REPORT
GEOTECHNICAL STUDY
PROPOSED SPANISH FORK PROJECT
APPROXIMATELY 800 WEST 4000 SOUTH
SPANISH FORK, UTAH

Submitted To:

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Submitted By:

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August 20, 2024

Job No. 3898-001-24

August 20, 2024
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Mr. Jay S. Turner
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Mr. Turner:

Re: Report
Geotechnical Study
Proposed Spanish Fork Project
Approximately 800 West 4000 South
Spanish Fork, Utah

1. INTRODUCTION

1.1 GENERAL

This report presents the results of our geotechnical study performed at the site of the proposed Spanish Fork Project to be located at approximately 800 West 4000 South in Spanish Fork, Utah. GSH previously completed a geotechnical study for the site dated April 26, 2023[1]. The general location of the site with respect to existing roadways, as of 2024, is presented on Figure 1, Vicinity Map. A more detailed layout of the site showing proposed facilities, existing roadways, as well as the borings drilled and test pits excavated in conjunction with this study is presented on Figure 2, Site Plan.

1.2 OBJECTIVES AND SCOPE

The objectives and scope of the study were planned in discussions between Mr. Jay S. Turner of Turner Group and Mr. Robert Gifford of GSH Geotechnical, Inc. (GSH).

[1] "Geotechnical Study, Proposed Spanish Fork South Office/Warehouse/Data Center, Approximately 800 West 4000 South, Spanish Fork, Utah" prepared by GSH Geotechnical, Inc., GSH Job No. 3621-004-23.

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In general, the objectives of this study were to:

1. Define and evaluate the subsurface soil and groundwater conditions across the site.

2. Provide appropriate foundation, earthwork, pavement, and geoseismic recommendations to be utilized in the design and construction of the proposed facilities.

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

1. A field program consisting of the exploration, logging, and sampling of 15 borings and 10 test pits.

2. A laboratory testing program.

3. An office program consisting of the correlation of available data, engineering analysis, and the preparation of this summary report.

1.3 AUTHORIZATION

Authorization was provided by returning a signed copy of the Professional Services Agreement No. 24-0457 dated April 23, 2024.

1.4 PROFESSIONAL STATEMENTS

Supporting data upon which our recommendations are based are presented in subsequent sections of this report. Recommendations presented herein are governed by the physical properties of the soils encountered in the exploration borings and test pits, projected groundwater conditions, and the layout and design data discussed in Section 2, Proposed Construction. If subsurface conditions other than those described in this report are encountered and/or if design and layout changes are implemented, GSH must be informed so that our recommendations can be reviewed and amended, if necessary.

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

2. PROPOSED CONSTRUCTION

The project is to consist of the construction of one (1) or more office/warehouse/distribution structures and associated pavements. The structures are anticipated to be 1- to 2-stories of tilt-up concrete or CMU construction, to be placed slab-on-grade, and supported upon conventional spread and continuous wall footings.

Maximum real column and wall loads are anticipated to be on the order of up to 220 kips and 5 to 6 kips per lineal foot, respectively. Real loads are defined as the total of all dead plus frequently applied (reduced) live loads.

Paved parking areas, light- and heavy-duty drive lanes, and loading/unloading areas are planned around the structures. Projected traffic in the parking areas is anticipated to consist of a light volume of automobiles and light trucks, occasional medium-weight trucks, and no heavyweight trucks. Proposed traffic in the light-duty drive lanes is anticipated to consist of a moderate volume of automobiles and light trucks, a light volume of medium-weight trucks, and occasional heavyweight trucks. Projected traffic in the heavy-duty drive lanes and loading/unloading areas is anticipated to consist of a moderate volume of automobiles, light trucks, and medium-weight trucks with a light volume of heavyweight trucks.

Site development will require some earthwork in the form of minor cutting and filling. At this time, we anticipate that maximum site grading cuts and fills, excluding utilities, will be on the order of 1 to 3 feet.

3. SITE INVESTIGATIONS

3.1 GENERAL

Subsurface conditions in unexplored locations or at other times may vary from those encountered at specific boring and test pit locations. If such variations are noted during construction or if project development plans are changed, GSH must review the changes and amend our recommendations, if necessary.

Boring and test pit locations were established by estimating distances and angles from site landmarks. If increased accuracy is desired by the client, we recommend that the boring and test pit locations and elevations be surveyed.

3.2 FIELD PROGRAM

To define and evaluate the subsurface soil and groundwater conditions across the site, 15 borings and 10 test pits were completed within the accessible areas. These borings and test pits were completed to depths ranging from 3.0 to 46.5 feet with a truck-mounted drill rig equipped with hollow-stem augers and a moderate-sized rubber track-mounted excavator. The approximate locations of the borings and test pits are presented on Figure 2.

The field portion of our study was under the direct control and continual supervision of an experienced member of our geotechnical staff. During the course of the drilling operations, a continuous log of the subsurface conditions encountered was maintained. In addition, samples of the typical soils encountered were obtained for subsequent laboratory testing and examination. The soils were classified in the field based upon visual and textural examination. These classifications were supplemented by subsequent inspection and testing in our laboratory. Graphical

representation of the subsurface conditions encountered is presented on Figures 3A through 3O, Boring Logs and Figures 4A through 4H, Test Pit Logs. Soils were classified in accordance with the nomenclature described on Figure 5, Key to Boring Log and Figure 6, Key to Test Pit Log (USCS).

A 3.25-inch outside diameter, 2.42-inch inside diameter (Dames & Moore), a 2.0-inch outside diameter, 1.38-inch inside diameter drive sampler (SPT), and a 2.42-inch inside diameter thin-wall drive sampler were utilized at select locations and depths within the borings and test pits to collect soil samples for further examination and laboratory testing. The blow counts recorded on the boring logs were those required to drive the sampler 12 inches with a 140-pound hammer dropping 30 inches.

Following completion of exploration operations, 1.25-inch diameter slotted PVC pipe was installed in a majority of the borings to provide a means of monitoring the groundwater fluctuations. The borings and test pits were then backfilled. Although an effort was made to compact the backfill, it was not placed in uniform lifts and compacted to a specific density. Consequently, settlement of the backfill with time is likely to occur.

3.3 LABORATORY TESTING

3.3.1 General

To provide data necessary for our engineering analysis, a laboratory testing program was performed. This program included moisture, density, partial gradation, Atterberg limits, consolidation, laboratory vane shear, and chemical tests. The following paragraphs describe the tests and summarize the test data.

3.3.2 Moisture and Density Tests

To provide index parameters and to correlate other test data, moisture and density tests were performed on selected samples. The results of these tests are presented on the boring logs, Figures 3A through 3O.

