REPORT OF GEOTECHNICAL ENGINEERING SERVICES

New Commercial/Industrial Development
Turner Road SE
Salem, Oregon

Geotech Solutions Inc.

November 2, 2021

GSI Project: phelan-21-4-gi

Geotech Solutions Inc.

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REPORT OF GEOTECHNICAL ENGINEERING SERVICES
New Commercial/Industrial Development
Turner Road and 37th - 10-acre property, Salem, Oregon

As authorized, we are pleased to present our report of geotechnical engineering services for the proposed project. Based on information you provided we understand that the roughly 10-acre site is to be developed with single-story commercial tilt-up concrete buildings. Building loads are expected to be up to 200 kips for columns, 6 kips per foot for walls, and 500 psf for floors. Truck docks, pavement, and utilities are planned. The purpose of our work was to investigate the soil conditions and provide geotechnical engineering for design by others. Our specific scope of work included the following:

- Provide principal-level geotechnical project management including client communications, management of field and subcontracted services, report writing, analyses, and invoicing.
- Review previous reports, geologic maps and vicinity geotechnical information as indicators of subsurface conditions.
- Complete a site reconnaissance to observe surface features relevant to geotechnical issues, such as topography, vegetation, presence and condition of springs, exposed soils and rock, and evidence of previous grading.
- Identify exploration locations and complete a "one call" public locate, and a private utility locate for locatable utilities (limited to metallic or with tracer wire). As-built utilities are also requested from the owner. Un-locatable utilities are the responsibility of the owner, and our scope does not include any related utility repair.
- Explore subsurface conditions with the following:
    - Advance 4 CPT probes to depths of up to 25 feet or refusal (shallow refusal expected), including ppd testing in each.
    - Excavate up to 12 test pits to depths of up to 12 feet or refusal.
- Classify and sample materials encountered and maintain a detailed log of the explorations.
- Complete same day falling head infiltration testing in two test pits.
- Determine the moisture content of selected samples obtained from the explorations and complete soil classification testing as necessary.
- Provide recommendations for earthwork including site preparation, reuse of any existing fill in place or stabilization such as geogrid or cement amending, seasonal site material usage, surface stabilization, compaction criteria, utility trench backfill, and the need for subsurface drainage.
- Evaluate site liquefaction potential and estimate site deformations and provide qualitative means to address unsuitable deformations if needed.
- Provide recommendations for shallow foundations including suitable soils, stabilization, bearing pressures, sliding coefficient, and a seismic site class.
- Provide recommendations for slab support, including a subgrade modulus, underslab rock thickness

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and materials, and the need for stabilization, and underslab drainage if needed.
- Provide recommendations for building and site cantilevered retaining walls, including lateral earth pressures, foundations, resistance to lateral loads, backfill, and drainage.
- Provide recommendations for pavements including subgrade preparation and stabilization, and base rock and asphalt concrete and portland cement concrete thicknesses.
- Provide a written report summarizing the results of our geotechnical evaluation.

SITE OBSERVATIONS AND CONDITIONS

Surface Conditions

The property is located in Salem, Oregon on Turner Road SE on the undeveloped roughly 10-acre parcel SW of the intersection with 37th Avenue SE in Salem, Oregon. Mixed industrial developments are present in the vicinity, with a railroad to the southwest. Aerial photos indicate the site was heavily treed in 2000, with clearing and trails present in 2003 and the adjacent storage development present in 2005. In 2009 localized fill piles and haul roads were present, with the northwest graveled entry area present in 2011 along with a bulldozer in 2013 and extensive end dumped piles. The fill expanded through 2015 to include the northern roughly 1/3 of the property, and by 2017 nearly all areas were filled expect a few low south-central areas with few obvious changes by 2021. Throughout the preceding time the gravel pits north of 37th abutting Mill Creek were active in different portions.

Presently the site is relatively flat with fill with a few low areas in the south-central portion that also are covered in fill. Vegetation is sparse, with exposed soils consisting of silt and gravelly silt of visually different origins (alluvial silt, reddish brown silt with some clay derived from severely weathered basalt, mixed silty angular gravel, etc.).

Subsurface Conditions

Subsurface conditions at the site were explored on October 28 by excavating 12 test pits to depths of up to 12 feet and advancing 4 CPT's to depths of up to 11 feet. Subsurface conditions generally included soft surface gravelly silt fill to depths of 2 to 4 feet, underlain by medium stiff gray silt fill that was generally 2-3 feet thick and up to 6 feet thick. The site fill averaged 5.2 feet in the test pits, with the deepest fill depth from grade at 8 feet in TP-6 near the site center and the shallowest 3 feet in TP-4 and TP-7 and P-3. TP-11 in a low area had only silt fill to 4 feet deep. Moisture contents in the fill ranged from 16% to 32%.

Under the fills we generally encountered a thin layer of dense sand overlying dense gravels and cobbles that presented refusal in the CPT's. Tip resistance in the native sands and gravels generally ranged from 150 tsf to over 400 tsf. Tip resistance in the fills ranged widely from 5-80 tsf in the silty soils and over 100 tsf for a few feet of dense fill in P-1.

Detailed test pit and CPT logs and results of moisture content testing are attached.

We observed rapid ground water seepage at depths of 7 to 10 feet in all test pits, with saturated conditions back calculated at 4-6 feet in the CPT's. Higher ground water is expected later in the wet season, and near the surface in a perched condition in silty soils. Nearby gravel pits show shallow ground water.

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Infiltration testing was conducted in test pit TP-2 and TP-10 at a depth of 4 feet in the fill. Deeper tests in the gravel were not possible due to seepage. After an initial saturation, the test pits were flooded to a depth of one foot and allowed to infiltrate. Falling head test measurements were taken, and the raw unfactored infiltration rate was 0.1 to 0.2 $in^3/in^2/hr$.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on the results of our explorations, laboratory testing, and engineering analyses, it is our opinion that the project can be developed following these report recommendations. The proposed structure, with the preceding loads, can be supported on shallow spread footings bearing on native soils beneath the fill and till zone or on stabilized reconstructed fill. Specific geotechnical recommendations are provided in the following sections.

