



GeoTechnologies, Inc.

Geotechnical and Construction Materials Testing Services

February 12, 2009

City of Rocky Mount Department of Engineering
PO Box 1180
Rocky Mount, North Carolina 27802

Attention: Mr. Brad Kerr, P.E.

Reference: Annexation Area 8B Sewer Line
Rocky Mount, North Carolina
GeoTechnologies Project No. 1-09-0019-EA

Dear Sir:

GeoTechnologies has completed the authorized investigation of subsurface conditions for the purpose of evaluating suitability of material for use as backfill and the presence of difficult to excavate material for the proposed sewer line in Annexation Area 8B in Rocky Mount, North Carolina. The purpose of this report is to present and discuss the findings of our evaluation.

INVESTIGATION PROCEDURES

A total of twenty-eight (28) test borings were performed along the proposed sewer line for Annexation Area 8B at locations provided by City of Rocky Mount Engineering. The boring locations were established using GPS, therefore the indicated locations should be considered accurate to within 5 feet. Test borings 26-28 and 30-50 were extended using an off-road drilling rig to depths ranging from 8 to 21 feet below existing site grade. Test borings 30 and 45 were offset approximately 6 feet along the proposed path of the sewer line to avoid obstacles to the drilling rig. Test borings 22-25 and 29 were extended using hand augers to depths ranging from 8 to 14 feet below existing site grade. All test borings were refilled upon completion of the field work.

Approximate locations of test borings are presented on the attached site plan (Figure 1) in the attachments to this report. North Carolina State plane coordinates of the boring locations are presented in Table 1.

SUBSURFACE CONDITIONS

Generalized subsurface profiles prepared from the test boring data are attached to this report as Figures 3A through 3E to graphically illustrate subsurface conditions encountered at this site. More detailed descriptions of the conditions encountered at the test boring locations are then presented on the attached test boring records.

The soils encountered in the test borings consisted of silty sands, clayey sands, moderate to high plasticity clays, sandy clays, and low plasticity silts with Unified Soil Classifications of SM, SC, SC-SM, SC-CL, CH, CH-SC, and ML. Penetration resistances in these soils ranged from 1 to more than 20 blows per foot (bpf) or blows per increment (bpi). Fill material was encountered in several borings in the top 3

inches to 2.5 feet. Water was encountered in multiple borings at depths ranging from 0.5 to 11 feet at the time of boring completion. Many of the test borings caved at depths ranging from 6 to 17 feet. No rock or partially weathered rock (PWR) was encountered in any of the test borings. Hand auger test borings 23, 24, and 29 did not reach the intended termination depths of 15, 11, and 12 feet, respectively due to caving and inability to retain material in the hand auger bucket. Table 1 lists test borings with corresponding groundwater table, cave, and fill depths.

RECOMMENDATIONS

The following recommendations are made based upon a review of the attached data, our understanding of the proposed construction, and past experience with similar projects and subsurface conditions. Should alignment 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.

Difficult Excavation Considerations. No material constituting difficult to excavate material was encountered in the test borings. However, such material may be present intermediate of the test borings.

Pipeline Bedding and Trench Backfilling. We anticipate the materials present at the invert elevations will be adequate for support except in the borings shown in Figure 2. The materials encountered at the invert elevations in these borings exhibited very low penetration resistances. These areas and any other areas intermediate of the test borings where soft or loose soils are encountered should be over-excavated as directed by the geotechnical engineer and backfilled with washed stone. If any perched or true groundwater is encountered during line installation, some stone may be needed to maintain a clean excavation bottom, and to facilitate dewatering.

A standard backfill compaction recommendation for soils placed over the pipe is to compact the material to at least 90% of the standard Proctor maximum dry density, except where post-construction settlement of backfill cannot be tolerated (i.e. beneath paved areas or structures). The soils encountered during our investigation should generally be suitable for reuse as backfill, except that the contractor may need to be selective where the excavated soils are wet of optimum moisture content. Nearly all soils encountered were wet of optimum moisture content and will require drying prior to use as backfill. Compaction moisture should be maintained within 4% of optimum moisture content. If the excavated material cannot be easily dried to meet this requirement for reuse as backfill, other material should be imported.

The initial lifts of backfill over the pipe should consist of soil and not contain large pieces of rock or weathered rock to serve as a cushion over the pipe for subsequent fill placement and compaction.

Any excavations through roadways should be backfilled entirely with on-site or imported select fill compacted to 95% of the standard Proctor maximum dry density except in the top 1 foot beneath design subgrade where this requirement should be increased to 100% of the standard Proctor maximum dry density. Compaction moisture content under roadways or other sensitive areas should be maintained within 2% of optimum moisture content.

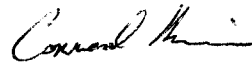
Stability & Groundwater Considerations. The results of our borings indicated that groundwater is currently within 0.5 to 11 feet of existing site grade, and this depth will likely vary during other times of the year. Therefore, the contractor must be prepared to deal with groundwater when excavating to the bottom elevation. A common dewatering practice during trench installation is to use a sump and mud pump to remove any water that enters the excavation; however, it is possible that the rate at which groundwater enters the excavation may exceed the contractor's ability to remove it. To ensure that these issues do not arise, consideration could be given to using a proactive dewatering approach in the form of wellpoints to lower water levels to an appropriate depth below the invert depths.

Due to the anticipated excavation depths, we recommend that the contractor be prepared to use temporary shoring such as a trench box during installation for safety. Nearby structures and roads will likely restrict available work space and will prevent the use of open slopes. Temporary bracing may be needed in areas of deep excavation. Braced excavations should be designed and installed by qualified personnel. All OSHA regulations regarding excavation safety should be followed during the construction operations.

GeoTechnologies appreciates the opportunity to be of service to the City of Rocky Mount on this project. Please contact us if you have any questions regarding this report.

Sincerely,

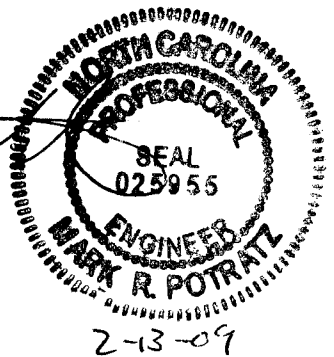
GeoTechnologies, Inc.



