SMITH+GARDNER
ENGINEERS

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February 3, 2025

ADDENDUM NO. 2
TO THE
CONTRACT DOCUMENTS
FOR
CUMBERLAND COUNTY TRANSFER STATION

To All Plan Holders:

The following revisions, additions and clarifications are hereby made part of the Contract Documents for the above-referenced project and shall be taken into account in the preparation of all Bids and the execution of all work. Bidders shall acknowledge receipt of the Addendum in the appropriate space on the Proposal Form. Failure to do so may result in your Bid being considered non-responsive.

I. ATTACHMENTS

AD2-1. CAD File:
See below for link to file.

Please see eTransmit below:
Cumberland Ann St - Solid Waste Transfer Station - Standard.zip

Geotechnical Report
AD2-2. Soils Testing Results

II. QUESTIONS AND ANSWERS

Questions are provided below in *italics* followe by S+G's reponse in **bold.**

AD2-3. *Please confirm if a geotechnical report was complted for this project.*

Geotechnical report and testing results attached.

AD2-4. *During the site walk through, it was discussed the project schedule is a 180 day duration and planned to start in April. Currently the PEMB lead times are tracking for a min 12 week lead time after shop drawing approval, but this lead time could vary between now and April. We are concerned with this project only being a 180 day schedule with this major lead time – please advise if the PEMB will be an early release right after bidding/award and paid accordingly, so it is released in a timely manor.*

The County will add to the Contract Times if required due to long building lead times.

AD2-5. *What Please advise on the bollard location and quantities. Drawing A101 in the NW Corner notes "painted steel bollards typ" with an arrow not pointing to any symbol. There are also bollards drawn on the civil plans, but refer to detail 3/D1, which has different lengths, details (covers not paint), footer size and specs (slope vs dome). Please confirm the location of the bollards in plan and which detail is to be used.*

Bollards shall be located in accordance with Civil Site Plan, Sheet 4, Drawing S3. Contractor to use detail 3/D1 on sheet 10, Drawing D1 of the Civil Plans. Contractor my substitute safety yellow paint for plastic covers.

AD2-6. *Please confirm whose responsibility it is to carry usage charges for temporary facilities of the project.*

The Contractor will be responsible for these costs.

AD2-7. *Please confirm whose responsibility it is to carry the building permit costs for the project.*

The Contractor will be responsible for these costs.

AD2-8. *There is a Revegation specification included in the project manual spec book. However this scope is not clearly defined on the plans. The bid form mentions 1.5 acres, but please advise what quantity and where is seed/mulch, etc. and/or confirm if a project allowance should be carried for this scope of work for bidding purposes.*

Seeding should be completed on disturbed areas outside of the paving limits and in existing grassed areas which will be disturbed by installation of force mains or utility installation.

AD2-9. *Drawing FP301 shows 12" hdpe and 4" hdpe lines on a fire protection site plan; however, NC state law session 1999-123, house bill 1076 requires fire protection subcontractors to only start their work 1" above finish floor in the riser room as it is the public utilities contractors responsibility to construct the fire service lines underground and terminate up into the building. The site plan S4 show these lines too, but note "by others". At the site walk through on 1/23, it was discussed that this work was not in contract (NIC). Please confirm.*

The Contractor shall install the 12" hdpe piping from the riser room to a point 5-feet outside the building line (measured from the riser room wall).

AD2-10. *Please confirm the mounting height of the exhaust fans for both inside and outside the building.*

Exhaust fans shall be mounted such that the top of the fan is at elevation 132.00 in accordance with Sheet A501.

AD2-11. *Please advise how approximately many yards are in the stockpile on site that needs relocated prior to construction commencing.*

The attached drawing file provides information that the Contractor can use to determine the volume in the stockpile.

AD2-12. *The concrete specification states 4000 psi AE for structural; however, drawings state 4500 psi. Please confirm which PSI strength shall be used.*

Concrete to be 4500 psi compressive strength. Please refer to notes on S201 for additional concrete mox requirements.

AD2-13. *The civil drawing detail 2/D1 for Apron / Pavement is 8" 4000 psi reinforcement WWF; however no WWF is indicated in specification or on drawings). Please confirm what size WWF should be used. Our understanding is minimum would be W2.1 6x6.*

Welded Wire Fabric shall be W2.9, 6x6.

AD2-14. *Civil Pavement Plan does not show expansion the construction joints. Please confirm if we should match the same as the building at 16' square at minimum.*

Detail 2/D1 note 5 on Sheet 10, Drawing D1, stipulates joint spacing as 15-ft max. each way.

AD2-15. *Please confirm the following items should be included in the painting scope: fire suppression piping, domestic water lines, parking lot striping.*

Painting scope includes door frames, doors and bollards.

AD2-16. *Will the County or City waive all permits and tap fees?*

No, the Contractor will be responsible for these costs. Please note that the City of Fayetteville will have jurisdiction over the bulding permit and Fayetteville PWC supplies power and water to the site. Water service exists on site and will not require tap fees. Power will require Contractor coordination with PWC.

AD2-17. *Who is responsible for testing?*

The County will provide testing services.

END OF ADDENDUM

Submitted by,

SMITH GARDNER, INC.

DocuSigned by:
9E91654B985E437...

John D. Barnard, P.E.
Senior Engineer
johnb@smithgardnerinc.com

Attachments Drawing File
Geotechnical Report
Soils Testing Results

Cc: Plan Holders
Amanda Lee
Johnny Scott
File

H:\Projects\Cumberland County (NC)\CUMBERLAND-23-6 (Transfer Station Permitting)\Bid Documents\Addenda\Addendum 2\Cumberland Transfer Station Construction Addendum No. 2.docx

GeoTechnologies, Inc.
Geotechnical and Construction Materials Testing Services

March 20, 2023

Mr. Lou Krasuski
Smith Gardner, Inc.
14 N Boylan Avenue
Raleigh, NC 27603

Re: Report of Subsurface Investigation
Cumberland County Landfill Transfer Station
Fayetteville, North Carolina
GeoTechnologies Project No. 1-23-0130-EA

Mr. Krasuski,

GeoTechnologies, Inc. has completed the authorized investigation to evaluate the subsurface conditions for the above referenced project in Fayetteville, North Carolina. The site is located within the existing Cumberland County landfill complex (see Figure 1). Our investigation consisted of performing five soil test borings at the locations indicated on the attached Figure 2. The borings were extended to depths of 20 feet below the existing ground surface. The boring locations were established in the field using state plane coordinates obtained from the provided CAD file and a handheld Trimble GPS. The coordinates are summarized on the attached Table 1 and the locations 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.

SITE & PROJECT INFORMATION

We understand that the consideration is being given to construction of a new transfer station facility at the existing Cumberland County Landfill at 698 Ann Street in Fayetteville, North Carolina. The proposed construction area is situated west of a shop building and is a cleared, former borrow area. Proposed construction will include a transfer station with a concrete tipping floor slab and loading bay. Construction will also include a concrete ramp and associated gravel and/or concrete drives leading to and surrounding the facility. We understand that the capacity of the facility will be about 750 tons per day. Assuming 10 to 15 tons per truck, the total volume will be about 50 to 75 trucks per day. A CAT 938 wheeled loader will be used on the tipping floor slab.

SUBSURFACE CONDITIONS

A generalized subsurface profile was prepared from the test boring data as Figure 3 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.

Subsurface conditions are characterized by 3 to 13 inches of topsoil, and or fill with topsoil, overlying natural, undisturbed soils which extended to the boring termination depth. The soils consisted of clayey and silty sands and silty and sandy low to high plastic clays. SPT resistances in the borings ranged from 3 to in excess of 100 blows per foot.

Groundwater was encountered at depths of 8 to 18 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. Topsoil thickness was about 3 to 12 inches, but tree roots could extend deeper. 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 soft to stiff in consistency within the upper several feet of the profile. At the time of our investigation the soils were wet of optimum and are very moisture sensitive and will likely exhibit instability under a proofroll, even in ideal grading conditions. 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.

We recommend that backfill beneath the tipping floor slab consist of select granular materials with less than 20 percent passing through the #200 sieve. Standard backfill compaction recommendations may be used for all fill placed beneath the tipping slab. These materials may include clean sands (SP) or quarry processed materials. Some clayey or silty sands may also be suitable but should be tested prior to use.

Lateral Earth Pressure. Retaining walls may be designed using the soil parameters indicated in the table below for on-site soils. The design values assume level grade behind or in front of the wall and should be modified for sloping grades. Appropriate safety factors should be used in conjunction with these design values.

At-rest EP Coeff.	Active EP Coeff.	Passive EP Coeff.	Friction Angle	Base Friction	Unit Weight (pcf)
0.53	0.36	2.77	28°	0.30	120

Any fill material placed adjacent to retaining walls should be compacted to a minimum of 95% of the standard Proctor maximum dry density, except where 98% is required at subgrade. Additionally, any soils placed within 3 to 4 feet of below grade walls should be compacted with light handheld equipment to prevent overstressing of the walls. This will necessitate that backfill be placed in 4-to-6-inch lifts.

