F&ME
CONSULTANTS

May 30, 2019

Tilley Bull, P.E.
Vice President of Transportation Engineering
Davis & Floyd, Inc.
3229 West Montague Avenue
North Charleston, SC 29418

Re: Final Roadway Geotechnical Report
Improvements to Brick Chimney Road (REVISED)
Georgetown, South Carolina
F&ME Proposal No.: G2017097 (4th Revision)
F&ME File No.: G5839.00

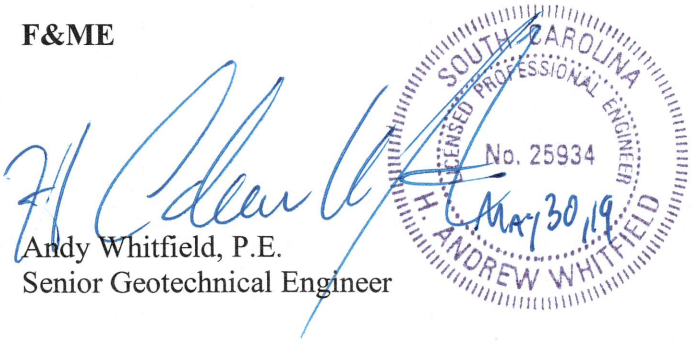
Dear Mr. Bull:

F&ME Consultants, Inc. (F&ME) is pleased to submit our revised final geotechnical engineering report for the improvements to Brick Chimney Road in Georgetown, South Carolina. The report includes boring logs, results from our laboratory testing program, and recommendations for roadway construction.

It has been a pleasure working for you on this project and we appreciate the opportunity to be of service. Please notify us if there are any questions or if we may be of further assistance with the implementation of our recommendations.

Sincerely,

F&ME



Andy Whitfield, P.E.
Senior Geotechnical Engineer

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APPENDICES

A. GENERAL PROJECT INFORMATION

The improvement project includes two (2) phases of roadway improvements to Brick Chimney Road near Georgetown in Georgetown County, South Carolina. F&ME understands that Phase 1 will include approximately 2.4 miles of improvements to the existing roadway between S-318 (Johnson Road) and SC 51 (Browns Ferry Road). The Phase 1 improvements will include two (2) 12-foot lanes and 10-foot shoulders that will accommodate a 55-mph roadway design speed. Phase 1 will also include a new culvert crossing over International Paper's Canal (IP Canal). Phase 1 will be designed for a future expansion to a 4-lane divided roadway. A map of the project location is shown on the Site Location Plan (Figure 1) in Appendix A.

Phase 2 will involve planning an approximately 2.4 mile long, 55-mph design speed new roadway corridor from the improved Brick Chimney Road terminus at Browns Ferry Road, included in the Phase 1 improvements, to US 701. F&ME's work on Phase 2 is a reconnaissance level exploration to aid in alignment selection for the new roadway alignment and will compliment a future final geotechnical exploration.

The boring plan was developed from the 30% plans provided by Lindsey Keziah of Davis & Floyd, Inc. (D&F) in an August 21, 2018 e-mail. Borings were spaced about every five-hundred (500) linear feet along the alignment in Phase 1 and about every one-thousand (1,000) linear feet along the alignment in Phase 2. F&ME also performed a boring on each side of the IP Canal in Phase 1.

Clearing for drill rig access was not needed on Phase 1. The alignment for Phase 1 generally follows the alignment of an existing haul road constructed of crushed slag. The original intent was for F&ME to conduct borings along a path cleared by the surveyor in Phase 2, but the surveyor's clearing was not sufficient for access by F&ME. Tilley Bull of D&F provided approval for F&ME to conduct clearing for drill rig access on Phase 2 in an August 16, 2018 e-mail. F&ME's services for the project were provided under the terms and conditions of the February 14, 2014 Master Service Agreement between F&ME and D&F.

The primary objective of this final exploration was to gather subsurface information in order to provide geotechnical recommendations for the Phase 1 new roadway improvements to Brick Chimney Road and to provide a reconnaissance level subsurface exploration for new roadway alignment selection in Phase 2. The SCDOT GDM provided a guide for the exploration. The objective was accomplished by executing the following:

1. We advanced twenty-four (24) Standard Penetration Test (SPT) borings for Phase 1 of the project to provide data on soil density and stratigraphy and to obtain samples for laboratory testing.
2. We performed five (5) manual hand auger borings for Phase 1 (Borings B-12, B-13, B-14, B-20, and B-21) to provide data on soil density and stratigraphy and to obtain samples for laboratory testing where drill rig access was restricted.
3. We advanced nine (9) Standard Penetration Test (SPT) borings for Phase 2 to provide data on soil density and stratigraphy and to obtain samples for laboratory testing.
4. We collected six (6) bulk samples for laboratory testing.

5. We performed forty (40) soil classification tests which included grain size distribution, Atterberg limits, and natural moisture content to determine physical characteristics of the soils encountered.
6. We performed six (6) Standard Proctors on bulk samples to determine compaction criteria for California Bearing Ratio (CBR) testing.
7. We performed six (6) CBR tests on field collected bulk samples to determine soil support strength values for design of the roadway sections.

The soil testing locations are included on the Boring Location Plans (Figures 2-9) in Appendix A of this report.

Where mechanical drilling occurred, SPT sampling was performed continuously in the top ten (10) feet and at five-foot intervals throughout the remaining depth of the test borings. The SPT sampling was performed in general accordance with ASTM D1586. The borings were advanced to the respective target depths. Soil descriptions with depth are included in the boring logs in Appendix B.

Dynamic cone penetrometer (DCP) testing was performed in accordance with ASTM D6951 at one-foot intervals in hand augers for borings B-12, B-13, B-14, B-20, and B-21. Hand auger B-14 was terminated short of the target depth of ten (10) feet beneath ground surface due to auger refusal. The other hand augers were terminated short of the target depth of ten (10) feet beneath ground surface due to unstable bore hole (hole collapse). The descriptions of soils encountered are shown on the hand auger boring logs contained in Appendix B of this report.

Collected soil samples from SPT split-spoons and hand auger cuttings were examined and sealed in plastic bags for transportation to our laboratory for testing. The soils were visually classified in the field based upon the Unified Soil Classification System (USCS) with the ASTM Visual-Manual method.

Selected samples were tested in the laboratory to determine applicable physical and engineering properties. The laboratory program included testing soil samples for moisture content, grain size distribution and Atterberg limits. The Atterberg limits, grain size, and moisture content tests were performed to determine the behavioral characteristics of the soils as well as to provide classification by the USCS. The Standard Proctor tests were performed to determine the moisture density relationship of the bulk samples. CBR tests were performed to determine the soil support strength of the bulk samples to aid in pavement thickness recommendations. The type and number of tests are provided in the following table (Table 1).

Test Type	Quantity
Moisture Content Determination	40
Grain Size Analysis	40
Atterberg Limits	40
Standard Proctor	6
California Bearing Ratio	6

Table 1 – Laboratory Testing Quantities

The data sheets presenting results of the above described laboratory test programs are provided in Appendix D of this report. The bulk samples were obtained from auger cuttings at the following locations: BS-1 at B-4; BS-2 at B-12; BS-3 at B-21; BS-4 at B-27; BS-5 at B-31; and BS-6 at B-36.

B. GENERAL GEOLOGY

The site lies within the Princess Anne Terrace of the Lower Coastal Plain region of South Carolina. Near surface soils generally consisted of disturbed and undisturbed, Echaw Sand, Grifton Loamy Fine Sand, Bladen Loam, Yauhannah Loamy Fine Sand, and Yemassee Loamy Fine Sand. These near surface soils presented themselves in our borings as primarily fine silty-sand (SM, A-2-4) and poorly graded fine sand with silt (SP-SM, A-3). The geology consists of ancient beaches and estuary deposits from the Late Wando Formation. Near surface soils from the Pleistocene Epoch overlay clays and sands from the Williamsburg Formation that dates to the Pliocene Epoch. The surface topography of the lower coastal plain is generally flat with broad plains that stair-step up in elevation as distance increases from the coast. These steps up in elevation have been interpreted as ancient shoreline complexes. Layers of poorly formed marl (commonly called pseudo-marl) exist above the Williamsburg Formation. A pseudo marl layer was encountered in B-24 and B-25.

C. SOILS ENCOUNTERED

Borings were conducted on August 28, September 10, September 11, and September 12, 2018. SPT soil borings were advanced along Phase 1 with a combination of trailer-mounted CME 45B drill rig, CME 550X ATV mounted drill rig, and hand auger equipment. Access determined the choice of equipment with the CME 45B used for boring along the existing slag roadway. The ATV drill was used to drill at B-22, B-23, B-26, B-27 and B-28 since these borings were off the

existing slag roadway alignment. B-12, B13, B-20, and B-21 were conducted with hand augers to minimize the amount of clearing along the existing alignment. Borings for Phase 2 were conducted exclusively with a CME 550X All-Terrain Vehicle (ATV) mounted drill rig. A bulldozer was utilized to cut paths for the drill rig in Phase 2 since the site was wooded at the time of our exploration.

The target depths for roadway borings were either ten (10) or twenty (20) feet below the ground surface depending on location. Borings B-24 and B-25 were targeted for fifty (50) feet below the ground surface to aid in recommendations for culvert foundations at the IP Canal crossing location.

Near surface soils obtained along the proposed new roadway were generally classified as fine sands with varying amounts of silt content. The soils were classified as silty sand (SM, A-2-4 or A-4) and sand with silt (SP-SM, A-3). Layers of low plasticity clay (CL, A-6 or A-7) were present, but not at the ground surface except at B-26. Examples of borings with one or more clay layer can be seen in boring logs B-1 through B-11. B-26 encountered sandy clay (CL, A-7-6) in the upper four (4) feet.

Soil density appeared to decrease with depth along the first 4,500 linear feet of the project from about station 17+30 to 61+50 (B-1 through B-10). Medium dense to loose soil near the ground surface tended to transition to very loose soil at approximate depths ranging from four (4) to six (6) feet below the ground surface. That trend appeared to reverse from station 61+50 to station 125+50 (B-11 through B-23) where soil density tended to increase with depth in the upper eight (8) feet with loose to very loose sands near the ground surface that transition to medium dense sands five (5) to eight (8) feet below the ground surface. The borings for the remainder of the Phase 1 alignment did not exhibit a definitive trend. Soil density at either side of the IP Canal (B-24 and B-25) tended to decrease with depth in the upper twenty (20) feet. The soil density from station 130+00 to station 147+00 (Borings B-26 through B-29) were loose to very loose at the surface and decreased to weight of hammer about six (6) feet below the ground surface. The soil relative density in Phase 2 was generally loose to very loose over the bore depth of each test boring.

Groundwater depth measurements were recorded at the time of drilling. Holes outside the travel way of the existing gravel road were left open overnight for twenty-four hour water measurements. Groundwater was encountered in each of the borings. Generally, the groundwater surface was measured to be two (2) to five (5) feet below existing ground surface depending on location.

D. EMBANKMENTS

Phase 1 Embankments

New fill thickness for the roadway improvements will be less than ten (10) feet. Pipe culvert crossings at approximately stations 126+00, 129+00, and 140+00 will require the greatest fill thickness with new fill about seven (7) feet thick at the station 140+00 culvert crossing. Any organic laden soils discovered during culvert construction should be mucked out from under new embankments along with any organic laden soils discovered during proofrolling. Side slopes for new embankments should not exceed a steepness of 2 to 1 horizontal to vertical.

New fill and Graded Aggregate Base Course (GABC) can be placed directly on the existing slag road base after successful proofrolling. Topsoil was identified at B-14, B-15, B-23, B-26, and B-27 test boring locations. Topsoil will need to be removed where it is encountered within the limits of new embankment. Loose sands identified near the ground surface by our borings will need to be densified with a smooth-drummed, vibratory compactor with a gross weight of at least 15-tons. Moisture conditioning, if needed, may include drying the in-place soil by windrowing or disking. If too dry, then moisture may need to be added to the soil from a water truck. In either case, the subgrade soil should fall within plus or minus three (3) percent of the optimum moisture content during compaction.