Conrad Harris, EI
Staff Engineer

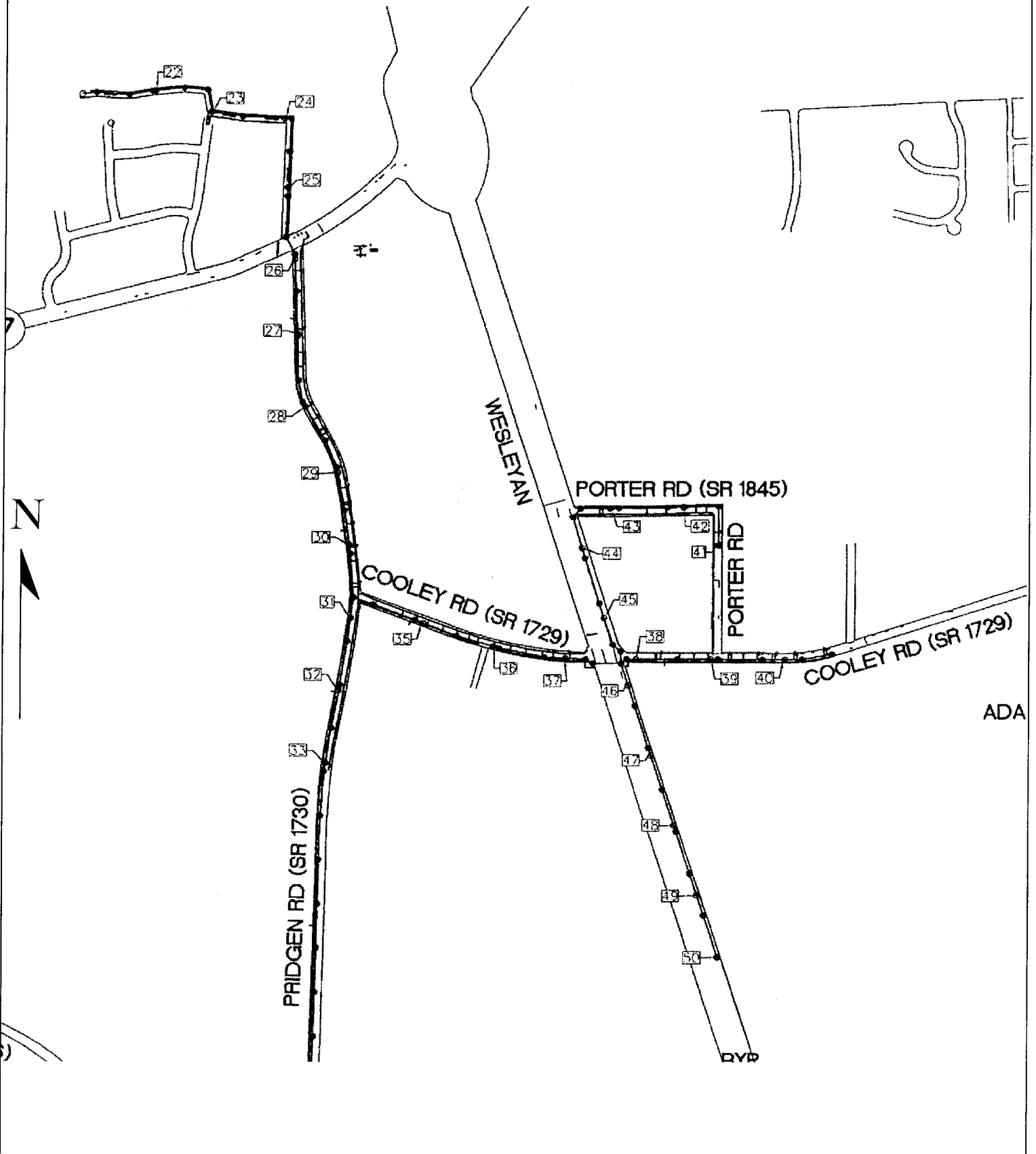


Mark R. Potratz, P.E.
NC Registration No. 25955



WB-CEH
Attachments

Site Plan

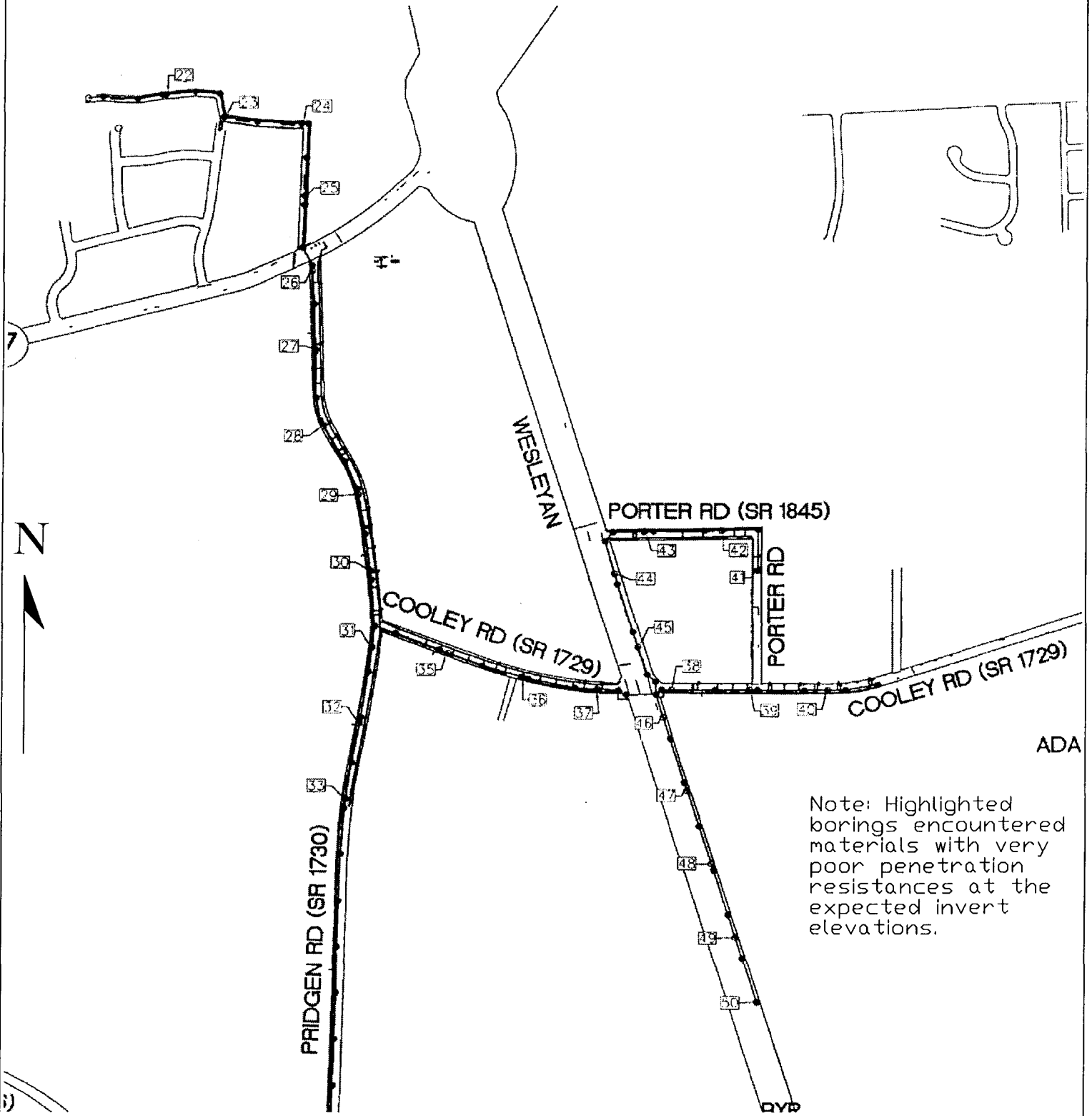


PROJECT:
Annexation Area 8B
Rocky Mount, North
Carolina



SCALE: Not to Scale
JOB No: 1-09-0019-EA
FIGURE No: 1

Borings With Poor Bearing Material at Invert Elevation



PROJECT:
 Annexation Area 8B
 Rocky Mount, North
 Carolina



SCALE: Not to Scale
 JOB No: 1-09-0019-EA
 FIGURE No: 2

Table 1

**Boring Locations
North Carolina State Plane Coordinates**

Annexation Area 8B
Rocky Mount, North Carolina
GeoTechnologies Project No. 1-09-0019-EA

	BORING	NORTHING	EASTING
22	5+00 Outfall	N 789,415	E 2,344,359
23	10+00 Outfall	N 789,274	E 2,344,733
24	15+00 Outfall	N 789,232	E 2,345,229
25	20+00 Outfall	N 788,774	E 2,345,253
26	1+65 Pridgen	N 788,289	E 2,345,301
27	6+65 Pridgen	N 787,789	E 2,345,319
28	11+65 Pridgen	N 787,297	E 2,345,376
29	16+65 Pridgen	N 786,851	E 2,345,596
30	21+65 Pridgen	N 786,358	E 2,345,674
31	26+65 Pridgen	N 785,860	E 2,345,684
32	31+65 Pridgen	N 785,366	E 2,345,607
33	36+65 Pridgen	N 784,871	E 2,345,516
35	5+00 Cooley	N 785,825	E 2,346,170
36	10+00 Cooley	N 785,667	E 2,346,644
37	15+00 Cooley	N 785,586	E 2,347,136
38	20+00 Cooley	N 785,578	E 2,347,618
39	25+00 Cooley	N 785,578	E 2,348,118
40	30+00 Cooley	N 785,576	E 2,348,618
41	12+80 Porter	N 786,355	E 2,348,172
42	7+80 Porter	N 786,618	E 2,347,940
43	2+80 Porter	N 786,609	E 2,347,440
44	8+55 Wesleyan	N 786,337	E 2,347,249
45	3+55 Wesleyan	N 785,860	E 2,347,401
46	1+55 Wesleyan	N 785,401	E 2,347,565
47	6+55 Wesleyan	N 784,925	E 2,347,719
48	11+55 Wesleyan	N 784,450	E 2,347,872
49	16+55 Wesleyan	N 783,974	E 2,348,026
50	21+00 Wesleyan	N 783,552	E 2,348,162

TABLE 2**Test Boring Summary
Groundwater, Cave, and Fill Depths**

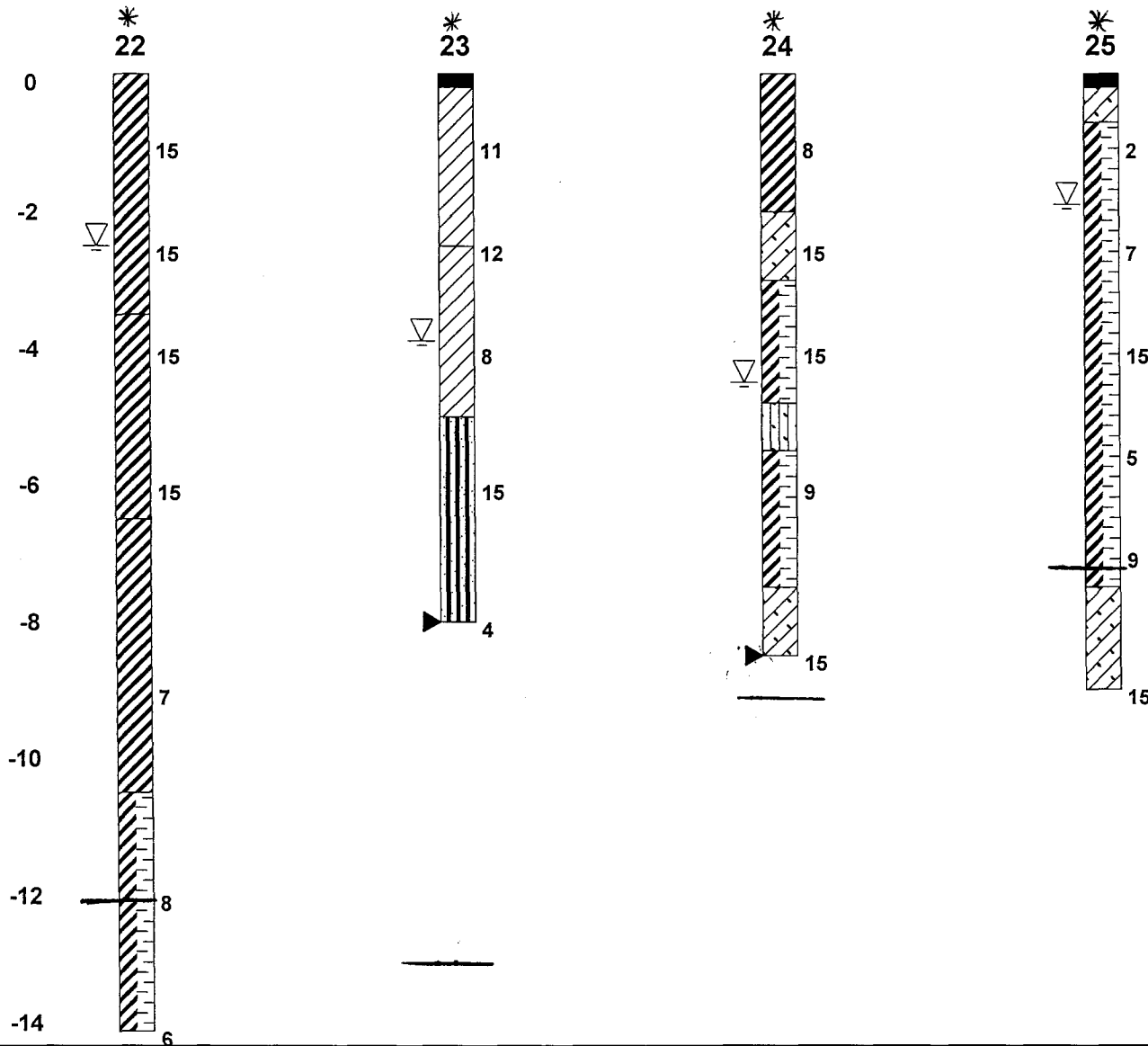
Annexation Area 8B
Rocky Mount, North Carolina
GeoTechnologies Project No. 1-09-0019-EA

Boring	Depth to Groundwater Table (ft)	Cave Depth (ft)	Fill Depth (ft)
22	2.5	-	-
23	4	8	-
24	4.5	8.5	-
25	2	-	-
26	7.5	9	1
27	-	-	-
28	-	10.5	-
29	4	7.75	-
30	-	12.5	-
31	-	-	-
32	8.5	10	-
33	-	7	-
35	9	11.5	-
36	5	11.5	-
37	0.5	17	0.5
38	5.5	14	2.5
39	3.5	12	-
40	11	-	1
41	-	-	-
42	-	-	-
43	-	-	-
44	-	7.5	-
45	-	10.5	-
46	3	10.5	-
47	2	8	-
48	3	6	0.7
49	-	6.5	0.25
50	2.5	6	-

Elevation (Feet)

GENERALIZED SUBSURFACE PROFILE

LEGEND



- High Plasticity Clay
- Very Sandy Plastic CLAY
- Topsoil
- Low Plasticity Clay
- Silty and Clayey Sand
- Clayey Sand
- Silty Sand
- 8 Dynamic Cone Penetration
- Groundwater at Time of Boring
- Cave Depth
- * Hand-auger boring with blows per increment (bpi)*
- Invert Depth*

PROJECT:

Subsurface Investigation
Annexation Area 8B - Sewer Line
Rocky Mount, North Carolina