Site Preparation and Stabilization/Re-use of Existing Fill

Prior to earthwork construction, the site must be prepared by removing any existing structures, utilities, and vegetation as well as topsoil/root zones and existing fill. Based on the fill consistency and placement methods, the fills were not prepared as structural fill. The fills are not suitable for support of buildings, pavements, or hardscaping, and their presence is a settlement and damage risk, not to mention a constructability issue, for the planned development. Therefore, we see a few practical alternatives to dealing with the fill which should be included in a cost comparison, which include the following:

- Remove the fill and reinstall it as structural fill. This is most cost effective in dry conditions and would involve multiple sequences of handling, including excavation/removal, drying the fill, and sequentially re-installing it in lifts as structural fill. The fill averaged 5.2 feet in thickness and ranged from 3 to 8 feet in our explorations. The soils observed are suitable for a dry weather process, with a noted extended drying period expected the reddish-brown silt that has some clay content. Some fills may need to be removed/excluded, as the explorations were limited to 16 locations and trace organics were present. A hybrid of this approach would be to cement treat and place the fills, after removing them until only a 1.5 foot mixing depth is left, and amending in place, then rebuilding the fill in cement treated lifts. This would work both in the dry season and in the wet season during light rain or non-rainfall conditions, and would reduce stabilization and foundation costs, as well as pavement thickness costs.
- Use compacted aggregate piers to stabilize the fill under footings and slabs, and cement treat the fill surface in pavement and hardscaping areas. This may be more expensive but is versatile as it can also be done in any season and would also reduce fill processing and pavement thickness costs.

Other methods may also be suitable, such as in wet conditions remove and replace the fill with rock fill, but this is expected to be more expensive.

Root balls from trees and shrubs may extend several feet and grubbing operations can cause considerable subgrade disturbance. All disturbed material must be removed to undisturbed subgrade and backfilled with structural fill. In general, roots greater than one inch in diameter must be removed as well as areas of concentrated smaller roots. Any excavation resulting from the aforementioned preparation must be brought back to grade with structural fill.

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Although tamped upon backfilling, the test pit backfill is soft, and settlement and soft soils can be expected at those locations. We recommend that these relatively uncompacted soils be removed from the test pits located within the proposed paved or hardscaped areas to a depth of 3.0 feet below finished subgrade. The resulting excavation must be brought back to grade with structural fill. If located beneath a building, the uncompacted soils must be completely removed and replaced with structural fill.

Stabilization and Soft Areas - After stripping, we must be contacted to evaluate the exposed subgrade below the fill or the remaining fill that is to be cement amended. This evaluation can be done by proof rolling in dry conditions or probing during wet conditions. Soft areas must be repaired by over-excavating the soft soil, but only to a maximum depth of 2 feet, and installing a separation geosynthetic such as a Propex Geotex 801 or equivalent. Areas that remain soft at the base of the maximum 2-foot excavation may also require a geogrid over the fabric, such as a Tensar Triax TX140 or other suitable approved punched and drawn geogrid. Well graded, angular ¾"-0 or 1.5"-0 crushed rock backfill with less than 6% fines compacted as structural fill must be used to bring the aforementioned areas to-grade.

Working Blankets and Haul Roads - Construction equipment must not operate directly on the silt or silty subgrade in the wet season, as it is susceptible to disturbance and softening. Our dump truck and trailer got stuck in moderately wet conditions in late October. Only in dry late summer conditions do we expect the surface can be trafficked by construction equipment with only localized disturbance. Rock working blankets and haul roads placed over a geosynthetic in a thickened advancing pad can be used to protect subgrades. We recommend that sound, angular, pit run or crushed rock with no more than 6 percent passing a #200 sieve be used to construct haul roads and working blankets over the preceding stabilization fabric. Working blankets must be at least 12 inches thick, and haul roads at least 18 inches thick. These can be reduced to 9 and 12 inches, respectively, with the use of the preceding separation fabric and geogrid. The preceding rock thicknesses are the minimum recommended. Subgrade protection is the responsibility of the contractor and thicker sections may be required based on subgrade conditions during construction and type and frequency of construction equipment.

Earthwork

Fill – After stripping, on-site inorganic silt fill can be re-used for structural fill if properly moisture conditioned and free of deleterious materials, per the preceding options. Use of any soils with more than 6% fines will not be feasible during wet conditions unless cement amended. As existing fills are uncontrolled and undocumented, with no observation of compaction equipment, they require reprocessing as structural fill. In fill is greater than one foot thick it is too deep to recompact in place full depth and requires reducing to roughly one foot thick to rip and recompact in dry weather conditions. In dry late summer conditions, the fills may be near optimum moisture or even need moisture added for compaction. Once moisture contents are within 3 percent of optimum, the material must be compacted to at least 92 percent relative to ASTM D1557 (modified proctor) using a tamping foot type compactor Fill must be placed in lifts no greater than 12 inches in loose thickness. In addition to meeting density specifications, fill will also need to pass a wheel roll using a loaded dump truck, water truck, or similar size equipment.

In wet conditions, existing fill and till zone materials are unsuitable for re-use and must be completely removed and replaced or cement amended. Imported wet condition fill must be imported granular soil

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with less than 6 percent fines, such as clean crushed or pit run rock. This material must also be compacted to 95 percent relative to ASTM D1557. Cement amendment requires an experienced contractor using specialty spreading and mixing equipment. Typically, 5-6% cement in one or two mixing passes is used for an amendment (i.e. mix) depth of 12-18 inches (a soil weight of 100pcf is typically used for the quantity calculation). Due to the fill depth and content, we expect a need for 18-inch amendment depth and 5% cement. However, the depth and quantities can vary based on moisture and organic contents, plasticity, and remaining existing fill depth. Compaction and grading of amended soils must be completed within 4 hours of mixing, and the amended soil must be allowed to cure for 4 days prior to trafficking. Generally, 50 percent of mixed particles should pass a No. 4 sieve.

The permeability of amended soil is extremely low. The surface of amended soils in building and pavement areas must therefore be sloped at a minimum of 0.5 percent to prevent collection of surface water during construction. Amended soils must be removed from all landscape areas prior to planting

Trenches – Caving is expected in all trenches, and even with the required shoring, contingencies must be included in the budget and schedule for increased excavation and backfill. Flowing conditions may also occur if seepage is present. Shoring of utility trenches will be required for depths greater than 4 feet and where groundwater seepage or sloughing is present. We recommend that the type and design of the shoring system be the responsibility of the contractor, who is in the best position to choose a system that fits the overall plan of operation.

