depth: 9'
Water Depth: 3'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; brown silty clay with organics										
		Brown Silty CLAY (CL) with roots moist, soft										
2		grades with sand		20								
		Brown Clayey SAND (SC) wet										
4												
		grades gray		21								
6												
8												
		END AT 9'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 3 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 27

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-27

Total Depth: 7.5'
Water Depth: 2'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; brown silty clay with organics										
		Gray-Brown Silty to Sandy CLAY (CL) with layers of clayey to silty sand										
		very moist, soft/loose										
2		wet										
4												
6												
		END AT 7.5'										
8		CAVING AT 1.0'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 2 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 28

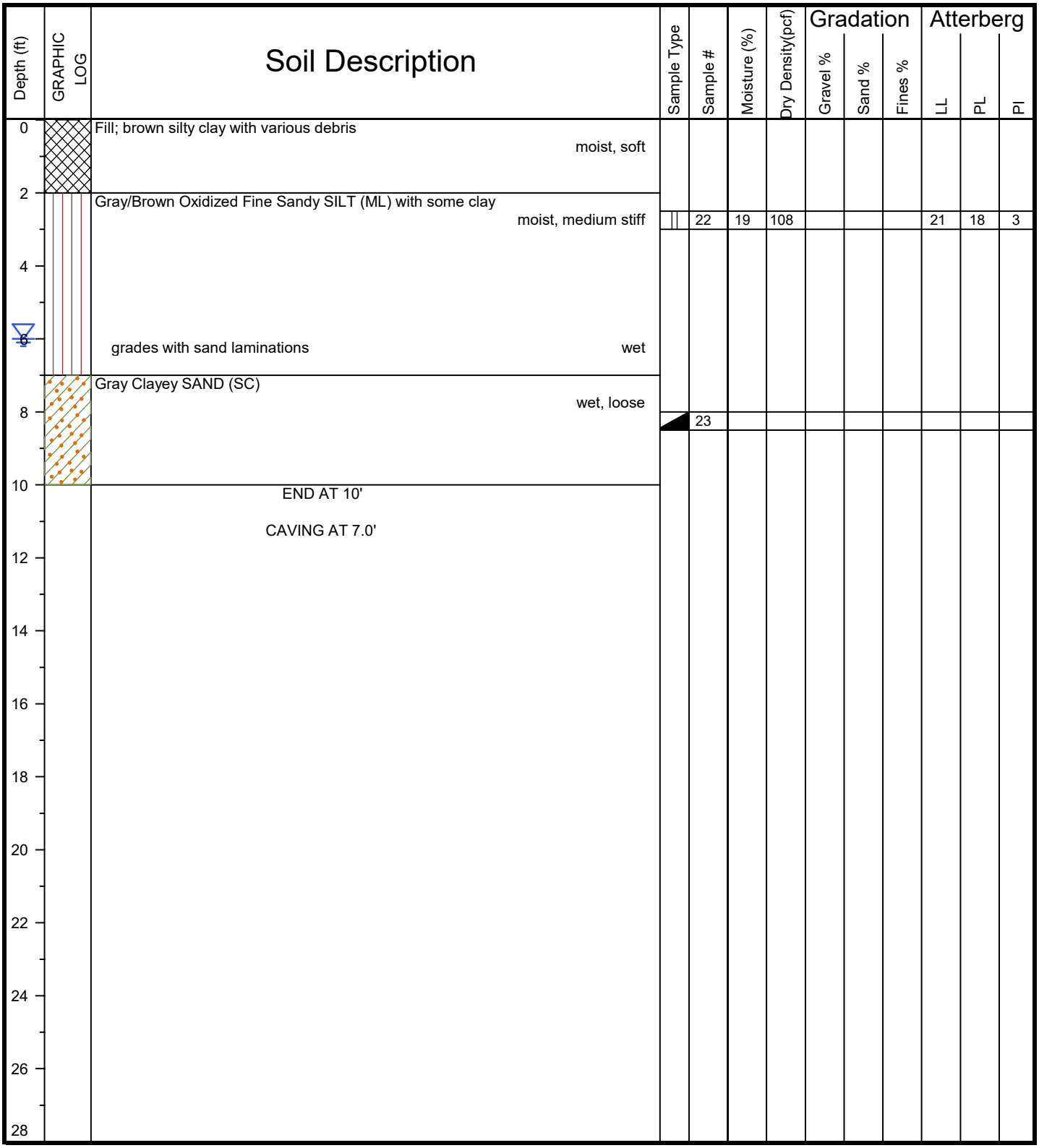
Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-28