SCALE: As Shown

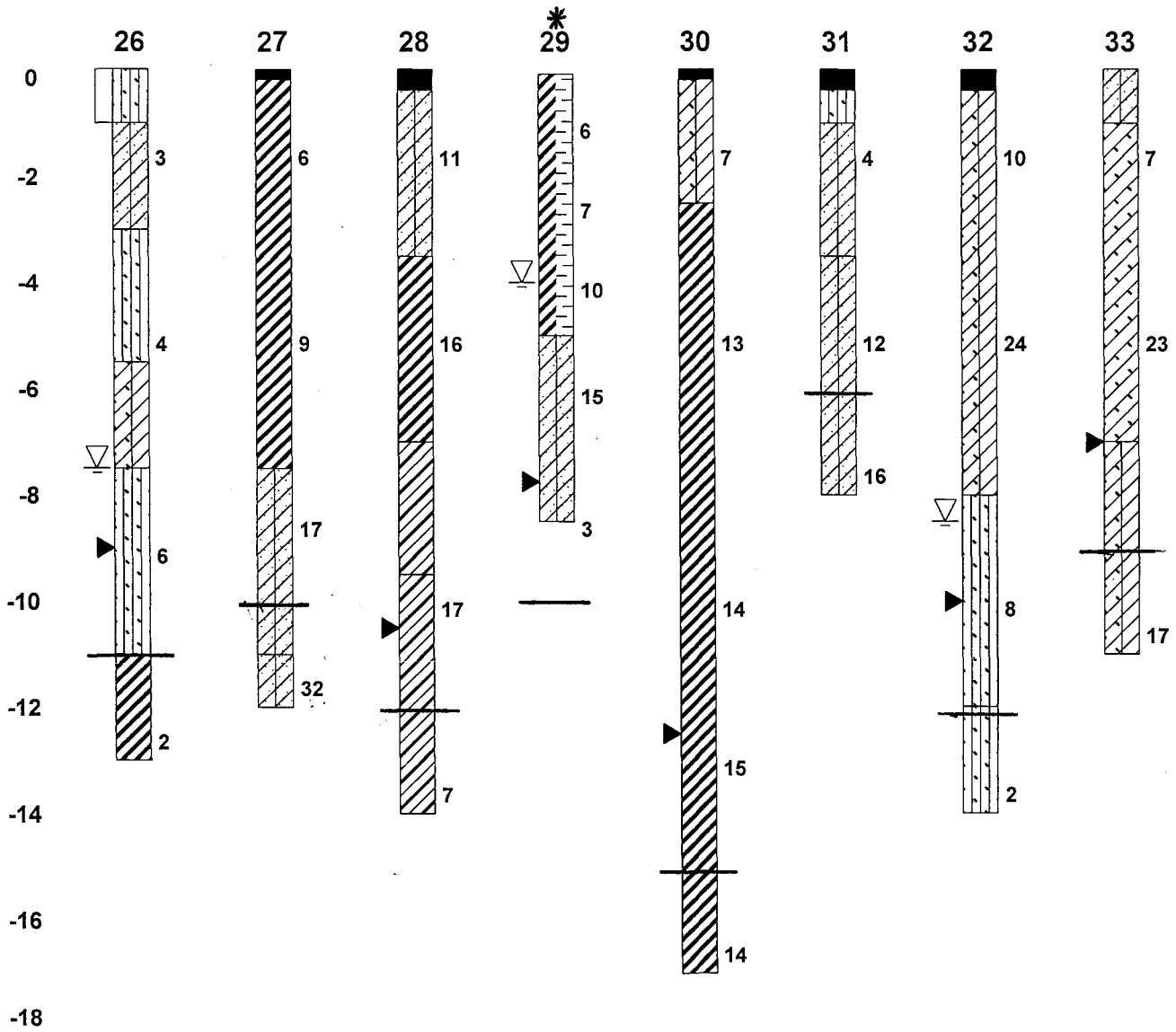
JOB No:1-09-0019-EA

FIGURE No: 3A

Elevation (Feet)

GENERALIZED SUBSURFACE PROFILE

LEGEND



- Silty Sand
- Slightly Clayey Fine to Medium SAND
- Clayey Sand - Sandy Clay
- High Plasticity Clay
- Topsoil
- Moderate Plasticity Clay
- Very Sandy Plastic CLAY
- Clayey Sand
- Fill
- 8 Standard Penetration Resistance
- 8 Dynamic Cone Penetration
- Groundwater at Time of Boring
- Cave Depth
- * Hand-auger boring with blows per increment (bpi)*
- Invert Depth*

PROJECT:

Subsurface Investigation
Annexation Area 8B - Sewer Line
Rocky Mount, North Carolina



SCALE: As Shown

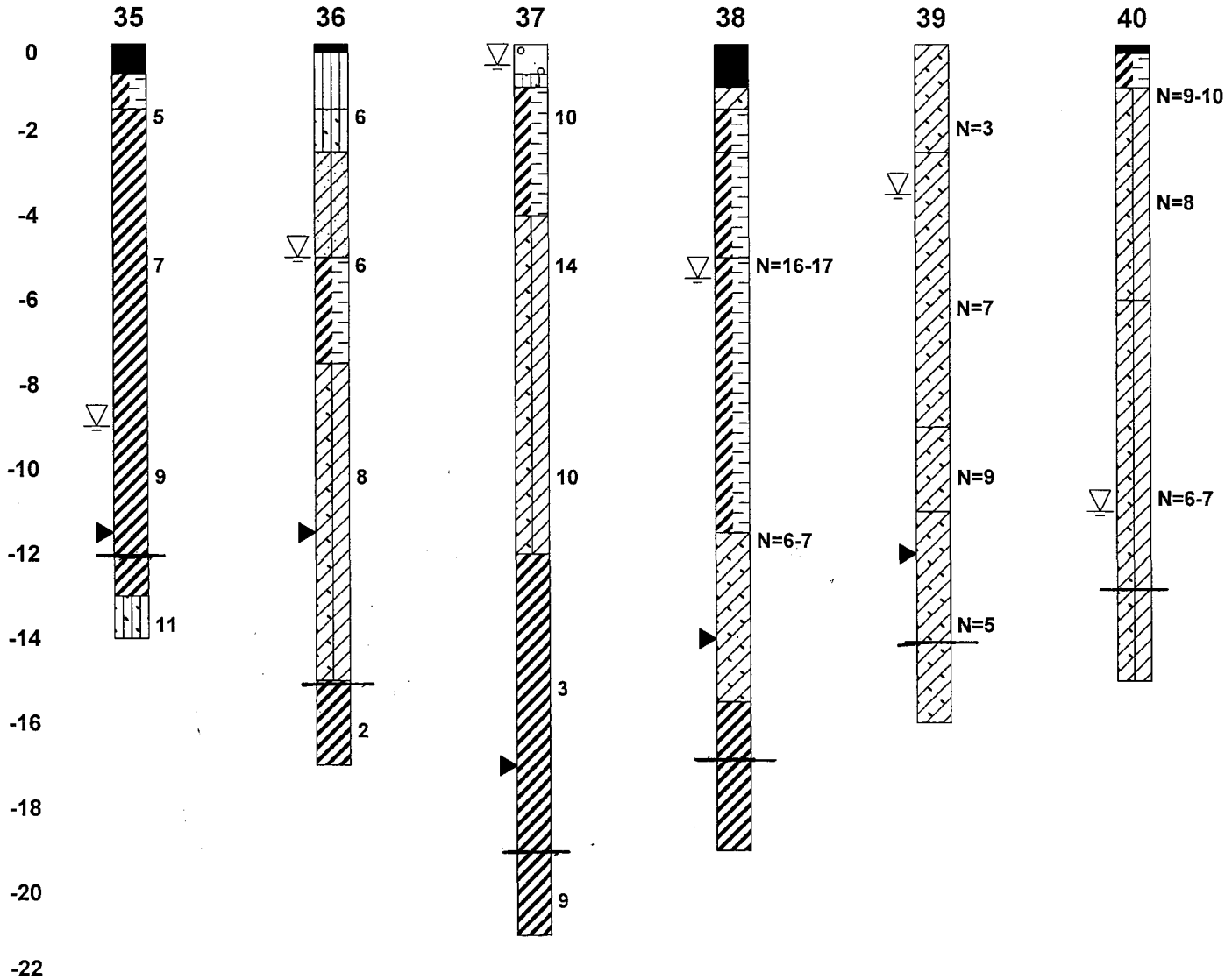
JOB No:1-09-0019-EA

FIGURE No: 3B

Elevation (Feet)

GENERALIZED SUBSURFACE PROFILE

LEGEND



- Topsoil
- ▨ Very Sandy Plastic CLAY
- ▩ High Plasticity Clay
- ▧ Silty Sand
- ▦ Low Plasticity Silt
- ▤ Slightly Clayey Fine to Medium SAND
- ▣ Clayey Sand - Sandy Clay
- ◻ Sandy Gravel
- ▧ Clayey Sand
- ◻ 8 Standard Penetration Resistance
- ◻ N=8 Estimated Penetration Resistance
- ▽ Groundwater at Time of Boring
- ▶ Cave Depth
- *Invert Depth*

PROJECT:

Subsurface Investigation
Annexation Area 8B - Sewer Line
Rocky Mount, North Carolina



GeoTechnologies, Inc.

SCALE: As Shown

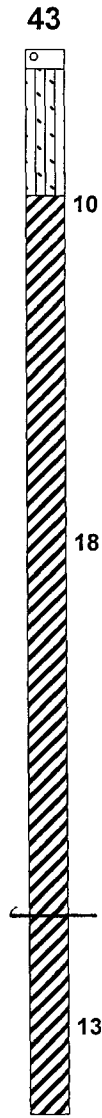
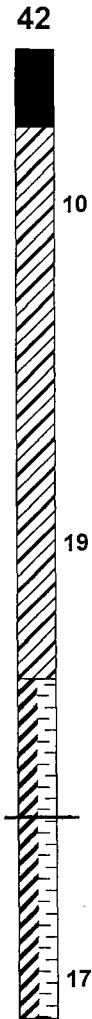
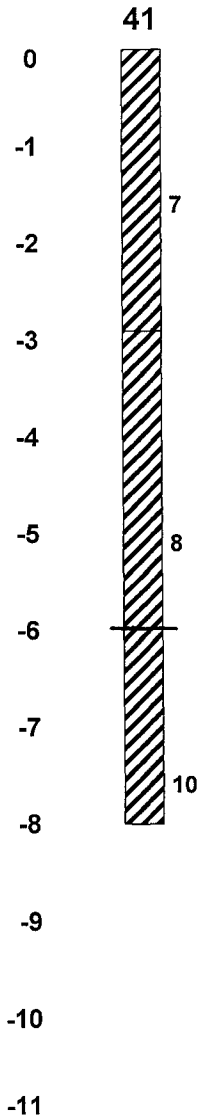
JOB No:1-09-0019-EA

FIGURE No: 3C

Elevation (Feet)

GENERALIZED SUBSURFACE PROFILE

LEGEND



- High Plasticity Clay
- Topsoil
- Moderate Plasticity Clay
- Very Sandy Plastic CLAY
- CABC Stone
- Silty Sand
- 8 Standard Penetration Resistance
- Groundwater at Time of Boring
- Cave Depth
- Invert Depth

PROJECT:

Subsurface Investigation
Annexation Area 8B - Sewer Line
Rocky Mount, North Carolina



SCALE: As Shown

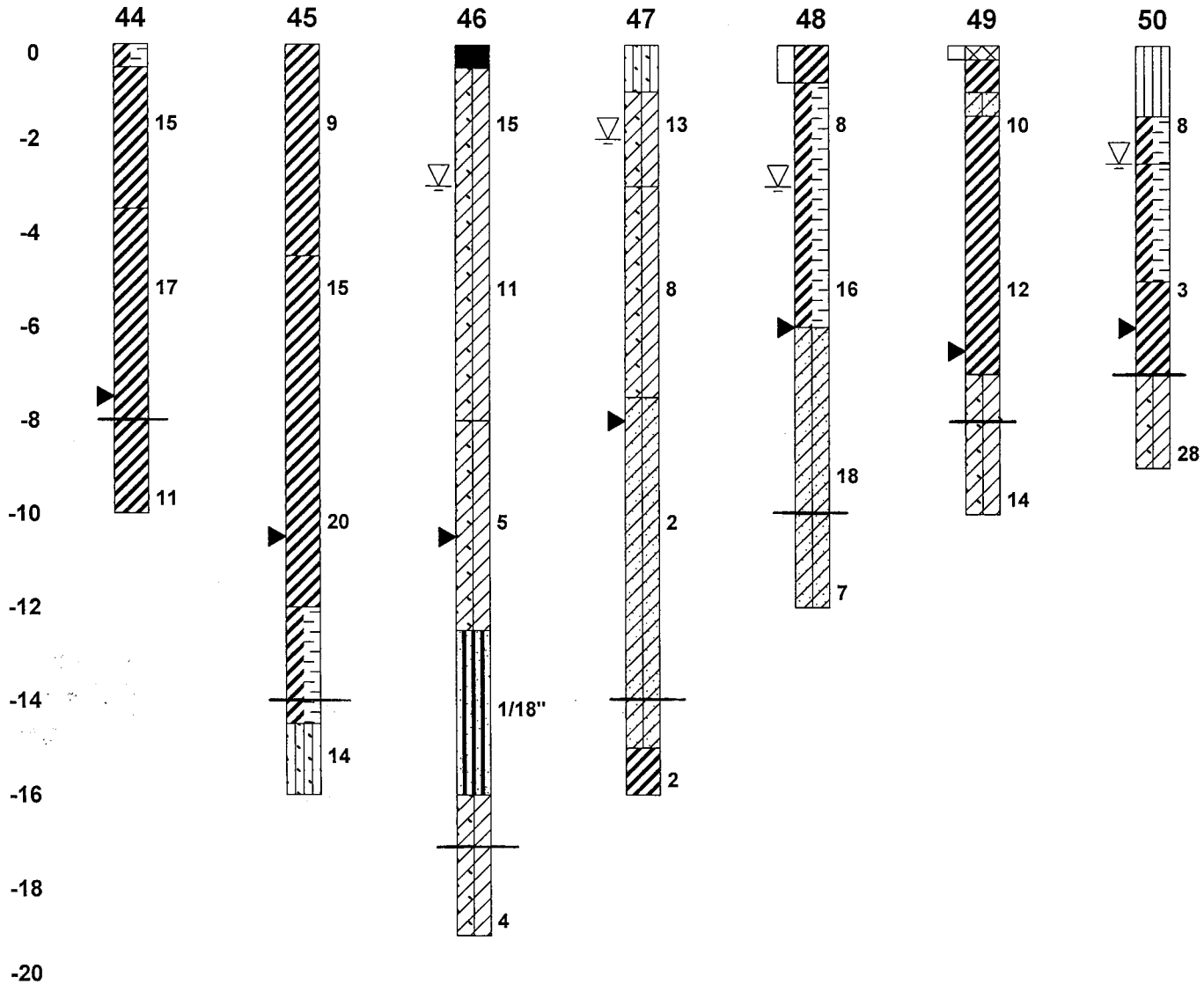
JOB No:1-09-0019-EA

FIGURE No: 3D

Elevation (Feet)