Depending on the excavation depth and amount of groundwater seepage, dewatering may be necessary for construction of underground utilities. Flow rates for dewatering are likely to vary depending on location, soil type, and the season during which the excavation occurs, and may be extremely high. The dewatering systems, if necessary, must be capable of adapting to variable flows.

Pipe bedding must be installed in accordance with the pipe manufacturers' recommendations. If groundwater is present in the base of the utility trench excavation, we recommend over excavating the trench by 12 to 18 inches and placing trench stabilization material in the base. Trench stabilization material must consist of well-graded, crushed rock or crushed gravel with a maximum particle size of 4 inches and be free of deleterious materials. The percent passing the U.S. Standard No. 200 Sieve must be less than 5 percent by weight when tested in accordance with ASTM C 117.

Trench backfill above the pipe zone must consist of well graded, angular crushed rock or sand fill with no more than 7 percent passing a #200 sieve. Trench backfill must be compacted to 92 percent relative to ASTM D-1557, and construction of hard surfaces, such as sidewalks or pavement, must not occur within one week of backfilling.

Infiltration

Infiltration is not recommended due to the low rates and shallow seasonal ground water.

Seismic Design

General - In accordance with the International Building Code (IBC) as adapted by State of Oregon Structural Specialty Code (SOSSC) and based on our explorations and experience in the site vicinity, the subject project must be evaluated using the parameters associated with Site Class C.

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Liquefaction - Liquefaction occurs in loose, saturated, granular soils. Strong shaking, such as that experienced during earthquakes, causes the densification and the subsequent settlement of these soils. The site's underlying dense gravels, and in some explorations overlying dense sand, are not susceptible to liquefaction, and the risk of structurally damaging deformations from liquefaction at the site is low.

Shallow Foundations

Based on the provided information regarding building type and anticipated structural loads as previously stated, the proposed structure can be supported on shallow spread foundations bearing beneath any fill or till zone on the native medium stiff to stiff silt, dense gravels, or on properly constructed structural fill bearing on these units. Footings must be embedded at least 18 inches below the lowest adjacent, exterior grade. Such footings can be designed for an allowable net bearing pressure of 3,000 psf. The preceding bearing pressure can be increased to 5,000 psf for temporary wind and seismic loads (this is controlled by temporary bearing capacity versus long term compression). Continuous footings must be no less than 18 inches wide, and pad footings must be no less than 24 inches wide. Properly founded footings are expected to settle less than a total of 1 inch, with less than ½ inch differentially.

Resistance to lateral loads can be obtained by a passive equivalent fluid pressure of 350 pcf against suitable footings, ignoring the top 12 inches of embedment, and by a footing base friction coefficient of 0.35. Each of these has a factor of safety of 1.5 for less than one inch of deflection.

Excavated footing subgrades in gravel may require recompaction of the surface if the materials are loosened during excavation. If footing construction is to occur in wet conditions, a few inches of crushed rock placed at the base of footings would reduce subgrade disturbance and provide a more uniform and clean working surface for rebar placement.

Slabs

Floor slab loads up to 500 psf are expected to induce less than one-half inch of settlement. A minimum of six inches of clean, angular crushed rock with no more than 5 percent passing a #200 sieve is recommended for under slab rock, but this may need to be thicker in the wet season per the *Working Blanket* sections described herein. A modulus of subgrade reaction of 100 pci may be used for slabs on the medium stiff silt covered with at least 6 inches of crushed rock. Prior to slab rock placement the subgrade will need to be evaluated by us by probing or observing a proof rolling using a fully loaded truck. Under slab rock must be compacted to 92 percent compaction relative to ASTM D1557 and must be proof rolled as well. In addition, any areas contaminated with fines must be removed and replaced with clean rock. If the base rock is saturated or trapping water, this water must be removed prior to slab placement.

Some flooring manufacturers require specific slab moisture levels and/or vapor barriers to validate the warranties on their products. A properly installed and protected vapor flow retardant can reduce slab moistures. If a vapor flow retardant is used, care must be taken not to trap moisture within the overlying granular fill and floor slab concrete.

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Retaining Walls

General - The following recommendations are based on the assumptions that: (1) Wall backfill consists of level, drained, angular, granular material, (2) Walls are concrete cantilever-type walls and are less than 5 feet in height, and (3) No surcharges such as stockpiled soil, equipment, or footings are located within 10 feet of the wall.

Walls restrained against rotation must be designed using an equivalent fluid pressure of 50 pcf. Walls not restrained against rotation must be designed using an equivalent fluid pressure of 29 pcf. These forces can be resisted by passive pressure at the toe of the wall using an equivalent fluid pressure of 350 pcf (this must exclude the top 12 inches of embedment) and friction along the base using a friction coefficient of 0.35. Walls less than 6 feet high will not be subject to additional seismic loading in the site silt.

Footings for retaining walls must be designed as recommended in the ***Shallow Foundations*** section of the report. Footings and floor slabs located above retaining walls and within a zone defined by a plane extending upward at 1H:1V from the bottom of the wall will increase lateral pressures on the wall. We must be consulted for lateral pressure and footing support issues if footings or other surcharge loads are located within this zone.

Backfill - Retaining walls must be backfilled with clean, imported, granular soil with less than 6 % fines, such as clean sand or rock. This material must also be compacted to a minimum of 92 % relative to ASTM D1557 (modified proctor). Within 3 feet of the wall, backfill must be compacted to not more than 90 % relative to ASTM D1557 using hand-operated equipment.

Retaining structures typically rotate and displace roughly 1% of the wall height during development of active pressures behind the wall. We therefore recommend that construction of improvements adjacent to the top of the walls greater than 5 feet high be delayed until approximately two weeks after wall construction.

Drainage

General - We recommend installing perimeter foundation drains around all exterior foundations, particularly where moisture sensitive floor coverings are planned. These drains can be eliminated if a vapor barrier is used over suitably clean under slab rock and poured directly on, and if the slab is higher than current grades and surrounding finished grades within 10 feet of the building. In all cases the surface around building perimeters must be sloped to drain away from the building. As stated previously, our retaining wall recommendations are based on drained conditions. All retaining walls must include a drain constructed as described in the following section.

