ABI Ponce de Leon LCI

P.I. No. 0012586; Fulton County

BFI Report Submittal

March 1, 2017

Kimley»Horn

BRIDGE FOUNDATION INVESTIGATION REPORT (LRFD)
ABI PONCE DE LEON LCI PROJECT
Atlanta, Fulton County, Georgia
Georgia DOT Project No. (*Not Assigned*), P.I. No. 0012586
ACCURA Project No. 10072.001.14
March 1, 2017
Revision No. 3

LOCATION Atlanta Beltline Eastside Trail at Ponce de Leon Avenue, Atlanta, Fulton County, Georgia

GENERAL INFORMATION

GEOLOGIC FORMATION The project site lies along the boundary of two different formations. The boundary is a northeast-southwest oriented line located slightly north of Ponce de Leon Avenue. The Stonewall Formation is north of this line and the Clarkston Formation is to the south. The Stonewall Formation rocks are comprised of intercalated fine grained biotite gneiss, hornblende-plagioclase amphibolite and sillimanite-biotite schist. The Clarkston Formation is described as a sillimanite-garnet-quartz-plagioclase-biotite-muscovite schist interlayered with hornblende-plagioclase amphibolite. These formations are in the Georgia Piedmont Region.

SUBSURFACE FEATURES The general subsurface profile at the site consists mainly of residual soils and partially weathered rock that increase in relative density or consistency to boring termination or refusal depths at elevations ranging from 876 to 897 feet. Minor amounts of fill soils were penetrated at a depth of 3 feet below the ground surface in borings B-1, B-3 and B-4 and borings B-5 through B-7 encountered a relatively thin pavement section of asphaltic concrete and graded aggregate base (GAB) at the surface. Auger refusal materials (apparent rock) were encountered in borings B-2 and B-3 at depths of 33 and 30 feet, respectively. No ground water was encountered in the borings at the time of investigation. For additional information see the enclosed Boring Location Plan and Soil Test Boring Records.

SITE CLASSIFICATION We recommend a site class of *D* per AASHTO LRFD 3.10.3.1.

1.0 -- FOUNDATION RECOMMENDATIONS

Bents	Drilled Shaft	Spread Footing	Pile Footing (Type)	Pile Bent (Type)
Elev. Walkway 1 – 10	N/A	In undisturbed residual soils	N/A	N/A
Structural Metal Stairs (Eastside)	N/A	In undisturbed residual soils	N/A	N/A

1.2 -- DESIGN LOADS

Bents	Maximum Factored Strength Limit State Load (kips)	Maximum Factored Service Limit State Load (kips)	Factored Extreme Event I Limit State Load (kips)
1	32	21	
2	80	53	
3	81	54	
4	64	43	
5	50	36	
6	66	45	
7	85	57	
8	86	58	
9	86	58	
10	85	61	
Structural Metal Stairs (Eastside)	64	43	

2.0 -- SPREAD FOOTING FOUNDATION LOADS

Bents	Nominal Bearing Resistance (ksf)	Factored Bearing Resistance (ksf)	Gross Footing Size (ft)	Effective Footing Size (ft)
1	9.2	4.1	1.5 x 10.17	1.5 x 10.17
2 – 9	23.3	10.5	5.0 x 7.0	2.0 x 7.0
10	27.5	12.4	7.0 x 7.0	2.2 x 7.0
Structural Metal Stairs (Eastside)	23.3	10.5	5.0 x 7.0	1.5 x 7.0

Notes:

1. Foundation soils in all cases should consist of dense to very dense undisturbed residual silty sands or partially weathered rock at anticipated foundation elevations. Standard penetration resistance (N) values in these soils is a minimum of 30 blows per foot. Based on correlations with SPT N values and our previous experience with similar conditions, we recommend an internal soil friction angle (ϕ) of 40 degrees, cohesion value (c) of 0 psf and soil unit weight of 120 pcf for design of spread footings in undisturbed dense to very dense residual soil conditions.
2. A resistance factor of 0.45 was used to determine the factored bearing resistance at the strength limit state **(**φ_b) in accordance with AASHTO LRFD 2012 (Table 10.5.5.2.2-1). The nominal geotechnical resistance was calculated using the theoretical method (Munfakh et al., 2001), in sand, using SPT. In all cases the actual foundation pressures (< 2.5 ksf) for the factored strength limit state loads are less than the factored bearing resistances for the gross footing sizes.
3. Except for Bent 1, effective footing size was determined at the maximum service load using a factored bearing resistance of 4.0 ksf and resistance factor of 1.0. A presumptive (nominal) bearing resistance of 4.0 ksf at the service limit state was established from AASHTO LRFD 2012 (Table C10.6.2.6.1-1) for medium dense to dense sand. At bent 1, a minimum footing dimension of 1.5 feet is recommended to prevent possible localized shear failure. At all bent locations, reduction of the effective footing size for eccentricity is not applicable.

3.0 -- FOUNDATION ELEVATIONS

Bents	Bottom of Drilled Shaft	Bottom of Spread Footing	Minimum Pile Tip	Estimated Pile Tip
1 - 3		±900.0 or below		
4		±898.0 or below		
5		±897.0 or below		
6		±898.0 or below		
7 - 8		±900.0 or below		
9		±902.0 or below		
10		±900.0 or below		
Structural Metal Stairs (Eastside of Trail)		±903.0 or below		

4.0 -- GENERAL NOTES

Elevations

Bent 1 -10 foundation elevations were estimated based on proposed groundline grades shown on Sastry & Associates, Inc. *Atlanta Beltline, Preliminary Layout, Ponce De Leon Avenue/Atlanta Beltline Connection Ramp* (Drawing No. 35-0001), approved date February 2017. The foundation elevation for the stairs on the east side of the trail was estimated based on existing and finished grades shown on Kimley-Horn *Atlanta Beltline, Inc., Grading and Drainage Plan, Ponce De Leon Avenue Complete Streets Retrofit and Beltline Connection,* (Drawing No. 18-001), dated August 20, 2014.

Obstructions (ramp footing excavations)

Based on the available subsurface boring data, materials requiring difficult excavation measures may be encountered during excavations required for foundation installation. Difficult excavation materials will include predominantly very dense or very hard soils and very dense or very hard partially weathered rock with some possible rock lenses. Refusal material (bedrock) was not encountered above the estimated bottom of footing elevations; however, due to the erratic weathering of the rocks within this geologic setting, some unexpected rock excavation may also be encountered between the borings or in areas not investigated.

Obstructions (metal stairs footing excavations)

Hand auger borings at the location of the structural metal stairs on the east side of the beltline trail encountered several feet of rubble debris overlying an apparent 4-inch thick concrete slab. Below the slab, a single hand auger boring appeared to encounter fill materials to a refusal depth of 5 feet below the slab. In order to achieve adequate bearing for the stair foundations, the rubble debris and concrete slab must be removed prior to foundation construction.

4.0 -- GENERAL NOTES

Inspection

All spread footing excavations should be evaluated by the project geotechnical engineer at the time of construction to confirm that conditions are similar to those encountered in the borings and that the bearing soils are capable of supporting the design contact pressures.

As Built Foundation Information

The as built foundation information should be forwarded to the Geotechnical Engineering Bureau upon completion of the foundation system installation.

4.1-- SPREAD FOOTING NOTES

Bearing Resistance of Spread Footings at the Strength and Service Limit States

The following resistance factors were used to calculate the factored bearing resistance of spread footings at the strength and service limits states in accordance with AASHTO LRFD 2012 (10.5.5.2.2-1) and AASHTO LRFD 2012 (Table C10.6.2.6.1-1), respectively:

Method/Soil/Condition	Resistance Factor
Strength Limit State - *Theoretical Method (Munfakh et al., 2001), in sand, using SPT*	*0.45*
Service Limit State – *Presumptive Bearing Resistance, medium dense to dense sand (SM)*	*1.0*

Installation

The estimated footing elevations are based on a minimum embedment of 4 feet below the proposed ground line. The embedment includes on a 2-foot thick footing with 2 feet of cover, as required by GDOT. All spread footings should bear in undisturbed residual soils or partially weathered rock, similar to the soil conditions encountered in the borings.

Protection

The footing excavations should be protected from standing water and surface run-off. Footings should be poured as soon as practical after excavation.

Temporary Shoring

We assume that retaining wall No. 2 will be installed prior to construction of the ramp spread footings; therefore, no shoring of the footing excavations is anticipated to be required.

4.1-- SPREAD FOOTING NOTES

Special Problems - Structural Metal Stairs (East Side of the Beltline Trail)	Due to the possible presence of fill soils below several feet of rubble debris and a concrete slab at this location, it may not be practical to achieve shallow footing support in undisturbed residual soils. It is critical the Project Geotechnical Engineer inspect the stairs footing excavations, immediately following removal of the rubble debris and concrete slab, in order to determine if alternative foundation support measures are necessary. Due to anticipated relatively light loading conditions, it may be possible to undercut unsuitable fill materials and backfill with compacted No. 57 stone in order to achieve adequate foundation bearing.

5.0 – QA / QC

Accura Engineering and Consulting Services, Inc.

Prepared By Larry D. Mullins, P.E.
Senior Geotechnical Consultant

Reviewed By Prashanthi Reddy
President

APPENDIX

Project Site Map

Wall Elevation and Profile

Stair and Ramp Preliminary Layout

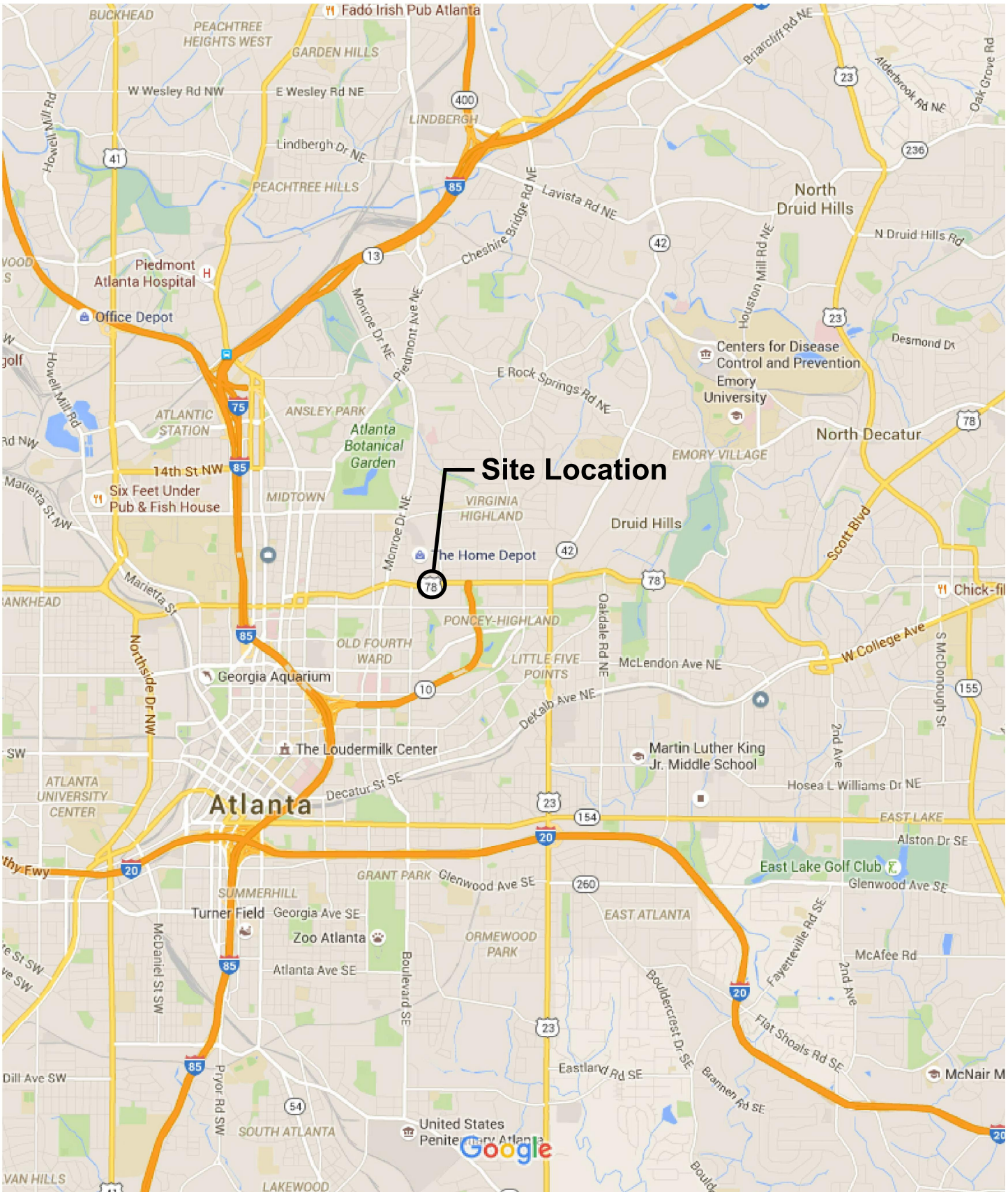
Boring Location Plan

Key to Symbols

Soil Test Boring Records

Laboratory Test Results

ASFE Information about Geotechnical Reports



Kimley»Horn
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THE BILTMORE, SUITE 601
ATLANTA, GEORGIA 30308
PHONE: (404) 419-8700 | www.kimley-horn.com

PROJECT: *ABI PONCE DE LEON LCI*

TITLE: *BFI/WFI SUBMITTAL*

CLIENT: *ATLANTA BELTLINE*

PI NUMBER:	0012586
SCALE:	N.T.S.
DATE:	05/20/2016
SHEET:	*SITE MAP*

3/1/2017 diana.mitchen	GPLOT-V8 gplotborder-v81-PO.tbl	0012586_01-001.dgn GRNCOV	STATE GA	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS

LOCATION SKETCH

DESIGN DATA:
TRAFFIC A.D.T.: 36,100 (2015)
TRAFFIC A.D.T.: 46,700 (2035)
TRAFFIC D.H.V.: N/A
DIRECTIONAL DIST: N/A
% TRUCKS: N/A
24 HR.TRUCKS %: N/A
SPEED DESIGN: 35 MPH

LOCATION & DESIGN APPROVAL DATE:

FUNCTIONAL CLASS:
URBAN PRINCIPAL ARTERIAL

THIS PROJECT IS 100% IN FULTON COUNTY AND IS 100% IN CONG.DIST.NO.5.

PROJECT DESIGNATION: EXEMPT
DESIGNED IN ENGLISH UNITS.

THIS PROJECT HAS BEEN PREPARED USING THE HORIZONTAL GEORGIA COORDINATE SYSTEM OF 1984 (NAD 1983)/94 WEST ZONE, AND THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

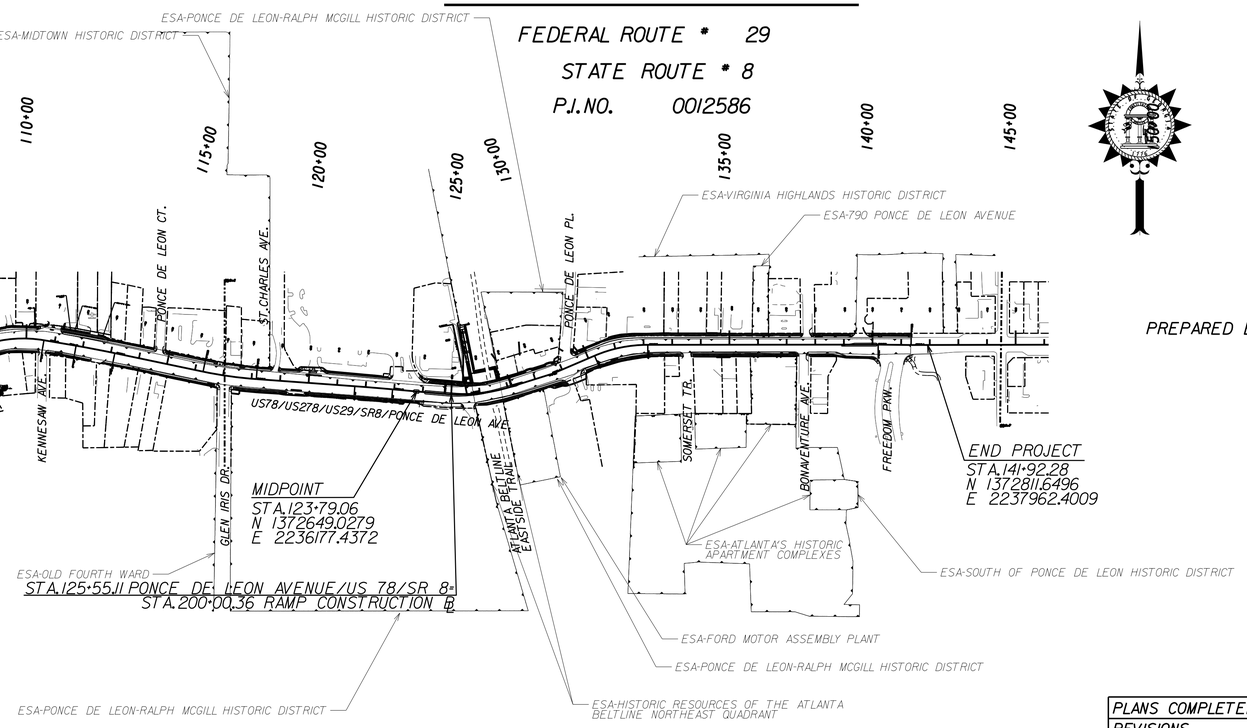
ATLANTA BELTLINE, INC.

PLAN AND PROFILE OF PROPOSED
PONCE DE LEON AVENUE COMPLETE STREET
RETROFIT AND BELTLINE CONNECTION

FEDERAL AID PROJECT
PRELIMINARY PLANS
08/20/14

FEDERAL ROUTE * 29
STATE ROUTE * 8
P.I.NO. 0012586

NOTE :
ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS, DOCUMENTS, DRAWINGS, OR PHOTOGRAPHS USED, OR TO BE USED IN CONNECTION WITH THIS DOCUMENT, TO "STATE HIGHWAY DEPARTMENT OF GEORGIA", "STATE HIGHWAY DEPARTMENT", GEORGIA STATE HIGHWAY DEPARTMENT", "HIGHWAY DEPARTMENT", OR "DEPARTMENT" WHEN THE CONTEXT THEREOF MEANS THE STATE HIGHWAY DEPARTMENT OF GEORGIA, AND SHALL BE DEEMED TO MEAN THE DEPARTMENT OF TRANSPORTATION.



PREPARED BY: KIMLEY-HORN AND ASSOCIATES, INC.
DESIGN

THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS OR IN ANYWAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF BIDDER IS SPECIFICALLY DIRECTED TO SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.

LENGTH OF PROJECT	FULTON CO COUNTY No.121 Project No. 0012586 MILES
NET LENGTH OF ROADWAY	0.687
NET LENGTH OF BRIDGES	0.000
NET LENGTH OF PROJECT	0.687
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	0.687

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW
Atlanta, Georgia 30308

SCALE IN FEET
0 250 500 1000

PLANS COMPLETED - -	
REVISIONS	

DRAWING No. 01-001

CONCOV
5/20/2011

3/1/2017 3:49:36 PM diana.mitchen	GPLOT-V8 gplotborder-v81-P0.tbl	0012586_13-004.dgn	STATE GA	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS

NOTE:
1. SEE SHEET 13-008 FOR SPECIFIC DETAILS REGARDING RAMP SURROUNDINGS

JHH MIDTOWN FEE OWNER LLC.
23
SEE SHEET 4, 13

122+53.96
-42.55' LT

122+58.37
-47.48'LT

ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

+73.03
45.53'

123+00

END SIDEWALK
STA. 122+79.04
INSTALL TYPE A RAMP

EXIST R/W

MATCH LINE STA. 122+50
SEE SHEET 13-003

ASPHALT

15'R

EX-22

76.07
91.98

CURVE #4
S84°53'41.6"E
PONCE DE LEON AVENUE/US 78/SR 8

EXISTING MARTA BUS STOP SHELTER TO BE REMOVED

BIKE RAMP
EX-23
EXIST R/W

SIDEWALK

294.48

122+75.00
49.00'RT

123+20.00
44.21'RT

123+20.00
48.06'RT

INSTALL TYPE A RAMP

+24.25
46.91'

DO NOT DISTURB EXISTING FENCE

ORANGE BARRIER FENCE

RE0'D R/W

123+88.20
39.62'RT

123+88.23
42.25'RT

123+93.50
42.19' RT

123+88.39
54.41'RT

INSTALL MODIFIED TYPE A RAMP

123+37.20
40.54'RT

123+37.32
47.54'RT

+00.31
44.41'

124+05.43
54.20' RT

NEW MARTA BUS SHELTER TO BE RESET BY OTHERS

124+56.86
53.56' RT
CITY OF ATLANTA
19
SEE SHEET 4, 12

INVERTED "U" BIKE RACKS

125+01.73
53.11' RT

DO NOT DISTURB EXISTING FENCE

INSTALL TYPE D RAMP

END SIDEWALK
STA. 125+40.00

125+32.37
53.16' RT

125+39.24
53.40' RT

125+43.82
58.74' RT

STA. 125+55.11 PONCE DE LEON AVENUE/US 78/SR 8
STA. 200+00.36 RAMP CONSTRUCTION ℄

124+89.67
-247.18'LT

PI 202+50.00

125+16.30
-250.83' LT

125+26.39
-252.08'LT

ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

202+00

BASELINE FOR PROPOSED RAMP TO THE ATLANTA BELTLINE EASTSIDE TRAIL

ESA-HISTORIC RAILROAD RESOURCES OF THE ATLANTA BELTLINE NORTHWEST QUADRANT

N11°21'34.0"W

123+84.73
-57.13' LT

123+89.59
-56.50'LT

124+00

+95.06
49.47'

125+26.02
-137.57'LT

SCOTT G ARNOLINO & RONALD J LAZARUS
24
SEE SHEET 13

123+99.34
-47.01' LT

125+41.42
-43.87' LT

125+23.00
-45.46'RT

201+00

BEGIN SIDEWALK
STA. 124+05.63
4' CONC. SIDEWALK
EXISTING MARTA BUS STOP TO BE RESET BY OTHERS
INSTALL 25' ADA LOADING PAD

125+00

E

MAG NAIL FOUND

RE0'D R/W

EXIST R/W

ANDERSON FOUND

12'

SIDEWALK

EX-24
BIKE RAMP

PC 124+75.55

+72.59
06.00'
TOP 895.55
INV. 890.55

+12.08
26.00'
+12.08
6.00'

F-25

+38.02
32.00'

+08.11
5.12'

+22.12
30.28'

PI 200+00.36

CURVE #5

+72.61
06.00'

+89.45
31.00'

+12.08
25.00'
+12.08
6.00'

+77.40
31.00'

ESA RESOURCE I

+29.19
30.62'

510'R

+92.44
28.64'

+24.67
27.01'

+39.21
29.04'

20'R

15'R

MAG NAIL FOUND

SIDEWALK

OPEN TOP PIPE FOUND

125+46.53
-140.34'LT

126+00

CONTRACTOR IS NOT TO DISTURB EXISTING WALL AT BACK OF SIDEWALK

PIPE BEHIND GRAVITY WALL

125+83.48
61.83' RT

BEGIN SIDEWALK
STA. 125+89.91
INSTALL TYPE B RAMP
ESA-PONCE DE LEON-RALPH MCGILL HISTORIC DISTRICT
ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

EXIST R/W

ATLANTA BELTLINE EASTSIDE TRAIL

E

ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

ESA-HISTORIC RAILROAD RESOURCES OF THE ATLANTA BELTLINE NORTHWEST QUADRANT

ESA-PONCE DE LEON-RALPH MCGILL HISTORIC DISTRICT

128+45.50
-38.17'LT

128+43.00
-60.39'LT

126+79.56
-38.56'LT

ROBERT C & DANE E MOOREFIELD
28

128+43.00
-38.18'LT

ORANGE BARRIER FENCE

CONTRACTOR IS NOT TO DISTURB EXISTING BUILDING AT BACK OF SIDEWALK

128+00

ROHRIG INVESTMENTS
26

127+00

EXIST R/W

127+71.50
-38.00' LT

ATL MOTORCYCLE

127+65.45
-37.79' LT

127+48.91
-37.66' LT

127+30.28
-38.17'LT

127+12.22
-38.59'LT

REQ'D R/W

18'

14'

F-24

TOP 921.76
INV. 906.93

PC 127+12.22

+34.93
30.00'
+51.40
04.77'

N72°30'18.0"E

+51.40
00.81'

EX-25

+49.24
30.00'

+30.62
03.50

+26.44
27.98'

300'R

SIDEWALK

EXIST R/W

128+44.83
42.60' RT

127+47.17
42.77' RT

RE0'D R/W

2" OPEN TOP PIPE FOUND

FORD FACTORY SQUARE
21

4" CONC. SIDEWALK
CONTRACTOR IS NOT TO DISTURB EXISTING BUILDING AT BACK OF SIDEWALK

ESA-FORD MOTOR ASSEMBLY PLANT

ESA-PONCE DE LEON-RALPH MCGILL HISTORIC DISTRICT

ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

126+72.70
44.77' RT

CONTRACTOR IS NOT TO DISTURB EXISTING WALL AT BACK OF SIDEWALK

ESA-HISTORIC RAILROAD RESOURCES OF THE ATLANTA BELTLINE NORTHWEST QUADRANT

MATCH LINE STA. 128+50
SEE SHEET 13-005

N

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

Atlanta BeltLine

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SCALE IN FEET
0 20 40 80

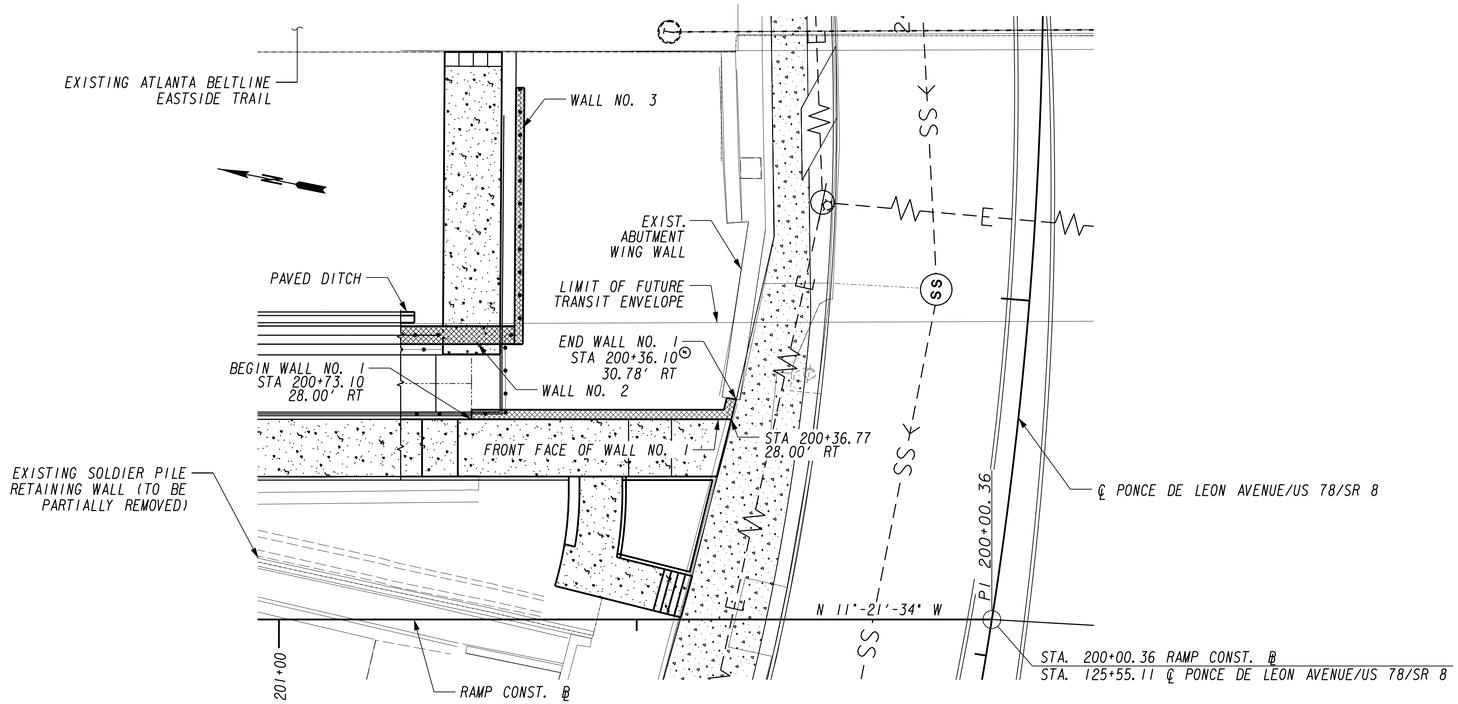
REVISION DATES		

ATLANTA BELTLINE

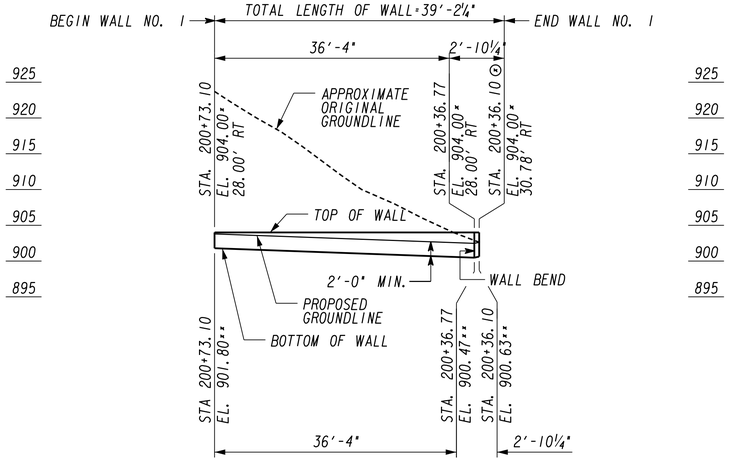
MAINLINE PLAN

DRAWING No.
13-004

12/14/2012 GPLN



PLAN



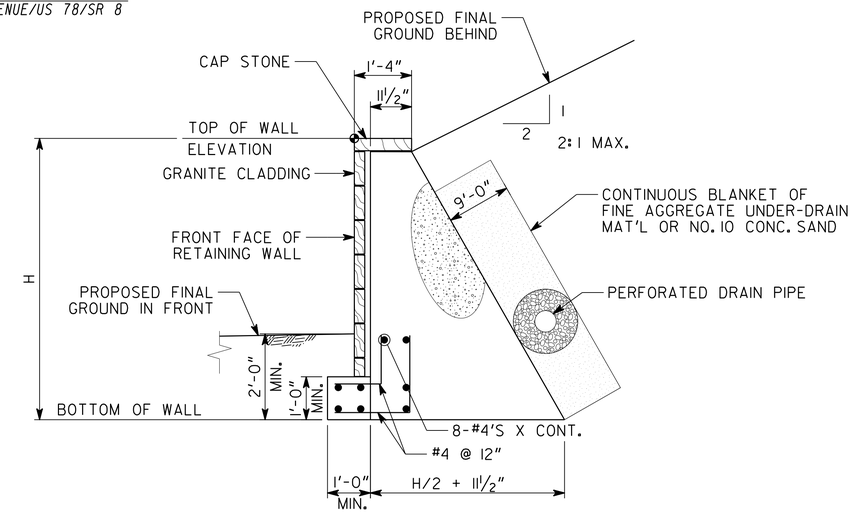
ELEVATION

DESIGN DATA

SPECIFICATIONS ..... AASHTO LRFD 7TH EDITION, 2014

NOTES:

1. STATIONS ARE ALONG RAMP CONST. ℄. OFFSETS GIVEN TO FRONT FACE OF WALL.
2. * ELEVATIONS SHOWN ARE AT TOP OF GRAVITY WALL.
3. ** ELEVATIONS SHOWN ARE MAXIMUM BOTTOM OF GRAVITY WALL.
4. ⊙ TIE END WALL NO. 1 TO EXISTING ABUTMENT WING WALL.



WALL 1 TYPICAL SECTION

(GRAVITY)

Atlanta BeltLine

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW
Atlanta, Georgia 30308

SCALE IN FEET
0 10 20 40

REVISION DATES		

ATLANTA BELTLINE

OFFICE:

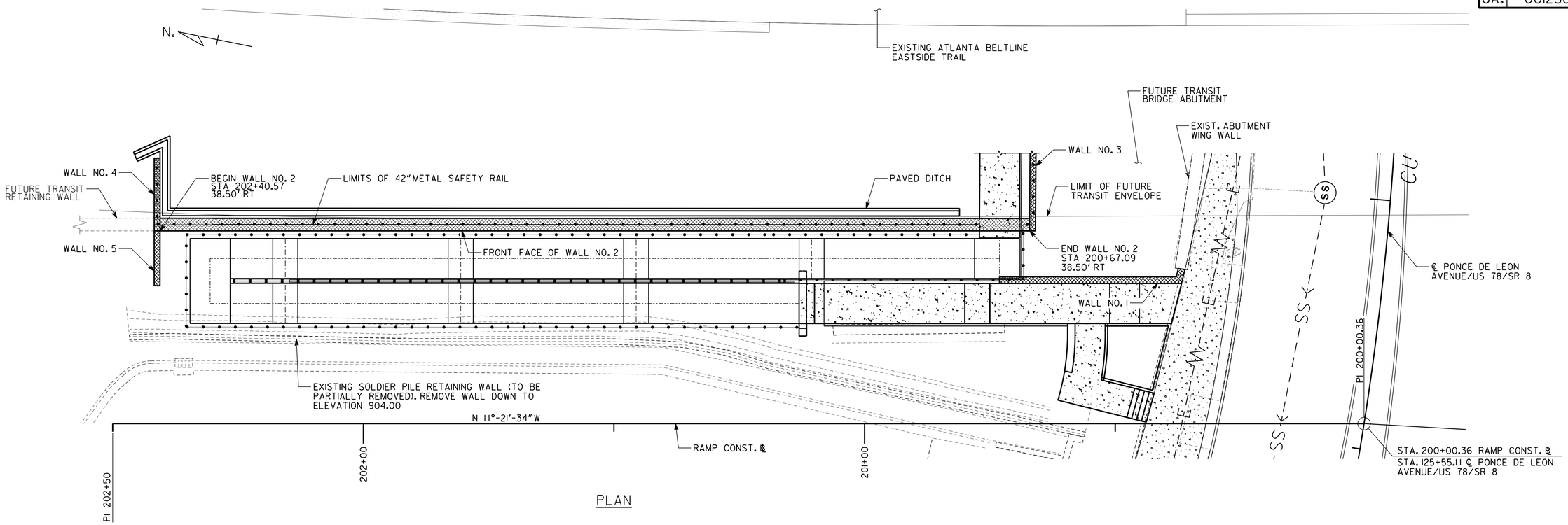
RETAINING WALL ENVELOPES

WALL NO. 1

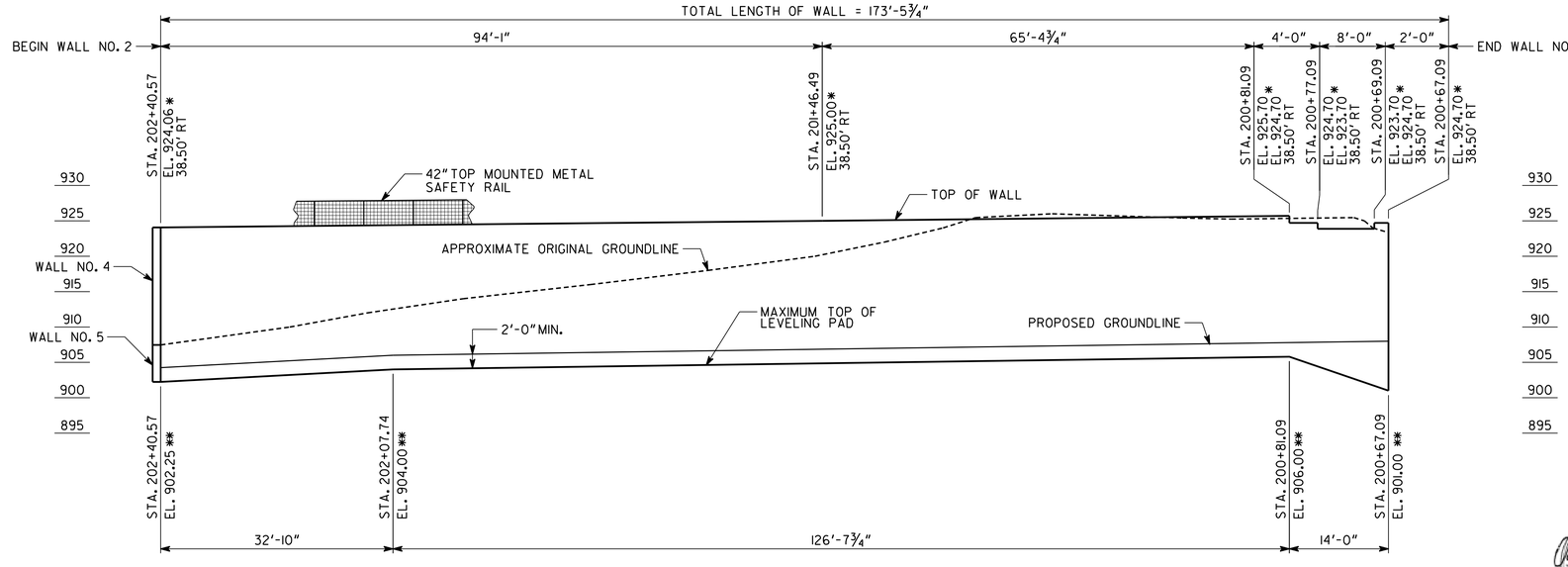
DRAWING No. 31- 0001

12/14/2012 GPLN

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



PLAN



ELEVATION
LOOKING AT FRONT FACE OF WALL

NOTES:

1. STATIONS ARE ALONG RAMP CONST. ℄. OFFSETS GIVEN TO FRONT FACE OF WALL.
2. * ELEVATIONS SHOWN ARE AT TOP OF WALL.
3. ** ELEVATIONS SHOWN ARE THE MAXIMUM ELEVATION AT THE TOP OF LEVELING PAD.
4. FOR SECTIONS AND DETAILS, SEE WALL DETAILS SHEET.

WALL NO. 2

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW, Suite 601
Atlanta, Georgia 30308

GEORGIA REGISTERED 31339 PROFESSIONAL ENGINEER DAVID L. STRICKLIN, JR. 2-17-2017

ATLANTA BELTLINE

PRELIMINARY - WALL NO. 2
PONCE DE LEON COMPLETE STREET RETROFIT AND BELTLINE CONNECTION
FULTON COUNTY 0012586

SCALE: 1"= 10'-0" FEBRUARY 2017

DRAWING NO.	REVISIONS	BY	DATE
32 - 0001			
WALL SHEET 1 OF 4			

DESIGNED AEL	CHECKED DLS	REVIEWED SKG
DRAWN GAG	DESIGN GROUP	APPROVED WMD

1 INCH WHEN PRINTED FULL SIZE

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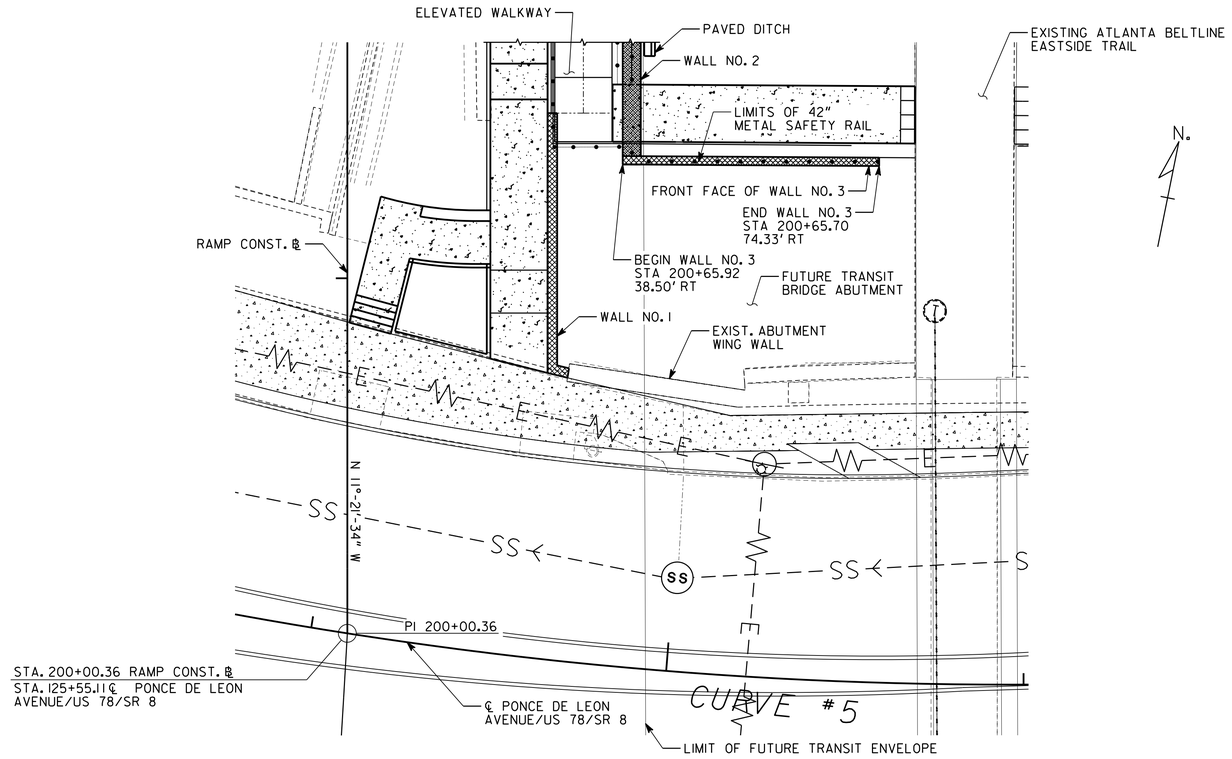
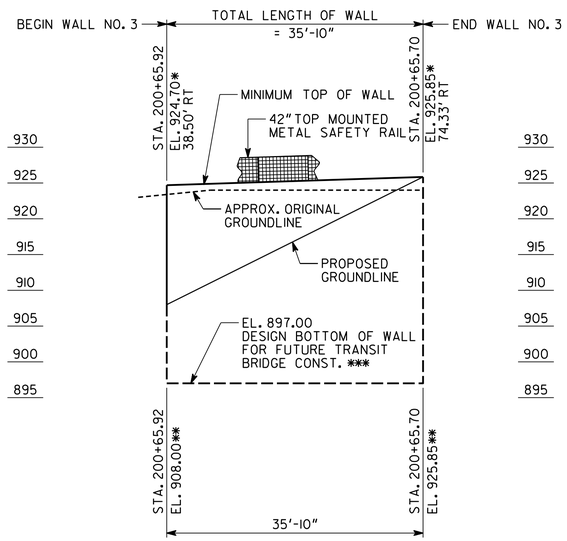
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



PLAN



ELEVATION
LOOKING AT FRONT FACE OF WALL

NOTES:

1. STATIONS ARE ALONG RAMP CONST. ℄. OFFSETS GIVEN TO FRONT FACE OF WALL.
2. * MINIMUM TOP OF WALL ELEVATIONS SHOWN ARE AT PROPOSED FINISHED GRADE ELEVATION AT BACK FACE OF WALL.
3. ** ELEVATIONS SHOWN ARE AT PROPOSED FINISHED GRADE ELEVATION AT FRONT FACE OF WALL.
4. *** WALL NO. 3 SHALL BE DESIGNED FOR A FUTURE BOTTOM OF WALL ELEVATIN OF 897.00 TO ACCOMODATE CONSTRUCTION OF A FUTURE TRANSIT BRIDGE ABUTMENT.
5. FOR SECTIONS AND DETAILS, SEE WALL DETAILS SHEET.

WALL NO. 3

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW, Suite 601
Atlanta, Georgia 30308

GEORGIA No. 31339 PROFESSIONAL ENGINEER DAVID L. STRICKLIN JR.
2-17-2017

ATLANTA BELTLINE

PRELIMINARY - WALL NO. 3
PONCE DE LEON COMPLETE STREET RETROFIT AND BELTLINE CONNECTION
FULTON COUNTY 0012586

DRAWING NO. 32 - 0002
WALL SHEET 2 OF 4

SCALE: 1"= 10'-0" FEBRUARY 2017

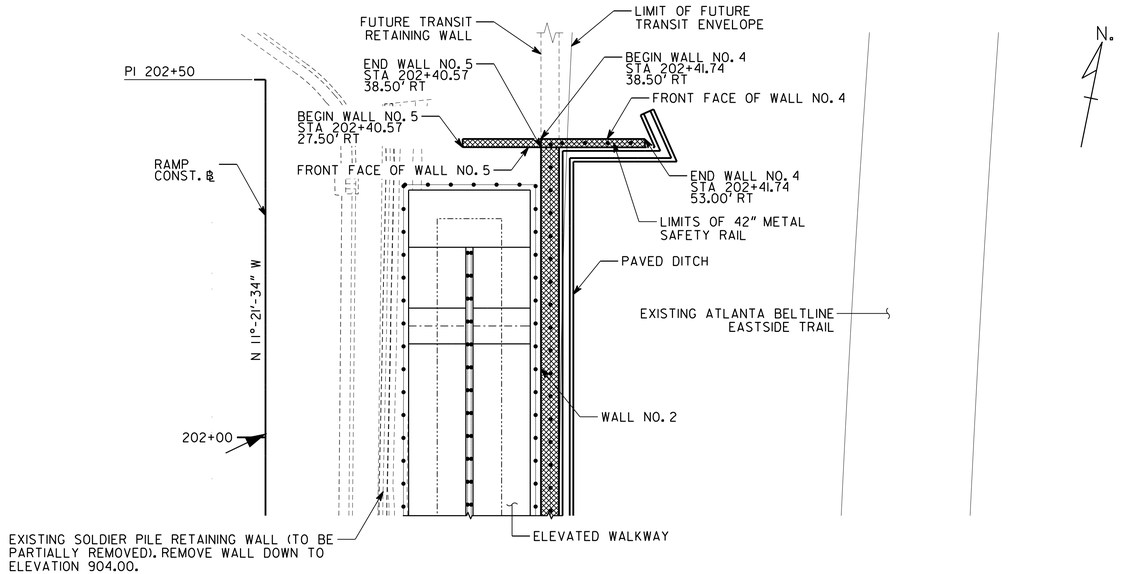
BY	REVISIONS	DATE

DESIGNED AEL | CHECKED DLS | REVIEWED SKG
DRAWN GAG | DESIGN GROUP | APPROVED WMD

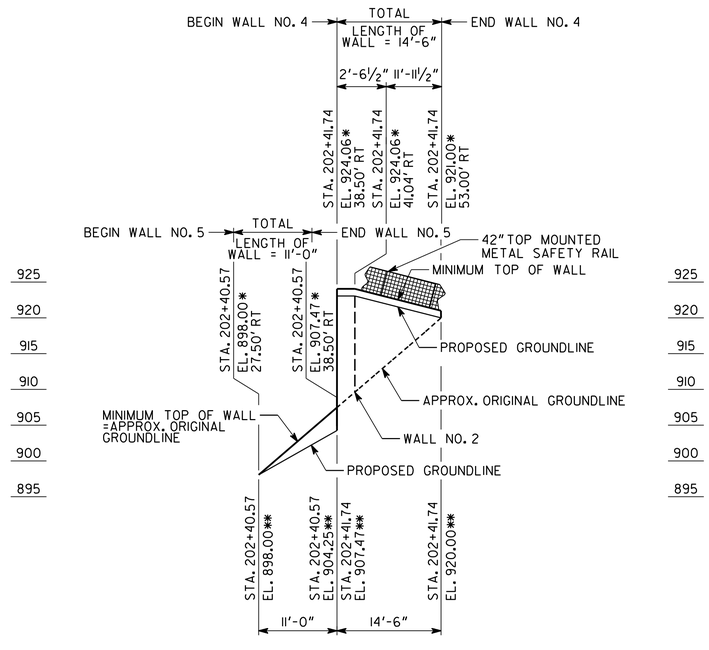
9:23:11 AM $DATE$ $FILE$

1 INCH WHEN PRINTED FULL SIZE

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



PLAN



ELEVATION - WALL NO. 4 & 5

LOOKING AT BACK FACE OF WALL 4
LOOKING AT FRONT FACE OF WALL 5

NOTES:

1. STATIONS ARE ALONG RAMP CONST. ℄. OFFSETS GIVEN TO FRONT FACE OF WALL.
2. * MINIMUM TOP OF WALL ELEVATIONS
3. ** ELEVATIONS SHOWN ARE AT FINISHED GRADE ELEVATION AT FRONT FACE OF WALL.
4. FOR SECTIONS AND DETAILS, SEE WALL DETAILS SHEET.