3.3.3 Partial Gradation Tests

To aid in classifying the granular soils, partial gradation tests were performed. Results of the tests are tabulated below and presented on the boring logs, Figures 3A through 3O:

Boring/ Test Pit No.	Depth (feet)	Percent Passing No. 200 Sieve	Moisture Content Percent	Soil Classification
B-11	15.0	73.8	31.8	CL
B-14	15.0	66.9	35.1	CL

3.3.4 Atterberg Limits Test

To aid in classifying the soils, Atterberg limits test was performed on representative samples of the fine-grained cohesive soils. Results of the test are tabulated below and presented on the boring logs, Figures 3A through 3O:

Boring No.	Depth (feet)	Liquid Limit (percent)	Plastic Limit (percent)	Plasticity Index (percent)	Soil Classification
B-1	5.0	33	20	13	CL
B-1	40	37	18	19	CL

3.3.5 Consolidation Tests

To provide data necessary for our settlement analysis, consolidation testing was performed on 8 representative samples of the natural fine-grained clay soils encountered at the site. The results of these tests indicate that the samples tested slightly over-consolidated and will exhibit low to moderate strength and moderate to high compressibility characteristics under the anticipated loading. Detailed results of the tests are maintained within our files and can be transmitted to you, upon your request.

3.3.6 Laboratory Vane Shear Tests

To determine the undrained shear strength of the clay soils encountered at the site, laboratory vane shear tests were performed. The results of the tests are tabulated below:

Boring No.	Depth (feet)	Soil Type	In-Situ Moisture Content (percent)	Dry Density (pcf)	Ultimate Shear Strength (psf)
B-2	10.0	CL	26.6	93.7	5,425
B-4	2.5	CL	32.3	86.6	1,090
B-6	7.5	CL	30.4	94.7	1,000
B-7	5.0	CL	27.8	91.0	825

3.3.7 Chemical Tests

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

Boring No.	Depth (feet)	Soil Classification	pH	Total Water-Soluble Sulfate (mg/kg-dry)
B-1	2.5	CL	8.5	206

4. SITE CONDITIONS

4.1 SURFACE

The site is located at approximately 800 West 4000 South in Spanish Fork, Utah. The majority of the site is currently vacant/undeveloped land with a single-family residential structure in the southwest corner of the site. The northwest portion of the site was utilized as a staging ground for a construction site directly adjacent to the east and subsequent fill was placed in this location. The southern portion was previously utilized as agricultural fields. The topography of the site is relatively flat, grading down to the northeast with a total relief of approximately 4 to 6 feet. Site vegetation consists of various weeds and grass in the southern portion of the site.

The site is bounded to the north by 4000 South Street followed by vacant/undeveloped land; to the east by an active construction site; to the south by commercial structures and vacant/undeveloped land; and to the west by 800 West Street followed by vacant/undeveloped land.

4.2 SUBSURFACE SOIL

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

The borings and test pits were completed to depths ranging from 3.0 to 46.5 feet. The soil conditions encountered in each of the borings and test pits, to the depths completed, were generally similar across the boring and test pit locations.

- Approximately 4 to 8 inches of topsoil was encountered in Borings B-1 through B-10 as well as Test Pits TP-1, TP-2, TP-4 through TP-7, TP-9, and TP-10. Topsoil thickness is frequently erratic and thicker zones of topsoil shall be anticipated.

- Non-engineered fill soils were encountered in each boring and test pit except Borings B-3, B-4, B-6 through B-9, and B-12 to depths ranging from 1.0 to 6.0 feet beneath the existing ground surface. The non-engineered fill soils primarily consisted of clay with varying silt, sand, and gravel content.

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

The natural clay soils were soft to hard, moist to saturated, gray, dark brown, and brown in color, and moderately over-consolidated. The natural clay soils are anticipated to exhibit moderate strength and compressibility characteristics under the anticipated loading.

For a more descriptive interpretation of subsurface conditions, please refer to Figures 3A through 3O, Boring Logs and Figures 4A through 4H, Test Pit Logs. The lines designating the interface between soil types on the boring logs and test pit logs generally represent approximate boundaries. In situ, the transition between soil types may be gradual.

4.3 GROUNDWATER

On April 5, 2023 (following original drilling), groundwater was measured within the PVC pipes installed as tabulated below:

Boring No.	Groundwater Depth (feet)
	April 5, 2023
B-1	3.1
B-2	3.9
B-6	5.1
B-7	4.6
B-10	5.7

On August 6, 2024 (following additional drilling), groundwater was measured within the PVC pipes installed as tabulated below:

Boring No.	Groundwater Depth (feet)
	August 6, 2024
B-11	Pipe Damaged
B-12	Pipe Damaged
B-13	Pipe Damaged
B-14	5.5
B-15	Pipe Damaged

Groundwater levels vary with changes in season and rainfall, construction activity, irrigation, snow melt, surface water run-off, and other site-specific factors.

5. DISCUSSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The proposed structures may be supported upon conventional spread and continuous wall foundations supported upon suitable natural soils and/or structural fill extending to suitable natural soils.

The most significant geotechnical aspects at the site are:

1. The existing non-engineered fills across much of the site.

2. The relatively shallow depth to groundwater.

Prior to proceeding with construction, removal of any existing debris, surface vegetation, root systems, topsoil, non-engineered fill, and any deleterious materials from beneath an area extending out at least 5 feet from the perimeter of the proposed structure footprints and 3 feet beyond pavements and exterior flatwork areas will be required. All existing utility locations shall be reviewed to assess their impact on the proposed construction and abandoned and/or relocated as appropriate.

Due to the developed nature of this site and the surrounding area, additional non-engineered fills may exist in unexplored areas of the site. Based on our experience, non-engineered fills are frequently erratic in composition and consistency. All surficial loose/disturbed soils and non-engineered fills must be removed below all footings, floor slabs, and pavements.

Groundwater was measured as shallow as 3.1 feet below the ground surface. GSH recommends placing floor slabs no closer than 4 feet from the highest groundwater elevation. Site grading fill may be utilized to raise the overall grade to achieve the required separation between the floor slab and the highest groundwater elevation.

Proof rolling of the natural clay subgrade must not be completed if cuts extend to within 1 foot of the groundwater surface. In areas where cuts are to extend to within 1 foot of the groundwater surface, stabilization must be anticipated.

To reduce disturbance of the natural soils during excavation, it is recommended that low-impact, track-mounted equipment with smooth edge buckets/blades be utilized.

Detailed discussions pertaining to earthwork, foundations, pavements, and the geoseismic setting of the site are presented in the following sections.

5.2 EARTHWORK

5.2.1 Site Preparation

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

It must be noted that from a handling and compaction standpoint, soils containing high amounts of fines (silts and clays) are inherently more difficult to rework and 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. Additionally, the on-site soils are likely above optimum moisture content for compacting at present and would require some drying prior to re-compacting.

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 proof rolled 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, GSH must be notified to provide further recommendations. In pavement, floor slab, and outside flatwork areas, unsuitable natural soils shall be removed to a maximum depth of 2 feet and replaced with compacted granular structural fill.

Subgrade preparation as described must be completed prior to placing overlying structural site grading fills.

Due to the relatively high groundwater, site grading cuts shall be kept to a minimum. Cuts extending to within 1 foot of the groundwater elevation will likely disturb the natural clay soils and proof rolling must not be completed. Stabilization must be anticipated in areas where cuts are to extend to within 1 foot of the groundwater surface.

To reduce disturbance of the natural soils during excavation, it is recommended that low-impact, track-mounted equipment with smooth edge buckets/blades be utilized.