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 in excess of 400 kips and wall loads of 16 klf. Typically, differential settlement will be approximately one-half of the maximum settlement.

Dewatering Considerations. Groundwater was encountered in the borings at depths ranging from 8 to 18 feet. It should be noted that many of the on-site soils are conducive to perched groundwater conditions. We anticipate any water encountered during general grading and shallow utility installation 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. We understand that consideration is being given to construction of concrete and/or gravel drives. The following pavement design recommendations are based of the provided information that the

proposed drives will experience 50 to 75 trips per day of trash collection trucks weighing approximately 20,000 to 30,000 lb.

Based on laboratory testing on a representative sample collected from the site, we recommend using a design CBR value of 4.3% for design of pavements. This recommended CBR value can be confirmed or altered if off site materials are imported for constructed. Soils which do not provide the design CBR value may necessitate thickening of the stone base section. If the soils can provide significantly higher CBR values, then a reduction in the required pavement section may also be possible. 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.

An appropriate ridged pavement section should consist 8 inches of 4,000 psi concrete with load transfer. We recommend utilizing load transfer devices in lateral joints and also in longitudinal joints where vehicles will be turning and where the path of travel is likely to cross longitudinal joints. The concrete pavements should be constructed over a minimum of 4 inches of CABC (compacted to 100 percent of AASHTO T-180). We recommend a maximum joint spacing of 15 ft each way, and that the joints be doweled. Welded wire fabric (WWF) should be placed in the upper half of the concrete section (preferably 1.5 inches from the top) to mitigate shrinkage cracking. Mass placement of concrete is not recommended. We recommend lane placement followed by in-filling the intermediate lanes.

An appropriate flexible pavement section should consist of 6 inches of asphalt (2" S9.5C over 4" I19.0C) over 10 inches of compacted base course stone. All base course stone should be compacted to 100 percent of the modified Proctor maximum dry density.

Subgrade soils should be compacted to 98 percent of the standard Proctor maximum dry density within the upper 1 foot below subgrade elevation, with compaction moisture maintained within 2 percent of optimum. Compaction moisture should preferably be held at or below optimum moisture content in the upper couple feet below subgrade elevation to achieve stability, as soils over optimum moisture content may be unstable under a proofroll. Pavement subgrades should be proofrolled with a loaded tandem-axle dump truck in the presence of a geotechnical engineer prior to placement of CABC. Any areas which are unstable in the opinion of the engineer should be repaired as directed. CABC stone should be compacted to 100 percent of AASHTO T-180, and proofrolled as well prior to placement of concrete.

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.

Gravel Roads. Gravel road design was performed per AASHTO design methods. Please note that expected traffic loading and volume is above what is typically allowed by AASHTO aggregate-surface roads. And as such more regular maintenance or a short life before reconstruction may be needed. For a gravel road in the drives leading to the facility, we recommend placement of non-woven geotextile separator (minimum weight of 4 oz) between the subgrade and CABC. The fabric will not provide a substantial increase in structural value, but it will prevent the stone base from migrating into the subgrade overtime. We recommend a section consisting of a minimum of 24 inches of CABC.

Consideration may also be given to placing a layer of geogrid reinforcement to provide additional stability to the gravel road. This section would need to be constructed by placing about 4 inches of loose CABC, followed by the geogrid which should be taut. The grid would then be covered with 5 to 6 inches of loose stone and rutted thoroughly with a rubber tire vehicle to remove any remaining slack. After the grid has been rutted, the remainder of the CABC can be placed and properly compacted. We recommend that the geogrid reinforcement be Tensar TX-140 or BX1100 or equivalent. All CABC stone should be compacted to 100 percent of AASHTO T-180.

Long term performance of the gravel road will be highly dependent upon maintenance. In the absence of maintenance, the condition of the road will deteriorate regardless of the stone thickness or initial stability of the subgrade. A regular maintenance schedule should be implemented following construction to identify areas which may require maintenance or repair. Regular maintenance of gravel road for this facility is expected due to loss and rutting of the aggregate surface. Drainage is particularly important for the performance of gravel roads and the road surface, and the surrounding areas should be inspected during regular maintenance to ensure water is not pooling and drains properly from the road. It is important the gravel road is graded such that it promotes drainage and prevents standing water.

Additionally, consideration may be given to cement treating the subgrade or gravel road. This process involves mixing the subgrade or CABC with Portland cement to form a stabilized subgrade or base. The cement treated material will have a substantially higher strength and will allow for a thinner section of CABC. GeoTechnologies can provide additional information regarding stabilization if desired.

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.

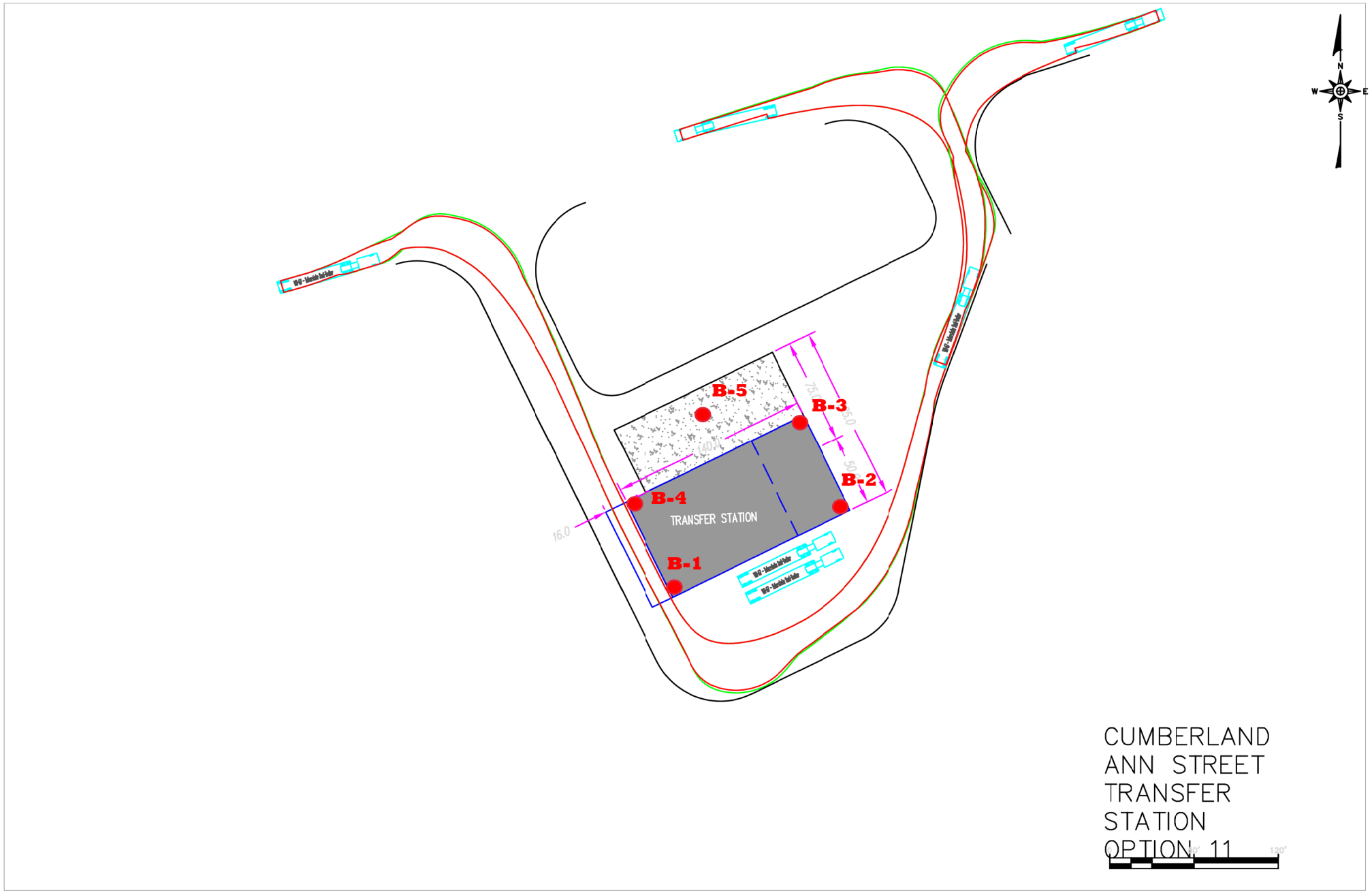
David L. Israel, P.E.
NC Registration No. 14319

Table 1

Summary of Boring Coordinates

Boring #	State Plane Coordinates (ft)	
	Northing	Easting
B-1	477961	2041207
B-2	478020	2041328
B-3	478085	2041298
B-4	478024	2041176
B-5	478089	2041222