WALL NO. 4 & 5

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW, Suite 601
Atlanta, Georgia 30308

GEORGIA 31339 PROFESSIONAL ENGINEER DAVID L. STRICKLIN JR. 2-17-2017

ATLANTA BELTLINE

PRELIMINARY - WALL NO. 4 & 5
PONCE DE LEON COMPLETE STREET RETROFIT AND BELTLINE CONNECTION
FULTON COUNTY 0012586

SCALE: 1"= 10'-0" FEBRUARY 2017

DRAWING NO. 32 - 0003
WALL SHEET 3 OF 4

BY	REVISIONS	DATE

DESIGNED AEL | CHECKED DLS | REVIEWED SKG
DRAWN GAG | DESIGN GROUP | APPROVED WMD

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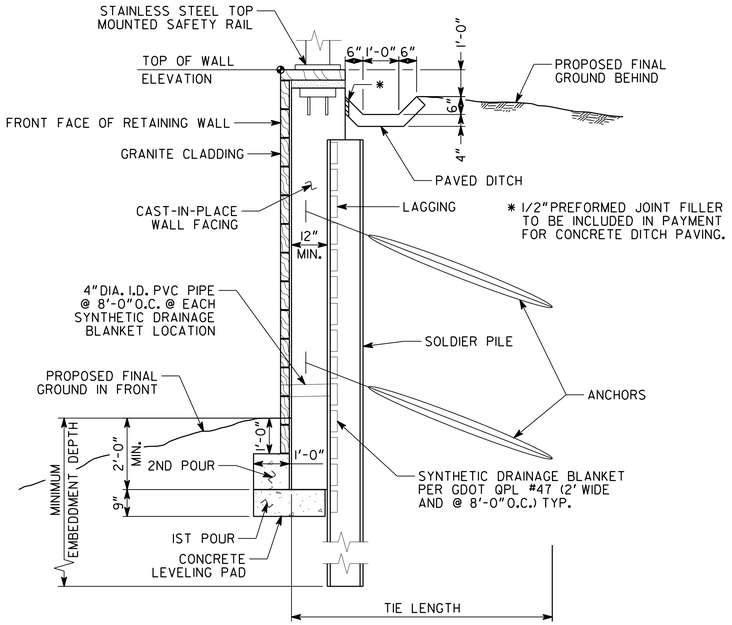
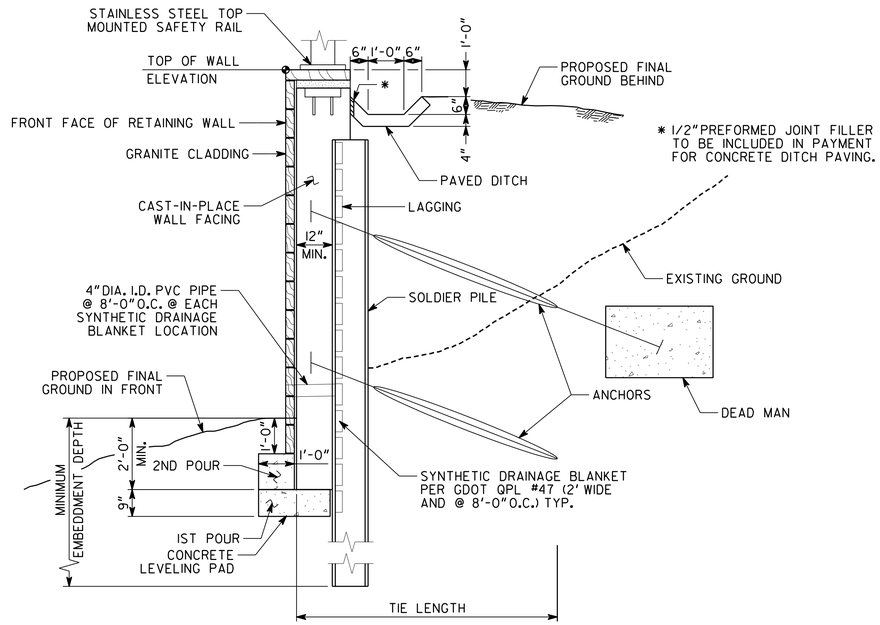
1 INCH WHEN PRINTED FULL SIZE

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



WALL 2 TYPICAL SECTION

(WALL IN CUT, PERMANENT TIE-BACK)

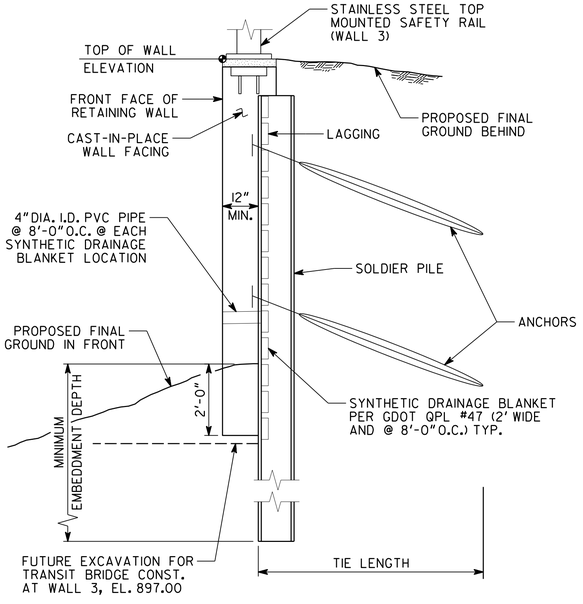


WALL 2 TYPICAL SECTION

(WALL IN FILL, PERMANENT TIE-BACK)

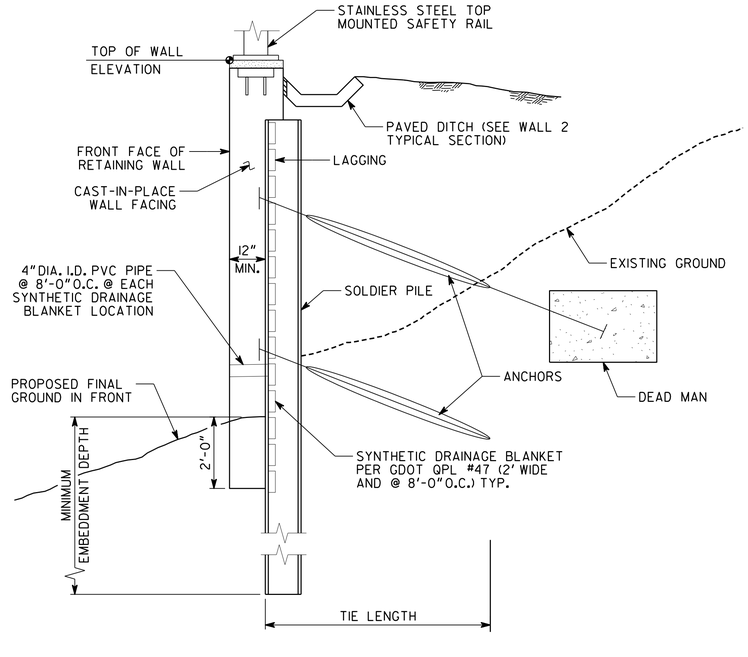
DESIGN DATA - WALLS NO. 2 - NO. 5

SPECIFICATIONS ---------- AASHTO LRFD 7TH EDITION, 2014



WALL 3 AND 5 TYPICAL SECTION

(INTERIM TIE-BACK WALL IN CUT)



WALL 4 TYPICAL SECTION

(INTERIM TIE-BACK WALL IN FILL)

Kimley»Horn

Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW, Suite 601
Atlanta, Georgia 30308

ATLANTA BELTLINE

WALL DETAILS
PONCE DE LEON COMPLETE STREET RETROFIT AND BELTLINE CONNECTION

FULTON COUNTY 0012586

GEORGIA 31339 PROFESSIONAL ENGINEER DAVID L. STRICKLIN JR. 2-17-2017

DRAWING NO.	REVISIONS	DATE
32 - 0004		
WALL SHEET 4 OF 4	BY	

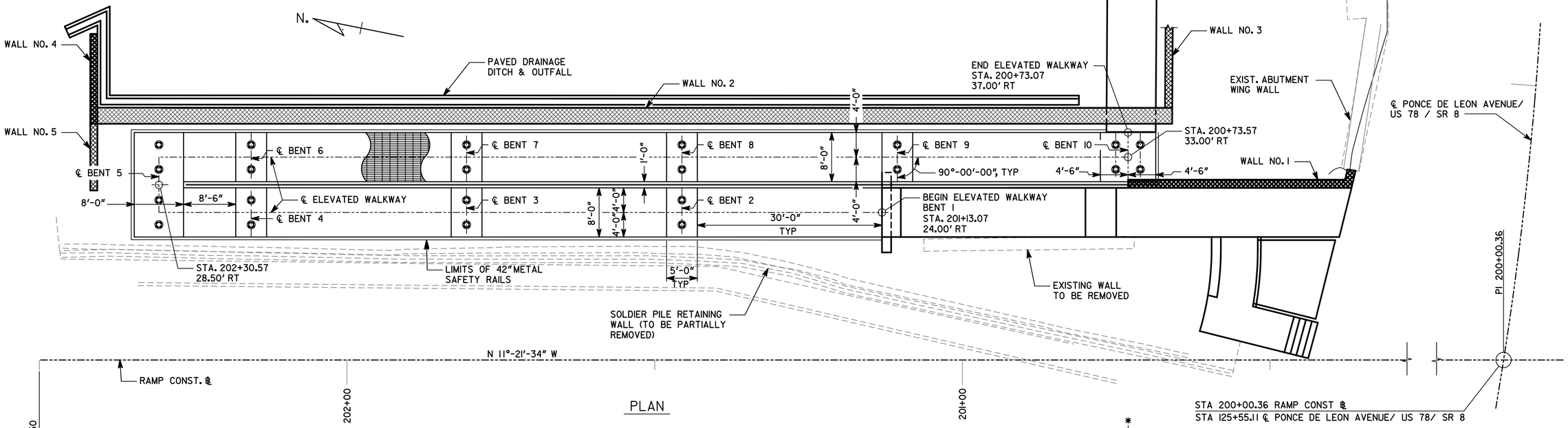
NO SCALE FEBRUARY 2017

DESIGNED AEL | CHECKED DLS | REVIEWED SKG
DRAWN GAG | DESIGN GROUP | APPROVED WMD

9:23:19 AM $DATE$ $FILE$

1 INCH WHEN PRINTED FULL SIZE

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



ELEVATED WALKWAY CONSISTS OF

7 -	30'-0" STEEL BEAM RAMP SPANS	SPECIAL DESIGN
2 -	8'-6" STEEL BEAM RAMP SPANS	SPECIAL DESIGN
1 -	3'-0" END BENT SLAB	SPECIAL DESIGN
7 -	5'-0" CONCRETE COLUMN/STEEL BEAM INTERMEDIATE BENTS	SPECIAL DESIGN
1 -	8'-0" CONCRETE COLUMN/STEEL BEAM INTERMEDIATE BENT	SPECIAL DESIGN
1 -	9'-0" CONCRETE COLUMN/STEEL BEAM END BENT	SPECIAL DESIGN

DESIGN DATA

SPECIFICATIONS ---- AASHTO LRFD 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS

AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, 2ND EDITION WITH 2015 INTERIM REVISIONS

ADA STANDARDS FOR ACCESSIBLE DESIGN, 2010

NOTE:

* STATIONS ARE ALONG RAMP CONST. ℄ AT INTERSECTION OF BEGIN/END ELEVATED STRUCTURE OR ℄ BENT AND ℄ ELEVATED WALKWAY. ELEVATIONS ARE ALONG ℄ ELEVATED WALKWAY.

EXISTING FILL TO BE REMOVED

GEORGIA REGISTERED No.19371 PROFESSIONAL ENGINEER

02-01-2017

S&A Atlanta

SASTRY & ASSOCIATES, INC.
11030 JONES BRIDGE ROAD, SUITE 201
ALPHARETTA, GA 30022
PHONE: 678-366-9375

DRAWING NO. 35 - 0001

BRIDGE SHEET 1 OF 1

BY	REVISIONS	DATE

ATLANTA BELTLINE

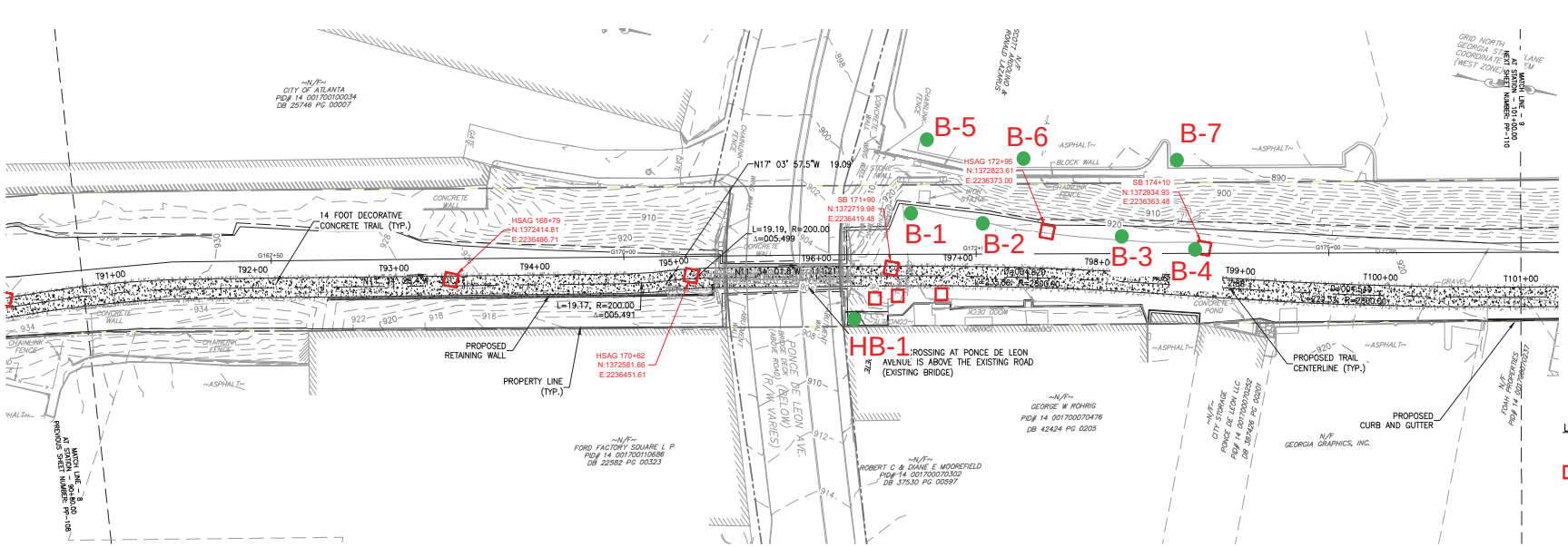
PRELIMINARY LAYOUT
PONCE DE LEON AVENUE/ATLANTA BELTLINE CONNECTION RAMP

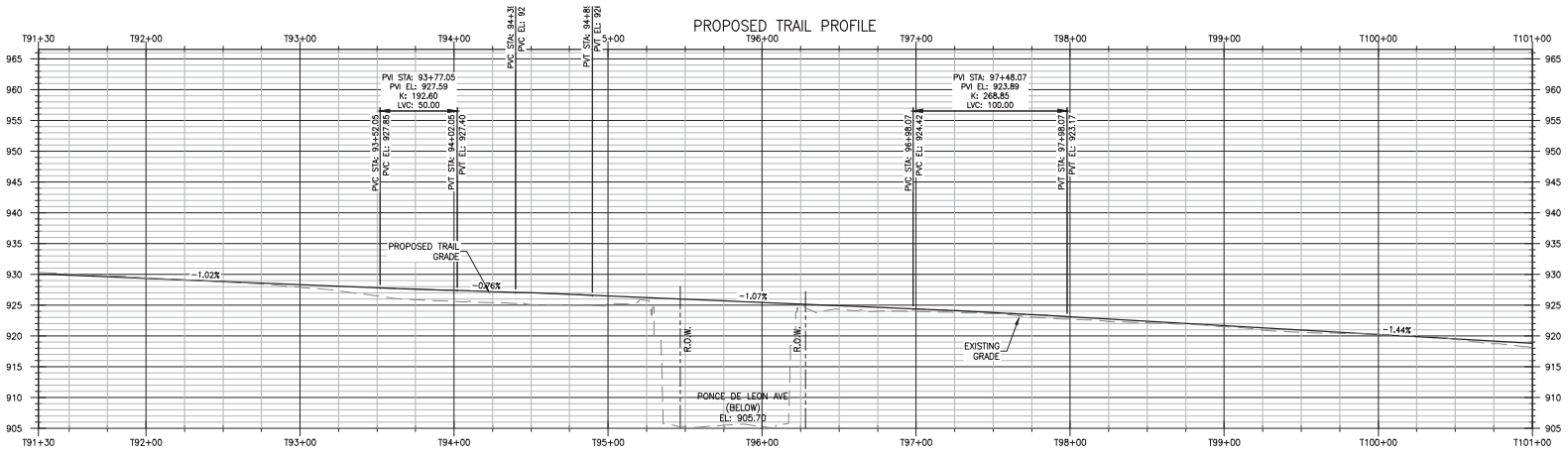
FULTON COUNTY 0012586

SCALE: 1/8" = 1'-0", UNLESS OTHERWISE NOTED FEBRUARY 2017

DESIGNED AP	CHECKED AS	REVIEWED SKG
DRAWN PS	DESIGN GROUP	APPROVED WMD

1 INCH WHEN PRINTED FULL SIZE





NOTES:
UTILITY DEPTHS AND LOCATIONS SHOWN ON PROFILE ARE APPROXIMATE AND MUST BE FIELD VERIFIED.
SEE L-SERIES DRAWINGS FOR MATERIAL FINISHES AND LAYOUT DETAILS

SCALE: 1" = 40'
HORIZONTAL
SCALE: 1" = 10'
VERTICAL PROFILE SCALE

Eastside Trail - North Section

Atlanta BeltLine

Atlanta Beltline, Inc.
86 Pryor Street. SW, Suite 200
Atlanta, GA 30303
t: 404.885.4100
f: 404.840.0616

Perkins + Will
1382 Peachtree Street, NE
Atlanta, GA 30309
t: 404.873.2300
f: 404.892.5823

James Corner Field Operations
475 Tenth Avenue, 10th Floor
New York, New York 10018
t: 212.433.1450
f: 212.433.1451

MACTEC Engineering & Consulting, Inc.
3400 Town Point Drive
Kennesaw, Georgia, 30309
t: 770.421.3400
f: 770.421.3486

Revisions

NO.	ISSUE	DATE	NO.	ISSUE	DATE

Sheet Information

Date	09/27/2010
Job Number	800911.007
Drawn	C. BUDSOCK
Checked	D. GUNNING

Title

GEOTECHNICAL BORING LOCATION PLAN
T90+80 TO T101+00

Sheet

9

NOT FOR CONSTRUCTION

MAJOR DIVISIONS			GROUP SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)		GW	Well graded gravels, gravel - sand mixtures, little or no fines.
				GP	Poorly graded gravels or grave - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)		GM	Silty gravels, gravel - sand - silt mixtures.
				GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size)	CLEAN SANDS (Little or no fines)		SW	Well graded sands, gravelly sands, little or no fines.
				SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)		SM	Silty sands, sand - silt mixtures
				SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)			ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts and with slight plasticity.
				CL	Inorganic lays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
				OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS				PT	Peat and other highly organic soils.
FILL					Fill

	Undisturbed Sample		Auger Cuttings
	Standard Penetration Test or Dynamic Cone Penetration Test		Bulk Sample
	Rock Core		Crandall Sampler
	Dilatometer		Pressure Meter
	Packer		No Recovery
	Water Table at time of boring		Water Table after 24 hours

Correlation of Standard Penetration Resistance with Relative Density and Consistency

SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 2	Very Soft
5 - 10	Loose	3 - 4	Soft
11 - 30	Medium Dense	5 - 8	Firm
31 - 50	Dense	9 - 15	Stiff
Over 50	Very Dense	16 - 30	Very Stiff
		31 - 50	Hard
		Over 50	Very Hard

Correlation of Dynamic Cone Penetration Resistance with Relative Density and Consistency (Piedmont Residual Soils)

SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 2	Very Soft
5 - 15	Loose	3 - 4	Soft
16 - 30	Medium Dense	5 - 10	Firm
		11 - 30	Stiff

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

SILT OR CLAY	SAND			GRAVEL		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		

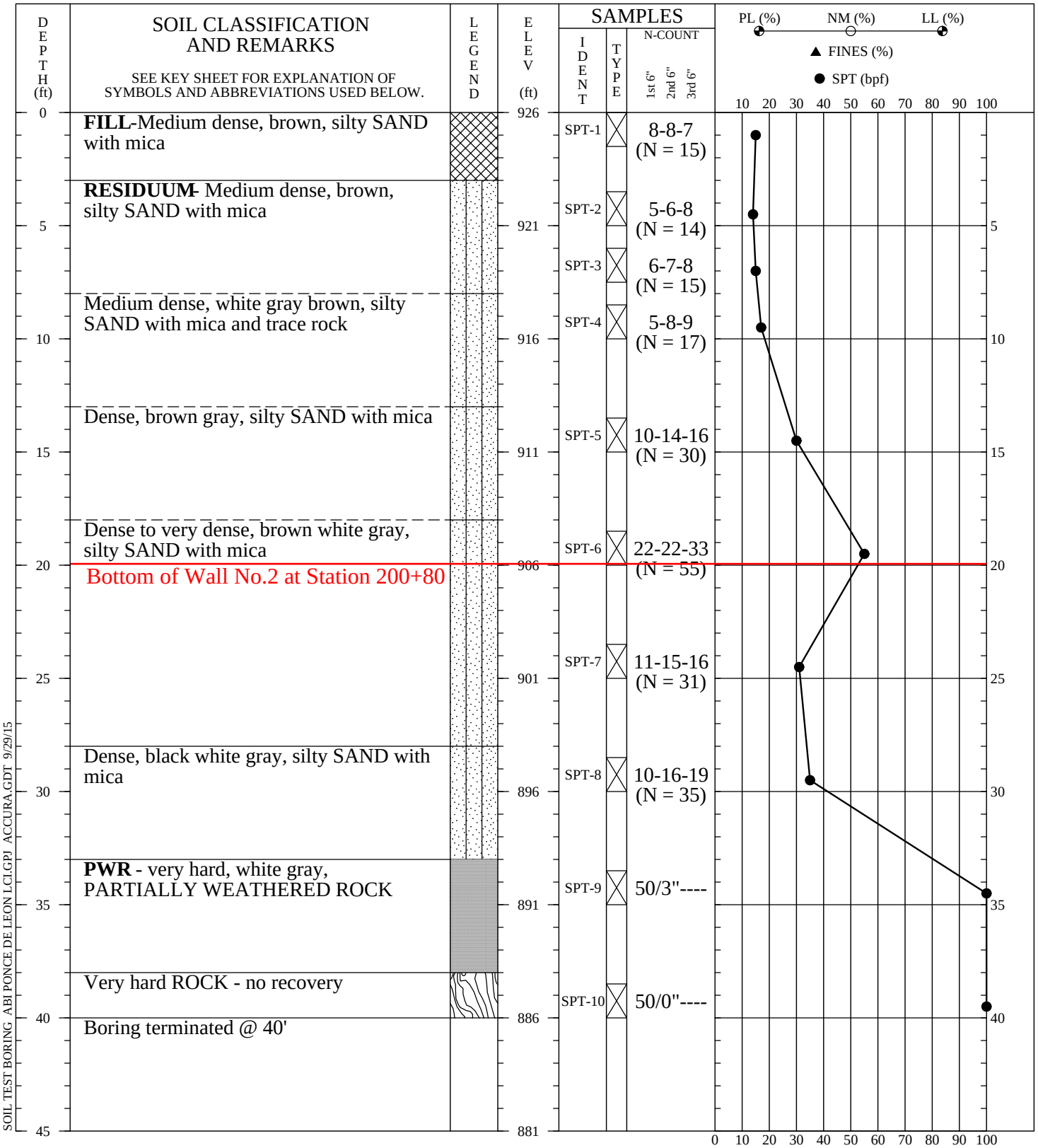
No.200 No.40 No.10 No.4 3/4" 3" 12"

U.S. STANDARD SIEVE SIZE

Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No 3-357, Vol. 1, March, 1953 (Revised April, 1960)

KEY TO SYMBOLS AND DESCRIPTIONS

ACCURA



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/29/15

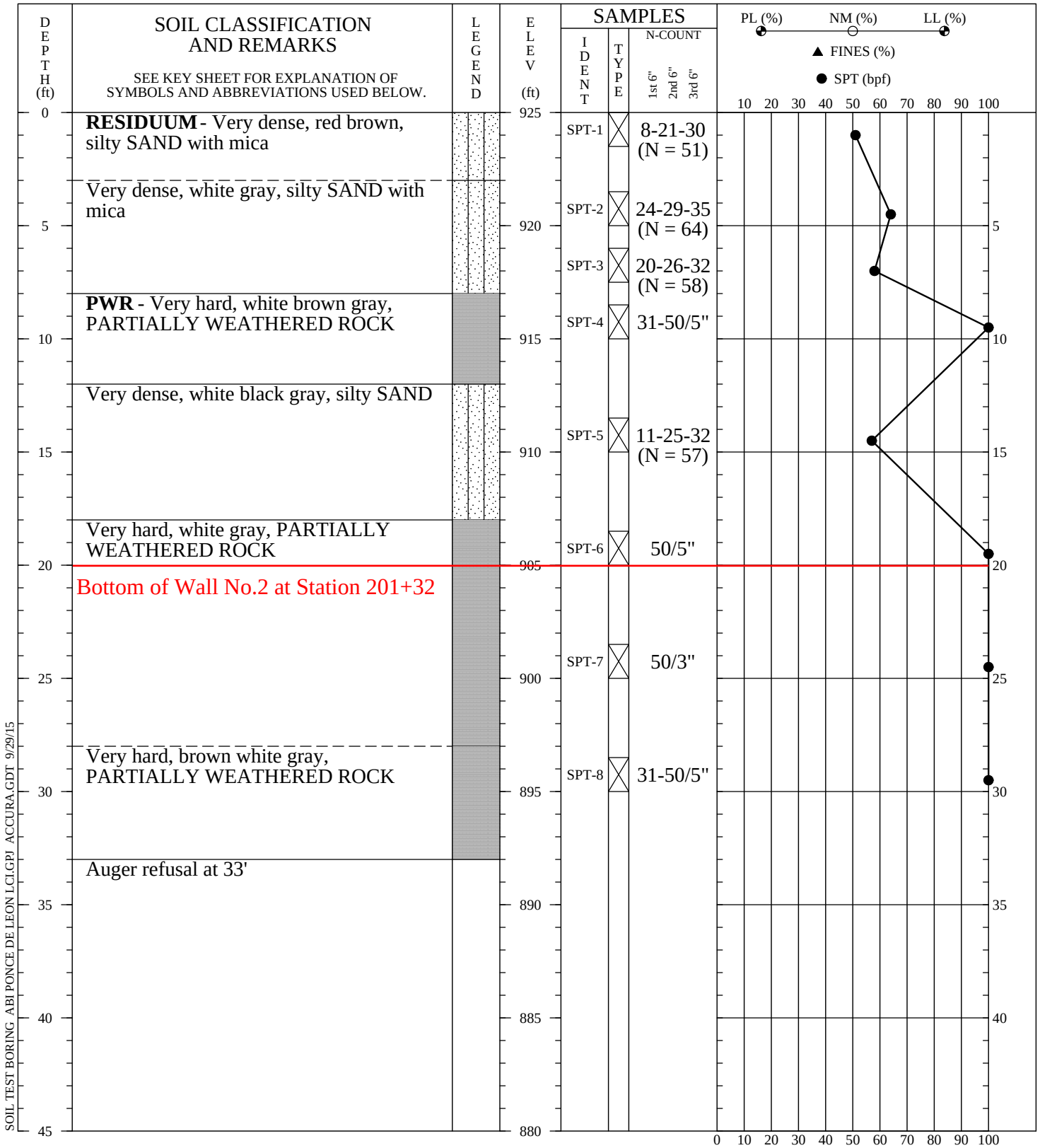
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372726.2169
E:	2336369.1481
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-1
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services



SOIL_TEST BORING_ABI PONCE DE LEON LCI.GPJ_ACCURA.GDT_9/29/15

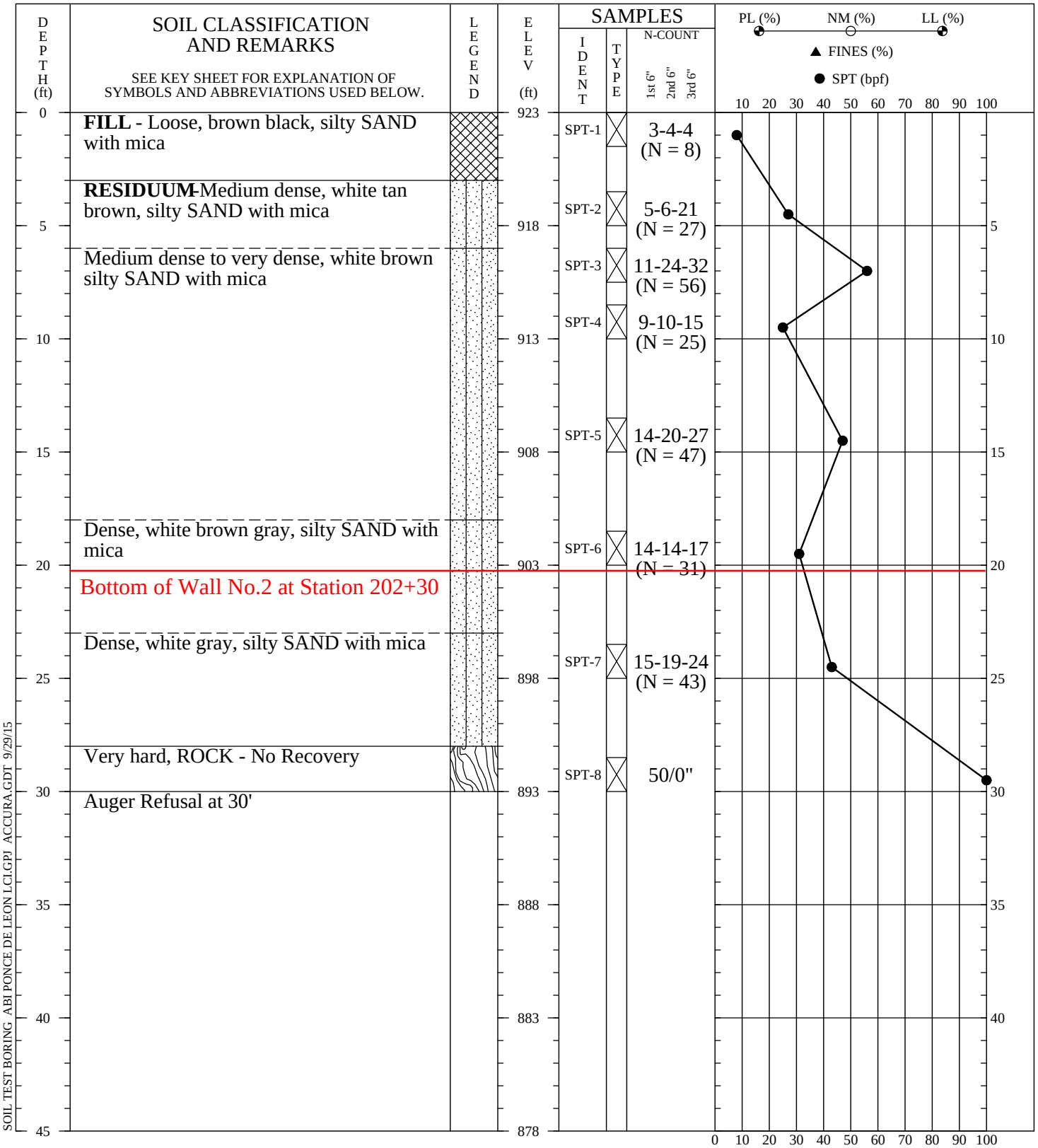
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372777.0664
E:	2336377.5204
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-2
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13

ACCURA Engineering and Consulting Services



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/29/15

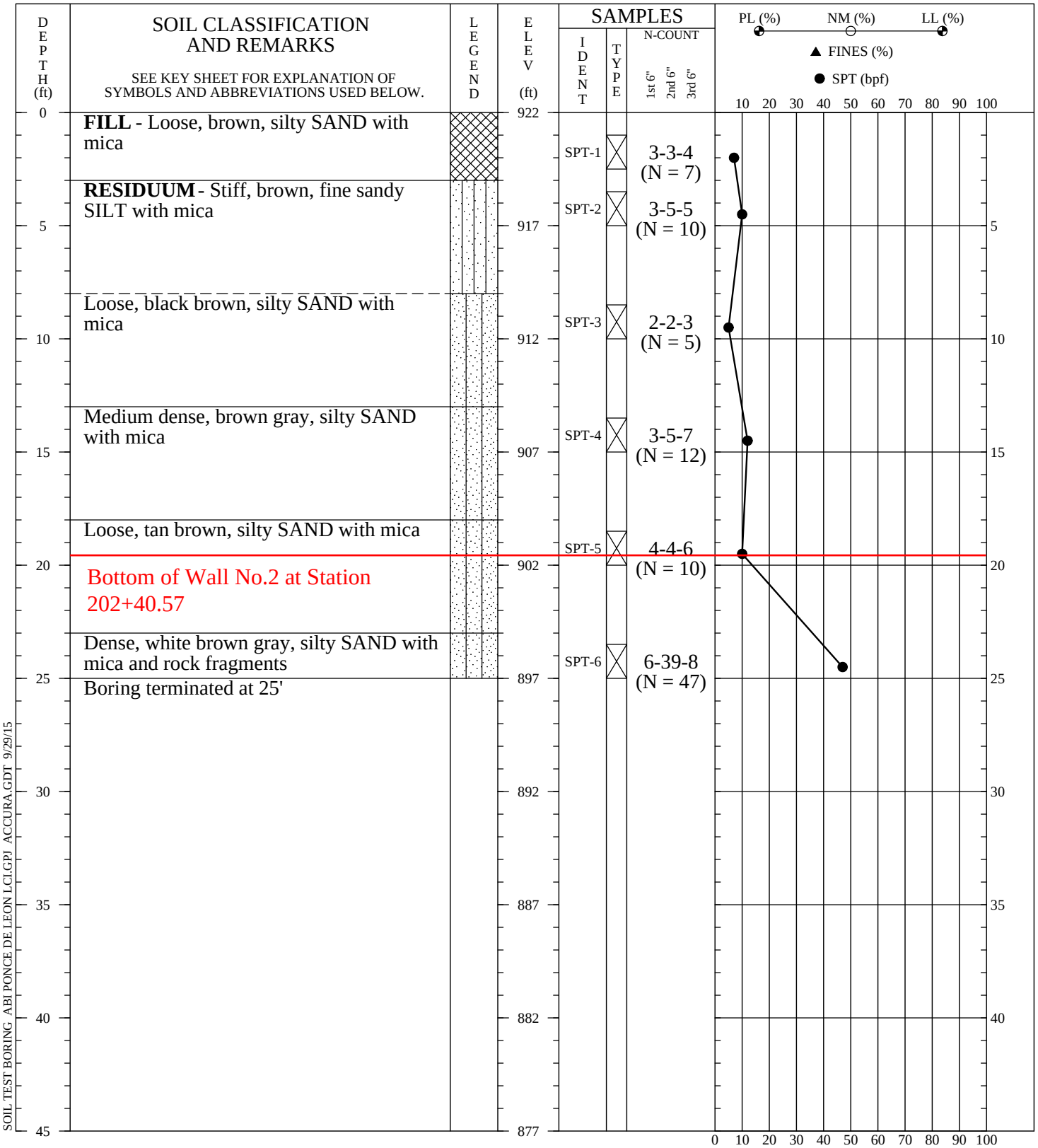
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372879.4187
E:	2336372.6804
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-3
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/29/15

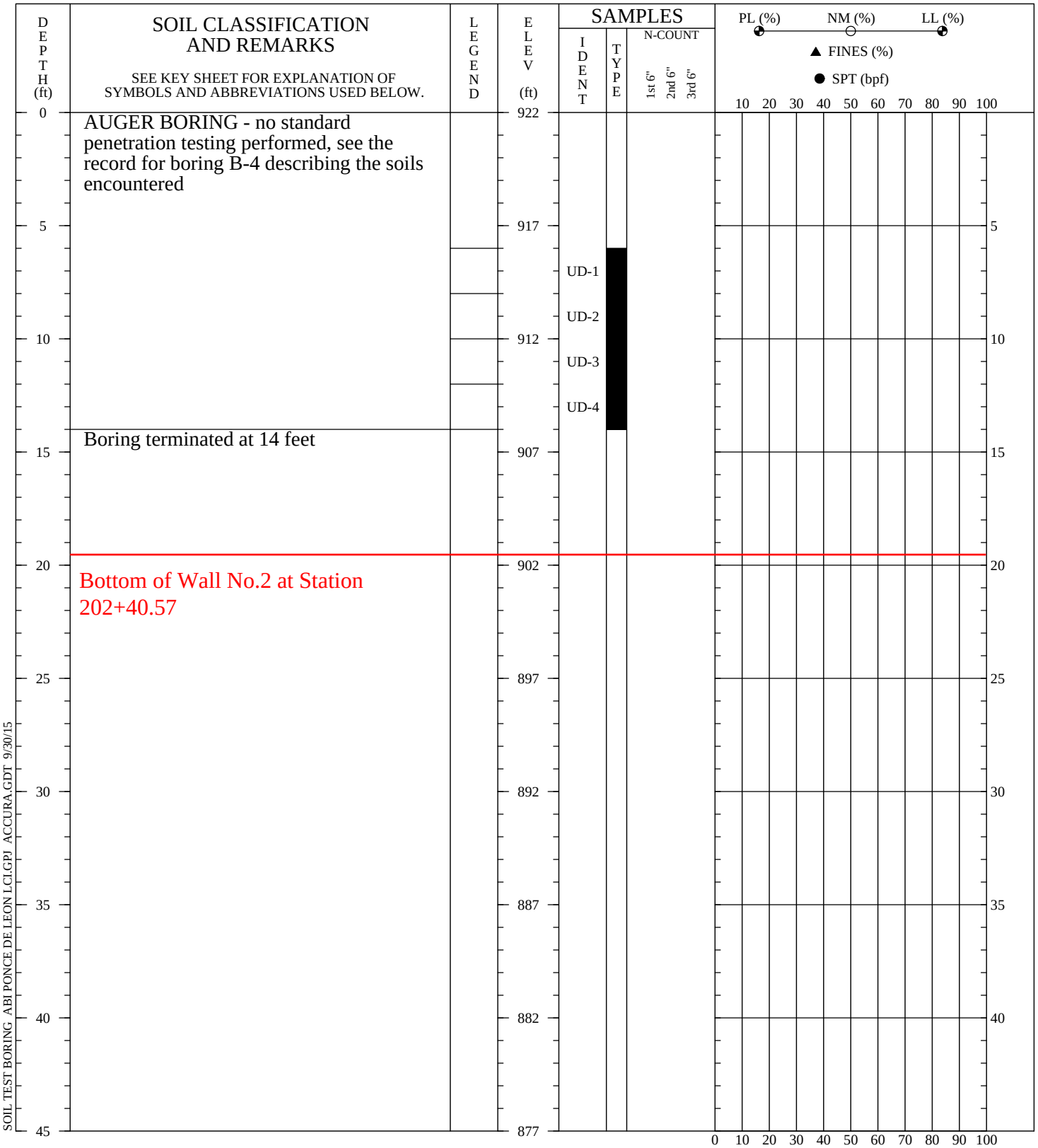
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372935.7211
E:	2336362.1951
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-4
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13

ACCURA
Engineering and Consulting Services



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/30/15

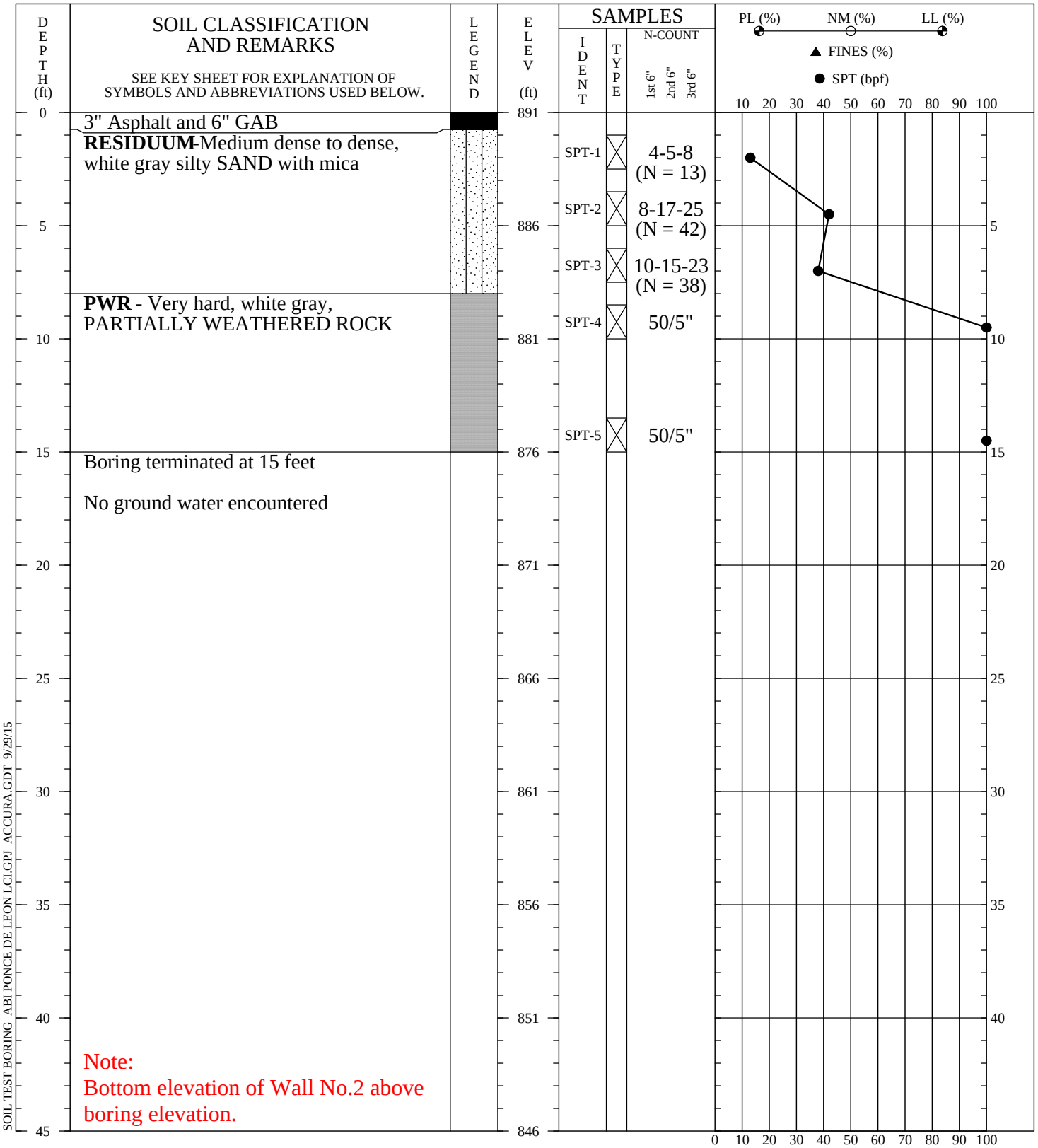
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	
E:	
REMARKS:	3'offset from B-4 for collecting undisturbed samples

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-4A
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13

ACCURA Engineering and Consulting Services



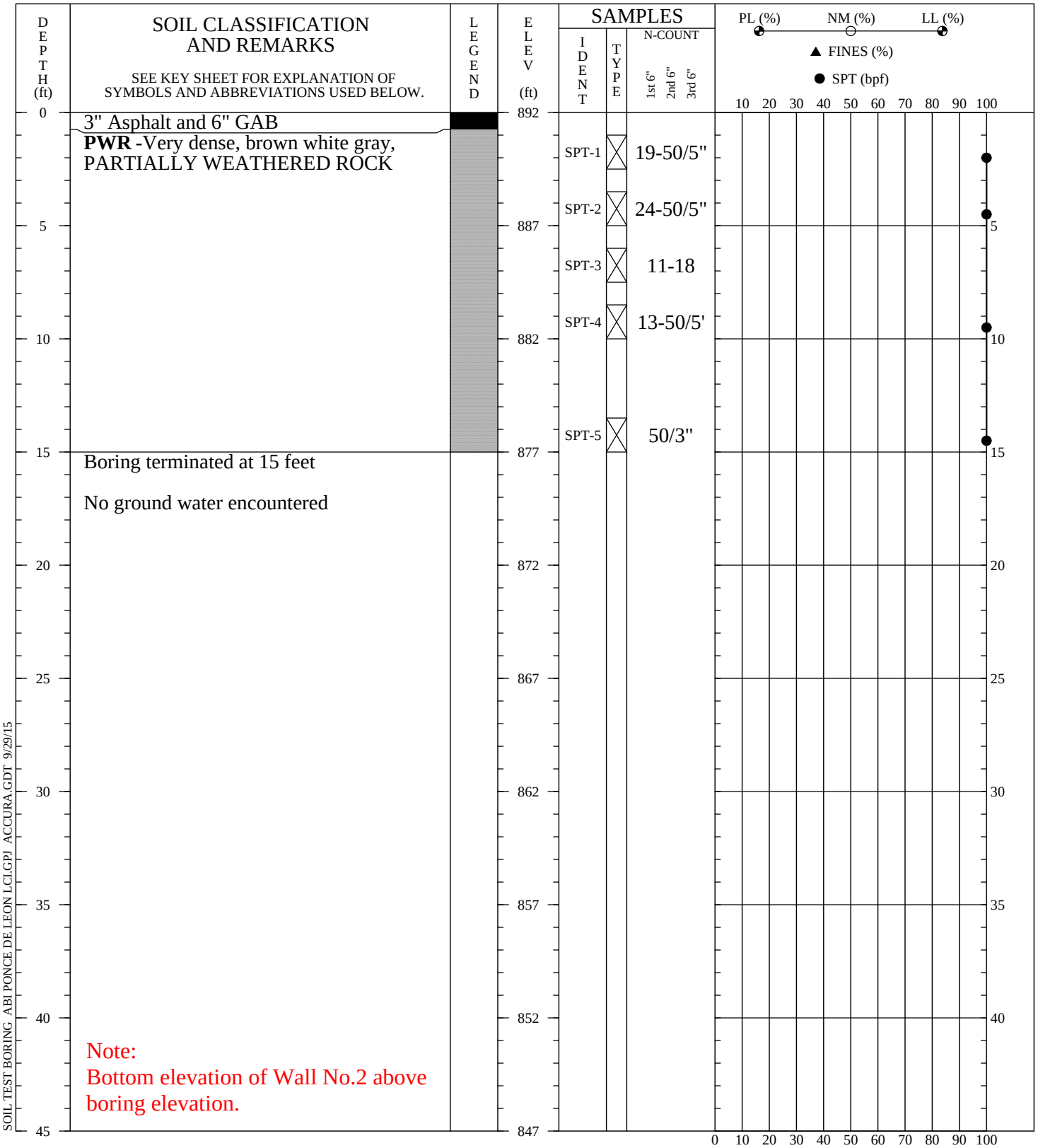
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372726.1195
E:	2336324.4157
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-5
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services



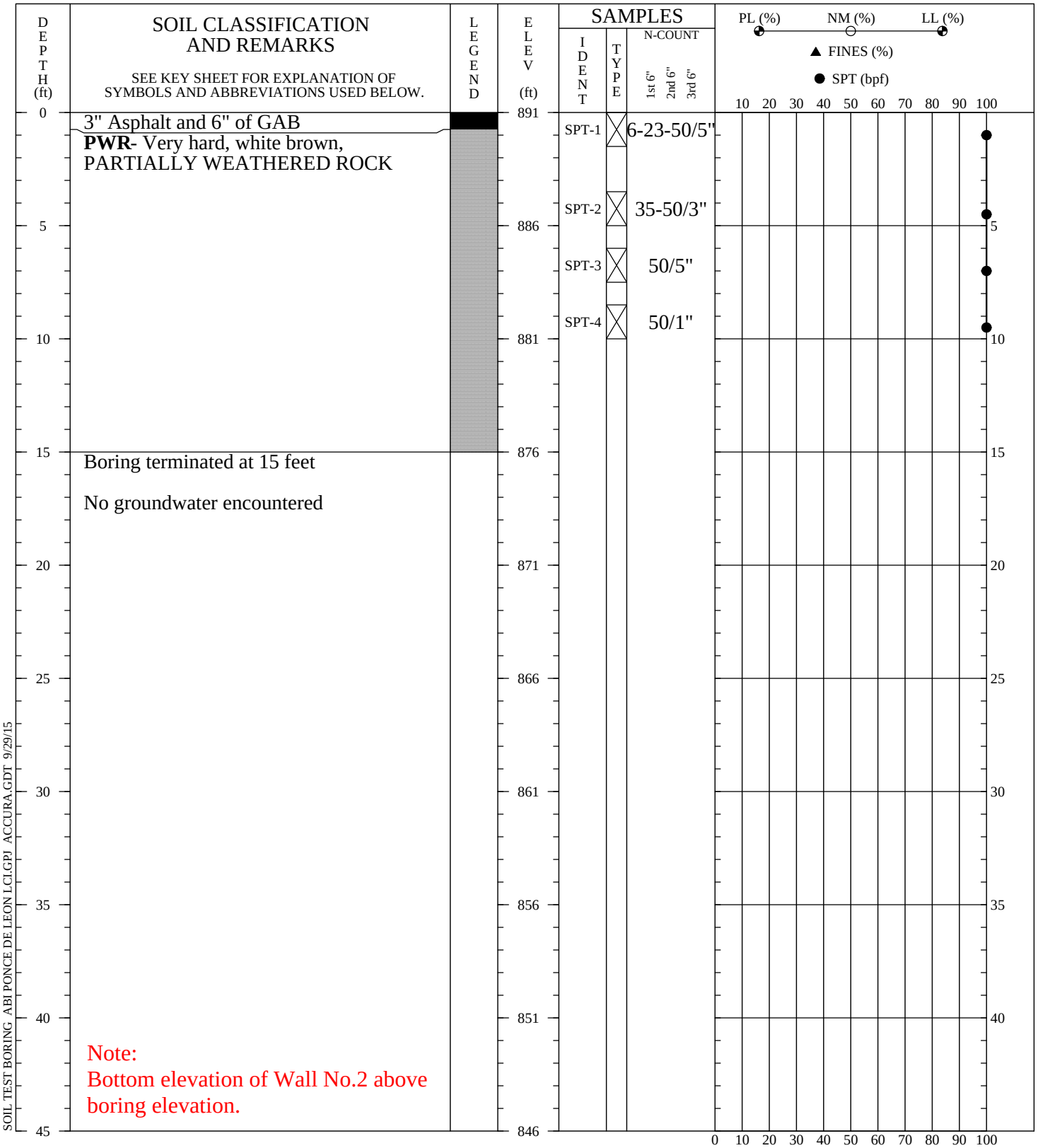
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372799.6346
E:	2336325.1987
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-6
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/29/15

DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372902.2058
E:	2336306.7393
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

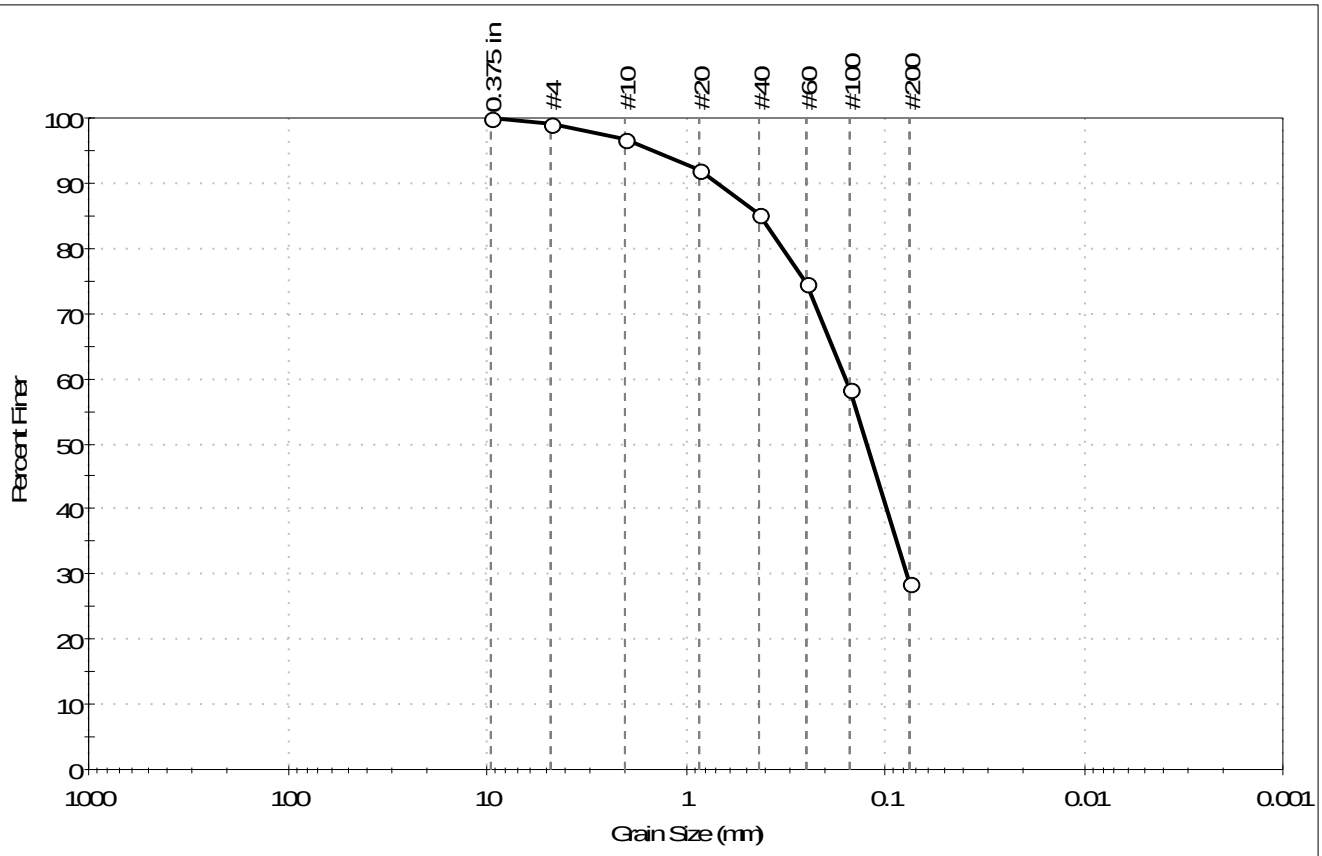
SOIL TEST BORING RECORD

BORING NO.: B-7
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-1	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341271		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.9	70.4	28.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	97		
#20	0.85	92		
#40	0.42	85		
#60	0.25	74		
#100	0.15	58		
#200	0.075	29		