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

5.2.2 Temporary Excavations

Temporary excavations up to 8 feet deep in fine-grained cohesive soils, above or below the water table, may be constructed with sideslopes no steeper than one-half horizontal to one vertical (0.5H:1.0V). Excavations deeper than 8 feet are not anticipated at the site.

For granular (cohesionless) soils, construction excavations above the water table, not exceeding 4 feet, shall be no steeper than one-half horizontal to one vertical (0.5H:1.0V). For excavations up to 8 feet, in granular soils and above the water table, the slopes shall be no steeper than one horizontal to one vertical (1H:1V). Excavations encountering saturated cohesionless soils will be very difficult and will require very flat sideslopes and/or shoring, bracing, and dewatering.

To reduce disturbance of the natural soils during excavation, it is recommended that low-impact, track-mounted equipment with smooth edge buckets/blades be utilized.

The static groundwater table was encountered as shallow as 3.1 feet below the existing surface and may be shallower with seasonal fluctuations. Consideration for dewatering of utility trenches, excavations for the removal of non-engineered fill, and other excavations below this level shall be incorporated into the design and bidding process.

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.

5.2.3 Structural Fill

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 surface vegetation, root systems, rubbish, topsoil, frozen soil, and other deleterious materials.

Structural site grading fill is defined as structural fill placed over relatively large open areas to raise the overall grade. For structural site grading fill, the maximum particle size shall not exceed 4 inches; although, occasional larger particles, not exceeding 8 inches in diameter, may be incorporated if placed randomly in a manner such that “honeycombing” does not occur, and the desired degree of compaction can be achieved. The maximum particle size within structural fill placed within confined areas shall be restricted to 2 inches.

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

Imported structural fill below foundations and floor slabs shall consist of a well graded sand and gravel mixture with less than 30 percent retained on the three-quarter-inch sieve and less than 20 percent passing the No. 200 Sieve (clays and silts).

To stabilize soft subgrade conditions (if encountered) or where structural fill is required to be placed closer than 2.0 feet above the water table at the time of construction, a mixture of coarse angular gravels and cobbles and/or 1.5- to 2.0-inch gravel (stabilizing fill) shall be utilized. It may also help to utilize a stabilization fabric, such as Mirafi 600X or equivalent, placed on the natural ground if 1.5- to 2.0-inch gravel is used as stabilizing fill.

5.2.4 Fill Placement and Compaction

All structural fill shall be placed in lifts not exceeding 8 inches in loose thickness. Structural fills shall be compacted in accordance with the percent of the maximum dry density as determined by the AASHTO[2] T180 (ASTM[3] D1557) compaction criteria in accordance with the following table:

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending at least 5 feet beyond the perimeter of the structure	0 to 10	95
Site grading fills outside area defined above	0 to 5	90
Site grading fills outside area defined above	5 to 10	95
Utility trenches within structural areas	--	96
Road base	--	96

Structural fills greater than 10 feet thick are not anticipated at the site.

Subsequent to stripping and prior to the placement of structural site grading fill, the subgrade shall be prepared as discussed in Section 5.2.1, Site Preparation, of this report. In confined areas, subgrade preparation shall consist of the removal of all loose or disturbed soils.

Coarse angular gravel and cobble mixtures (stabilizing fill), if utilized, shall be end dumped, spread to a maximum loose lift thickness of 15 inches, and compacted by dropping a backhoe bucket onto the surface continuously at least twice. As an alternative, the stabilizing fill may be compacted by passing moderately heavy construction equipment or large self-propelled compaction equipment over the surface at least twice. Subsequent fill material placed over the coarse gravels and cobbles

[2] American Association of State Highway and Transportation Officials
[3] American Society for Testing and Materials

shall be adequately compacted so that the "fines" are "worked into" the voids in the underlying coarser gravels and cobbles. Where soil fill materials are to be placed directly over more than about 18 inches of clean gravel, a separation geofabric, such as Mirafi 140N or equivalent, is recommended to be placed between the gravel and subsequent soil fills.

Non-structural fill may be placed in lifts not exceeding 12 inches in loose thickness and compacted by passing construction, spreading, or hauling equipment over the surface at least twice.

5.2.5 Utility Trenches

All utility trench backfill material below structurally loaded facilities (footings, floor slabs, flatwork, pavements, etc.) shall be placed at the same density requirements established for structural fill. If the surface of the backfill becomes disturbed during the course of construction, the backfill shall be proof rolled and/or properly compacted prior to the construction of any exterior flatwork over a backfilled trench. Proof rolling shall be performed by passing moderately loaded rubber tire-mounted construction equipment uniformly over the surface at least twice. If excessively loose or soft areas are encountered during proof rolling, they shall be removed to a maximum depth of 2 feet below design finish grade and replaced with structural fill.

Many utility companies and City-County governments are now requiring that Type A-1a or A-1b (AASHTO Designation – granular soils with limited fines) soils be used as backfill over utilities. These organizations are also requiring that in public roadways, the backfill over major utilities be compacted over the full depth of fill to at least 96 percent of the maximum dry density as determined by the AASHTO T180 (ASTM D1557) method of compaction. GSH recommends that as the major utilities continue onto the site that these compaction specifications are followed.

Fine-grained soils, such as silts and clays, are not recommended for utility trench backfill in structural areas.

The static groundwater table was encountered as shallow as 3.1 feet below the existing surface and may be shallower with seasonal fluctuations. Dewatering of utility trenches and other excavations below this level shall be anticipated.

To reduce disturbance of the natural soils during excavation, it is recommended that low-impact, track-mounted equipment with smooth edge buckets/blades be utilized.

5.3 GROUNDWATER

On April 5, 2023 (following original drilling), groundwater was measured within the PVC pipes installed as tabulated on the following page.

Boring No.	Groundwater Depth (feet)
	April 5, 2023
B-1	3.1
B-2	3.9
B-6	5.1
B-7	4.6
B-10	5.7

On August 6, 2024 (following additional drilling), groundwater was measured within the PVC pipes installed as tabulated below:

Boring No.	Groundwater Depth (feet)
	August 6, 2024
B-11	Pipe Damaged
B-12	Pipe Damaged
B-13	Pipe Damaged
B-14	5.5
B-15	Pipe Damaged

Based on the anticipated cuts necessary to reach design subgrades, we anticipate temporary dewatering will be necessary, especially in footing excavation that extend to the groundwater elevations.

Floor slabs must be placed a minimum of 4 feet from the stabilized groundwater elevation. Site grading fill may be utilized to raise the overall grade to achieve the required separation between the floor slab and the highest groundwater elevation.

The groundwater measurements presented are conditions at the time of the field exploration and may not be representative of other times or locations. Groundwater levels may vary seasonally and with precipitation, as well as other factors including irrigation. Evaluation of these factors is beyond the scope of this study. Groundwater levels may, therefore, be at shallower or deeper depths than those measured during this study, including during construction and over the life of the structure.

The extent and nature of any dewatering required during construction will be dependent on the actual groundwater conditions prevalent at the time of construction and the effectiveness of construction drainage to prevent run-off into open excavations.