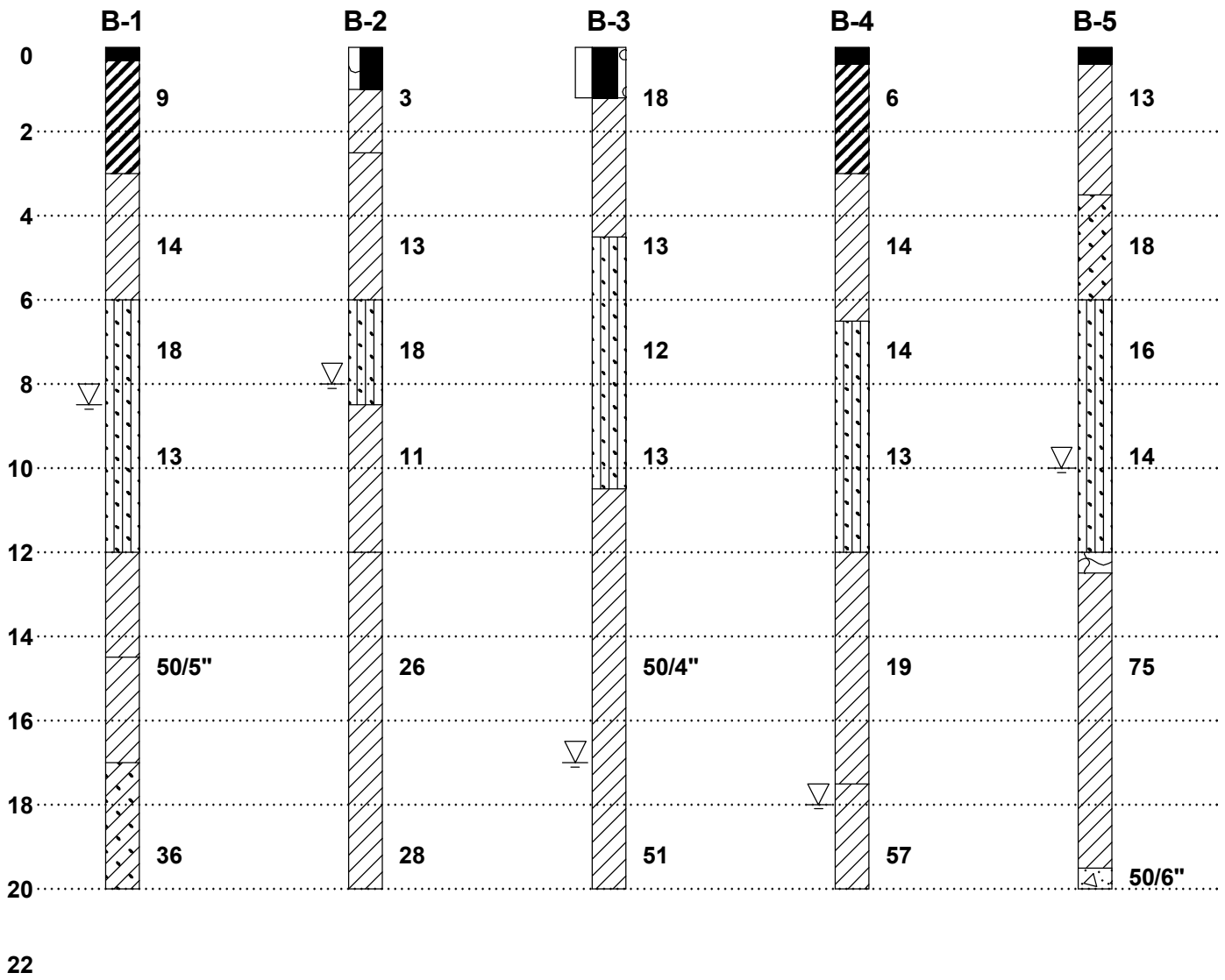
Figure 1



E:\transfer Station Op 11.dwg - 3/3/2023 9:54 AM

Figure 2

GENERALIZED SUBSURFACE PROFILE



LEGEND

- Topsoil
- High Plasticity Clay
- Low Plasticity Clay
- Silty Sand
- Clayey Sand
- Topsoil/Clay
- Topsoil/Gravel
- Quartz
- Partially Weathered Rock
- Fill
- Standard Penetration Resistance
- Groundwater at Time of Boring

PROJECT:

Cumberland County Transfer Station Fayetteville, NC

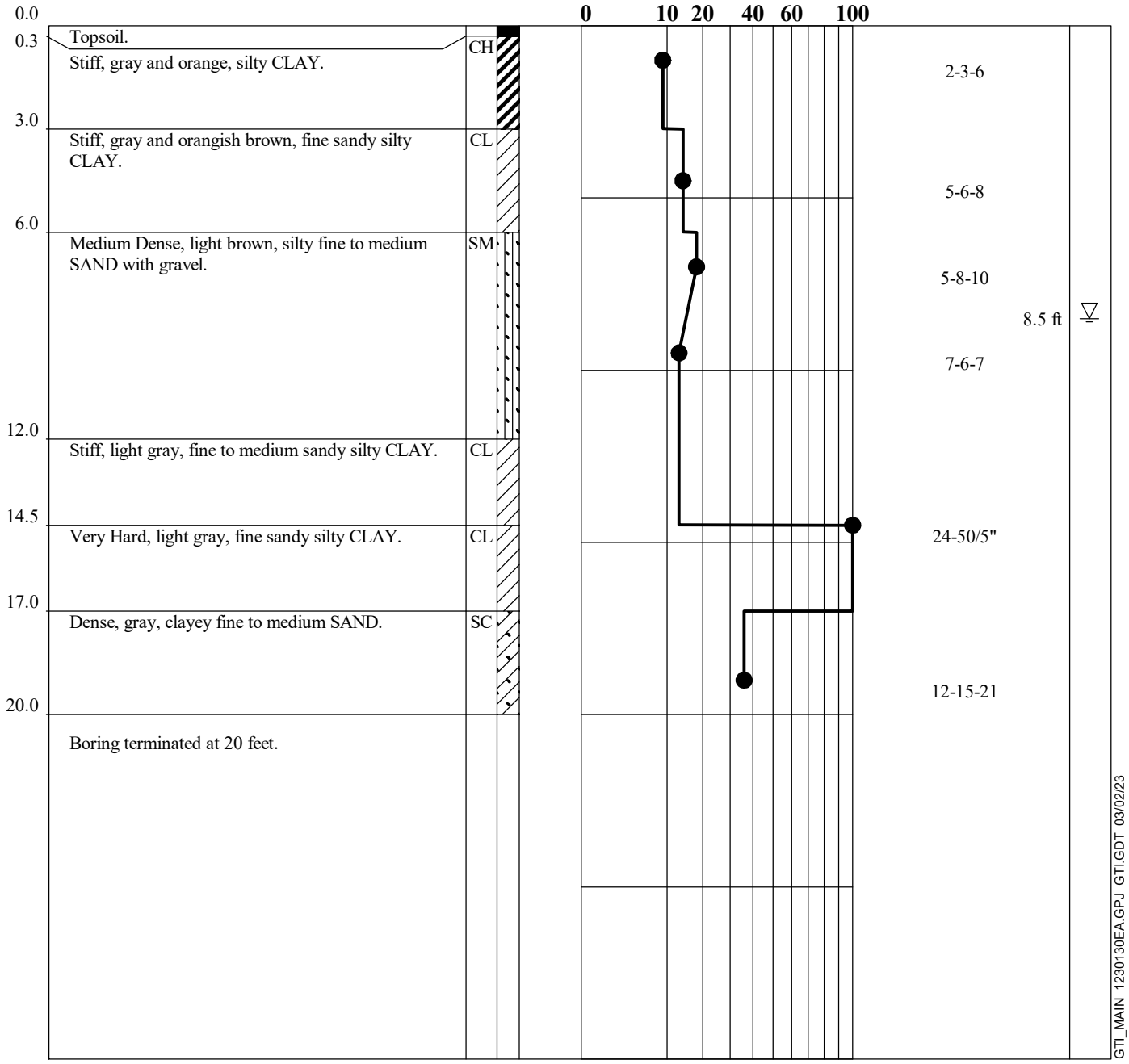
GeoTechnologies, Inc.

SCALE: As Shown

JOB No: 1230130EA

FIGURE No: 3

TEST BORING RECORD



Drilled with hollow stem augers and sampled with manual hammer.

JOB NUMBER 1230130EA
BORING NUMBER B-1
DATE 03-01-23

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Ct
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				
1.0	Topsoil and Clay.			
	Soft, grayish brown and orange, fine sandy silty CLAY.	CL		2-1-2
2.5	Stiff, gray and orange, fine sandy silty CLAY.	CL		4-5-8
6.0	Medium Dense, light gray and orangish brown, silty fine to medium SAND.	SM		7-8-10
8.5	Stiff, gray and orange, silty CLAY.	CL		3-4-7
12.0	Very Stiff, grayish brown, fine sandy silty CLAY.	CL		8-11-15
20.0				10-11-17
	Boring terminated at 20 feet.			