Coefficients

D_{85} = 0.4186 mm	D_{30} = 0.0774 mm
D_{60} = 0.1574 mm	D_{15} = N/A
D_{50} = 0.1232 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

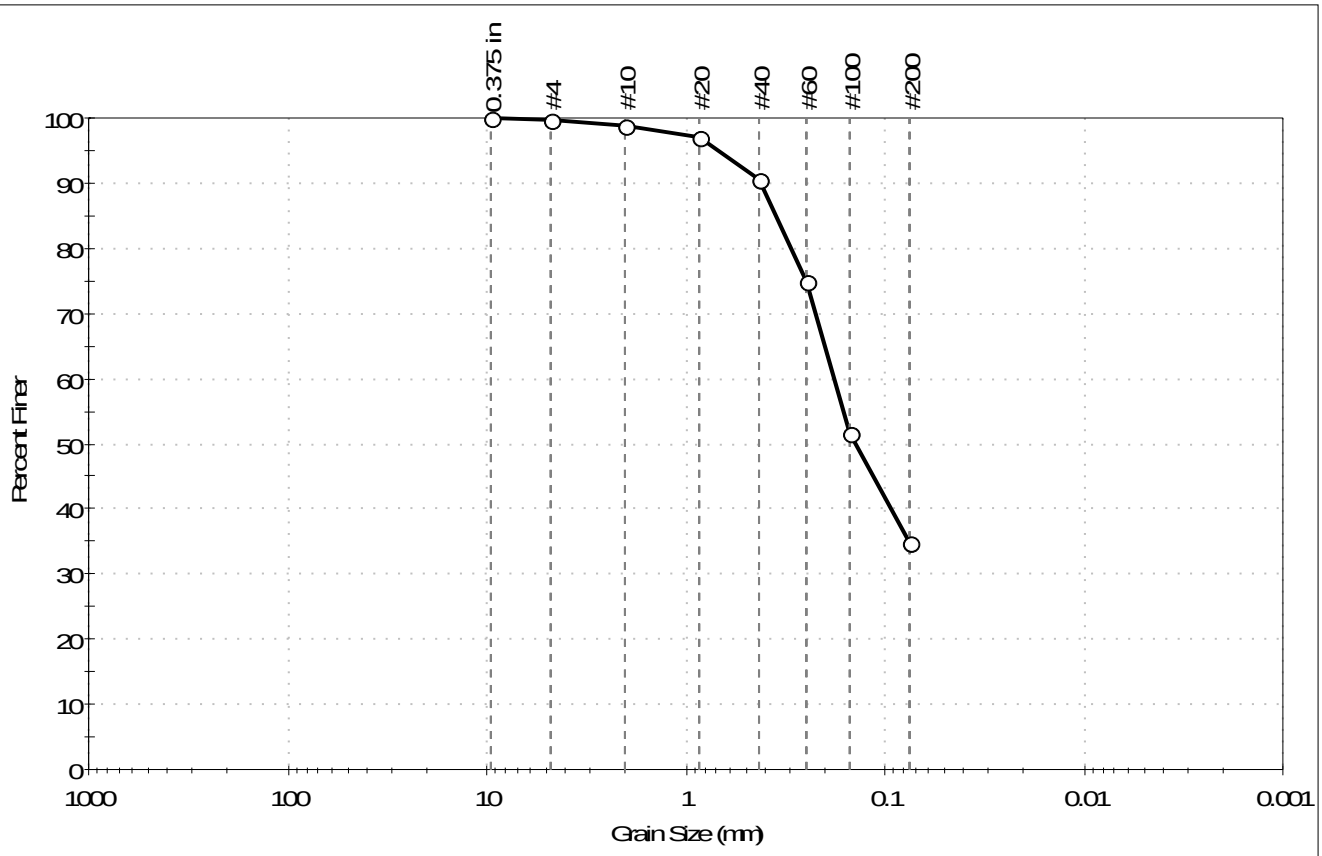
Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-1	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	18.5-20 ft	Test Id:	341272		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.3	64.9	34.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	90		
#60	0.25	75		
#100	0.15	52		
#200	0.075	35		

Coefficients

D_{85} = 0.3529 mm	D_{30} = N/A
D_{60} = 0.1799 mm	D_{15} = N/A
D_{50} = 0.1396 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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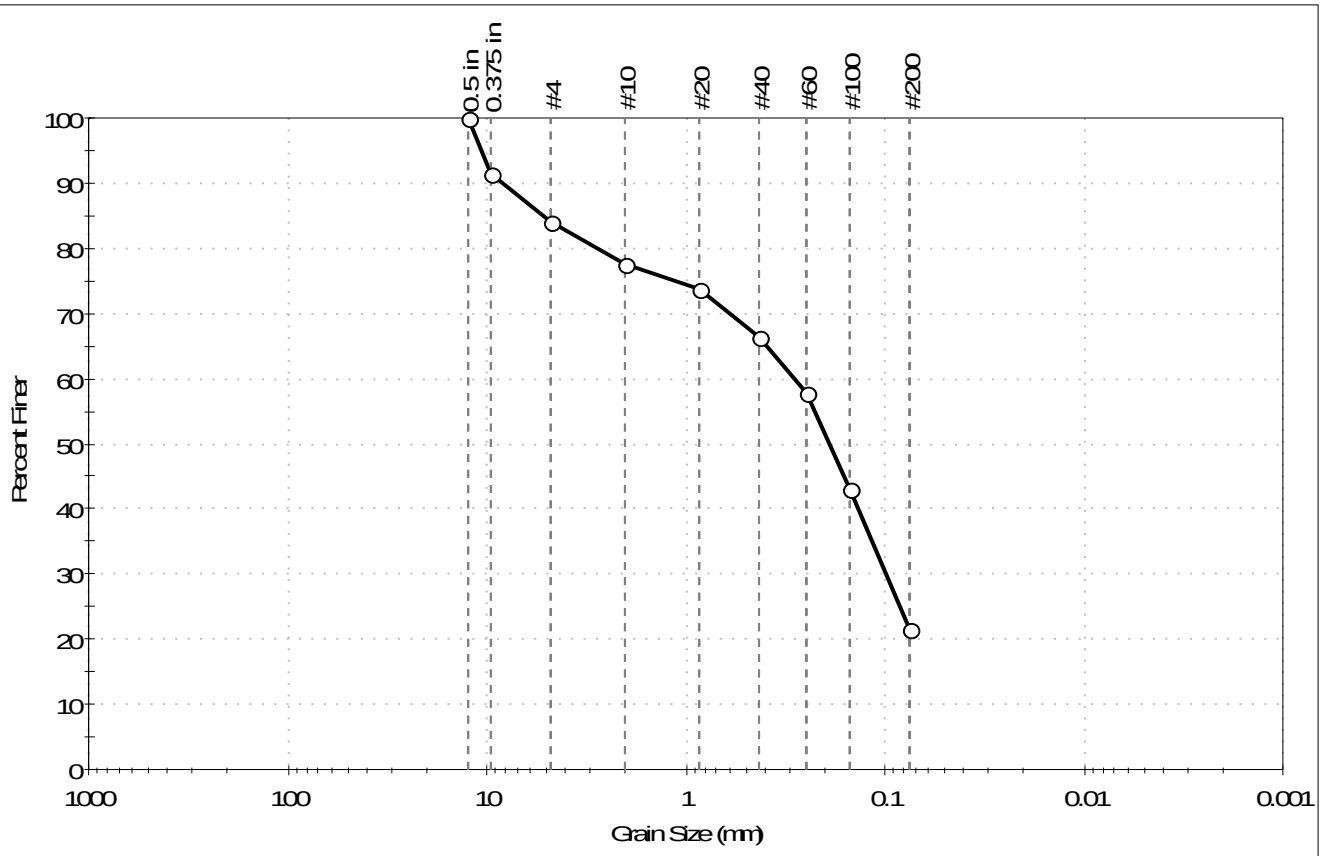
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-2	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	6-7.5 ft	Test Id:	341273		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	15.9	62.6	21.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	92		
#4	4.75	84		
#10	2.00	77		
#20	0.85	74		
#40	0.42	66		
#60	0.25	58		
#100	0.15	43		
#200	0.075	22		

Coefficients

D_{85} = 5.1395 mm D_{30} = 0.0985 mm

D_{60} = 0.2853 mm D_{15} = N/A

D_{50} = 0.1903 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

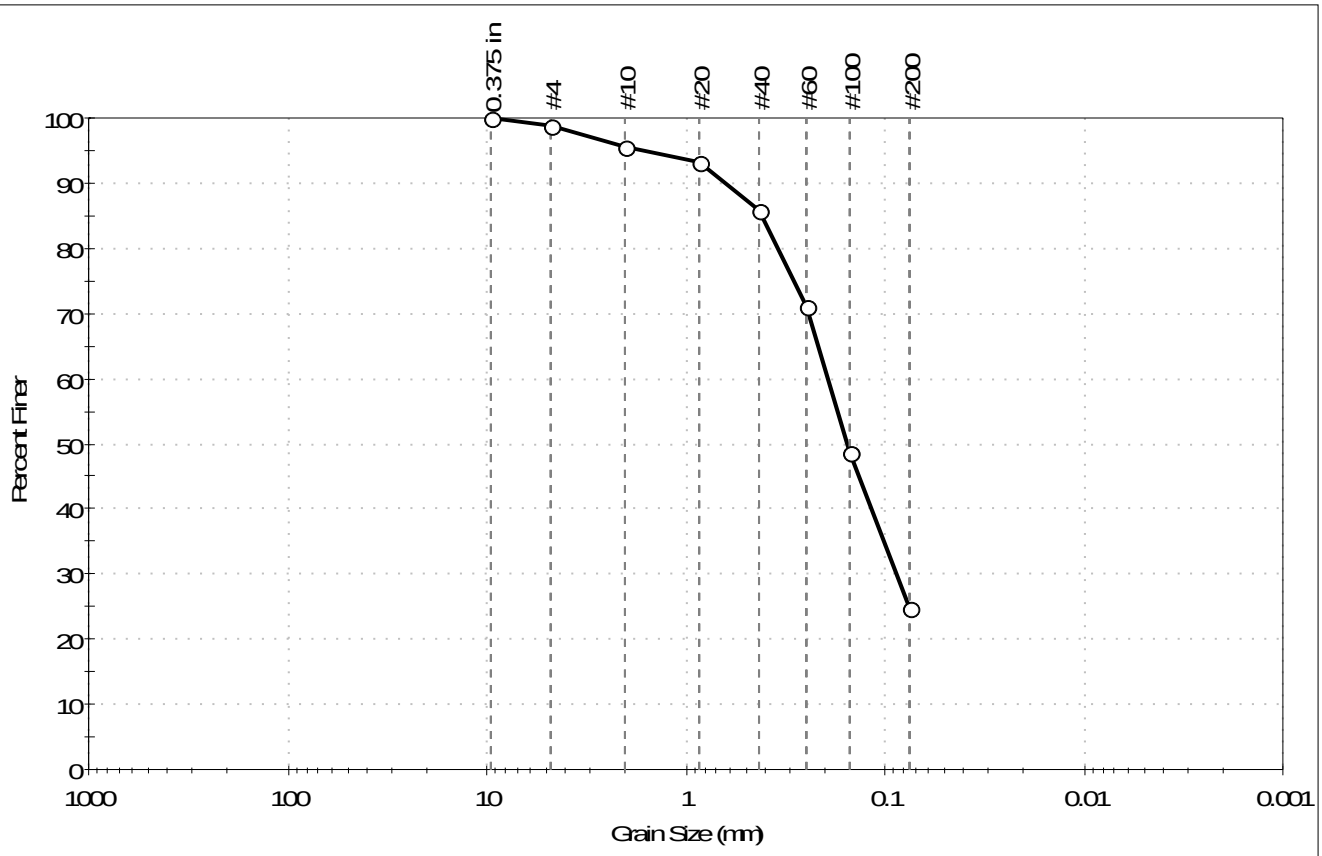
Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-2	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	18.5-20 ft	Test Id:	341274		

Test Comment: ---
Visual Description: Moist, grayish brown silty sand
Sample Comment: ---

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	1.2	74.0	24.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	96		
#20	0.85	93		
#40	0.42	86		
#60	0.25	71		
#100	0.15	49		
#200	0.075	25		

Coefficients

D_{85} = 0.4138 mm	D_{30} = 0.0872 mm
D_{60} = 0.1939 mm	D_{15} = N/A
D_{50} = 0.1541 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

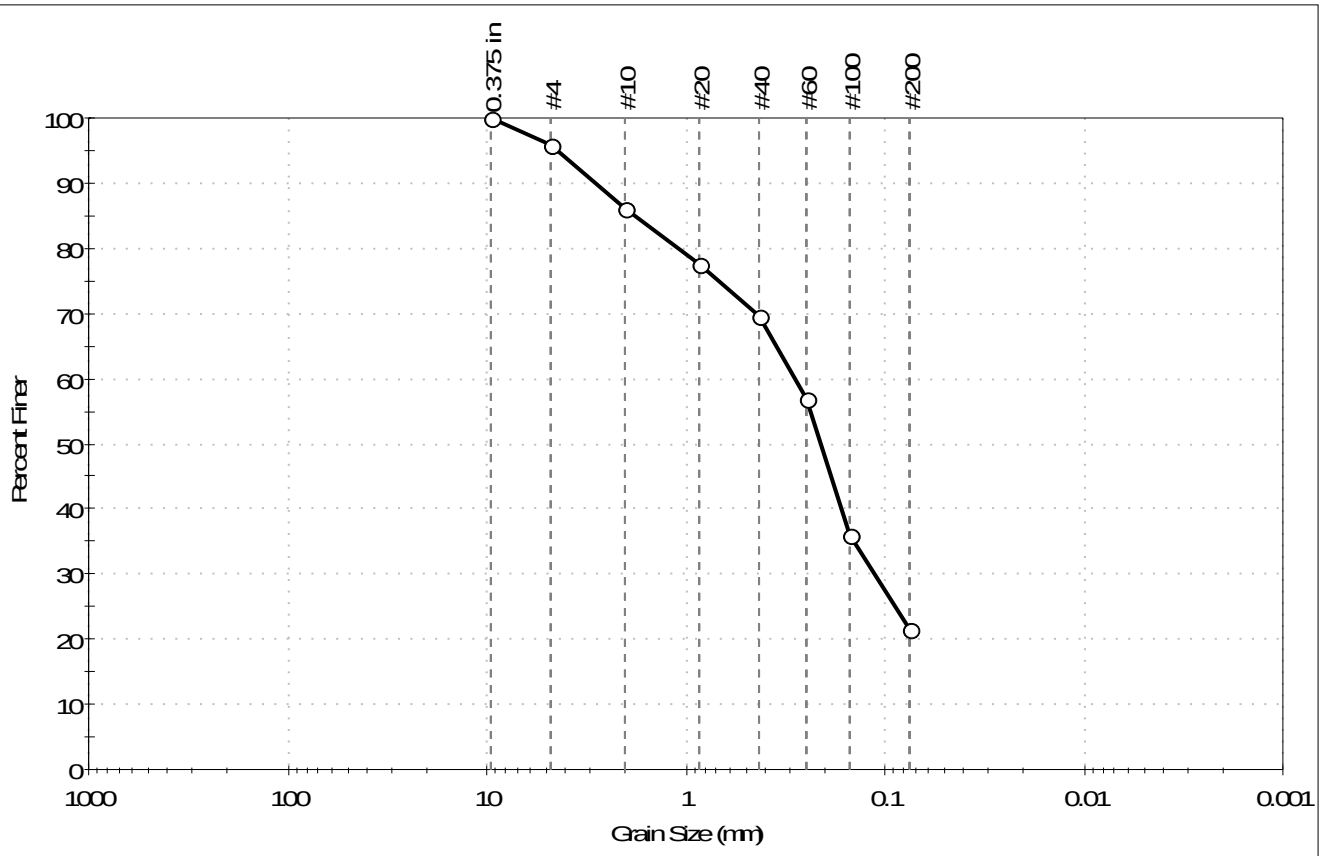
Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-3	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341275		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	4.1	74.2	21.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	96		
#10	2.00	86		
#20	0.85	78		
#40	0.42	70		
#60	0.25	57		
#100	0.15	36		
#200	0.075	22		

Coefficients

D_{85} = 1.7785 mm	D_{30} = 0.1126 mm
D_{60} = 0.2844 mm	D_{15} = N/A
D_{50} = 0.2114 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

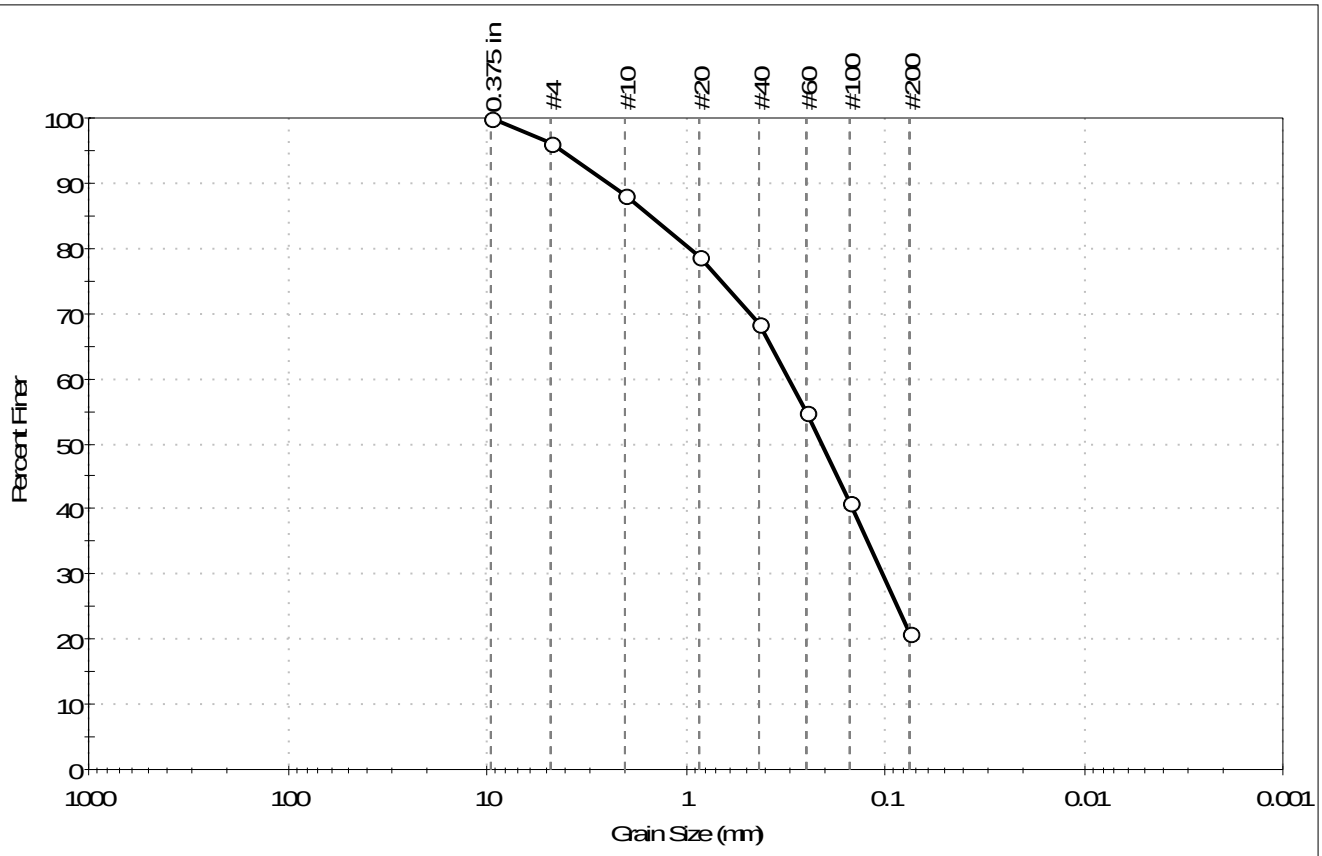
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-3	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	18.5-20 ft	Test Id:	341276		
Test Comment:	---				
Visual Description:	Moist, light olive brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	3.9	75.3	20.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	96		
#10	2.00	88		
#20	0.85	79		
#40	0.42	68		
#60	0.25	55		
#100	0.15	41		
#200	0.075	21		

Coefficients

D_{85} = 1.5038 mm	D_{30} = 0.1027 mm
D_{60} = 0.3063 mm	D_{15} = N/A
D_{50} = 0.2091 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

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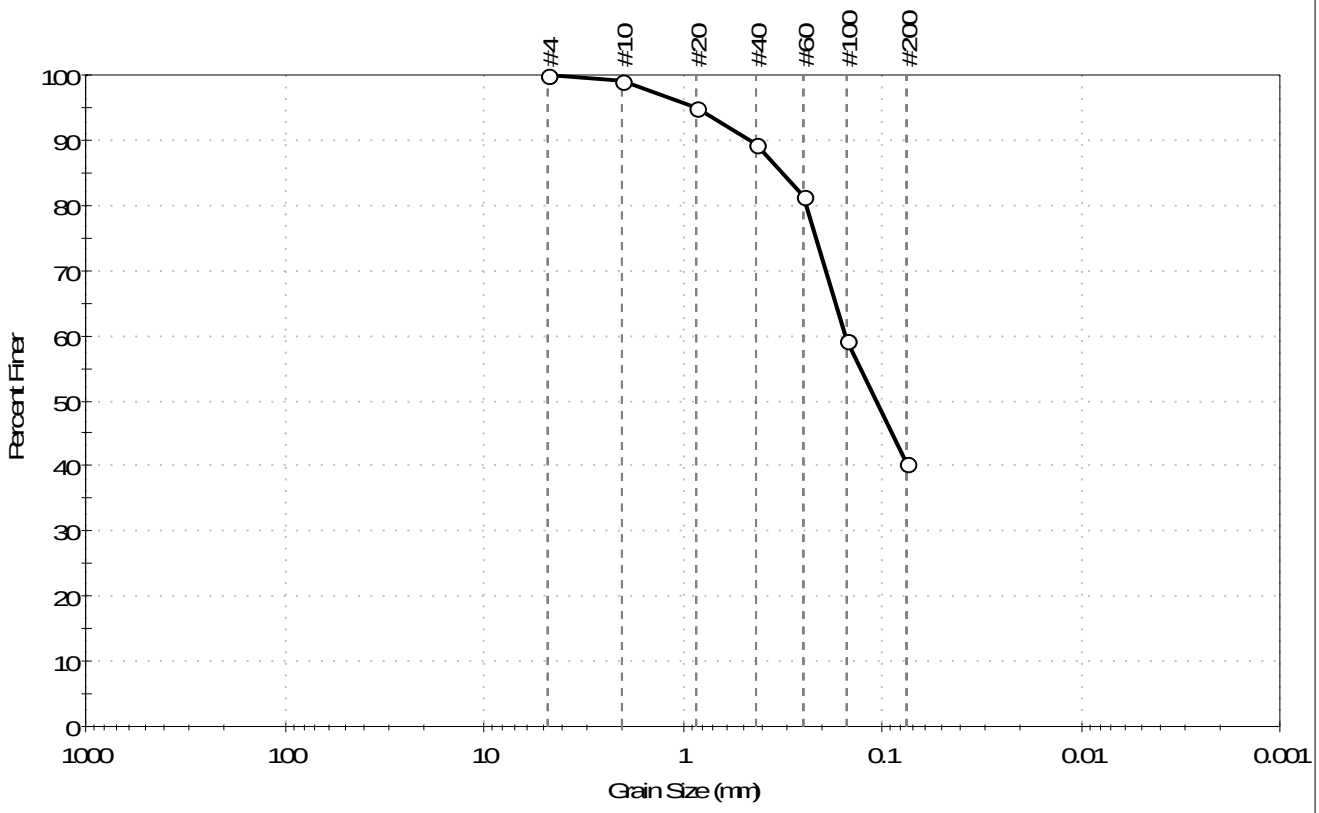
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-4	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341277		
Test Comment:	---				
Visual Description:	Moist, dark grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.0	59.5	40.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	95		
#40	0.42	89		
#60	0.25	81		
#100	0.15	59		
#200	0.075	41		

Coefficients

D_{85} = 0.3192 mm D_{30} = N/A
D_{60} = 0.1528 mm D_{15} = N/A
D_{50} = 0.1066 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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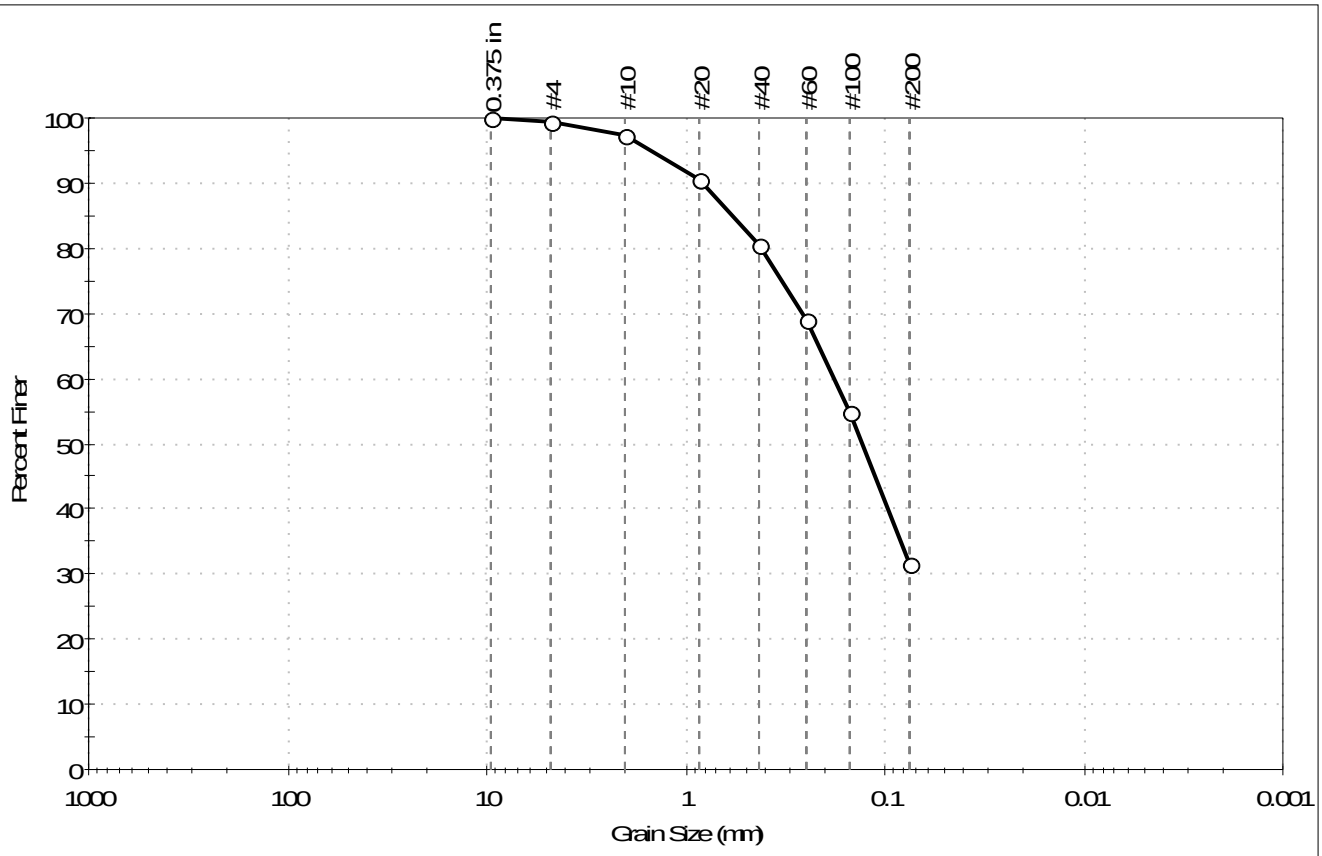
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-4	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	18.5-20 ft	Test Id:	341278		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.7	67.8	31.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	97		
#20	0.85	91		
#40	0.42	81		
#60	0.25	69		
#100	0.15	55		
#200	0.075	31		

Coefficients

D_{85} = 0.5759 mm	D_{30} = N/A
D_{60} = 0.1806 mm	D_{15} = N/A
D_{50} = 0.1300 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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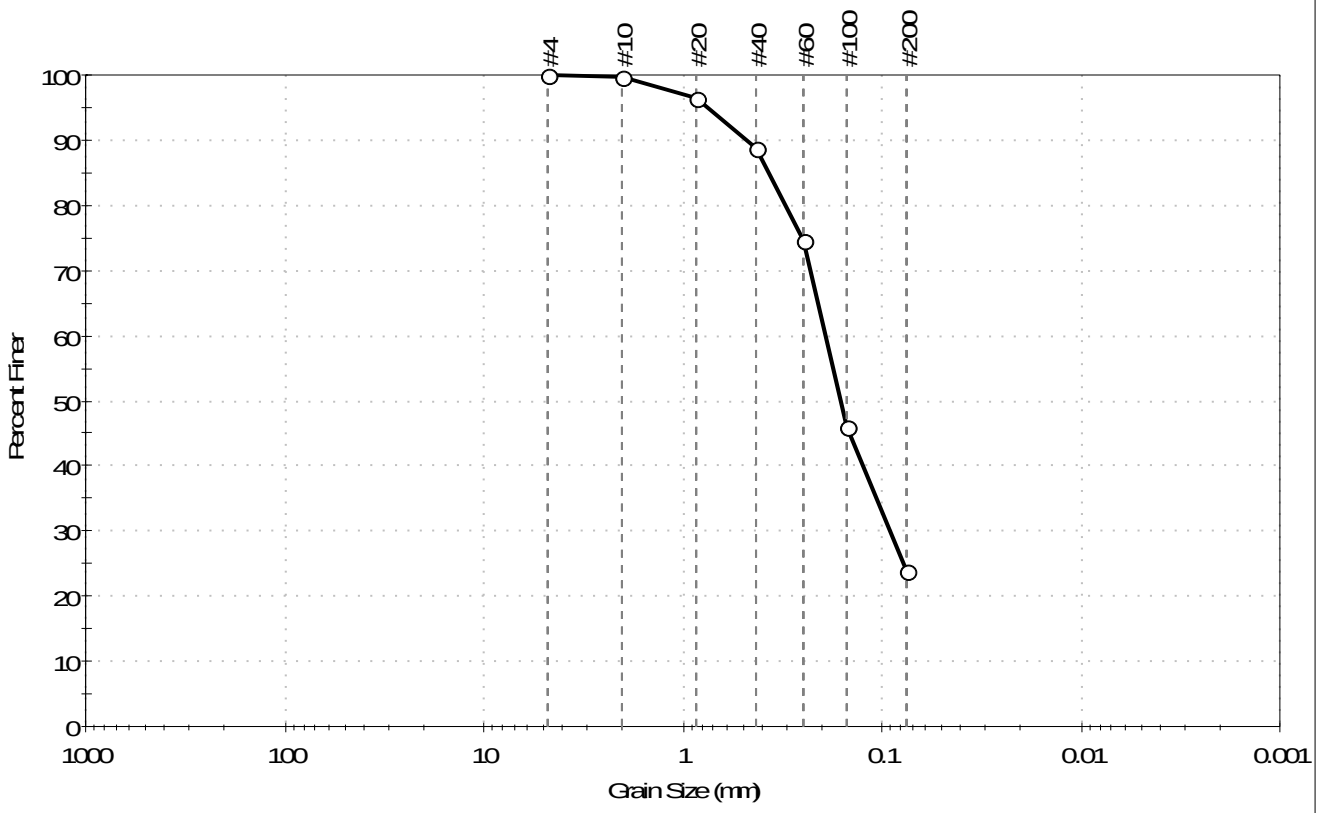
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-5	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	3.5-5 ft	Test Id:	341279		
Test Comment:	---				
Visual Description:	Moist, dark grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.0	76.3	23.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	96		
#40	0.42	89		
#60	0.25	75		
#100	0.15	46		
#200	0.075	24		

Coefficients

D_{85} = 0.3688 mm	D_{30} = 0.0911 mm
D_{60} = 0.1928 mm	D_{15} = N/A
D_{50} = 0.1612 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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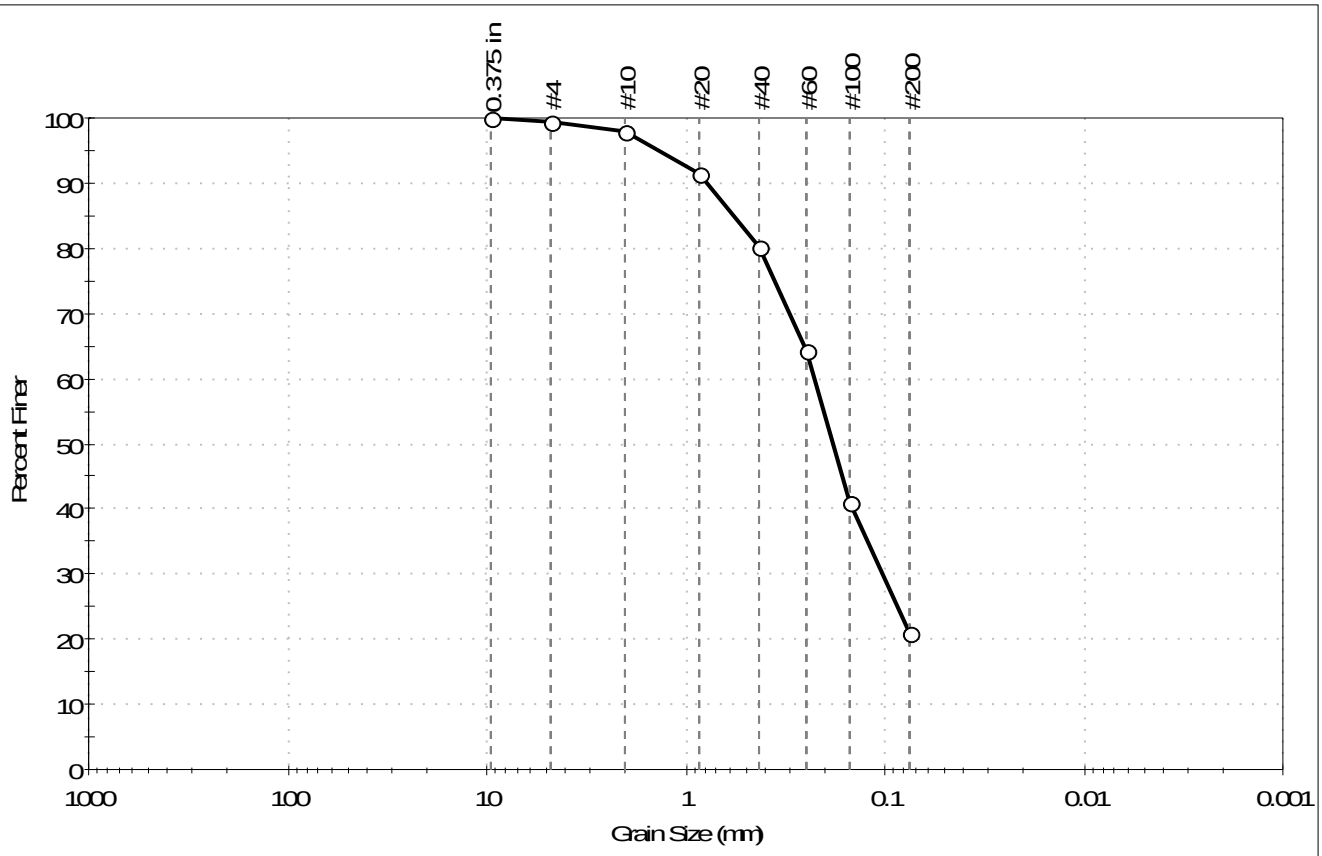
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-5	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341280		
Test Comment:	---				
Visual Description:	Moist, dark grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.7	78.3	21.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	98		
#20	0.85	92		
#40	0.42	80		
#60	0.25	64		
#100	0.15	41		
#200	0.075	21		

Coefficients

D_{85} = 0.5685 mm	D_{30} = 0.1025 mm
D_{60} = 0.2273 mm	D_{15} = N/A
D_{50} = 0.1828 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

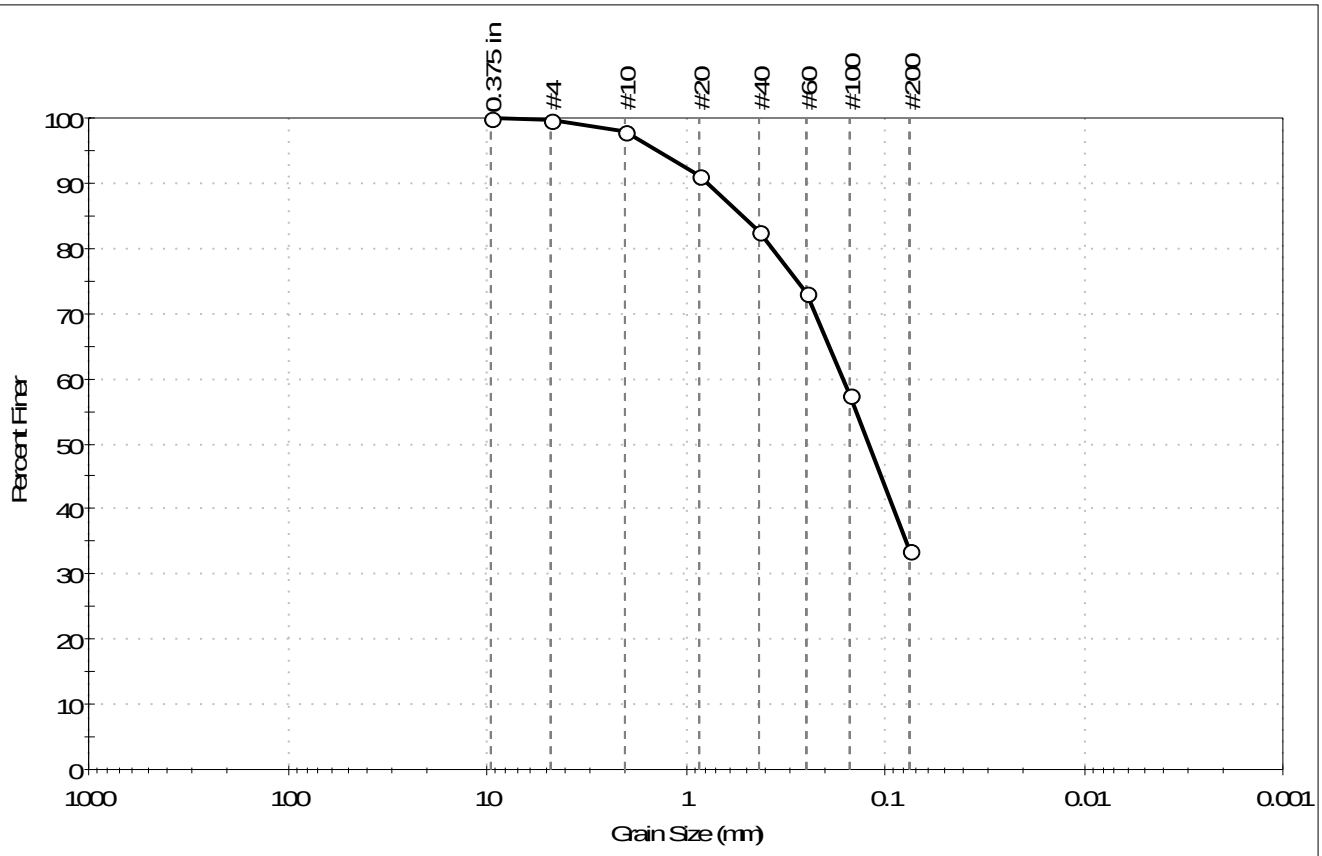
Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-6	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	3.5-5 ft	Test Id:	341281		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.3	66.0	33.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	98		
#20	0.85	91		
#40	0.42	83		
#60	0.25	73		
#100	0.15	58		
#200	0.075	34		

Coefficients

D_{85} = 0.5180 mm	D_{30} = N/A
D_{60} = 0.1622 mm	D_{15} = N/A
D_{50} = 0.1202 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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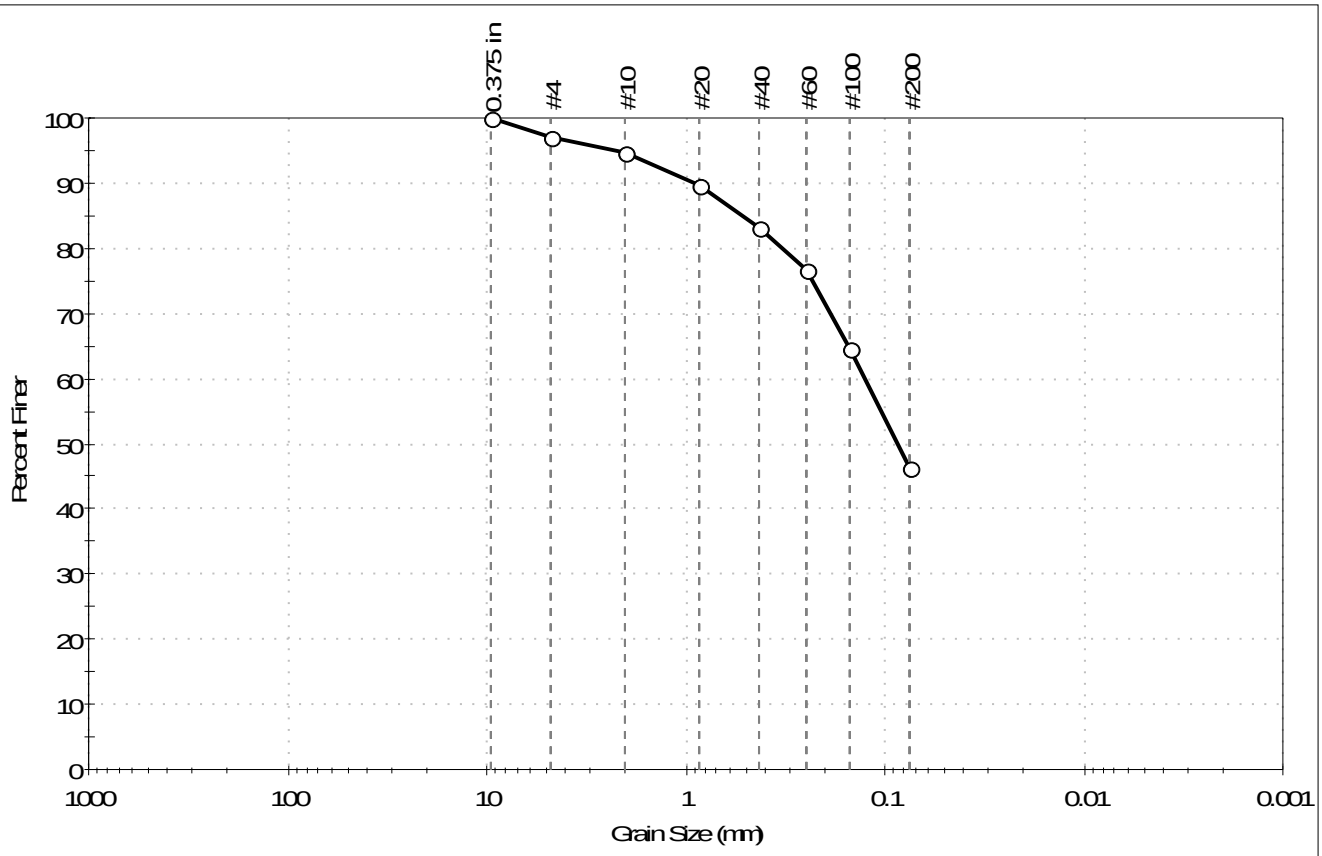
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-6	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341282		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	2.9	50.9	46.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	97		
#10	2.00	95		
#20	0.85	90		
#40	0.42	83		
#60	0.25	77		
#100	0.15	65		
#200	0.075	46		

Coefficients

D_{85} = 0.5160 mm	D_{30} = N/A
D_{60} = 0.1262 mm	D_{15} = N/A
D_{50} = 0.0866 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

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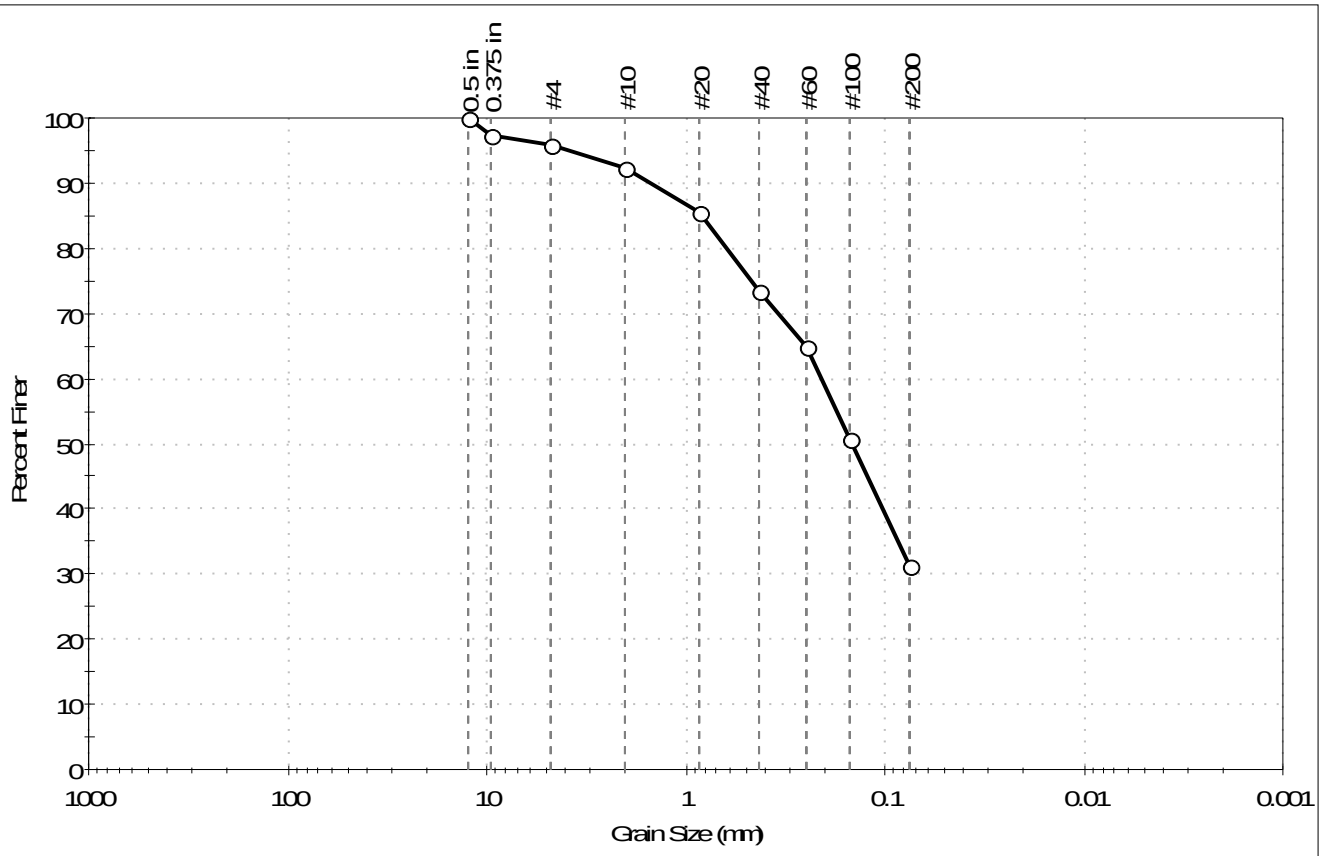
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-7	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	3.5-5 ft	Test Id:	341283		
Test Comment:	---				
Visual Description:	Moist, brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	4.0	64.6	31.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	97		
#4	4.75	96		
#10	2.00	92		
#20	0.85	85		
#40	0.42	73		
#60	0.25	65		
#100	0.15	51		
#200	0.075	31		

Coefficients

D_{85} = 0.8305 mm D_{30} = N/A

D_{60} = 0.2100 mm D_{15} = N/A

D_{50} = 0.1468 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

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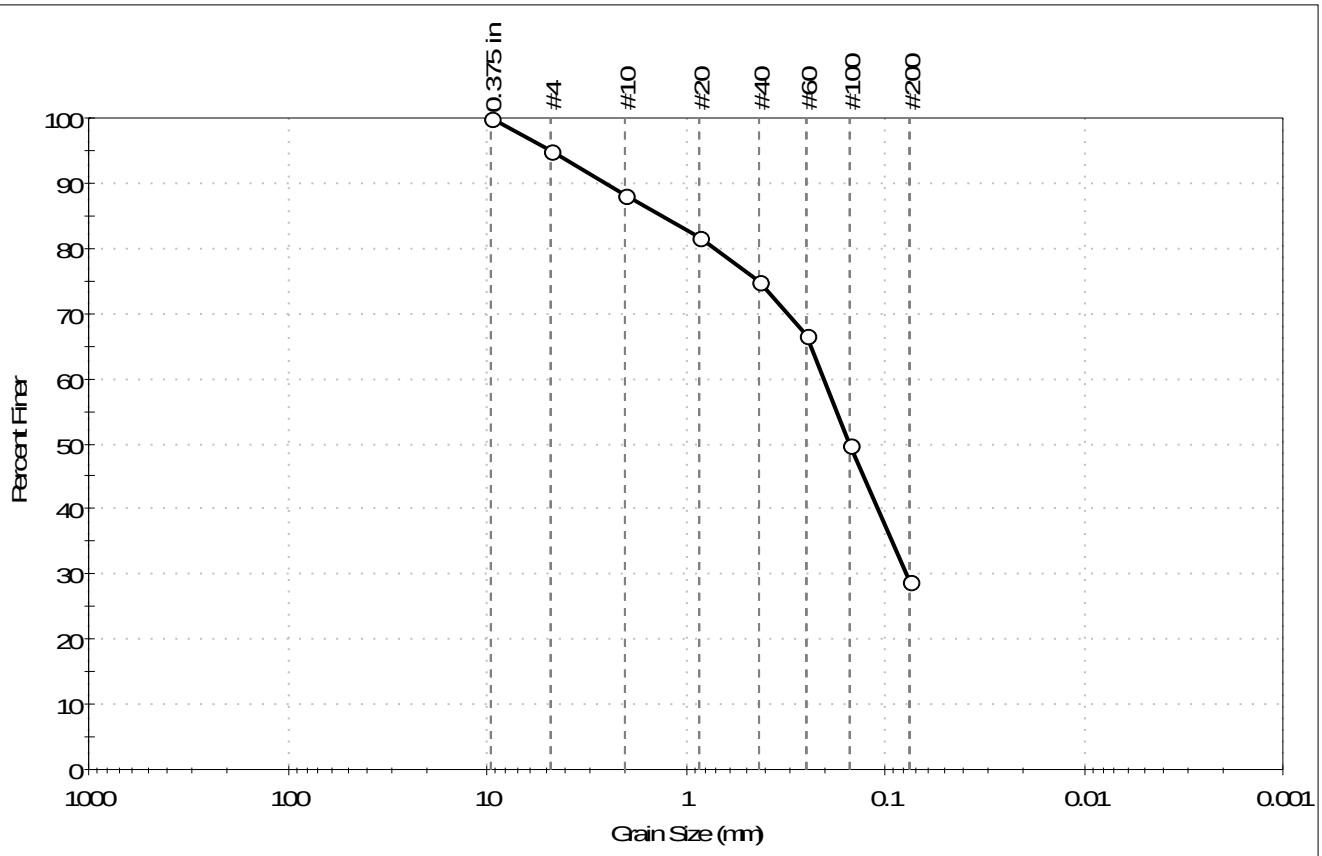
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-7	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	6-7.5 ft	Test Id:	341284		
Test Comment:	---				
Visual Description:	Moist, brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	5.0	66.0	29.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	95		
#10	2.00	88		
#20	0.85	82		
#40	0.42	75		
#60	0.25	67		
#100	0.15	50		
#200	0.075	29		

Coefficients

D_{85} = 1.2988 mm	D_{30} = 0.0775 mm
D_{60} = 0.2037 mm	D_{15} = N/A
D_{50} = 0.1507 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