Near surface soils encountered in Phase 1 typically met the requirements for reuse as structural embankment fill in Georgetown County (a Group B County), based on the SCDOT *2007 Standard Specifications for Highway Construction* (Section 203.2.1.8). In Group B counties such as Georgetown County, soils must be classified A-1 through A-4 to be used as fill in the upper 18 inches of roadway embankments. A-1 to A-5 material is allowed in Group B roadway embankments below 18 inches. Borings and lab data indicate that a significant portion of the existing soils would be allowed for use as embankment fill based on AASHTO soil classification and SCDOT 2007 *Standard Specifications for Highway Construction.*

A-2-4 to A-3 soils were commonly encountered within the top four (4) feet of subsurface soils in Phase 1. Soils with higher clay content were encountered near the ground surface at B-2, B-7, B-26, and B-28. These soils may classify as A-6 or A-7 depending on sand content. A-6 and A-7 soils should not be reused as structural fill for new embankments.

Off-site borrow should meet the classification requirements of the SCDOT *2007 Standard Specifications for Highway Construction* (Section 203.2.1.8).

Preliminary Embankment Considerations for Phase 2

Soil density was generally low across the borings in Phase 2. If new fill heights are greater than five (5) feet in Phase 2, then embankment settlement may be a concern especially if culvert crossings are needed through one or more low areas. Similar to Phase 1, loose sands and soft clays identified near the ground surface will need to be densified with a smooth-drummed, vibratory compactor with a gross weight of at least 15-tons. F&ME also noted that topsoil was present in many of the borings located in Phase 2. Topsoil will need to be removed prior to densification of subgrade soil and prior to the placement of new fill or GABC.

E. STRUCTURE FOUNDATIONS

Bridge over IP Canal

We recommend utilizing 18-inch diameter closed end pipe piles with ½" minimum wall thickness to support the planned bridge over the IP Canal. The L-PILE output for the Service Load Case is included in the appendix of this report. The L-PILE output includes report summary, pile deflection, moment, shear, and critical depth graphs for the Service Loads provided by D&F. The longitudinal analysis was computed with both the shear and moment loads applied to top of pile

and are not representative of a 'true fixed-head' condition/model. Given plan integral nature of bridge/end cap, the longitudinal deflections as generated in our L-PILE analysis are greater than what constructed fixed-head end bent piles would exhibit under these longitudinal loadings. The transverse load LPILE model was run as a fixed-head condition to account for bent cap/pile bracketing effect.

The bridge end bents and wing walls should be pile supported. The bridge span eliminates embankment fill within the canal channel so a pile supported embankment is no longer needed. F&ME recommends the following table and notes for inclusion on the bridge plan sheets:

Pile Bearing – Strength Limit State		
Bent I.D.	EB1	EB2
Factored Design Load	94.5 Tons	94.5 Tons
Geotechnical Resistance Factor	0.65	0.65
Nominal Resistance	145 Tons	145 Tons
Estimated Scour	0 Tons	0 Tons
Unfactored Downdrag	0 Tons	0 Tons
Required Driving Resistance	145 Tons	145 Tons

Table 2 – Pile Capacity

NOTE: Method of controlling installation of piles and verifying their capacity:
Resistance and stresses will be verified by Pile Driving Analyzer (PDA) and CAPWAP analysis of index pile(s) during driving. A Pile Installation Chart developed from the analysis will be used to verify the resistance of production piles.

We recommend that Contractor perform Pile Driving Analyzer (PDA) testing on the first production pile driven at End Bent 1 and on the first production pile installed at End Bent 2. If a CAPWAP analysis determines that resistance has not been achieved, a restrike shall be performed at one (1) of the production piles installed at each end bent as necessary. Perform the restrike on the production pile exhibiting the least blows per foot.

On initial drive, piles shall be stopped at the highest allowable finished grade on the plans to accommodate a restrike. Perform PDA testing during the restrike. The time between initial drive and restrike is estimated at seven (7) days. Payment for the restrike will be as indicated in the project documents.

For EB1 and EB2 steel piles, the required minimum pile tip elevation to achieve lateral stability and the estimated pile tip elevation to achieve the required axial capacity in Table 3 are to be included in bridge plans:

Pile Tip Elevation Table		
Bent I.D.	Minimum Pile Tip Elevation (ft-NAVD88)	Estimated Pile Tip Elevation (ft-NAVD88)
EB1	-13	-15
EB2	-13	-15

Table 3 – Minimum Pile Tip Embedment

The following estimated parameters in Table 4 were used for performing a drivability analysis for EB1 and EB2 and should be inserted in bridge plan sheets along with below listed pile installation notes:

Estimated Pile Drivability Analysis Parameters	
Skin Quake (QS)	0.10 in.
Toe Quake (QT)	0.04 in.
Skin Damping (SD)	0.10 sec/ft
Toe Damping (TD)	0.15 sec/ft
% Skin Friction	10%
Distribution Shape No.	1.0[1]
Bearing Graph	Constant Skin Friction[2]
Pile Penetration	95%
Hammer Energy Range	30 - 50 ft-kips

Table 4 – Estimated Driving Criteria

[1]Distribution Shape No. varies with depth: 0 at the ground surface and 1.0 at the pile tip elevation
[2]Bearing Graph Options – proportional, constant skin friction, and constant end bearing. Note: GRLWEAP (2010) was used to perform the wave equation analysis.

A pile hammer having a rated energy as indicated above is considered suitable for driven pile installation. However, final hammer approval is based on a wave equation analysis that accurately reflects the Contractor's proposed driving system.

End bent pile installations shall be terminated immediately once required ultimate driving resistance is achieved. Over driving of pile to avoid pile cut-off shall not be permitted.

Each pile is to be installed in one continuous operation. Include details of any anticipated temporary driving discontinuities including anticipated time intervals in the Pile Installation Plan.

Reference the 2007 Standard Specifications for Highway Construction for Driven Pile Foundations, Section 711. Notes included in these plans are in addition to the requirements of SCDOT Standard Specifications for Highway Construction.

Cross Line Pipe Culverts

New pipe culverts under the roadway improvements are planned approximately at stations 126+00, 129+00, and 140+00. New fill thickness is not anticipated to exceed seven (7) at the crossings. Borings indicate that settlement will occur as new fill is placed and any settlement should be built out during final grading. However, borings were not performed within the footprint of the planned culverts. Organic laden soils could exist at the planned culvert locations. Any organic laden soils discovered within the embankment footprint during culvert construction or during proofrolling should be mucked out. F&ME also recommends improving culvert foundations by over-excavating culvert foundations at least one (1) foot deep and placing one (1) foot of washed stone

like #57 stone. Washed stone should be completely wrapped in filter fabric prior to placing culverts. See SCDOT Standard Drawings for more details on improved foundations for pipe culverts.

F. PAVEMENT THICKNESS RECOMMENDATIONS

F&ME expects the primary use of Brick Chimney Road will continue to be for dump truck traffic with passenger vehicles and tractor trailer traffic increasingly utilizing the road as the by-pass becomes established over time. Once the subgrade is prepared and proofrolling is successful, then the pavement section can be constructed. F&ME recommends ten (10) inches of graded aggregate base course (GABC) and four point nine (4.9) inches of asphalt pavement for the pavement section. This recommended pavement section is based on 3,000,000 ESAL's over a twenty (20) year design life and results in a pavement structural number of 4. This recommendation was developed based on a California Bearing Ratio (CBR) value of 6 which corresponds to an SSV of 2.7.

F&ME utilized the SCDOT *Pavement Design Guidelines* 2008 edition and the 1993 AASHTO *Flexible Pavement Structural Design* to develop pavement thickness recommendations. GABC should be placed according to section 305 of the SCDOT *2007 Standard Specifications for Highway Construction.* Hot Mix Asphalt (HMA) Type B Surface Course should be placed at a rate of at least two hundred (200) pounds per square yard (psy) as the top lift of pavement and HMA Type B Intermediate should be used as the bottom lift at a rate of at least three hundred and twenty (320) psy.

The HMA should be batched according to an SCDOT approved Job Mix Formula. Division 400 of the SCDOT *2007 Standard Specifications for Highway Construction* should be incorporated into the project specifications for hot mix asphalt. Also, SCDOT Supplemental Technical Specifications SC-M-400 and SC-M-402 should be incorporated in the project specifications.

D&F will need to decide if the SCDOT pay factors associated with SC-M-400 are appropriate for the project. If pay factors are not appropriate, then clarification will need to be placed in the project specifications about how the acceptance criteria in SC-M-400 should be applied.

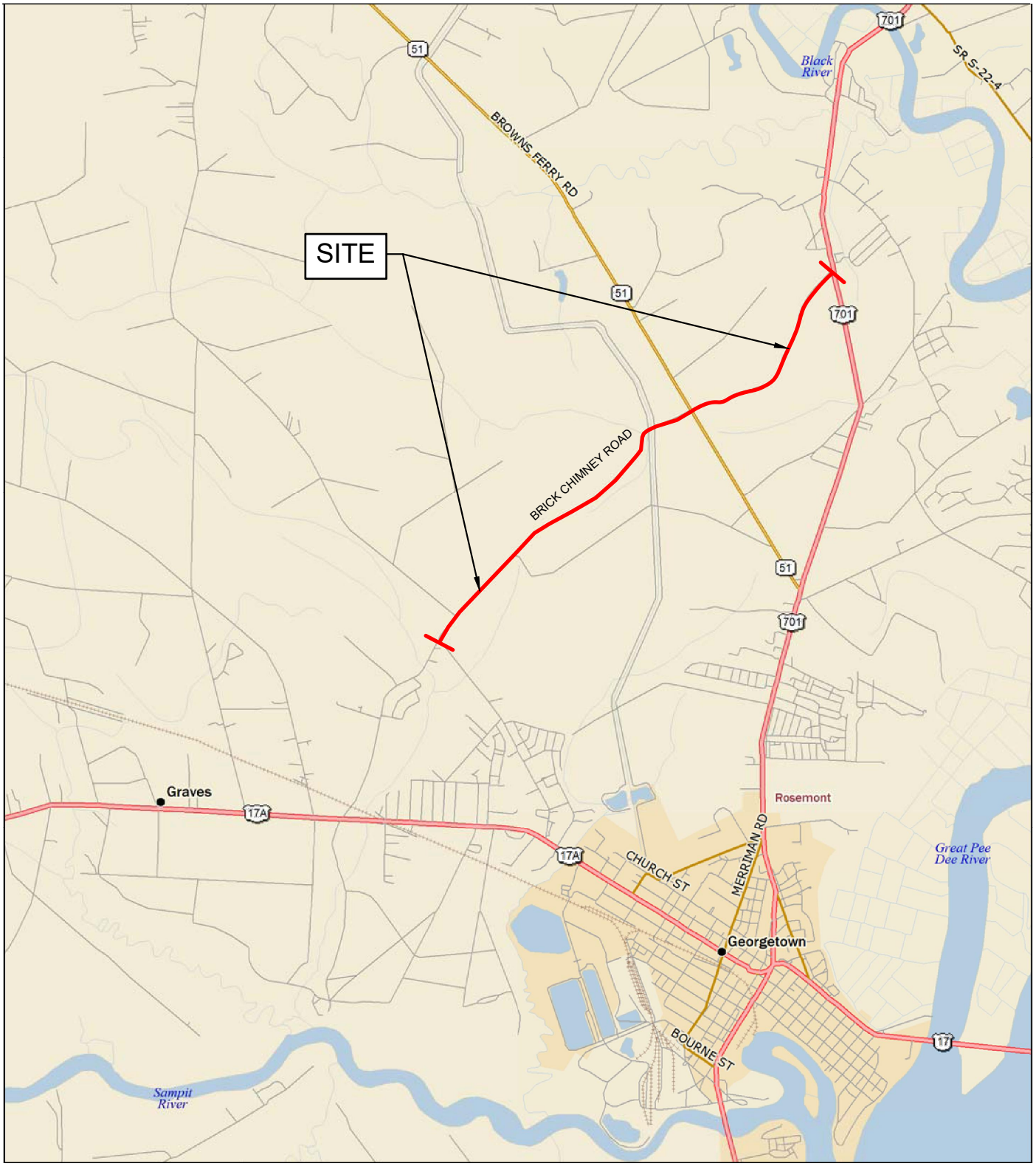
G. LIMITATIONS OF REPORT

This final report has been prepared in general accordance with F&ME's defined scope of work. The conclusions and recommendations contained herein are based upon applicable standards in this geographic area at the time this report was prepared. No other warranty, expressed or implied, is made.

