ARCADIS | IBI GROUP
421 Fayetteville Street, Suite 1609
Raleigh NC 27601 United States
tel 919 851 4211
ibigroup.com

ADDENDUM
BUILDING BID

Addendum No.: **2** Date of this Addendum: **October 19, 2022**

Re: **Town of Rolesville Public Works Facility**
805 E. Young Street
Rolesville, NC 27571
IBI Group # 135941

To: Prospective Bidders,

Bid Opening Date:	**October 25, 2022**
Bid Opening Time:	**3:00 pm**
Bid Receipt Location:	**Rolesville Town Hall,** **502 Southtown Circle, Rolesville, NC 27571**

This Addendum shall and does hereby become a part of the construction documents for the above Project. Contractors submitting a bid shall be responsible for ensuring that they are properly apprised of the contents of this Addendum. The clarifications or modifications in this Addendum shall be incorporated into the Work of the referenced Project and all associated costs shall be accounted for in the General Contractor's lump sum bid. All information contained in this Addendum shall supersede and take precedence over any conflicting information in the original bid documents. All other requirements of the Work, except as modified herein, shall remain unchanged.

Receipt of this addendum shall be acknowledged in the Contractor's Bid. Failure to do so may constitute grounds for rejection of the bid.

GENERAL CLARIFICATIONS:

1. Please see attached RFI responses.

ATTACHED DOCUEMENTS:

1. RFIs 31-59
2. Flow test
3. Geotech report
4. Civil and Landscape drawing set
5. C5.00 – diagram in response to RFI 57

End of Addendum

Addendum #2	**All bidders**		
Contract / Issue:	**Rolesville Public Works Facility**	**IBI Group Project #**	**135941**
Date Issued:	**October 19, 2022**	Questions received by 10/19/2022	

Item No.	Bidder Question (Incl: Dwg No, Specification, Section)	Response
31	Please confirm all metal siding is pre-finished. A301 calls it all out to be pre-finished, but A302, Wall Section 1 notes "metal siding to be painted".	Yes, all metal siding is pre-finished.
32	Please confirm the painting contractor is just to paint the structural steel. Just want to clarify that we are not painting the interior of the metal siding that is pre-finished.	Structural steel is only shop primed. Metal siding is pre-finished.
33	Specs state for painter to caulk the millwork and countertops after painting, but this is not in our typical scope. We caulk painted subtrate to painted substrate, but the cost of any other caulking is typically carried by those installing thse pieces. Please clarify who is to carry this cost.	Caulk for millwork and countertops to be completed by millwork and countertop installers.
34	Please clarify which flooring/base is required at the workshop, bays, and access aisle? Sealed concrete with rubber base?	Workshop, bays, and access aisle to be sealed concrete without rubbber base.
35	Drawing P-101 shows a hose reel. Please confirm if this is to be owner supplied. If not, please provide a specification to price.	There is no hose reel, just an air drop.
36	P-501, section 8 shows an automatic condensate drain. Please provide a specification to price, unless this is supplied by others.	Condensate drain line to be cooper, type L. Provided by Plumbing Contractor.
37	P-502, section 1 shows the filter/regulator for the compressed air outlets. Please provide a specification to price, or confirm if this is to be owner provided.	Provide Wilkerson ½" D28-04-FKG0B Combination Filter/Regulator/Lubricator rated for 110 cfm @ 150 psi, and 5 microns.
38	P-502, section 3 shows the Traoeze Slectric and Air detail. Is this supplied by others and installed by the plumbing contractor?	All miscellaneous supports, piping, and filter/regulator/lubricator by PC. All electrical conduit, and power by EC. PC to coordinate with EC for conduit and power.
39	RF-01 and RF-02 are both specified for the corridor on the schedule for finishes 09 06 00 - Please confirm that RF-02 should go in the corridor between the bathrooms / locker room.	RF-02 will be used in the Corridor.
40	Please confirm if the (open space-green) area on C2.00 is to be sodded, seeded or pavers.	The open space area should be seeded per "seeding and mulching" section on C5.04.

41	The 25' and 100' landscape buffer requirements state to utilize existing vegetation and supplement vegetation as necessary. Should we price assuming a new buffer? Or can the LA provide a plant schedule with quantities for bidding?	Bidders can assume that buffer will be all new and provide a unit cost per LF for each type of buffer. During construction, contractor can credit back any portion of buffer not requried.
42	Please confirm if a permanent irrigation system is part of this project. If so, could irrigation limits be provided.	No irrigation system proposed with the project.
43	Several notes on the Civil General Notes sheets reference a Geotech report. Will a copy of this report be made available?	The geotech report is provided with this addendum.
44	Notes on the Civil docs and on the fire protection docs reference a fire flow test. Has this test already been performed or will we need to handle? If already performed, will a copy be made available to us?	Fire flow test results are provided with this addendum.
45	Who is the power company at this site?	Duke Energy
46	Has the order for the new transformer already been placed?	Order for new transformer has not been placed.
47	For the underground conduit for the primary and secondary power: will the power company supply the conduit and we are to install?	Per the light pole label on sheet C3.00, "contractor to provide & install UG conduit".
48	Have any discussions been had with the sump pump manufacturer regarding lead times on the control panel?	No.
49	In the specifications – Div 10 Aluminum awnings. Material indicates – roll formed, Description indicates – extruded.	Aluminum awning material is rolled formed.
50	Can the dry shake & slip resistant items be completed after the slab is poured? To complete these items during the slab pour would require specialized equipment, drive up costs and limit number of subcontractors available to perform the work.	Dry shake & slip resistant items can be completed after the slab is poured.
51	Addendum 1 provided pictures in response to the request for a fence detail - The picture does not provide sizes, heights, depth of post into the ground, if the post are set in concrete, etc. Providing only picutres leaves a lot of room for interpretation. We are asking again for an actual detial on the fencing.	Response to RFI #9 provides sizes of memebers and depths. Civil drawings provide heights. Picture was provided to illustrate design intent.
52	Typical Mounting height details show baby changing stations yet none are shown anywhere else on the drawings. Does the GC own Baby changing stations - if so please provide location and specification.	Baby changing tables are not included in the scope of work for the GC.

53	There is a performance specification for a vehicle exhaust system for the referenced project, however, the design drawings do not show anything about this system. Is the system required? If so, where and how does this need to be incorporated into the project.	Vehicle exhaust system is not included in this project.
54	In section 2.5 the specification calls for Carbon Steel Fiber is that what is wanted for slab reinforcing?	Yes, See sheet S002.
55	IN section 2.7 the floor sab treatments call for a metallic dry shake and a slip resistive treatment on the slabs on grade. If this needed. I cant find this on the structural notes.	Dry shake & slip resistant items can be completed after the slab is poured.
56	I cannot find what the slabs on grade are to be reinforced with. Can you let us know if it is welded wire or rebar reinforced and the spacing or guage wire?	See sheet S002 for reinforcement.
57	Please request that bid question 10 be answered as requested. The existing tree line needs to be shown on C4.00C5.01 and L1.00 so we may determine the actual amount of new clearing has to be done. Adding the existing tree line	See attached C5.00 mark up.
58	Spec section 09 51 00 3.06 “A” & “B” list (2) the job. The RCP on A-102 shows 2’ X 4’ ceiling systems. Please confirm 2’ x 2’ ceiling tiles for the desired ceiling system sizes and types if different than the products listed in the specifications.	Please follow specifications indicating that the ceiling tile is 2'x2'.
59	The Addnedum 1 response to RF-02 no longer being made was to submit a substitution request….There is nothing to substitute…the product listed no longer exist so we have nothing to compare it to. Please provide a product in lieu of RF-02	Please follow substitution procedures under 01 60 00.3.01. Subsitutute product must compare to 09 65 19.2.01.B.