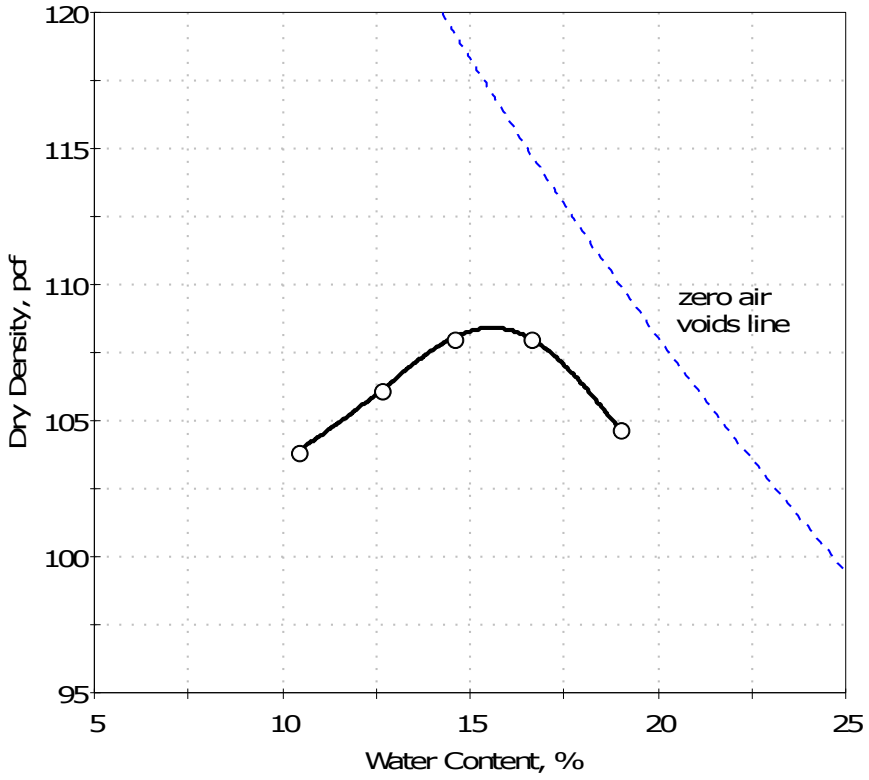
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-1	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/05/15	Checked By:	mcm
Depth :	0-10 ft	Test Id:	341286		
Test Comment:	---				
Visual Description:	Moist, reddish brown sandy silt				
Sample Comment:	---				

Compaction Report - ASTM D698



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	103.9	106.1	108.0	108.0	104.7
Moisture Content, %	10.4	12.6	14.6	16.6	19.0

Method : A

Preparation : WET

As received Moisture :---

Rammer : Manual

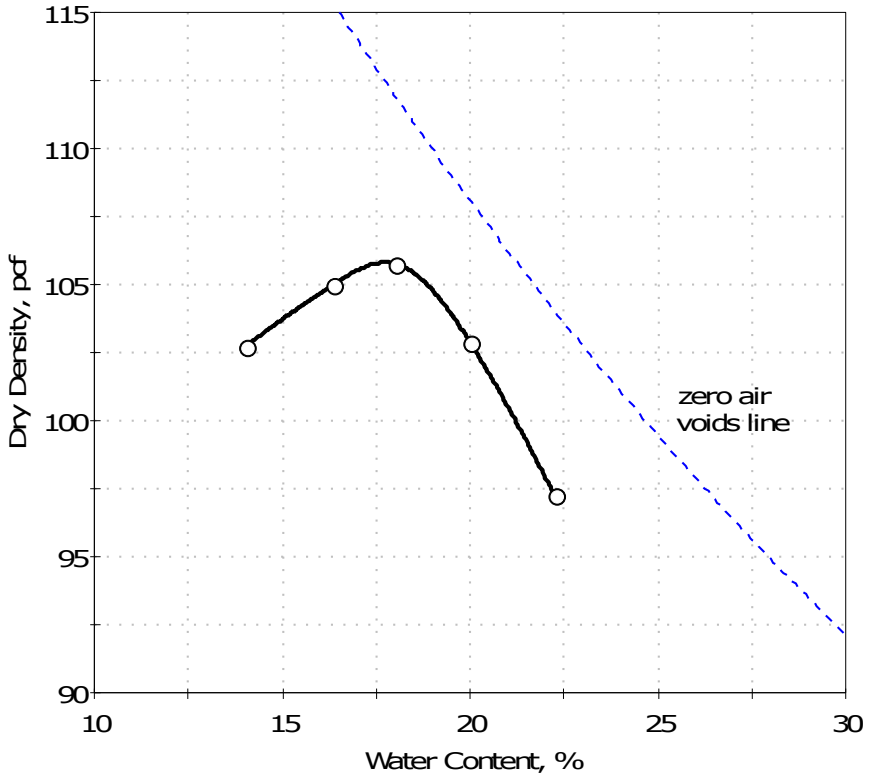
Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 108.4 pcf

Optimum Moisture= 15.6 %

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-1	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/05/15	Checked By:	mcm
Depth :	10-20 ft	Test Id:	341287		
Test Comment:	---				
Visual Description:	Moist, reddish brown sandy silt				
Sample Comment:	---				

Compaction Report - ASTM D698



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	102.7	105.0	105.8	102.8	97.3
Moisture Content, %	14.0	16.3	18.0	20.0	22.2

Method : A

Preparation : WET

As received Moisture :----

Rammer : Manual

Zero voids line based on assumed specific gravity of 2.65

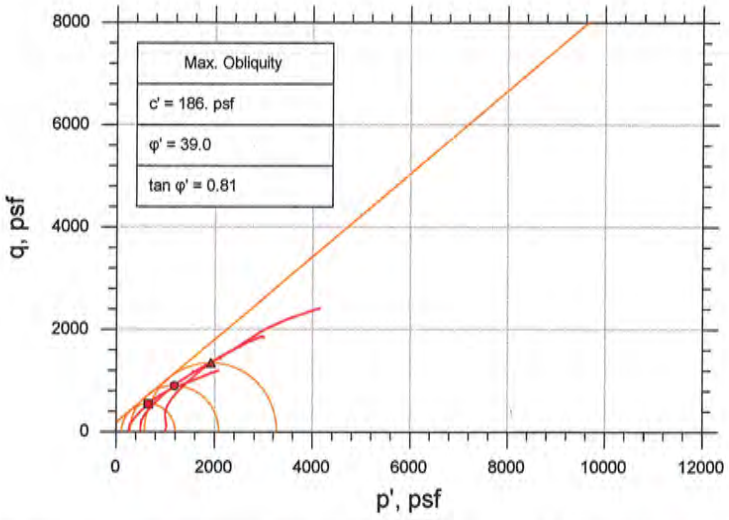
Maximum Dry Density= 105.8 pcf

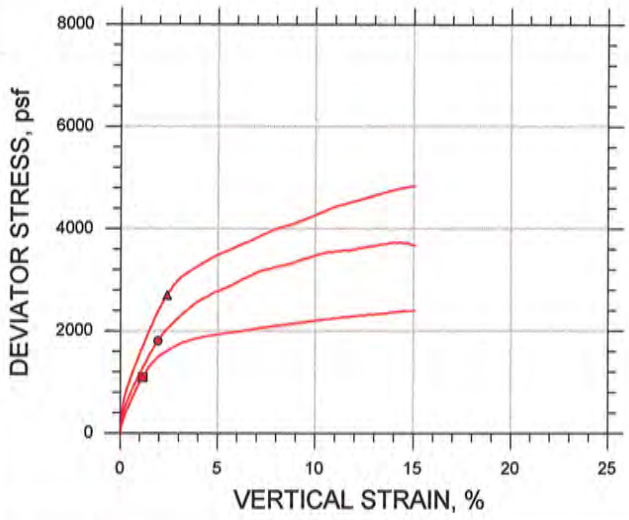
Optimum Moisture= 17.7 %

GeoTesting EXPRESS

Client: Accura Engineering and Consulting Services, Inc.	
Project Name: ABL Ponce De Leon	
Project Location: ---	
Project Number: GTX-303511	
Tested By: jm	Checked By: mcm
Boring ID: B-4	
Preparation: intact	
Description: Moist, dark yellowish brown silty sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





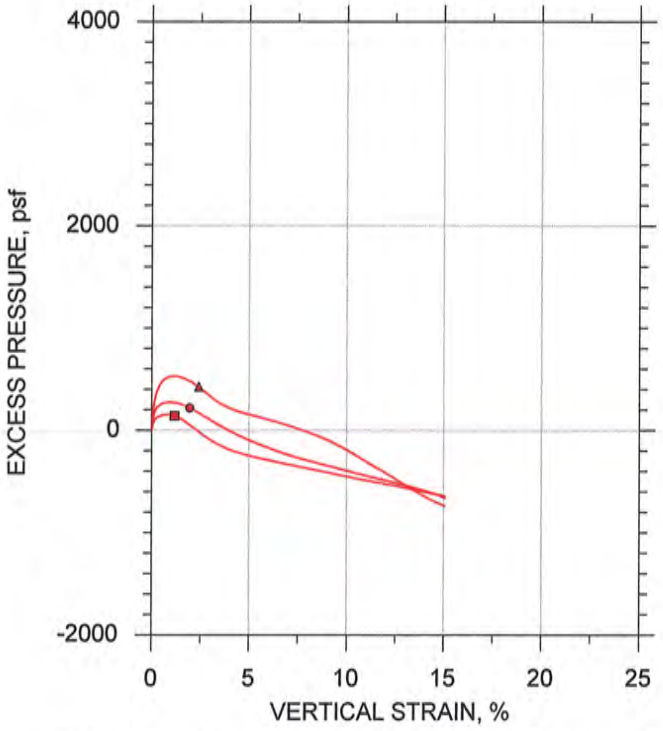
Symbol		■	●	▲	
Sample ID		---	---	---	
Depth, ft		6-8 ft	6-8 ft	6-8 ft	
Test Number		CU-3-1	CU-3-2	CU-3-3	
Initial	Height, in	5.909	6.330	6.423	
	Diameter, in	2.860	2.870	2.870	
	Moisture Content (from Cuttings), %	28.0	22.8	16.6	
	Dry Density, pcf	80.2	73.6	90.4	
	Saturation (Wet Method), %	68.8	47.7	51.7	
	Void Ratio	1.10	1.29	0.865	
Before Shear	Moisture Content, %	40.6	48.1	31.4	
	Dry Density, pcf	80.4	73.3	91.2	
	Cross-sectional Area (Method A), in²	6.414	6.489	6.436	
	Saturation, %	100.0	100.0	100.0	
	Void Ratio	1.10	1.30	0.847	
	Back Pressure, psf	1.554e+004	1.999e+004	1.943e+004	
Vertical Effective Consolidation Stress, psf		249.4	499.1	997.4	
Horizontal Effective Consolidation Stress, psf		249.2	499.4	998.7	
Vertical Strain after Consolidation, %		0.04787	0.08515	0.4661	
Volumetric Strain after Consolidation, %		0.1177	0.1433	1.012	
Time to 50% Consolidation, min		0.3600	0.3600	0.3600	
Shear Strength, psf		547.5	903.7	1348.	
Strain at Failure, %		1.15	1.93	2.40	
Strain Rate, %/min		0.01600	0.01600	0.01600	
Deviator Stress at Failure, psf		1095.	1807.	2697.	
Effective Minor Principal Stress at Failure, psf		107.7	277.9	574.6	
Effective Major Principal Stress at Failure, psf		1203.	2085.	3271.	
B-Value		0.95	0.96	0.96	

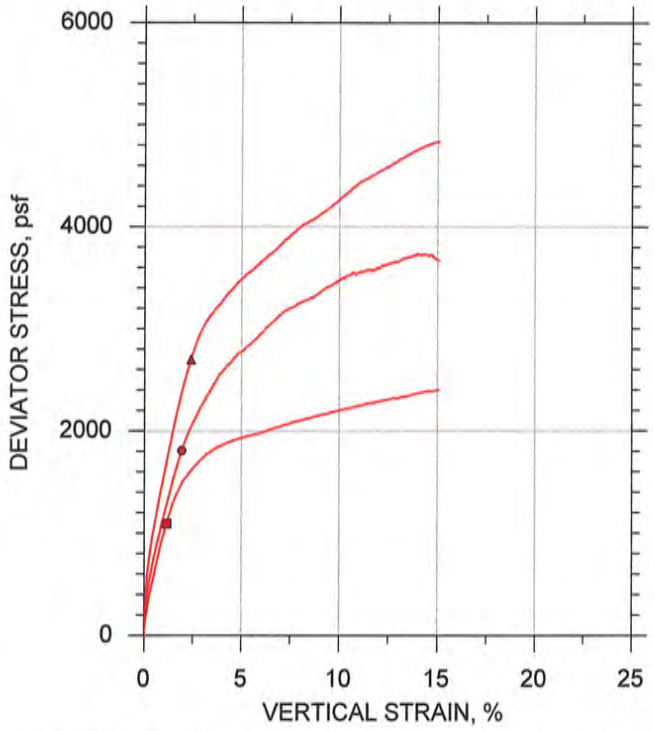
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

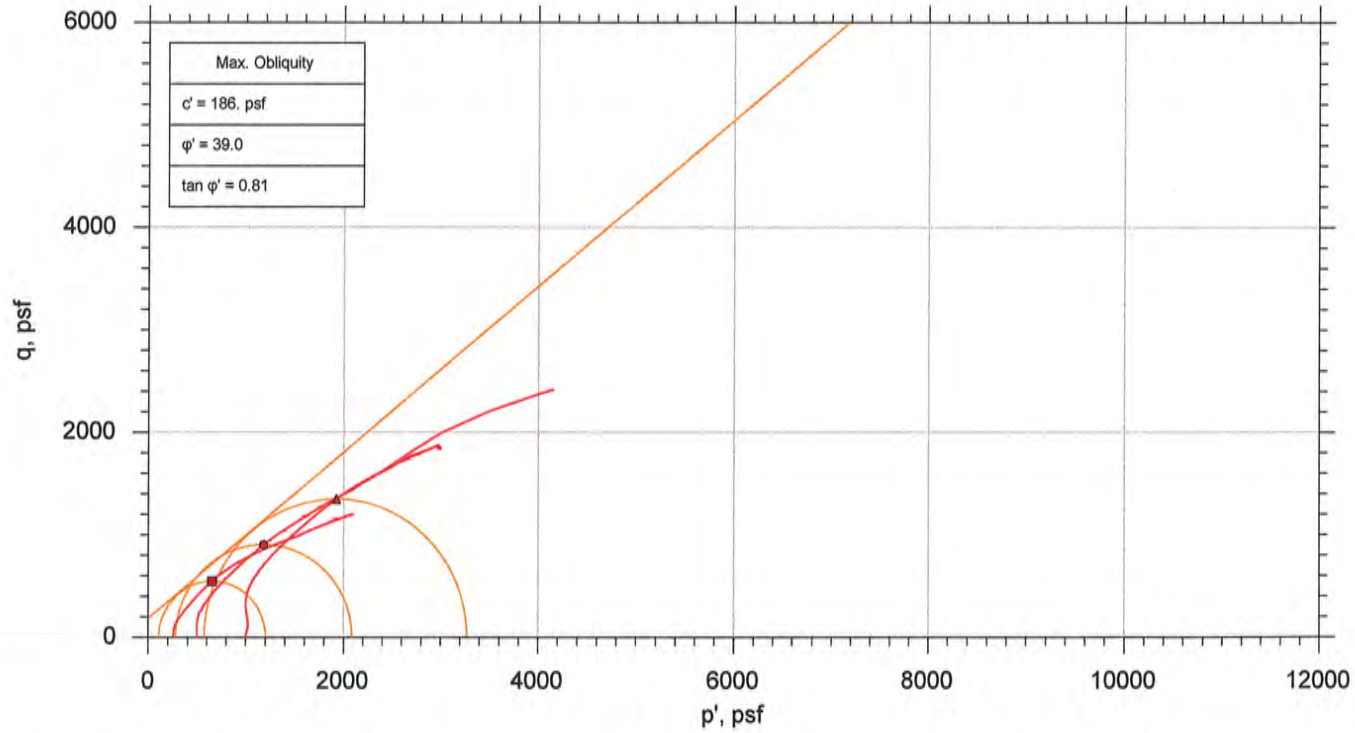
Remarks:

System A

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	---	CU-3-1	6-8 ft	jm	7/29/15	mcm	8/5/15	303511-CU-3-1m.dat
●	---	CU-3-2	6-8 ft	jm	7/29/15	mcm	8/5/15	303511-CU-3-2m.dat
▲	---	CU-3-3	6-8 ft	jm	7/29/15	mcm	8/5/15	303511-CU-3-3m.dat

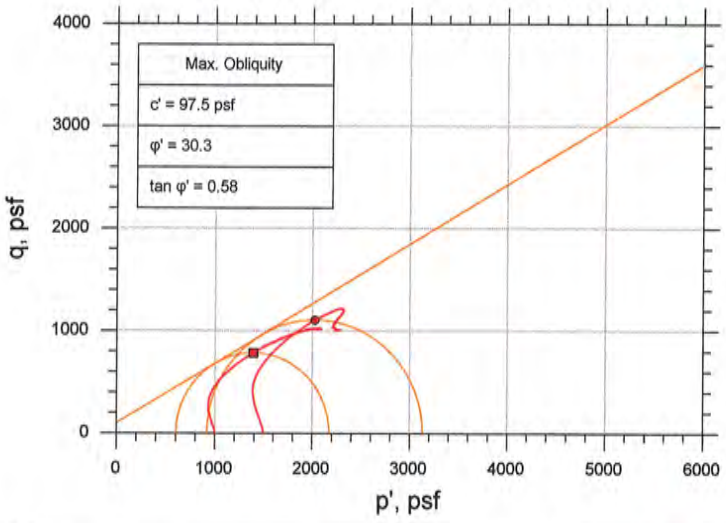
GeoTesting EXPRESS

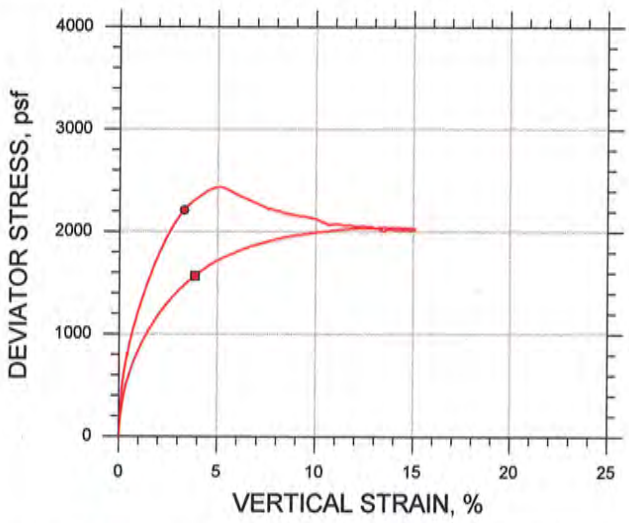
Project: ABL Ponce De Leon	Location: ---	Project No.: GTX-303511
Boring No.: B-4	Sample Type: intact	
Description: Moist, dark yellowish brown silty sand		
Remarks: System A		

GeoTesting EXPRESS

Client: Accura Engineering and Consulting Services, Inc.	
Project Name: ABL Ponce De Leon	
Project Location: ---	
Project Number: GTX-303511	
Tested By: jm	Checked By: mcm
Boring ID: B-4	
Preparation: intact	
Description: Moist, dark yellowish brown silty sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





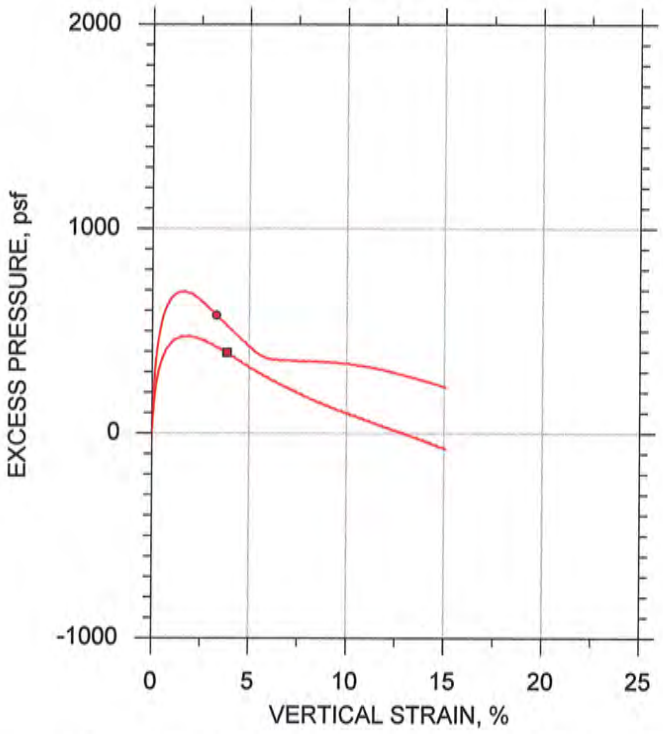
Symbol		■	●		
Sample ID		---	---		
Depth, ft		8-10 ft	8-10 ft		
Test Number		CU-4-2	CU-4-3		
Initial	Height, in	6.063	6.244		
	Diameter, in	2.860	2.860		
	Moisture Content (from Cuttings), %	19.2	18.2		
	Dry Density, pcf	77.9	80.8		
	Saturation (Wet Method), %	44.4	45.1		
	Void Ratio	1.16	1.09		
Before Shear	Moisture Content, %	45.2	40.9		
	Dry Density, pcf	75.9	80.1		
	Cross-sectional Area (Method A), in²	6.551	6.483		
	Saturation, %	100.0	100.0		
	Void Ratio	1.22	1.11		
	Back Pressure, psf	1.971e+004	1.943e+004		
Vertical Effective Consolidation Stress, psf		996.9	1497.		
Horizontal Effective Consolidation Stress, psf		999.9	1499.		
Vertical Strain after Consolidation, %		0.8163	0.9237		
Volumetric Strain after Consolidation, %		1.555	1.798		
Time to 50% Consolidation, min		0.0000	0.0000		
Shear Strength, psf		784.7	1105.		
Strain at Failure, %		3.85	3.30		
Strain Rate, %/min		0.01600	0.01600		
Deviator Stress at Failure, psf		1569.	2211.		
Effective Minor Principal Stress at Failure, psf		604.7	920.1		
Effective Major Principal Stress at Failure, psf		2174.	3131.		
B-Value		0.96	0.96		

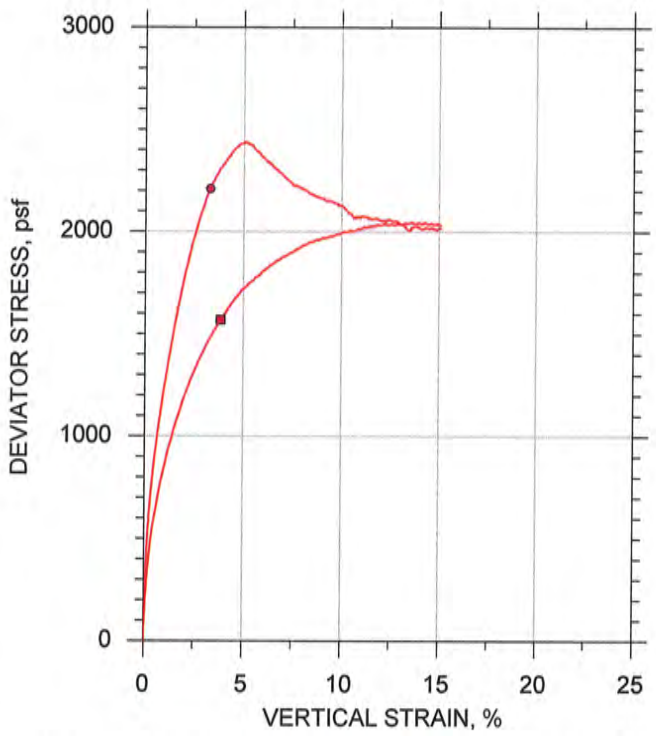
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

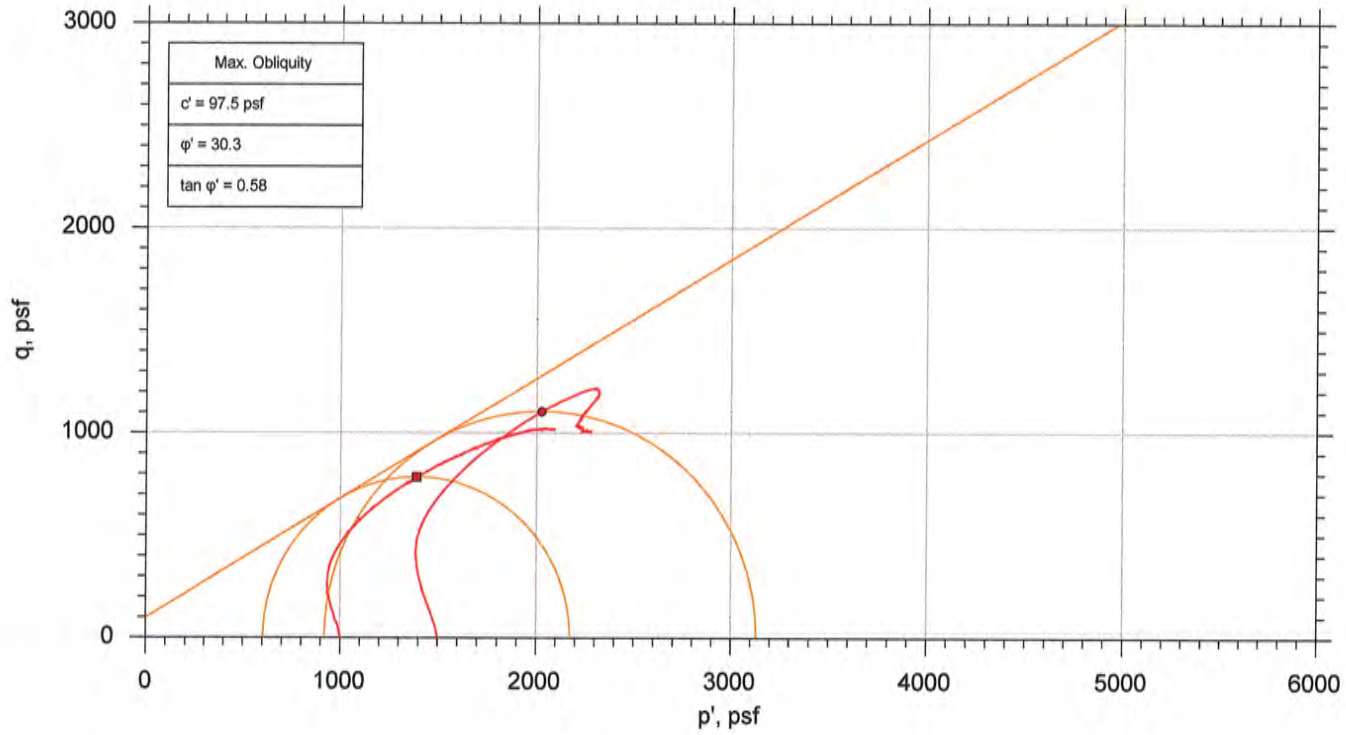
Remarks:

System 1057

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	---	CU-4-2	8-10 ft	jm	7/31/15	mcm	8/6/15	303511-CU-4-2m.dat
●	---	CU-4-3	8-10 ft	jm	7/31/15	mcm	8/6/15	303511-CU-4-3m.dat

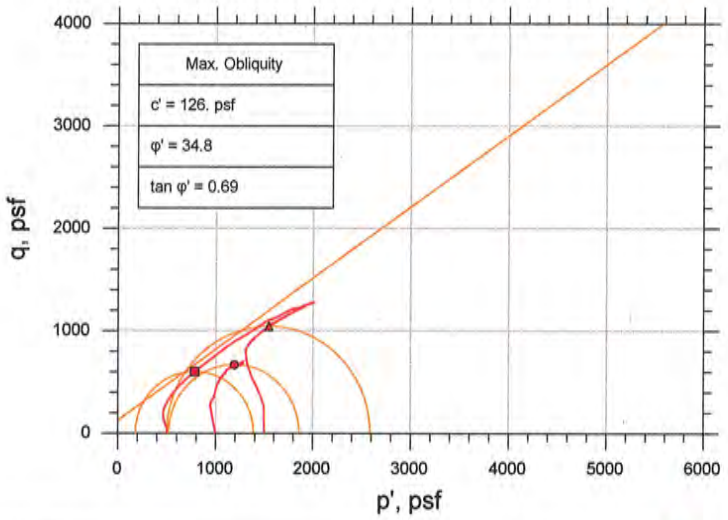
GeoTesting EXPRESS

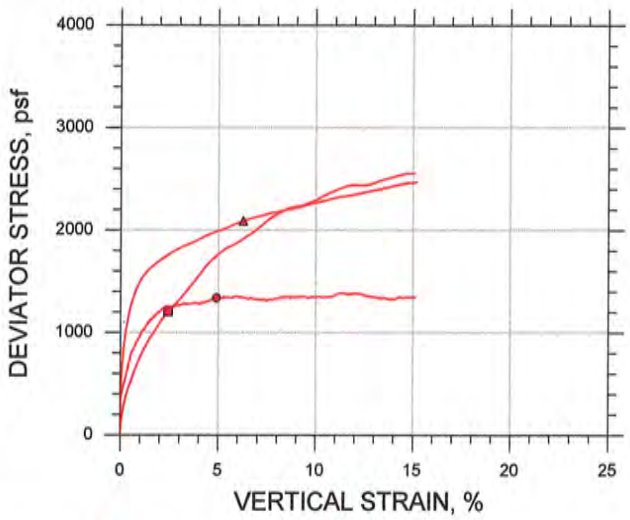
Project: ABL Ponce De Leon	Location: ---	Project No.: GTX-303511
Boring No.: B-4	Sample Type: intact	
Description: Moist, dark yellowish brown silty sand		
Remarks: System 1057		

GeoTesting EXPRESS

Client: Accura Engineering and Consulting Services, Inc	
Project Name: ABL Ponce De Leon	
Project Location: ---	
Project Number: GTX-303511	
Tested By: md	Checked By: mcm
Boring ID: B-4	
Preparation: intact	
Description: Moist reddish brown and yellow sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

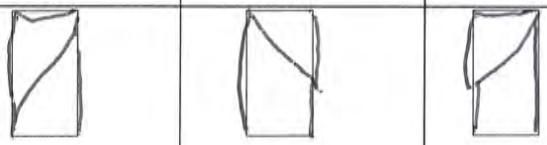
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲	
Sample ID		---	---	---	
Depth, ft		10-12 ft	10-12 ft	10-12 ft	
Test Number		CU-1-1	CU-1-2	CU-1-3	
Initial	Height, in	6.180	6.150	6.200	
	Diameter, in	2.860	2.860	2.860	
	Moisture Content (from Cuttings), %	34.8	23.0	22.5	
	Dry Density, pcf	71.2	66.2	76.1	
	Saturation (Wet Method), %	68.6	40.2	50.0	
	Void Ratio	1.37	1.55	1.21	
Before Shear	Moisture Content, %	49.2	54.5	43.4	
	Dry Density, pcf	72.4	68.2	77.6	
	Cross-sectional Area (Method A), in²	6.358	6.329	6.355	
	Saturation, %	100.0	100.0	100.0	
	Void Ratio	1.33	1.47	1.17	
	Back Pressure, psf	2.071e+004	2.029e+004	2.315e+004	
Vertical Effective Consolidation Stress, psf		498.4	993.7	1492.	
Horizontal Effective Consolidation Stress, psf		498.4	999.8	1497.	
Vertical Strain after Consolidation, %		0.1086	1.059	0.7545	
Volumetric Strain after Consolidation, %		0.07062	1.890	1.690	
Time to 50% Consolidation, min		0.5600	0.6400	0.7200	
Shear Strength, psf		602.8	670.8	1044.	
Strain at Failure, %		2.43	4.90	6.27	
Strain Rate, %/min		0.01600	0.01600	0.01600	
Deviator Stress at Failure, psf		1206.	1342.	2089.	
Effective Minor Principal Stress at Failure, psf		180.4	518.2	499.6	
Effective Major Principal Stress at Failure, psf		1386.	1860.	2588.	
B-Value		0.95	0.95	0.94	

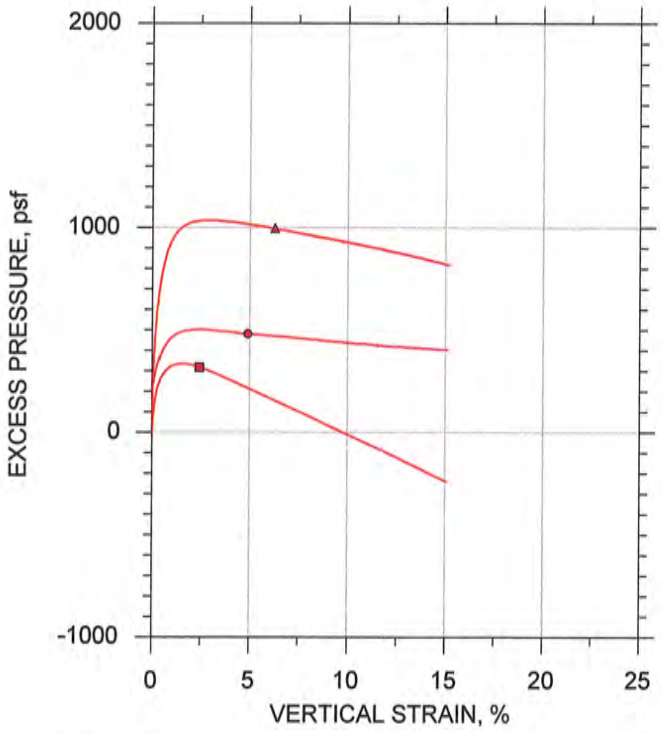
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

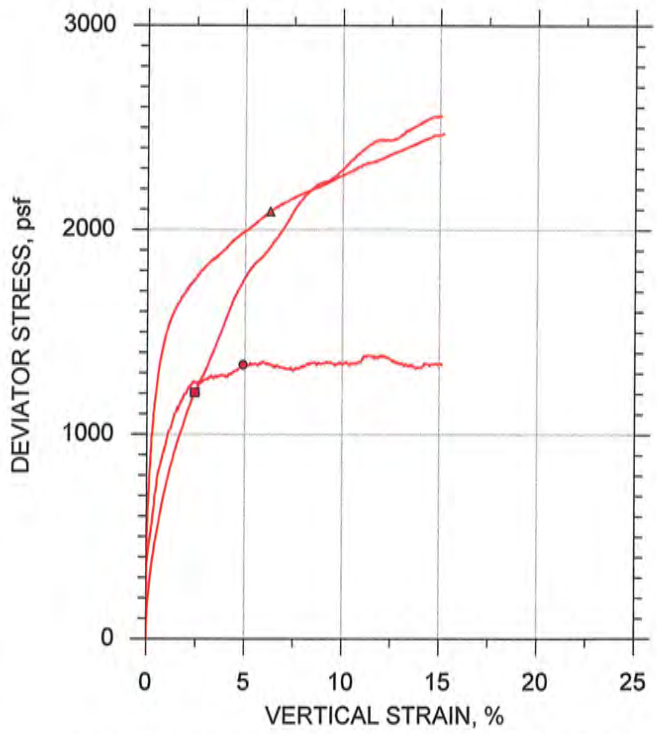


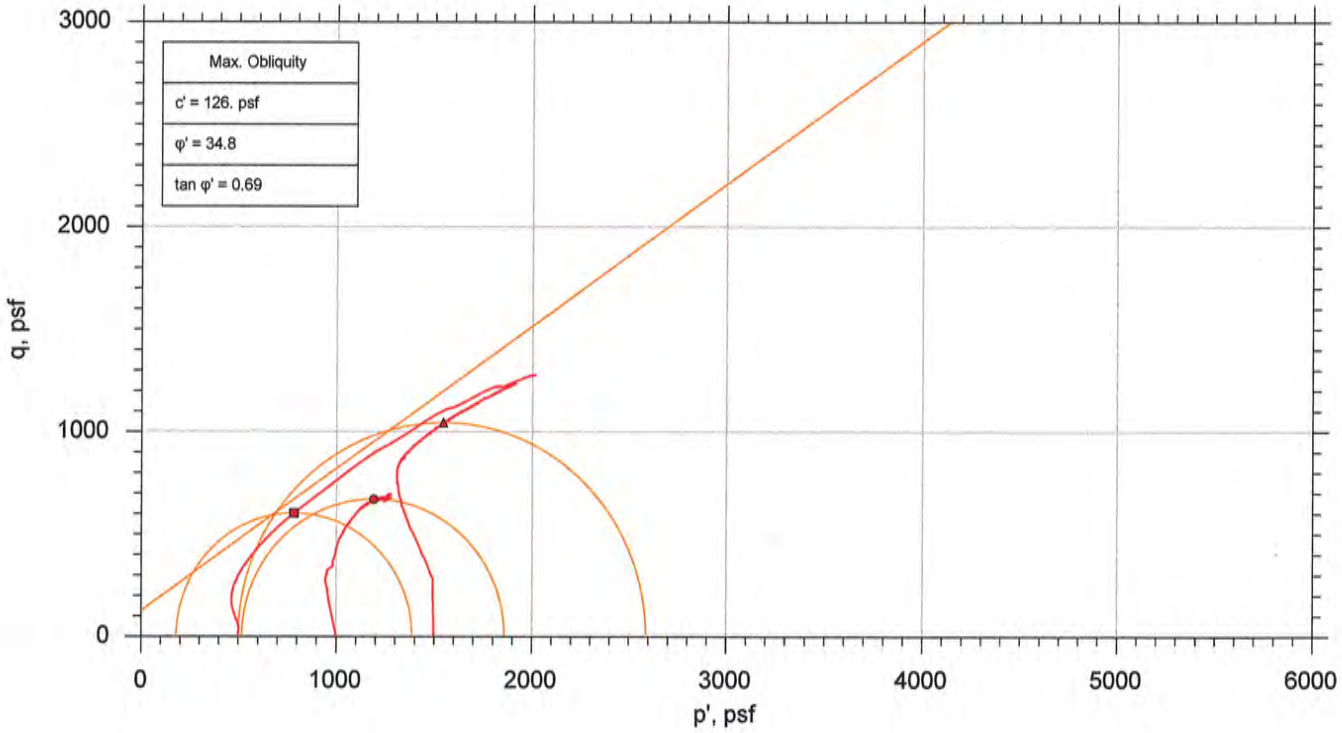
Remarks:

System Y

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	---	CU-1-1	10-12 ft	md	8/1/15	mcm	8/6/15	303511-CU-1-1m.dat
●	---	CU-1-2	10-12 ft	md	8/1/15	mcm	8/6/15	303511-CU-1-2m.dat
▲	---	CU-1-3	10-12 ft	md	8/1/15	mcm	8/6/15	303511-CU-1-3m.dat

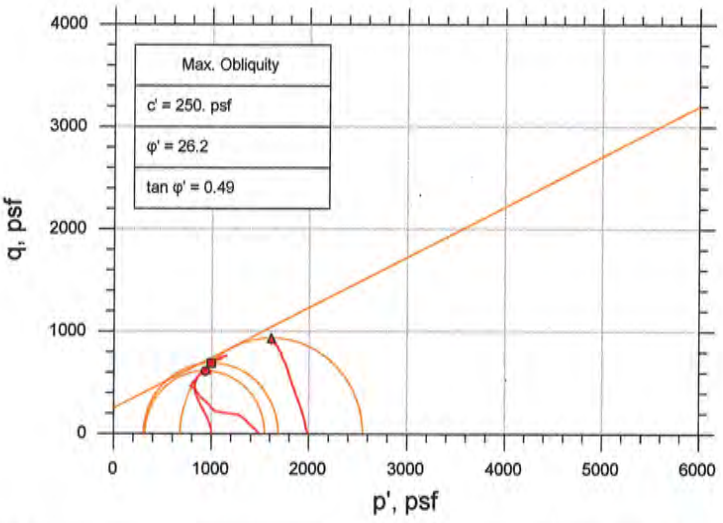
GeoTesting EXPRESS

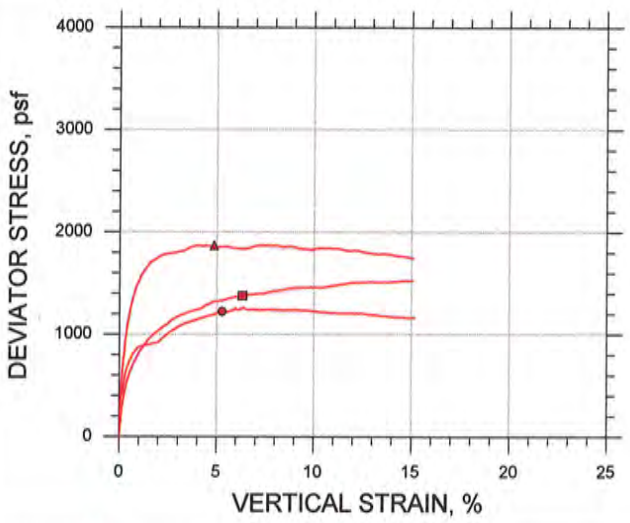
Project: ABL Ponce De Leon	Location: ---	Project No.: GTX-303511
Boring No.: B-4	Sample Type: intact	
Description: Moist reddish brown and yellow sand		
Remarks: System Y		

GeoTesting EXPRESS

Client: Accura Engineering and Consulting Services, Inc	
Project Name: ABL Ponce De Leon	
Project Location: ---	
Project Number: GTX-303511	
Tested By: md	Checked By: mcm
Boring ID: B-4	
Preparation: intact	
Description: Moist reddish brown silt	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

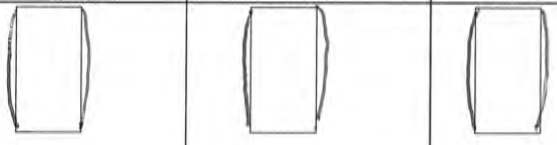
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		---	---	---
Depth, ft		12-14 ft	12-14 ft	12-14 ft
Test Number		CU-2-1	CU-2-2	CU-2-3
Initial	Height, in	6.190	6.210	6.140
	Diameter, in	2.860	2.860	2.860
	Moisture Content (from Cuttings), %	43.0	43.9	47.9
	Dry Density, pcf	52.5	56.6	55.2
	Saturation (Wet Method), %	52.4	59.9	63.0
	Void Ratio	2.21	1.98	2.06
Before Shear	Moisture Content, %	78.5	61.8	70.2
	Dry Density, pcf	54.0	63.1	58.2
	Cross-sectional Area (Method A), in²	6.304	5.960	6.221
	Saturation, %	100.0	100.0	100.0
	Void Ratio	2.12	1.67	1.90
	Back Pressure, psf	2.056e+004	2.031e+004	2.173e+004
Vertical Effective Consolidation Stress, psf		994.5	1466.	1987.
Horizontal Effective Consolidation Stress, psf		999.1	1491.	2000.
Vertical Strain after Consolidation, %		0.5836	3.119	1.632
Volumetric Strain after Consolidation, %		1.548	9.629	3.796
Time to 50% Consolidation, min		0.6400	0.3600	0.3600
Shear Strength, psf		690.1	612.9	934.5
Strain at Failure, %		6.33	5.28	4.85
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psf		1380.	1226.	1869.
Effective Minor Principal Stress at Failure, psf		306.9	320.7	679.8
Effective Major Principal Stress at Failure, psf		1687.	1546.	2549.
B-Value		0.95	0.96	0.95

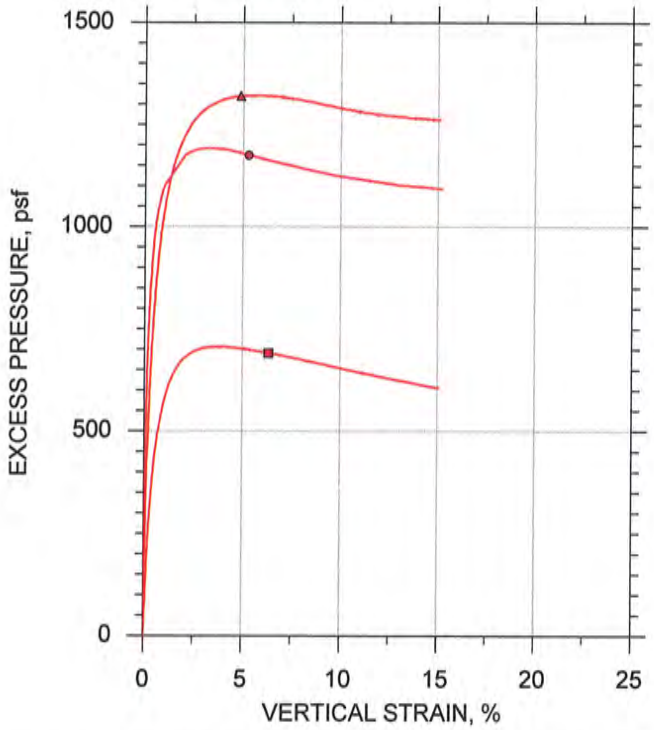
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

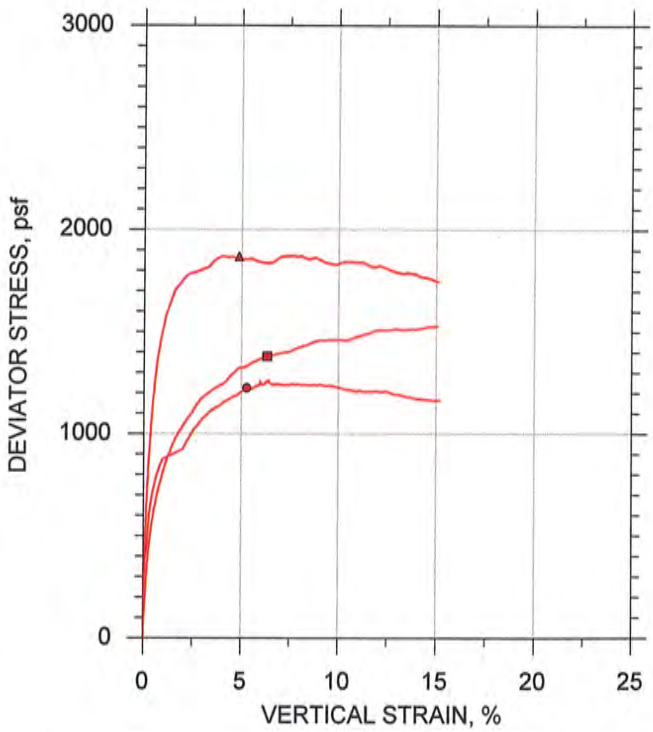


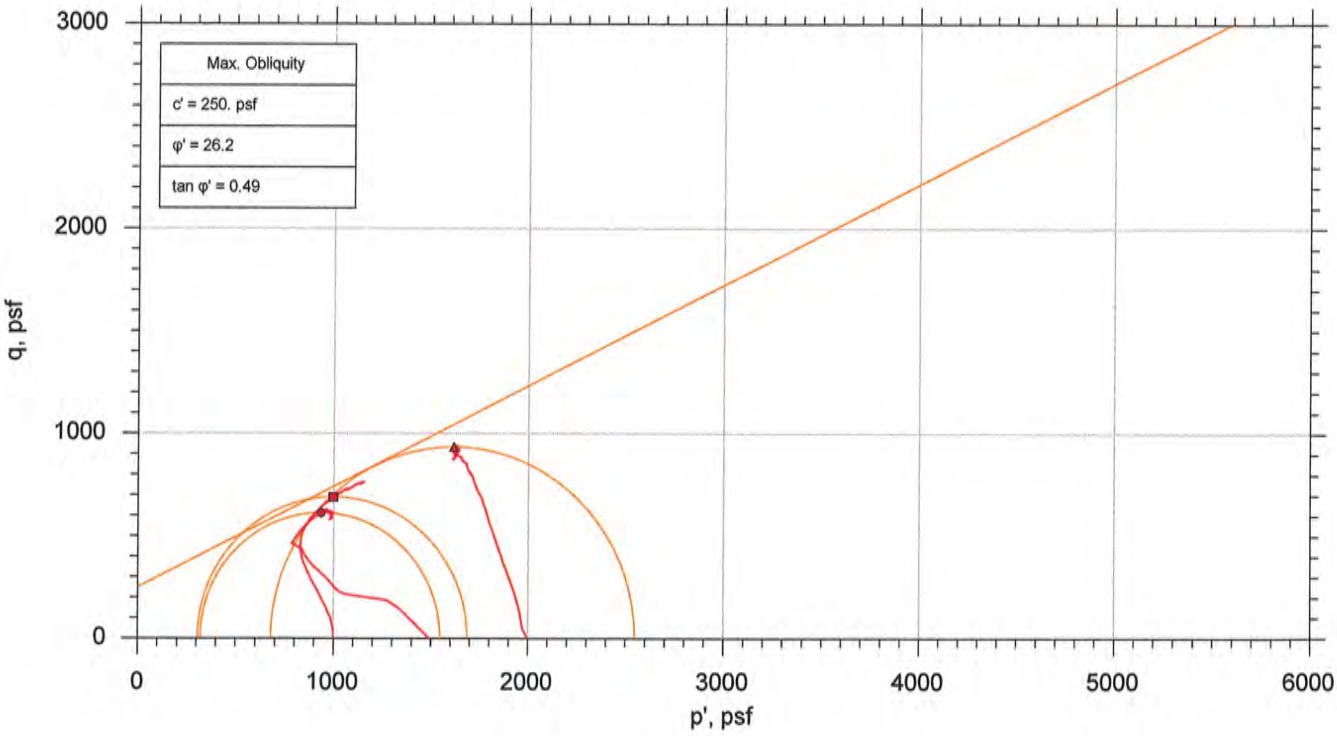
Remarks:

System R

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	---	CU-2-1	12-14 ft	md	8/1/15	mcm	8/6/15	303511-CU-2-1m.dat
●	---	CU-2-2	12-14 ft	md	8/3/15	mcm	8/6/15	303511-CU-2-2m.dat
▲	---	CU-2-3	12-14 ft	md	8/1/15	mcm	8/6/15	303511-CU-2-3m.dat

GeoTesting EXPRESS

Project: ABL Ponce De Leon	Location: ---	Project No.: GTX-303511
Boring No.: B-4	Sample Type: intact	
Description: Moist reddish brown silt		
Remarks: System R		

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you*—should apply the report for any purpose or project except the one originally contemplated.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject To Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations", many of these provisions indicate where geotechnical engineers responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Rely on Your Geotechnical Engineer for Additional Assistance

Membership in ASFE exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE PROFESSIONAL FIRMS PRACTICING IN THE GEOSCIENCES

8811 Colesville Road Suite G106 Silver Spring, MD 20910
Telephone: 301-565-2733 Facsimile: 301-589-2017
email: info@asfe.org www.asfe.org

IIGER06983.5M

ABI Ponce de Leon LCI

P.I. No. 0012586; Fulton County

WFI Report Submittal

March 1, 2017

Kimley»Horn

RETAINING WALL FOUNDATION INVESTIGATION REPORT (LRFD)
ABI PONCE DE LEON LCI PROJECT
Atlanta, Fulton County, Georgia
Georgia DOT Project No. (*Not Assigned*), P.I. No. 0012586
ACCURA Project No. 10072.001.14
March 1, 2017
Revision No. 3

LOCATION	Atlanta Beltline Eastside Trail at Ponce de Leon Avenue, Atlanta, Fulton County, Georgia

GENERAL INFORMATION

GEOLOGIC FORMATION	The project site lies along the boundary of two different formations. The boundary is a northeast-southwest oriented line located slightly north of Ponce de Leon Avenue. The Stonewall Formation is north of this line and the Clarkston Formation is to the south. The Stonewall Formation rocks are comprised of intercalated fine grained biotite gneiss, hornblende-plagioclase amphibolite and sillimanite-biotite schist. The Clarkston Formation is described as a sillimanite-garnet-quartz-plagioclase-biotite-muscovite schist interlayered with hornblende-plagioclase amphibolite. These formations are in the Georgia Piedmont Region.
SUBSURFACE FEATURES	The general subsurface profile at the site consists mainly of residual soils and partially weathered rock that increase in relative density or consistency to boring termination or refusal depths at elevations ranging from 876 to 897 feet. Minor amounts of fill soils were penetrated at a depth of 3 feet below the ground surface in borings B-1, B-3 and B-4 and borings B-5 through B-7 encountered a relatively thin pavement section of asphaltic concrete and graded aggregate base (GAB) at the surface. Auger refusal materials (apparent rock) were encountered in borings B-2 and B-3 at depths of 33 and 30 feet, respectively. No ground water was encountered in the borings at the time of investigation. For additional information see the enclosed Boring Location Plan and Soil Test Boring Records.
SITE CLASSIFICATION	We recommend a site class of *D* per AASHTO LRFD 3.10.3.1.