The analyses and recommendations submitted herein are based, in part, upon the data obtained from the subsurface exploration and publicly reported geology at the site. The nature and extent of variations between the borings and reported geology will not become evident until construction begins.

APPENDIX A

Location Plans



TN
MN (8.3°W)

Scale 1 : 68,750

1" = 1.09 mi Data Zoom 11-5

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REV.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			

TOPO. _____ DATE _____
DWG. CTC DATE 10.12.18 GROUP ____ – ____
R/W _____ DATE _____

BRICK CHIMNEY ROAD
GEORGETOWN, SOUTH CAROLINA

SITE LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE = AS NOTED | FIGURE 1

BORING DATA								
Boring ID	Station	Offset	Elevation	Northing	Easting	Latitude	Longitude	Boring Depth (ft)
B-1	17+31	15' - LT	23.0	579052.415	2509388.240	33.413552	-79.330386	10
B-2	22+59	13' - LT	22.1	579440.132	2509745.377	33.414601	-79.329195	10
B-3	26+71	11 - LT	23.0	579742.771	2510025.373	33.415421	-79.328262	10
B-4	32+47	2' - RT	22.8	580158.970	2510424.335	33.416547	-79.326932	10
B-5	36+91	7' - RT	22.7	580482.602	2510727.467	33.417423	-79.325922	20

LEGEND:

SOIL TEST BORING LOCATION

REV.	BY	DATE	DESCRIPTION OF REVISION
4			
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TOPO. _____ DATE _____
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R/W _____ DATE _____

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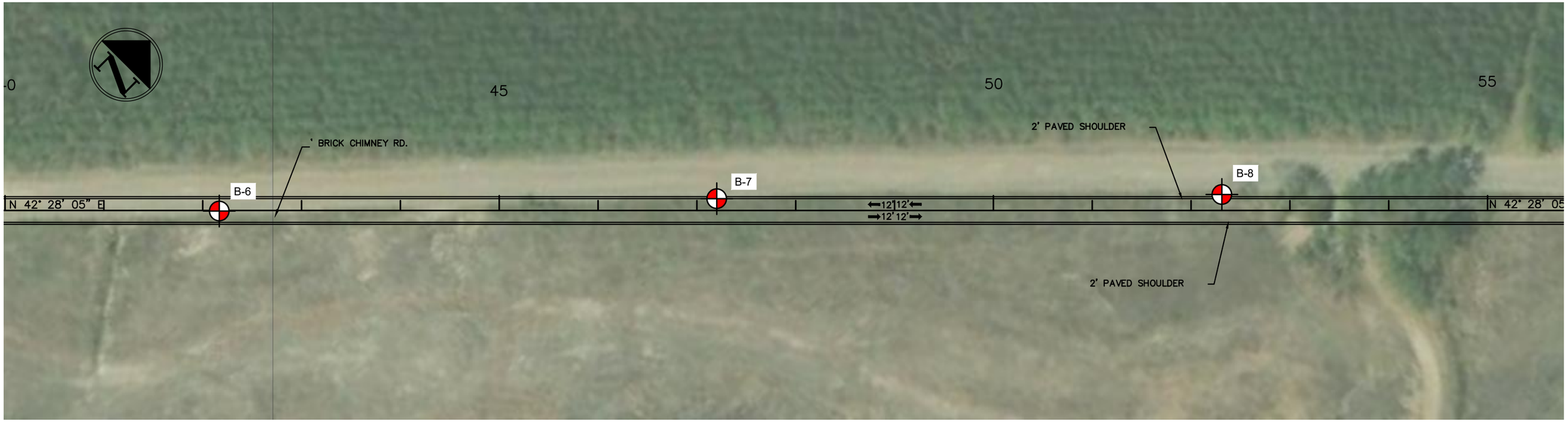
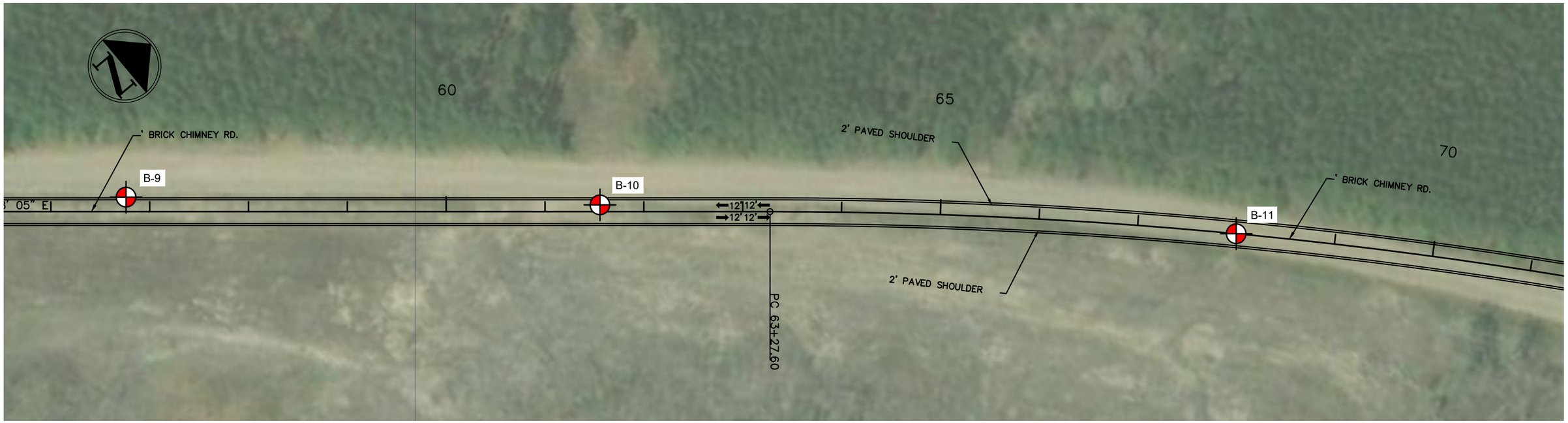
BRICK CHIMNEY ROAD
GEORGETOWN, SOUTH CAROLINA

SOIL TEST BORING LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE: 1"=100' | FIGURE 2





BORING DATA

Boring ID	Station	Offset	Elevation	Northing	Easting	Latitude	Longitude	Boring Depth (ft)
B-6	42+17	1' - RT	22.1	580875.409	2511077.825	33.418487	-79.324752	10
B-7	47+20	12' - LT	21.5	581255.030	2511408.410	33.419515	-79.323649	10
B-8	52+31	16' - LT	21.0	581634.886	2511750.340	33.420544	-79.322508	10
B-9	56+76	15' - LT	22.0	581961.991	2512051.802	33.421430	-79.321503	10
B-10	61+56	7' - LT	21.8	582310.319	2512381.424	33.422372	-79.320404	20
B-11	68+01	3' - LT	22.4	582768.501	2512836.636	33.423611	-79.318887	10

LEGEND:

SOIL TEST BORING LOCATION

REV.	BY	DATE	DESCRIPTION OF REVISION
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R/W _____ DATE _____

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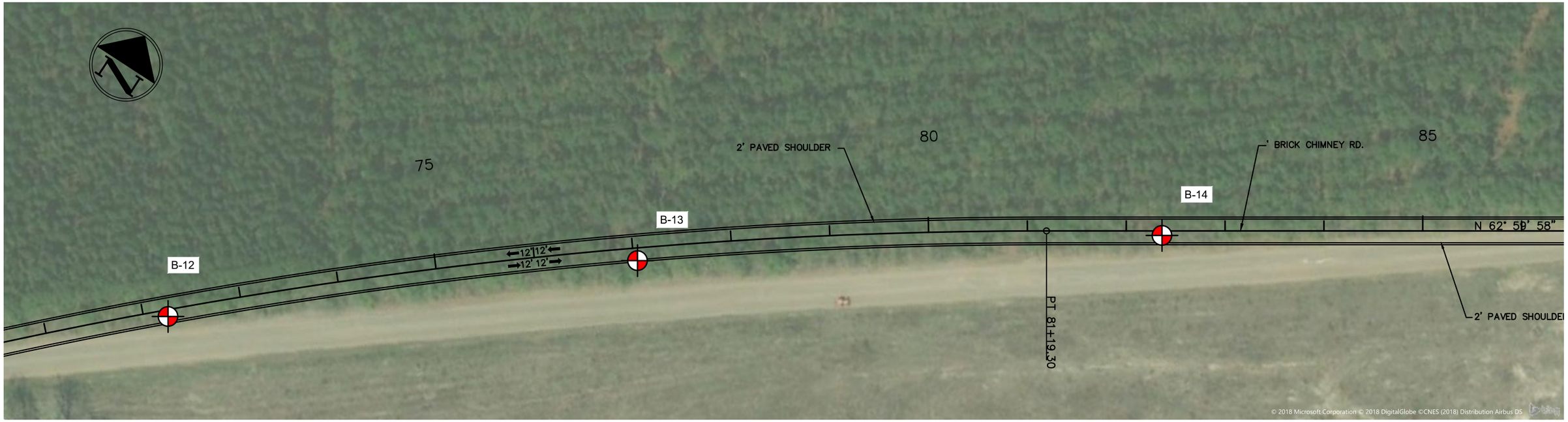
SOIL TEST BORING LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE: 1"=100' | FIGURE 3



BORING DATA

Boring ID	Station	Offset	Elevation	Northing	Easting	Latitude	Longitude	Boring Depth (ft)
B-12	72+24	4' - RT	21.9	583033.012	2513166.481	33.424323	-79.317792	10
B-13	77+04	13' - RT	22.7	583297.141	2513565.850	33.425031	-79.316469	8.5
B-14	82+36	5' - RT	26.2	583560.747	2514027.091	33.425735	-79.314943	7.2
B-15	86+75	2' - RT	30.6	583762.475	2514416.416	33.426272	-79.313656	20
B-16	92+11	6' - LT	26.4	584015.643	2514889.449	33.426947	-79.312093	9
B-17	96+96	23' - LT	25.2	584299.646	2515278.583	33.427710	-79.310802	20.0

LEGEND:

SOIL TEST BORING LOCATION

REV.	BY	DATE	DESCRIPTION OF REVISION
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1			