5.4 SPREAD AND CONTINUOUS WALL FOUNDATIONS

5.4.1 Design Data

The results of our analysis indicate that the proposed structures may be supported upon conventional spread and continuous wall foundations established upon suitable natural soils and/or structural fill extending to suitable natural soils. Under no circumstances shall foundations be established over non-engineered fills, loose or disturbed soils, topsoil, surface vegetation, root systems, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. More heavily loaded footings will require a certain amount of granular structural replacement fill as specified in Section 5.4.3, Settlements, of this report. For design, the parameters are provided below:

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Minimum Recommended Depth of Embedment for Frost Protection	-	30 inches
Minimum Recommended Depth of Embedment for Non-frost Conditions	-	15 inches
Recommended Minimum Width for Continuous Wall Footings	-	18 inches
Minimum Recommended Width for Isolated Spread Footings	-	24 inches
Recommended Net Bearing Capacity for Real Load Conditions	-	1,500 pounds per square foot
Bearing Capacity Increase for Seismic Loading	-	50 percent

The term “net bearing capacity” refers to the allowable pressure imposed by the portion of the structure located above lowest adjacent final grade. Therefore, the weight of the footing and backfill to lowest adjacent final grade need not be considered. Real loads are defined as the total of all dead plus frequently applied live loads. Total load includes all dead and live loads, including seismic and wind.

5.4.2 Installation

Under no circumstances shall the footings be installed upon non-engineered fills, loose or disturbed soils, topsoil, surface vegetation, root systems, rubbish, construction debris, or other deleterious materials. If unsuitable soils are encountered, they must be removed and replaced with compacted granular fill. If granular soils become loose or disturbed, they must be recompacted prior to pouring the concrete.

The width of structural replacement fill below footings shall be equal to the width of the footing plus one foot for each foot of fill thickness.

5.4.3 Settlements

Granular structural replacement fill will be required under more heavily loaded footings. For the required amount, refer to the table below:

Foundations	Loading	Minimum Thickness of Replacement Structural Granular Fill (feet)
Wall	Up to 6 kips per lineal foot	1.0
Spread	Up to 115 kips	1.0
	115 kips to 165 kips	2.0
	165 kips to 220 kips	3.0

Based on column loadings, soil bearing capacities, and the foundation recommendations as discussed above, we expect primary total settlement beneath individual foundations to be less than one inch.

The amount of differential settlement is difficult to predict because the subsurface and foundation loading conditions can vary considerably across the site. However, we anticipate differential settlement between adjacent foundations could vary from 0.5 to 0.75 inch. The final deflected shape of the structure will be dependent on actual foundation locations and loading.

5.5 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 friction of 0.35 may be utilized for the footing interface with in situ natural clay soils and 0.40 for footing interface with granular structural fill. Passive resistance provided by properly placed and compacted granular structural fill above the water table may be considered equivalent to a fluid with a density of

300 pounds per cubic foot. Below the water table, this granular soil shall be considered equivalent to a fluid with a density of 150 pounds per cubic foot.

A combination of passive earth resistance and friction may be utilized provided that the friction component of the total is divided by 1.5.

5.6 FLOOR SLABS

Floor slabs may be established upon suitable natural subgrade soils or structural fill extending to suitable natural soils. Under no circumstances shall floor slabs be established directly over non-engineered fills, loose or disturbed soils, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water.

Additionally, GSH recommends that floor slabs be constructed a minimum of 4.0 feet from the stabilized groundwater elevation. Site grading fill may be utilized to raise the overall grade to achieve the required separation between the floor slab and the highest groundwater elevation.

To facilitate curing of the concrete and to provide a capillary moisture break, it is recommended that floor slabs be directly underlain by at least 4 inches of "free-draining" fill, such as "pea" gravel or three-quarters to one inch minus clean gap-graded gravel.

Settlement of lightly loaded floor slabs designed according to previous recommendations (average uniform pressure of 200 pounds per square foot or less) is anticipated to be less than one-quarter of an inch.

5.7 PAVEMENTS

The natural clay soils will exhibit poor pavement support characteristics when saturated. All pavement areas must be prepared as previously discussed (see Section 5.2.1, Site Preparation). Under no circumstances shall pavements be established over unprepared non-engineered fills, loose or disturbed soils, topsoil, surface vegetation, root systems, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. With the subgrade soils and the estimated projected traffic as discussed in Section 2, Proposed Construction, the pavement sections on the following pages are recommended.

Parking Areas

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

Flexible Pavements:
(Asphalt Concrete)

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

Rigid Pavements:
(Non-reinforced Concrete)

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

Light-Duty Drive Lanes

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

Flexible Pavements:
(Asphalt Concrete)

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

Rigid Pavements:
(Non-reinforced Concrete)

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

Heavy-Duty Drive Lanes and Loading/Unloading Areas

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

Flexible Pavements:
(Asphalt Concrete)

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

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

Rigid Pavements:
(Non-reinforced Concrete)

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

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

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

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

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

5.8 CEMENT TYPES

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

5.9 GEOSEISMIC SETTING

5.9.1 General

Utah municipalities have adopted the International Building Code (IBC) 2021 The IBC 2021 code refers to ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7-16) determines the seismic hazard for a site based upon 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).

5.9.2 Faulting

Based on our review of available literature, no active faults pass through or immediately adjacent to the site. The nearest active mapped fault consists of the Provo Section of the Wasatch Fault, located about 2.7 miles to the east of the site.

5.9.3 Site Class

For dynamic structural analysis, the Site Class D – Default Soil Profile as defined in Chapter 20 of ASCE 7-16 (per Section 1613.3.2, Site Class Definitions, of IBC 2018) can be utilized. If a measured site class is desired based on the project structural engineer's evaluation and

recommendations, additional testing and analysis can be completed by GSH to determine the measured site class. Please contact GSH for additional information.

5.9.4 Ground Motions

The IBC 2021 code is based on USGS mapping, which provides values of short and long period accelerations for average bedrock values for the Western United States and must be corrected for local soil conditions. The following table summarizes the peak ground and short and long period accelerations for the MCE event and incorporates the appropriate soil amplification factor for a Site Class D – Default* Soil Profile. Based on the site latitude and longitude (40.1572 degrees north and 111.6727 degrees west, respectively) and Risk Category I, the values for this site are tabulated below:

Spectral Acceleration Value, T	Bedrock Boundary [mapped values] (% g)	Site Coefficient	Site Class D - Default* [adjusted for site class effects] (% g)	Design Values** (% g)
0.2 Seconds (Short Period Acceleration)	S_S = 143.7	F_a = 1.200	S_{MS} = 172.4	S_{DS} = 114.9
1.0 Second (Long Period Acceleration)	S_1 = 52.1	F_v = 1.779	S_{M1} = 92.7	S_{D1} = 61.8

* If a measured site class in accordance with IBC 2021/ASCE 7-16 is beneficial based on the project structural engineer's review, please contact GSH for additional options for obtaining this measured site class.

**IBC 2021/ASCE 7-16 may require a site-specific study based on the project structural engineer's evaluation and recommendations. If needed, GSH can provide additional information and analysis including a complete site-specific study in accordance with chapter 21 of ASCE 7-16.