1.0 – SOIL PARAMETERS

1.1 – RETAINING WALL FOUNDATION SOIL PARAMETERS

Retaining Wall No. 1 is a low concrete gravity wall. Walls No. 2 through No. 5 are planned as soldier pile walls with timber lagging and a cast-in-place concrete facing over the timber lagging. The soldier pile walls will allow for both temporary excavation shoring using top-down construction, and permanent soil retention. Due to the height of the walls, permanent grouted tiebacks or deadman anchors will be required to resist the lateral earth pressures on all but one of the soldier pile walls. Wall No. 5 is not anticipated to require anchors as it will be a maximum of 4 feet in height and can be designed as a cantilevered wall with lateral earth pressure resistance provided by the soldier pile/beam embedment.

Retaining wall foundation soils in all cases should consist of dense to very dense undisturbed residual silty sands, partially weathered rock (intermediate geo-materials, IGMs) or rock at anticipated foundation elevations.

Standard penetration resistance (N) values in the dense to very dense soils is a minimum of 30 blows per foot. Based on correlations with SPT N values and our previous experience with similar conditions, we recommend an internal soil friction angle (ϕ) of 40 degrees, cohesion value (c) of 0 psf and soil unit weight of 120 pcf for these conditions. These parameters appear applicable for design of foundation support for gravity Wall No. 1.

We recommend a minimum soldier beam embedment of 10 feet below the bottom of wall elevation for the soldier pile walls No. 2 through No. 5. The soldier beams should be installed in minimum 30-inch diameter pilot holes and backfilled with reinforced Class A concrete in accordance with GDOT requirements. A nominal axial compression resistance of 44 ksf was calculated for the soldier beam shafts constructed in this manner, based on tip resistance in IGMs using *O'Neill and Reese (1999)* methods. A factored axial compression resistance of 24 ksf is recommended for the strength limit state based on a resistance factor of 0.55 per AASHTO LRFD 2012 (Table 10.5.5.2.4-1).

1.2 – RETAINING WALL LATERAL EARTH PRESSURE SOIL PARAMETERS

The following design parameters and earth pressure coefficients for retained soils are recommended for earth pressure calculations for the proposed concrete gravity wall No. 1 and anchored/cantilevered walls No. 2 through No. 5:

Soil Classification	Unit Weight (pcf)	Cohesion (c) pcf	Friction Angle ϕ (Degrees)
Fill – Silty Sand (SM) 98% Standard Proctor MDD	120	0	28
Fill – Silty Sand (SM) 95% Standard Proctor MDD	117	0	25
Undisturbed Residual Soils – Silty Sand (SM)	120	0	30

Earth Pressure Condition	Earth Pressure Coefficient		
	Undisturbed Residual Soils	Fill 95% Standard Proctor MDD	Fill 98% Standard Proctor MDD
Active EH (K_A)	0.33	0.40	0.36
At-Rest EH (K_O)	0.50	0.60	0.55
Passive EH (K_P)	3.00	2.46	2.77

2.0 – DESIGN RESISTANCE FACTORS FOR RETAINING WALLS

Condition	Resistance Factor[1]
Axial Compression Resistance of Soldier Beams for Anchored Walls[2]	0.55[2]
Passive Resistance of Vertical Elements for Anchored Walls	0.75
Pullout Resistance of Anchors[3] (cohesionless soils)	0.65[3]
Pullout Resistance of Anchors[4]	1.0[4]
Bearing Resistance of Gravity Wall No. 1	0.55
Sliding Resistance of Gravity Wall No. 1	1.0

Notes:
1. In accordance with AASHTO LRFD 2012 (Table 11.5.7-1).
2. In accordance with AASHTO LRFD 2012 (Table 10.5.5.2.4-1) for tip resistance in IGMs
3. Apply to presumptive ultimate unit bond stresses for preliminary design only.
4. Apply where proof testing is conducted on every production anchor to a load of at least 1.0 times the factored load on the anchor.

3.0 – SOIL BEARING RESISTANCE

Walls	Nominal Bearing Resistance (ksf)	Factored Bearing Resistance (ksf)
Wall No. 1 – Concrete Gravity (Foundation Bearing)[1]	8.0[1]	4.4
Walls No. 2 through No. 5 - Axial Compression Resistance of Drilled-in Soldier Beams (Tip Bearing)[2]	44.0[2]	24.2

Notes:
1. Presumptive bearing resistance from local experience and AASHTO LRFD 2012 (Table 10.6.2.6.1-1) for dense to very dense silty fine to medium sand (SM).
2. Nominal axial compression resistance was calculated based on tip resistance in IGMs using *O'Neill and Reese (1999)* methods in accordance with AASHTO LRFD 2012 (10.8.3.5.2c-*Tip Resistence*).

4.0 -- BEARING ELEVATIONS

Walls	Bottom of Wall (ft)	Estimated Tip of Soldier Beam[1] (ft)
Concrete Gravity Wall No. 1 (South End)	900.47/900.63	
Concrete Gravity Wall No. 1 (North End)	901.80	

4.0 -- BEARING ELEVATIONS

Walls	Bottom of Wall (ft)	Estimated Tip of Soldier Beam[1] (ft)
Anchored Soldier Pile/Beam Wall No. 2 (South End)		±891.0 or below
Anchored Soldier Pile/Beam Wall No. 2 (North End)		±892.2 or below
Anchored Soldier Pile/Beam Wall No. 3 (East End)[2]		±887.0 or below[2]
Anchored Soldier Pile/Beam Wall No. 3 (West End)[2]		±887.0 or below[2]
Anchored Soldier Pile/Beam Wall No. 4 (East End)		±910.0 or below
Anchored Soldier Pile/Beam Wall No. 4 (West End)		±897.5 or below
Cantilevered Soldier Pile/Beam Wall No. 5 (East End)		±894.2 or below
Cantilevered Soldier Pile/Beam Wall No. 5 (West End)		±888.0 or below

Note:
1. Estimated tip elevation is based on a minimum soldier pile/beam embedment of 10 feet below the bottom of wall elevation.
2. Based on design bottom of wall at El. 987.00 for future transit bridge construction.

5.0 -- PULLOUT RESISTANCE OF ANCHORS

Condition	Nominal Pull Out Resistance (ksf)	Factored Pull Out Resistance (ksf)
Preliminary Design	**5.0**	**3.25**
With Proof Testing of 100% of Anchors	**5.0**	**5.0**

Notes:
1. Nominal pullout resistance is based on presumptive ultimate unit bond stress from local experience and AASHTO LRFD 2012 (Table C11.9.4.2-2) for silty sands (SM).

6.0 -- NOTES

Elevations — All foundation elevations are estimated based on proposed bottom of wall elevations or finished grades shown in Kimley-Horn's *Atlanta Beltline - Ponce De Leon Complete Street Retrofit and Beltline Connection,* Preliminary Wall 2-5 Plans, Drawing Nos. 32-001 through 32-004, approved date February 2017 and *Atlanta Beltline – Retaining Wall Envelopes, Wall No. 1,* Drawing 31-001, undated.

Soldier Pile/Beam Embedment — A minimum soldier beam embedment of 10 feet below the bottom of wall elevation is recommended. Actual embedment will depend on the final wall design and soil conditions encountered at the time of installation.

6.0 -- NOTES

Soldier Pile/Beam Installation	The soldier beams should be installed in minimum 30-inch diameter predrilled pilot holes and backfilled with reinforced Class A concrete.
Restrictions	Since the anchored retaining wall system depends on soil resistance on the excavation side of the soldier piles, no excavation below the bottom of wall elevation within a distance of two times (2X) the soldier pile embedment depth from the face of wall can be allowed during or following construction.
Corrosion Protection	Class I corrosion protection level is recommended for soldier pile walls No. 2,4 and 5 anchorage system components, since these walls will be permanent. No corrosion protection may be used for wall No. 3, if desired, since wall No. 3 is temporary.
Obstructions	Based on the available subsurface boring data, materials requiring difficult excavation techniques will likely be encountered during excavations required for retaining wall installation. Difficult excavation materials will include predominantly very dense or very hard soils and very dense or very hard partially weathered rock with some possible rock. Refusal material (bedrock) was not encountered above the anticipated bottom of wall elevations or foundation bearing elevations; however, refusal levels at some boring locations were near or slightly above the anticipated minimum embedment elevations for the retaining wall soldier piles/beams. Due to the erratic weathering of the rocks within this geologic setting, some unexpected rock excavation may also be encountered between the borings or in areas not investigated.
As Built Information	The as built retaining wall information should be forwarded to the Geotechnical Engineering Bureau upon completion of the wall construction.

7.0 – QA / QC

Accura Engineering and Consulting Services, Inc.

Prepared By Larry D. Mullins, P.E.
Senior Geotechnical Consultant

Reviewed By Prashanthi Reddy
President

APPENDIX

Project Site Map

Wall Elevation and Profile

Stair and Ramp Preliminary Layout

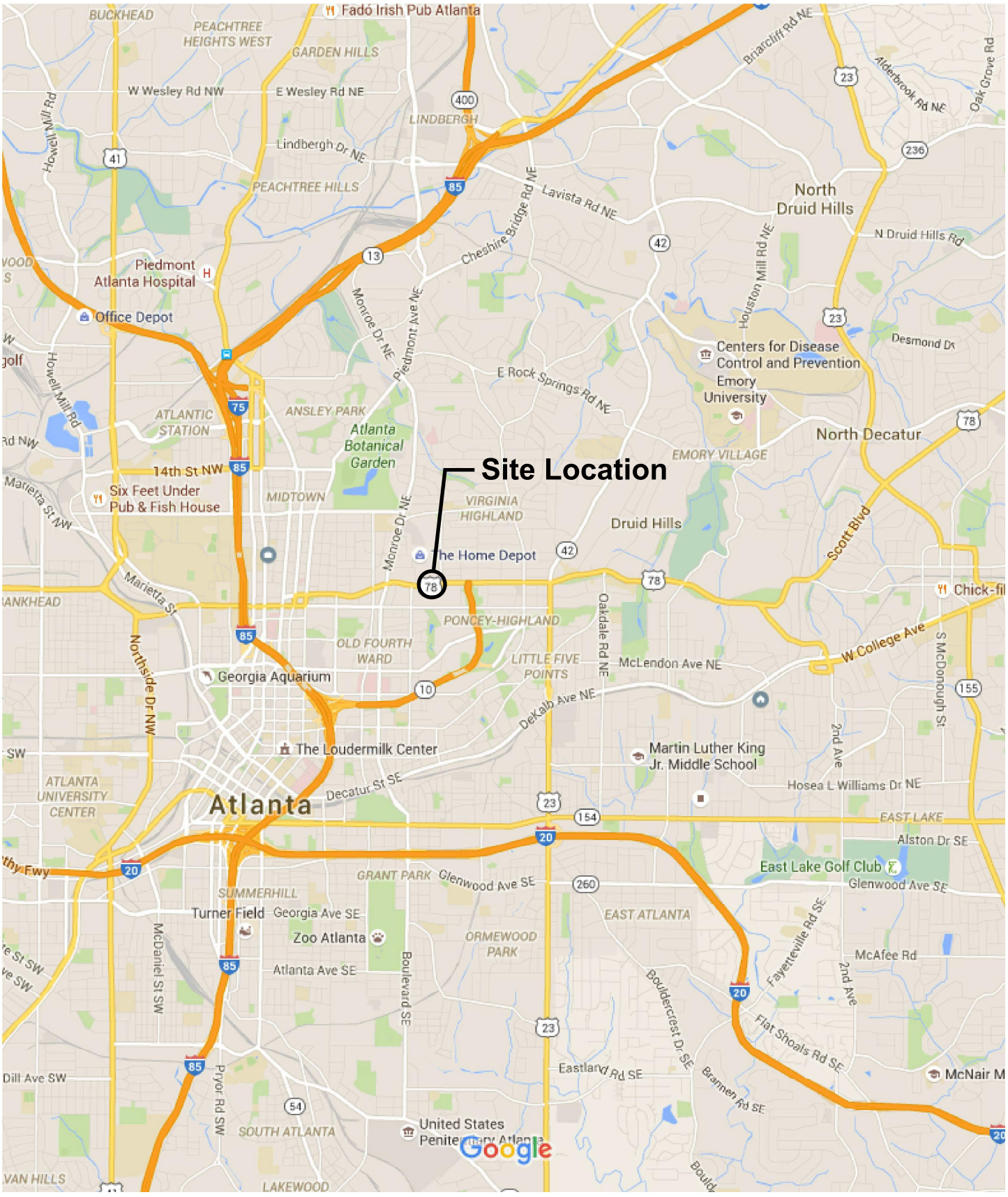
Boring Location Plan

Key to Symbols

Soil Test Boring Records

Laboratory Test Results

ASFE Information about Geotechnical Reports



Kimley»Horn
817 W. PEACHTREE STREET, NW
THE BILTMORE, SUITE 601
ATLANTA, GEORGIA 30308
PHONE: (404) 419-8700 | www.kimley-horn.com

PROJECT: *ABI PONCE DE LEON LCI*

TITLE: *BFI/WFI SUBMITTAL*

CLIENT: *ATLANTA BELTLINE*

PI NUMBER:	0012586
SCALE:	N.T.S.
DATE:	05/20/2016
SHEET:	*SITE MAP*

3/1/2017 diana.mitchen	GPLOT-V8 gplotborder-v81-PO.tbl	0012586_01-001.dgn GRNCOV	STATE GA	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS

LOCATION SKETCH

DESIGN DATA:
TRAFFIC A.D.T.: 36,100 (2015)
TRAFFIC A.D.T.: 46,700 (2035)
TRAFFIC D.H.V.: N/A
DIRECTIONAL DIST: N/A
% TRUCKS: N/A
24 HR.TRUCKS %: N/A
SPEED DESIGN: 35 MPH

LOCATION & DESIGN APPROVAL DATE:

FUNCTIONAL CLASS:
URBAN PRINCIPAL ARTERIAL

THIS PROJECT IS 100% IN FULTON COUNTY AND IS 100% IN CONG.DIST.NO.5.

PROJECT DESIGNATION: EXEMPT
DESIGNED IN ENGLISH UNITS.

THIS PROJECT HAS BEEN PREPARED USING THE HORIZONTAL GEORGIA COORDINATE SYSTEM OF 1984 (NAD 1983)/94 WEST ZONE, AND THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

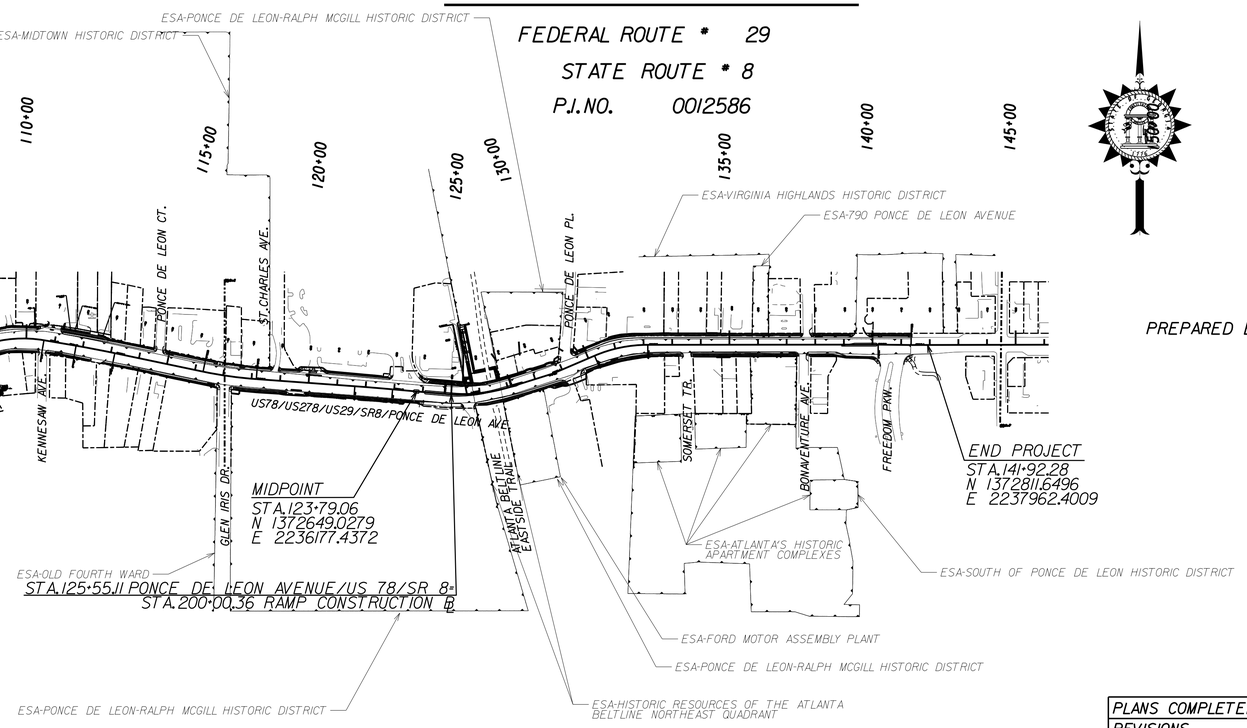
ATLANTA BELTLINE, INC.

PLAN AND PROFILE OF PROPOSED
PONCE DE LEON AVENUE COMPLETE STREET
RETROFIT AND BELTLINE CONNECTION

FEDERAL AID PROJECT
PRELIMINARY PLANS
08/20/14

FEDERAL ROUTE * 29
STATE ROUTE * 8
P.I.NO. 0012586

NOTE :
ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS, DOCUMENTS, DRAWINGS, OR PHOTOGRAPHS USED, OR TO BE USED IN CONNECTION WITH THIS DOCUMENT, TO "STATE HIGHWAY DEPARTMENT OF GEORGIA", "STATE HIGHWAY DEPARTMENT", GEORGIA STATE HIGHWAY DEPARTMENT", "HIGHWAY DEPARTMENT", OR "DEPARTMENT" WHEN THE CONTEXT THEREOF MEANS THE STATE HIGHWAY DEPARTMENT OF GEORGIA, AND SHALL BE DEEMED TO MEAN THE DEPARTMENT OF TRANSPORTATION.



PREPARED BY: KIMLEY-HORN AND ASSOCIATES, INC.
DESIGN

THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS OR IN ANYWAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF BIDDER IS SPECIFICALLY DIRECTED TO SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.

LENGTH OF PROJECT	FULTON CO COUNTY No.121 Project No. 0012586 MILES
NET LENGTH OF ROADWAY	0.687
NET LENGTH OF BRIDGES	0.000
NET LENGTH OF PROJECT	0.687
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	0.687

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW
Atlanta, Georgia 30308

SCALE IN FEET
0 250 500 1000

PLANS COMPLETED - -	
REVISIONS	

DRAWING No. 01-001

CONCOV
5/20/2011

3/1/2017 3:49:36 PM diana.mitchen	GPLOT-V8 gplotborder-v81-P0.tbl	0012586_13-004.dgn	STATE GA	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS

NOTE:
1. SEE SHEET 13-008 FOR SPECIFIC DETAILS REGARDING RAMP SURROUNDINGS

JHH MIDTOWN FEE OWNER LLC.
23
SEE SHEET 4, 13

122+53.96
-42.55' LT

122+58.37
-47.48'LT

ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

+73.03
45.53'

123+00

END SIDEWALK
STA. 122+79.04
INSTALL TYPE A RAMP

EXIST R/W

MATCH LINE STA. 122+50
SEE SHEET 13-003

ASPHALT

15'R

EX-22

76.07
91.98

CURVE #4
S84°53'41.6"E
PONCE DE LEON AVENUE/US 78/SR 8

EXISTING MARTA BUS STOP SHELTER TO BE REMOVED

BIKE RAMP
EX-23
EXIST R/W

SIDEWALK

294.48

122+75.00
49.00'RT

123+20.00
44.21'RT

123+20.00
48.06'RT

INSTALL TYPE A RAMP

+24.25
46.91'

DO NOT DISTURB EXISTING FENCE

ORANGE BARRIER FENCE

RE0'D R/W

123+88.20
39.62'RT

123+88.23
42.25'RT

123+93.50
42.19' RT

123+88.39
54.41'RT

INSTALL MODIFIED TYPE A RAMP

123+37.20
40.54'RT

123+37.32
47.54'RT

+00.31
44.41'

124+05.43
54.20' RT

NEW MARTA BUS SHELTER TO BE RESET BY OTHERS

124+56.86
53.56' RT
CITY OF ATLANTA
19
SEE SHEET 4, 12

INVERTED "U" BIKE RACKS

125+01.73
53.11' RT

DO NOT DISTURB EXISTING FENCE

INSTALL TYPE D RAMP

END SIDEWALK
STA. 125+40.00

125+32.37
53.16' RT

125+39.24
53.40' RT

125+43.82
58.74' RT

STA. 125+55.11 PONCE DE LEON AVENUE/US 78/SR 8
STA. 200+00.36 RAMP CONSTRUCTION ℄

124+89.67
-247.18'LT

PI 202+50.00

125+16.30
-250.83' LT

125+26.39
-252.08'LT

ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

202+00

BASELINE FOR PROPOSED RAMP TO THE ATLANTA BELTLINE EASTSIDE TRAIL

ESA-HISTORIC RAILROAD RESOURCES OF THE ATLANTA BELTLINE NORTHWEST QUADRANT

N11°21'34.0"W

123+84.73
-57.13' LT

123+89.59
-56.50'LT

124+00

+95.06
49.47'

125+26.02
-137.57'LT

SCOTT G ARNOLINO & RONALD J LAZARUS
24
SEE SHEET 13

123+99.34
-47.01' LT

125+41.42
-43.87' LT

125+23.00
-45.46'RT

201+00

BEGIN SIDEWALK
STA. 124+05.63
4' CONC. SIDEWALK
EXISTING MARTA BUS STOP TO BE RESET BY OTHERS
INSTALL 25' ADA LOADING PAD

125+00

E

MAG NAIL FOUND

RE0'D R/W

EXIST R/W

ANDERSON FOUND

12'

SIDEWALK

EX-24
BIKE RAMP

PC 124+75.55

+72.59
06.00'
TOP 895.55
INV. 890.55

+12.08
26.00'
+12.08
6.00'

F-25

+38.02
32.00'

+08.11
5.12'

+22.12
30.28'

PI 200+00.36

CURVE #5

+72.61
06.00'

+89.45
31.00'

+12.08
25.00'
+12.08
6.00'

+77.40
31.00'

ESA RESOURCE I

+29.19
30.62'

510'R

+92.44
28.64'

+24.67
27.01'

+39.21
29.04'

20'R

15'R

MAG NAIL FOUND

SIDEWALK

OPEN TOP PIPE FOUND

125+46.53
-140.34'LT

126+00

CONTRACTOR IS NOT TO DISTURB EXISTING WALL AT BACK OF SIDEWALK

PIPE BEHIND GRAVITY WALL

125+83.48
61.83' RT

BEGIN SIDEWALK
STA. 125+89.91
INSTALL TYPE B RAMP
ESA-PONCE DE LEON-RALPH MCGILL HISTORIC DISTRICT
ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

EXIST R/W

ATLANTA BELTLINE EASTSIDE TRAIL

E

ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

ESA-HISTORIC RAILROAD RESOURCES OF THE ATLANTA BELTLINE NORTHWEST QUADRANT

ESA-PONCE DE LEON-RALPH MCGILL HISTORIC DISTRICT

128+45.50
-38.17'LT

128+43.00
-60.39'LT

126+79.56
-38.56'LT

ROBERT C & DANE E MOOREFIELD
28

128+43.00
-38.18'LT

ORANGE BARRIER FENCE

CONTRACTOR IS NOT TO DISTURB EXISTING BUILDING AT BACK OF SIDEWALK

128+00

ROHRIG INVESTMENTS
26

127+00

EXIST R/W

127+71.50
-38.00' LT

ATL MOTORCYCLE

127+65.45
-37.79' LT

127+48.91
-37.66' LT

127+30.28
-38.17'LT

127+12.22
-38.59'LT

REQ'D R/W

18'

14'

F-24

TOP 921.76
INV. 906.93

PC 127+12.22

+34.93
30.00'
+51.40
04.77'

N72°30'18.0"E

+51.40
00.81'

EX-25

+49.24
30.00'

+30.62
03.50

+26.44
27.98'

300'R

SIDEWALK

EXIST R/W

128+44.83
42.60' RT

127+47.17
42.77' RT

RE0'D R/W

2" OPEN TOP PIPE FOUND

FORD FACTORY SQUARE
21

4" CONC. SIDEWALK
CONTRACTOR IS NOT TO DISTURB EXISTING BUILDING AT BACK OF SIDEWALK

ESA-FORD MOTOR ASSEMBLY PLANT

ESA-PONCE DE LEON-RALPH MCGILL HISTORIC DISTRICT

ESA-SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

126+72.70
44.77' RT

CONTRACTOR IS NOT TO DISTURB EXISTING WALL AT BACK OF SIDEWALK

ESA-HISTORIC RAILROAD RESOURCES OF THE ATLANTA BELTLINE NORTHWEST QUADRANT

MATCH LINE STA. 128+50
SEE SHEET 13-005

N

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

Atlanta BeltLine

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW
Atlanta, Georgia 30308

SCALE IN FEET
0 20 40 80

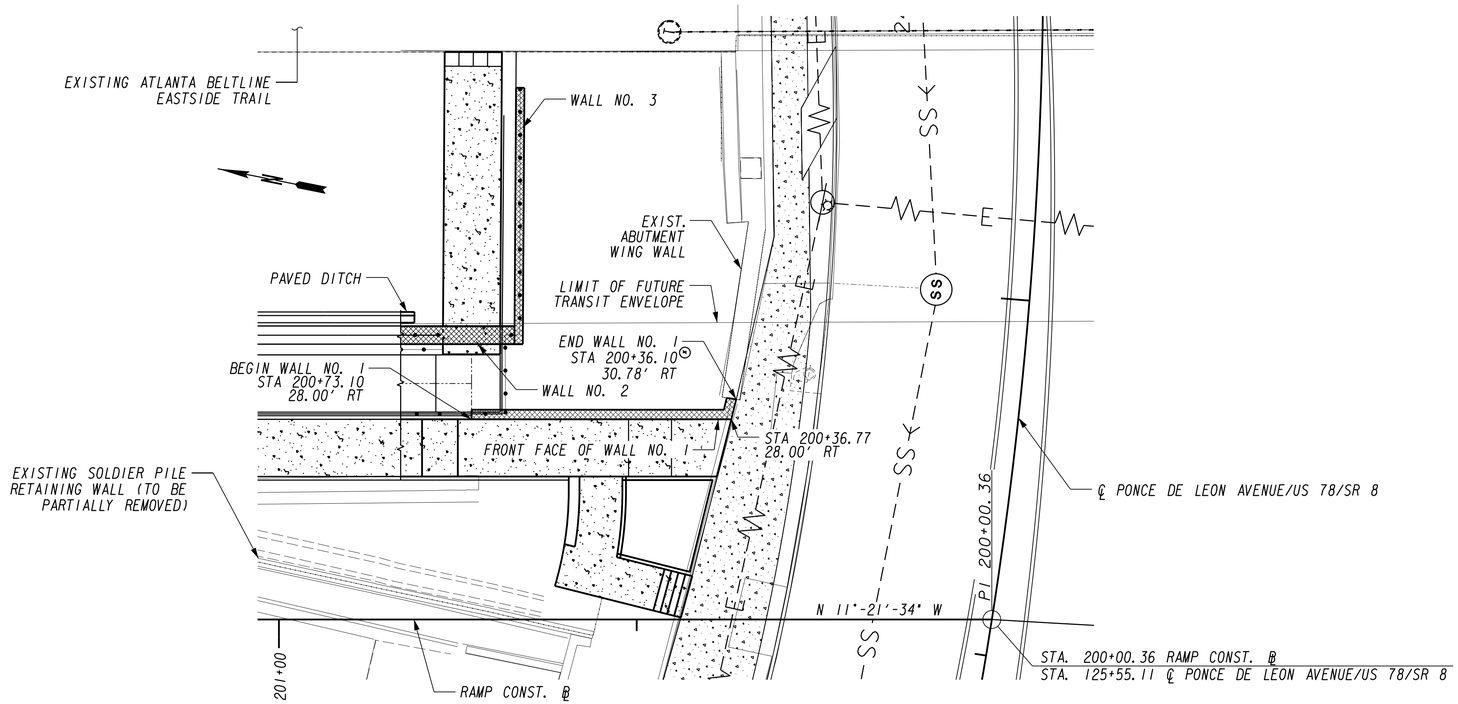
REVISION DATES		

ATLANTA BELTLINE

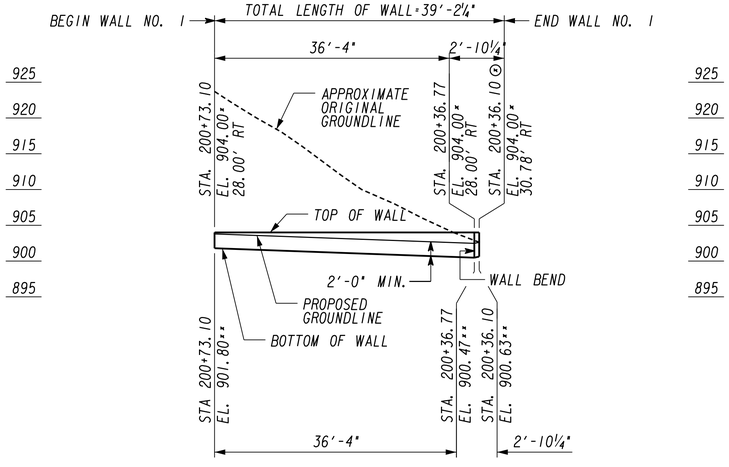
MAINLINE PLAN

DRAWING No.
13-004

12/14/2012 GPLN



PLAN



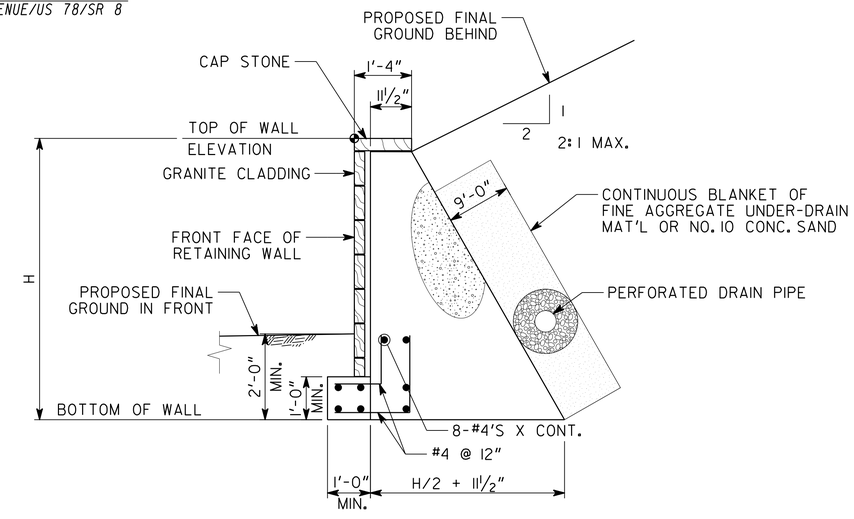
ELEVATION

DESIGN DATA

SPECIFICATIONS ..... AASHTO LRFD 7TH EDITION, 2014

NOTES:

1. STATIONS ARE ALONG RAMP CONST. ℄. OFFSETS GIVEN TO FRONT FACE OF WALL.
2. * ELEVATIONS SHOWN ARE AT TOP OF GRAVITY WALL.
3. ** ELEVATIONS SHOWN ARE MAXIMUM BOTTOM OF GRAVITY WALL.
4. ⊙ TIE END WALL NO. 1 TO EXISTING ABUTMENT WING WALL.



WALL 1 TYPICAL SECTION

(GRAVITY)

Atlanta BeltLine

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW
Atlanta, Georgia 30308

SCALE IN FEET
0 10 20 40

REVISION DATES		

ATLANTA BELTLINE

OFFICE:

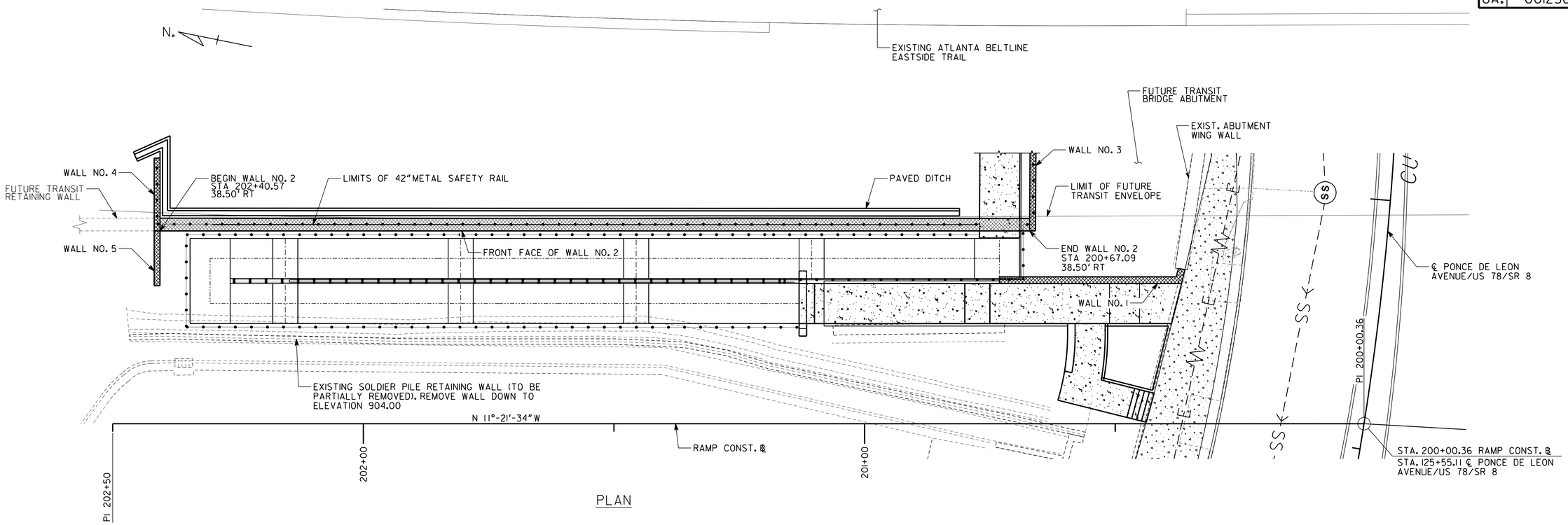
RETAINING WALL ENVELOPES

WALL NO. 1

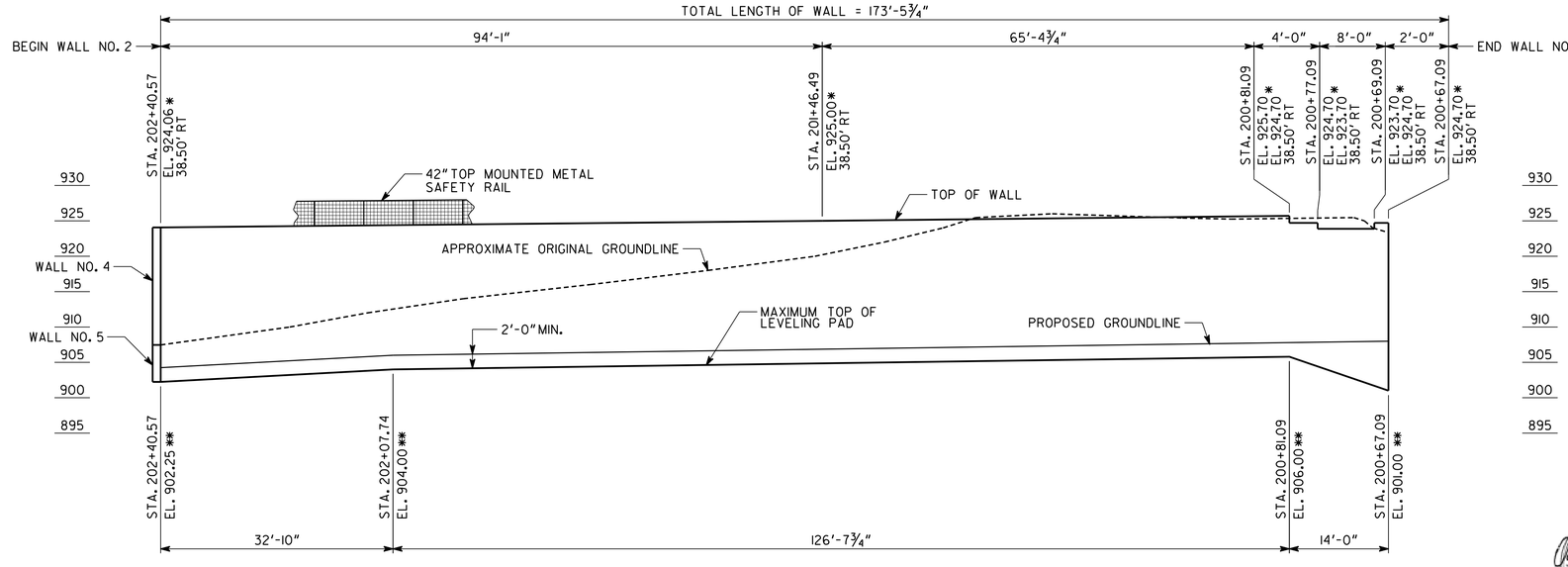
DRAWING No. 31- 0001

12/14/2012 GPLN

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



PLAN



ELEVATION
LOOKING AT FRONT FACE OF WALL

NOTES:

1. STATIONS ARE ALONG RAMP CONST. ℄. OFFSETS GIVEN TO FRONT FACE OF WALL.
2. * ELEVATIONS SHOWN ARE AT TOP OF WALL.
3. ** ELEVATIONS SHOWN ARE THE MAXIMUM ELEVATION AT THE TOP OF LEVELING PAD.
4. FOR SECTIONS AND DETAILS, SEE WALL DETAILS SHEET.

WALL NO. 2

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW, Suite 601
Atlanta, Georgia 30308

GEORGIA REGISTERED 31339 PROFESSIONAL ENGINEER DAVID L. STRICKLIN, JR. 2-17-2017

ATLANTA BELTLINE

PRELIMINARY - WALL NO. 2
PONCE DE LEON COMPLETE STREET RETROFIT AND BELTLINE CONNECTION
FULTON COUNTY 0012586

SCALE: 1"= 10'-0" FEBRUARY 2017

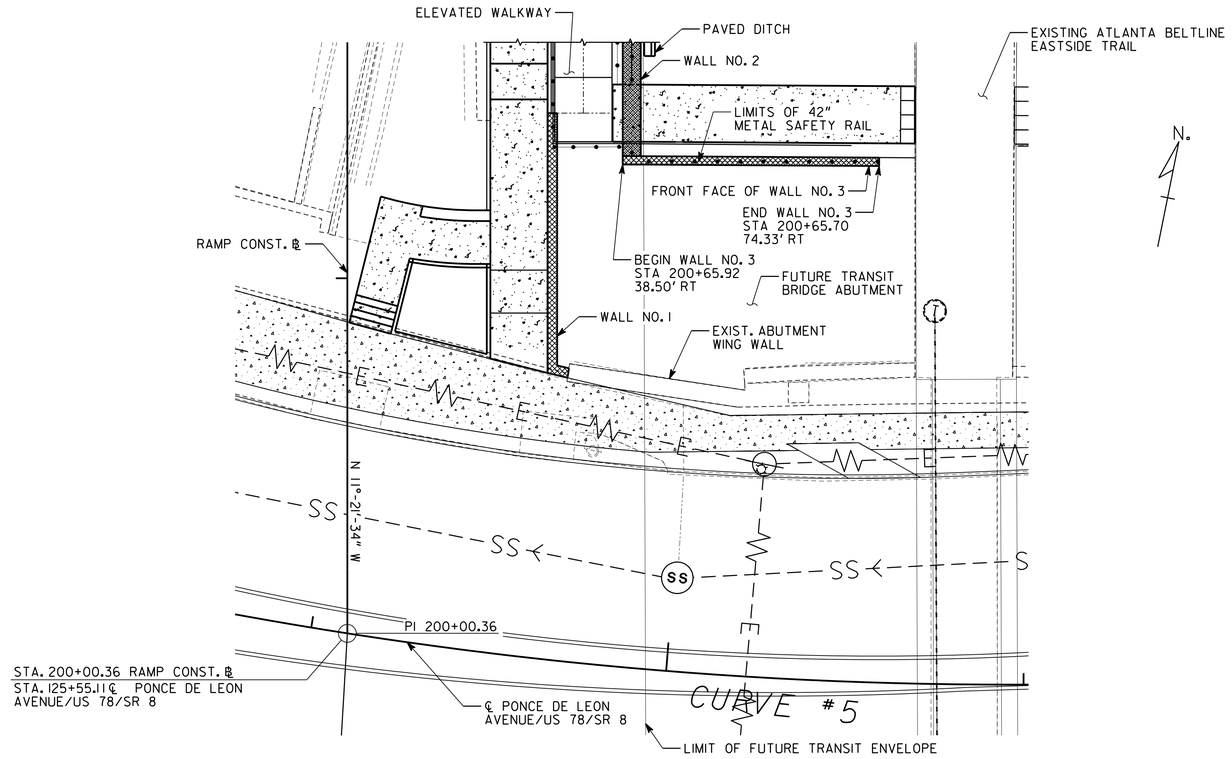
DRAWING NO.	REVISIONS	BY	DATE
32 - 0001			
WALL SHEET 1 OF 4			

DESIGNED AEL	CHECKED DLS	REVIEWED SKG
DRAWN GAG	DESIGN GROUP	APPROVED WMD

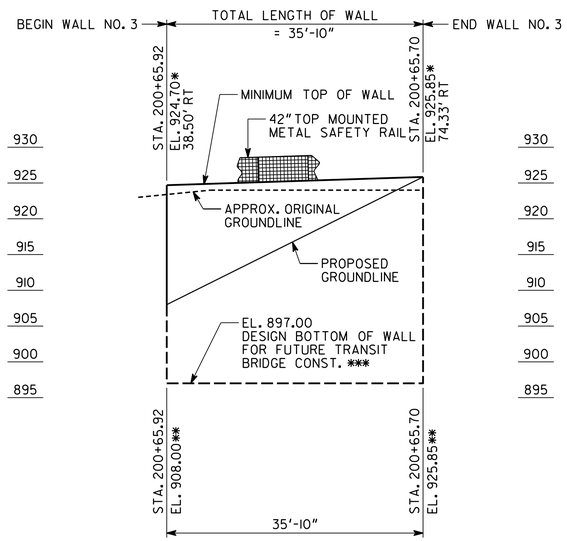
1 INCH WHEN PRINTED FULL SIZE

9:23:02 AM $DATE$ $FILE$

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



PLAN



ELEVATION
LOOKING AT FRONT FACE OF WALL

NOTES:

1. STATIONS ARE ALONG RAMP CONST. ℄. OFFSETS GIVEN TO FRONT FACE OF WALL.
2. * MINIMUM TOP OF WALL ELEVATIONS SHOWN ARE AT PROPOSED FINISHED GRADE ELEVATION AT BACK FACE OF WALL.
3. ** ELEVATIONS SHOWN ARE AT PROPOSED FINISHED GRADE ELEVATION AT FRONT FACE OF WALL.
4. *** WALL NO. 3 SHALL BE DESIGNED FOR A FUTURE BOTTOM OF WALL ELEVATIN OF 897.00 TO ACCOMODATE CONSTRUCTION OF A FUTURE TRANSIT BRIDGE ABUTMENT.
5. FOR SECTIONS AND DETAILS, SEE WALL DETAILS SHEET.

WALL NO. 3

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW, Suite 601
Atlanta, Georgia 30308

GEORGIA No. 31339 PROFESSIONAL ENGINEER DAVID L. STRICKLIN JR.
2-17-2017

ATLANTA BELTLINE

PRELIMINARY - WALL NO. 3
PONCE DE LEON COMPLETE STREET RETROFIT AND BELTLINE CONNECTION
FULTON COUNTY 0012586

DRAWING NO. 32 - 0002
WALL SHEET 2 OF 4

SCALE: 1"= 10'-0" FEBRUARY 2017

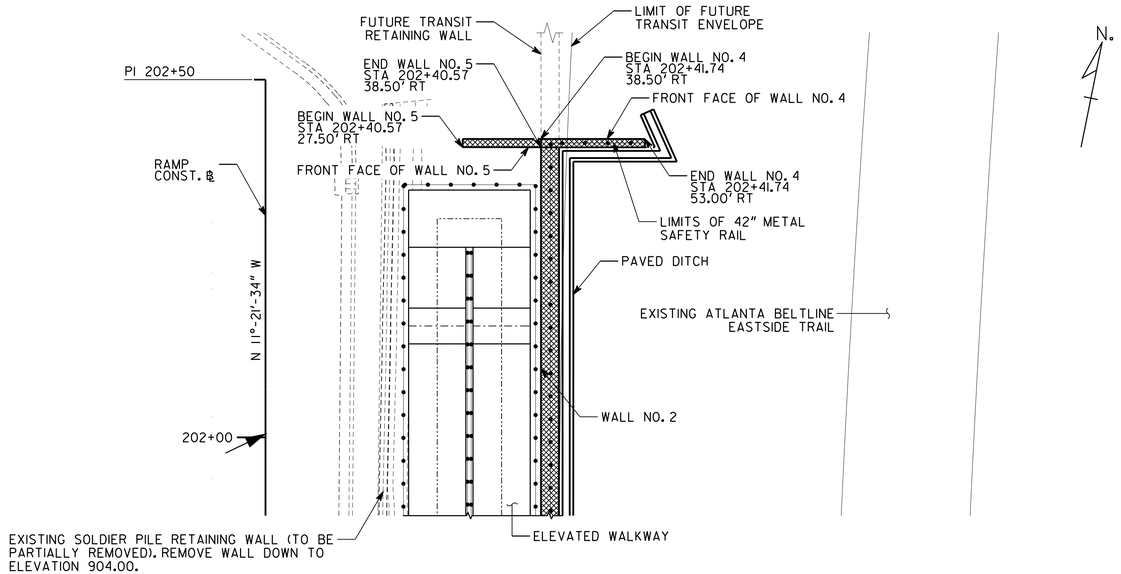
BY	REVISIONS	DATE

DESIGNED AEL | CHECKED DLS | REVIEWED SKG
DRAWN GAG | DESIGN GROUP | APPROVED WMD

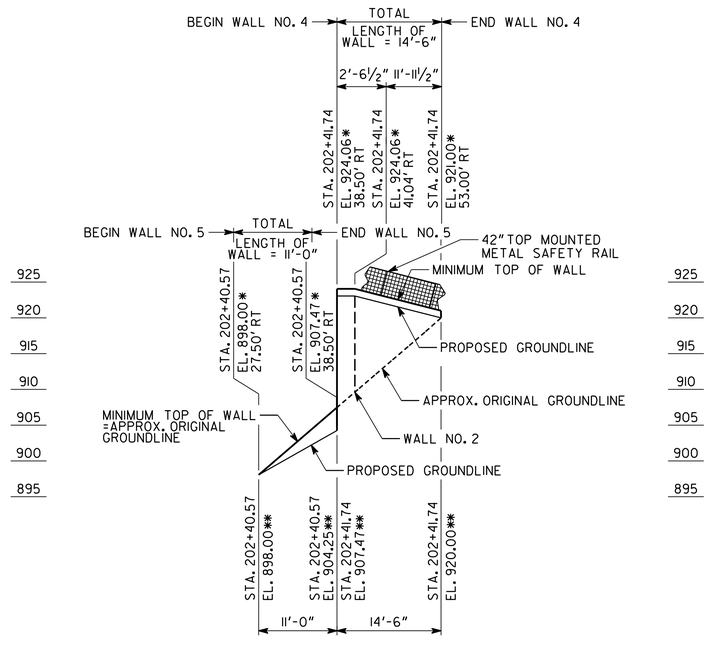
9:23:11 AM $DATE$ $FILE$

1 INCH WHEN PRINTED FULL SIZE

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



PLAN



ELEVATION - WALL NO. 4 & 5

LOOKING AT BACK FACE OF WALL 4
LOOKING AT FRONT FACE OF WALL 5

NOTES:

1. STATIONS ARE ALONG RAMP CONST. ℄. OFFSETS GIVEN TO FRONT FACE OF WALL.
2. * MINIMUM TOP OF WALL ELEVATIONS
3. ** ELEVATIONS SHOWN ARE AT FINISHED GRADE ELEVATION AT FRONT FACE OF WALL.
4. FOR SECTIONS AND DETAILS, SEE WALL DETAILS SHEET.