TOPO. _____ DATE _____
DWG. CTC DATE 10.12.18 GROUP ____ – ____
R/W _____ DATE _____

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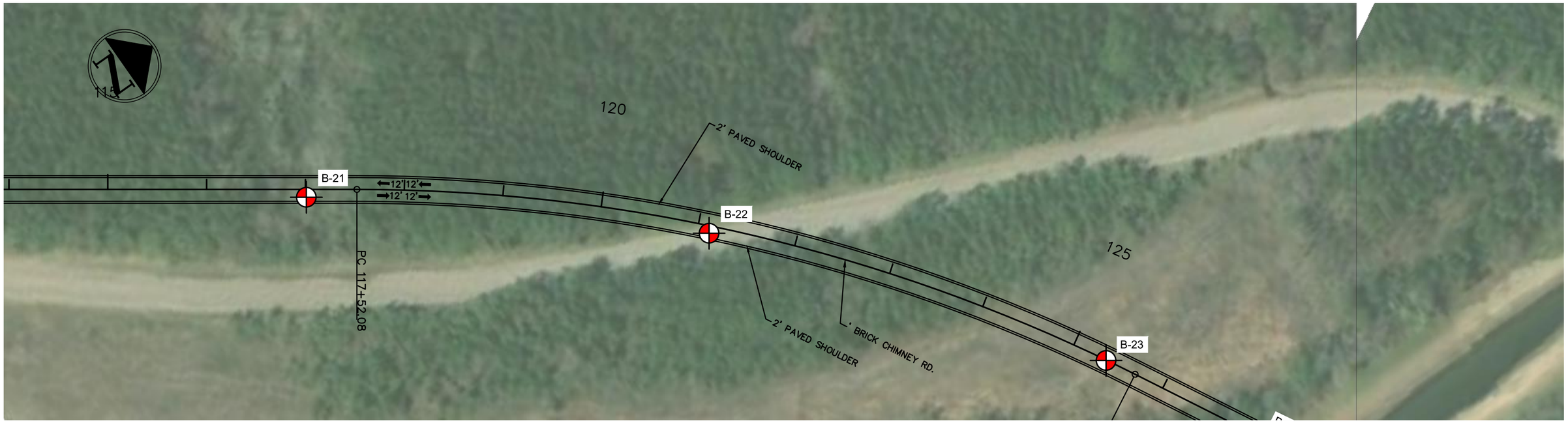
BRICK CHIMNEY ROAD
GEORGETOWN, SOUTH CAROLINA

SOIL TEST BORING LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE: 1"=100' | FIGURE 4



BORING DATA

Boring ID	Station	Offset	Elevation	Northing	Easting	Latitude	Longitude	Boring Depth (ft)
B-18	102+03	16' - LT	24.7	584641.304	2515648.905	33.428632	-79.309570	10
B-19	107+17	4' - LT	26.3	585042.869	2515965.625	33.429721	-79.308510	10
B-20	112+09	CL	27.0	585446.684	2516247.472	33.430818	-79.307565	8
B-21	117+01	8' - RT	27.5	585848.070	2516531.820	33.431909	-79.306611	5
B-22	121+12	8' - RT	18.0	586163.703	2516792.153	33.432764	-79.305741	10
B-23	125+36	1' - RT	17.2	586422.295	2517125.366	33.433460	-79.304635	20

LEGEND:

SOIL TEST BORING LOCATION

REV.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			

TOPO. _____ DATE _____
DWG. CTC DATE 10.12.18 GROUP ____ – ____
R/W _____ DATE _____

F&ME
CONSULTANTS
GEOTECHNICAL - ENVIRONMENTAL - MATERIALS
COLUMBIA, SOUTH CAROLINA

BRICK CHIMNEY ROAD
GEORGETOWN, SOUTH CAROLINA

SOIL TEST BORING LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE: 1"=100' | FIGURE 5

BORING DATA								
Boring ID	Station	Offset	Elevation	Northing	Easting	Latitude	Longitude	Boring Depth (ft)
B-24	127+56	CL	18.4	586529.071	2517317.218	33.433745	-79.304000	50
B-25	128+47	1' - LT	17.2	586573.725	2517396.492	33.433864	-79.303738	50
B-26	133+09	1' - RT	15.4	586797.310	2517800.974	33.434460	-79.302400	20
B-27	138+21	11' - RT	15.0	587052.580	2518245.079	33.435142	-79.300930	10
B-28	143+10	16' - LT	16.4	587334.633	2518645.955	33.435899	-79.299601	10
B-29	146+56	22' - LT	18.0	587523.104	2518935.852	33.436404	-79.298641	10
B-30	152+67	1' - LT	17.9	587829.148	2519465.409	33.437221	-79.296888	10

LEGEND:

SOIL TEST BORING LOCATION

REV.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			

TOPO. ____ DATE ____
DWG. CTC DATE 10.12.18 GROUP ____ – ____
R/W ____ DATE ____

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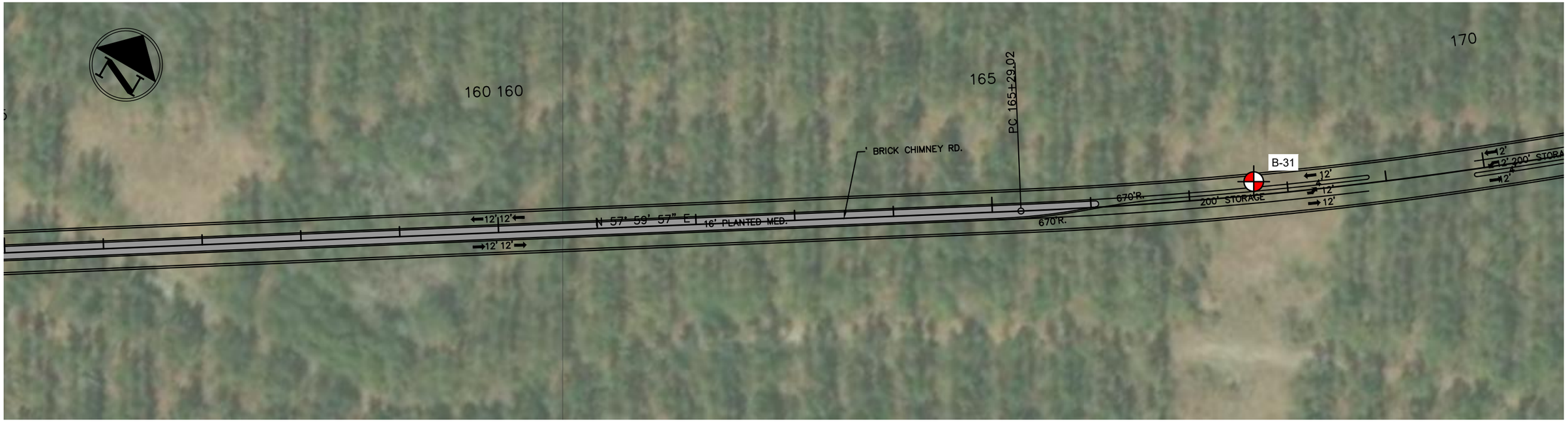
COLUMBIA, SOUTH CAROLINA

BRICK CHIMNEY ROAD
GEORGETOWN, SOUTH CAROLINA

SOIL TEST BORING LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE: 1"=100' | FIGURE 6



BORING DATA

Boring ID	Station	Offset	Elevation	Northing	Easting	Latitude	Longitude	Boring Depth (ft)
B-31	167+66	14' - LT	17.8	588639.500	2520725.838	33.439391	-79.292713	10
B-32	175+85	31' - RT	19.9	589134.927	2521380.006	33.440723	-79.290542	10

LEGEND:

SOIL TEST BORING LOCATION

REV.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			

TOPO. ____ DATE ____
DWG. CTC DATE 10.12.18 GROUP ____ – ____
R/W ____ DATE ____

F&ME
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COLUMBIA, SOUTH CAROLINA

BRICK CHIMNEY ROAD
GEORGETOWN, SOUTH CAROLINA

SOIL TEST BORING LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE: 1"=100' | FIGURE 7

BORING DATA

Boring ID	Station	Offset	Elevation	Northing	Easting	Latitude	Longitude	Boring Depth (ft)
B-33	186+14	7' - RT	17.1	589961.854	2521996.117	33.442967	-79.288477	10
B-34	191+74	3' - LT	17.6	590460.586	2522250.211	33.444326	-79.287617	20
B-35	200+03	15' - LT	21.2	591214.554	2522596.299	33.446383	-79.286441	10
B-36	207+28	2' - RT	16.7	591850.765	2522942.648	33.448115	-79.285271	10

LEGEND:

SOIL TEST BORING LOCATION

REV.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			

TOPO. _____ DATE _____
DWG. CTC DATE 10.12.18 GROUP ____ – ____
R/W _____ DATE _____

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COLUMBIA, SOUTH CAROLINA

BRICK CHIMNEY ROAD
GEORGETOWN, SOUTH CAROLINA

SOIL TEST BORING LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE: 1"=100' | FIGURE 8

BORING DATA								
Boring ID	Station	Offset	Elevation	Northing	Easting	Latitude	Longitude	Boring Depth (ft)
B-37	217+37	14' - LT	18.034	592529.664	2523678.906	33.449948	-79.282821	10
B-38	227+68	25' - LT	20.8	592834.049	2524664.564	33.450739	-79.279572	20

LEGEND:

SOIL TEST BORING LOCATION

REV.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			

TOPO. _____ DATE _____
DWG. CTC DATE 10.12.18 GROUP ____ – ____
R/W _____ DATE _____

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COLUMBIA, SOUTH CAROLINA

BRICK CHIMNEY ROAD
GEORGETOWN, SOUTH CAROLINA

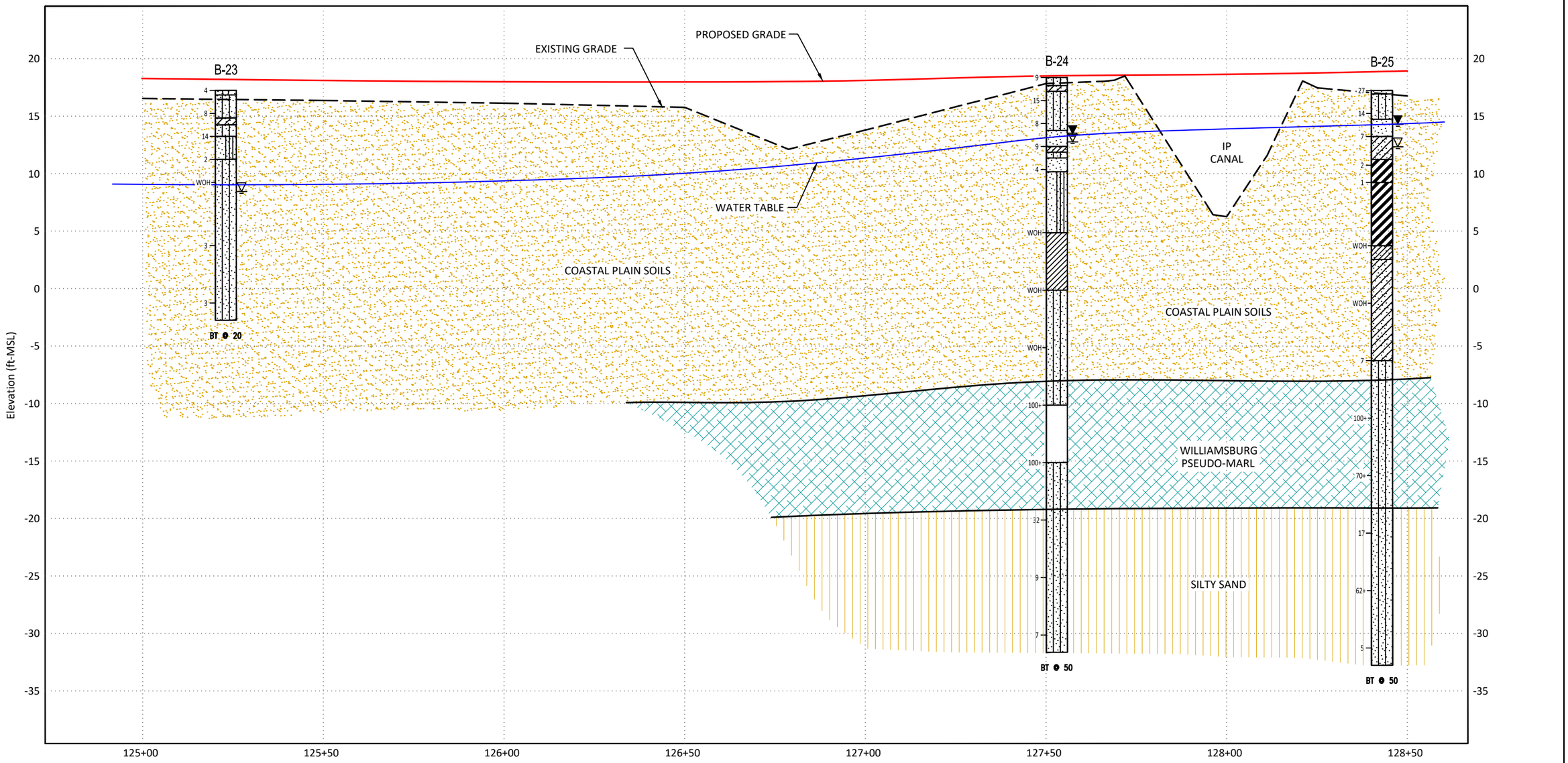
SOIL TEST BORING LOCATION PLAN

F&ME JOB NO. G5839.000

SCALE: 1"=100' | FIGURE 9

APPENDIX B

Subsurface Profile



NOTE:
VARIATIONS WILL OCCUR BETWEEN TEST LOCATIONS.
THIS SHEET REPRESENTS A GENERALIZED PROFILE
BASED ON TEST INFORMATION AT EACH LOCATION.