5.9.5 Liquefaction

The site is located in an area that has been identified by the Utah Geological Survey (UGS) as being a "high" liquefaction potential zone. Liquefaction is defined as the condition when saturated, loose, granular 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.

Due to the clayey nature of the soils, liquefaction is not anticipated to occur within the soils encountered at this site.

5.10 SITE VISITS

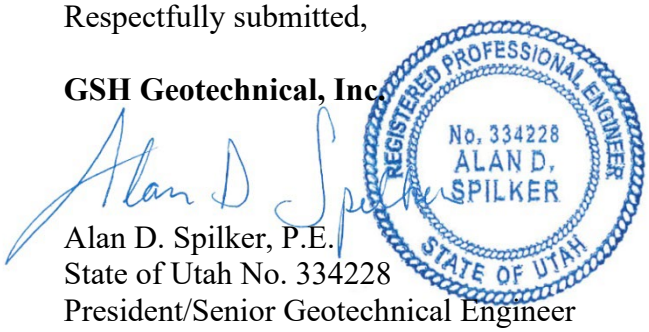
GSH must verify that all topsoil/disturbed soils and any other unsuitable soils have been removed, that non-engineered fills have been removed and/or properly prepared, and that suitable soils have been encountered prior to placing site grading fills, footings, slabs, and pavements. Additionally, GSH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

6. CLOSURE

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

Respectfully submitted,

GSH Geotechnical, Inc.



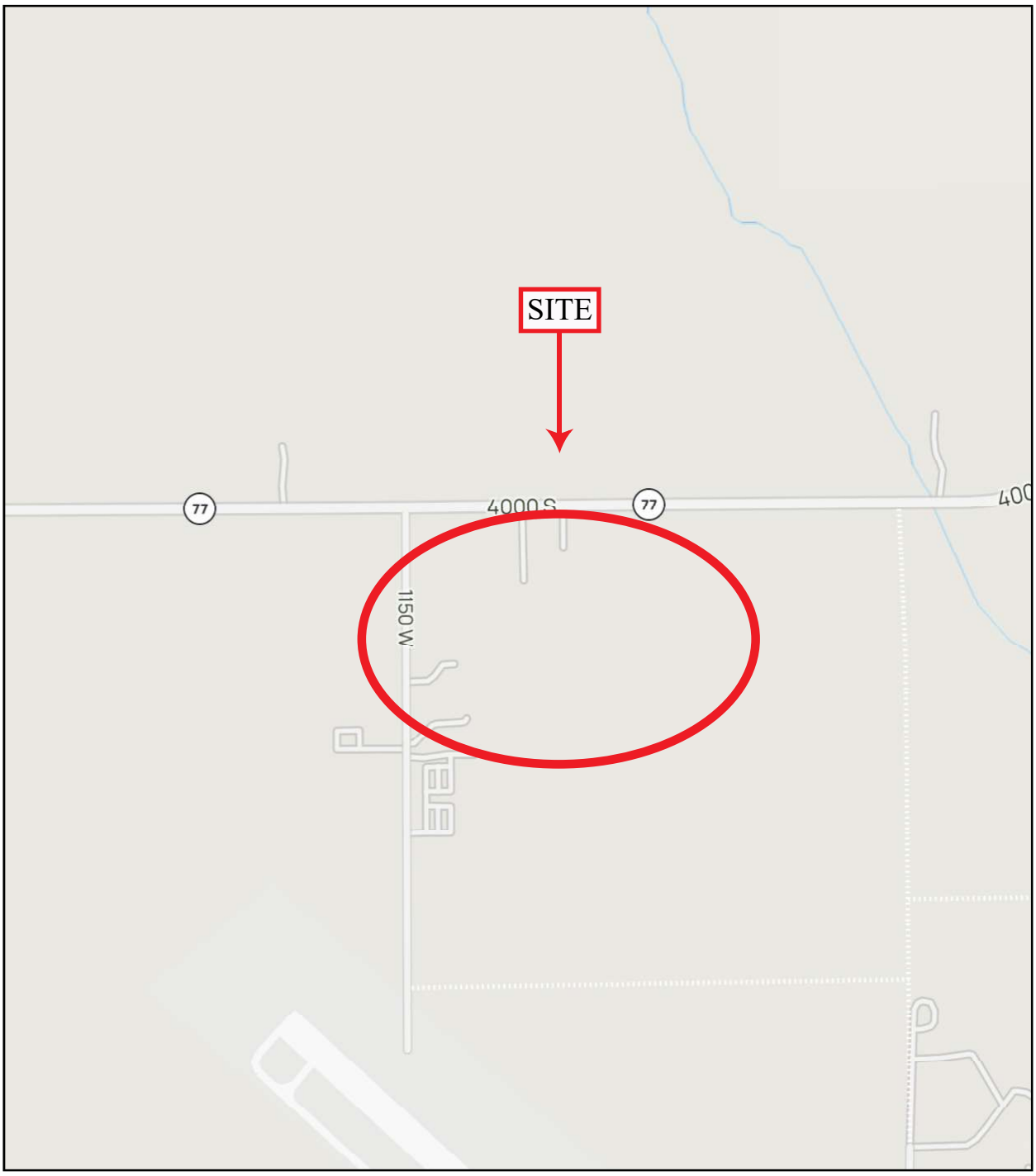
Alan D. Spilker, P.E.
State of Utah No. 334228
President/Senior Geotechnical Engineer

ADS:jmt

Encl. Figure 1, Vicinity Map
Figure 2, Site Plan
Figures 3A through 3O, Boring Logs
Figures 4A through 4H, Test Pit Logs
Figure 5, Key to Boring Log (USCS)
Figure 6, Key to Test Pit Log (USCS)

Addressee (email)