Foundation and Wall Drains - Foundation and retaining wall drains must consist of a two-foot-wide zone of drain rock encompassing a 4-inch diameter perforated pipe, all enclosed with a non-woven filter fabric. The drain rock must have no more than 2 % passing a #200 sieve and must extend to within one foot of the ground surface. The geosynthetic must have an AOS of a #70 sieve, a minimum permittivity of 1.0 sec^{-1}, and a minimum puncture resistance of 80 pounds (such as Propex Geotex 601 or equivalent). Alternatively, a composite drain board such as an Amoco 500/520 could be used. In both

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cases, one foot of low permeability soil (such as the on-site silt) must be placed over fabric at the top of the drain to isolate the drain from surface runoff.

Pavement

Asphalt Concrete – At the time of this report we did not have specific information regarding the type and frequency of expected traffic. We therefore developed new asphalt concrete pavement thicknesses for areas exposed to passenger vehicles only and areas exposed to up to 15, 30, 45, and 60 trucks per day based on a 20-year design life with mixed 3-to 5-axle trucks. Traffic volumes can be revised if specific data is available.

Our pavement analyses are based on AASHTO methods and subgrade of structural fill, or undisturbed medium stiff or better native silt having a resilient modulus of 6,000 psi and prepared as recommended herein. We have also assumed that roadway construction will be completed during an extended period of dry summer weather. The results of our analyses based on these parameters are provided in the following table.

Traffic	**ESAL's**	**AC (inches)**	**CR (inches)**
Passenger Vehicle Only	-	3	6*
Up to 15 Trucks Per Day	123k	4	9*
Up to 30 Trucks Per Day	246k	4.5	10*
Up to 45 Trucks Per Day	369k	5	10*
Up to 60 Trucks Per Day	492k	5	12*

*The thicknesses listed in the preceding table (and PCC table) are the minimum acceptable for construction during an extended period of dry weather in the dry season. Increased rock thicknesses and stabilization will be required for construction in working blankets and hauls roads and during wet conditions per the ***Stabilization*** section in this report. If the pavement subgrade is suitably cement amended, 4 inches of crushed rock is suitable for up to 45 trucks, and 6 inches for 60 trucks.

Crushed rock must conform to ODOT base rock standards and have less than 6 percent passing the #200 sieve unless otherwise approved by the geotechnical engineers review of samples. Asphalt concrete must be compacted to a minimum of 91 percent of a Rice Density.

Portland Cement Concrete - We developed PCC pavement thicknesses at the site for the assumed one-way traffic levels as shown in the table below. Each of these sections is based on AASHTO methods with no reduction for wander and a composite modulus of subgrade reaction of 350 pci (AASHTO Figure 3.3 with M_r = 6,000 psi and 6 inches crushed rock base). Other parameters include 4,000 psi compressive strength portland cement concrete (PCC), and plain jointed concrete ***without*** load transfer devices or tied concrete shoulders. PCC pavements over trench backfill should not be placed within one week of fill installation unless survey data indicates that settlement of the backfill is complete.

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Traffic	ESAL's	PCC (inches)	CR (inches)
Up to 15 Trucks Per Day	123k	7	6*
Up to 30 Trucks Per Day	246k	8	6*
Up to 45 Trucks Per Day	369k	8.5	6*
Up to 60 Trucks Per Day	492k	9	6*

Subgrade Preparation - The pavement subgrade must be prepared in accordance with the ***Earthwork*** *and* ***Site Preparation*** recommendations presented in this report. All pavement subgrades must pass a wheel roll prior to paving. Soft areas must be repaired per the preceding ***Stabilization*** section.

LIMITATIONS AND OBSERVATION DURING CONSTRUCTION

We have prepared this report for use by Phelan MJD2, LLC and the design and construction teams for this project only. The information herein could be used for bidding or estimating purposes but must not be construed as a warranty of subsurface conditions. We have made observations only at the aforementioned locations and only to the stated depths. These observations do not reflect soil types, strata thicknesses, water levels or seepage that may exist between observations. We must be consulted to observe all foundation bearing surfaces, subgrade stabilization, proof rolling of slab and pavement subgrades, installation of structural fill, subsurface drainage, and cut and fill slopes. We must be consulted to review final design and specifications in order to see that our recommendations are suitably followed. If any changes are made to the anticipated locations, loads, configurations, or construction timing, our recommendations may not be applicable, and we must be consulted. The preceding recommendations must be considered preliminary, as actual soil conditions may vary. In order for our recommendations to be final, we must be retained to observe actual subsurface conditions encountered. Our observations will allow us to interpret actual conditions and adapt our recommendations if needed.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty, expressed or implied, is given.

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We appreciate the opportunity to work with you on this project and look forward to our continued involvement. Please contact us if you have any questions.

Sincerely,

Don Rondema, MS, PE, GE
Principal

Attachments –
Site Plan, Guidelines for Classification of Soil, Exploration Logs, Moisture Contents