GENERALIZED SUBSURFACE PROFILE

LEGEND



- Very Sandy Plastic CLAY
- High Plasticity Clay
- Silty Sand
- Topsoil
- Clayey Sand - Sandy Clay
- Silty and Clayey Sand
- Slightly Clayey Fine to Medium SAND
- Fill
- Low Plasticity Silt
- Fill
- 8 Standard Penetration Resistance
- Groundwater at Time of Boring
- Cave Depth
- Invert Depth

PROJECT:

Subsurface Investigation
Annexation Area 8B - Sewer Line
Rocky Mount, North Carolina



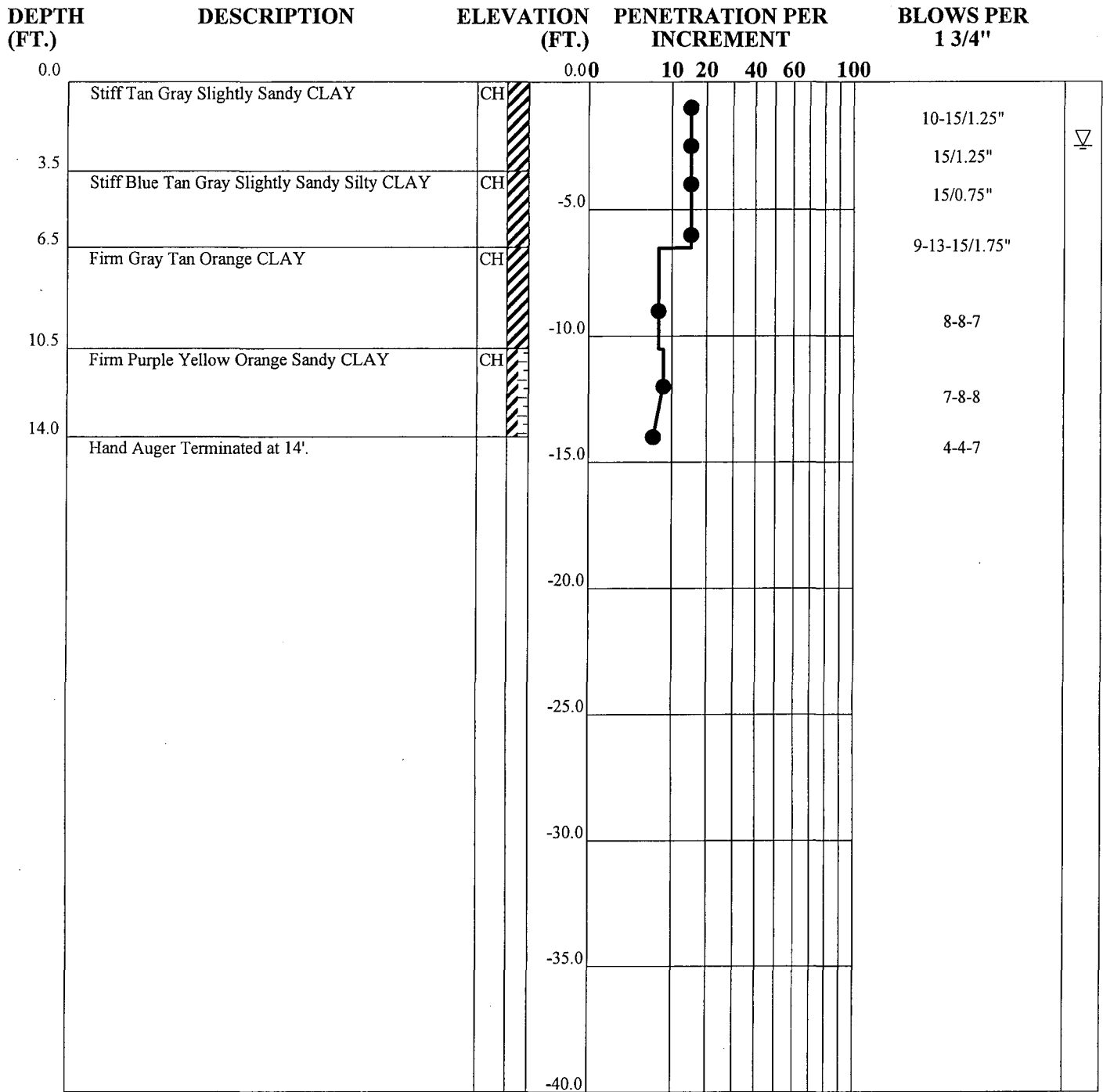
GeoTechnologies, Inc.

SCALE: As Shown

JOB No:1-09-0019-EA

FIGURE No: 3E

**DYNAMIC HAND CONE
PENETROMETER RECORD**



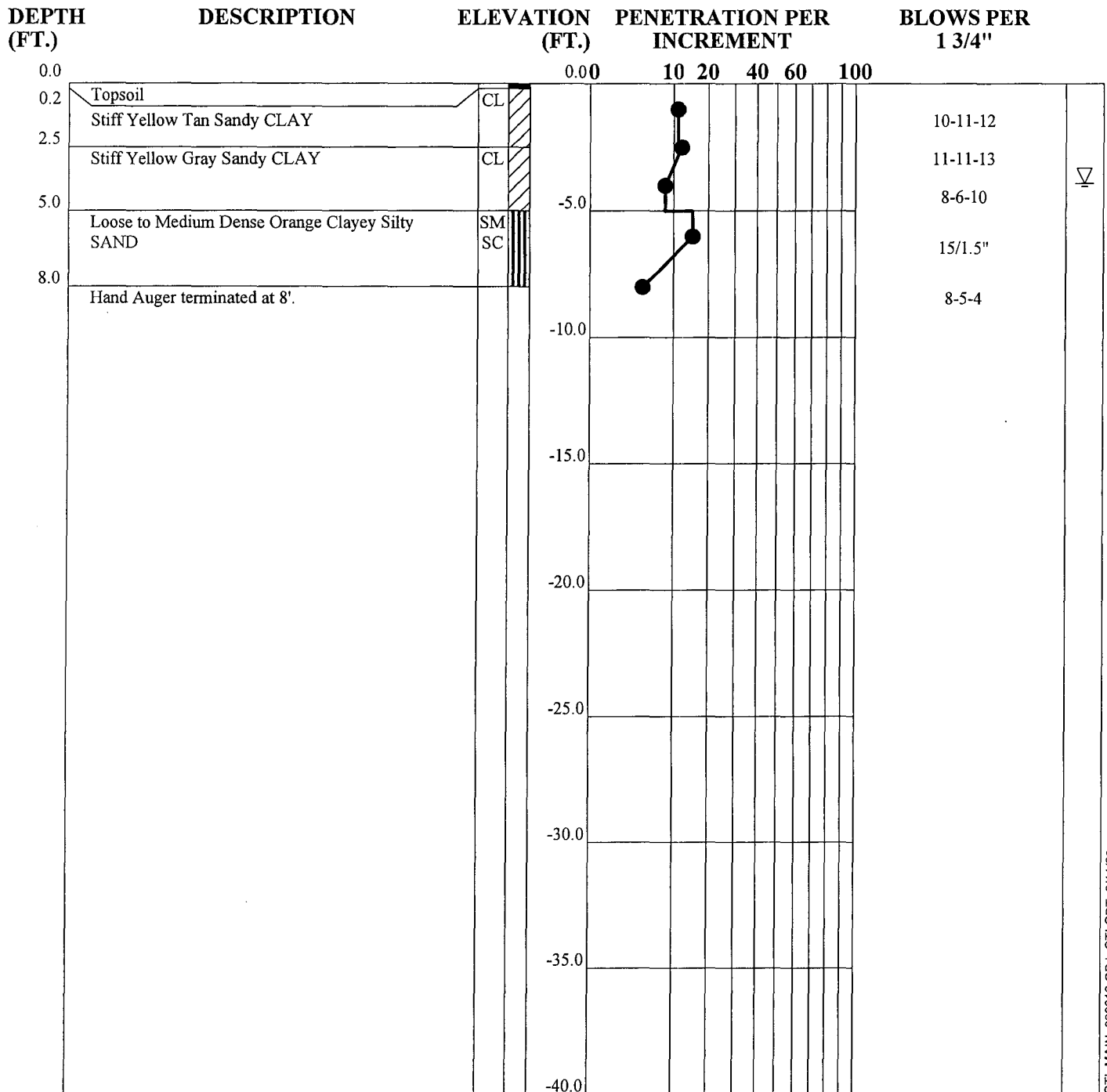
GTI_MAIN 090019.GPJ GTI.GDT 2/11/09

Groundwater encountered at 2.5' at time of boring.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 22
DATE