GeoTechnologies, Inc.
Geotechnical and Construction Materials Testing Services

December 7, 2021

Mr. Mark Humienny
IBI Group
421 Fayetteville Street
Suite 1609
Raleigh, NC 27601

Re: Report of Subsurface Investigation
Rolesville Public Works Facility
Rolesville, North Carolina
GeoTechnologies Project No. 1-21-1051-EA

Mr. Humienny,

GeoTechnologies, Inc. has completed the authorized investigation to evaluate the subsurface conditions for the above referenced project in Rolesville, North Carolina. We understand that the Town of Rolesville is considering construction of a public works facility at 805 E Young Street. Construction will include a pre-engineered single story metal building as well as associate gravel and paved areas and future expansion areas.

Our investigation consisted of performing six soil test borings indicated on the attached Figures 1A and 1B. The borings were extended to up to 20 feet below the existing ground surface. The boring locations were established in the field using a handheld Trimble GPS and should be considered approximate. The borings were completed using an all-terrain drill rig utilizing standard penetration testing (SPT) procedures at selected intervals to evaluate the consistency and density of the subsurface soils. This report presents the findings of our investigation and recommendations concerning site preparation and foundation support.

AREA GEOLOGY

The proposed site is located within the Raleigh Belt of the Piedmont Geologic and Physiographic Province of North Carolina. More specifically, the project is located within the Rolesville Granitic Batholith. The batholith runs in a general NE-SW direction through Wake County and consists of massive, foliated granitic rock formed 270 to 320 million years ago which has a variable thickness of soil cover. The thickness of overlying soil is a function of the mineralogy of the original parent bedrock. In areas where the mineralogy of the parent bedrock was high in feldspar, a relatively thick cover of overburden soil is present. In areas where the parent rock was quartz rich, the granitic rock generally will have a much thinner soil mantle and rock can be exposed at the ground surface. This formation also often has large boulders and ledges of partially weathered rock which are surrounded by soil again due to the differential weathering pattern. The depth to rock and the presence of boulders can vary dramatically over relatively short distances. As such, even though test boring data may not show shallow rock, there is always a potential for encountering areas of very large boulders or shallow rock intermediate of test locations on sites in this geologic formation.

SUBSURFACE CONDITIONS

A generalized subsurface profile was prepared from the test boring data as Figure 2 to graphically illustrate subsurface conditions encountered during the investigation. More detailed descriptions of the conditions encountered at the boring locations are presented on the attached boring records.

Residual soils were encountered in each boring. The residual soils consisted of silty and clayey sands and sandy clays and silts. SPT resistances in the residual soils ranged from 4 to 26 blows per foot (bpf). Partially weathered rock (PWR) was encountered underlying the residual soils in B-1, B-2, B-4, and B-6 at depths ranging from 4.5 to about 9 feet. PWR is defined as material that could be penetrated with the hollow stem augers but exhibited penetration resistances in excess of 100 bpf. The PWR was discontinuous in borings B-4 and B-6. SPT resistances in the PWR ranged from 50 blows per 1 inch to 50 blows per 4 inches. Auger refusal was encountered in boring B-4 at a depth of 12 feet.

Groundwater was encountered in borings B-3, B-5 and B-6 at depths ranging from 10 and 13.5 feet, respectively. Caving was encountered in each boring at depths ranging from 8 to 18.5 feet. It should be noted that the near surface soils at the site are conducive to the temporary development of perched groundwater conditions during periods of wet weather, and that groundwater levels will fluctuate during different periods of the year.

RECOMMENDATIONS

The following recommendations are made based upon a review of the attached test boring data, our understanding of the proposed construction, and past experience with similar projects and subsurface conditions. Should the project plans change significantly from those now under consideration, we would appreciate being provided with that information so that these recommendations may be confirmed, extended, or modified as necessary. Additionally, should subsurface conditions adverse to those indicated by this report be encountered during construction, those differences should be reported to us for review and comment.

Site Grading Considerations. Site grading should begin with the removal of all topsoil and vegetation within the limits of the proposed construction. Following stripping and clearing, all areas at grade which are designated to receive fill should be proofrolled with a loaded dump truck in the presence of a geotechnical engineer to identify areas necessitating repairs. Repairs should be performed as directed by the engineer.

Our borings indicate that the soils at this site are typically firm to very stiff within the upper several feet of the profile. Additionally, some of the soils encountered in the borings are micaceous and may exhibit instability under a proofroll, even in ideal grading conditions. However, it is possible that conditions can vary immediate of the borings performed. If the site is graded during a period of warm and dry weather, the depth of near surface repairs should be significantly reduced. Conditions in this geology deteriorate during wetter periods of the year, resulting in significant seasonal differences in the quantity of surface repairs necessary for site development.

It is expected that near surface instability can be mitigated with limited undercut provided that the contractor is prepared to disc and dry wet soils prior to recompaction. In our experience, the most effective way to dry any wet on-site soils is with a farm disc turning the soils every 60 to 90 minutes under favorable (warm/dry) conditions. In this area, these conditions are most prevalent from about April through October. If the contractor is not prepared to dry soils, or if the site is graded during a wet or cool period of the year, drying will be ineffective

and undercut quantities will increase. It may be beneficial to include some additional undercut allowance if the site is to be graded during cooler months.

Borrow Materials/Placement. The on-site soils, excluding topsoil, should be suitable for reuse as structural fill. A standard backfill compaction recommendation for soils placed in structural areas is to compact the material to at least 95% of the standard proctor maximum dry density, except at subgrade elevations where the compaction should be at least 98% of the standard proctor maximum dry density. In order to achieve proper density and stability, soil moisture contents should be maintained within 2% of the optimum moisture content, which may require some drying or the addition of moisture.

If off-site borrow is required, low plasticity clays, sands, or silts with Unified Soil Classification of CL, SM, SC, and ML may be used for structural fill. Non-structural areas should have some compaction effort when filling. We recommend that fill in non-structural areas be compacted to at least 90% of the standard proctor maximum dry density, if some post-construction settlement is acceptable.

Difficult Excavation Considerations. Partially weathered rock was encountered in four of the six borings at depths ranging from 4.5 to about 9 feet. Auger refusal was also encountered at in B-4 at a depth of 12 feet. Additionally, shallower and/or harder materials could be encountered intermediate of the test boring locations. It has been our experience that partially weathered rock materials can generally be ripped with a large dozer such as a CAT D8 or equivalent equipped with a single tooth ripper provided penetration resistances are no higher than 50 blows per 2 inches. Auger refusal materials or PWR harder than 50 blows per 2 inches of penetration generally requires blasting to remove.

The equipment utilized for installation of utilities and foundations is less powerful and blasting is typically required for excavation into the partially weathered rock. A large track hoe such as a CAT 320 or equivalent equipped with rock teeth can excavate materials having standard penetration resistances in the range of 50 blows per 4 inches to 50 blows per 6 inches. However, the rate of excavation is slow and utility contractors will typically request a trench rock price for excavation of any partially weathered rock materials. Light blasting of these materials will expedite utility installation. A hoe-ram can also be used to remove difficult excavation material but will not be as effective as blasting.

If blasting is required, the blasting contractor should be careful not to over blast below plan grade/design invert. Areas which are over blasted will have to be cleaned of loose rock and backfilled with compacted soil unless otherwise directed. Preblast surveys and seismic monitoring are recommended if blasting is performed in the proximity of houses.

Foundation Support Considerations. Assuming that the site is prepared as directed, foundations may be designed for an allowable bearing pressure of 2,000 psf subject to the restriction that column and wall footings have least dimensions of not less than 24 and 16 inches, respectively. These foundations may bear at nominal depth below finished exterior grade in residual soils or in properly compacted fill except that a minimum embedment depth of not less than 18 inches for exterior footings is recommended for frost protection. The bottom of all foundation excavations should be free from water, loose soil, and debris prior to placement of concrete. Concrete should also not be placed on frozen subgrades. Concrete should be placed as soon as possible, and preferably within the same day it is excavated to minimize the potential for disturbing of the foundation subgrade due to inclement weather.