TURNER GROUP
JOB NO. 3898-001-24



0.1 0 0 0 0 0 0.1 0.2 MI 0.3

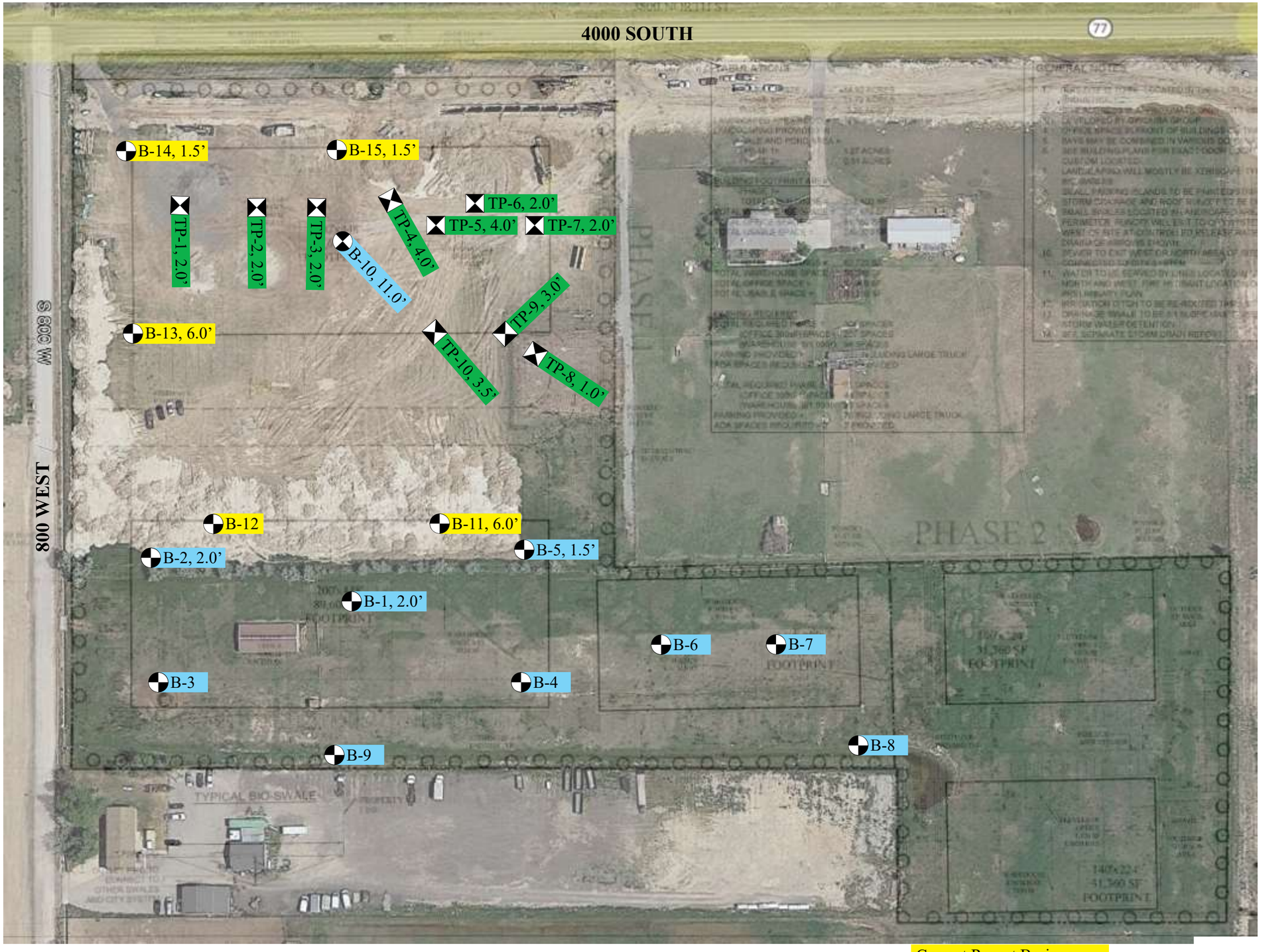
200 0 0 200 M 400

REFERENCE:
ALL TRAILS - NATIONAL GEOGRAPHIC TERRAIN
DATED 2024

FIGURE 1
VICINITY MAP

GSH

TURNER GROUP
JOB NO. 3898-001-24



REFERENCE:
ADAPTED FROM AERIAL PHOTOGRAPH
DOWNLOADED FROM GOOGLE EARTH
IMAGERY DATED 5/2022

APPROXIMATE SCALE IN FEET
100 0 100 200

KEY:
Boring No./Test Pit No., Fill Thickness (feet)

Current Report Borings
Current Report Test Pits
Borings from April 26, 2023

FIGURE 2
SITE PLAN

GSH

BORING LOG

Page: 1 of 2

BORING: B-1

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/23/23 | DATE FINISHED: 3/23/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 3.1' (4/5/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; brown									moist soft
▼	CL	SILTY CLAY with some fine sand and trace fine gravel; gray/light brown									moist very soft saturated
			5	0					33	13	
				0							
		grades light brown	10	0							
		grades fine sandy clay with silt; light reddish-brown	15	1							
		grades with some fine gravel; light brown	20	1							
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3A

GSH

BORING LOG

Page: 2 of 2

BORING: B-1

CLIENT: GWC Capital PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center DATE STARTED: 3/23/23 DATE FINISHED: 3/23/23

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
			25								
		grades with layers of fine sand up to 2" thick		0							
		grades with layers of fine sand up to 1" thick; light reddish-brown/ tan	30	0							
		grades fine sandy clay									
		grades with layers of fine to coarse sand up to 1/2" thick									
		grades fine sandy clay; light brown/red	35	0							
		grades red	40	0					37	19	
		grades light brown	45								
		grades gray and black		0							
		End of Exploration at 46.5'. Installed 1.25" diameter slotted PVC pipe to 46.5'.	50								

See Subsurface Conditions section in the report for additional information.

FIGURE 3A
(continued)

BORING LOG

Page: 1 of 1

BORING: B-2

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/24/23 | DATE FINISHED: 3/24/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 3.9' (4/5/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; brown									moist stiff
	CL	SILTY CLAY									moist very soft
		grades reddish-brown									
▼				0							
		grades fine sandy clay; gray/brown									saturated
		grades silty clay; reddish-brown	5	0		25.7					
		grades with layers of fine to coarse sand up to 1/2" thick; dark gray	10	0		26.6	94				
		End of Exploration at 11.0'. No groundwater encountered at time of drilling. Installed 1.25" diameter slotted PVC pipe to 11.0'.	15 20 25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3B

BORING LOG

Page: 1 of 1

BORING: B-3

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/24/23 | DATE FINISHED: 3/24/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 6.0' (3/24/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL	SILTY CLAY with major roots (topsoil) to 6"; brown									moist very soft
		grades gray/brown	5								
▼				0							saturated
		grades brown grades reddish-brown									
				1		32.1	89				
			10								
				0		22.1	96				
		grades fine sandy clay; light brown	15	0		26.7	84				
		End of Exploration at 16.0'.									
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3C

BORING LOG

Page: 1 of 1

BORING: B-4

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/27/23 | DATE FINISHED: 3/27/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 4.0' (3/27/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL	SILTY CLAY with major roots (topsoil) to 6"; brown									moist
				3		32.3	87				very moist
▼											saturated
			5								
		grades light brown									very soft
				0							
			10	0		37.8	86				
		End of Exploration at 11.0'. No groundwater encountered at time of drilling.									
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3D

BORING LOG

Page: 1 of 1

BORING: B-5

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/27/23 | DATE FINISHED: 3/27/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 5.0' (3/27/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 8"; light brown									moist stiff
	CL	SILTY CLAY brown									moist stiff
				12							
▼		grades reddish-brown	5	4							saturated soft
		grades fine sandy clay with some silty clay and organics	10	2		34.2	97				very soft
		grades light brown grades silty clay; red	15	3							soft
		End of Exploration at 16.0'. No groundwater encountered at time of drilling.	20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3E

BORING LOG

Page: 1 of 1

BORING: B-6

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/27/23 | DATE FINISHED: 3/27/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 5.1' (4/5/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL	SILTY CLAY with major roots (topsoil) to 6"; brown									moist medium stiff
		grades reddish-brown		6							
▽			5								saturated
		grades red									very soft
				0		30.4	95				
		grades light brown	10	0							
		grades red	15	3							soft
		End of Exploration at 16.0'. No groundwater encountered at time of drilling. Installed 1.25" diameter slotted PVC pipe to 16.0'.	20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3F