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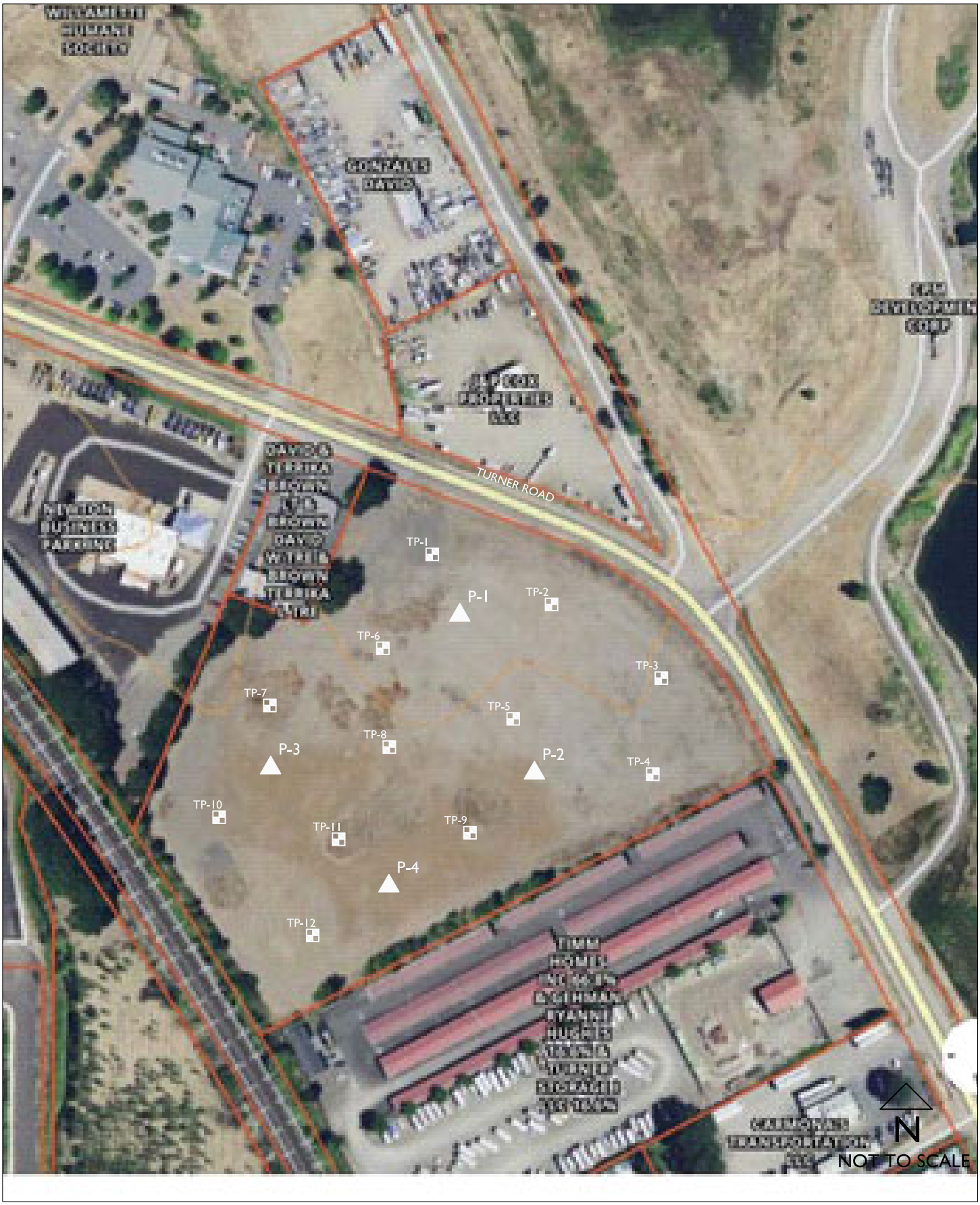

BASE PHOTO FROM ONXMAPS

Geotech Solutions Inc.

SITE PLAN

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GUIDELINES FOR CLASSIFICATION OF SOIL

Description of Relative Density for Granular Soil	
Relative Density	**Standard Penetration Resistance (N-values) blows per foot**
very loose	0 - 4
loose	4 - 10
medium dense	10 - 30
dense	30 - 50
very dense	over 50

Description of Consistency for Fine-Grained (Cohesive) Soils		
Consistency	**Standard Penetration Resistance (N-values) blows per foot**	**Torvane Undrained Shear Strength, tsf**
very soft	0 - 2	less than 0.125
soft	2 - 4	0.125 - 0.25
medium stiff	4 - 8	0.25 - 0.50
stiff	8 - 15	0.50 - 1.0
very stiff	15 - 30	1.0 - 2.0
hard	over 30	over 2.0

Grain-Size Classification	
Description	**Size**
Boulders	12 - 36 in.
Cobbles	3 - 12 in.
Gravel	¼ - ¾ in. (fine)
	¾ - 3 in. (coarse)
Sand	No. 200 - No. 40 Sieve (fine)
	No. 40 - No. 10 sieve (medium)
	No. 10 - No. 4 sieve (coarse)
Silt/Clay	Pass No. 200 sieve

Modifier for Subclassification	
Adjective	**Percentage of Other Material In Total Sample**
Clean/Occasional	0 - 2
Trace	2 - 10
Some	10 - 30
Sandy, Silty, Clayey, etc.	30 - 50

Test Pit #	Depth (ft)	Soil Description

Explorations completed on October 27, 2021 with a John Deere 310E Backhoe (Approx. 15,000 pounds).