GeoTechnologies recommends that all foundations excavations be carefully evaluated by a geotechnical engineer to verify that suitable bearing materials have been encountered. Should foundations need to be extended to provide adequate bearing, we recommend that over-excavated footings be backfilled to design bearing elevation utilizing uniformly graded #57 or #67 washed stone.

GeoTechnologies utilized the FHA settlement estimation procedure which correlates soil compressibility to soil type and standard penetration resistances. The results of our analyses indicates total estimated maximum settlements are anticipated to be less than 1 inch for column loads of up to 125 kips and wall loads of up to 8 klf. If heavier loads are anticipated, undercut and stone replacement techniques could be used to reduce settlements. Typically, differential settlement will be approximately one-half of the maximum settlement. Once structural loads and site grading plans are available, GeoTechnologies should be provided with that information so that settlement estimates can be finalized.

Slab-on-Grades. We recommend that slabs-on-grade for the structures are designed for an assumed subgrade modulus of 100 pci (for a 1 foot by 1 foot area). This assumes that subgrades will be recompacted to a minimum of 98% of the standard Proctor maximum dry density. We recommend that slabs be supported on a 4 inch thick layer of compacted ABC base course stone to provide protection of the soil subgrades during periods of inclement weather and provide a working surface for construction. All slabs should be constructed per current ACI guidelines, including proper jointing to help control shrinkage cracking.

Subgrade Protection. It is important that the contractor protect the subgrade soils from inclement weather, sealing off the site with a smooth drum roller in advance of rain events, grading to promote drainage and prevent ponding, and covering finalized on-grade areas with compacted CABC stone as appropriate. Consideration could also be given to leaving subgrades a few inches high during construction and cutting to grade just prior to placement of stone base. As an alternative, a sacrificial layer of stone or crushed concrete can be used to protect the subgrade soils. Even with the above provisions, it should be recognized that the contractor's production and ability to limit undercut will in part be a function of weather conditions at the time of site grading. The soils are also sensitive to rubber tire traffic, and previously stable areas may require repair after exposure to construction traffic, even in good weather.

Dewatering Considerations. Groundwater was encountered in borings B-3, B-5, and B-6 at depths of 10 and 13.5 feet. It should be noted that many of the on-site soils are conducive to perched groundwater conditions. We anticipate any water encountered will be minor such that a sump pump can be used to effectively remove any water. Dewatering is ultimately the responsibility of the contractor.

Pavement Design. Following proper completion of grading, the site should be suitable for support of conventional pavement structures. Based on our experience in the area, a design CBR of 4% can be used for the design of flexible pavements and a subgrade modulus of 100 pci can be used for rigid pavements. This recommended CBR value can be confirmed or altered if samples of native soils at subgrade elevations are obtained for laboratory CBR testing. Any imported fill soils should be sampled for laboratory CBR testing to verify that the soils at subgrade elevation can provide the design CBR values. Soils which do not provide the design CBR value may necessitate thickening of the stone base section. A typical pavement section for travel lanes would be 3 inches asphalt over 8 inches stone base, for parking stalls this can be reduced to 2 inches asphalt over 8 inches stone base. These sections should be verified once provided with daily vehicle counts.

All pavement subgrades should be proofrolled in the presence of an engineer prior to the placement of CABC. Areas which are unstable in the opinion of the engineer should be repaired as directed. Stone grade should be proofrolled as well prior to paving.

The most important factors affecting pavement life in the area of the site are the condition of the subgrade immediately prior to base course stone placement and post-construction drainage. It is recommended that site grades be detailed to promote positive drainage away from pavement areas and that a drainage swale be installed on the uphill side of all pavement areas to intercept and divert perched water which may otherwise occur during the wetter winter months of the year. Since the near surface soils are fine grained, consideration should also be given to installing drains within planter islands and irrigated areas to intercept any perched water which occurs as a result of those open natural areas.

Seismic Design. This site is a seismic site class "D" under the building code based on the test boring data and past experience in the area of the site.

GeoTechnologies, Inc. appreciates the opportunity to be of service on the phase of the project. Please contact us if you have any questions concerning this letter or if we may be of addition service on this or other projects.

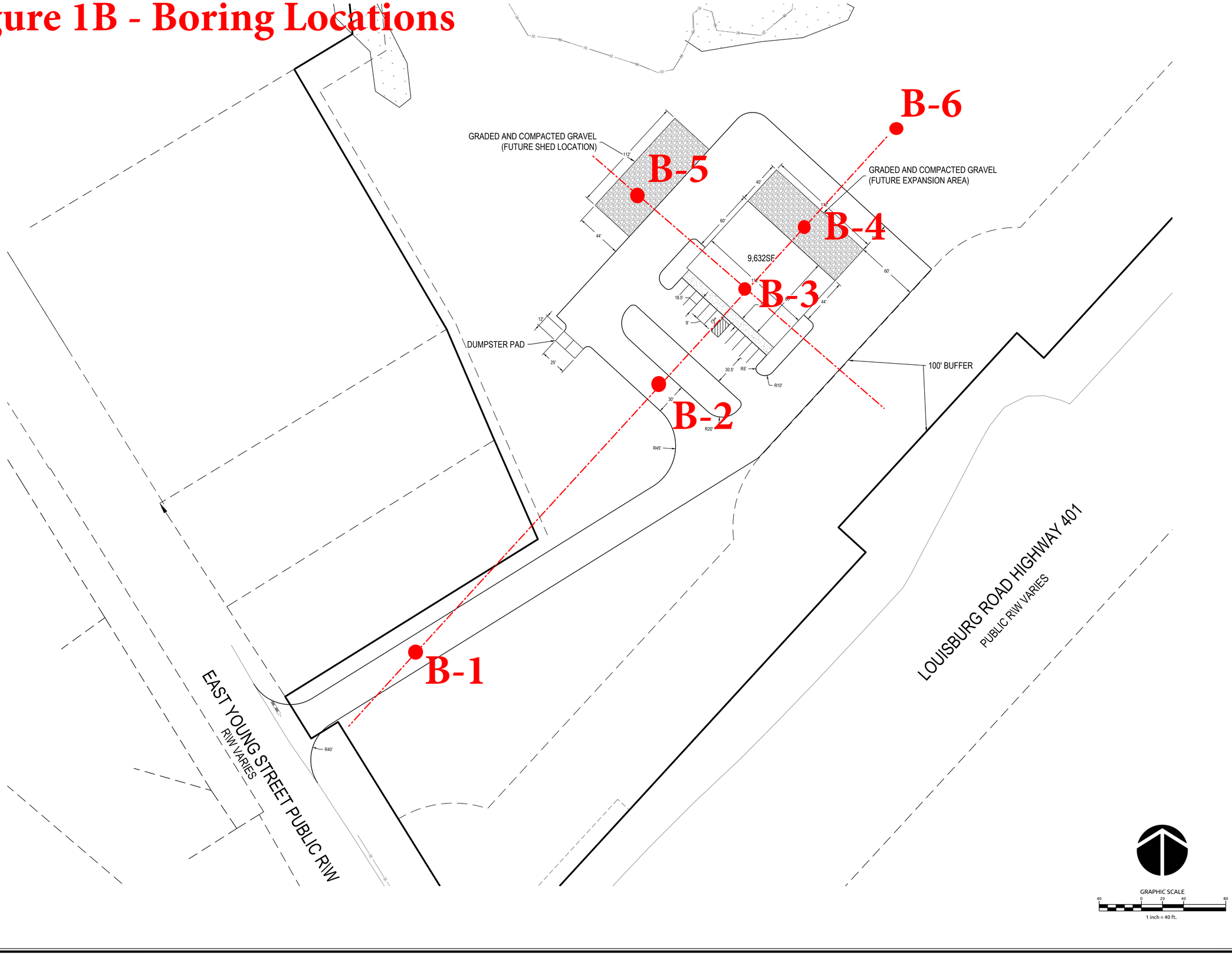
Sincerely,
GeoTechnologies Inc.