BORING LOG

Page: 1 of 1

BORING: B-7

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/27/23 | DATE FINISHED: 3/27/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 4.6' (4/5/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL	SILTY CLAY with major roots (topsoil) to 8"; brown									moist soft
		grades dark brown grades reddish brown		3							
▼			5								saturated
		grades fine sandy clay; light brown		2		27.8	91				very soft
		grades silty clay; red	10								
		grades light reddish-brown		0		34.2	85				
		grades with layers of fine sand up to 4" thick	15								
				2							
		grades fine sandy clay; red/light brown									5' heave soft
		grades silty clay; red	20	4							
		End of Exploration at 21.0'. No groundwater encountered at time of drilling. Installed 1.25" diameter slotted PVC pipe to 21.0'.	25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3G

BORING LOG

Page: 1 of 1

BORING: B-8

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/27/23 | DATE FINISHED: 3/27/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: Not Encountered (3/27/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL	SILTY CLAY with major roots (topsoil) to 4"; light brown									moist soft
		End of Exploration at 5.0'. No groundwater encountered at time of drilling.	5								
			10								
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3H

BORING LOG

Page: 1 of 1

BORING: B-9

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/27/23 | DATE FINISHED: 3/27/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: Not Encountered (3/27/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL	SILTY CLAY with major roots (topsoil) to 6"; light brown									moist soft
		End of Exploration at 5.0'. No groundwater encountered at time of drilling.	5								
			10								
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3I

BORING LOG

Page: 1 of 2

BORING: B-10

CLIENT: GWC Capital | PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center | DATE STARTED: 3/27/23 | DATE FINISHED: 3/27/23

LOCATION: Approximiately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: BD

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 5.7' (4/5/23) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with fine and coarse gravel; tan/light brown									moist soft
	CL	SILTY CLAY with some fine sand; brown									moist soft
		grades with organics; light brown	5								
▼				3							saturated
		grades light brown and red		0							very soft
			10	0							
		grades red grades fine sandy clay; light brown	15								
		grades with layers of fine sand up to 3" thick		2		29.9		57.2			
			20	4							
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3J

GSH

BORING LOG

Page: 2 of 2

BORING: B-10

CLIENT: GWC Capital PROJECT NUMBER: 3621-004-23

PROJECT: Proposed Spanish Fork South Office/Warehouse/Data Center DATE STARTED: 3/27/23 DATE FINISHED: 3/27/23

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
			25								
		grades with layers of fine to medium sand up to 6" thick		10		28.6		66.9			stiff
			30	6							medium stiff
		grades with fine sand; red									
		grades with layers of fine to medium sand up to 4" thick; light brown	35	4							
		grades red									
		grades light brown	40	9							stiff
		grades red grades tan/gray grades with layers of fine to medium sand up to 1" thick; gray grades fine sandy clay; dark gray	45	12							
		End of Exploration at 46.5'. Installed 1.25" diameter slotted PVC pipe to 46.5'.	50								

See Subsurface Conditions section in the report for additional information.

FIGURE 3J
(continued)

BORING LOG

Page: 1 of 1

BORING: B-11

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 8.0' (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL	SILTY CLAY, FILL with trace fine sand and fine gravel; brown									moist very stiff
				51							
			5								
				19		27.2	94				stiff
	CL	SILTY CLAY with trace fine sand; brown									very moist stiff
▼											saturated
											medium stiff
			10	10							
			15								
				2		31.8		73.8			soft
		End of Exploration at 16.5'. Installed 1.25" diameter slotted PVC pipe to 16.5'.									
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3K

BORING LOG

Page: 1 of 1

BORING: B-12

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 8.0' (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL	SILTY CLAY with trace fine sand; brown									very moist very stiff
				39							
			5								
				17							stiff
▼											saturated
		sand grades out	10	5		24.6	94				medium stiff
		End of Exploration at 11.5'. Installed 1.25" diameter slotted PVC pipe to 11.5'.									
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3L

BORING LOG

Page: 1 of 1

BORING: B-13

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 8.0' (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with fine and coarse gravel and fine to coarse sand; brown									moist very stiff
				43							
			5								
				17		20.5	100				stiff
	CL	SILTY CLAY with trace fine sand; brown									very moist stiff
▼											saturated
			10								
				8							medium stiff
		End of Exploration at 11.5'. Installed 1.25" diameter slotted PVC pipe to 11.5'.									
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3M

BORING LOG

Page: 1 of 1

BORING: B-14

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 5.5' (8/6/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with fine and coarse gravel; brown									dry medium stiff
	CL	SILTY CLAY with trace oxidation; brown									moist hard
				70							
▼			5	22							saturated very stiff
		grades with trace sand and oxidation									
			10	7							medium stiff
		sand and oxidation grade out									
			15	7		35.1		66.9			
		grades fine to coarse sandy clay with silt; brown/tan									
		End of Exploration at 16.5'. Installed 1.25" diameter slotted PVC pipe to 16.5'.	20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3N

BORING LOG

Page: 1 of 1

BORING: B-15

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

DRILLING METHOD/EQUIPMENT: 4-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 5.0' (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with trace fine and coarse gravel; light brown									dry stiff
	CL	SILTY CLAY brown									moist hard
				63		18.6	107				
▼		grades with trace fine sand	5	26							saturated very stiff
			10								
		grades with trace fine to coarse sand; gray/brown		7							medium stiff
		End of Exploration at 11.5'. Installed 1.25" diameter slotted PVC pipe to 11.5'.	15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3O

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-1

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 7/17/24 | DATE FINISHED: 7/17/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (7/17/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE TO COARSE SANDY CLAY, FILL with fine and coarse gravel; major roots (topsoil) to 6"; tan/brown								dry medium stiff
	CL	SILTY CLAY with trace fine gravel, trace fine sand, and trace organics; brown								moist medium stiff
		End of Exploration at 5.0'. No significant sidewall caving. No groundwater encountered at time of excavation.	5							
			10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4A

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-2

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 7/17/24 | DATE FINISHED: 7/17/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (7/17/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE SANDY CLAY, FILL with fine and coarse gravel and trace coarse silty sand; major roots (topsoil) to 6"; tan/brown								dry soft
	CL	SILTY CLAY with trace fine gravel, trace fine sand, and trace organics; brown								moist stiff
			5							
		End of Exploration at 5.5'. No significant sidewall caving. No groundwater encountered at time of excavation.								
			10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4B

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-3

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 6/18/24 | DATE FINISHED: 6/18/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (6/18/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE SANDY CLAY, FILL with fine and coarse gravel and trace coarse sand; major roots (topsoil) to 8"; tan/red								dry soft
	CL	SILTY CLAY with trace fine sand, trace fine gravel, and organics; brown								moist medium stiff
		End of Exploration at 4.0'. No significant sidewall caving. No groundwater encountered at time of excavation.	5							
			10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4C

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-4

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE SANDY CLAY, FILL with fine and coarse gravel; major roots (topsoil) to 6"; tan/brown								dry soft
	CL	SILTY CLAY with trace fine gravel and trace fine sand, brown	5							moist medium stiff
		End of Exploration at 5.5'. No significant sidewall caving. No groundwater encountered at time of excavation.	10 15 20 25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4D