Total Depth: 10'
Water Depth: 6'

Date: 1/13/22
Job #: 17063



Remarks: Groundwater encountered during excavation at depth of 6 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 29

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-29

Total Depth: 10'
Water Depth: 4'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; dark brown silty clay with organics										
2		Grayish-Brown Clayey SAND (SC) with layered sandy clay very moist, loose/medium stiff										
4		Grayish Brown Fine Sandy Clay/Silt (CL-ML) wet soft to medium stiff		24	23				75			
6												
8				25								
10		Gray Silty CLAY (CL) soft END AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 4 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 30

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-30

Total Depth: 7'
Water Depth: 2'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; silty clay with organics										
		Brown Silty CLAY (CL) with sand										
		very moist, medium stiff										
2		wet										
		grades with more sand										
4		Gray SAND (SP-SC) with some clay and oxidation										
		wet, loose										
				26	36				7			
6												
		END AT 7'										
8		CAVING AT 1.0'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 2 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 31

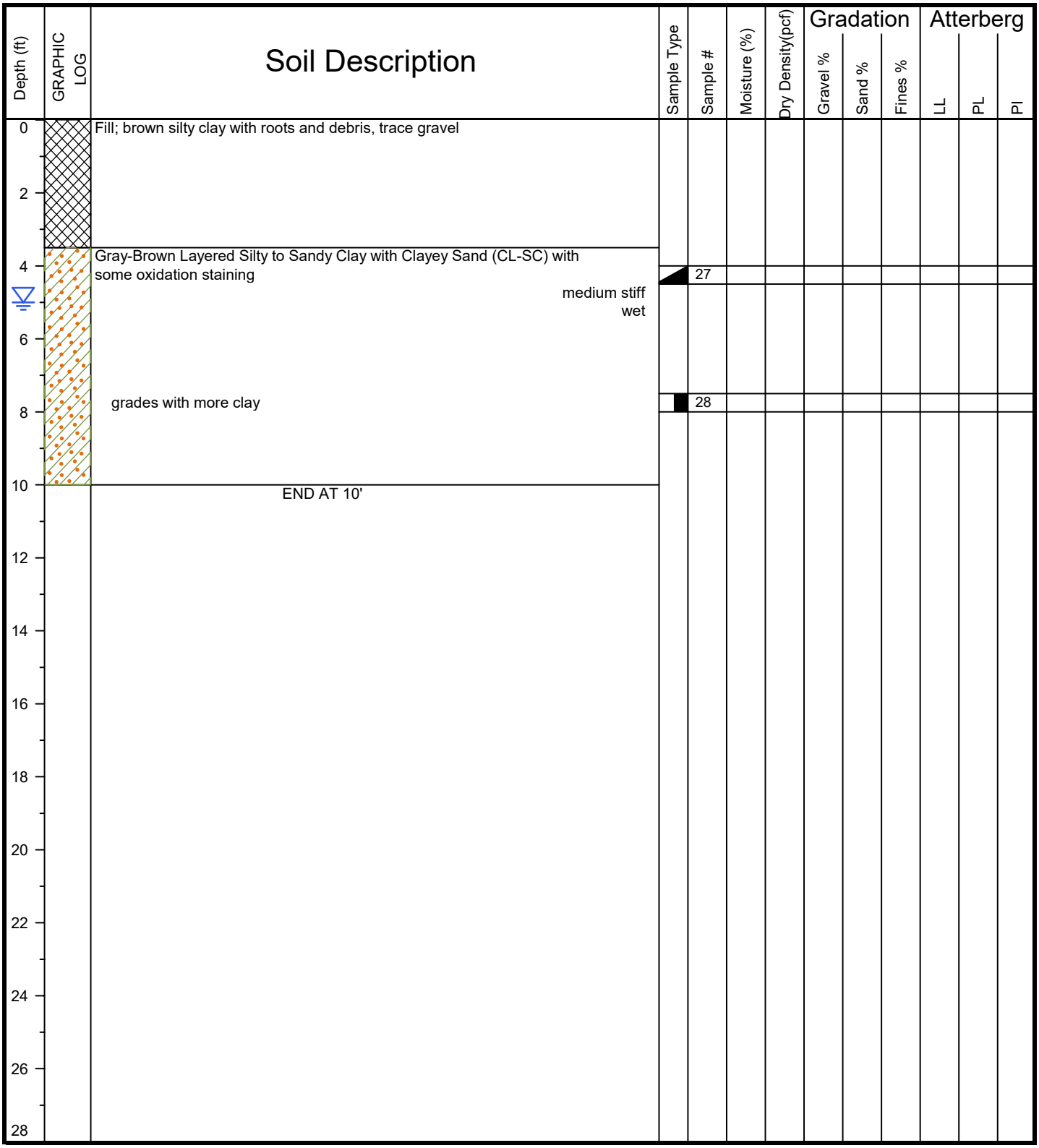
Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-31