REV.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			

TOPO. _____ DATE _____
DWG. CTC DATE 09.24.18 GROUP ____ – _____
R/W _____ DATE _____

F&ME
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GEOTECHNICAL - ENVIRONMENTAL - MATERIALS
COLUMBIA, SOUTH CAROLINA

BRICK CHIMNEY ROAD IMPROVEMENTS
GEORGETOWN, SOUTH CAROLINA

GENERALIZED SUBSURFACE PROFILE
AT IP CANAL CROSSING

F&ME JOB NO. G5839

SCALE: NTS | FIGURE 10

APPENDIX C

Soil Test Boring and Hand Auger Logs

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-1

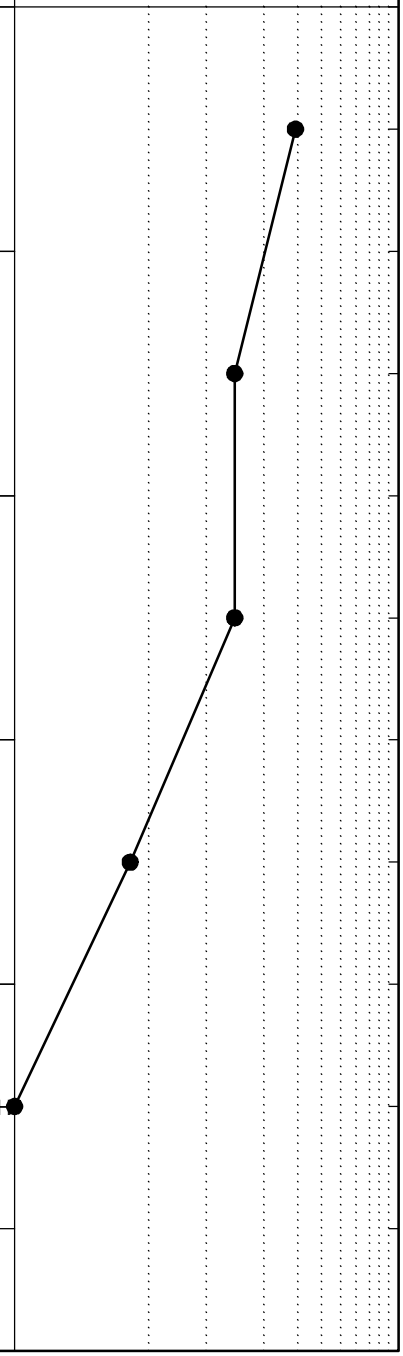
Latitude: 33.413552
Longitude: -79.330386

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 23
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 3.5	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Asphalt Roadway								
		ASPHALT (5")		0.0						
	0.4	Medium Dense, Moist, Brown, Clayey Fine SAND (SC)								
	1.1	Medium Dense, Moist to Wet, Dark Gray, Silty Fine SAND (SM)			SS-1	X	8	16	13	29
				2.0						
		@2.3-ft: Light Brown/Gray			SS-2	7	7	7	6	14
		@ 3.5-ft: Wet								
		@4-ft: Dark Gray		4.0						
	4.5	Medium Dense, Wet, Gray, Non-Plastic, Poorly Graded Fine SAND (SP-SM/A-3) with Silt			SS-3	1	6	8	10	14
18.0										
		@6-ft: Very Loose @SS-4: LL=NP, PL=NP, PI=NP, NMC=26.0%, %#200=5.4 @6.5-ft: Black		6.0	SS-4	3	3	1/12"		4
	8.0	Very Soft, Wet, Gray, Lean CLAY (CL)		8.0						
					SS-5	WOR	WOH/12"		3	WOH
	9.2	Very Loose, Wet, Gray, Clayey Fine SAND (SC)								
13.0	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-2

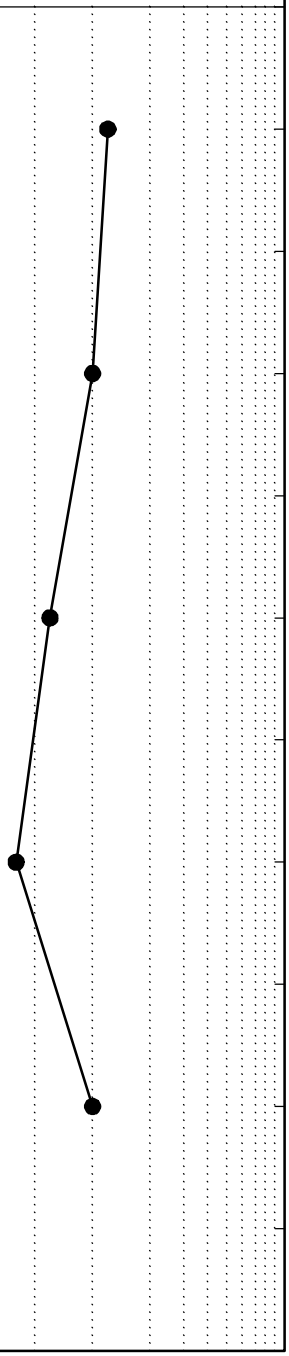
Latitude: 33.414601
Longitude: -79.329195

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 22
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 2.3	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		GRAVEL (4")		0.0						
	0.3	Medium Dense, Moist, Gray, Poorly Graded Fine SAND (SP)								
	1.0				SS-1	7	6	6	13	12
	1.4	Medium Dense, Moist, Gray/Dark Gray, Poorly Graded Fine SAND (SP-SM) with Silt								
		@1.2-ft: Gray/Reddish Yellow								
		Stiff, Moist to Wet, Gray/Reddish Yellow, Lean CLAY (CL)		2.0						
		▽ @2.2-ft: Wet			SS-2	4	5	5	3	10
	4.0	Firm, Wet, Gray/Reddish Yellow, Lean CLAY (CL) with Sand		4.0						
	4.7	Loose, Wet, Gray/Reddish Yellow, Clayey Fine SAND (SC)								
17.1	5.0	Loose, Wet, Dark Gray/Reddish Yellow, Poorly Graded Fine SAND (SP-SM) with Silt			SS-3	1	2	4	5	6
	6.0	Very Loose, Wet, Dark Gray/Gray, Silty Fine SAND (SM)		6.0						
	6.6	Very Loose, Wet, Gray/Reddish Yellow, Clayey Fine SAND (SC)								
		@6.8-ft: Bluish Gray			SS-4	1	3	1	5	4
	8.0	Loose, Wet, Gray/Bluish Gray/Reddish Yellow, Silty Fine SAND (SM)		8.0						
					SS-5	1	5	5	4	10
12.1	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-3

Latitude: 33.415421
Longitude: -79.328262

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 23
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 2.4	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder							
		SAND/GRAVEL (4")	0.0						
	0.3	Loose to Medium Dense, Moist, Brownish Yellow, Poorly Graded Fine SAND (SP-SM) with Silt		SS-1	3	4	5	5	9
		@2-ft: Brownish Yellow/Gray/Light Gray	2.0						
		@2.5-ft: Wet		SS-2	6	6	7	6	13
	4.0	Very Loose, Wet, Dark Gray, Silty Fine SAND (SM)	4.0						
		@4.3-ft: Gray/Reddish Yellow							
	4.6	Very Soft, Wet, Gray, Lean CLAY (CL)		SS-3	2	1/12"		1	1
18.0			6.0						
	6.7	Very Soft, Wet, Gray, Sandy Lean CLAY (CL)		SS-4	WOH/18"			2	WOH
	7.4	Very Loose, Wet, Black, Silty Fine SAND (SM)							
		@8-ft: Dark Brown/Dark Gray	8.0						
				SS-5	WOH/18"			3	WOH
13.0	10.0	Boring Terminated at 10 feet							

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-4

Latitude: 33.416547
Longitude: -79.326932

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 23
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 1.7	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		SAND/GRAVEL (7")		0.0						
	0.6	Loose to Medium Dense, Moist, Light Brown, Poorly Graded Fine SAND (SP)			SS-1	3	4	5	6	9
		@2-ft: Wet, Light Gray/Dark Gray		2.0	SS-2	3	6	8	7	14
		@4-ft: Dark Brown/Brownish Gray		4.0						
17.8	4.8	Firm, Wet, Gray, Lean CLAY (CL)			SS-3	3	5	2	2	7
	6.0	Very Soft, Wet, Bluish Gray, Lean CLAY (CL) with Sand		6.0						
	6.5	Very Loose, Wet, Bluish Gray, Clayey Fine SAND (SC)			SS-4	1/12"		1/12"		1
				8.0						
	8.6	Very Loose, Wet, Light Gray, Poorly Graded Fine SAND (SP)			SS-5	WOH	2	2	5	4
12.8	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-5

Latitude: 33.417423
Longitude: -79.325922

Date Drilled: 8/28/2018	Supervisor: C. Piercy	Notes:
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 23	
Drill Machine: CME 45B	Drilling Method: HSA	
Water T.O.B. (ft): 1.8	Water 24 HR (ft): Backfilled	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
	0.1	Shoulder GRAVEL/SAND (1")		0.0						
		Medium Dense to Loose, Moist, Gray/Light Brown, Non-Plastic, Poorly Graded Fine SAND (SP/A-3)			SS-1	2	6	7	6	13
		▽ @SS-1: LL=NP, PL=NP, PI=NP, NMC=14.5%, %#200=5.0 @1-ft: Gray @2-ft: Wet		2.0	SS-2	3	5	5	6	10
		@4-ft: Very Loose, Gray/Reddish Yellow		4.0						
	4.5	Very Loose, Wet, Reddish Yellow, Low Plasticity, Silty, Clayey Fine SAND (SC-SM/A-2-4)			SS-3	3	1	1	1	2
17.7		@6-ft: Gray @SS-4: LL=23, PL=17, PI=6, NMC=32.0%, %#200=26.1 @6.6-ft: Dark Gray		6.0	SS-4	WOH/24"				WOH
		@7.6-ft: Reddish Yellow		8.0						
	8.0	Soft, Wet, Dark Gray, Sandy Lean CLAY (CL)			SS-5	WOH	1	2	2	3
12.7										
	13.5	Very Loose, Wet, Dark Gray, Silty Fine SAND (SM)		13.5						
	14.1				SS-6	WOH/12"		1		1
	14.4	Very Soft, Wet, Dark Gray, Lean CLAY (CL)								
7.7		Very Loose, Wet, Dark Gray, Clayey Fine SAND (SC)								
	18.5	Medium Dense, Wet, Gray, Poorly Graded Fine SAND (SP-SM) with Silt		18.5	SS-7	4	6	10		16
2.7	20.0	Boring Terminated at 20 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-6