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-5

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE TO MEDIUM SANDY CLAY, FILL with fine and coarse gravel and trace coarse silty sand; major roots (topsoil) to 6"; tan/brown								dry medium stiff
	CL	SILTY CLAY with trace fine gravel and trace organics; dark brown	5							moist medium stiff
		End of Exploration at 5.5'. No significant sidewall caving. No groundwater encountered at time of excavation.	10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4E

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-6

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE SANDY CLAY, FILL with fine and coarse gravel and trace coarse sand; major roots (topsoil) to 6"; brown/tan								dry soft
	CL	SILTY CLAY with trace fine sand, trace fine gravel, and organics; dark brown								moist medium stiff
		End of Exploration at 4.0'. No significant sidewall caving. No groundwater encountered at time of excavation.	5							
			10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4F

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-7

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE SILTY SANDY CLAY, FILL with fine and coarse gravel; major roots (topsoil) to 6"; brown/tan								dry medium stiff
	CL	SILTY CLAY with some fine sand; brown								slightly moist medium stiff
		End of Exploration at 3.0'. No significant sidewall caving. No groundwater encountered at time of excavation.	5							
			10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4G

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-8

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 5/8/24 | DATE FINISHED: 5/8/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (5/8/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE TO MEDIUM SANDY CLAY, FILL with fine and coarse gravel; major roots (topsoil) to 4"; brown/tan		◢						dry medium stiff
	CL	SILTY CLAY with trace fine gravel; organics; brown								moist medium stiff
				◢						
		End of Exploration at 4.5'. No significant sidewall caving. No groundwater encountered at time of excavation.	5							
			10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4H

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-9

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 7/17/24 | DATE FINISHED: 7/17/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (7/17/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE TO MEDIUM SANDY CLAY, FILL with fine and coarse gravel; major roots (topsoil) to 6"; tan/brown								dry medium stiff
	CL	SILTY CLAY with fine to coarse sand, trace fine gravel, and organics; brown	5							moist medium stiff
		End of Exploration at 5.0'. No significant sidewall caving. No groundwater encountered at time of excavation.	10 15 20 25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4G

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-10

CLIENT: Turner Group | PROJECT NUMBER: 3898-001-24

PROJECT: Proposed Spanish Fork Project | DATE STARTED: 7/17/24 | DATE FINISHED: 7/17/24

LOCATION: Approximately 800 West 4000 South, Spanish Fork, Utah | GSH FIELD REP.: JC

EXCAVATING METHOD/EQUIPMENT: Mini Excavator

GROUNDWATER DEPTH: Not Encountered (7/17/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL FILL	FINE TO MEDIUM SANDY CLAY, FILL with fine and coarse gravel and trace coarse sand; major roots (topsoil) to 6"; tan/brown								dry medium stiff
	CL	SILTY CLAY with trace fine to coarse sand, trace fine gravel, and organics; dark brown	5							moist medium stiff
		End of Exploration at 5.5'. No significant sidewall caving. No groundwater encountered at time of excavation.	10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4H

CLIENT: Turner Group
PROJECT: Proposed Spanish Fork Project
PROJECT NUMBER: 3898-001-24

KEY TO BORING LOG

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

COLUMN DESCRIPTIONS

① **Water Level:** Depth to measured groundwater table. See symbol below.

② **USCS:** (Unified Soil Classification System) Description of soils encountered; typical symbols are explained below.

③ **Description:** Description of material encountered; may include color, moisture, grain size, density/consistency,

④ **Depth (ft.):** Depth in feet below the ground surface.

⑤ **Blow Count:** Number of blows to advance sampler 12" beyond first 6", using a 140-lb hammer with 30" drop.

⑥ **Sample Symbol:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

⑦ **Moisture (%):** Water content of soil sample measured in laboratory; expressed as percentage of dryweight of

⑧ **Dry Density (pcf):** The density of a soil measured in laboratory; expressed in pounds per cubic foot.

⑨ **% Passing 200:** Fines content of soils sample passing a No. 200 sieve; expressed as a percentage.

⑩ **Liquid Limit (%):** Water content at which a soil changes from plastic to liquid behavior.

⑪ **Plasticity Index (%):** Range of water content at which a soil exhibits plastic properties.

⑫ **Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel. May include other field and laboratory test results using the following abbreviations:

CEMENTATION:

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

Moderately: Crumbles or breaks with considerable finger pressure.

Strongly: Will not crumble or break with finger pressure.

MODIFIERS:

Trace <5%

Some 5-12%

With > 12%

MOISTURE CONTENT (FIELD TEST):

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

Moist: Damp but no visible water.

Saturated: Visible water, usually soil below water table.

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

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

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

STRATIFICATION:

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

Occasional: One or less per 6" of thickness

Numerous; More than one per 6" of thickness

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Bulk/Bag Sample
- Standard Penetration Split Spoon Sampler
- Rock Core
- No Recovery
- 3.25" OD, 2.42" ID D&M Sampler
- 3.0" OD, 2.42" ID D&M Sampler
- California Sampler
- Thin Wall

WATER SYMBOL

Water Level

FIGURE 5

GSH

CLIENT: Turner Group
PROJECT: Proposed Spanish Fork Project
PROJECT NUMBER: 3898-001-24

KEY TO TEST PIT LOG

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

COLUMN DESCRIPTIONS

① **Water Level:** Depth to measured groundwater table. See symbol below.

② **USCS:** (Unified Soil Classification System) Description of soils encountered; typical symbols are explained below.

③ **Description:** Description of material encountered; may include color, moisture, grain size, density/consistency,

④ **Depth (ft.):** Depth in feet below the ground surface.

⑤ **Sample Symbol:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

⑥ **Moisture (%):** Water content of soil sample measured in laboratory; expressed as percentage of dryweight of

⑦ **Dry Density (pcf):** The density of a soil measured in laboratory; expressed in pounds per cubic foot.

⑧ **% Passing 200:** Fines content of soils sample passing a No. 200 sieve; expressed as a percentage.

⑨ **Liquid Limit (%):** Water content at which a soil changes from plastic to liquid behavior.

⑩ **Plasticity Index (%):** Range of water content at which a soil exhibits plastic properties.

⑪ **Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel. May include other field and laboratory test results using the following abbreviations:

CEMENTATION:

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

Moderately: Crumbles or breaks with considerable finger pressure.

Strongly: Will not crumble or break with finger pressure.

MODIFIERS:

Trace <5%

Some 5-12%

With > 12%

MOISTURE CONTENT (FIELD TEST):

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Saturated: Visible water, usually soil below water table.

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

STRATIFICATION:

DESCRIPTION	THICKNESS
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Layer	1/8" to 12"

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TYPICAL SAMPLER GRAPHIC SYMBOLS

- Bulk/Bag Sample
- Standard Penetration Split Spoon Sampler
- Rock Core
- No Recovery
- 3.25" OD, 2.42" ID D&M Sampler
- 3.0" OD, 2.42" ID D&M Sampler
- California Sampler
- Thin Wall

WATER SYMBOL

- Water Level

FIGURE 6

GSH