**DYNAMIC HAND CONE
PENETROMETER RECORD**



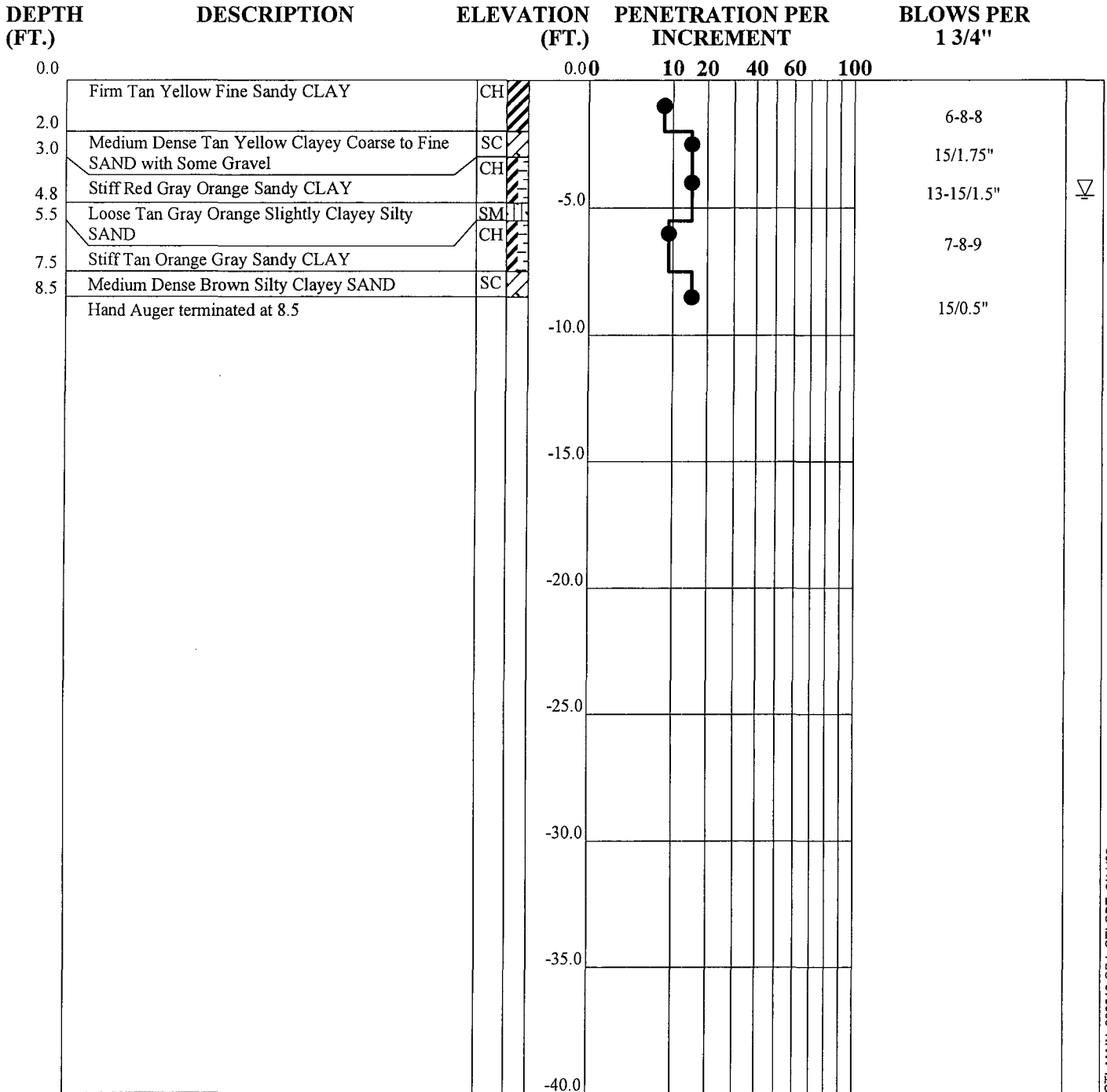
GTL_MAIN 090019.GPJ GTI.GDT 2/11/09

Groundwater encountered at 3.9' at time of boring. Caved at 8'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 23
DATE



**DYNAMIC HAND CONE
PENETROMETER RECORD**



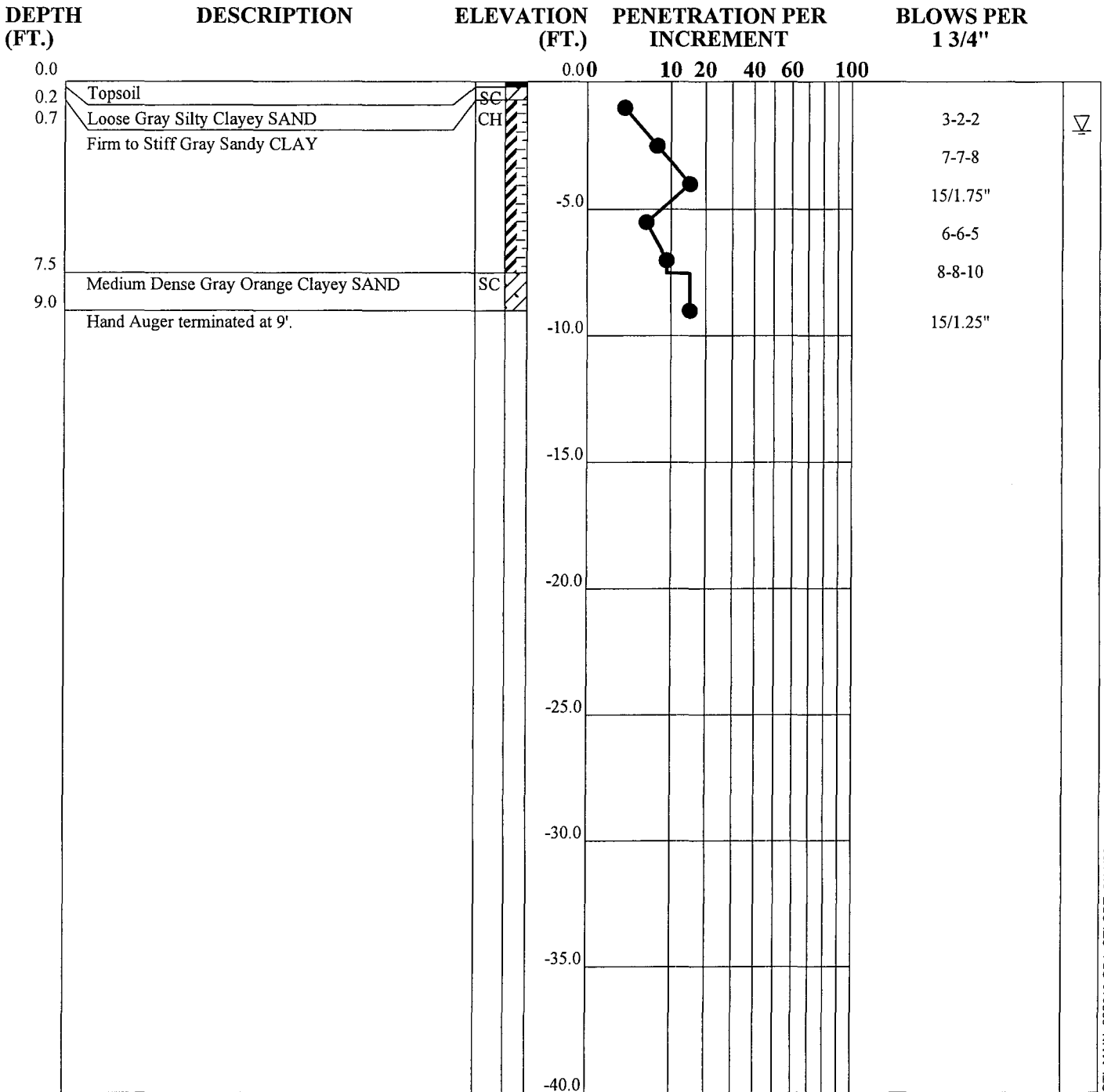
GTL_MAIN 090019.GPJ GTL.GDT 2/11/09

Groundwater encountered at 4.5' at time of boring. Caved at 8.5'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 24
DATE



**DYNAMIC HAND CONE
PENETROMETER RECORD**



GTI_MAIN 090019.GPJ GTI.GDT 2/11/09

Groundwater encountered at 1.9' at time of boring.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 25
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)					BLOWS PER SIX INCHES
			0	10	20	40	60	
0.0								
1.0	Fill - Gray Silty Fine to Medium SAND	SM						
3.0	Very Loose Gray Brown Clayey Silty Fine to Medium SAND	SC SM						2-1-2
5.5	Loose Gray Brown Silty Fine to Medium SAND	SM						
7.5	Firm Yellow Fine to Medium Sandy Silty CLAY	SC CL						2-2-2
11.0	Loose Gray Silty Fine to Medium SAND	SM						2-2-4
13.0	Very Soft Yellow Gray Fine Sandy Silty CLAY	CH						1-1-1
	Boring terminated at 13'.							

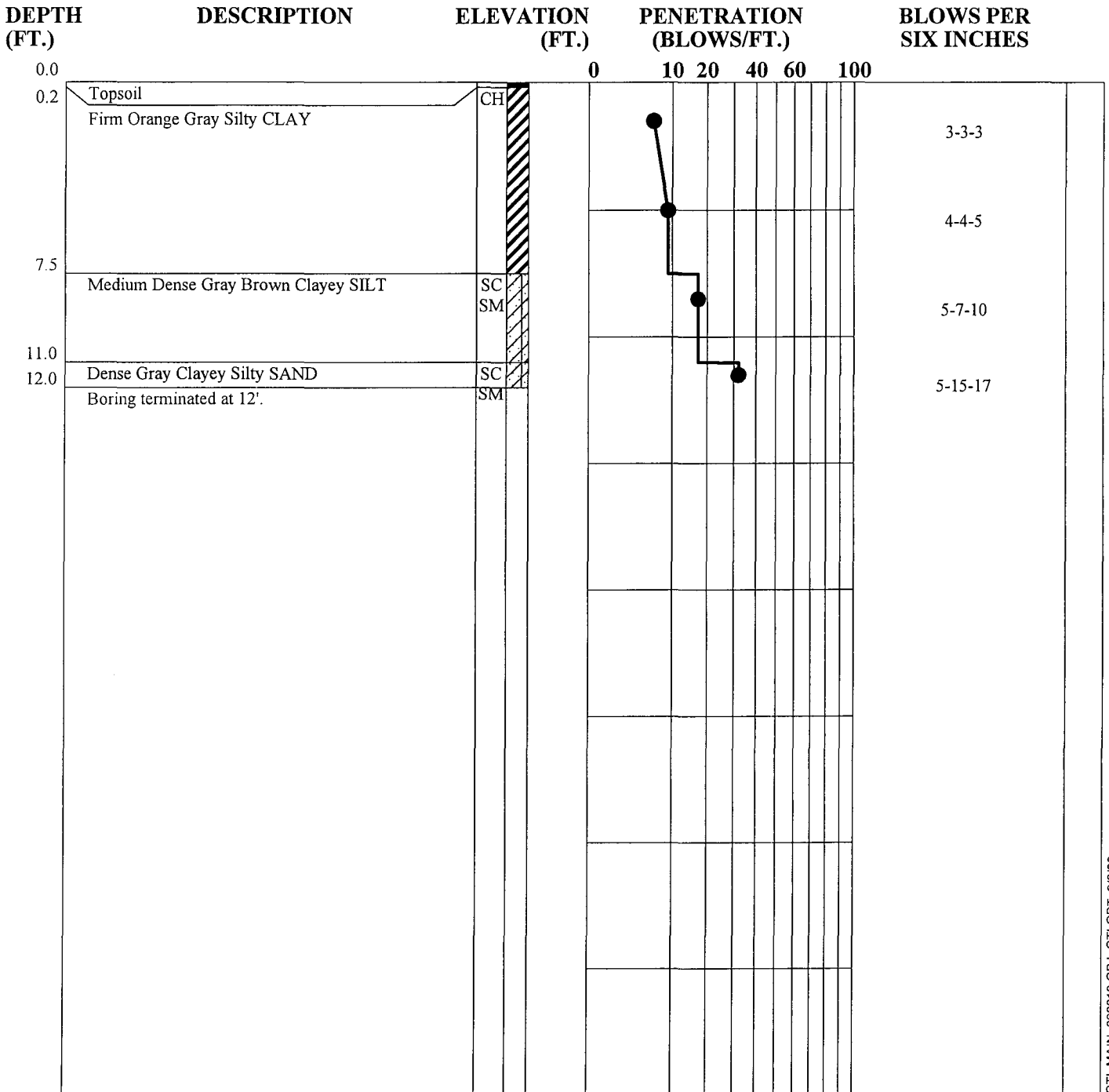
GTL_MAIN 090019.GPJ GTL.GDT 2/6/09

Groundwater encountered at 7.5' at time of boring. Caved at 9'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 26
DATE



TEST BORING RECORD



GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 27
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0			0 10 20 40 60 100	
0.4	Topsoil			
	Medium Dense Tan Yellow Silty Clayey Fine to Medium SAND	SC SM	●	4-4-7
3.5	Very Stiff Gray Silty CLAY	CH	●	5-7-9
7.0	Very Stiff Yellow Fine Sandy Silty CLAY	CL CH	●	
9.5	Firm Gray Yellow Silty CLAY	CL CH	●	5-8-9
14.0	Boring terminated at 14'.		●	3-3-4