Latitude: 33.418487
Longitude: -79.324752

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 22
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 2.2	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder	0.0						
	0.2	GRAVEL/SAND (2") Medium Dense, Moist, Light Brown/Gray, Poorly Graded Fine SAND (SP-SM) with Silt		SS-1	3	5	6	7	11
		▽ @2-ft: Wet, Light Gray/Reddish Yellow	2.0						
		@3-ft: Gray		SS-2	5	7	6	7	13
	4.0	Very Loose, Wet, Dark Gray/Gray, Silty Fine SAND (SM)	4.0						
	4.7	@4.5-ft: Light Gray/Reddish Yellow Very Soft, Wet, Gray, Lean CLAY (CL)		SS-3	2	1/12"		1	1
17.1			6.0						
	6.5	Very Soft, Wet, Light Gray/Dark Gray, Sandy Lean CLAY (CL)		SS-4	WOH	1/18"			1
	8.0	Very Loose, Wet, Brown, Silty Fine SAND (SM)	8.0						
	8.3	Very Soft, Wet, Dark Gray, Sandy Lean CLAY (CL)		SS-5	WOH/18"			1	WOH
12.1	10.0	Boring Terminated at 10 feet							

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-7

Latitude: 33.419515
Longitude: -79.323649

Date Drilled: 8/28/2018	Supervisor: C. Piercy	Notes:
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 22	
Drill Machine: CME 45B	Drilling Method: HSA	
Water T.O.B. (ft): 3.8	Water 24 HR (ft): Backfilled	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		GRAVEL/SAND (6")		0.0						
	0.5	Loose, Moist, Grayish Brown, Poorly Graded Fine SAND (SP-SM) with Silt			SS-1	2	4	5	5	9
				2.0						
		@2.5-ft: Wet			SS-2	5	4	2	2	6
	3.0	Firm, Wet, Light Gray/Reddish Yellow, Sandy Lean CLAY (CL)								
		▽		4.0						
	4.0	Very Loose, Wet, Reddish Yellow, Low Plasticity, Silty Fine SAND (SM/A-2-4) @SS-3: LL=23, PL=20, PI=3, NMC=24.5%, %#200=23.9			SS-3	1	1/12"		2	1
16.5		@4.5-ft: Gray/Reddish Yellow		6.0						
					SS-4	WOH/24"				WOH
				8.0						
		@8.0-ft: Gray/Dark Gray			SS-5	1	2	1	2	3
11.5	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-8

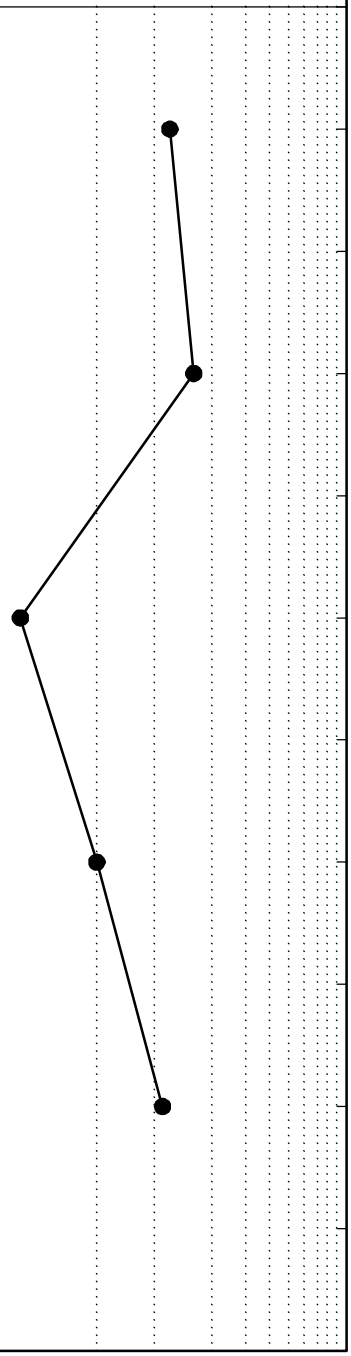
Latitude: 33.420544
Longitude: -79.322508

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 21
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 2.8	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		GRAVEL/SAND (7")		0.0						
	0.6	Medium Dense, Moist, Gray/Light Brown, Non-Plastic, Poorly Graded Fine SAND (SP/A-3)			SS-1	3	5	7	9	12
		@2-ft: Gray/Dark Gray @SS-2: LL=NP, PL=NP, PI=NP, NMC=23.5%, %#200=2.3		2.0						
		▽ @2.8-ft: Wet			SS-2	5	7	9	9	16
		@4-ft: Very Loose, Gray/Light Gray/White		4.0						
	4.3	Very Soft, Wet, Gray, Sandy Lean CLAY (CL)			SS-3	1/12"		1	1	2
16.0				6.0						
		@6-ft: Firm			SS-4	WOH	1	4	3	5
	6.6	Loose to Medium Dense, Wet, Dark Gray, Poorly Graded Fine SAND (SP-SC) with Clay		8.0						
		@8.5-ft: Gray			SS-5	3	5	6	5	11
11.0	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-9

Latitude: 33.42143
Longitude: -79.321503

Date Drilled: 8/28/2018	Supervisor: C. Piercy	Notes:
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 22	
Drill Machine: CME 45B	Drilling Method: HSA	
Water T.O.B. (ft): 3.0	Water 24 HR (ft): Backfilled	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		GRAVEL/SAND (8")		0.0						
	0.7	Medium Dense, Moist, Grayish Brown, Poorly Graded Fine SAND (SP-SM) with Silt			SS-1	4	6	8	8	14
		@2-ft: Gray/Reddish Yellow		2.0						
		▽ @3-ft: Wet, Gray/Dark Gray			SS-2	6	7	6	6	13
	4.0	Soft, Wet, Gray, High Plasticity, Lean CLAY (CL/A-6(16)) @SS-3: LL=37, PL=16, PI=21, NMC=45.9%, %#200=86.9		4.0						
17.0		@5.1-ft: Gray/Reddish Yellow			SS-3	1/12"		2	2	3
	5.5	Very Loose to Loose, Gray/Reddish Yellow, Wet, Clayey Fine SAND (SC)		6.0						
		@6-ft: Reddish Yellow/Gray			SS-4	1	2	3	4	5
	8.0	Medium Dense, Wet, Gray, Poorly Graded Fine SAND (SP-SC) with Clay		8.0						
	8.6	Medium Dense, Light Brown/Light Gray, Poorly Graded Fine SAND (SP-SM) with Silt			SS-5	3	7	7	4	14
12.0	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-10

Latitude: 33.422372
Longitude: -79.320404

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 22
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 3.2	Water 24 HR (ft): Cave at 2.2-ft

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder							
	0.3	GRAVEL/SAND (4")	0.0						
		Loose, Moist, Gray, Non-Plastic, Silty Fine SAND (SM/A-4(0))		SS-1	6	4	6	8	10
		@SS-2: LL=NP, PL=NP, PI=NP, NMC=30.8%, %#200=43.8	2.0	SS-2	5	3	2	2	5
		@3.2-ft: Light Gray							
	4.0	Loose, Wet, Light Gray/Reddish Yellow, Clayey Fine SAND (SC)	4.0	SS-3	1	2	4	3	6
16.8									
	6.0	Loose, Wet, Light Gray/Yellow, Poorly Graded Fine SAND (SP-SC) with Clay	6.0	SS-4	3	3	4	4	7
	6.6	Loose to Very Loose, Wet, Bluish Gray, Clayey Fine SAND (SC)	8.0	SS-5	2	3	1/12"		3
11.8									
	13.5	Very Loose, Wet, Silty Fine SAND (SM)	13.5						
	14.1	Very Soft, Wet, Gray, Sandy Lean CLAY (CL)		SS-6	WOH/18"				WOH
6.8									
	18.5	Very Loose, Wet, Gray, Clayey Fine SAND (SC), with Shell Fragments	18.5	SS-7	2	1	2		3
1.8	20.0	Boring Terminated at 20 feet							

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-11

Latitude: 33.423611
Longitude: -79.318887

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 22
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 3.0	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		GRAVEL/SAND (3")		0.0						
	0.3	Medium Dense, Moist, Gray/Yellowish Brown/Brown, Non-Plastic, Silty Fine SAND (SM/A-2-4) @SS-1: LL=NP, PL=NP, PI=NP, NMC=12.9%, %#200=19.4 @1.1-ft: Gray			SS-1	4	6	5	3	11
	2.0	Medium Dense, Moist, Light Gray/Gray, Poorly Graded Fine SAND (SP)		2.0						
		@3-ft: Wet			SS-2	6	10	12	12	22
	4.0	Medium Dense to Dense, Wet, Gray, Silty Fine SAND (SM)		4.0						
17.4					SS-3	4	9	15	17	24
				6.0						
					SS-4	9	18	17	14	35
		@8.0-ft: Very Loose		8.0						
	9.0	Very Loose, Wet, Gray, Poorly Graded Fine SAND (SP)			SS-5	5	2	1	4	3
12.4	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-12

Latitude: 33.424323
Longitude: -79.317792

Date Performed: 9/12/2018
Supervisor: C. Piercy
Ground Elevation (ft): 22
Water Level T.O.B.: 5.5

Notes:
REF: Dynamic Cone for Shallow In-Situ Penetration Testing; Sowers & Hedges (1966)

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 1.75" 2nd 1.75" 3rd 1.75"	N Value	COMMENTS
		Loose to Medium Dense, Moist, Dark Brownish Gray, Silty Fine SAND (SM)		0.0	DS-1		10	
				1.0	DS-2		6	
		@1-ft: Yellowish Brown						
20.0				2.0	DS-3		7	
				3.0	DS-4		12	
		@3-ft: Yellowish Brown/Gray						
		@3.4-ft: Wet						
18.0				4.0	DS-5		12	
		@4-ft: Gray						
		@4.8-ft: Black		5.0	DS-6		14	
		▽ @5.3-ft: Gray						
16.0	6.0			6.0	DS-7		15	
		Medium Dense to Loose, Wet, Light Gray, Poorly Graded Fine SAND (SP-SM) wtih Silt						
				7.0	DS-8		17	
14.0				8.0	DS-9		9	
				9.0				
		@9-ft: Light Gray/Gray			DS-10		9	
	9.5							
12.0		Hand Auger Boring Terminated at 9.5-ft Due to Hole Collapse						

LEGEND

SAMPLER TYPE		ABBREVIATIONS	
SS - Split Spoon	DS - Disturbed Sample	WOH - Weight of Hammer	LL - Liquid Limit
UD - Undisturbed Sample	CU - Cuttings	NMC - Natural Moisture Content	PL - Plastic Limit
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	T.O.B. - Time of Boring	PI - Plasticity Index

F&ME HAND AUGER LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-13

Latitude: 33.425031
Longitude: -79.316469

Date Performed: 9/12/2018
Supervisor: C. Piercy
Ground Elevation (ft): 23
Water Level T.O.B.: 4.7

Notes:
REF: Dynamic Cone for Shallow In-Situ Penetration Testing; Sowers & Hedges (1966)

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 1.75" / 2nd 1.75" / 3rd 1.75"	N Value	COMMENTS
		Very Loose, Moist, Dark Gray, Silty Fine SAND (SM)		0.0	DS-1		4	
22.0	0.7	Medium Dense to Loose, Moist, Yellowish Brown, Non-Plastic, Poorly Graded Fine SAND (SP-SM/A-2-4) with Silt		1.0	DS-2		14	
		@DS-2: LL=NP, PL=NP, PI=NP, NMC=7.0%, %#200=10.1						
		@1.5-ft: Reddish Yellow		2.0	DS-3		9	
20.0				3.0	DS-4		12	
		@3.0-ft: Yellow/Brownish Gray						
	3.5	Medium Dense, Moist, Gray, Poorly Graded Fine SAND (SP)						
	4.0	Medium Dense, Wet, Dark Gray/Gray, Silty Fine SAND (SM)		4.0	DS-5		11	
18.0		▽						
		@5.0-ft: Dark Gray		5.0	DS-6		17	
				6.0	DS-7		15	
16.0				7.0	DS-8		18	
				8.0	DS-9		4	
		@8.0-ft: Very Loose						
	8.5	Hand Auger Boring Terminated at 8.5 feet Due to Hole Collapse						
14.0								