WALL NO. 4 & 5

Kimley»Horn
Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW, Suite 601
Atlanta, Georgia 30308

GEORGIA 31339 PROFESSIONAL ENGINEER DAVID L. STRICKLIN JR. 2-17-2017

ATLANTA BELTLINE

PRELIMINARY - WALL NO. 4 & 5
PONCE DE LEON COMPLETE STREET RETROFIT AND BELTLINE CONNECTION
FULTON COUNTY 0012586

SCALE: 1"= 10'-0" FEBRUARY 2017

DRAWING NO. 32 - 0003
WALL SHEET 3 OF 4

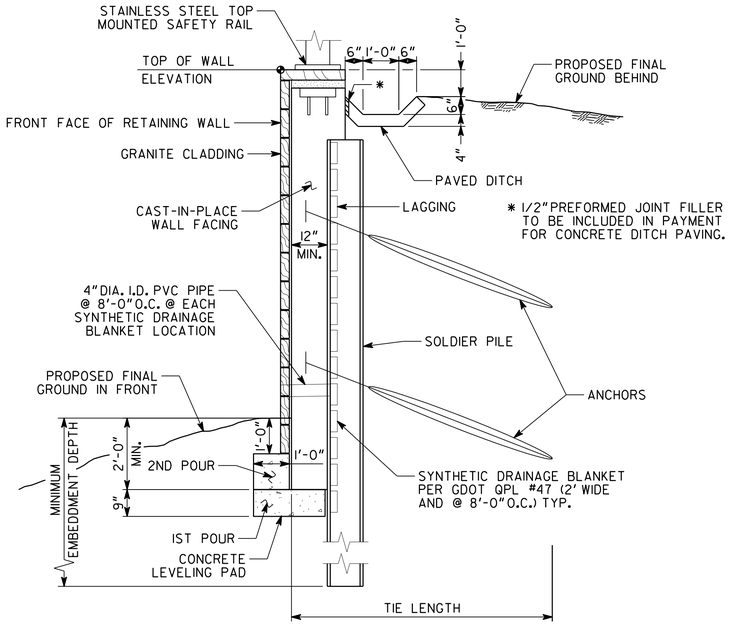
BY	REVISIONS	DATE

DESIGNED AEL | CHECKED DLS | REVIEWED SKG
DRAWN GAG | DESIGN GROUP | APPROVED WMD

9:23:17 AM $DATE$ $FILE$

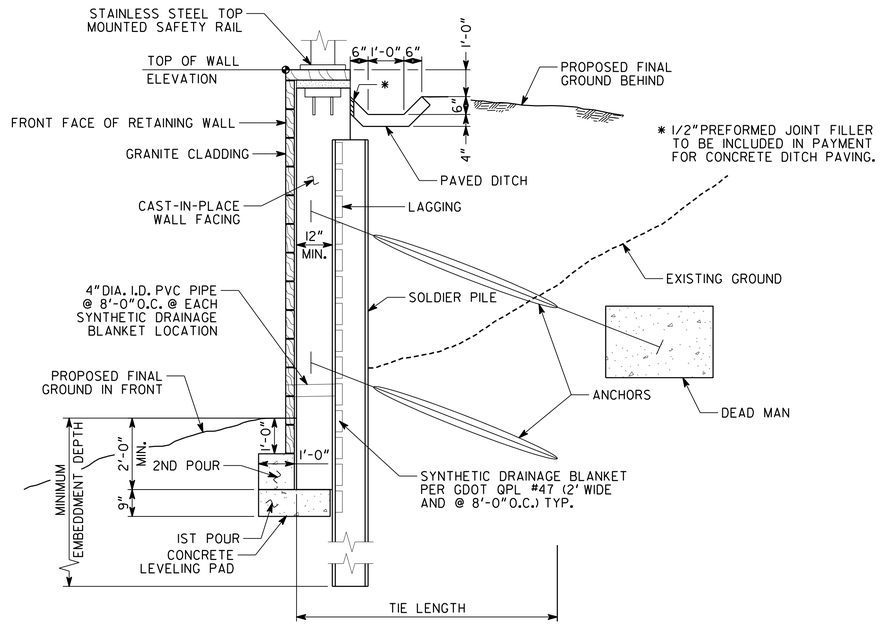
1 INCH WHEN PRINTED FULL SIZE

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



WALL 2 TYPICAL SECTION

(WALL IN CUT, PERMANENT TIE-BACK)

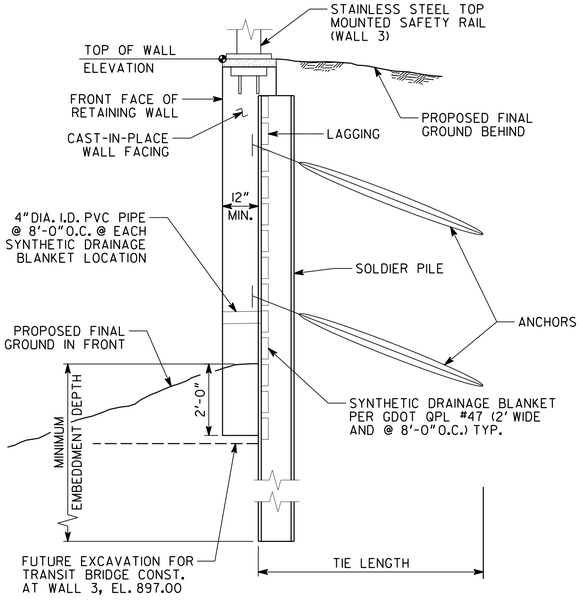


WALL 2 TYPICAL SECTION

(WALL IN FILL, PERMANENT TIE-BACK)

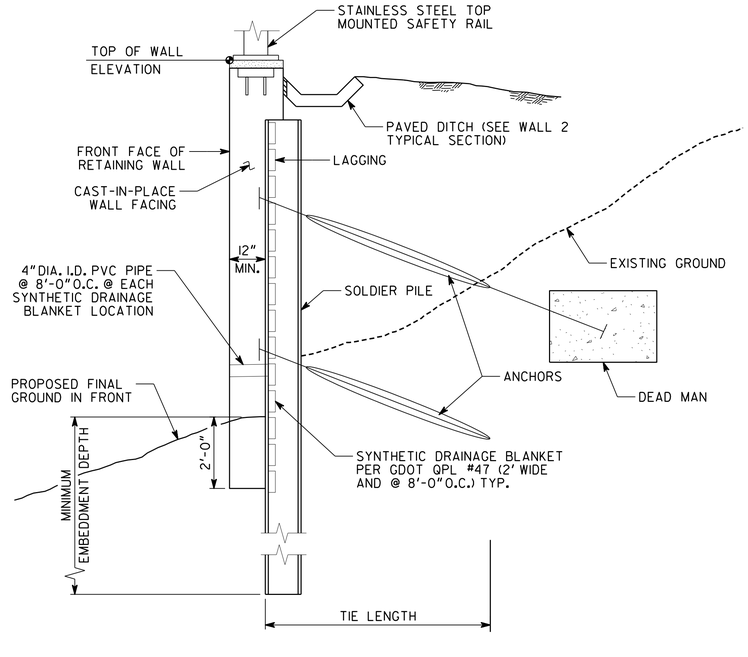
DESIGN DATA - WALLS NO. 2 - NO. 5

SPECIFICATIONS ---------- AASHTO LRFD 7TH EDITION, 2014



WALL 3 AND 5 TYPICAL SECTION

(INTERIM TIE-BACK WALL IN CUT)



WALL 4 TYPICAL SECTION

(INTERIM TIE-BACK WALL IN FILL)

Kimley»Horn

Engineering, Planning, and Environmental Consultants
817 W. Peachtree Street, NW, Suite 601
Atlanta, Georgia 30308

ATLANTA BELTLINE

WALL DETAILS
PONCE DE LEON COMPLETE STREET RETROFIT AND BELTLINE CONNECTION

FULTON COUNTY 0012586

GEORGIA 31339 PROFESSIONAL ENGINEER DAVID L. STRICKLIN JR. 2-17-2017

DRAWING NO.	REVISIONS	DATE
32 - 0004		
WALL SHEET 4 OF 4	BY	

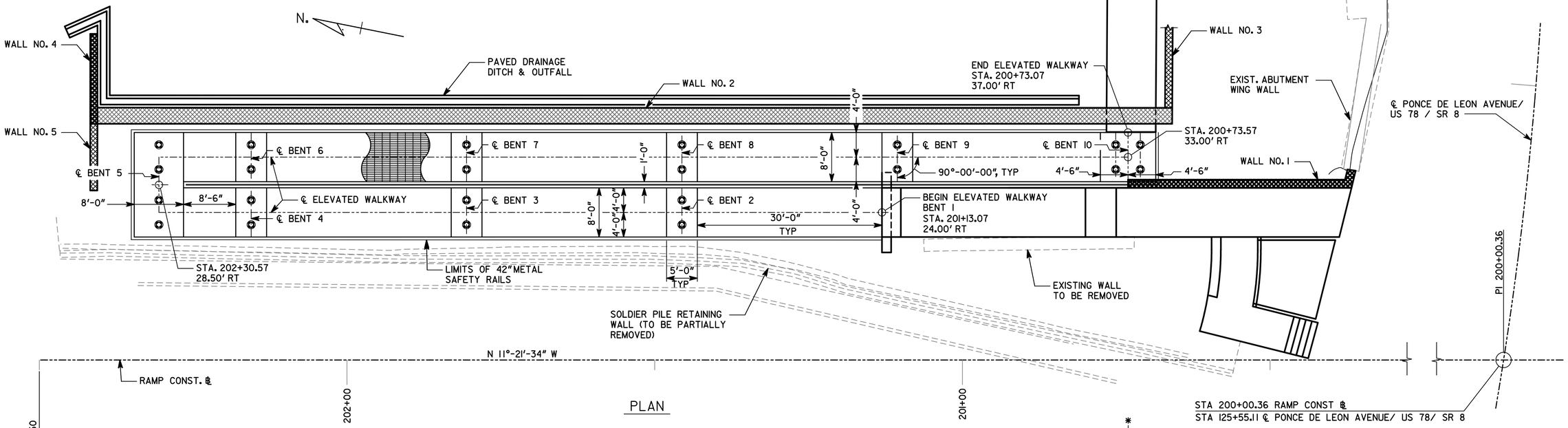
NO SCALE FEBRUARY 2017

DESIGNED AEL | CHECKED DLS | REVIEWED SKG
DRAWN GAG | DESIGN GROUP | APPROVED WMD

9:23:19 AM $DATE$ $FILE$

1 INCH WHEN PRINTED FULL SIZE

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0012586		



ELEVATED WALKWAY CONSISTS OF

7 -	30'-0" STEEL BEAM RAMP SPANS	SPECIAL DESIGN
2 -	8'-6" STEEL BEAM RAMP SPANS	SPECIAL DESIGN
1 -	3'-0" END BENT SLAB	SPECIAL DESIGN
7 -	5'-0" CONCRETE COLUMN/STEEL BEAM INTERMEDIATE BENTS	SPECIAL DESIGN
1 -	8'-0" CONCRETE COLUMN/STEEL BEAM INTERMEDIATE BENT	SPECIAL DESIGN
1 -	9'-0" CONCRETE COLUMN/STEEL BEAM END BENT	SPECIAL DESIGN

DESIGN DATA

SPECIFICATIONS ---- AASHTO LRFD 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS

AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, 2ND EDITION WITH 2015 INTERIM REVISIONS

ADA STANDARDS FOR ACCESSIBLE DESIGN, 2010

NOTE:

* STATIONS ARE ALONG RAMP CONST. ℄ AT INTERSECTION OF BEGIN/END ELEVATED STRUCTURE OR ℄ BENT AND ℄ ELEVATED WALKWAY. ELEVATIONS ARE ALONG ℄ ELEVATED WALKWAY.

EXISTING FILL TO BE REMOVED

GEORGIA REGISTERED No.19371 PROFESSIONAL ENGINEER

02-01-2017

S&A Atlanta

SASTRY & ASSOCIATES, INC.
11030 JONES BRIDGE ROAD, SUITE 201
ALPHARETTA, GA 30022
PHONE: 678-366-9375

DRAWING NO. 35 - 0001

BRIDGE SHEET 1 OF 1

BY	REVISIONS	DATE

ATLANTA BELTLINE

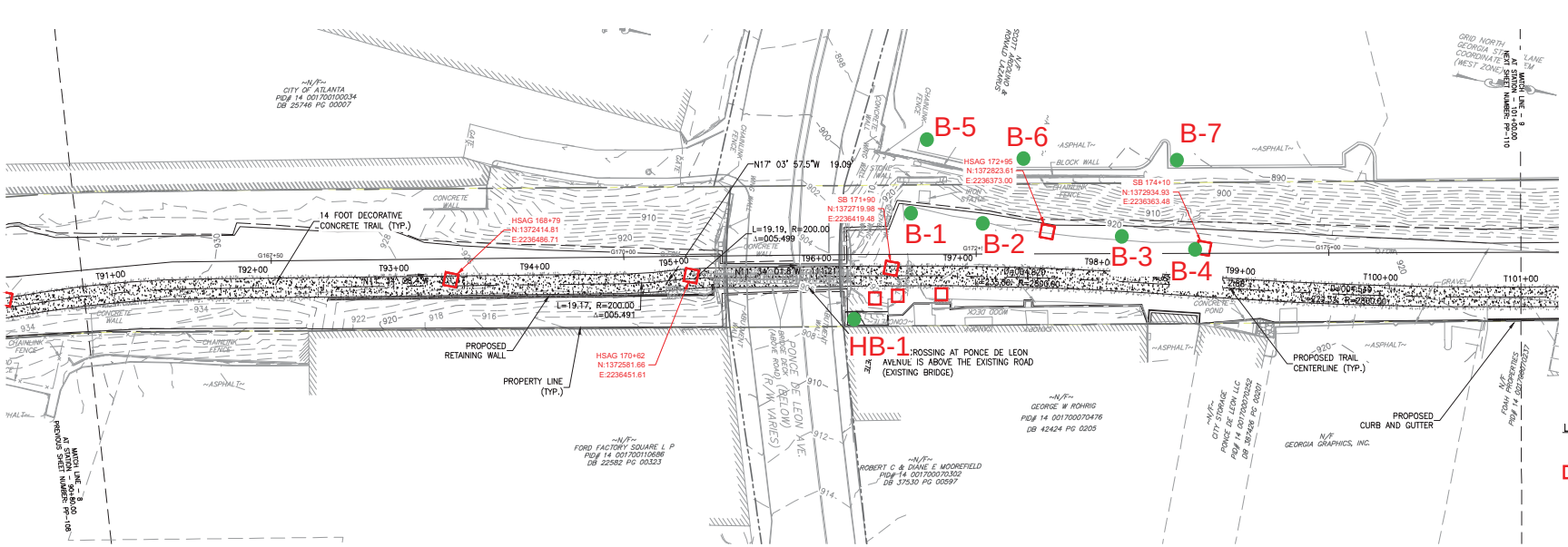
PRELIMINARY LAYOUT
PONCE DE LEON AVENUE/ATLANTA BELTLINE CONNECTION RAMP

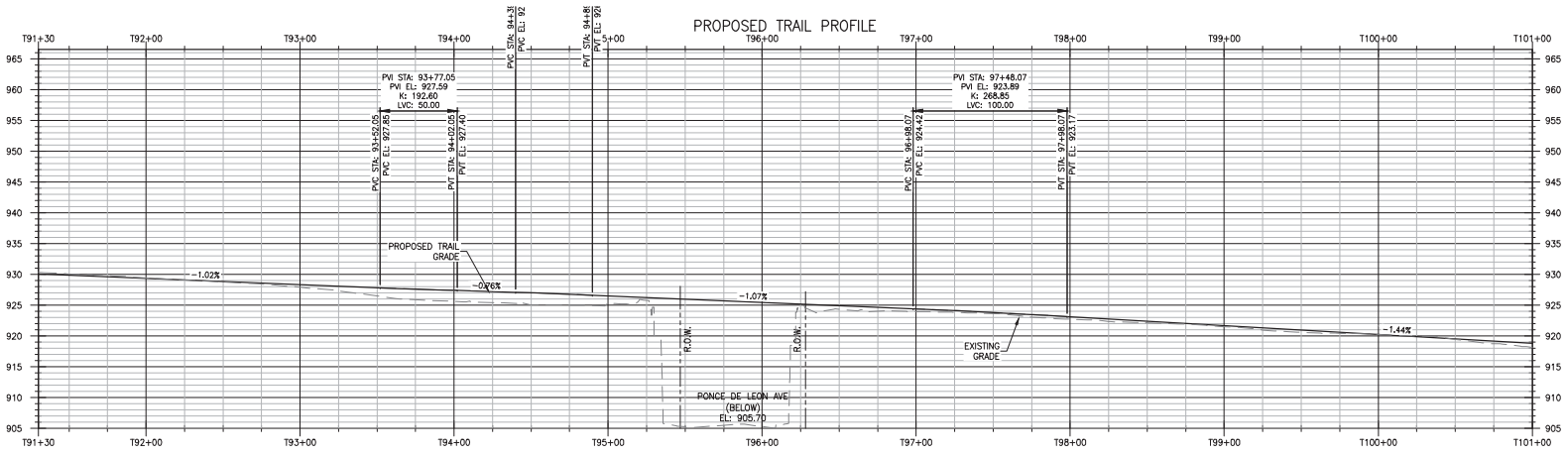
FULTON COUNTY 0012586

SCALE: 1/8" = 1'-0", UNLESS OTHERWISE NOTED FEBRUARY 2017

DESIGNED AP	CHECKED AS	REVIEWED SKG
DRAWN PS	DESIGN GROUP	APPROVED WMD

1 INCH WHEN PRINTED FULL SIZE





NOTES:
UTILITY DEPTHS AND LOCATIONS SHOWN ON PROFILE ARE APPROXIMATE AND MUST BE FIELD VERIFIED.
SEE L-SERIES DRAWINGS FOR MATERIAL FINISHES AND LAYOUT DETAILS

SCALE: 1" = 40'
HORIZONTAL
SCALE: 1" = 10'
VERTICAL PROFILE SCALE

Eastside Trail - North Section

Atlanta BeltLine

Atlanta Beltline, Inc.
86 Pryor Street. SW, Suite 200
Atlanta, GA 30303
t: 404.885.4100
f: 404.840.0616

Perkins + Will
1382 Peachtree Street, NE
Atlanta, GA 30309
t: 404.873.2300
f: 404.892.5823

James Corner Field Operations
475 Tenth Avenue, 10th Floor
New York, New York 10018
t: 212.433.1450
f: 212.433.1451

MACTEC Engineering & Consulting, Inc.
3400 Town Point Drive
Kennesaw, Georgia, 30309
t: 770.421.3400
f: 770.421.3486

Revisions

NO.	ISSUE	DATE	NO.	ISSUE	DATE

Sheet Information

Date	09/27/2010
Job Number	800911.007
Drawn	C. BUDSOCK
Checked	D. GUNNING

Title

GEOTECHNICAL BORING LOCATION PLAN
T90+80 TO T101+00

Sheet

9

NOT FOR CONSTRUCTION

MAJOR DIVISIONS			GROUP SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)		GW	Well graded gravels, gravel - sand mixtures, little or no fines.
				GP	Poorly graded gravels or grave - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)		GM	Silty gravels, gravel - sand - silt mixtures.
				GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size)	CLEAN SANDS (Little or no fines)		SW	Well graded sands, gravelly sands, little or no fines.
				SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)		SM	Silty sands, sand - silt mixtures
				SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)			ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts and with slight plasticity.
				CL	Inorganic lays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
				OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS				PT	Peat and other highly organic soils.
FILL					Fill

	Undisturbed Sample		Auger Cuttings
	Standard Penetration Test or Dynamic Cone Penetration Test		Bulk Sample
	Rock Core		Crandall Sampler
	Dilatometer		Pressure Meter
	Packer		No Recovery
	Water Table at time of boring		Water Table after 24 hours

Correlation of Standard Penetration Resistance with Relative Density and Consistency

SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 2	Very Soft
5 - 10	Loose	3 - 4	Soft
11 - 30	Medium Dense	5 - 8	Firm
31 - 50	Dense	9 - 15	Stiff
Over 50	Very Dense	16 - 30	Very Stiff
		31 - 50	Hard
		Over 50	Very Hard

Correlation of Dynamic Cone Penetration Resistance with Relative Density and Consistency (Piedmont Residual Soils)

SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 2	Very Soft
5 - 15	Loose	3 - 4	Soft
16 - 30	Medium Dense	5 - 10	Firm
		11 - 30	Stiff

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

SILT OR CLAY	SAND			GRAVEL		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		

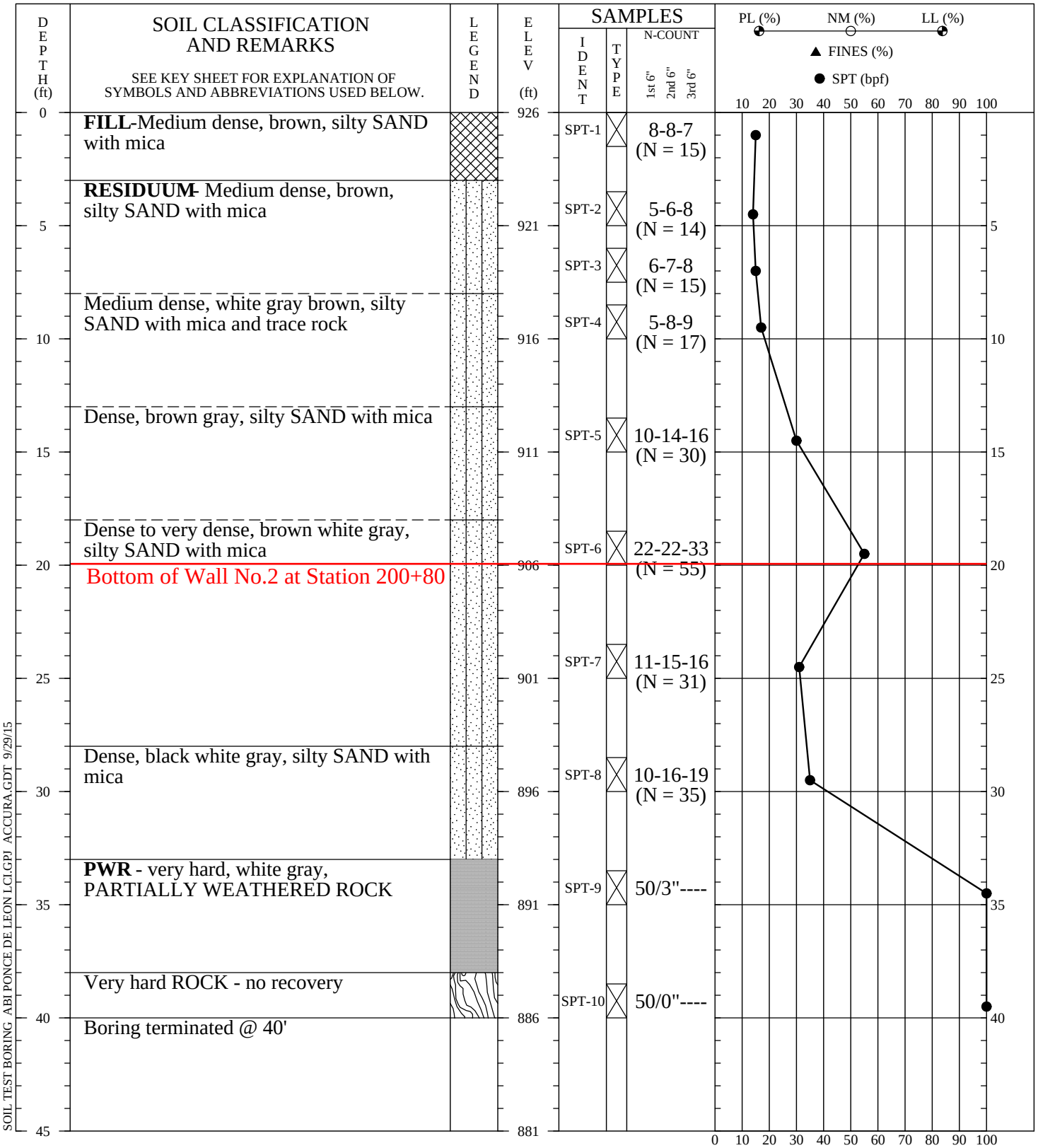
No.200 No.40 No.10 No.4 3/4" 3" 12"

U.S. STANDARD SIEVE SIZE

Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No 3-357, Vol. 1, March, 1953 (Revised April, 1960)

KEY TO SYMBOLS AND DESCRIPTIONS

ACCURA



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/29/15

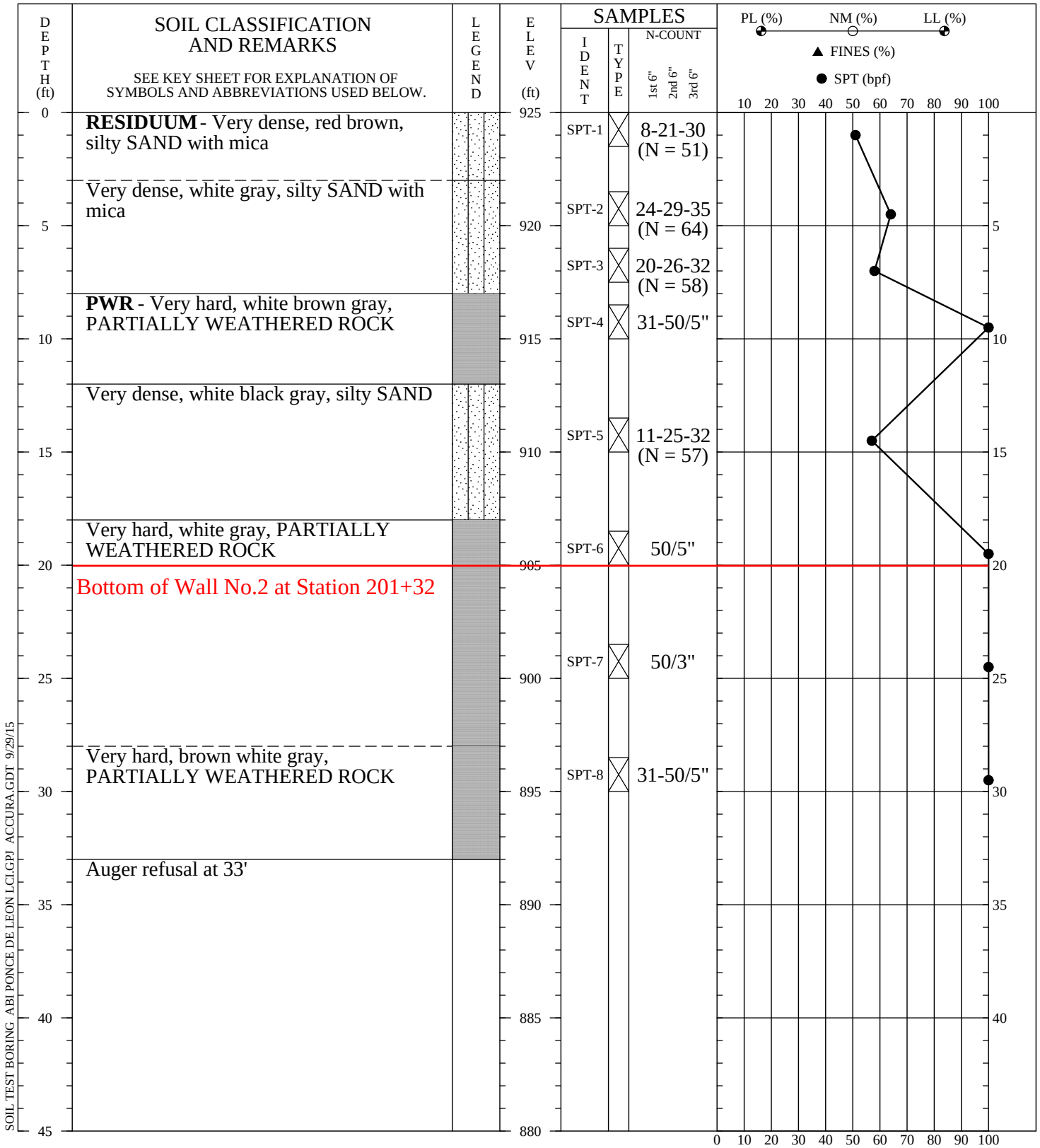
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372726.2169
E:	2336369.1481
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-1
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services



SOIL_TEST BORING_ABI PONCE DE LEON LCI.GPJ_ACCURA.GDT_9/29/15

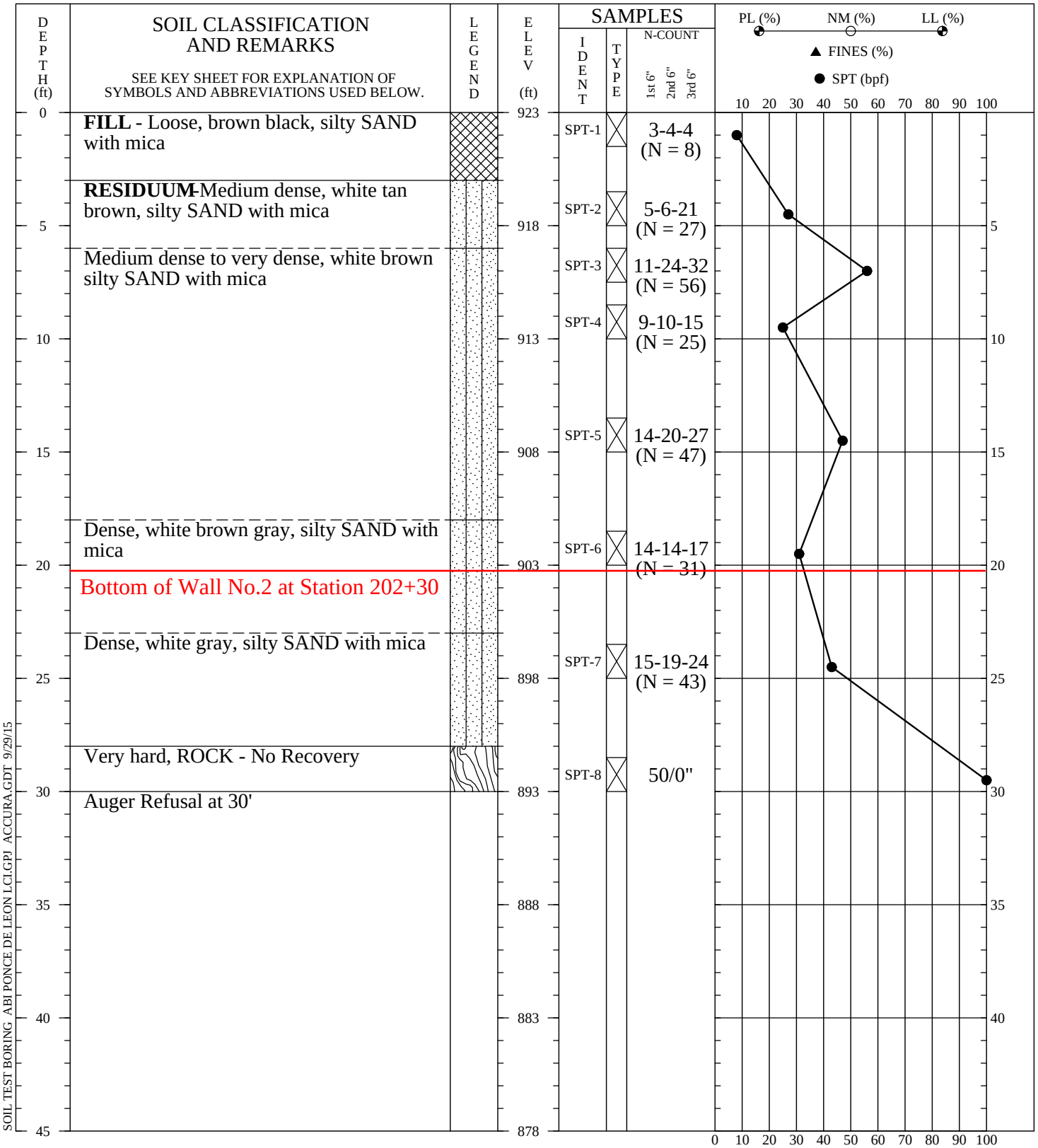
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372777.0664
E:	2336377.5204
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-2
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13

ACCURA Engineering and Consulting Services



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/29/15

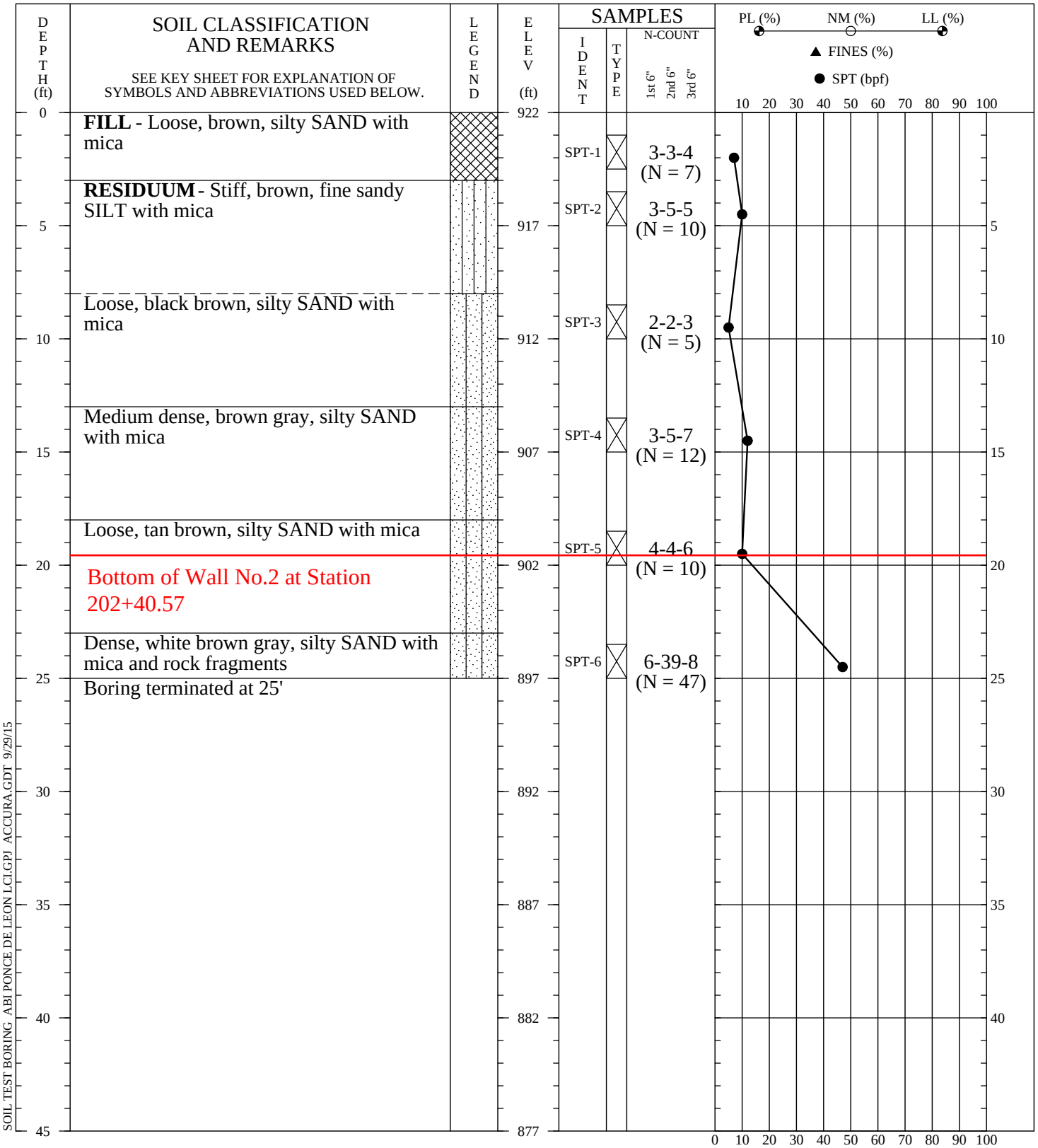
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372879.4187
E:	2336372.6804
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-3
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/29/15

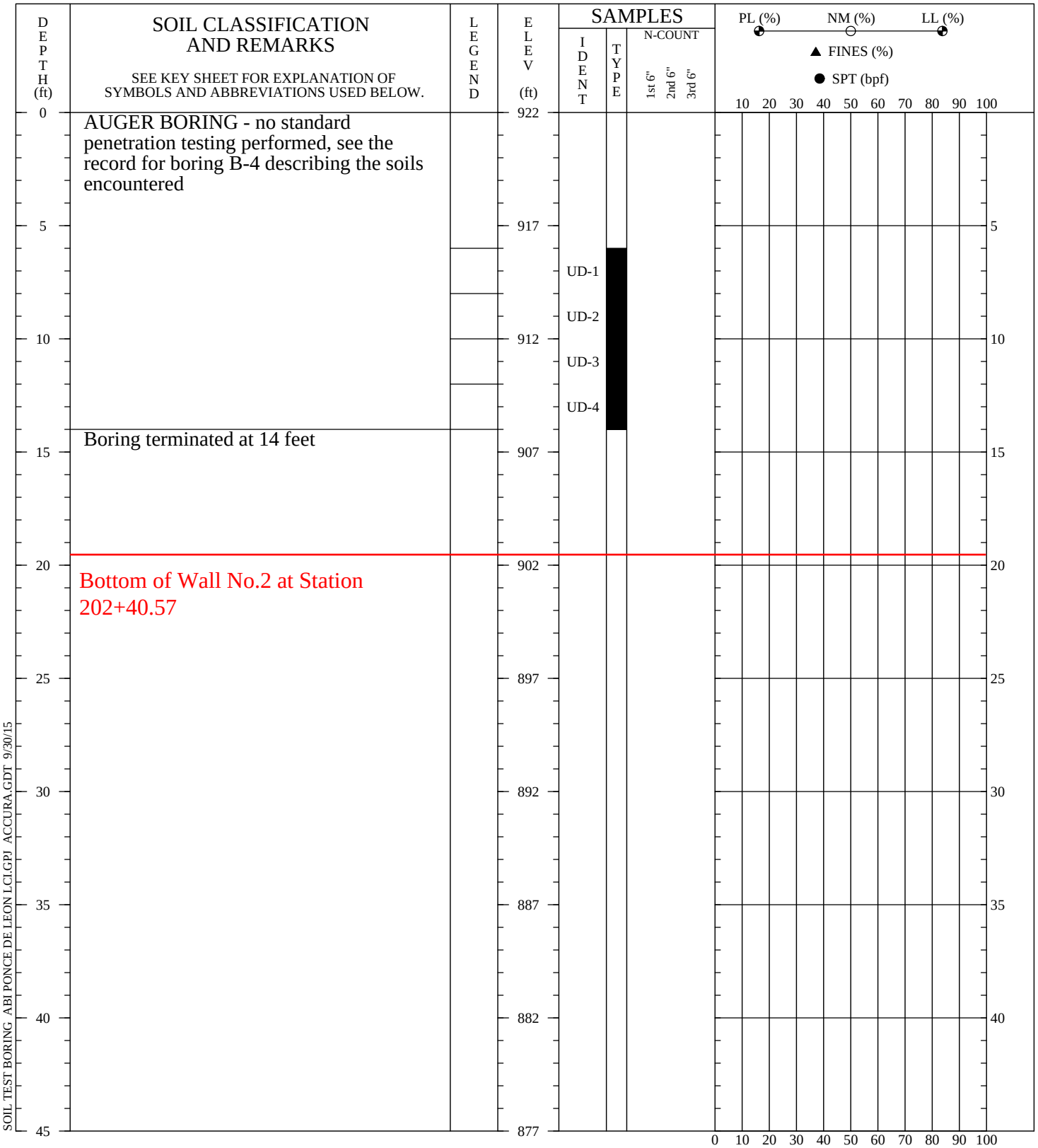
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372935.7211
E:	2336362.1951
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-4
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13

ACCURA
Engineering and Consulting Services



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/30/15

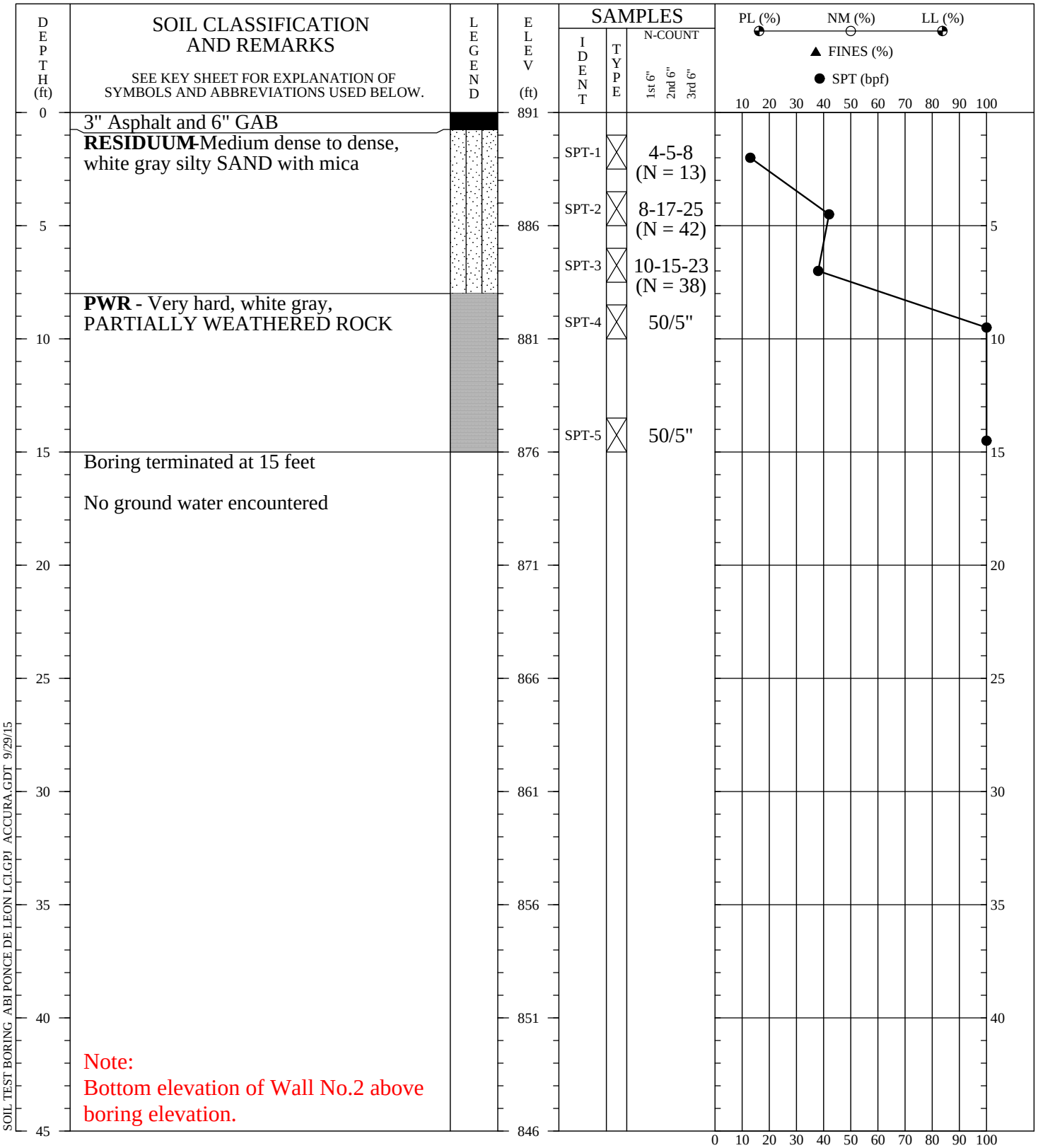
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	
E:	
REMARKS:	3'offset from B-4 for collecting undisturbed samples

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-4A
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13

ACCURA Engineering and Consulting Services



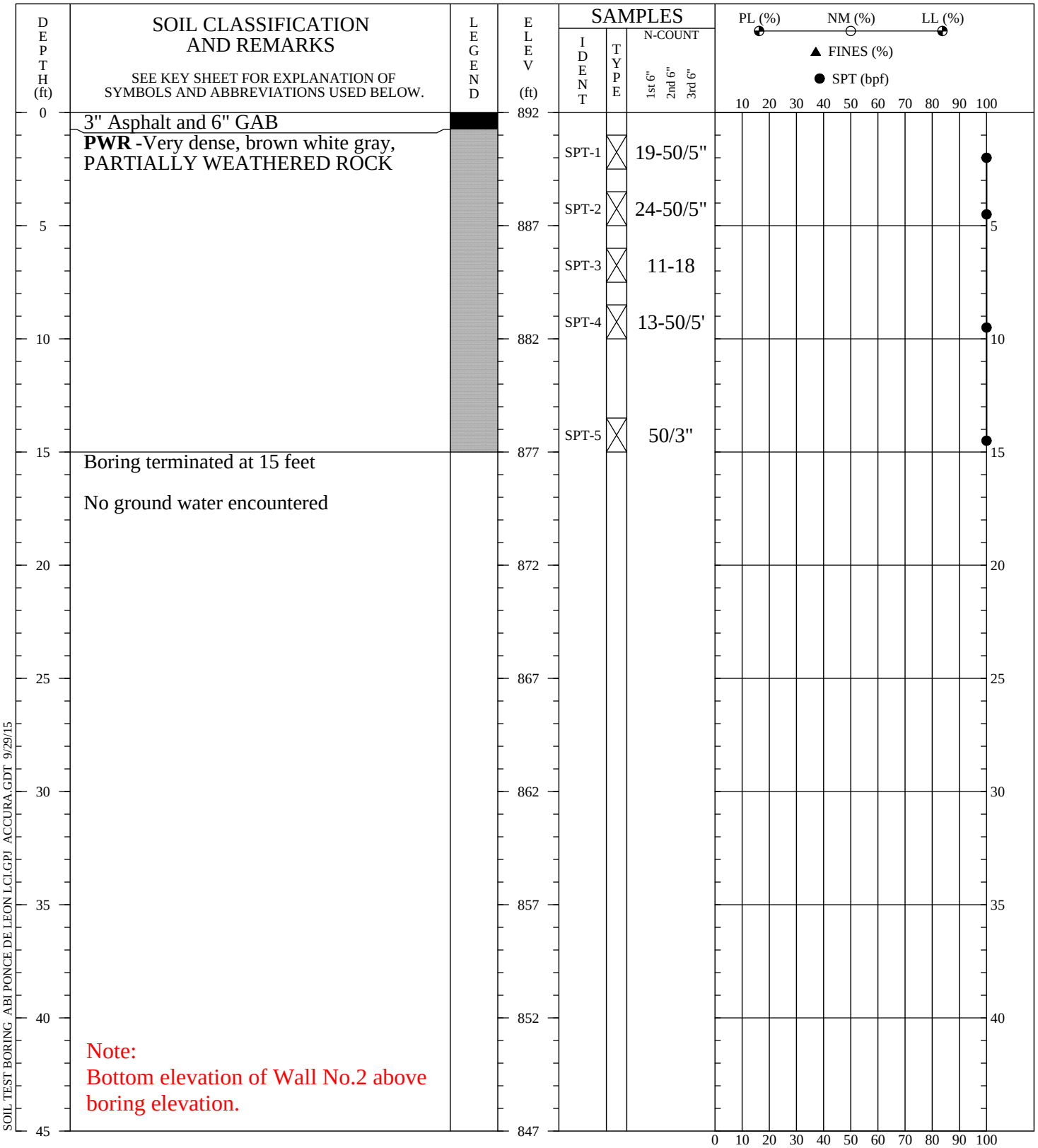
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372726.1195
E:	2336324.4157
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-5
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services



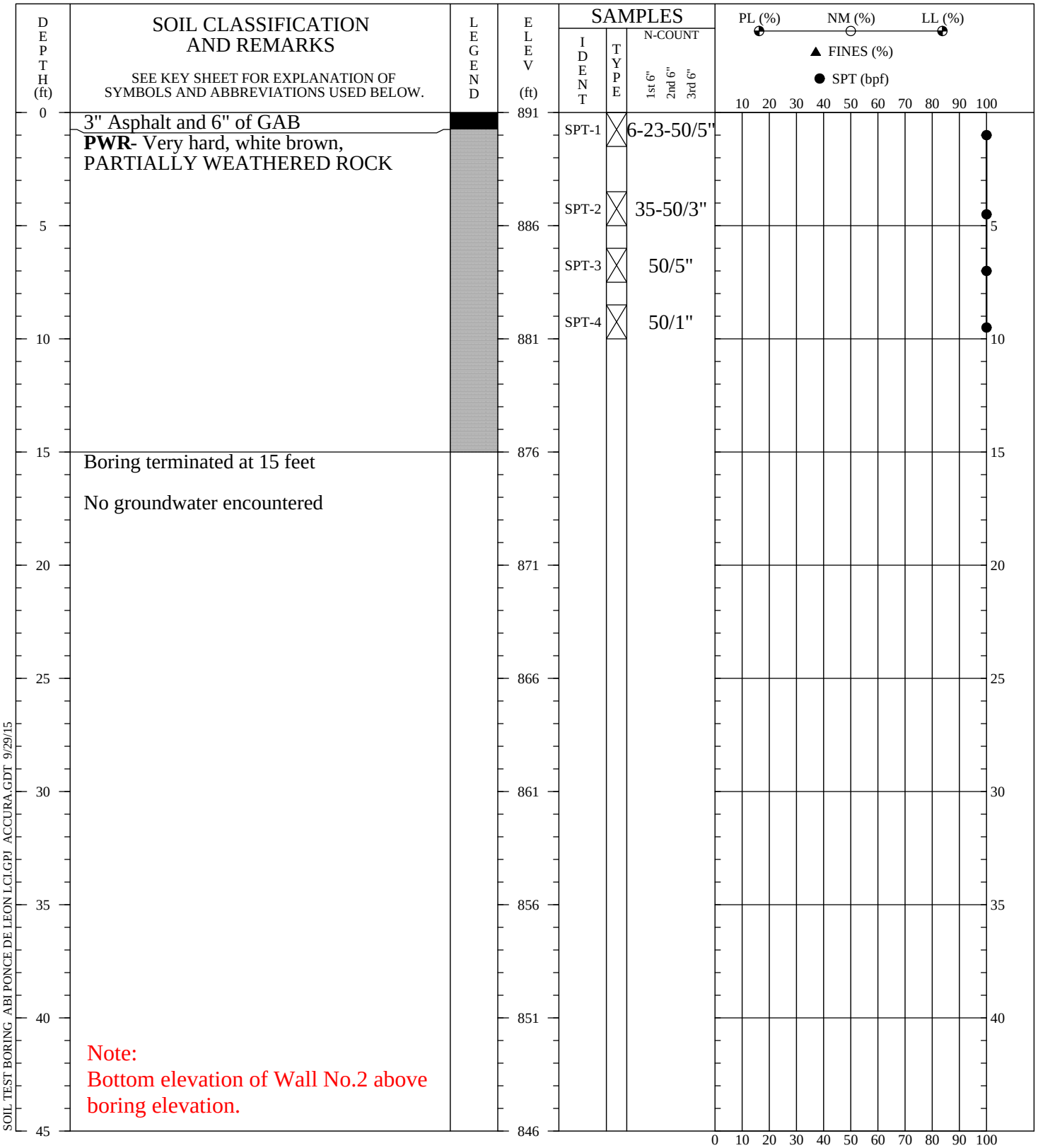
DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372799.6346
E:	2336325.1987
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-6
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services



SOIL TEST BORING ABI PONCE DE LEON LCI.GPJ ACCURA.GDT 9/29/15

DRILLER:	Gable Drilling Co. Inc.
EQUIPMENT:	CME-550 (Auto-Hammer)
METHOD:	Hollow Stem Auger
HOLE DIA.:	6 inches
N:	1372902.2058
E:	2336306.7393
REMARKS:	

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

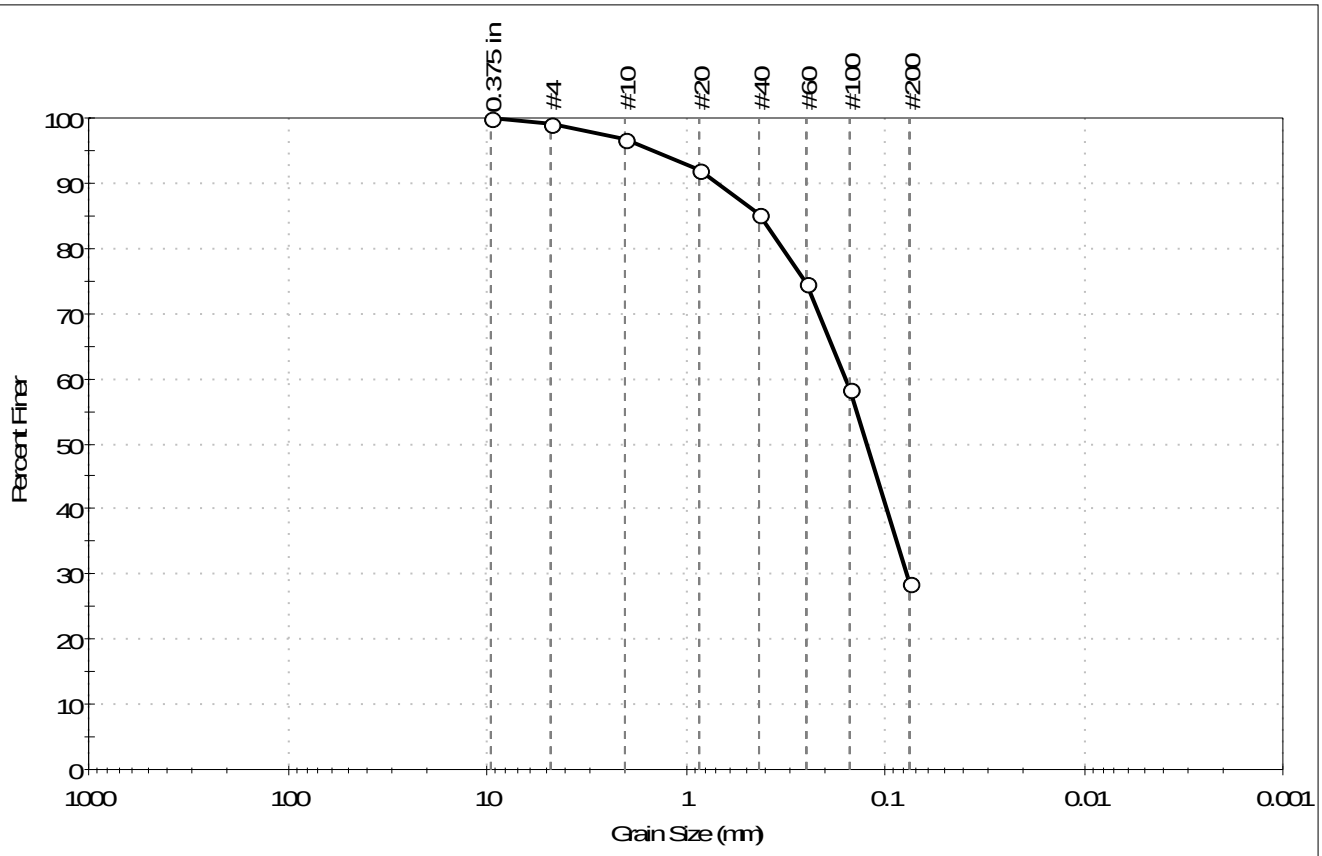
SOIL TEST BORING RECORD

BORING NO.: B-7
PROJECT: ABI - Ponce De Leon LCI
LOCATION: Atlanta, GA
DRILLED: July 2, 2015
PROJECT NO.: 10062.001.13 **PAGE** 1 **OF** 1