Lance S. Littmann, E.I.
Staff Engineer

Mark R. Potratz, P.E.
NC License No. 25955

Figure 1A - Boring Locations

Figure 1B - Boring Locations



GRAPHIC SCALE
40 0 20 40 80
1 inch = 40 ft.

WithersRavenel
Engineers | Planners | Surveyors
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ROLESVILLE
PUBLIC WORKS FACILITY
ROLESVILLE, NC

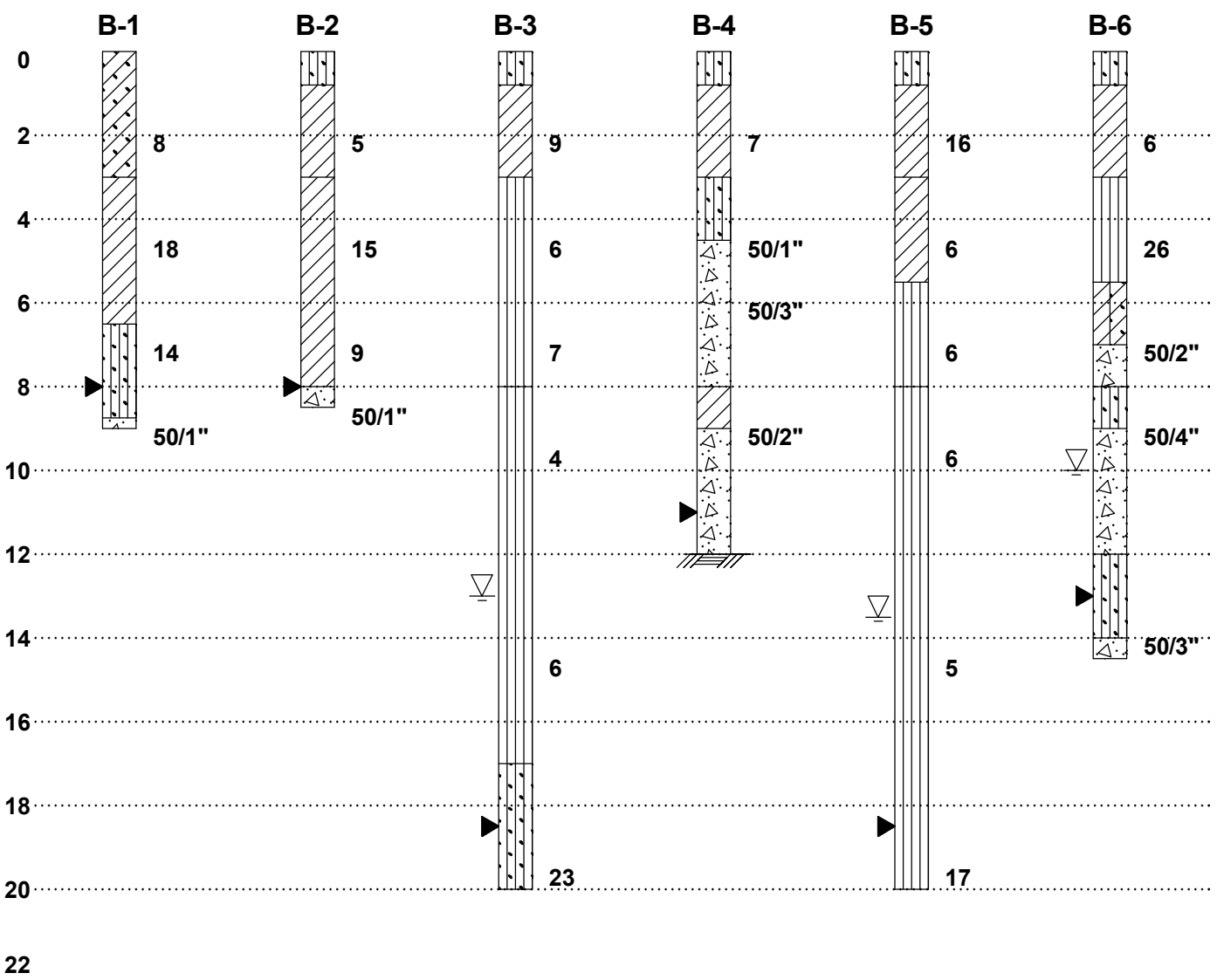
PRELIMINARY SITE LAYOUT

Job No.	02210710		
Date	10/01/2021	Drawn By	WR
Checked By	WR	Designer	WR

Revisions

Sheet No.
1

GENERALIZED SUBSURFACE PROFILE



LEGEND

- Clayey Sand
- Low Plasticity Clay
- Silty Sand
- Partially Weathered Rock
- Low Plasticity Silt
- Low Plasticity Clay to Clayey Sand
- Standard Penetration Resistance
- Groundwater at Time of Boring
- Auger Refusal
- Cave Depth

PROJECT:

Rolesville Public Works Facility
Rolesville, North Carolina

GeoTechnologies, Inc.