LEGEND

SAMPLER TYPE		ABBREVIATIONS	
SS - Split Spoon	DS - Disturbed Sample	WOH - Weight of Hammer	LL - Liquid Limit
UD - Undisturbed Sample	CU - Cuttings	NMC - Natural Moisture Content	PL - Plastic Limit
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	T.O.B. - Time of Boring	PI - Plasticity Index

F&ME HAND AUGER LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-14

Latitude: 33.425735
Longitude: -79.314943

Date Performed: 9/12/2018

Supervisor: C. Piercy

Ground Elevation (ft): 26

Water Level T.O.B.: 4.5

Notes:
REF: Dynamic Cone for Shallow In-Situ Penetration Testing; Sowers & Hedges (1966)

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 1.75" / 2nd 1.75" / 3rd 1.75"	N Value	COMMENTS
26.0	0.1	TOPSOIL (1")		0.0	DS-1		3	
		Very Loose to Loose, Moist, Grayish Brown, Poorly Graded Fine SAND (SP-SM) with Silt						
		@1-ft: Light Brown		1.0	DS-2		6	
				2.0				
24.0		@2-ft: Light Brown/Reddish Yellow			DS-3		6	
		@3-ft: Light Gray/Reddish Yellow		3.0	DS-4		9	
	3.5	Loose, Moist, Light Gray, Poorly Graded Fine SAND (SP)						
	4.0	Loose, Moist, Gray/Light Gray, Poorly Graded Fine SAND (SP-SM) with Silt		4.0				
22.0		▽ @4.5-ft: Wet			DS-5		9	
				5.0	DS-6		5	
	5.7	Medium Dense, Wet, Dark Gray, Silty Fine SAND (SM)		6.0				
20.0					DS-7		18	
				7.0				
	7.2	Hand Auger Boring Terminated at 7.2 feet Due to Refusal			DS-8		18	
18.0								

LEGEND

SAMPLER TYPE		ABBREVIATIONS	
SS - Split Spoon	DS - Disturbed Sample	WOH - Weight of Hammer	LL - Liquid Limit
UD - Undisturbed Sample	CU - Cuttings	NMC - Natural Moisture Content	PL - Plastic Limit
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	T.O.B. - Time of Boring	PI - Plasticity Index

F&ME HAND AUGER LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

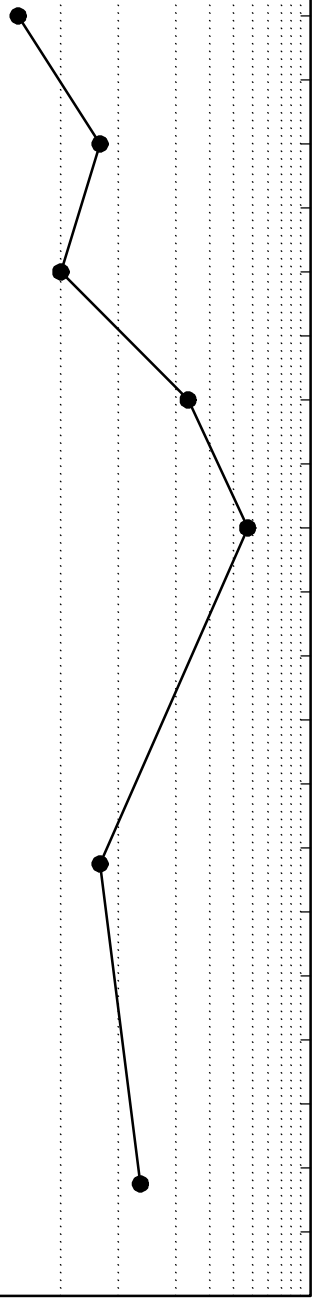
LOG OF BORING No. B-15

Latitude: 33.426272
Longitude: -79.313656

Date Drilled: 8/28/2018	Supervisor: C. Piercy	Notes:
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 31	
Drill Machine: CME 45B	Drilling Method: HSA	
Water T.O.B. (ft): 2.5	Water 24 HR (ft): Cave at 2.8-ft	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
	0.5	TOPSOIL (6")		0.0						
		Very Loose to Loose, Moist, Yellowish Brown/Gray, Poorly Graded Fine SAND (SP-SM) with Silt			SS-1	1	1	2	2	3
	2.5	▽		2.0						
		Loose, Wet, Light Gray, Non-Plastic, Poorly Graded Fine SAND (SP/A-3) @SS-2: LL=NP, PL=NP, PI=NP, NMC=23.1%, %#200=2.4			SS-2	2	3	5	4	8
	4.3	@4-ft: Gray		4.0						
25.6		Loose to Medium Dense, Wet, Dark Gray/Black, Silty Fine SAND (SM)			SS-3	1	2	3	5	5
		@6-ft: Black		6.0						
					SS-4	5	9	14	18	23
	8.0			8.0						
		Dense, Wet, Dark Brown/Black, Poorly Graded Fine SAND (SP-SM) with Silt			SS-5	9	18	29	30	47
20.6										
	13.5			13.5						
		Firm, Wet, Dark Gray, Sandy Lean CLAY (CL)								
	14.0	Loose to Medium Dense, Wet, Dark Gray, Poorly Graded Fine SAND (SP-SM) with Silt			SS-6	4	4	4		8
15.6										
				18.5						
		@18.5-ft: Greenish Gray			SS-7	3	5	8		13
10.6	20.0	Boring Terminated at 20 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-16

Latitude: 33.426947
Longitude: -79.312093

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 26
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 4.0	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		GRAVEL/SAND (4")		0.0						
	0.3	Medium Dense, Moist, Yellow/Light Brown/Brown, Non-Plastic, Poorly Graded Fine SAND (SP-SM/A-3) with Silt			SS-1	5	6	7	8	13
		@2-ft: Light Gray @SS-2: LL=NP, PL=NP, PI=NP, NMC=21.7%, %#200=6.4		2.0						
		@3.0-ft: Dark Gray			SS-2	7	7	5	5	12
	4.0 ▽	Medium Dense to Dense, Wet, Black, Silty Fine <U>>SAND (SM)		4.0						
21.4					SS-3	5	11	13	17	24
		@6-ft: Dark Brown/Black		6.0						
					SS-4	5	15	27	47	42
		@8-ft: Dark Gray		8.0						
		@8.5-ft: Very Dense, Brown			SS-5	36	50/5.75"			100+
	9.0	Boring Terminated at 9 feet								
16.4										

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

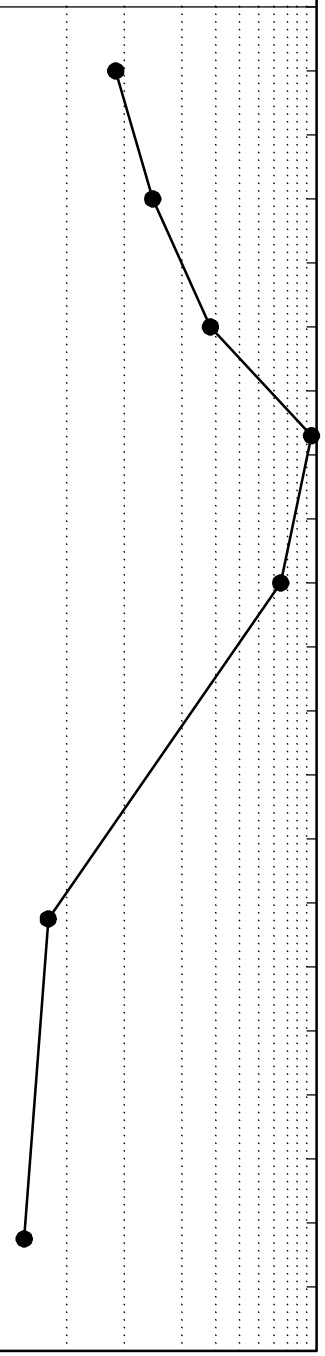
LOG OF BORING No. B-17

Latitude: 33.42771
Longitude: -79.310802

Date Drilled: 8/28/2018	Supervisor: C. Piercy	Notes:
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 25	
Drill Machine: CME 45B	Drilling Method: HSA	
Water T.O.B. (ft): 3.2	Water 24 HR (ft): 1.1	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
	0.3	GRAVEL/SAND (3")		0.0						
		Loose to Medium Dense, Moist, Gray/Light Brown, Non-Plastic, Silty Fine SAND (SM/A-2-4) @SS-1: LL=NP, PL=NP, PI=NP, NMC=22.1%, %#200=12.3 @1.6-ft: Wet, Black/Dark Brown			SS-1	3	5	4	5	9
	3.0	Medium Dense, Wet, Dark Gray, Poorly Graded Fine SAND (SP-SM) with Silt		2.0	SS-2	7	6	8	8	14
	4.0	Medium Dense, Wet, Dark Brown/Black, Silty Fine SAND (SM), with Organics (Roots)		4.0	SS-3	7	10	18	22	28
20.2	6.0	Very Dense, Wet, Dark Brown, Poorly Graded Fine SAND (SP-SM) with Silt		6.0	SS-4	17	43	50/5"		93+
	8.0	Very Dense, Wet, Dark Brown, Silty Fine SAND (SM)		8.0	SS-5	23	35	30	31	65
15.2										
	13.5	Very Loose, Wet, Brown, Poorly Graded Fine SAND (SP-SM) with Silt		13.5	SS-6	3	2	2		4
10.2										
		@18.5-ft: Gray		18.5	SS-7	2	1	2		3
5.2	20.0	Boring Terminated at 20 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-18

Latitude: 33.428632
Longitude: -79.30957

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 25
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 2.0	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		GRAVEL/SAND (4")		0.0						
	0.3	Medium Dense, Moist, Light Brown/Gray, Non-Plastic, Poorly Graded Fine to Medium SAND (SP-SM/A-3) with Silt			SS-1	1	5	6	3	11
		@SS-1: LL=NP, PL=NP, PI=NP, NMC=13.9%, %#200=9.1								
		@1.3-ft: Dark Gray		2.0						
	2.0	Loose, Wet, Dark Gray, Silty Fine SAND (SM)			SS-2	1	1	6	11	7
		@2.6-ft: Wood (Tree Stump)		4.0						
		@4-ft: Wood			SS-3	7	18	34	50/5"	52
19.7		@4.4-ft: Very Dense, Dark Brown/Black		6.0						
					SS-4	38	50/4"			100+
				8.0						
					SS-5	10	30	29	23	59
14.7	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-19

Latitude: 33.429721
Longitude: -79.30851

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 26
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 2.1	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
	0.1	GRAVEL/SAND (1/2")		0.0						
		Loose, Moist, Brownish Gray, Poorly Graded Fine SAND (SP-SM) with Silt								
	1.0				SS-1	1	3	4	3	7
		Loose, Moist, WHite/Light Gray/Gray, Poorly Graded Fine SAND (SP)								
	2.0	▽		2.0						
		Loose to Medium Dense, Wet, Dark Gray/Black, Silty Fine SAND (SM)			SS-2	3	2	4	6	6
		@4-ft: Dark Gray		4.0						
21.3					SS-3	3	8	14	24	22
		@6-ft: Very Dense to Dense, Black		6.0						
					SS-4	25	50/5.75"			100+
				8.0						
	9.0				SS-5	14	15	17	19	32
		Dense, Wet, Reddish Yellow, Poorly Graded Fine SAND (SP-SM) with Silt								
16.3	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70
>>

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-20

Latitude: 33.430818
Longitude: -79.307565

Date Performed: 9/12/2018
Supervisor: E. Baker
Ground Elevation (ft): 27
Water Level T.O.B.: 4.0

Notes:
REF: Dynamic Cone for Shallow In-Situ Penetration Testing; Sowers & Hedges (1966)