Total Depth: 10'
Water Depth: 5'

Date: 1/13/22
Job #: 17063



Remarks: Groundwater encountered during excavation at depth of 5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 32

Other Side Village

About 1850 West Indiana Avenue, Salt Lake City, Utah

Test Pit Log TP-32

Total Depth: 10'
Water Depth: 3.5'

Date: 1/13/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; black silty clay										
		Brown Silty CLAY (CL) with sand moist to very moist, medium stiff										
2				29	26	95				33	14	19
4		wet grades with layers of sand up to 4" thick										
6												
8												
10		grades gray soft END AT 10' CAVING AT 1.0'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 3.5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: EK Bailey
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 33

Other Side Village

About 1850 West Idiana Avenue, Salt Lake City, Utah

Bore Hole Log B-1

Total Depth: 16.5'
Water Depth: 6'

Date: 2/15/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Fill; dark gray clayey sand and sandy clay with wood debris												
		moist, medium stiff		1	4 3 2	5								
4		Grayish Brown Silty CLAY (CL)												
		moist, medium stiff												
		wet		2	2 2 4	6								
8				3	3 3 3	6								
		grades with sand layers up to 1" thick												
		soft		4	1 1 1	2								
12														
		grades with more sand layers		5	0 6 8	14								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater encountered during drilling at depth of 6 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 34

Other Side Village

About 1850 West Idiana Avenue, Salt Lake City, Utah

Bore Hole Log B-2

Total Depth: 16.5'
Water Depth: 5'

Date: 2/15/22
Job #: 17063

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	Fill; brown silty to sandy clay with some gravel and concrete debris												
			6	12 12 11	23								
4	Gray Brown Silty CLAY (CL) moist, medium stiff												
	wet		7	4 5 6	11	14.9	116						
8	grades with silty sand layers up to 3" thick soft		8	1 1 2	3								
	grades with less frequent sand		9	0 0 1	1								
12													
	grades dark gray		10	1 2 0	2								
16	END AT 16.5'												
20													
24													
28													

Remarks: Groundwater encountered during drilling at depth of 5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
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Figure: 35

Other Side Village

About 1850 West Idiana Avenue, Salt Lake City, Utah

Bore Hole Log B-3

Total Depth: 51.5'
Water Depth: 9'

Date: 2/15/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Fill; gray brown silty clay with various debris moist, medium stiff												
		Brown Clayey SAND (SC) very moist, medium dense												
				11	2 2 2	4								
4														
		Brown Silty CLAY (CL) with sand very moist to wet, medium stiff		12	2 1 3	4								
8				13	3 2 2	4	34	88						
		wet												
				14	2 1 1	2	35.8				83.3			
12														
		grades with sand layers up to 2" thick		15	1 4 5	9								
16														
				16	1 3 1	4								
20														
		grades dark gray with less sand		17	0 0 0	0	53.7				89	42	22	20
24														
28														

Remarks: Groundwater encountered during drilling at depth of 9 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 36

Other Side Village

About 1850 West Idiana Avenue, Salt Lake City, Utah

Bore Hole Log B-3

Total Depth: 51.5'
Water Depth: 9'

Date: 2/15/22
Job #: 17063

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
28														
				18	1 2 1	3	45.7				88.3			
32														
				19	2 2 1	3								
36														
40		grades with sand layers 1" thick		20	0 4 5	9	23.8				50.2			
44		grades sandy clay/clayey sand		21	14 12 12	24	24.5				48.7			
48		grades with less sand		22	2 1 0	1								
52		END AT 51.5'												
56														

Remarks: Groundwater encountered during drilling at depth of 9 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 36

Other Side Village

About 1850 West Idiana Avenue, Salt Lake City, Utah

Key to Symbols

Date: 2/15/22

Job #: 17063

① Depth (ft)	② GRAPHIC LOG	③ Soil Description	④ Sample Type	⑤ Sample #	⑥⑦ Blows(N) Total	⑧ Moisture (%)	⑨ Dry Density(pcf)	⑩ Gradation Gravel %	Sand %	Fines %	Atterberg LL	PL	PI

COLUMN DESCRIPTIONS

Depth (ft.): Depth (feet) below the ground surface (including groundwater depth - see water symbol below).