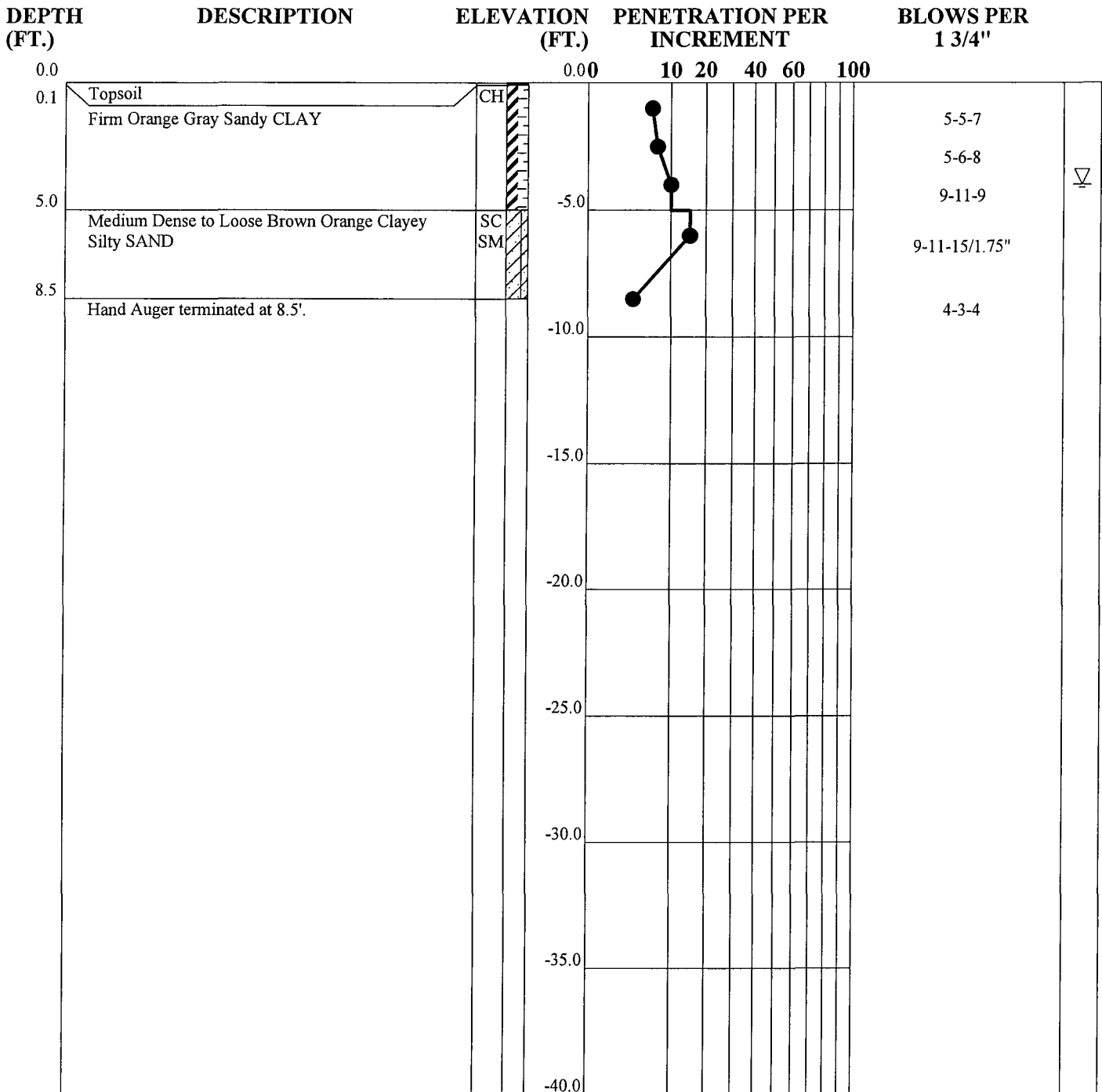
GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring. Caved at 10.5'. Wet below 12'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 28
DATE



**DYNAMIC HAND CONE
PENETROMETER RECORD**



GTL_MAIN 090019.GPJ GTI.GDT 2/11/09

Groundwater encountered at 4' at time of boring. Caved at 7.9'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 29
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)					BLOWS PER SIX INCHES	
			0	10	20	40	60	100	
0.0	Topsoil								
0.2	Firm Tan Yellow Fine to Medium Sandy Silty CLAY			●					3-3-4
2.5	Stiff Yellow Gray Silty CLAY			●					5-5-8
				●					4-5-9
				●					5-6-9
17.0	Boring terminated at 17'.			●					5-6-8

GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring. Caved at 12.5'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 30
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0			0 10 20 40 60 100	
0.4	Topsoil	SM		
1.0	Tan Silty Fine to Medium SAND	SC		3-2-2
3.5	Orange Gray Silty Clayey Fine SAND	SM		4-6-6
8.0	Gray Yellow Silty Clayey Medium SAND	SC SM		6-7-9
	Boring terminated at 8'.			

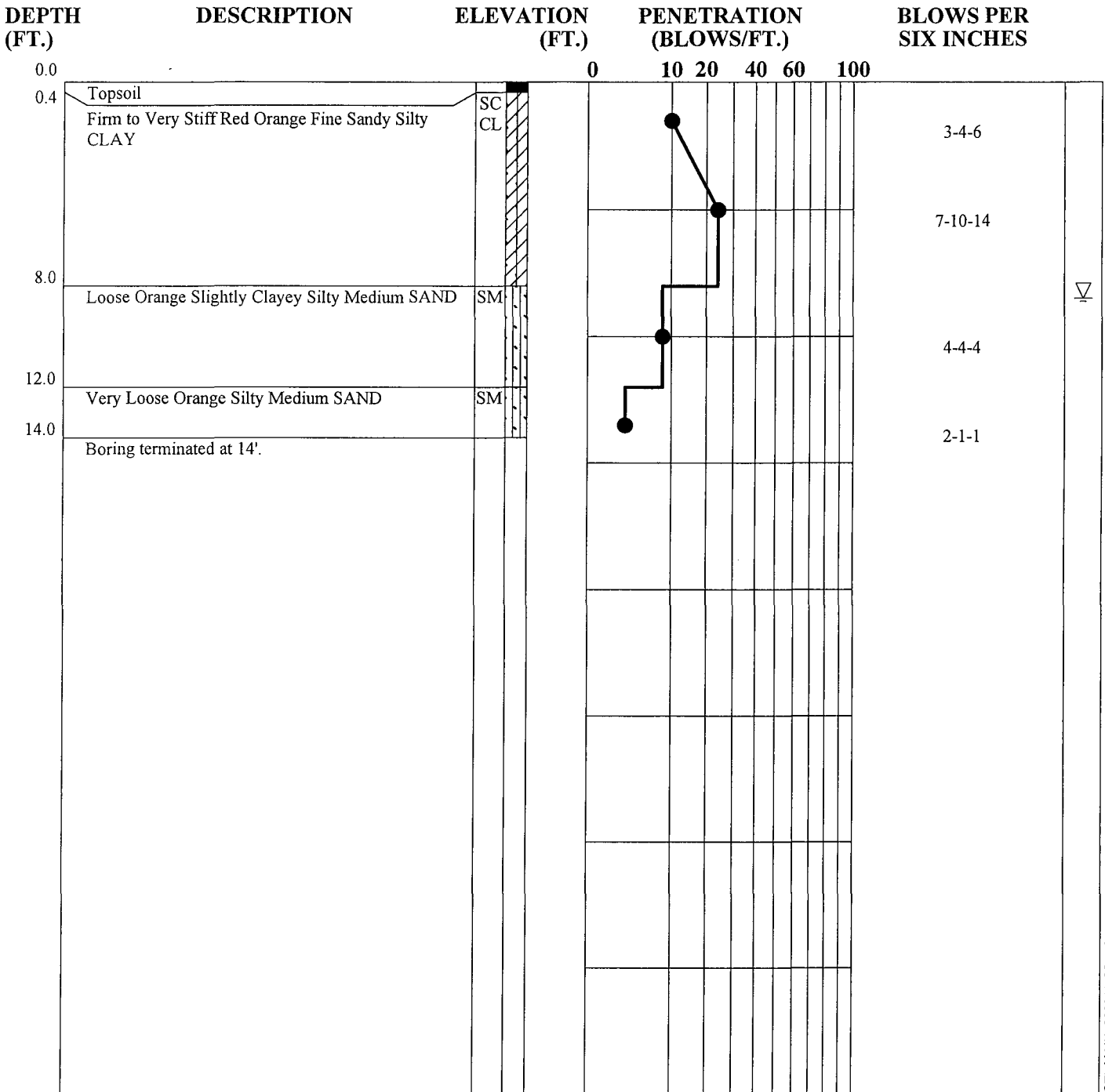
GTL_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 31
DATE



TEST BORING RECORD



GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater encountered at 8.5' at time of boring. Caved at 10'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 32
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)					BLOWS PER SIX INCHES	
			0	10	20	40	60		100
0.0 1.0	Brown Clayey Fine to Medium SAND Firm Yellow Silty Clayey SAND	SC SM SC		●					4-3-4
7.0	Medium Dense Gray Silty Clayey Fine to Medium SAND	SC CL			●				6-10-13
11.0	Boring terminated at 11'.				●				5-8-9

GTL_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring. Caved at 7'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 33
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
			0 10 20 40 60 100	
0.0	Topsoil			
0.7				
1.5	Firm Gray Fine to Medium Sandy CLAY	CH	●	3-2-3
	Firm to Stiff Slightly Fine to Medium Sandy CLAY	CH	●	3-3-4
			●	3-4-5
13.0				
14.0	Medium Dense Red Yellow Silty Fine to Medium SAND	SM	●	3-5-6
	Boring terminated at 14'.			



GTL_MAIN 090019.GPJ GTL.GDT 2/6/09

Groundwater encountered at 9' at time of boring. Caved at 11.5'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 35
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)					BLOWS PER SIX INCHES	
			0	10	20	40	60		
0.0									
0.2	Topsoil								
1.5	Gray Brown Clayey SILT								
2.5	Loose Black Silty Fine to Medium SAND			●					3-2-4
	Loose Brown Slightly Clayey Silty Fine to Medium SAND								
5.0	Firm Yellow Gray Fine to Medium Sandy CLAY			●					1-2-4
7.5	Loose Yellow Gray Slightly Clayey Fine to Medium SAND								
				●					2-3-5
15.0	Very Soft Gray Silty CLAY								
17.0	Boring terminated at 17'.			●					1-1-1

GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

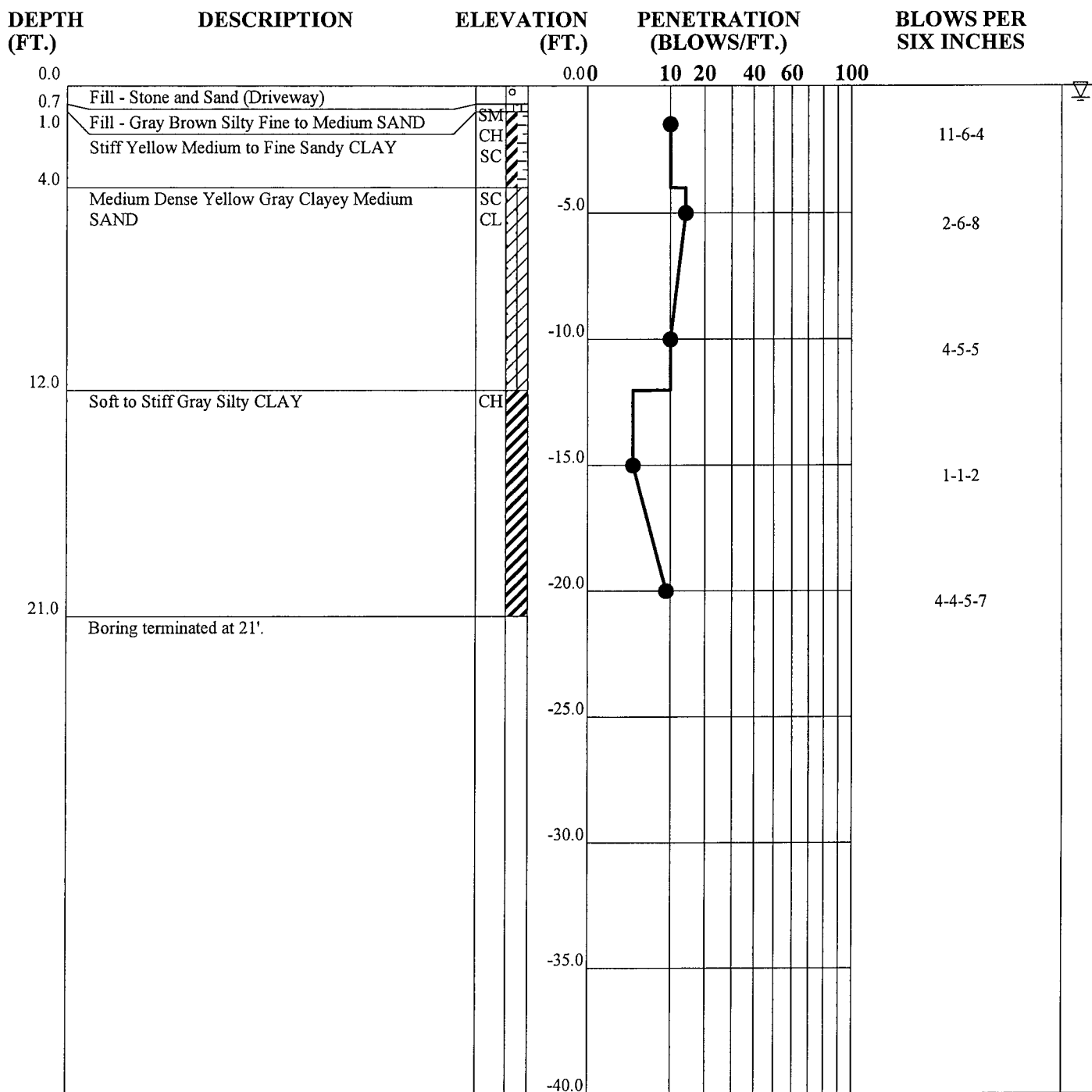
Groundwater encountered at 5' at time of boring. Caved at 11.5'.

JOB NUMBER
BORING NUMBER
DATE

1-09-0019-EA
 36



TEST BORING RECORD



Groundwater encountered at 0.5' at time of boring. Caved at 17'.

GTL_MAIN 090019.GPJ GTI.GDT 2/11/09

JOB NUMBER 1-09-0019-EA
BORING NUMBER 37
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PROBE (FEET)					PROBE RESISTANCE		
			10	20	40	60	100			
0.0		0.00								
1.0	Fill - Topsoil with Stone									
1.5	Fill - Tan Clayey SAND		SC							
2.5	Fill - Orange Sandy CLAY		CH							
	Gray Sandy CLAY		CH							
5.0	Gray Sandy CLAY	-5.0	CH						N=16-17	▽
		-10.0								
11.5	Tan Clayey SAND	-10.0	SC						N=6-7	
		-15.0								
15.5	Tan Slightly Sandy CLAY	-15.0	CH							
		-20.0								
19.0	Boring terminated at 19'.	-20.0								
		-25.0								
		-30.0								
		-35.0								
		-40.0								

GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater encountered at 5.5' at time of boring. Caved at 14'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 38
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PROBE (FEET)					PROBE RESISTANCE
			10	20	40	60	100	
0.0	Tan Gray Clayey SAND (Very Wet)	0.00						
2.5	Orange Tan Clayey SAND (Wet)	-5.0						N=3
9.0	Pink Gray Clayey SAND (Wet)	-10.0						N=7
11.0	Tan Gray Clayey SAND (Very Wet)	-15.0						N=9
16.0	Boring terminated at 16'.	-20.0						N=5
		-25.0						
		-30.0						
		-35.0						
		-40.0						

▽

GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater encountered at 3.5' at time of boring. Caved at 12'

JOB NUMBER 1-09-0019-EA
BORING NUMBER 39
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PROBE (FEET)					PROBE RESISTANCE
			10	20	40	60	100	
0.0		0.00						
0.2	Topsoil							
1.0	Fill - Brown Orange Silty Sandy CLAY							N=9-10
	Tan Pink Clayey SAND							N=8
6.0		-5.0						
	Pink Tan Clayey Medium SAND (Wet)							
		-10.0						
15.0		-15.0						N=6-7
	Boring terminated at 15'.							
		-20.0						
		-25.0						
		-30.0						
		-35.0						
		-40.0						

GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater encountered at 11' at time of boring.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 40
DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)					BLOWS PER SIX INCHES	
			0.00	10	20	40	60		100
0.0	Firm Orange Gray Black Fine Sandy CLAY with Pieces of Glass	0.00							
2.9	Firm to Stiff Gray Orange CLAY	-5.0							3-3-4
8.0	Boring terminated at 8'.	-10.0							3-4-4
		-15.0							3-4-6
		-20.0							
		-25.0							
		-30.0							
		-35.0							
		-40.0							

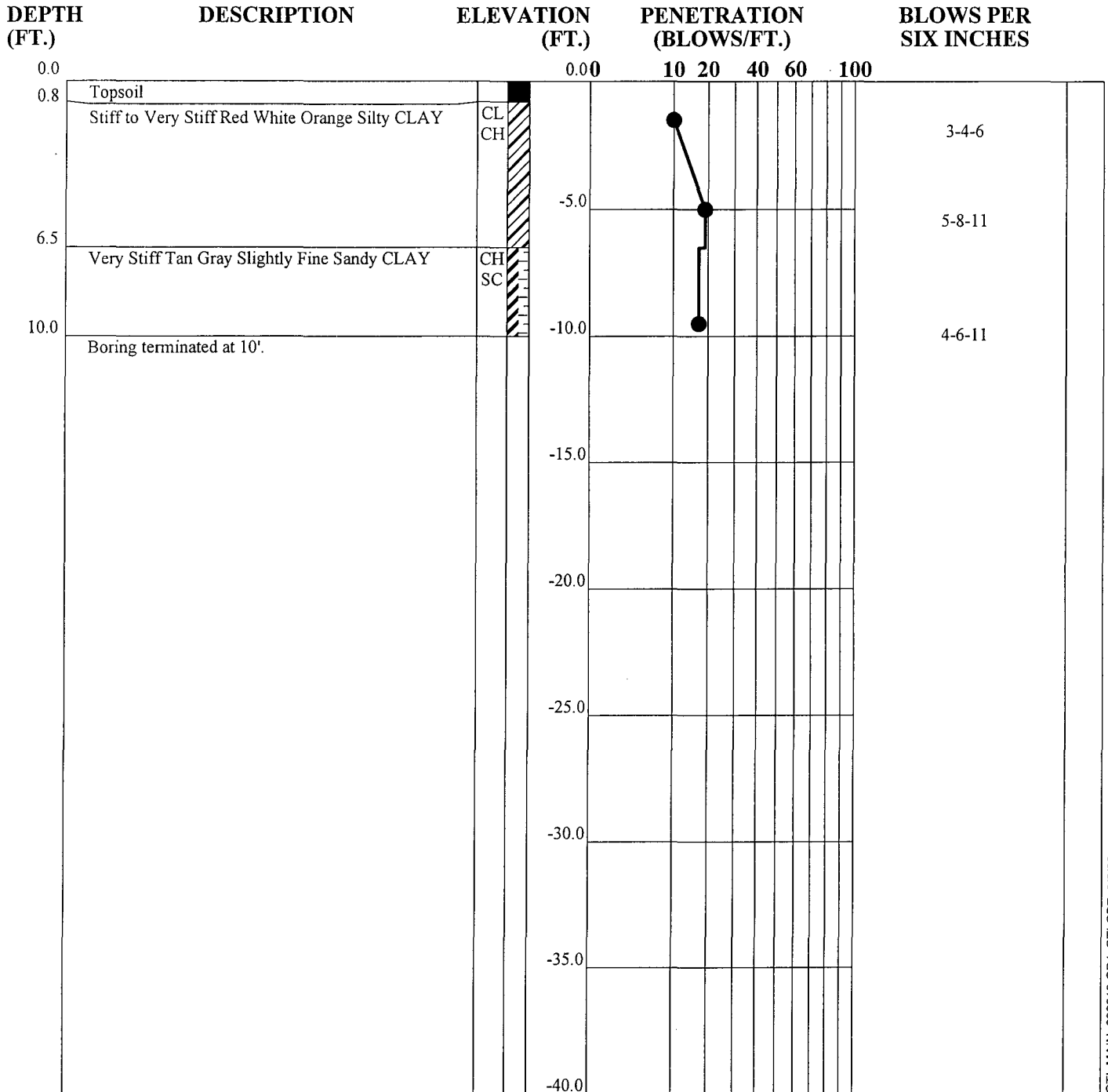
GTL_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring. Wet below 6.5'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 41
DATE



TEST BORING RECORD



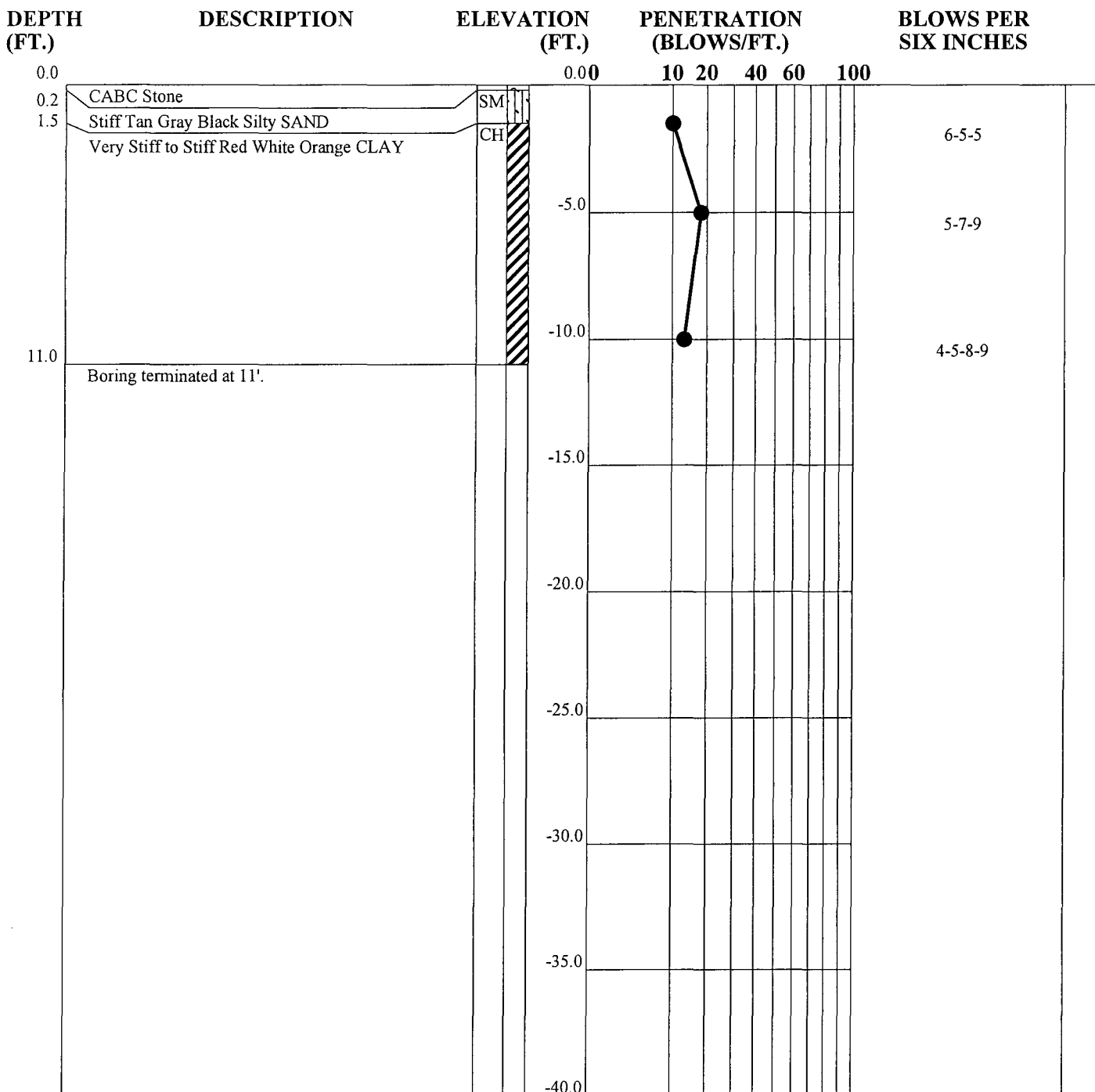
GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 42
DATE