ACCURA Engineering and Consulting Services

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-1	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341271		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.9	70.4	28.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	97		
#20	0.85	92		
#40	0.42	85		
#60	0.25	74		
#100	0.15	58		
#200	0.075	29		

Coefficients

D_{85} = 0.4186 mm	D_{30} = 0.0774 mm
D_{60} = 0.1574 mm	D_{15} = N/A
D_{50} = 0.1232 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

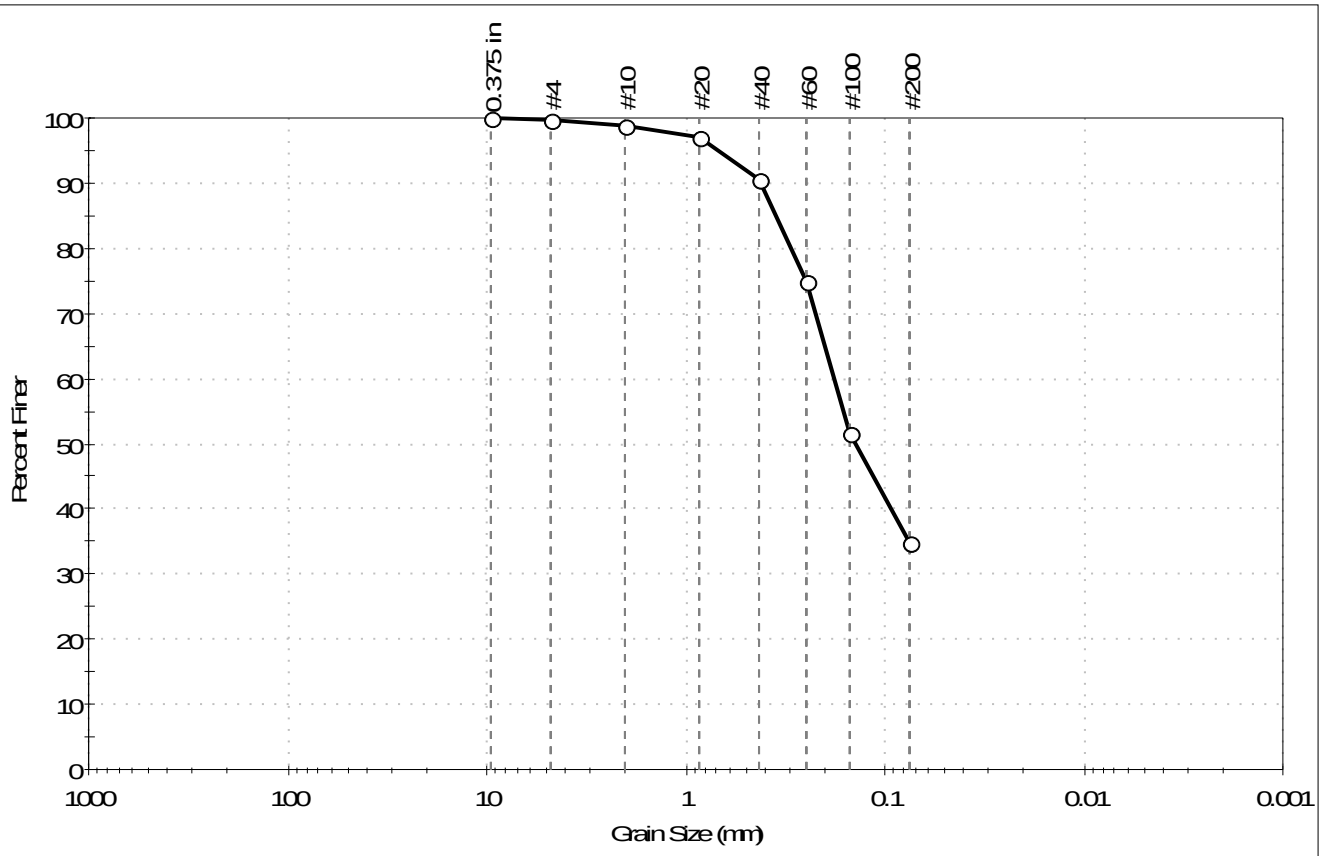
Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-1	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	18.5-20 ft	Test Id:	341272		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.3	64.9	34.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	90		
#60	0.25	75		
#100	0.15	52		
#200	0.075	35		

Coefficients

D_{85} = 0.3529 mm	D_{30} = N/A
D_{60} = 0.1799 mm	D_{15} = N/A
D_{50} = 0.1396 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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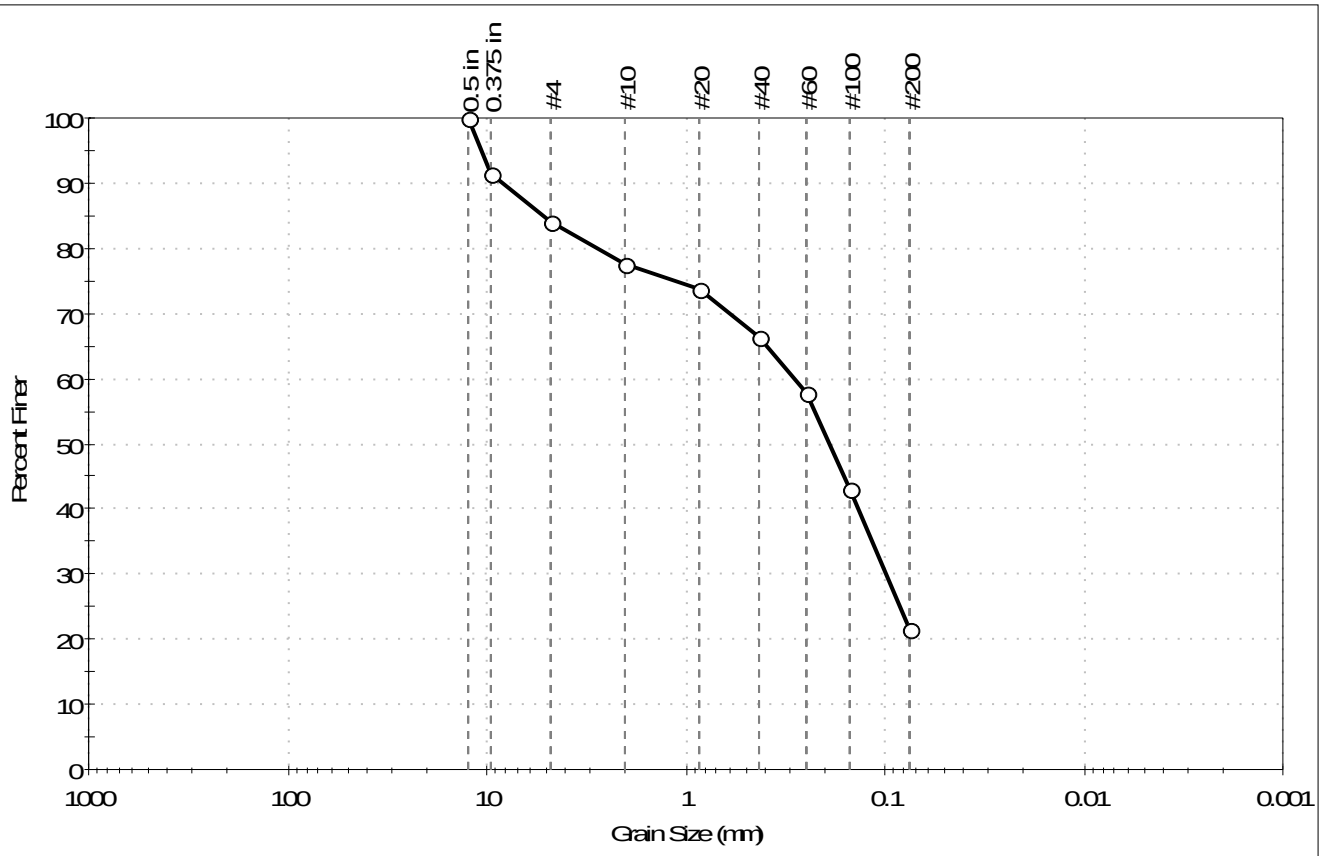
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-2	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	6-7.5 ft	Test Id:	341273		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	15.9	62.6	21.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	92		
#4	4.75	84		
#10	2.00	77		
#20	0.85	74		
#40	0.42	66		
#60	0.25	58		
#100	0.15	43		
#200	0.075	22		

Coefficients

D_{85} = 5.1395 mm D_{30} = 0.0985 mm

D_{60} = 0.2853 mm D_{15} = N/A

D_{50} = 0.1903 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

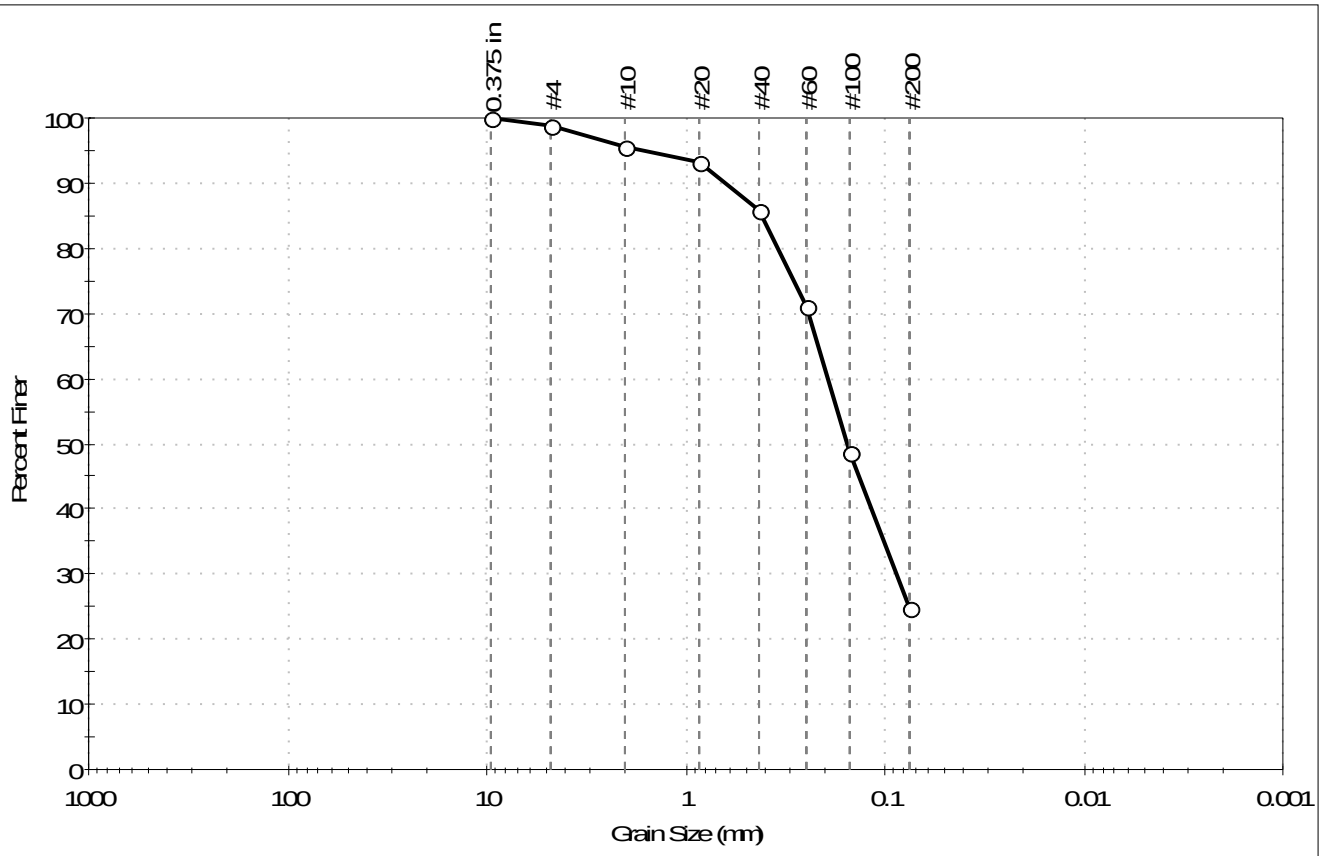
Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-2	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	18.5-20 ft	Test Id:	341274		

Test Comment: ---
Visual Description: Moist, grayish brown silty sand
Sample Comment: ---

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	1.2	74.0	24.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	96		
#20	0.85	93		
#40	0.42	86		
#60	0.25	71		
#100	0.15	49		
#200	0.075	25		

Coefficients

D_{85} = 0.4138 mm	D_{30} = 0.0872 mm
D_{60} = 0.1939 mm	D_{15} = N/A
D_{50} = 0.1541 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

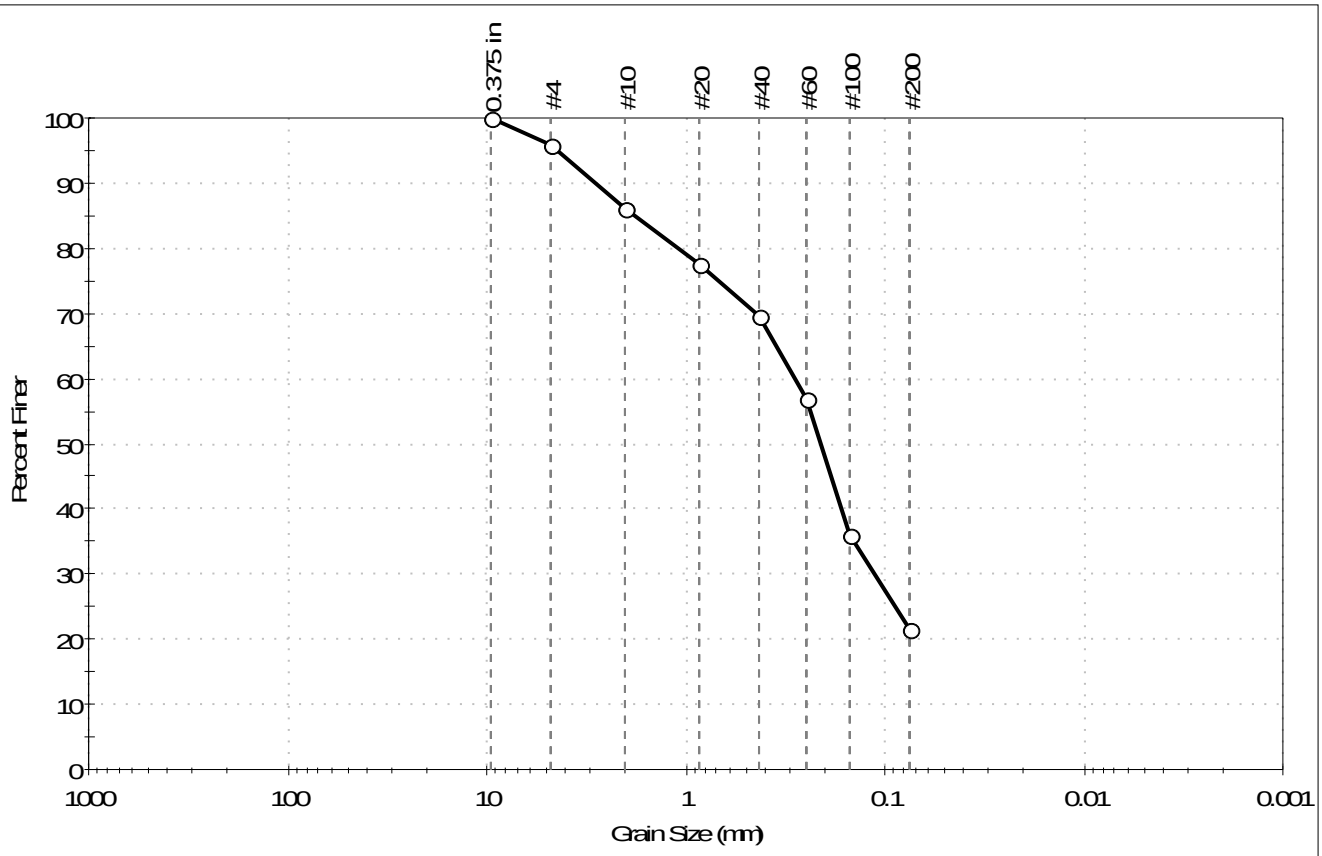
Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-3	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341275		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	4.1	74.2	21.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	96		
#10	2.00	86		
#20	0.85	78		
#40	0.42	70		
#60	0.25	57		
#100	0.15	36		
#200	0.075	22		

Coefficients

D_{85} = 1.7785 mm	D_{30} = 0.1126 mm
D_{60} = 0.2844 mm	D_{15} = N/A
D_{50} = 0.2114 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

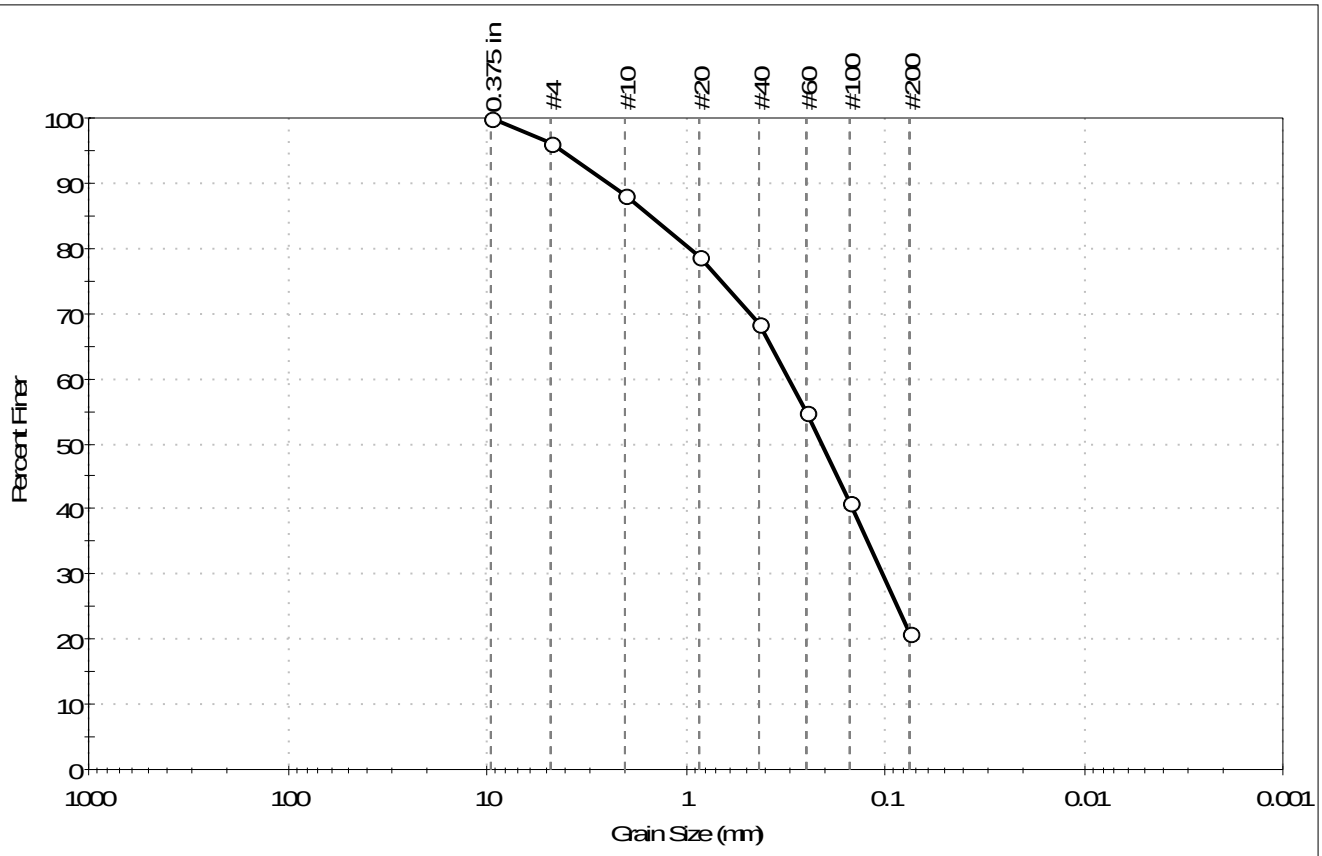
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-3	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	18.5-20 ft	Test Id:	341276		
Test Comment:	---				
Visual Description:	Moist, light olive brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	3.9	75.3	20.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	96		
#10	2.00	88		
#20	0.85	79		
#40	0.42	68		
#60	0.25	55		
#100	0.15	41		
#200	0.075	21		

Coefficients

D_{85} = 1.5038 mm	D_{30} = 0.1027 mm
D_{60} = 0.3063 mm	D_{15} = N/A
D_{50} = 0.2091 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

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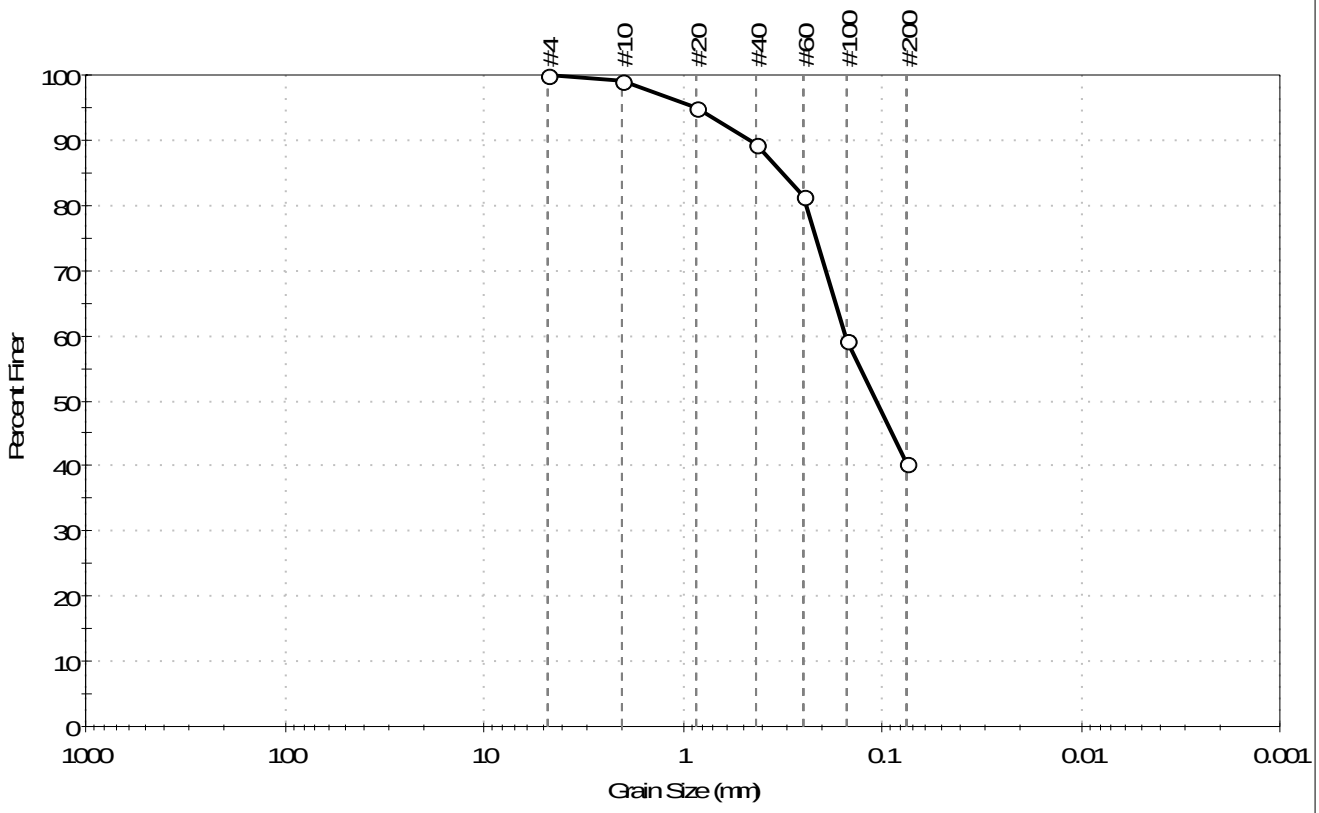
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-4	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341277		
Test Comment:	---				
Visual Description:	Moist, dark grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.0	59.5	40.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	95		
#40	0.42	89		
#60	0.25	81		
#100	0.15	59		
#200	0.075	41		

Coefficients

D_{85} = 0.3192 mm D_{30} = N/A
D_{60} = 0.1528 mm D_{15} = N/A
D_{50} = 0.1066 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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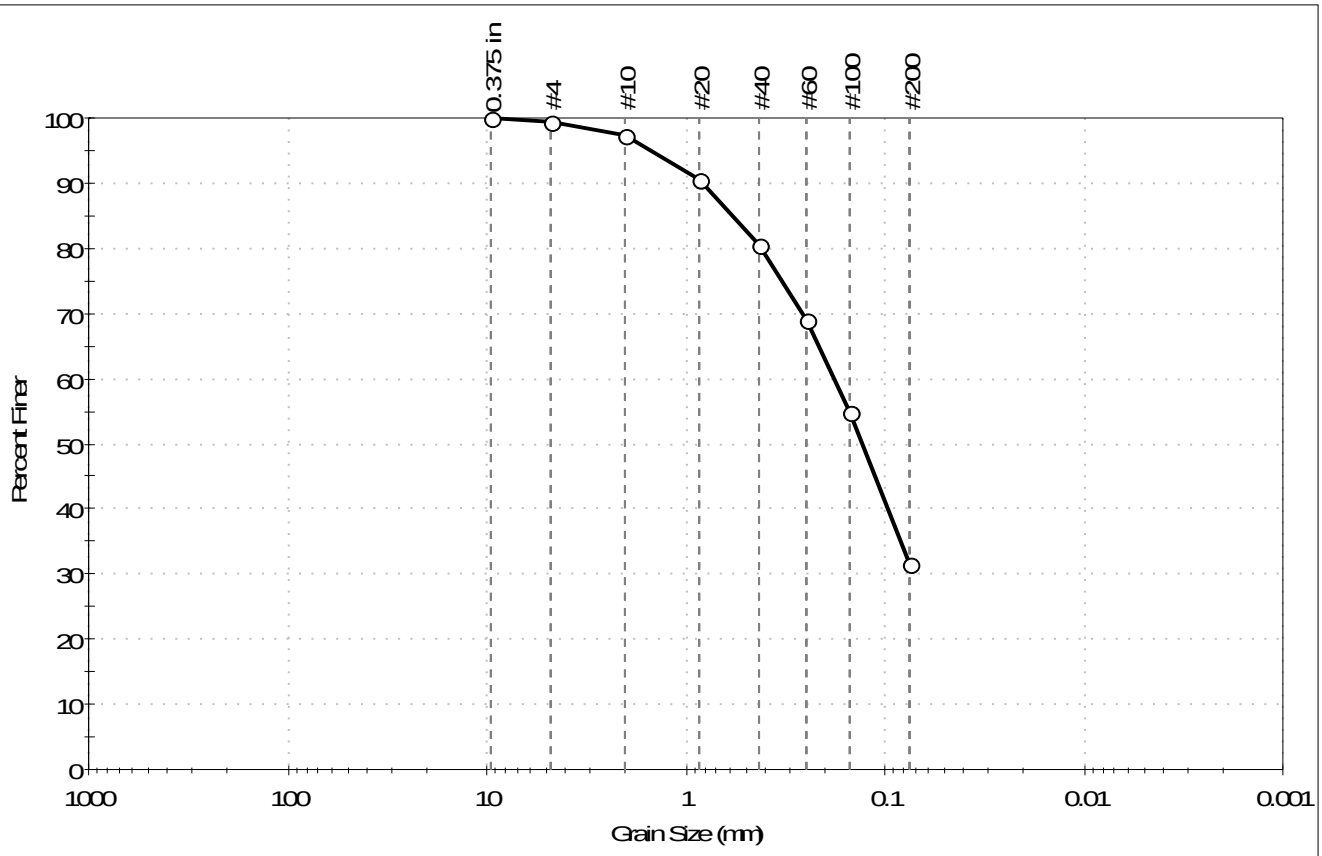
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-4	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	18.5-20 ft	Test Id:	341278		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.7	67.8	31.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	97		
#20	0.85	91		
#40	0.42	81		
#60	0.25	69		
#100	0.15	55		
#200	0.075	31		

Coefficients

D_{85} = 0.5759 mm	D_{30} = N/A
D_{60} = 0.1806 mm	D_{15} = N/A
D_{50} = 0.1300 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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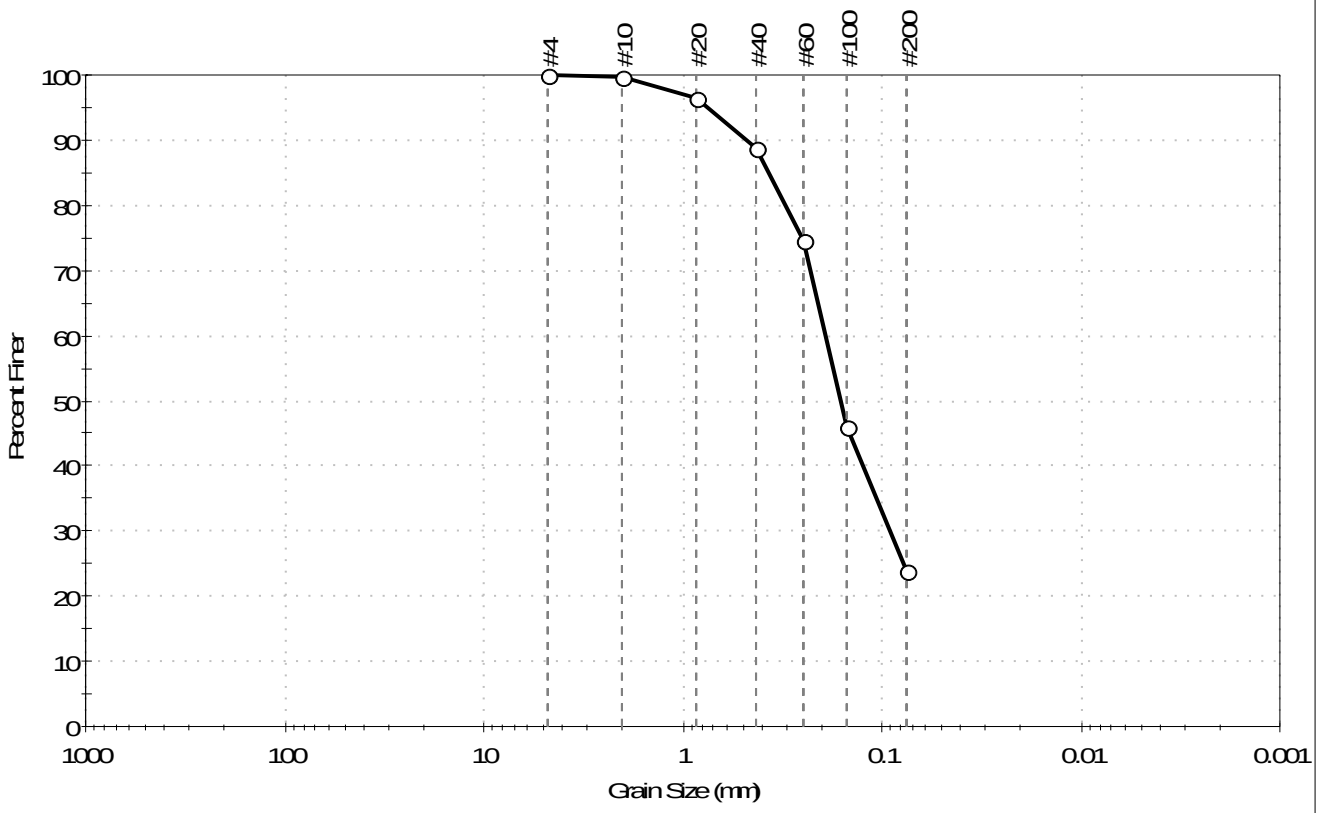
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-5	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	3.5-5 ft	Test Id:	341279		
Test Comment:	---				
Visual Description:	Moist, dark grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.0	76.3	23.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	96		
#40	0.42	89		
#60	0.25	75		
#100	0.15	46		
#200	0.075	24		

Coefficients

D_{85} = 0.3688 mm	D_{30} = 0.0911 mm
D_{60} = 0.1928 mm	D_{15} = N/A
D_{50} = 0.1612 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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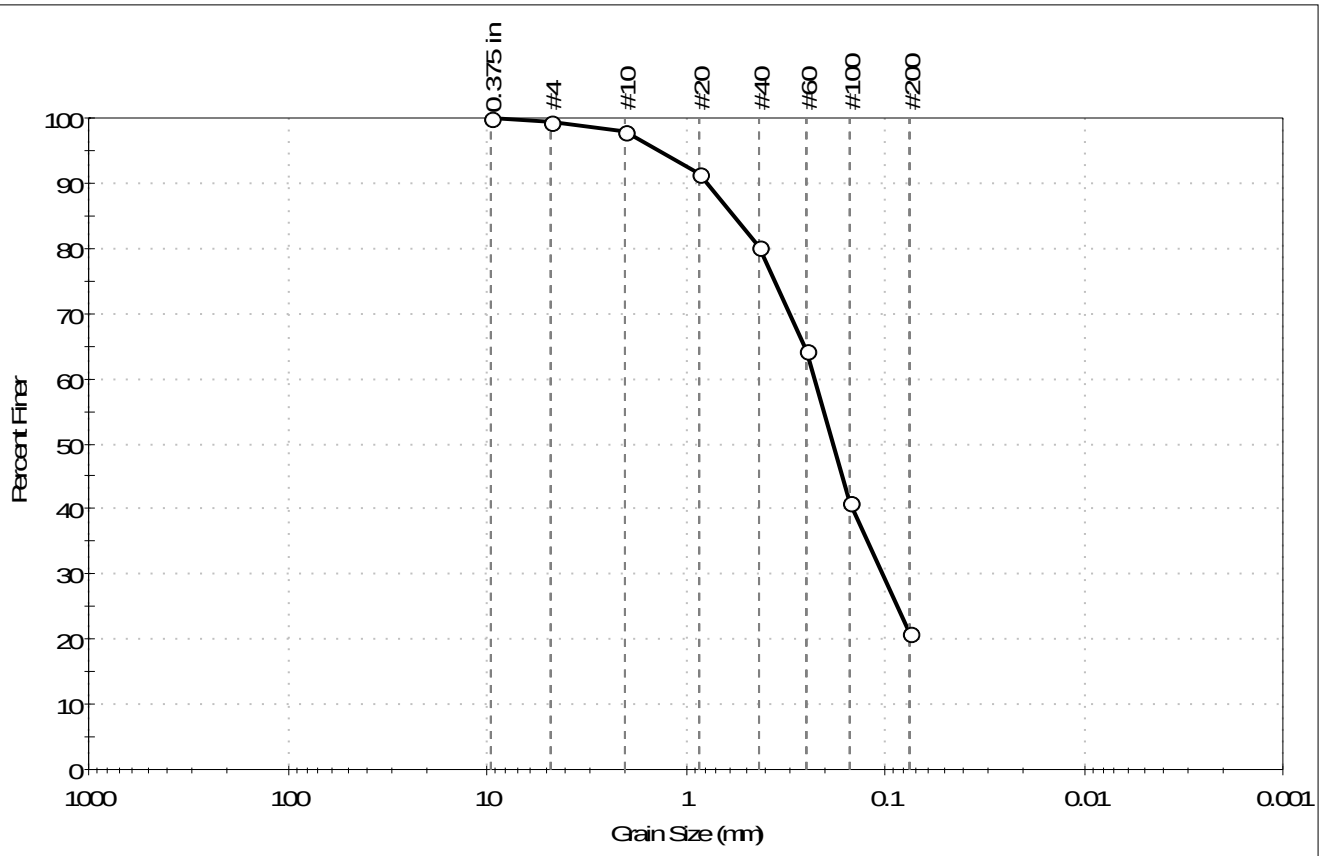
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-5	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341280		
Test Comment:	---				
Visual Description:	Moist, dark grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.7	78.3	21.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	98		
#20	0.85	92		
#40	0.42	80		
#60	0.25	64		
#100	0.15	41		
#200	0.075	21		

Coefficients

D_{85} = 0.5685 mm	D_{30} = 0.1025 mm
D_{60} = 0.2273 mm	D_{15} = N/A
D_{50} = 0.1828 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

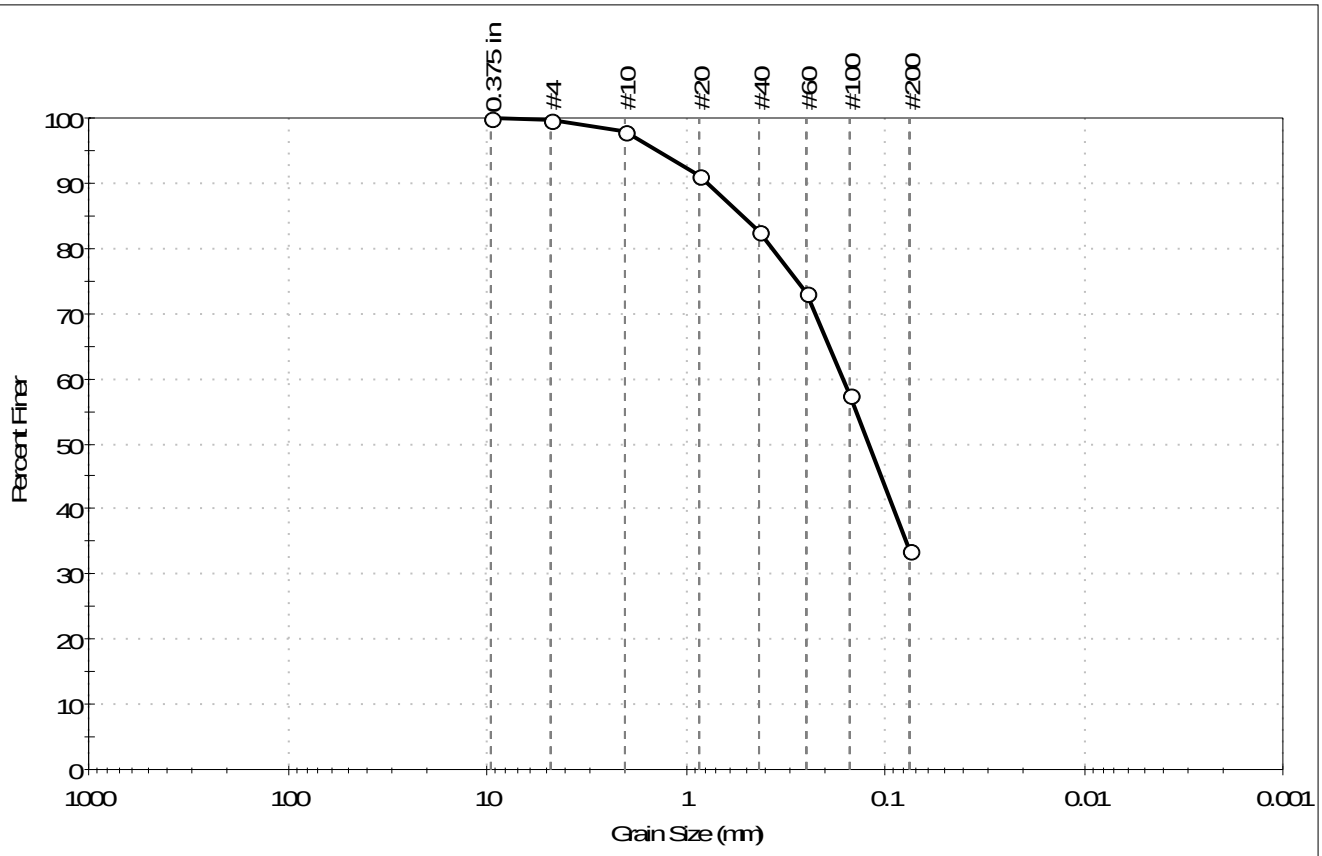
Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-6	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	3.5-5 ft	Test Id:	341281		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	0.3	66.0	33.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	98		
#20	0.85	91		
#40	0.42	83		
#60	0.25	73		
#100	0.15	58		
#200	0.075	34		

Coefficients

D_{85} = 0.5180 mm	D_{30} = N/A
D_{60} = 0.1622 mm	D_{15} = N/A
D_{50} = 0.1202 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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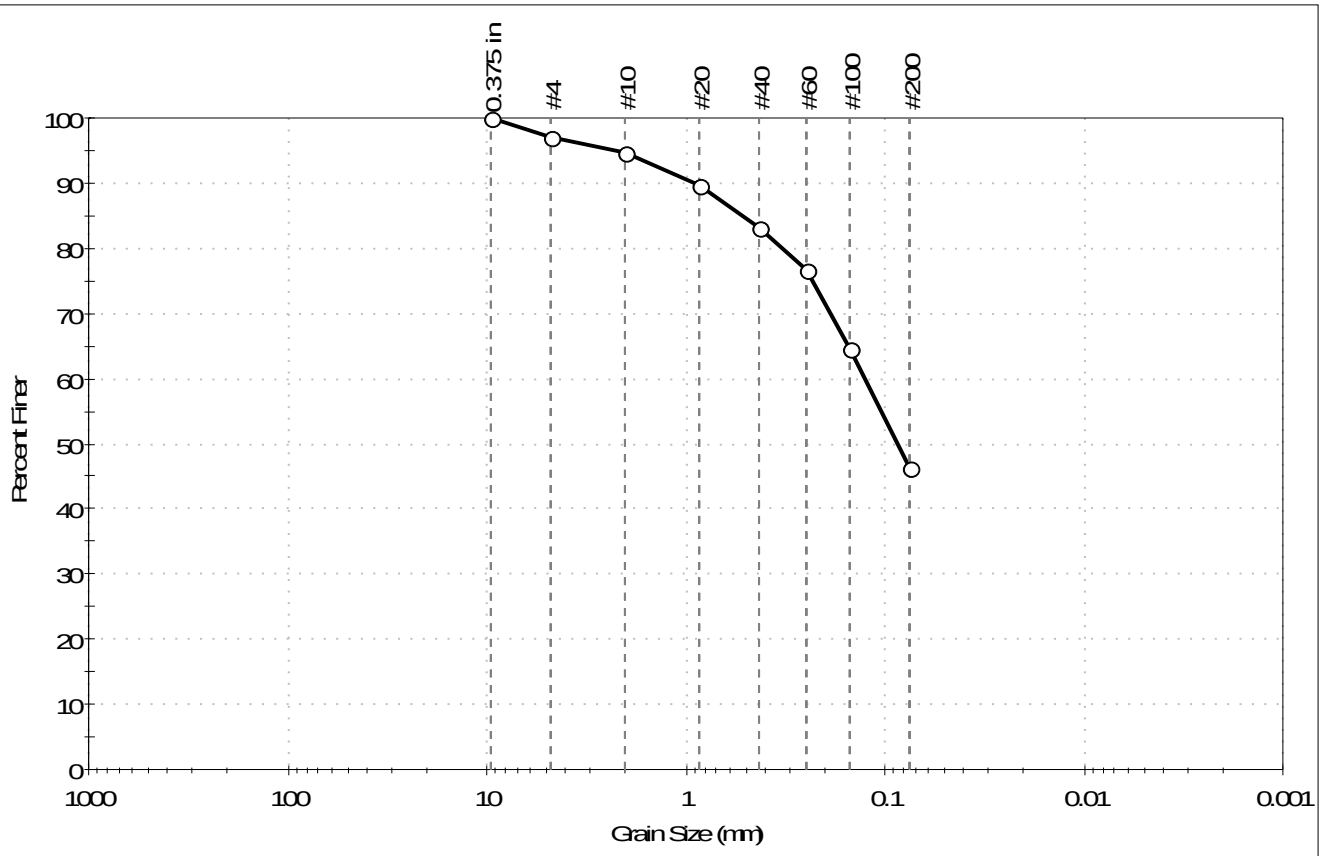
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-6	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	8.5-10 ft	Test Id:	341282		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	2.9	50.9	46.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	97		
#10	2.00	95		
#20	0.85	90		
#40	0.42	83		
#60	0.25	77		
#100	0.15	65		
#200	0.075	46		

Coefficients

D_{85} = 0.5160 mm	D_{30} = N/A
D_{60} = 0.1262 mm	D_{15} = N/A
D_{50} = 0.0866 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

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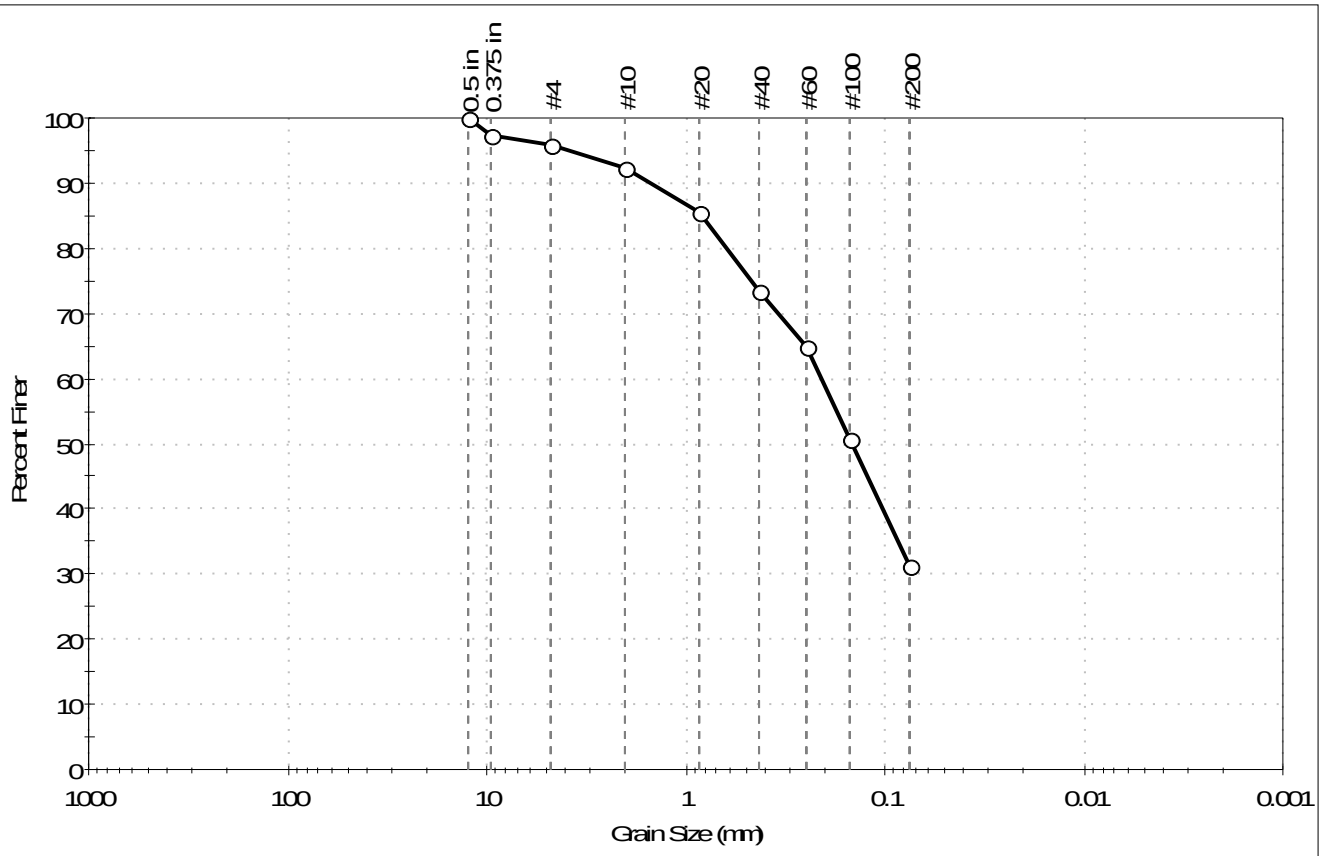
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-7	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	3.5-5 ft	Test Id:	341283		
Test Comment:	---				
Visual Description:	Moist, brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	4.0	64.6	31.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	97		
#4	4.75	96		
#10	2.00	92		
#20	0.85	85		
#40	0.42	73		
#60	0.25	65		
#100	0.15	51		
#200	0.075	31		

Coefficients

D_{85} = 0.8305 mm D_{30} = N/A

D_{60} = 0.2100 mm D_{15} = N/A

D_{50} = 0.1468 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

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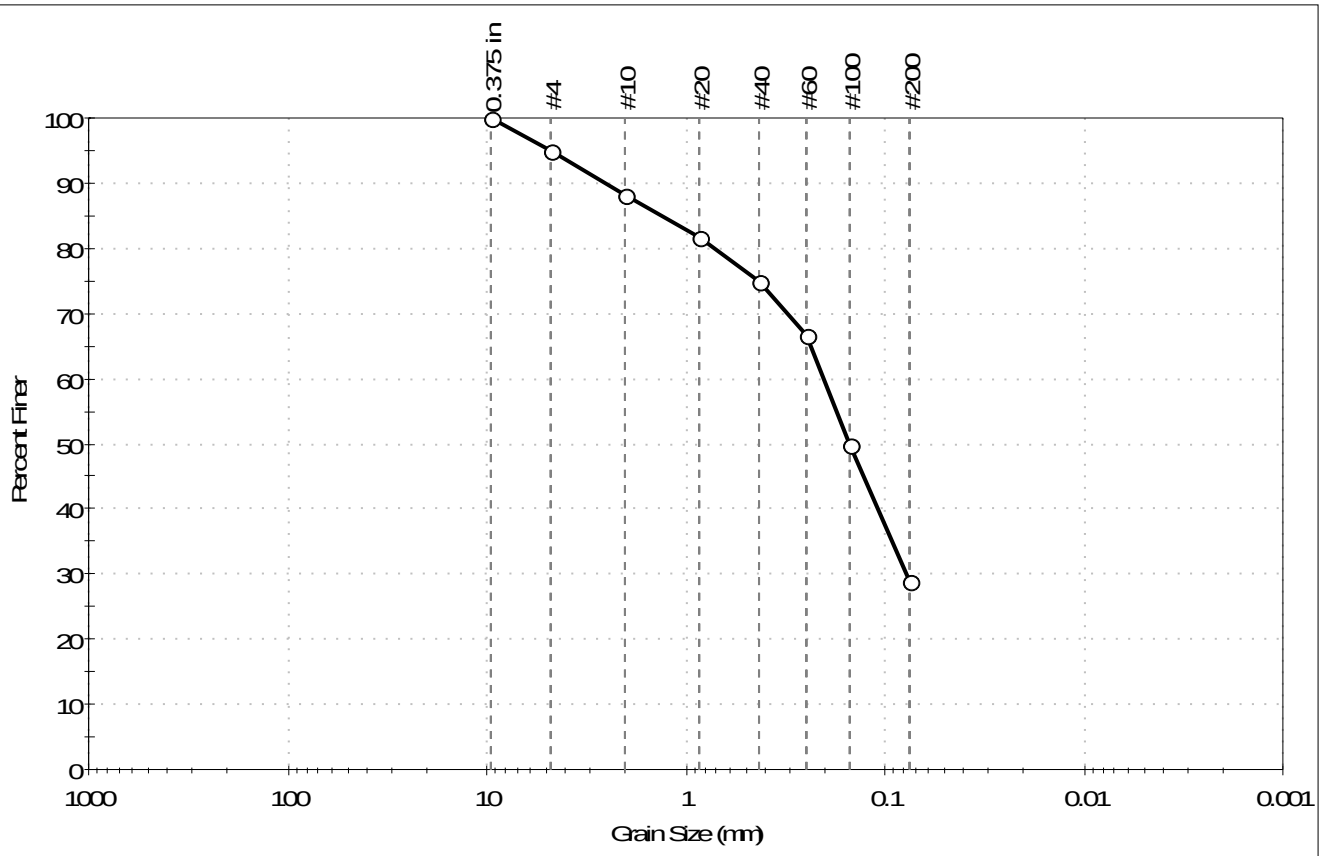
Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-7	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/06/15	Checked By:	mcm
Depth :	6-7.5 ft	Test Id:	341284		
Test Comment:	---				
Visual Description:	Moist, brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
—	5.0	66.0	29.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	95		
#10	2.00	88		
#20	0.85	82		
#40	0.42	75		
#60	0.25	67		
#100	0.15	50		
#200	0.075	29		