8 ft ▽

GTI_MAIN 1230130EA.GPJ GTI.GDT 03/02/23

Drilled with hollow stem augers and sampled with manual hammer.

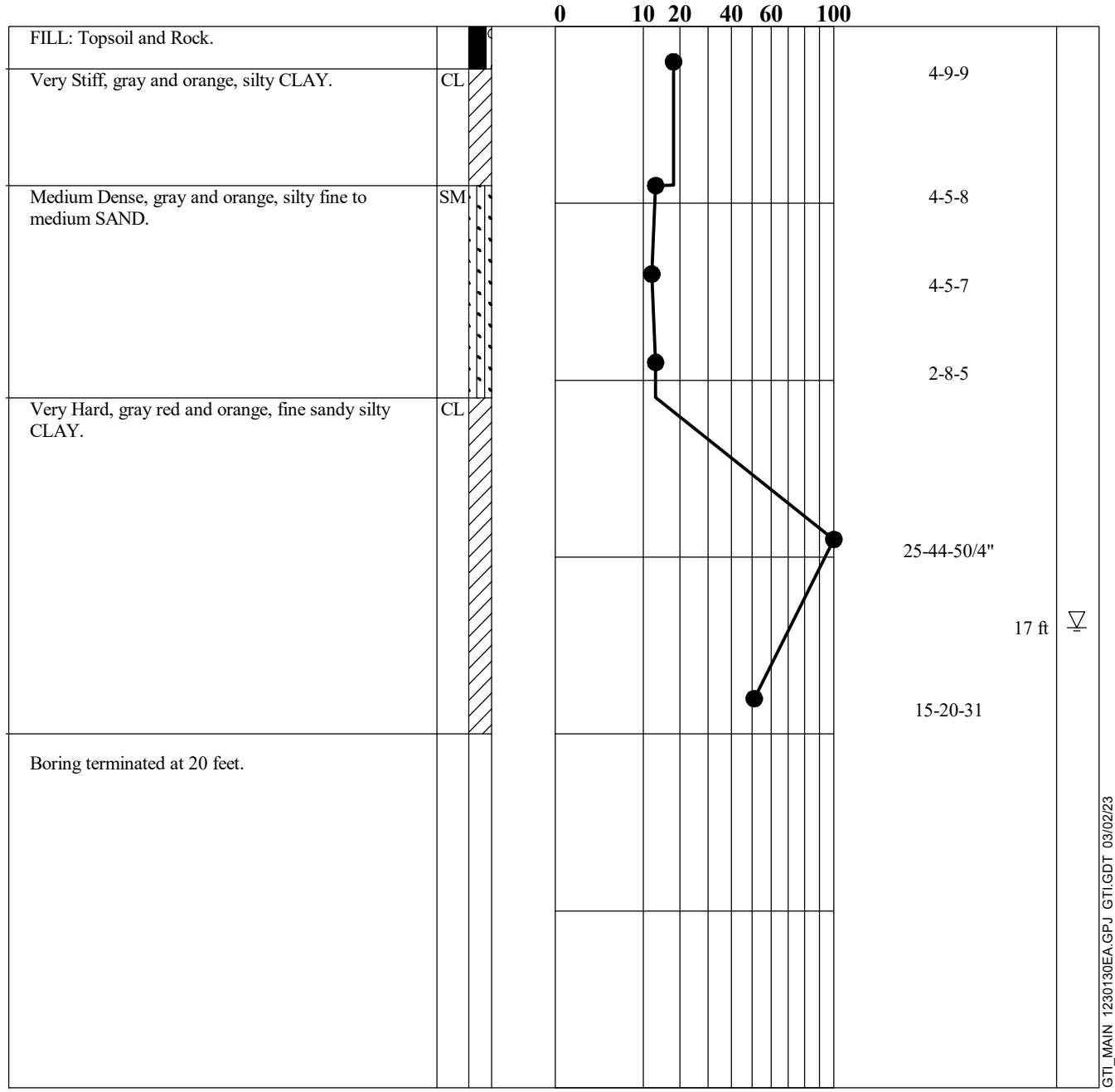
JOB NUMBER 1230130EA
BORING NUMBER B-2
DATE 03-01-23

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Ct
Raleigh, NC 27615

TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0	FILL: Topsoil and Rock.			
1.2	Very Stiff, gray and orange, silty CLAY.	CL		4-9-9
4.5	Medium Dense, gray and orange, silty fine to medium SAND.	SM		4-5-8 4-5-7 2-8-5
10.5	Very Hard, gray red and orange, fine sandy silty CLAY.	CL		25-44-50/4"
				17 ft ▽
20.0	Boring terminated at 20 feet.			15-20-31



GTI_MAIN 1230130EA.GPJ GTI.GDT 03/02/23

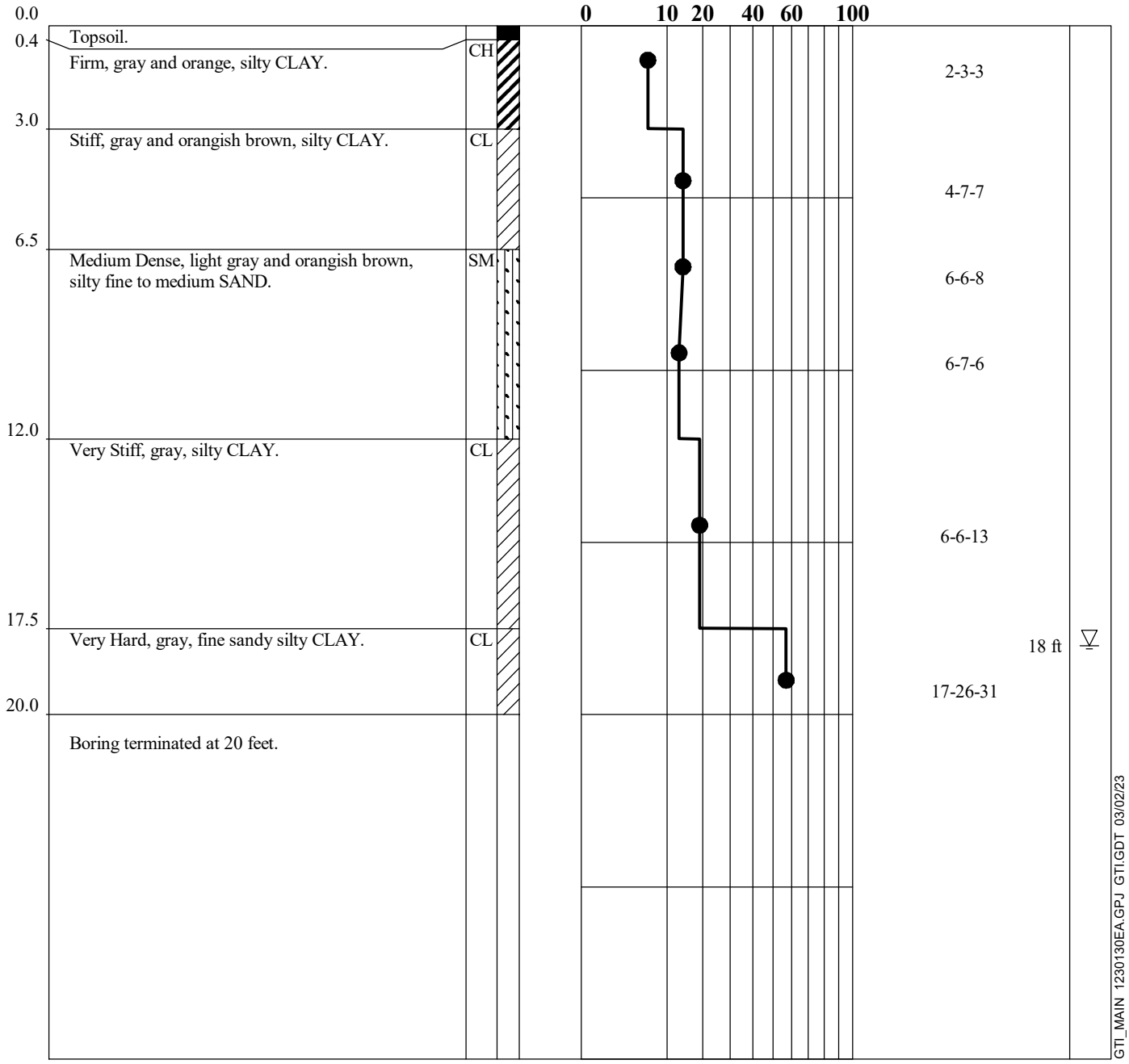
Drilled with hollow stem augers and sampled with manual hammer.