TEST BORING RECORD



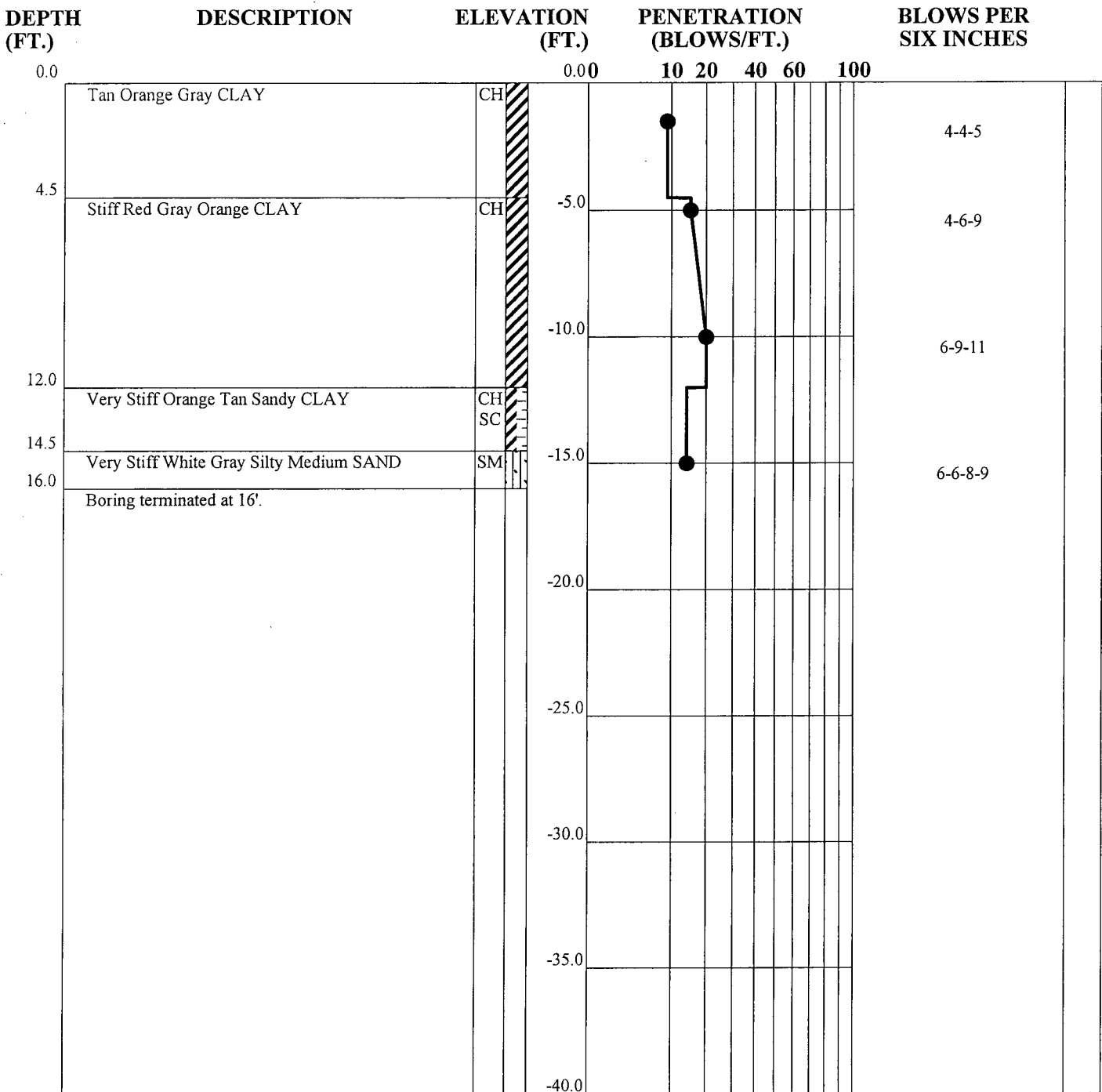
GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring.

JOB NUMBER 1-09-0019-EA
 BORING NUMBER 43
 DATE



TEST BORING RECORD



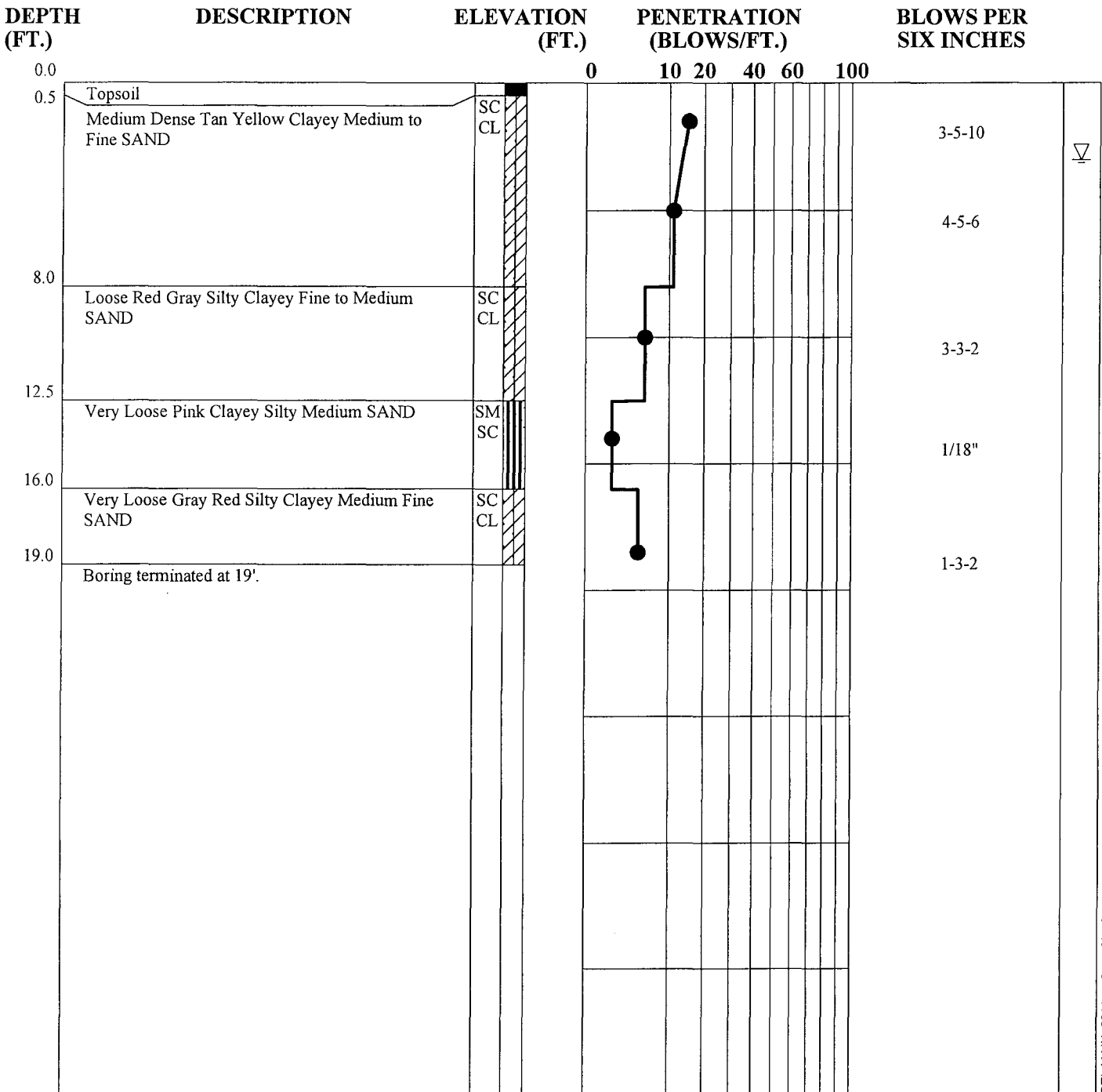
GTL_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring. Caved at 10.5'. Wet below 13'.

JOB NUMBER 1-09-0019-EA
BORING NUMBER 45
DATE



TEST BORING RECORD



GTL_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater encountered at 3' at time of boring. Caved at 10.5'.

JOB NUMBER 1-09-0019-EA
 BORING NUMBER 46
 DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)					BLOWS PER SIX INCHES	
			0	10	20	40	60		
0.0	Gray Silty Fine SAND	SM							
1.0	Medium Dense Dark Brown Silty Clayey Fine to Medium SAND	SC CL							7-7-6
3.0	Loose Gray Orange Silty Clayey Fine to Medium SAND	SC CL							3-3-5
7.5	Very Loose Light Gray Slightly Clayey Silty Fine to Medium SAND	SC SM							1-1-1
15.0	Very Soft Gray Red Fine Sandy CLAY	CH							1-1-1
16.0	Boring terminated at 16'.								

Groundwater encountered at 2' at time of boring. Caved at 8'.

GTL_MAIN 090019.GPJ GTI.GDT 2/6/09

JOB NUMBER 1-09-0019-EA
 BORING NUMBER 47
 DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)					BLOWS PER SIX INCHES		
			0	10	20	40	60			100
0.0										
0.8	Fill - Gray Orange Silty Fine to Medium Sandy CLAY with Gravel Firm to Very Stiff Yellow Gray Silty Fine to Medium Sandy CLAY			●					6-4-4	▽
6.0	Medium Dense Yellow Gray Clayey Silty Fine to Medium SAND			●					4-7-9	
10.0	Loose Yellow Gray Slightly Clayey Silty Fine SAND			●					7-8-10	
12.0	Boring terminated at 12'.			●					3-2-5	

GTL_MAIN 090019.GPJ GTL.GDT 2/6/09

Groundwater encountered at 3' at time of boring. Caved at 6'.

JOB NUMBER 1-09-0019-EA
 BORING NUMBER 48
 DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)	BLOWS PER SIX INCHES
0.0			0 10 20 40 60 100	
0.3	Fill - Stone and Sand (Old Roadway)	CH		
1.0	Gray Silty CLAY	SC	●	
1.5	Stiff Gray Silty Fine to Medium SAND	SM	●	6-6-4
	Stiff Orange Gray Silty CLAY	CH	●	
7.0			●	3-5-7
	Medium Dense Gray Slightly Clayey Fine to Medium SAND	SC CL	●	
10.0	Boring terminated at 10'.		●	3-5-8

GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater not encountered at time of boring. Caved at 6.5'.

JOB NUMBER 1-09-0019-EA
 BORING NUMBER 49
 DATE



TEST BORING RECORD

DEPTH (FT.)	DESCRIPTION	ELEVATION (FT.)	PENETRATION (BLOWS/FT.)						BLOWS PER SIX INCHES		
			0	10	20	40	60	100			
0.0	Dark Gray SILT										
1.5	Firm Orange Gray Medium to Fine Sandy CLAY									4-4-4	▽
2.5	Soft Gray Fine Sandy CLAY										
5.0	Soft Gray Orange Medium to Fine Sandy CLAY									1-1-2	
7.0	Dense Gray Clayey Medium SAND										
9.0	Boring terminated at 9'.									7-10-14	

GTI_MAIN 090019.GPJ GTI.GDT 2/6/09

Groundwater encountered at 2.5' at time of boring. Caved at 6'

JOB NUMBER 1-09-0019-EA
BORING NUMBER 50
DATE