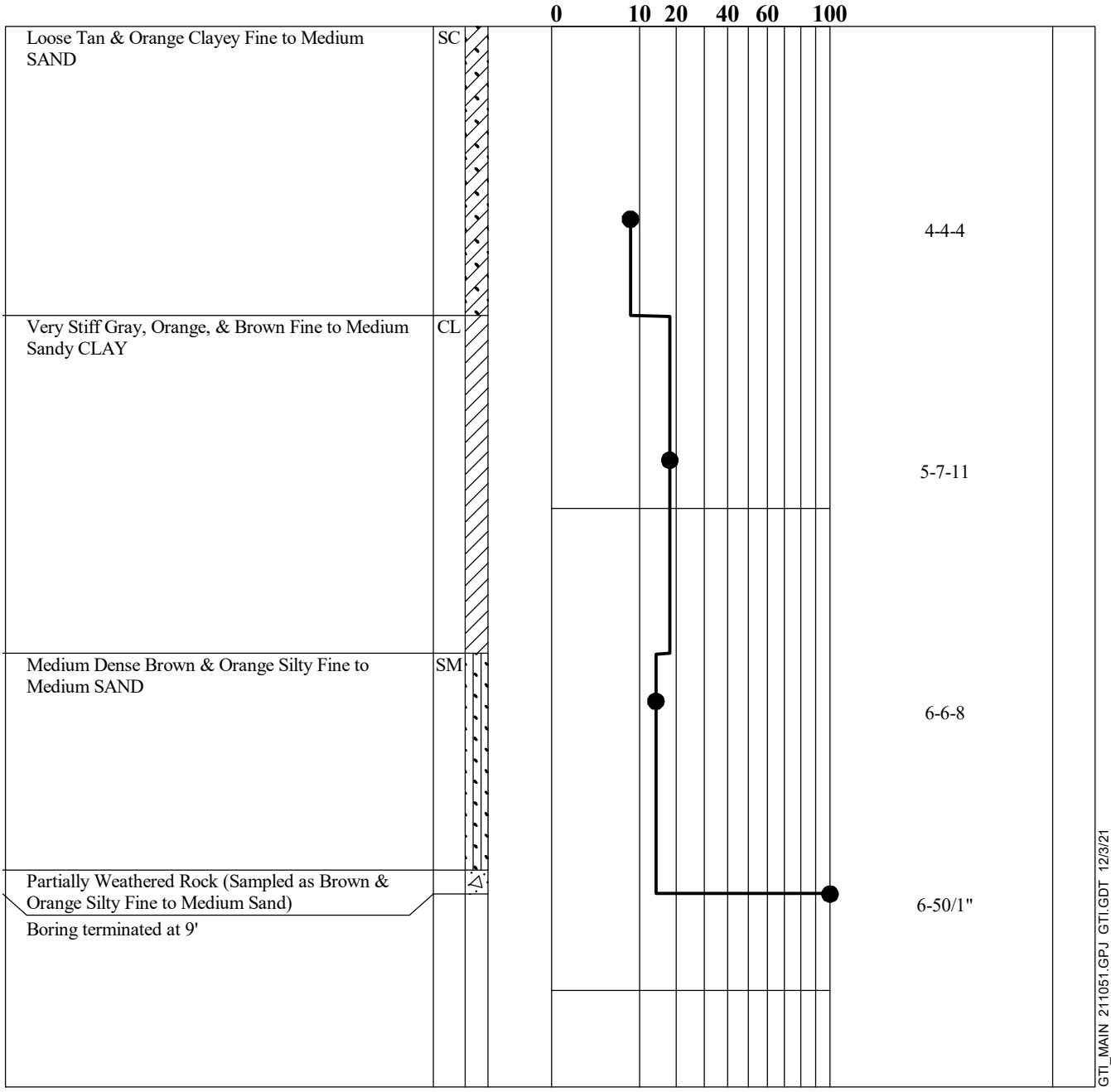
SCALE: As Shown

JOB No:1-21-1051-EA

FIGURE No: 2

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Loose Tan & Orange Clayey Fine to Medium SAND	SC		4-4-4
3.0	Very Stiff Gray, Orange, & Brown Fine to Medium Sandy CLAY	CL		5-7-11
6.5	Medium Dense Brown & Orange Silty Fine to Medium SAND	SM		6-6-8
8.8				
9.0	Partially Weathered Rock (Sampled as Brown & Orange Silty Fine to Medium Sand)			6-50/1"
	Boring terminated at 9'			