JOB NUMBER 1230130EA
BORING NUMBER B-3
DATE 03-01-23

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Ct
Raleigh, NC 27615

TEST BORING RECORD



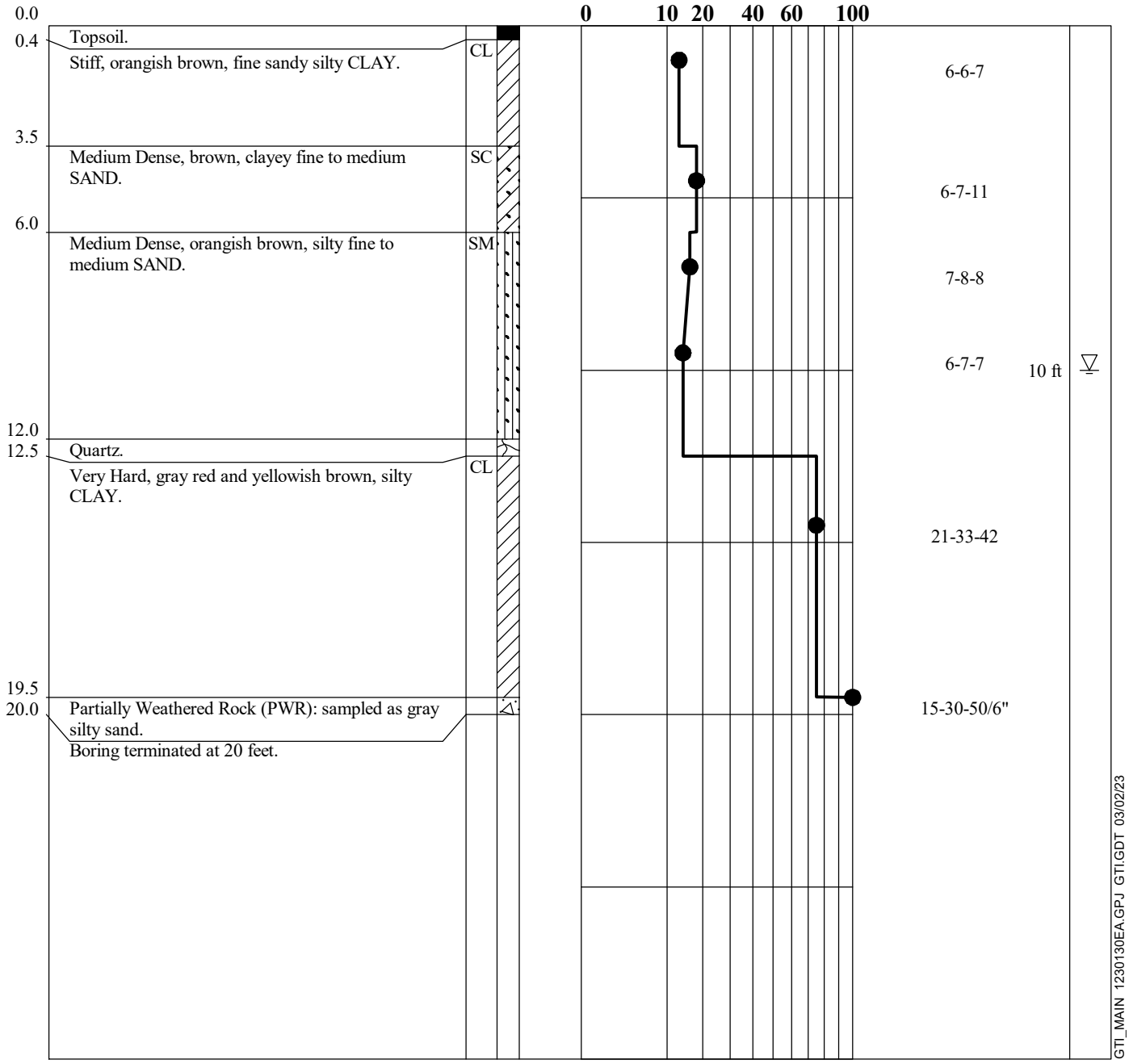
Drilled with hollow stem augers and sampled with manual hammer.

JOB NUMBER 1230130EA
BORING NUMBER B-4
DATE 02-28-23

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Ct
Raleigh, NC 27615

TEST BORING RECORD



Drilled with hollow stem augers and sampled with manual hammer.

JOB NUMBER 1230130EA
BORING NUMBER B-5
DATE 02-28-23

PAGE 1 OF 1

GeoTechnologies, Inc.
3200 Wellington Ct
Raleigh, NC 27615

GeoTechnologies, Inc.

Job No: 1-23-0130-EA Date: 03/08/23

Job Name: Cumberland County Transfer Staion

Job Location: Fayetteville, NC

Boring No: B-5

Sample No:

Depth: 0.5-4.0'

TEST RESULTS

Method of Test: ASTM D 698

Maximum Dry Density: 106.7 PCF

Optimum Moisture Content: 18.9%

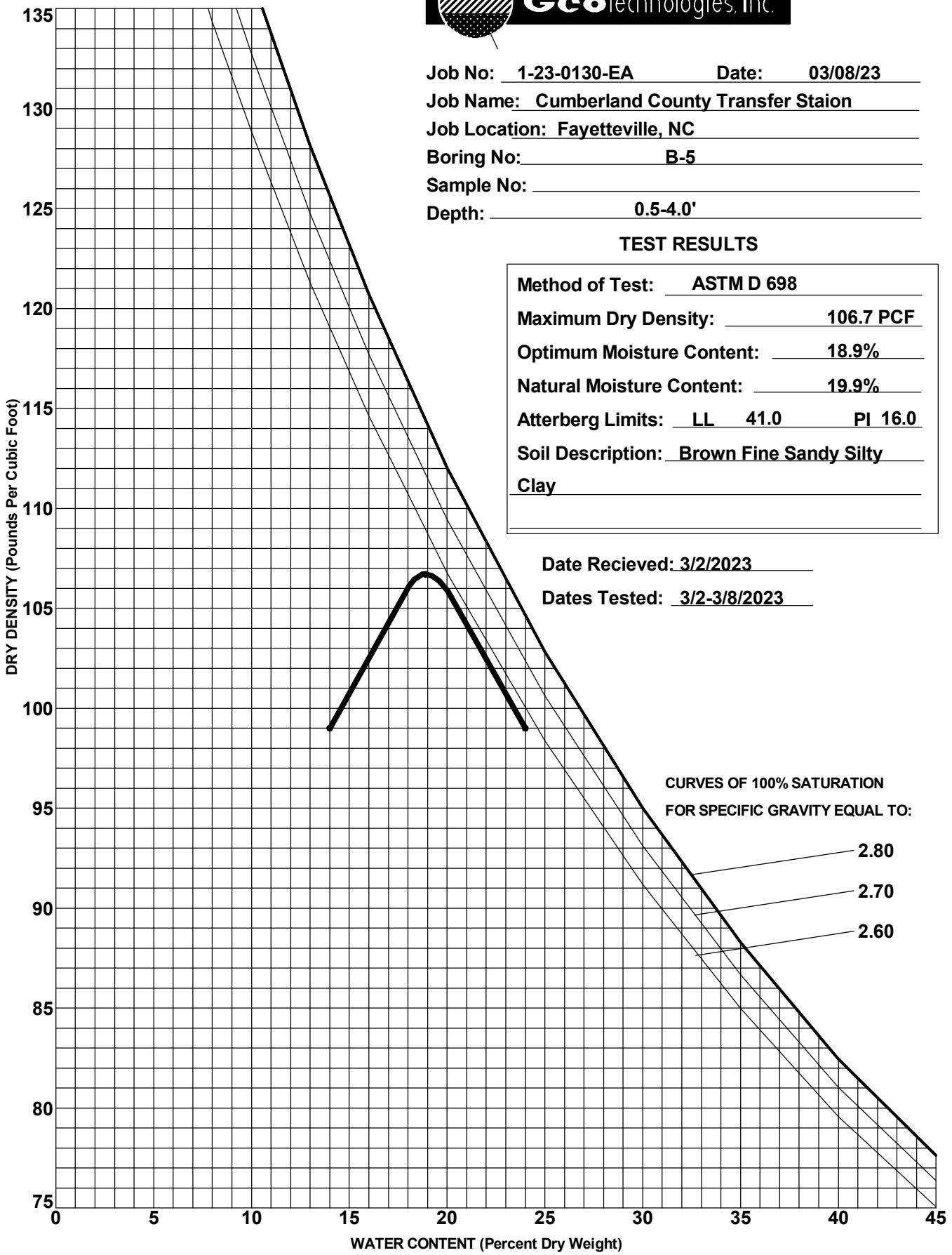
Natural Moisture Content: 19.9%

Atterberg Limits: LL 41.0 PI 16.0

Soil Description: Brown Fine Sandy Silty Clay

Date Recieved: 3/2/2023

Dates Tested: 3/2-3/8/2023



MOISTURE-DENSITY RELATIONSHIP

3200 Wellington Ct
Raleigh, NC 27615

GeoTechnologies, Inc. CBR DATA SHEET ASTM D-1883

JOB #: 1-23-0130-EA JOB NAME: Cumberland Co. Transfer Station

DATE: 3/8/2023 SAMPLE I.D.: B-5 Depth: 0.5-4.0'