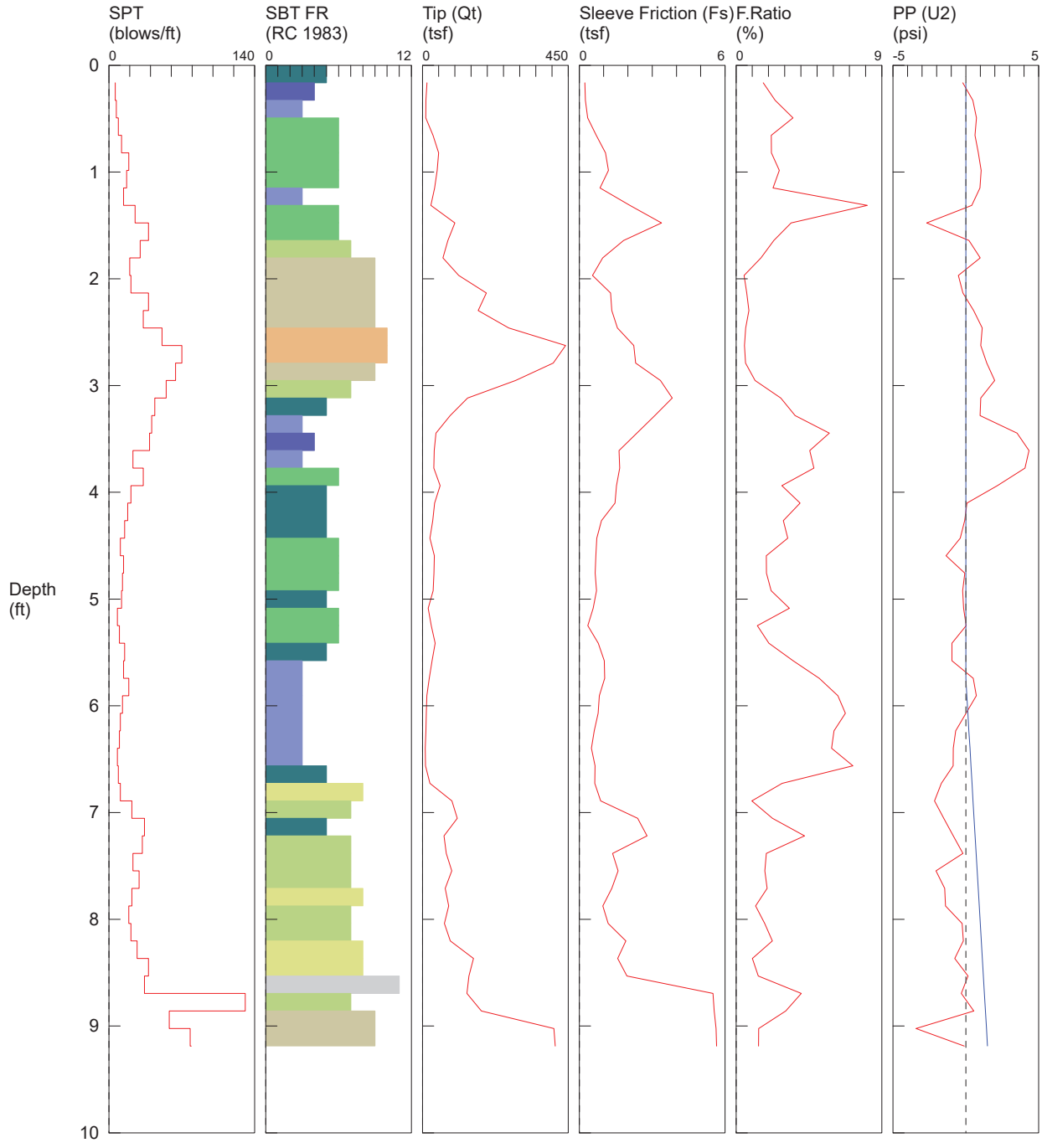
TP-1		**Location:** NW portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 3	Soft, gravelly SILT FILL; moist to wet.
	3 – 6	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	6 – 8	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	8 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 8-12'.
TP-2		**Location:** N portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 3	Soft, gravelly SILT FILL; moist to wet.
	3 – 6	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	6 – 12	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
		No caving. Rapid seepage 8-12'. Open hole falling head infiltration at 6' .
TP-3		**Location:** NE portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 3	Soft, gravelly SILT FILL; moist to wet.
	3 – 5	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	5 – 12	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
		No caving. No seepage.
TP-4		**Location:** NE portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 3	Soft, gravelly SILT FILL; moist to wet.
	3 –5	Medium stiff, brown/orange SILT, with trace gravels and cobbles; moist.
	5 – 8	Dense, brown GRAVELS AND COBBLES, with some silt and trace coarse sand; moist.
	8 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 8-12'.

Test Pit #	Depth (ft)	Soil Description
TP-5		**Location:** Central portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 4	Soft, gravelly SILT FILL; moist to wet.
	4 – 5	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	5 –7	Dense, light brown CEMENTED SAND; moist.
	7 – 9	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	9 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 9-12'.
TP-6		**Location:** W portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 2	Soft, gravelly SILT FILL; moist to wet.
	2 – 8	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	8 – 10	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	10 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 10-12'.
TP-7		**Location:** W portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 1	Soft, gravelly SILT FILL; moist to wet.
	1 – 3	Medium stiff, brown SILT FILL, with some gravels and trace clay; moist.
	3 – 8	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	8 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 8-12'.
TP-8		**Location:** Central portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 3	Soft, gravelly SILT FILL; moist to wet.
	3 – 7	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	7 – 10	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	10 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 10-12'.

Test Pit #	Depth (ft)	Soil Description
TP-9		**Location:** SE portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 3	Medium stiff, brown/red SILT FILL, with some gravel; moist.
	3 – 6	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	6 – 9	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	9 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 9-12'.
TP-10		**Location:** SW portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 2	Soft, gravelly SILT FILL; moist to wet.
	2 – 4	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	4 – 10	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	10 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 10-12'.
TP-11		**Location:** S portion of site in lower area 3 feet down from adjacent.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 4	Soft, brown SILT FILL, with trace gavel and trace clay; moist.
	4 – 7	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	7 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 7-12'.
TP-12		**Location:** SE portion of site.
		Surface conditions: Short grass, exposed gravel and dirt.
	0 – 2	Medium stiff, brown/red SILT FILL, with some gravel; moist.
	2 – 3	Soft, gravelly SILT FILL; moist to wet.
	3 – 5	Medium stiff, dark gray SILT FILL, with some gravel and trace organic content; moist.
	5 – 7	Dense, brown GRAVELS AND COBBLES, with some silt; moist.
	7 – 12	Very dense, GRAVELS AND COBBLES, with trace silt; wet.
		No caving. Rapid seepage 7-12'.