GTI_MAIN 211051.GPJ GTI.GDT 12/3/21

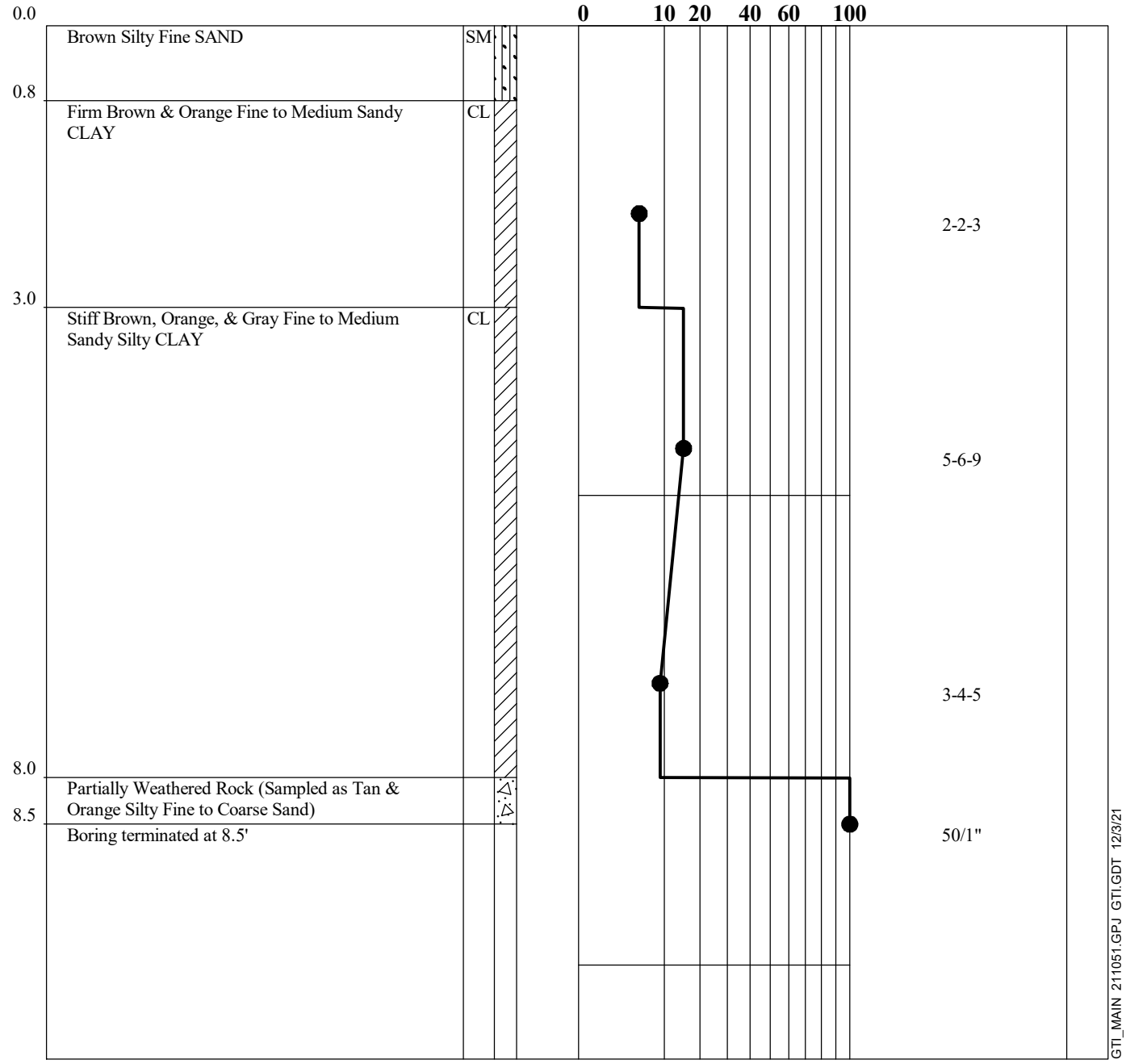
Dry at Time of Boring

JOB NUMBER 1-21-1051-EA
BORING NUMBER B-1
DATE 12-1-21

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD



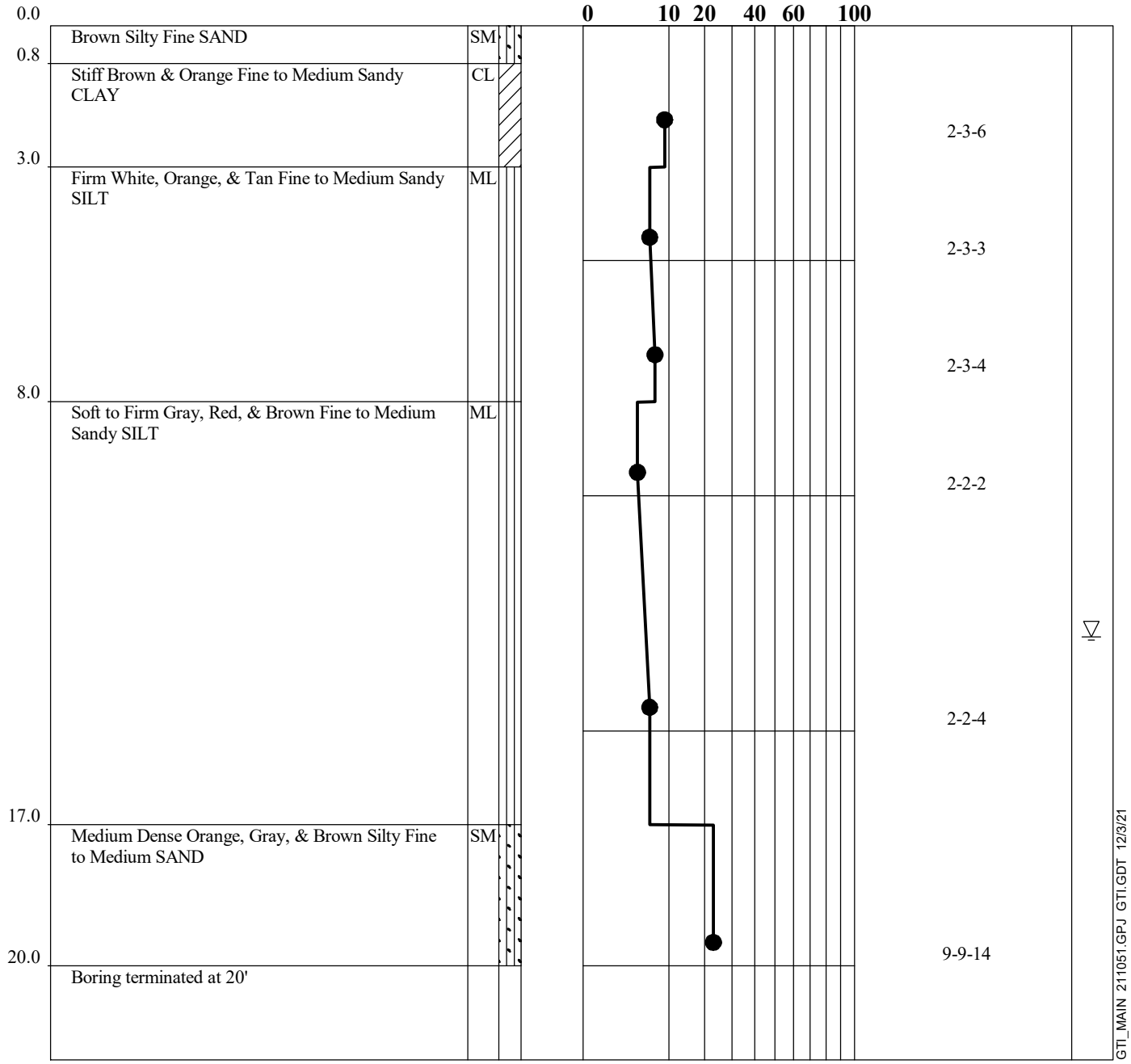
Dry at Time of Boring

JOB NUMBER 1-21-1051-EA
BORING NUMBER B-2
DATE 12-1-21

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD



Groundwater Encountered at 13' at Time of Boring

JOB NUMBER 1-21-1051-EA
BORING NUMBER B-3
DATE 12-1-21

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Brown Silty Fine SAND	SM		
0.8	Firm Brown, Red, & Orange Fine to Medium Sandy CLAY	CL		3-3-4
3.0	Medium Dense Orange & Tan Silty Fine to Medium SAND	SM		
4.5	Partially Weathered Rock (Sampled as Tan Fine to Coarse Sand)			5-11-50/1"
				50/3"
8.0	Stiff Brown, White, & Orange Fine to Medium Sandy CLAY	CL		
9.0	Partially Weathered Rock (Sampled as Brown & Red Silty Fine to Medium Sand)			7-50/2"
12.0	Auger Refusal at 12'			

Dry at Time of Boring

GTI_MAIN 211051.GPJ GTI.GDT 12/3/21

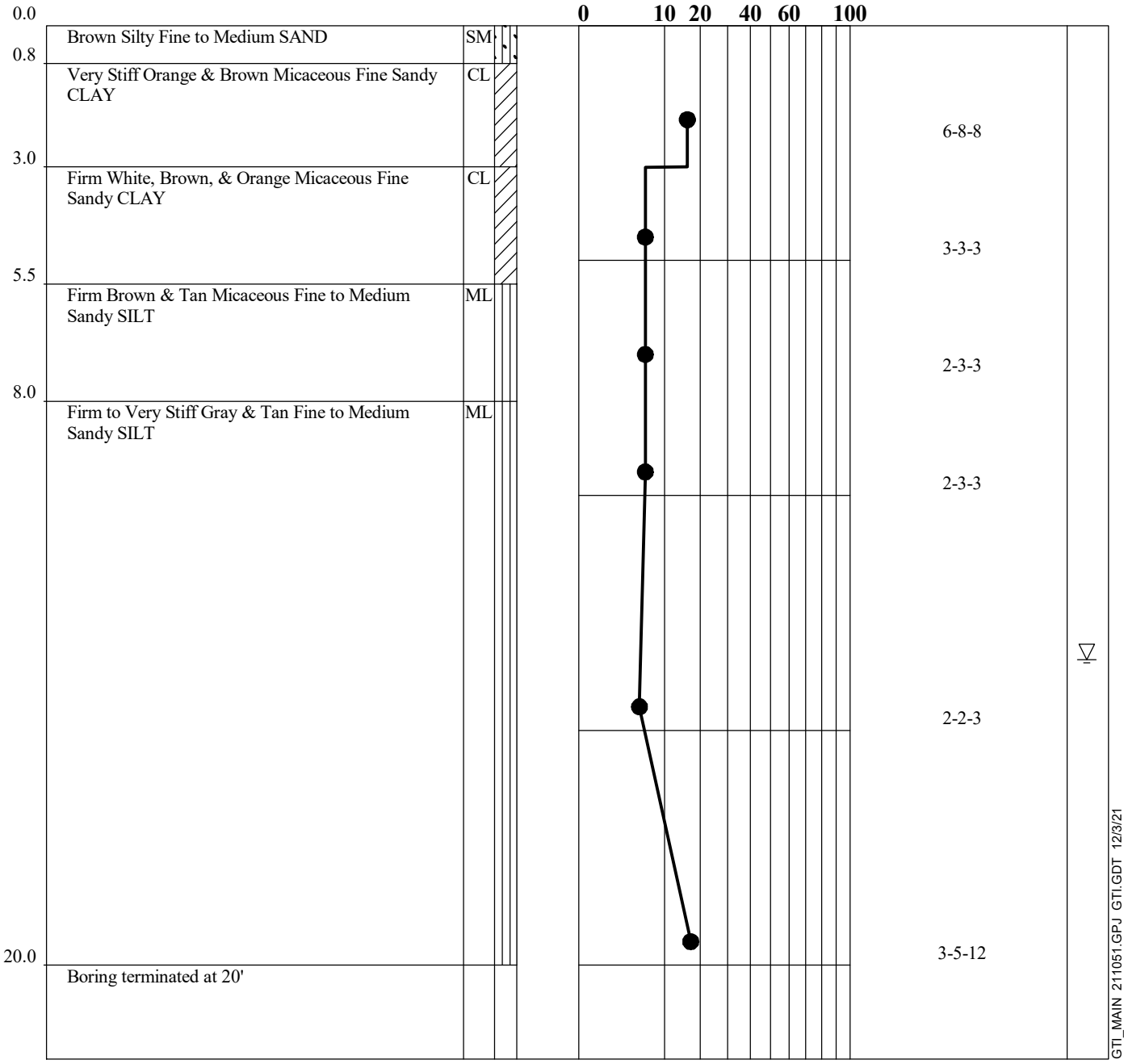
JOB NUMBER 1-21-1051-EA
BORING NUMBER B-4
DATE 12-1-21

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.) 0 10 20 40 60 100	BLOWS PER SIX INCHES
0.0	Brown Silty Fine to Medium SAND	SM		
0.8	Very Stiff Orange & Brown Micaceous Fine Sandy CLAY	CL		6-8-8
3.0	Firm White, Brown, & Orange Micaceous Fine Sandy CLAY	CL		3-3-3
5.5	Firm Brown & Tan Micaceous Fine to Medium Sandy SILT	ML		2-3-3
8.0	Firm to Very Stiff Gray & Tan Fine to Medium Sandy SILT	ML		2-3-3
				2-2-3
20.0	Boring terminated at 20'			3-5-12