NOTES: PROCTOR DATA: TEST PROCEDURE: ASTM D-698

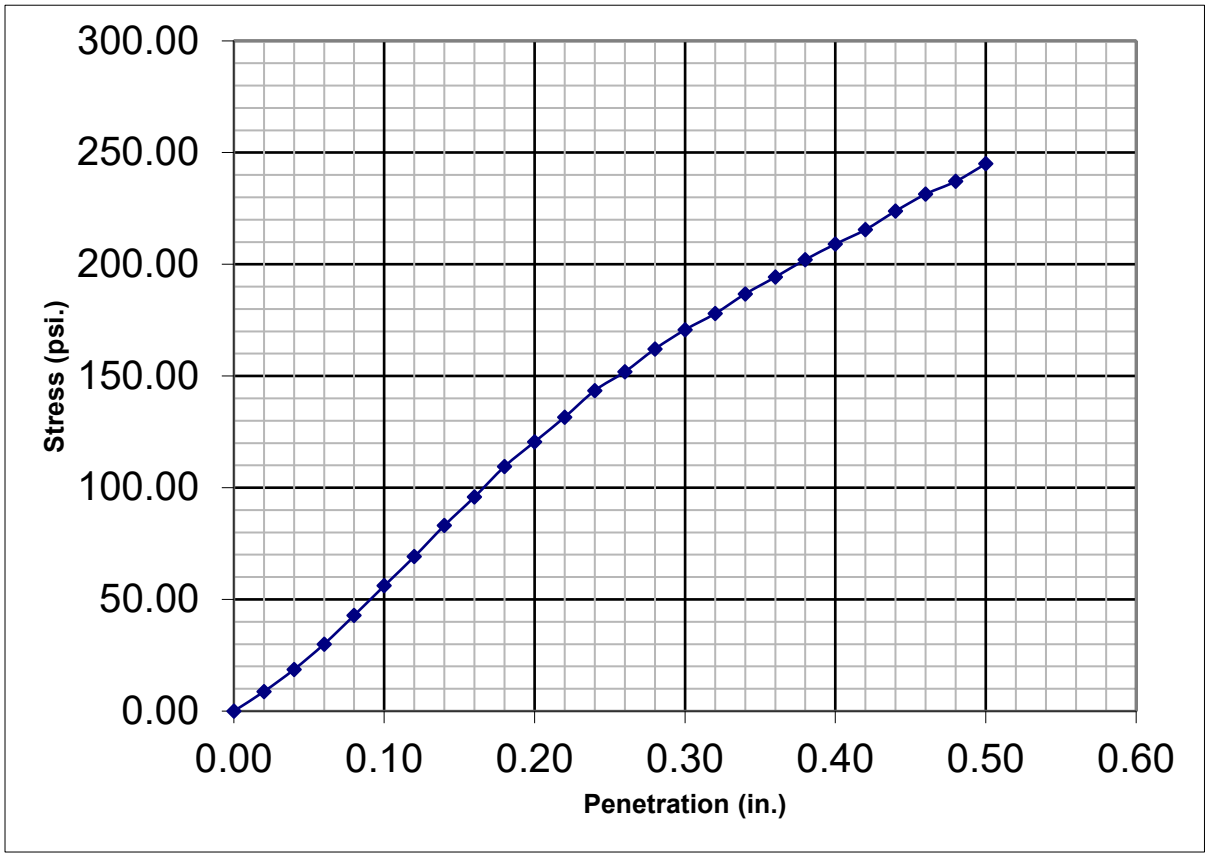
Opt. Moisture = 18.9% Max. Dry Density = 106.7

SOIL DESCRIPTION: Brown Fine Sandy Silty Clay

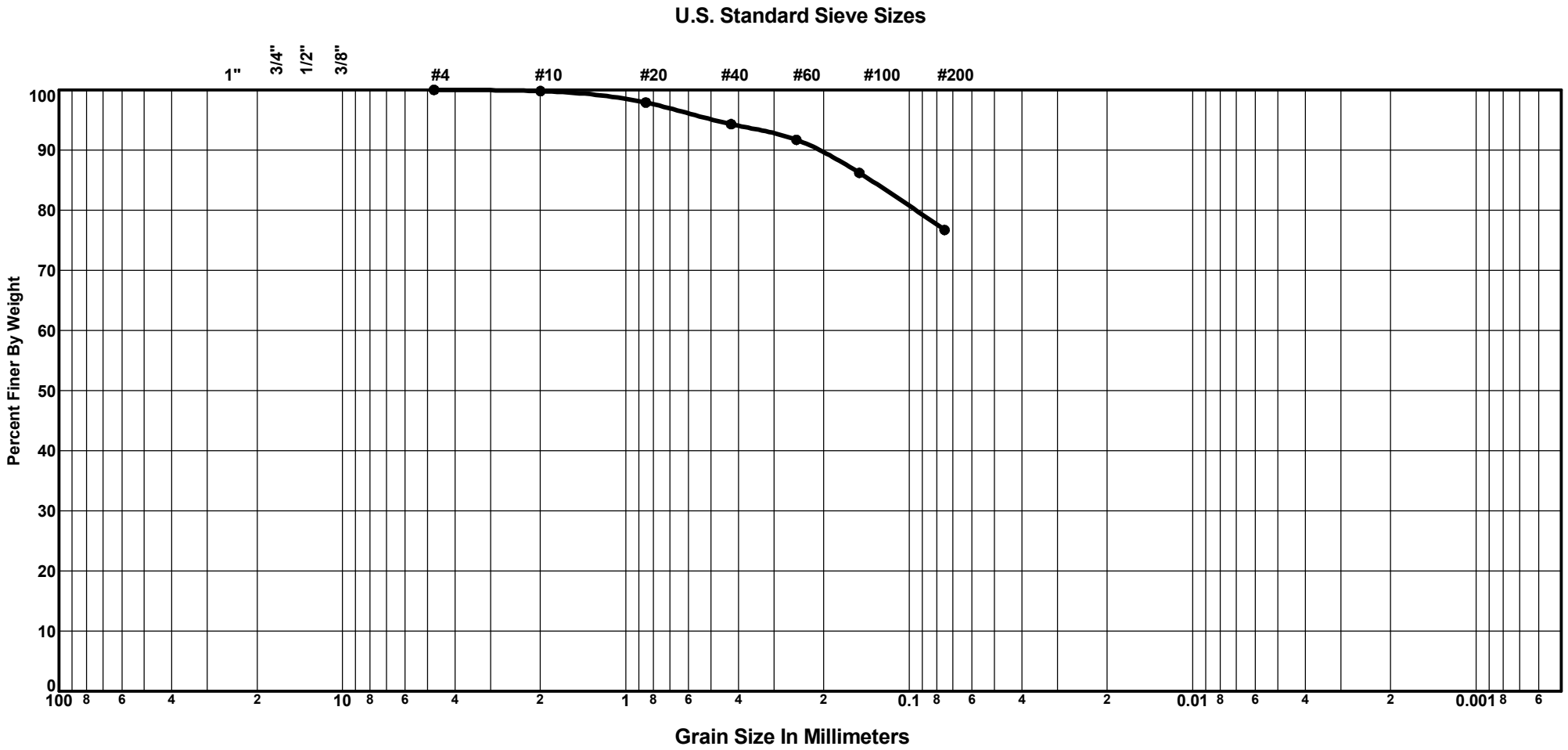
CBR SPECIMEN DATA		Swell Data	
MOISTURE CONTENT	19.6%	Initial Reading	0.349
WET DENSITY	126.3 lbs./cu.ft.	Final Reading	0.373
DRY DENSITY	105.6 lbs./cu.ft.	Mold Height	4.591
% COMPACTION	99.0 %	% Swell	0.52

LOAD CELL 5000 LB. RATE OF DEFORMATION .05 in./min.

SURCHARGE USED 10 lbs.