Coefficients

D_{85} = 1.2988 mm	D_{30} = 0.0775 mm
D_{60} = 0.2037 mm	D_{15} = N/A
D_{50} = 0.1507 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

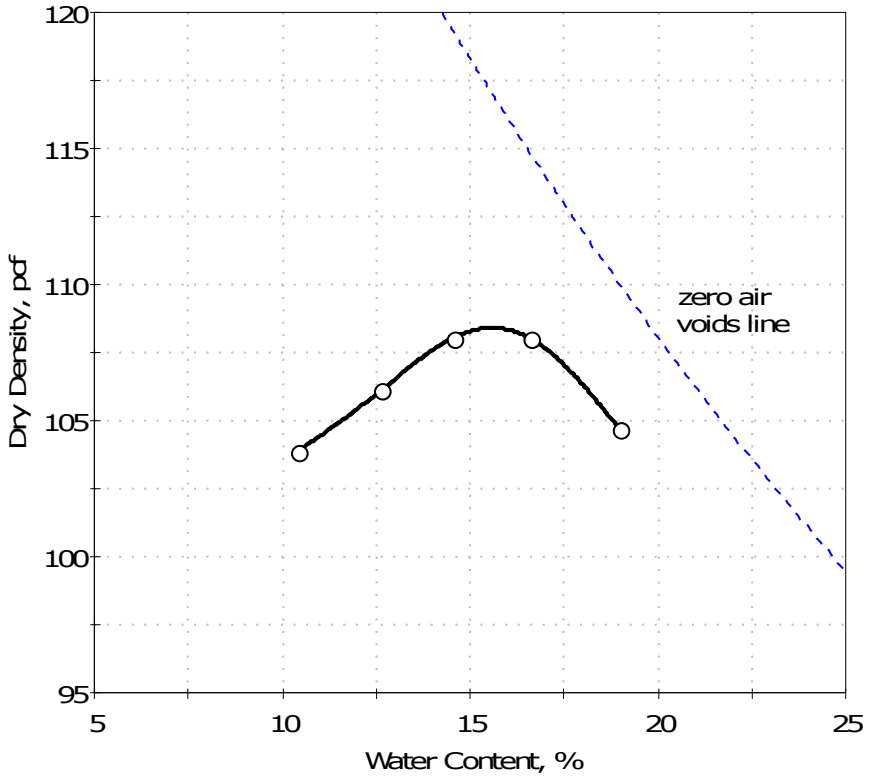
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : SOFT

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-1	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/05/15	Checked By:	mcm
Depth :	0-10 ft	Test Id:	341286		
Test Comment:	---				
Visual Description:	Moist, reddish brown sandy silt				
Sample Comment:	---				

Compaction Report - ASTM D698



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	103.9	106.1	108.0	108.0	104.7
Moisture Content, %	10.4	12.6	14.6	16.6	19.0

Method : A

Preparation : WET

As received Moisture :---

Rammer : Manual

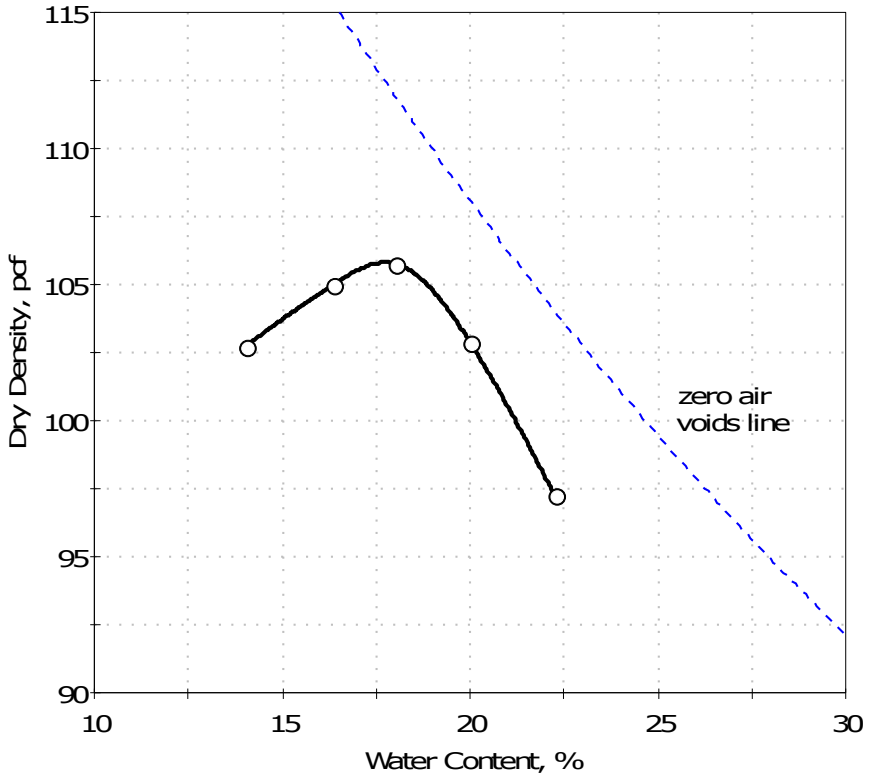
Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 108.4 pcf

Optimum Moisture= 15.6 %

Client:	Accura Engineering and Consult				
Project:	ABL Ponce De Leon				
Location:	---			Project No:	GTX-303511
Boring ID:	B-1	Sample Type:	bag	Tested By:	GA
Sample ID:	---	Test Date:	08/05/15	Checked By:	mcm
Depth :	10-20 ft	Test Id:	341287		
Test Comment:	---				
Visual Description:	Moist, reddish brown sandy silt				
Sample Comment:	---				

Compaction Report - ASTM D698



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	102.7	105.0	105.8	102.8	97.3
Moisture Content, %	14.0	16.3	18.0	20.0	22.2

Method : A

Preparation : WET

As received Moisture :----

Rammer : Manual

Zero voids line based on assumed specific gravity of 2.65

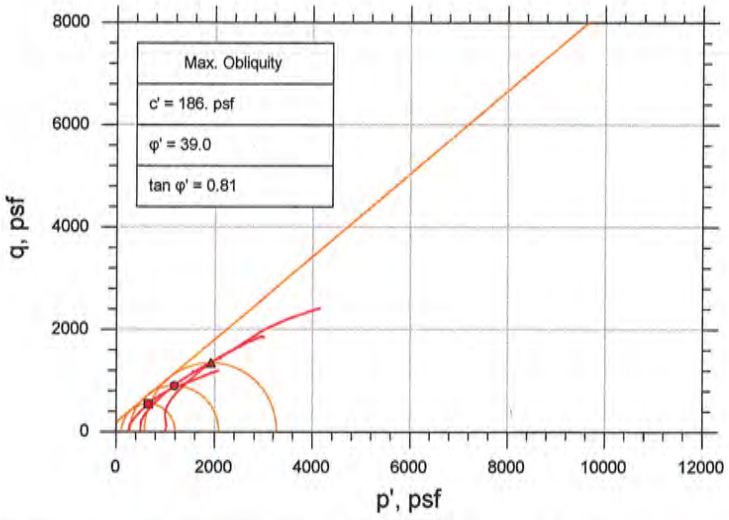
Maximum Dry Density= 105.8 pcf

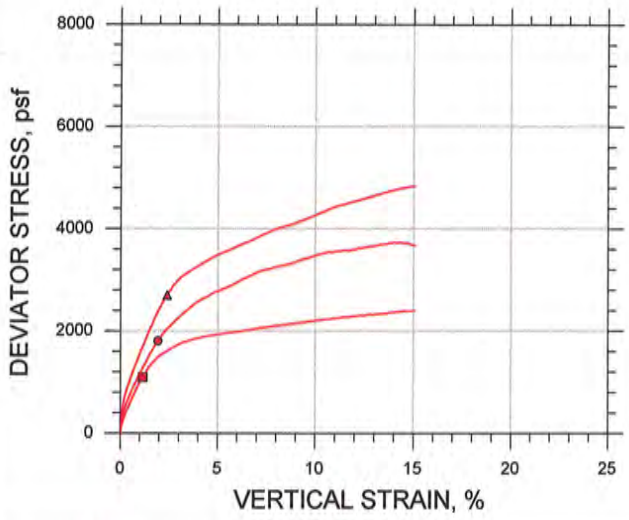
Optimum Moisture= 17.7 %

GeoTesting EXPRESS

Client: Accura Engineering and Consulting Services, Inc.	
Project Name: ABL Ponce De Leon	
Project Location: ---	
Project Number: GTX-303511	
Tested By: jm	Checked By: mcm
Boring ID: B-4	
Preparation: intact	
Description: Moist, dark yellowish brown silty sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





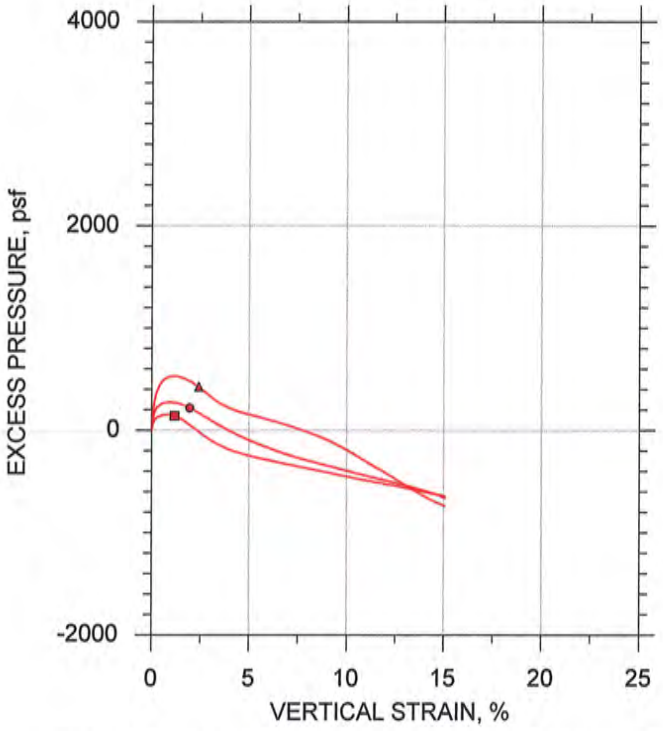
Symbol		■	●	▲	
Sample ID		---	---	---	
Depth, ft		6-8 ft	6-8 ft	6-8 ft	
Test Number		CU-3-1	CU-3-2	CU-3-3	
Initial	Height, in	5.909	6.330	6.423	
	Diameter, in	2.860	2.870	2.870	
	Moisture Content (from Cuttings), %	28.0	22.8	16.6	
	Dry Density, pcf	80.2	73.6	90.4	
	Saturation (Wet Method), %	68.8	47.7	51.7	
	Void Ratio	1.10	1.29	0.865	
Before Shear	Moisture Content, %	40.6	48.1	31.4	
	Dry Density, pcf	80.4	73.3	91.2	
	Cross-sectional Area (Method A), in²	6.414	6.489	6.436	
	Saturation, %	100.0	100.0	100.0	
	Void Ratio	1.10	1.30	0.847	
	Back Pressure, psf	1.554e+004	1.999e+004	1.943e+004	
Vertical Effective Consolidation Stress, psf		249.4	499.1	997.4	
Horizontal Effective Consolidation Stress, psf		249.2	499.4	998.7	
Vertical Strain after Consolidation, %		0.04787	0.08515	0.4661	
Volumetric Strain after Consolidation, %		0.1177	0.1433	1.012	
Time to 50% Consolidation, min		0.3600	0.3600	0.3600	
Shear Strength, psf		547.5	903.7	1348.	
Strain at Failure, %		1.15	1.93	2.40	
Strain Rate, %/min		0.01600	0.01600	0.01600	
Deviator Stress at Failure, psf		1095.	1807.	2697.	
Effective Minor Principal Stress at Failure, psf		107.7	277.9	574.6	
Effective Major Principal Stress at Failure, psf		1203.	2085.	3271.	
B-Value		0.95	0.96	0.96	

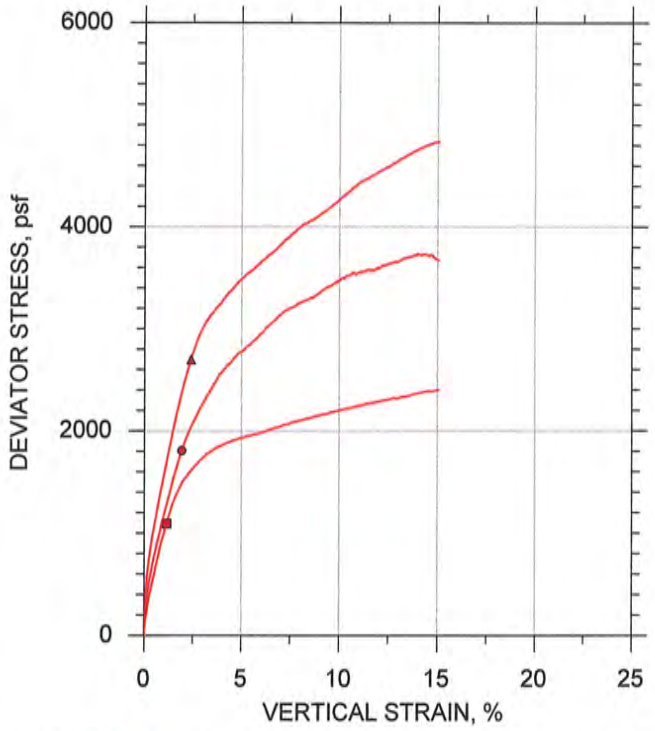
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

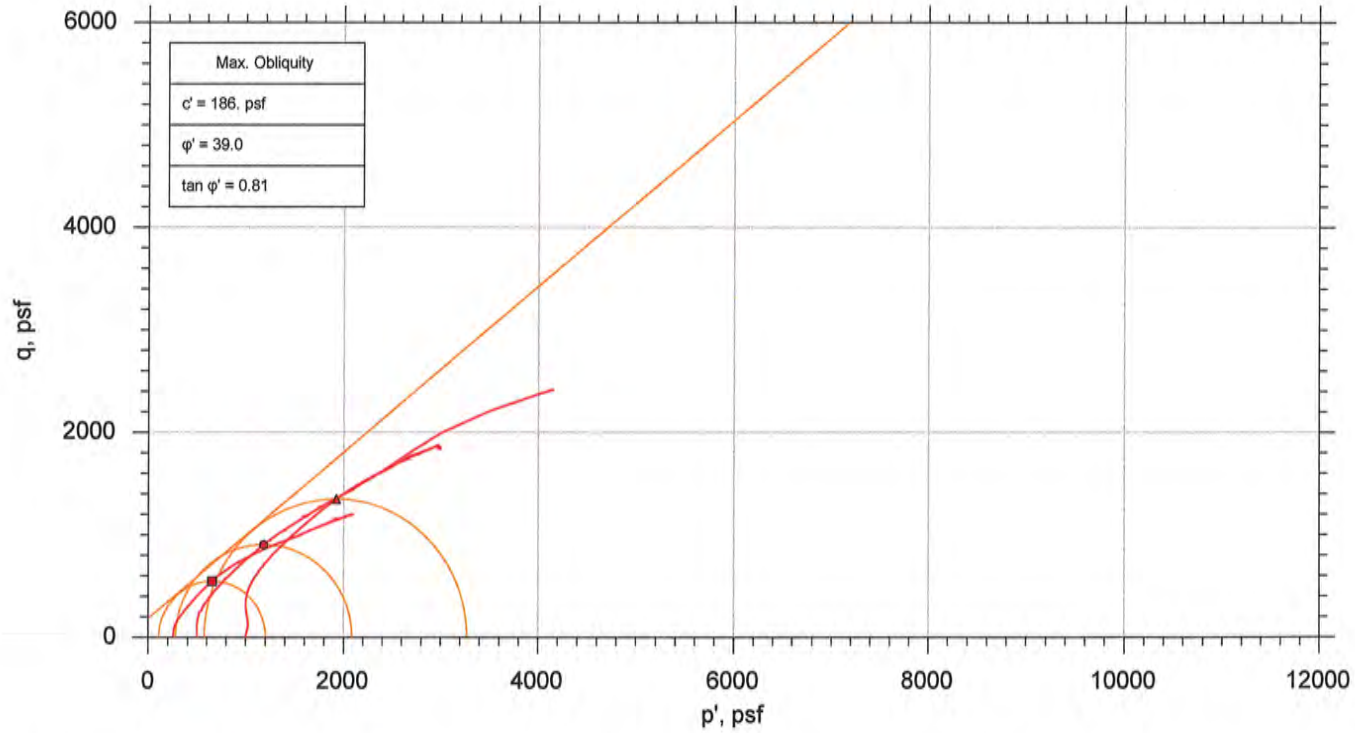
Remarks:

System A

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	---	CU-3-1	6-8 ft	jm	7/29/15	mcm	8/5/15	303511-CU-3-1m.dat
●	---	CU-3-2	6-8 ft	jm	7/29/15	mcm	8/5/15	303511-CU-3-2m.dat
▲	---	CU-3-3	6-8 ft	jm	7/29/15	mcm	8/5/15	303511-CU-3-3m.dat

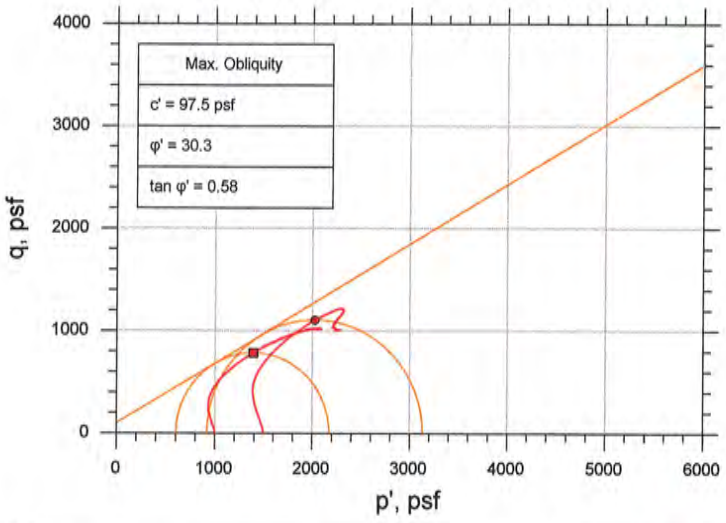
GeoTesting EXPRESS

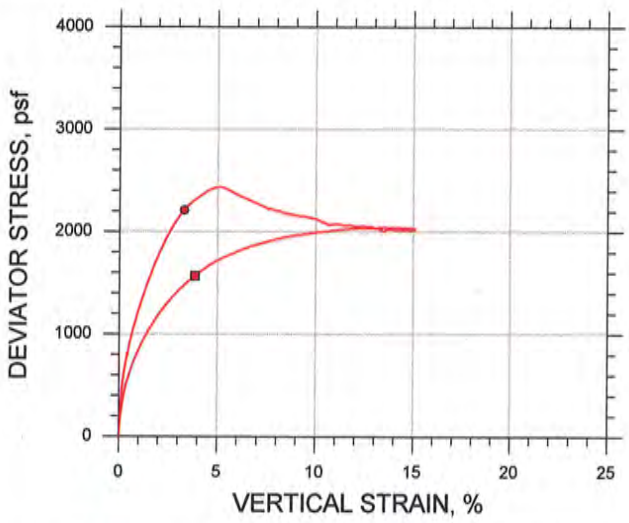
Project: ABL Ponce De Leon	Location: ---	Project No.: GTX-303511
Boring No.: B-4	Sample Type: intact	
Description: Moist, dark yellowish brown silty sand		
Remarks: System A		

GeoTesting EXPRESS

Client: Accura Engineering and Consulting Services, Inc.	
Project Name: ABL Ponce De Leon	
Project Location: ---	
Project Number: GTX-303511	
Tested By: jm	Checked By: mcm
Boring ID: B-4	
Preparation: intact	
Description: Moist, dark yellowish brown silty sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





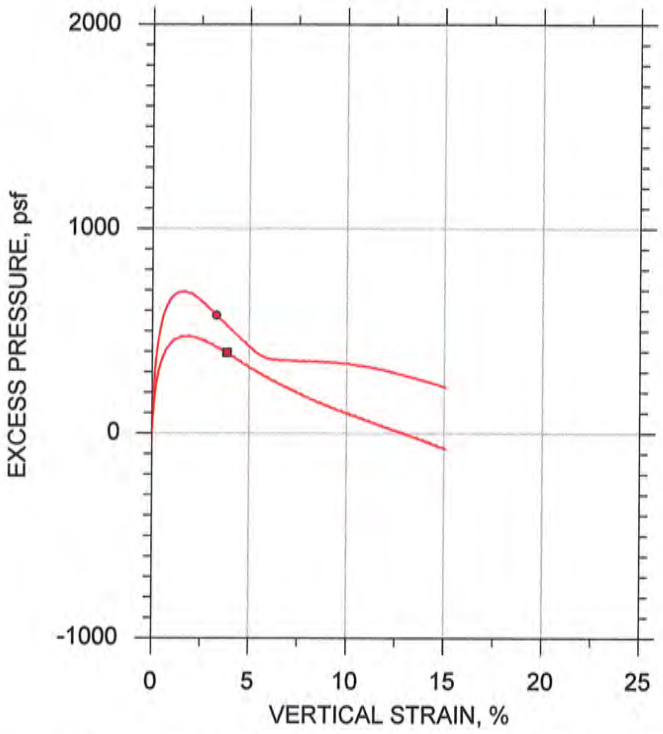
Symbol		■	●		
Sample ID		---	---		
Depth, ft		8-10 ft	8-10 ft		
Test Number		CU-4-2	CU-4-3		
Initial	Height, in	6.063	6.244		
	Diameter, in	2.860	2.860		
	Moisture Content (from Cuttings), %	19.2	18.2		
	Dry Density, pcf	77.9	80.8		
	Saturation (Wet Method), %	44.4	45.1		
	Void Ratio	1.16	1.09		
Before Shear	Moisture Content, %	45.2	40.9		
	Dry Density, pcf	75.9	80.1		
	Cross-sectional Area (Method A), in²	6.551	6.483		
	Saturation, %	100.0	100.0		
	Void Ratio	1.22	1.11		
	Back Pressure, psf	1.971e+004	1.943e+004		
Vertical Effective Consolidation Stress, psf		996.9	1497.		
Horizontal Effective Consolidation Stress, psf		999.9	1499.		
Vertical Strain after Consolidation, %		0.8163	0.9237		
Volumetric Strain after Consolidation, %		1.555	1.798		
Time to 50% Consolidation, min		0.0000	0.0000		
Shear Strength, psf		784.7	1105.		
Strain at Failure, %		3.85	3.30		
Strain Rate, %/min		0.01600	0.01600		
Deviator Stress at Failure, psf		1569.	2211.		
Effective Minor Principal Stress at Failure, psf		604.7	920.1		
Effective Major Principal Stress at Failure, psf		2174.	3131.		
B-Value		0.96	0.96		

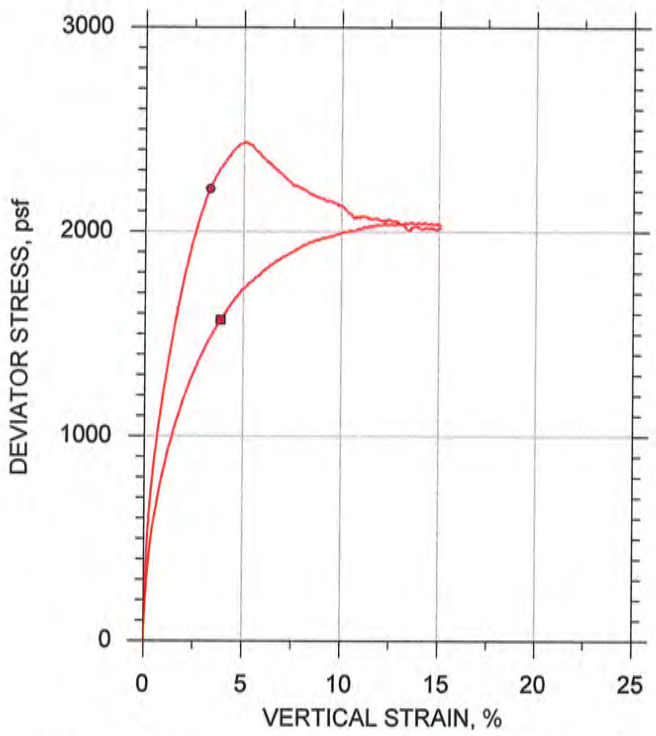
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

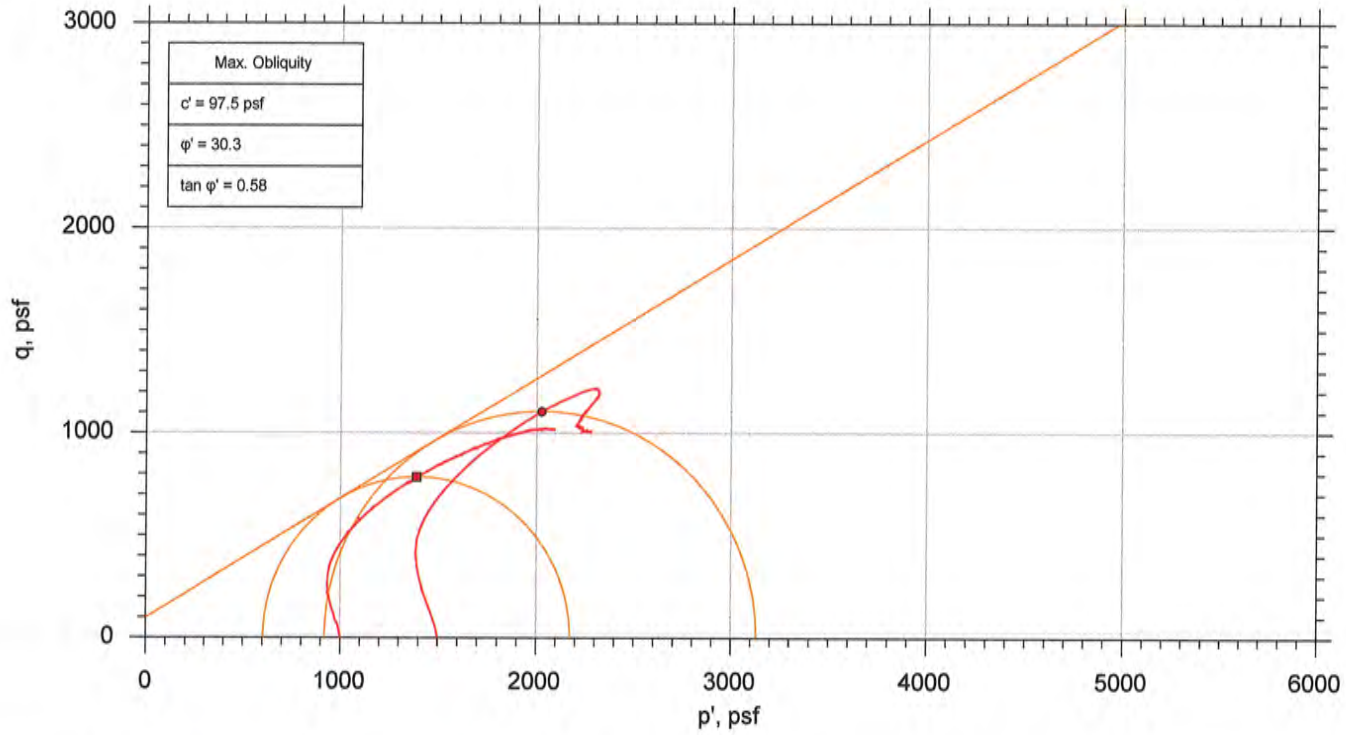
Remarks:

System 1057

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	---	CU-4-2	8-10 ft	jm	7/31/15	mcm	8/6/15	303511-CU-4-2m.dat
●	---	CU-4-3	8-10 ft	jm	7/31/15	mcm	8/6/15	303511-CU-4-3m.dat

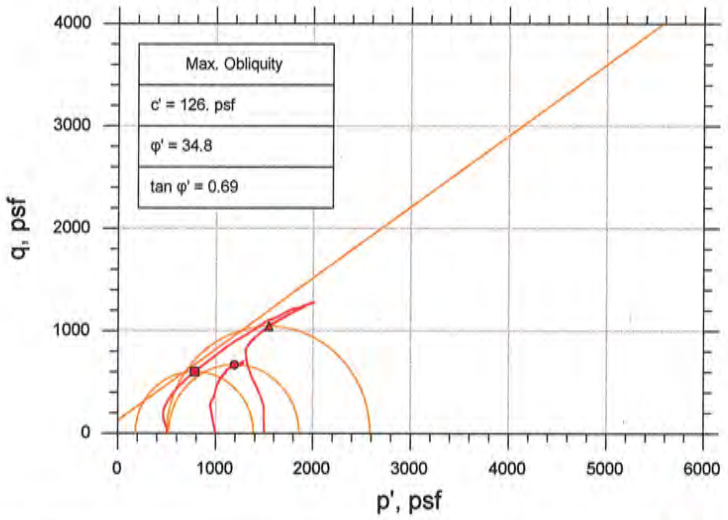
GeoTesting EXPRESS

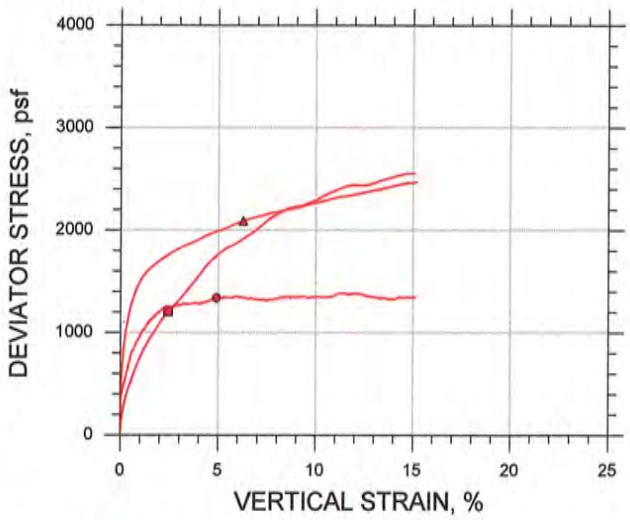
Project: ABL Ponce De Leon	Location: ---	Project No.: GTX-303511
Boring No.: B-4	Sample Type: intact	
Description: Moist, dark yellowish brown silty sand		
Remarks: System 1057		

GeoTesting EXPRESS

Client: Accura Engineering and Consulting Services, Inc	
Project Name: ABL Ponce De Leon	
Project Location: ---	
Project Number: GTX-303511	
Tested By: md	Checked By: mcm
Boring ID: B-4	
Preparation: intact	
Description: Moist reddish brown and yellow sand	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

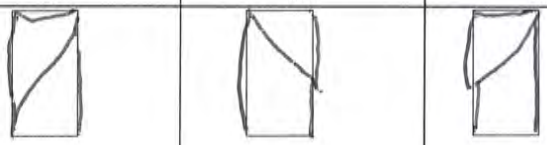
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲	
Sample ID		---	---	---	
Depth, ft		10-12 ft	10-12 ft	10-12 ft	
Test Number		CU-1-1	CU-1-2	CU-1-3	
Initial	Height, in	6.180	6.150	6.200	
	Diameter, in	2.860	2.860	2.860	
	Moisture Content (from Cuttings), %	34.8	23.0	22.5	
	Dry Density, pcf	71.2	66.2	76.1	
	Saturation (Wet Method), %	68.6	40.2	50.0	
	Void Ratio	1.37	1.55	1.21	
Before Shear	Moisture Content, %	49.2	54.5	43.4	
	Dry Density, pcf	72.4	68.2	77.6	
	Cross-sectional Area (Method A), in²	6.358	6.329	6.355	
	Saturation, %	100.0	100.0	100.0	
	Void Ratio	1.33	1.47	1.17	
	Back Pressure, psf	2.071e+004	2.029e+004	2.315e+004	
Vertical Effective Consolidation Stress, psf		498.4	993.7	1492.	
Horizontal Effective Consolidation Stress, psf		498.4	999.8	1497.	
Vertical Strain after Consolidation, %		0.1086	1.059	0.7545	
Volumetric Strain after Consolidation, %		0.07062	1.890	1.690	
Time to 50% Consolidation, min		0.5600	0.6400	0.7200	
Shear Strength, psf		602.8	670.8	1044.	
Strain at Failure, %		2.43	4.90	6.27	
Strain Rate, %/min		0.01600	0.01600	0.01600	
Deviator Stress at Failure, psf		1206.	1342.	2089.	
Effective Minor Principal Stress at Failure, psf		180.4	518.2	499.6	
Effective Major Principal Stress at Failure, psf		1386.	1860.	2588.	
B-Value		0.95	0.95	0.94	

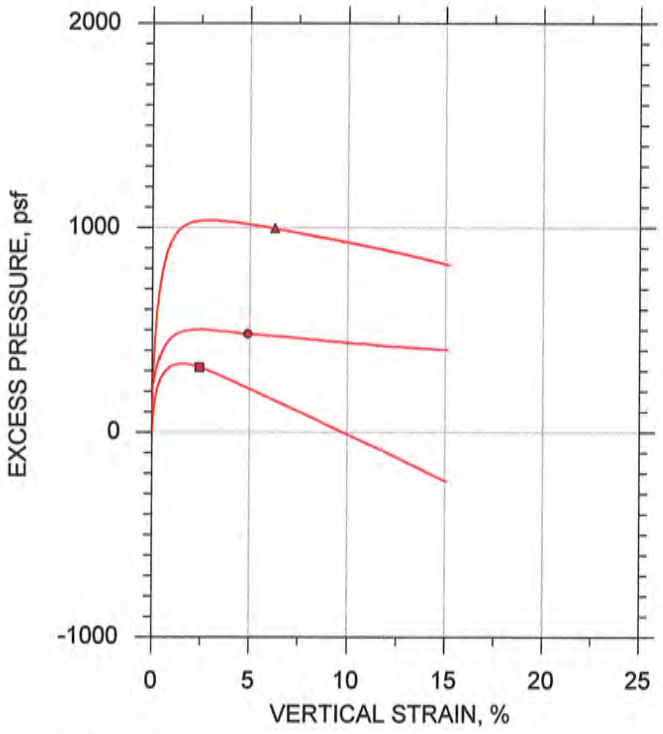
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

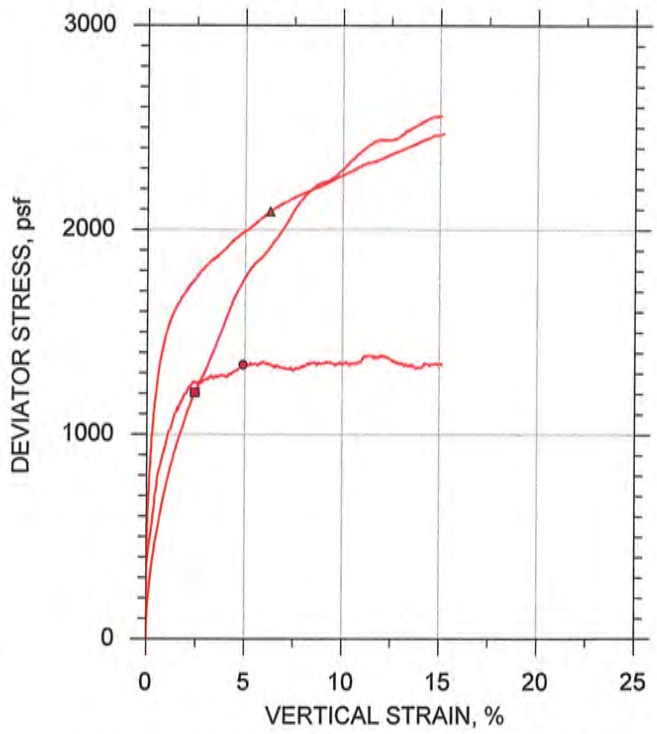


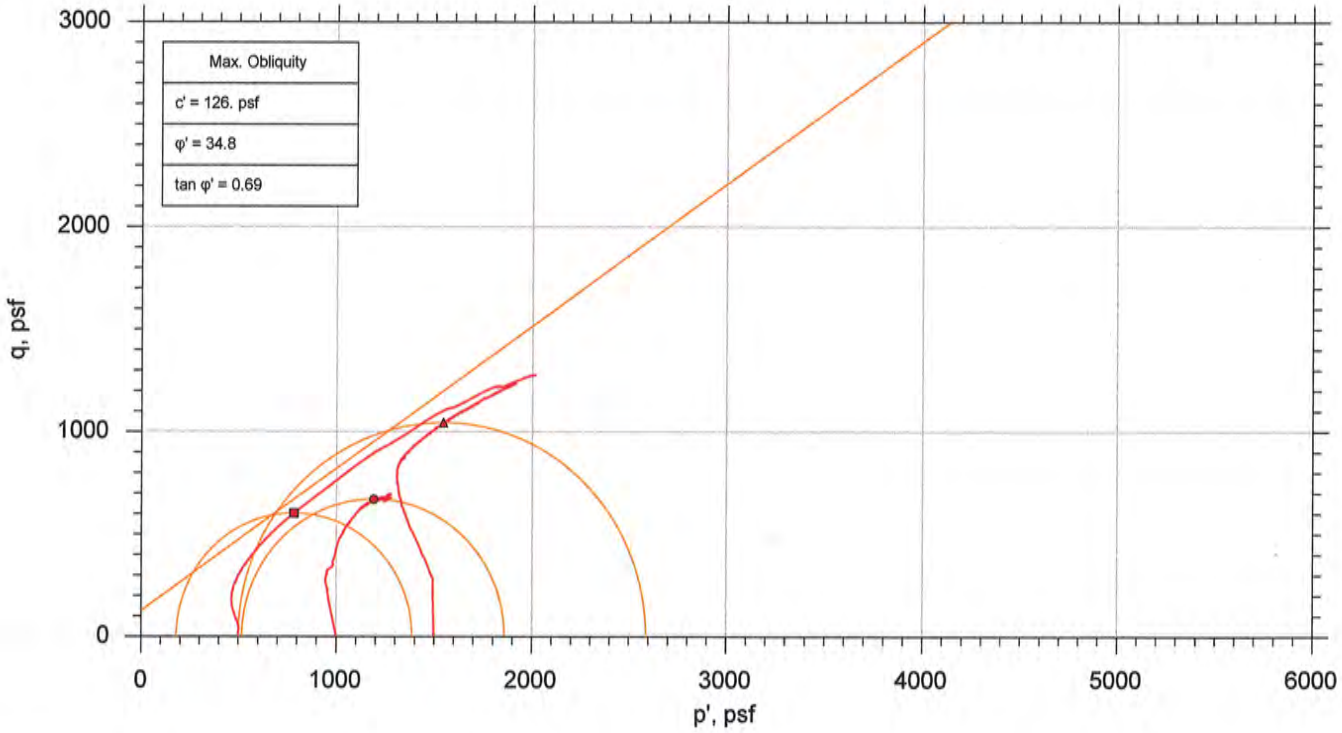
Remarks:

System Y

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	---	CU-1-1	10-12 ft	md	8/1/15	mcm	8/6/15	303511-CU-1-1m.dat
●	---	CU-1-2	10-12 ft	md	8/1/15	mcm	8/6/15	303511-CU-1-2m.dat
▲	---	CU-1-3	10-12 ft	md	8/1/15	mcm	8/6/15	303511-CU-1-3m.dat

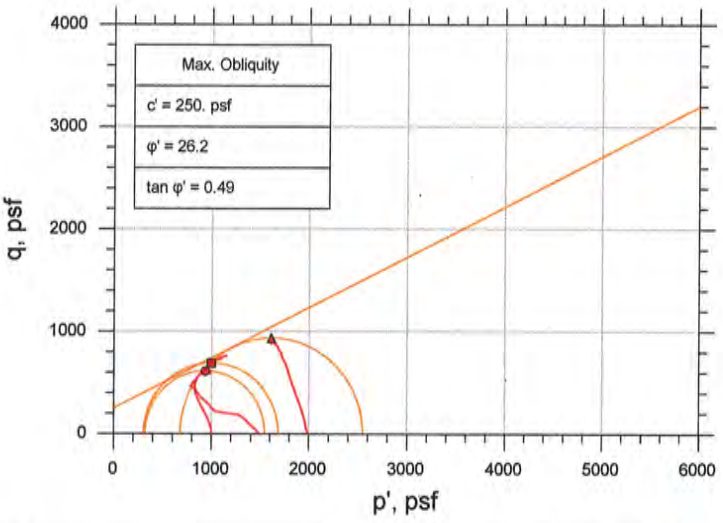
GeoTesting EXPRESS

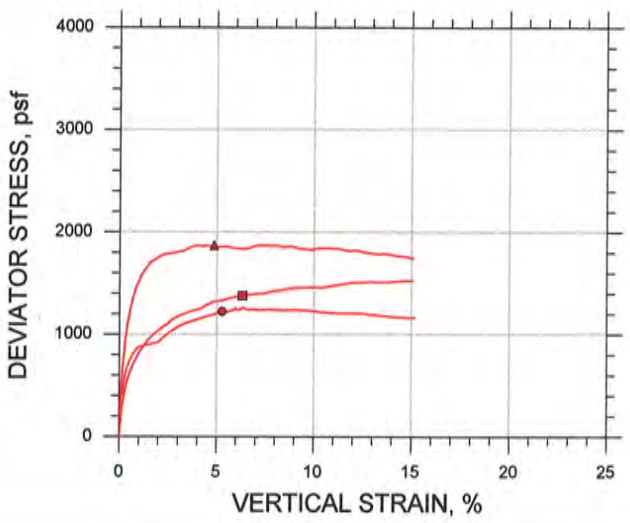
Project: ABL Ponce De Leon	Location: ---	Project No.: GTX-303511
Boring No.: B-4	Sample Type: intact	
Description: Moist reddish brown and yellow sand		
Remarks: System Y		

GeoTesting EXPRESS

Client: Accura Engineering and Consulting Services, Inc	
Project Name: ABL Ponce De Leon	
Project Location: ---	
Project Number: GTX-303511	
Tested By: md	Checked By: mcm
Boring ID: B-4	
Preparation: intact	
Description: Moist reddish brown silt	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

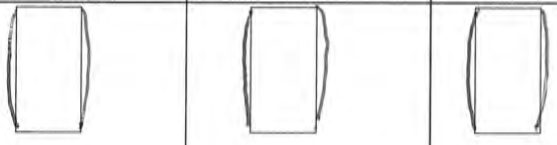
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		---	---	---
Depth, ft		12-14 ft	12-14 ft	12-14 ft
Test Number		CU-2-1	CU-2-2	CU-2-3
Initial	Height, in	6.190	6.210	6.140
	Diameter, in	2.860	2.860	2.860
	Moisture Content (from Cuttings), %	43.0	43.9	47.9
	Dry Density, pcf	52.5	56.6	55.2
	Saturation (Wet Method), %	52.4	59.9	63.0
	Void Ratio	2.21	1.98	2.06
Before Shear	Moisture Content, %	78.5	61.8	70.2
	Dry Density, pcf	54.0	63.1	58.2
	Cross-sectional Area (Method A), in²	6.304	5.960	6.221
	Saturation, %	100.0	100.0	100.0
	Void Ratio	2.12	1.67	1.90
	Back Pressure, psf	2.056e+004	2.031e+004	2.173e+004
Vertical Effective Consolidation Stress, psf		994.5	1466.	1987.
Horizontal Effective Consolidation Stress, psf		999.1	1491.	2000.
Vertical Strain after Consolidation, %		0.5836	3.119	1.632
Volumetric Strain after Consolidation, %		1.548	9.629	3.796
Time to 50% Consolidation, min		0.6400	0.3600	0.3600
Shear Strength, psf		690.1	612.9	934.5
Strain at Failure, %		6.33	5.28	4.85
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psf		1380.	1226.	1869.
Effective Minor Principal Stress at Failure, psf		306.9	320.7	679.8
Effective Major Principal Stress at Failure, psf		1687.	1546.	2549.
B-Value		0.95	0.96	0.95

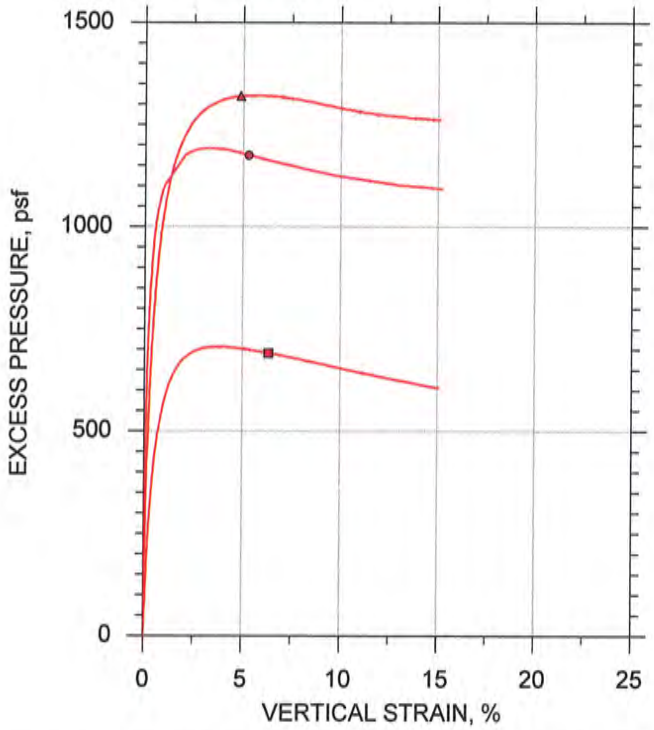
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

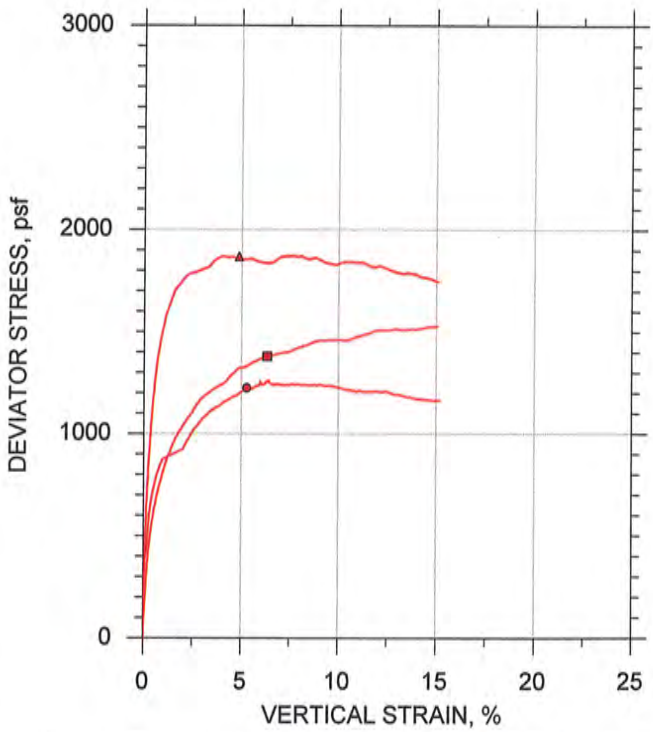


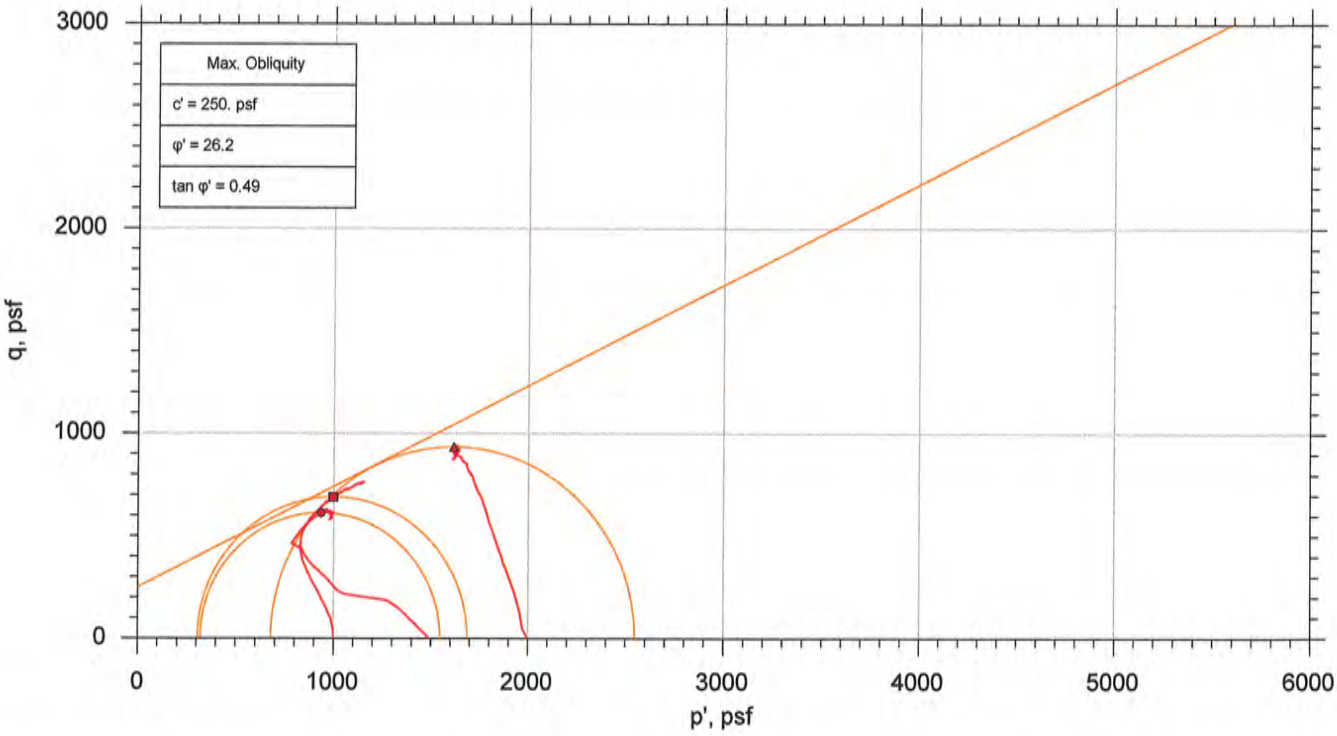
Remarks:

System R

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	---	CU-2-1	12-14 ft	md	8/1/15	mcm	8/6/15	303511-CU-2-1m.dat
●	---	CU-2-2	12-14 ft	md	8/3/15	mcm	8/6/15	303511-CU-2-2m.dat
▲	---	CU-2-3	12-14 ft	md	8/1/15	mcm	8/6/15	303511-CU-2-3m.dat

GeoTesting EXPRESS

Project: ABL Ponce De Leon	Location: ---	Project No.: GTX-303511
Boring No.: B-4	Sample Type: intact	
Description: Moist reddish brown silt		
Remarks: System R		

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you*—should apply the report for any purpose or project except the one originally contemplated.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject To Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations", many of these provisions indicate where geotechnical engineers responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Rely on Your Geotechnical Engineer for Additional Assistance

Membership in ASFE exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE PROFESSIONAL FIRMS PRACTICING IN THE GEOSCIENCES

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