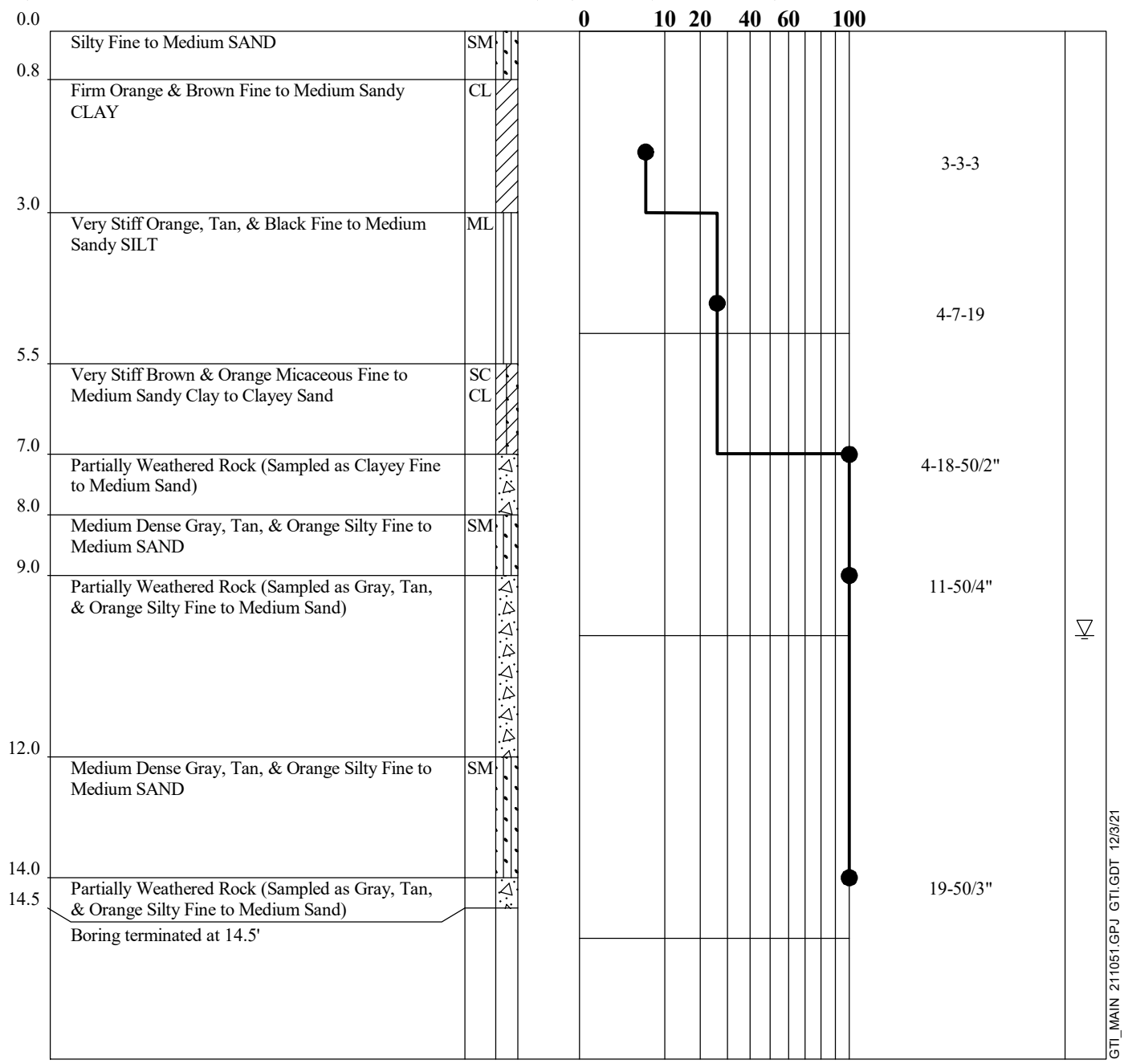
Groundwater Encountered at 13.5' at Time of Boring

JOB NUMBER 1-21-1051-EA
BORING NUMBER B-5
DATE 12-1-21

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

TEST BORING RECORD



Groundwater Encountered at 10' at Time of Boring

JOB NUMBER 1-21-1051-EA
BORING NUMBER B-6
DATE 12-1-21

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Court, Ste 108
Raleigh, NC 27615

Note:
Two fire flow tests were conducted. The first fire flow test was completed with two (2) hose monsters diffusers. However, the flow out of one hose monster diffuser during this test barely registered 10.0 psi on the flow gauge. Therefore, our staff conducted a second test with one hose monster diffuser and measured 13.0 psi on the flow gauge. Based on the results of the two tests, the results from the second test were used for the calculations in this report.

401 N TO EAST YOUNG

Raleigh

DocuSigned by:
Clark Maness
069F028F63C3426...

NORTH CAROLINA PROFESSIONAL SEAL 047235 ENGINEER J. CLARK MANESS

1/21/2022

TEST LOCATION

Address/Location Description 805 E Young St, Rolesville, NC 27571
Test hydrant Facility ID WHYD 122615
Flow hydrant Facility ID WHYD 120379

APPLICATION INFORMATION

Name WithersRavenel, Inc.
Address 115 Mackenan Drive, Cary, NC 27511
Contact Person Clark Maness, PE Phone 919-535-5213
Email cmaness@withersravenel.com

SYSTEM INFORMATION

Test Date 17 DEC 2021
Nearest Elevated Tank Rolesville
Main Size 12-inch DIP
Tank Hydraulic Grade 548.94
Pump Info No pumps

Time of Test 2:30
Test Hydrant Elevation 425 ft
Pressure Zone 560
Use 20ft below pressure zone (tank overflow) for design*
Theoretical Pressure 53.66 psi

RESULTS

Static Pressure ~~54~~ psi
Residual Pressure ~~46~~ psi
Outlet Diameter 2.5 inches

Number of Outlets Flowing ~~2 - 10.0 + 10.5~~
Flow Hydrant Discharge Pressure ~~10.0 + 10.5~~ psi
Volume of Discharge 594 gpm
Water usage during test 2,000 Total Gal

Test Completed by: L. POTTS H. PENNINGTON
Testing Company: WithersRavenel, Inc.
Checked by:
Date 17 DEC 2021

SEAL (if applicable)

SECOND TEST W/ 1 FLOW
STATIC 54
RES. 48
1 HOSE MONSTER 13.0

Notes:

Please attach the following supporting documentation to this form;
Labeled map of location of test identifying test hydrant and flow hydrant
Calculation demonstrating how the discharge flow was determined
Calculation demonstrating the available fire flow at a residual pressure of 20 psi
Printout of any recorded data supporting the static and residual pressure at the test hydrant.
Printout of any recorded data supporting the discharge pressure of the flow hydrant.