CBR @ 0.1"	5.6
CBR @ 0.2"	8.0
% SWELL	0.5



GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

Boring No.	Elev./Depth	Nat. W.C.	L.L.	P.L.	P.I.	Soil Description or Classification
B-5	0.5-4.0'	19.9	41.0	25.0	16.0	Brown Fine Sandy Silty Clay

Project:

Cumberland County Transfer Staion
Fayetteville, NC

Job No.: 1-23-0130-EA

Date: 03/08/23

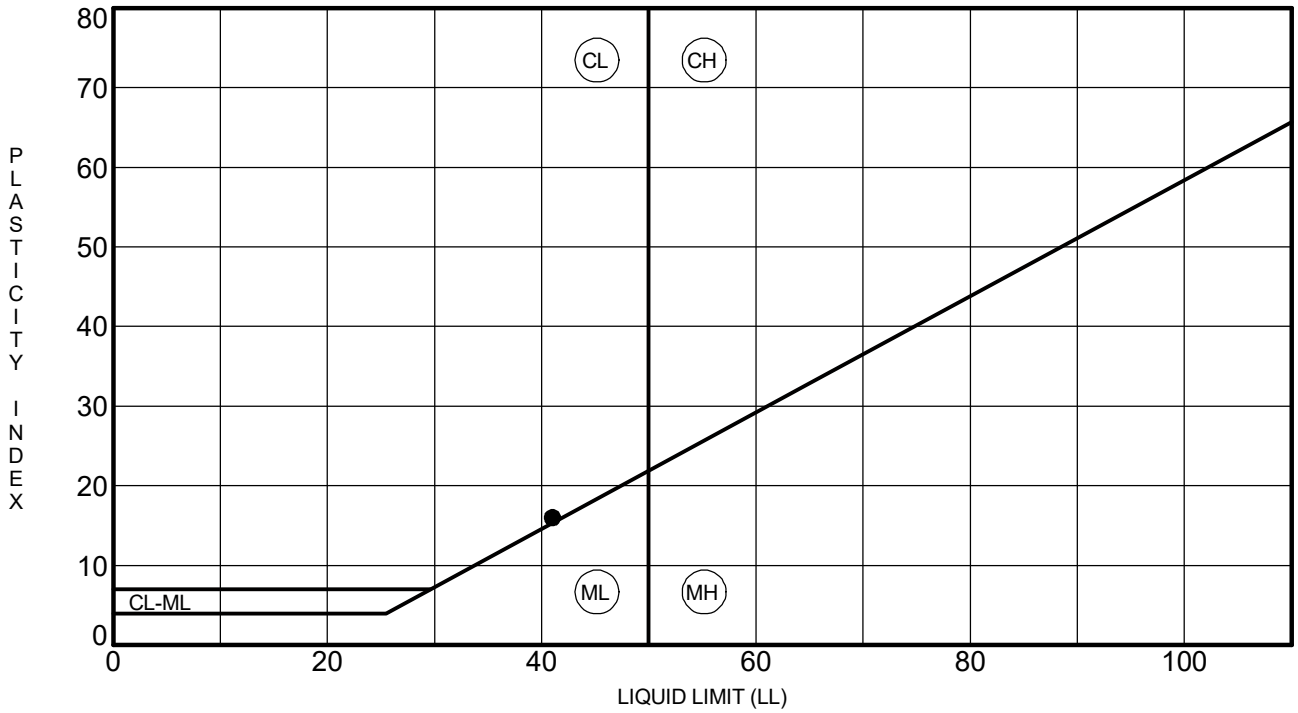
Date Recieved: 3/2/2023

Dates Tested: 3/2-3/8/2023

GRAIN SIZE DISTRIBUTION

GeoTechnologies, Inc.
3200 Wellington Ct
Raleigh, NC 27615

ASTM D-4318



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**B-5**	**0.5-4.0'**	**41**	**25**	**16**	**76.7**	**Brown Fine Sandy Silty Clay**

PROJECT **Cumberland County Transfer Staion - Fayetteville, NC**

JOB NO. **1-23-0130-EA**

DATE **03/08/23**

Date Recieved: 3/2/2023

Dates Tested: 3/2-3/8/2023

ATTERBERG LIMITS' RESULTS

3200 Wellington Ct
Raleigh, NC 27615

GeoTechnologies, Inc.
Geotechnical and Construction Materials Testing Services

3200 Wellington Court, Suite 108
Raleigh, NC 27615
(919) 954-1514

License No. C-0894

FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:** March 13, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS ☐ STRUCTURAL STEEL
			☐ FOOTING CHECK ☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):

FIELD INSPECTION AND OBSERVATION:

March 13, 2024 *(Clear, 68°F)*

GeoTechnologies representative was onsite to perform density testing.

Density testing was performed on proposed building area. The contractor notified representative that no building points where onsite yet, and no stakes were present onsite during fill process. Representative treated the entire area as structural fill due to area not being staked out prior to beginning fill placement. Proposed elevations were also not available, and all test elevations are referenced from residual soils. Technician performed 3 density tests on this day. The density tests met the compaction and moisture requirements. Please see attached for visualization of area of inspection. The contractor was informed of the results.

Representative departed the site once testing/inspections were completed.

DENSITY TEST RESULTS

#	Type of Test	Compaction	Wc +/- Opt.	Pass/Fail	Elevation	Stone Depth (in)
1	Drive Tube	100.2	-0.8	P	+1'	
2	Drive Tube	96.0	3.1	P	+1'	
3	Drive Tube	95.1	2.2	P	+1'	

GEOTECHNOLOGIES REP: Jeff Nunez-Sanchez
REVIEWED BY: Jason Parker
APPROVED: March 18, 2024

PRESENT AT SITE:

GeoTechnologies, Inc.
Geotechnical and Construction Materials Testing Services

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Raleigh, NC 27615
(919) 954-1514

License No. C-0894

FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:** March 13, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS ☐ STRUCTURAL STEEL
			☐ FOOTING CHECK ☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):

GEOTECHNOLOGIES REP: Jeff Nunez-Sanchez
REVIEWED BY: Jason Parker
APPROVED: March 18, 2024

PRESENT AT SITE:

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FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:** March 13, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS ☐ STRUCTURAL STEEL
			☐ FOOTING CHECK ☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):

GEOTECHNOLOGIES REP: Jeff Nunez-Sanchez
REVIEWED BY: Jason Parker
APPROVED: March 18, 2024

PRESENT AT SITE:

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FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:** March 13, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS ☐ STRUCTURAL STEEL
			☐ FOOTING CHECK ☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):

GEOTECHNOLOGIES REP:	Jeff Nunez-Sanchez	**PRESENT AT SITE:**
REVIEWED BY:	Jason Parker	
APPROVED:	March 18, 2024	

GeoTechnologies, Inc.
Geotechnical and Construction Materials Testing Services

In-Place Density Test Results

Project Info: Ann Street Transfer Station / Fayetteville, NC
Client: Smith Gardner, Inc.

Report Date: March 19, 2024
Project No: 1240267CA
Client Job No:

Test		In-Place Density Test				Reference Standard			Compaction		Location	Elevation or Stone Depth
#	Date	Type	Wet Density	Dry Density	Moisture Content	Type	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
1	03/13/2024	D-2937	126.9	109.4	16.0	D-698	109.2	16.8	95	**100+**	Northwest of fill area	+1'
2	03/13/2024	D-2937	125.7	104.8	19.9	D-698	109.2	16.8	95	**96.0**	Northeast of fill area	+1'
3	03/13/2024	D-2937	123.6	103.9	19.0	D-698	109.2	16.8	95	**95.1**	Southeast of fill area	+1’

* = Failed Specified Compaction and/or Moisture Content

All Test Locations and Elevations are approximate

References: D-8167: Standard Test Method for In-Place Density of Soil-Aggregates by a Low-Activity Nuclear Method, D-6938: Test Method for Density of Soil and Soil Aggregate in Place by Nuclear Method, D-1556: Test Method for Density and Unit Weight of Soil In Place by Sand Cone Method, D-2937: Test Method for Density of Soil In Place by Drive Cylinder Method, D-558: Moisture - Density Relations of Soil-Cement Mixtures, D-698: Laboratory Compaction Characteristics of Soil Using Standard Effort, D-1557: Laboratory Compaction Characteristics of Soil Using Modified Effort, D-2167: 08 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber, D-4959: Test Method for Determination of Soil by Direct Heating

Distribution: Louis Krasuski

Michael K. Morton
Name (Technical Responsibility)

Signature

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FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:** March 14, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS ☐ STRUCTURAL STEEL
			☐ FOOTING CHECK ☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):

FIELD INSPECTION AND OBSERVATION:

March 14, 2024 *(Clear, 53°F)*

GeoTechnologies representative was onsite to perform density testing.

Density testing was performed on proposed building area. The contractor notified representative that no building points where onsite yet, and no stakes were present onsite during fill process. Representative treated the entire area as structural fill due to area not being staked out prior to beginning fill placement. Technician performed 4 density tests on this day. The density tests met the compaction and moisture requirements. Please see attached for visualization of area of inspection. The contractor was informed of the results.

Representative departed the site once testing/inspections were completed.