Graphic Log: Graphic depicting type of soil encountered (see below).

Soil Description: Description of soils encountered, including Unified Soil Classification Symbol (see below).

Sample Type: Type of soil sample collected at depth interval shown; sampler symbols are explained below-right.

Sample #: Consecutive numbering of soil samples collected during field exploration.

Blows: Number of blows to advance sampler in 6" increments, using a 140-lb hammer with 30" drop.

Total Blows: Number of blows to advance sampler the 2nd and 3rd 6" increments.

Moisture (%): Water content of soil sample measured in laboratory (percentage of dry weight of sample).

Dry Density (pcf): The dry density of a soil measured in laboratory (pounds per cubic foot).

Gradation: Percentages of Gravel, Sand and Fines (Silt/Clay), obtained from lab test results of soil passing the No. 4 and No. 200 sieves.

Atterberg: Individual descriptions of Atterberg Tests are as follows:

LL = Liquid Limit (%): Water content at which a soil changes from plastic to liquid behavior.

PL = Plastic Limit (%): Water content at which a soil changes from liquid to plastic behavior.

PI = Plasticity Index (%): Range of water content at which a soil exhibits plastic properties (= Liquid Limit - Plastic Limit).

STRATIFICATION	
Description	**Thickness**
Seam	Up to ½ inch
Lense	Up to 12 inches
Layer	Greater than 12 in.
Occasional	1 or less per foot
Frequent	More than 1 per foot

MODIFIERS
Trace
<5%
Some
5-12%
With
> 12%

MOISTURE CONTENT
Dry: Absence of moisture, dusty, dry to the touch.
Moist: Damp / moist to the touch, but no visible water.
Saturated: Visible water, usually soil below groundwater.

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 The coarse fraction retained on No. 4 sieve.	CLEAN GRAVELS (< 5% fines)	GW		Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GP		Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
		GRAVELS WITH FINES (≥ 12% fines)	GM		Silty Gravels, Gravel-Sand-Silt Mixtures
			GC		Clayey Gravels, Gravel-Sand-Clay Mixtures
	SANDS The coarse fraction passing through No. 4 sieve.	CLEAN SANDS (< 5% fines)	SW		Well-Graded Sands, Gravelly Sands, Little or No Fines
			SP		Poorly-Graded Sands, Gravelly Sands, Little or No Fines
		SANDS WITH FINES (≥ 12% 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, Silty or Clayey Fine Sands or Clayey Silts with Slight
			CL		Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
			OL		Organic Silts and Organic Silty Clays o f Low Plasticity
	SILTS AND CLAYS Liquid Limit greater than 50%		MH		Inorganic Silts, Micacious or Diatomacious Fine Sand or Silty Soils with Plasticity (Elastic Silts)
			CH		Inorganic Clays of High Plasticity, Fat Clays
			OH		Organic Silts and Organic Clays of Medium to High Plasticity
HIGHLY ORGANIC SOILS			PT		Peat, Humus, Swamp Soils with High Organic Contents

Note: Dual Symbols are used to indicate borderline soil classifications (i.e. GP-GM, SC-SM, etc.).

SAMPLER SYMBOLS

- Block Sample
- Bulk/Bag Sample
- Modified California Sampler 3.5" OD, 2.42" ID
- D&M Sampler
- Rock Core
- Standard Penetration Split Spoon Sampler
- Thin Wall (Shelby Tube)

WATER SYMBOL

- Encountered Water Level
- Measured Water Level (see Remarks on Logs)

1. The results of laboratory tests on the samples collected are shown on the logs at the respective sample depths.
2. The subsurface conditions represented on the logs are for the locations specified. Caution should be exercised if interpolating between or extrapolating beyond the exploration locations.
3. The information presented on each log is subject to the limitations, conclusions, and recommendations presented in this report.

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Figure: 37