*To maintain system water quality, storage tanks may be maintained as low as 20' below overflow.

updated August 2019

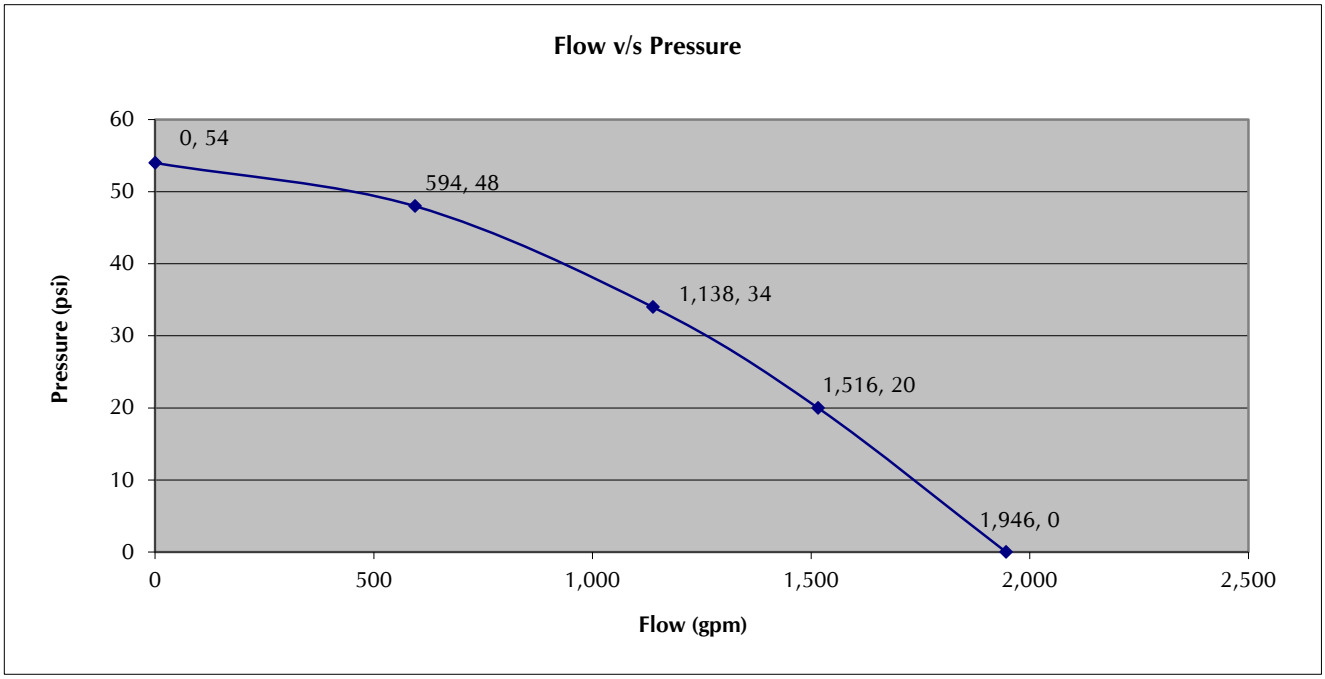
WithersRavenel
Our People. Your Success.

FIRE FLOW TEST DATA	
Project Name	Rolesvilles Public Works Facility
WR Project #	02210710.00
Test Date	December 17, 2021
Flow Hydrant Location	Hydrant closest to north side intersection with Young Street and Highway 401; 35.914518, -78.450696
Pressure Hydrant Location	Hydrant approximately 1,200' north of flow hydrant on Young Street; 35.917275, -78.452824

Test Hydrant Static Pressure (psi)	54	
Test Hydrant Residual Pressure (psi)	48	
Nozzle Pressure (psi)	13	
Nozzle Flow (gpm)	594	
Nozzle Pressure (psi)	0	*Only one nozzle used due to low flow*
Nozzle Flow (gpm)	0	
Calculated Flow (gpm)	594	
Pressure Drop (psi)	6	

Flow/Pressure Relationship	Flow (gpm)	Pressure (psi)
	0	54
	594	48
	1,138	34
	1,516	20
	1,946	0

Pump Curve	Flow (gpm)	Head (ft)
	0	125
	594	111
	1,138	79
	1,516	46
	1,946	0




Rolesville PWF
12/17/2021 - Fire Flow Test Map
Legend
TEST HYDRANT
New Bethel Baptist Church
E Young St
Virginia Water Dr
FLOW HYDRANT
401
N
800 ft
Google Earth

EROSION CONTROL LEGEND

- LIMITS OF CONSTRUCTION
- TP — TREE PROTECTION FENCE
- SF/TP — SILT/ TREE PROTECTION FENCE
- >TD — TEMPORARY DIVERSION DITCH
- TEMPORARY SLOPE DRAIN
- SCM BAFFLES
- CLEAN WATER DIVERSION
- INLET PROTECTION
- SILT FENCE OUTLET
- ROCK CHECK DAM
- SKIMMER BASIN
- TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
- SILT BAG FOR DEWATERING BASINS
- CONCRETE WASH OUT

TOTAL DISTURBED AREA: ±4.9 ACRES

EX. WETLANDS (TYP.)

APPROX. LOCATION OF SILT BAG STILLING BASIN (SEE DETAIL ON SHEET C5.03) & PUMP WITH FLOATING INTAKE FOR MAINTENANCE & DECOMMISSIONING PUMP TO BE LOCATED IN SKIMMER CELL.

2" SKIMMER W/ 1.5" ORIFICE

BAFFLES (TYP)

18" SLOPE DRAIN WITH HORSE SHOE INLET PROTECTION

15" SLOPE DRAIN WITH HORSE SHOE INLET PROTECTION

SKIMMER SEDIMENT BASIN 45'X90' SEE DETAILS & SPECIFICATIONS SHEETSC5.03 & C5.04

LIMITS OF DISTURBANCE (TYP)

TEMPORARY DIVERSION DITCH (TD 2)

EX. POND

SILT FENCE/TREE PROTECTION (TYP)

SILT FENCE OUTLET

EX. WETLANDS

SILT FENCE OUTLET

SOIL STOCKPILE
EXACT LOCATION/SIZE TO BE DETERMINED BY CONTRACTOR

CLEAN WATER DIVERSION (CWD 2)

CLEAN WATER DIVERSION (CWD 1)

CHECK DAM (TYP.) SEE SHEET C5.05

TEMPORARY DIVERSION DITCH (TD 1)

EAST YOUNG STREET PUBLIC R/W
R/W VARIES

INLET PROTECTION SEE SHEET C5.03

201 FES

CONTRACTOR SHALL COORDINATE WITH ADJACENT PROPERTY OWNER TO MAINTAIN ACCESS TO RESIDENCE THROUGHOUT CONSTRUCTION SEQUENCE.

CONSTRUCTION ENTRANCE

RAIN GAUGE & ON SITE RECORDS/PERMIT BOX

CONCRETE WASHOUT

200 FES

PROPOSED 18" CULVERT TO BE INSTALLED IN STAGE 1 WITH CONSTRUCTION ENTRANCE

RIP RAP APRON 6'x4.5' CLASS A STONE

EASEMENT NCDOT PLAN R-2814B

CB 424.03
INV(N) 419.63
INV(S) 419.54 18" RCP

CB 422.50
INV(N) 418.83
INV(S) 418.78 18" RCP

SSMH
RIM 423.94
INV 414.94 8"PVC

CAMERON EDWIN SHEARON & BEVERLY W SHEARON
701 EAST YOUNG STREET
PIN 1768286603
DEED BOOK 17687 PAGE 1025
ZONING: GC
LAND USE: RESIDENTIAL

LMR FAMILY HOLDINGS, LLC
737 EAST YOUNG STREET
PIN 1768286475
DEED BOOK 14774 PAGE 662
ZONING: RL
LAND USE: RESIDENTIAL

OAKEY FRANKLIN PULLEY & BRIAN KEITH PULLEY
807 EAST YOUNG STREET
PIN 1768287326
DEED BOOK 14987 PAGE 2228
ZONING: RL
LAND USE: RESIDENTIAL

GRAPHIC SCALE
30 0 15 30 60
1 inch = 30 ft.

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www.withersravenel.com

PROJECT # SP 22-02

ROLESVILLE PUBLIC WORKS FACILITY

ROLESVILLE, NORTH CAROLINA

EROSION CONTROL - STAGE 1

Job No.	02210710.00		
Date	7/1/2022	Drawn By	DBG
Checked By	PED	Designer	PED/DBG

NORTH CAROLINA PROFESSIONAL SEAL 049219 ENGINEER PAUL DEVLIN
10/17/2022

Revisions		
1	ADDENDUM #2	10/17/2022

Sheet No.
C5.00