DENSITY TEST RESULTS

#	Type of Test	Compaction	Wc +/- Opt.	Pass/Fail	Elevation	Stone Depth (in)
1	Drive Tube	98.2	1.0	P	+2'	
2	Drive Tube	97.1	0.9	P	+2'	
3	Drive Tube	100.6	-1.1	P	+2'	
4	Drive Tube	97.2	1.1	P	+2'	

GEOTECHNOLOGIES REP: Jeff Nunez-Sanchez
REVIEWED BY: Jason Parker
APPROVED: March 18, 2024

PRESENT AT SITE:

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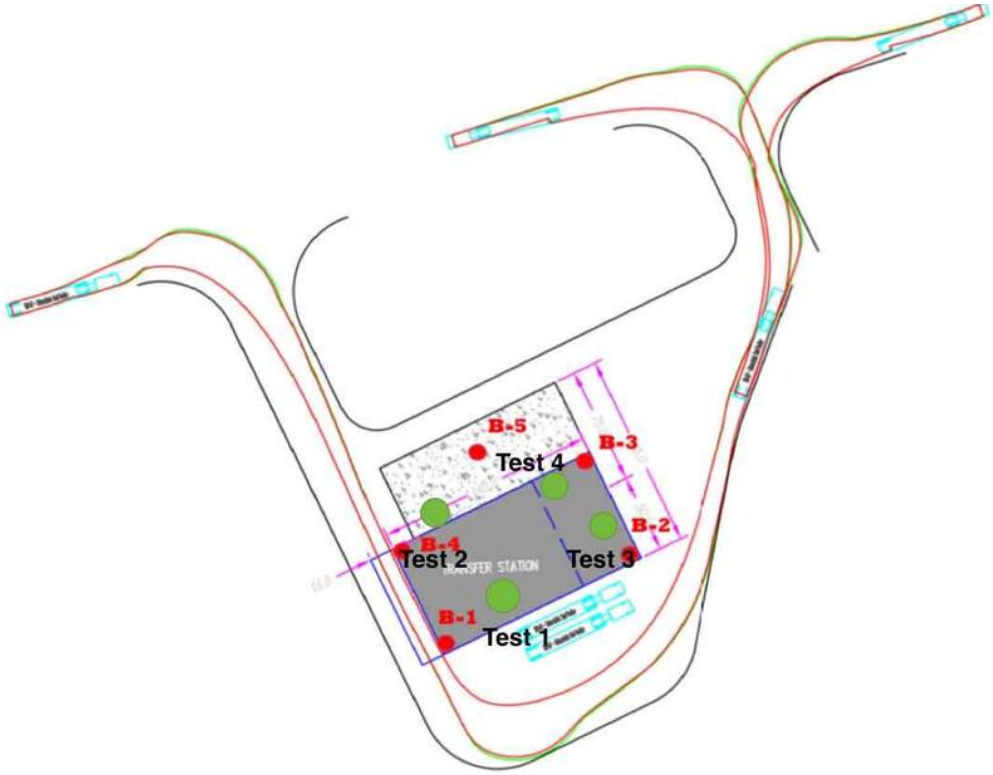
FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:**	March 14, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS	☐ STRUCTURAL STEEL
			☐ FOOTING CHECK	☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):	



CUMBERLAND
ANN STREET
TRANSFER
STATION
OPTION 11

GEOTECHNOLOGIES REP: Jeff Nunez-Sanchez
REVIEWED BY: Jason Parker
APPROVED: March 18, 2024

PRESENT AT SITE:

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FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:** March 14, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS ☐ STRUCTURAL STEEL
			☐ FOOTING CHECK ☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):

GEOTECHNOLOGIES REP:	Jeff Nunez-Sanchez	**PRESENT AT SITE:**
REVIEWED BY:	Jason Parker	
APPROVED:	March 18, 2024	

GeoTechnologies, Inc.
Geotechnical and Construction Materials Testing Services

In-Place Density Test Results

Project Info: Ann Street Transfer Station / Fayetteville, NC
Client: Smith Gardner, Inc.

Report Date: March 19, 2024
Project No: 1240267CA
Client Job No:

Test		In-Place Density Test				Reference Standard			Compaction		Location	Elevation or Stone Depth
#	Date	Type	Wet Density	Dry Density	Moisture Content	Type	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
4	03/14/2024	D-2937	126.3	107.2	17.8	D-698	109.2	16.8	98	**98.2**	Southeast of fill area	+2'
5	03/14/2024	D-2937	124.8	106.0	17.7	D-698	109.2	16.8	95	**97.1**	Northwest of fill area	+2'
6	03/14/2024	D-2937	127.2	109.9	15.7	D-698	109.2	16.8	95	**100+**	Southwest of fill area	+2'
7	03/14/2024	D-2937	124.8	105.9	17.9	D-698	109.0	16.8	95	**97.2**	Northeast of fill area	+2'

* = Failed Specified Compaction and/or Moisture Content

All Test Locations and Elevations are approximate

References: D-8167: Standard Test Method for In-Place Density of Soil-Aggregates by a Low-Activity Nuclear Method, D-6938: Test Method for Density of Soil and Soil Aggregate in Place by Nuclear Method, D-1556: Test Method for Density and Unit Weight of Soil In Place by Sand Cone Method, D-2937: Test Method for Density of Soil In Place by Drive Cylinder Method, D-558: Moisture - Density Relations of Soil-Cement Mixtures, D-698: Laboratory Compaction Characteristics of Soil Using Standard Effort, D-1557: Laboratory Compaction Characteristics of Soil Using Modified Effort, D-2167: 08 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber, D-4959: Test Method for Determination of Soil by Direct Heating

Distribution: Louis Krasuski

Michael K. Morton
Name (Technical Responsibility)

Signature

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FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:** March 15, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS ☐ STRUCTURAL STEEL
			☐ FOOTING CHECK ☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):

FIELD INSPECTION AND OBSERVATION:

March 15, 2024 *(Clear, 64°F)*

GeoTechnologies representative was onsite to perform density testing.

Density testing was performed on proposed building area. The contractor notified representative that no building points where onsite yet, and no stakes were present onsite during fill process. Representative treated the entire area as structural fill due to area not being staked out prior to beginning fill placement. Technician performed 4 density tests on this day. The density tests met the compaction and moisture requirements. Please see attached for visualization of area of inspection. The contractor was informed of the results.

Representative departed the site once testing/inspections were completed.

DENSITY TEST RESULTS

#	Type of Test	Compaction	Wc +/- Opt.	Pass/Fail	Elevation	Stone Depth (in)
1	Drive Tube	102.6	-1.7	P	+3'	
2	Drive Tube	99.8	-2.6	P	+3'	
3	Drive Tube	100.5	-0.6	P	+4'	
4	Drive Tube	96.0	1.1	P	+4'	

GEOTECHNOLOGIES REP: Jeff Nunez-Sanchez
REVIEWED BY: Jason Parker
APPROVED: March 18, 2024

PRESENT AT SITE:

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FIELD REPORT

	PROJECT:	Ann Street Transfer Station	**DATE OF VISIT:** March 15, 2024
	LOCATION:	Fayetteville, NC	☑ SOILS ☐ STRUCTURAL STEEL
			☐ FOOTING CHECK ☐ CONCRETE
RE:	**PROJECT NO:**	1240267CA	☐ OTHER (SPECIFY):

GEOTECHNOLOGIES REP: Jeff Nunez-Sanchez
REVIEWED BY: Jason Parker
APPROVED: March 18, 2024

PRESENT AT SITE:

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In-Place Density Test Results

Project Info: Ann Street Transfer Station / Fayetteville, NC
Client: Smith Gardner, Inc.

Report Date: March 19, 2024
Project No: 1240267CA
Client Job No:

Test		In-Place Density Test				Reference Standard			Compaction		Location	Elevation or Stone Depth
#	Date	Type	Wet Density	Dry Density	Moisture Content	Type	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
8	03/15/2024	D-2937	128.9	112.0	15.1	D-698	109.2	16.8	95	**100+**	Southwest of fill area	+3'
9	03/15/2024	D-2937	124.5	109.0	14.2	D-698	109.2	16.8	95	**99.8**	Northwest of fill area	+3'
10	03/15/2024	D-2937	127.5	109.7	16.2	D-698	109.2	16.8	95	**100+**	Southeast of fill area	+4'
11	03/15/2024	D-2937	123.6	104.8	17.9	D-698	109.2	16.8	95	**96.0**	Northeast of fill area	+4'

* = Failed Specified Compaction and/or Moisture Content

All Test Locations and Elevations are approximate

References: D-8167: Standard Test Method for In-Place Density of Soil-Aggregates by a Low-Activity Nuclear Method, D-6938: Test Method for Density of Soil and Soil Aggregate in Place by Nuclear Method, D-1556: Test Method for Density and Unit Weight of Soil In Place by Sand Cone Method, D-2937: Test Method for Density of Soil In Place by Drive Cylinder Method, D-558: Moisture - Density Relations of Soil-Cement Mixtures, D-698: Laboratory Compaction Characteristics of Soil Using Standard Effort, D-1557: Laboratory Compaction Characteristics of Soil Using Modified Effort, D-2167: 08 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber, D-4959: Test Method for Determination of Soil by Direct Heating

Distribution: Louis Krasuski

Michael K. Morton
Name (Technical Responsibility)

Signature