Geotech Solutions / P-1 / 4295 Turner Rd SE Salem

OPERATOR: OGE DMM
CONE ID: DDG1615
HOLE NUMBER: P-1
TEST DATE: 10/28/2021 8:51:31 AM
TOTAL DEPTH: 9.186 ft

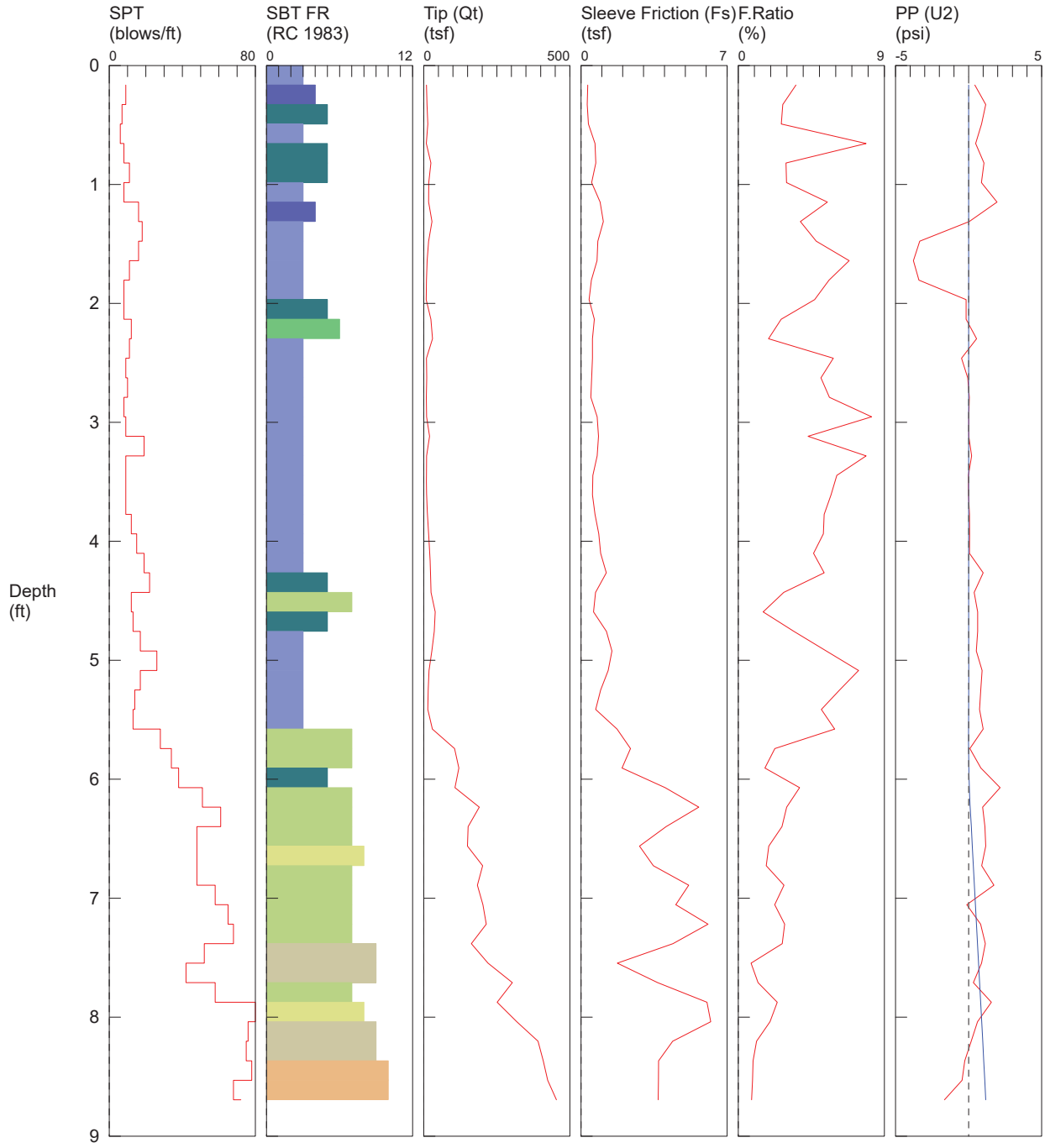


1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

Geotech Solutions / P-2 / 4295 Turner Rd SE Salem

OPERATOR: OGE DMM
CONE ID: DDG1615
HOLE NUMBER: P-2
TEST DATE: 10/28/2021 9:42:52 AM
TOTAL DEPTH: 8.694 ft

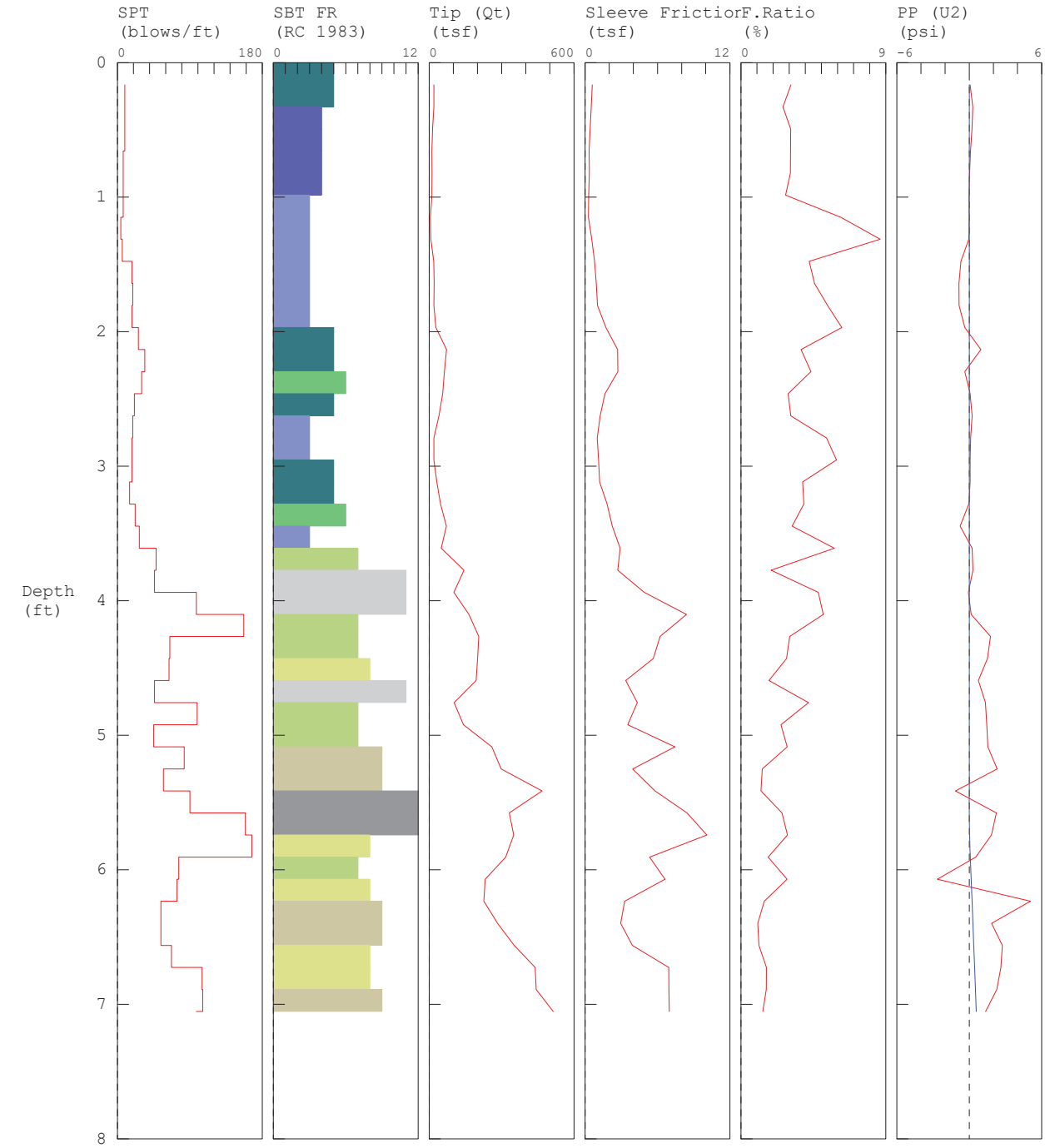


1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

Geotech Solutions / P-3 / 4295 Turner Rd SE Salem

OPERATOR: OGE DMM
CONE ID: DDG1615
HOLE NUMBER: P-3
TEST DATE: 10/28/2021 11:16:07 AM
TOTAL DEPTH: 7.054 ft

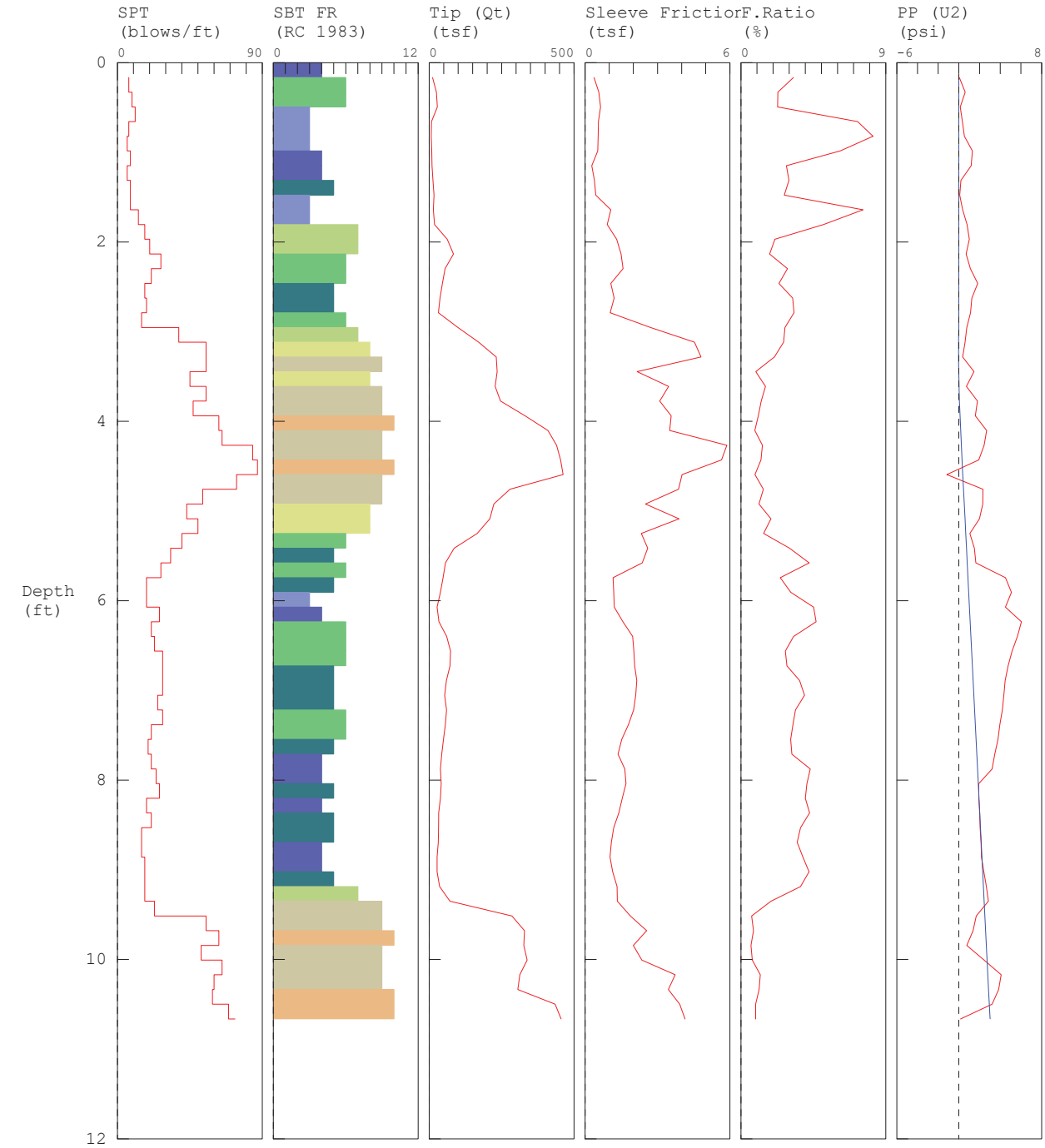


1 sensitive fine gra
2 organic materia
3 clay
4 silty clay to cl
5 clayey silt to silt
6 sandy silt to claye
7 silty sand to sandy
8 sand to silty sa
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

Geotech Solutions / P-4 / 4295 Turner Rd SE Salem

OPERATOR: OGE DMM
CONE ID: DDG1615
HOLE NUMBER: P-4
TEST DATE: 10/28/2021 10:36:48 AM
TOTAL DEPTH: 10.663 ft



1 sensitive fine gra
2 organic materia
3 clay
4 silty clay to cl
5 clayey silt to silt
6 sandy silt to claye
7 silty sand to sandy
8 sand to silty sa
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

Exploration	Depth, ft	Moisture Content
TP-1	4.0	23%
TP-1	7.0	17%
TP-2	4.0	16%
TP-3	3.0	18%
TP-4	4.0	26%
TP-4	10.0	25%
TP-5	6.0	29%
TP-5	8.0	35%
TP-6	5.0	32%
TP-7	2.0	20%
TP-8	4.0	21%
TP-9	7.0	19%
TP-10	4.0	16%
TP-10	12.0	25%
TP-11	3.0	29%
TP-12	2.0	27%