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 1.75" 2nd 1.75" 3rd 1.75"	N Value	COMMENTS
		Loose to Medium Dense, Dry, Yellow/Brown, Non-Plastic, Poorly Graded Fine SAND (SP-SM/A-3) with Silt		0.0	DS-1		6	
26.0		@1-ft: Yellow		1.0	DS-2		10	
		@2-ft: Light Brown		2.0	DS-3		6	
24.0				3.0	DS-4		9	
		▽ @4-ft: Wet, Dark Brown, with Shell Fragments @DS-5: LL=NP, PL=NP, PI=NP, NMC=34.7%, %#200=6.9		4.0	DS-5		5	
22.0				5.0	DS-6		6	
				6.0	DS-7		9	
20.0				7.0	DS-8		12	
	8.0	Hand Auger Boring Terminated at 8 feet Due to Hole Collapse		8.0	DS-9		13	
18.0								

LEGEND

SAMPLER TYPE		ABBREVIATIONS	
SS - Split Spoon	DS - Disturbed Sample	WOH - Weight of Hammer	LL - Liquid Limit
UD - Undisturbed Sample	CU - Cuttings	NMC - Natural Moisture Content	PL - Plastic Limit
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	T.O.B. - Time of Boring	PI - Plasticity Index

F&ME HAND AUGER LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-21

Latitude: 33.431909
Longitude: -79.306611

Date Performed: 9/12/2018
Supervisor: E. Baker
Ground Elevation (ft): 28
Water Level T.O.B.: 2.0

Notes:
REF: Dynamic Cone for Shallow In-Situ Penetration Testing; Sowers & Hedges (1966)

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 1.75" 2nd 1.75" 3rd 1.75"	N Value	COMMENTS
		Very Loose to Loose, Dry, Dark Brown, Poorly Graded Fine SAND (SP-SM) with Silt		0.0	DS-1		1	
				1.0	DS-2		7	
26.0								
		▽ @2-ft: Wet		2.0	DS-3		10	
		@3-ft: Medium Dense		3.0	DS-4		16	
24.0								
				4.0	DS-5		15	
	5.0	Hand Auger Boring Terminated at 5 feet Due to Hole Collapse		5.0	DS-6		18	
22.0								
20.0								
18.0								

LEGEND

SAMPLER TYPE		ABBREVIATIONS	
SS - Split Spoon	DS - Disturbed Sample	WOH - Weight of Hammer	LL - Liquid Limit
UD - Undisturbed Sample	CU - Cuttings	NMC - Natural Moisture Content	PL - Plastic Limit
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	T.O.B. - Time of Boring	PI - Plasticity Index

F&ME HAND AUGER LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-22

Latitude: 33.432764
Longitude: -79.305741

Date Drilled: 9/10/2018	Supervisor: C. Piercy
Date Completed: 9/10/2018	Approx. Ground Elevation (ft): 18
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 6.0	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
		GRAVEL/SAND (4")		0.0						
	0.3	Loose, Dry to Moist, Yellowish Red/Brown, Non-Plastic, Silty Fine SAND (SM/A-2-4) @SS-1: LL=NP, PL=NP, PI=NP, NMC=17.5%, %#200=24.7 @0.7-ft: Dark Gray			SS-1	3	4	2	1	6
	2.0	Loose, Moist, Light Gray/Reddish Yellow, Clayey Fine SAND (SC)		2.0	SS-2	1	4	5	6	9
	4.0	Medium Dense, Moist, Gray, Poorly Graded Fine SAND (SP-SC) with Clay		4.0						
	4.5	Medium Dense, Moist, Light Gray/Gray, Poorly Graded Fine SAND (SP-SM) with Silt			SS-3	6	7	5	3	12
13.0		@5.1-ft: Wet								
	6.0	▽		6.0						
	6.3	Very Loose, Wet, Dark Gray, Clayey Fine SAND (SC)			SS-4	WOH	2	1	1	3
		Very Loose, Wet, Light Gray/Dark Gray, Poorly Graded Fine SAND (SP-SM) with Silt								
	8.0	Very Loose, Wet, Dark Gray, Low Plasticity, Silty Fine SAND (SM/A-4(0)) @SS-5: LL=24, PL=23, PI=1, NMC=64.7%, %#200=48.1		8.0	SS-5	WOH/24"				WOH
8.0	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

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Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-23

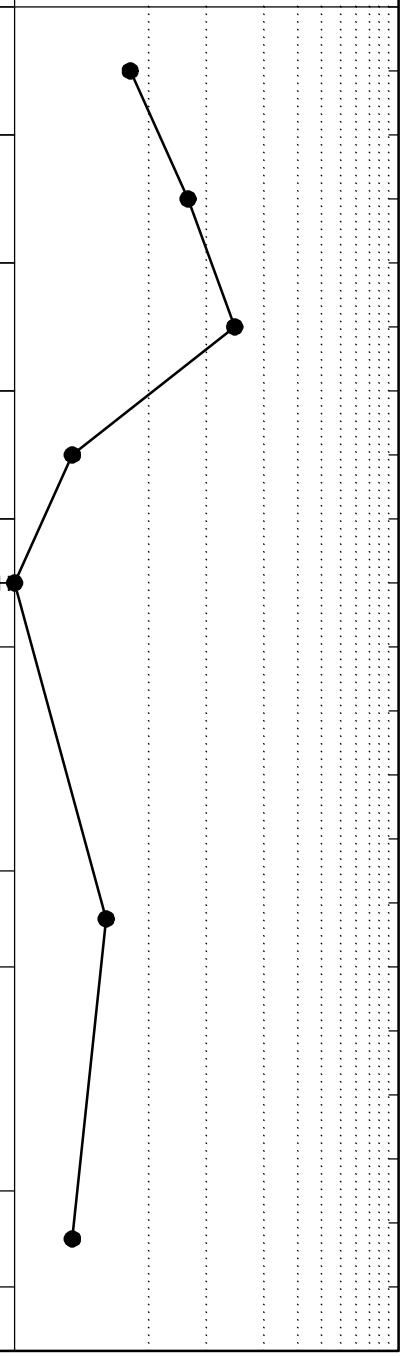
Latitude: 33.43346
Longitude: -79.304635

Date Drilled: 9/10/2018	Supervisor: C. Piercy
Date Completed: 9/10/2018	Approx. Ground Elevation (ft): 17
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 8.8	Water 24 HR (ft): Cave at 4.2-ft

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Grass Field							
	0.4	TOPSOIL (5")	0.0						
		Very Loose to Loose, Moist, Brown/Brownish Yellow, Non-Plastic, Silty Fine SAND (SM/A-2-4)		SS-1	1	2	2	3	4
		@SS-2: LL=NP, PL=NP, PI=NP, NMC=20.6%, %#200=21.1	2.0						
		@2.4-ft: Yellowish Brown		SS-2	4	3	5	6	8
		@3.0-ft: Light Gray	4.0						
		@4.0-ft: Medium Dense		SS-3	6	7	7	5	14
12.2		@5.1-ft: Wet							
	6.0		6.0						
		Very Loose, Dark Gray/Light Gray, Non-Plastic, Poorly Graded Fine SAND (SP-SM/A-2-4) with Silt		SS-4	WOH	1	1	2	2
		@SS-4: LL=NP, PL=NP, PI=NP, NMC=29.6%, %#200=10.0	8.0						
		@8-ft: Dark Gray		SS-5	WOH/18"			1	WOH
7.2									
			13.5						
				SS-6	WOH	1	2		3
2.2									
			18.5						
				SS-7	2	1	1		2
		@19.5-ft: Gray, with Shell Fragments							
-2.8	20.0	Boring Terminated at 20 feet							

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-24

Latitude: 33.433745
Longitude: -79.304

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 18
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 5.6	Water 24 HR (ft): 5.1

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
	0.7	Loose, Moist, Light Brown, Silty Fine SAND (SM)		0.0	SS-1	4	4	5	9	9
	1.2	Loose, Moist, Bluish Gray, Clayey Fine SAND (SC)		2.0	SS-2	9	8	7	7	15
		Loose to Medium Dense, Moist, Gray, Silty Fine SAND (SM) @2-ft: Gray/Light Brown @2.7-ft: Black/Gray @3.3-ft: Wet		4.0	SS-3	3	4	4	3	8
13.4	4.6	@4-ft: Black, with Organics		6.0	SS-4	WOH	2	7	9	9
	6.0	Loose, Wet, Gray, Poorly Graded Fine SAND (SP)		8.0	SS-5	2	3	1	1	4
	8.0	Loose, Wet, Gray, Non-Plastic, Silty Fine SAND (SM/A-2-4) @SS-4: LL=NP, PL=NP, PI=NP, NMC=28.9%, %#200=24.4								
8.4		Very Loose, Wet, Gray, Non-Plastic, Poorly Graded Fine SAND (SP-SM/A-3) with Silt @SS-5: LL=NP, PL=NP, PI=NP, NMC=25.8%, %#200=5.4								
	13.5	Very Soft, Wet, Gray, High Plasticity, Sandy Lean CLAY (CL/A-7-6(8)) @SS-6: LL=46, PL=19, PI=27, NMC=74.2%, %#200=50.1		13.5	SS-6	WOH/18"				WOH
3.4										
	18.5	Very Loose, Wet, Gray, Non-Plastic, Silty Fine SAND (SM/A-2-4), with Shell Fragments @SS-7: LL=NP, PL=NP, PI=NP, NMC=33.1%, %#200=15.0		18.5	SS-7	WOH/18"				WOH
-1.6										
				23.5	SS-8	WOH/18"				WOH
-6.6										
				28.5						

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

Continued Next Page

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-24

Latitude: 33.433745
Longitude: -79.304

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 18
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 5.6	Water 24 HR (ft): 5.1

Notes:

Elevation (ft)	Depth (ft)		Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
	28.5	@SS-9: No Recovery			SS-9	50/1.5"				100+
-11.6				33.5						
	33.5	Very Dense to Dense, Gray, Silty Fine to Coarse SAND (SM), with Cemented Layers			SS-10	27	50/4"			100+
-16.6										
		@38.5-ft: Light Gray		38.5	SS-11	19	17	15		32
		@39.4-ft: Gray								
-21.6										
				43.5	SS-12	2	3	6		9
		@43.5-ft: Loose, with Shell Fragments								
-26.6										
				48.5	SS-13	2	3	4		7
-31.6	50.0	Boring Terminated at 50 feet								
-36.6										

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70
Hard Drilling from 28.0 to 30.0 feet

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-25

Latitude: 33.433864
Longitude: -79.303738

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 17
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 4.9	Water 24 HR (ft): 3.1

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder								
	0.3	Medium Dense, Moist, Light Brown, Poorly Graded Fine SAND (SP)		0.0	SS-1	6	15	12	14	27
		Medium Dense, Moist, Gray, Silty Fine SAND (SM)		2.0	SS-2	12	7	7	8	14
	2.5	Medium Dense, Moist, Gray, Poorly Graded Fine SAND (SP)		4.0	SS-3	4	3	4	4	7
12.2	4.0	Loose, Moist, Gray, Low Plasticity, Silty, Clayey Fine SAND (SC-SM/A-4(0)) @SS-3: LL=23, PL=17, PI=6, NMC=19.5%, %#200=41.7		6.5	SS-4	WOH/12"		2		2
	6.0	Very Soft, Wet, Gray/Reddish Yellow, High Plasticity, Sandy Lean CLAY (CL/A-7-6(12)) @SS-5: LL=41, PL=16, PL=25, NMC=46.9%, %#200=60.8		8.0	SS-5	WOH/12"		1	1	1
7.2				13.5	SS-6	WOH/18"				WOH
	13.5	Very Loose, Wet, Gray, Low Plasticity, Silty Fine SAND (SM/A-4(0)) @SS-6: LL=27, PL=24, PI=3, NMC=63.7%, %#200=41.1		18.5	SS-7	WOH/18"				WOH
2.2				23.5	SS-8	2	4	3		7
	18.5	Very Loose to Loose, Wet, Gray, Non-Plastic, Silty Fine SAND (SM/A-2-4), with Shell Fragments @SS-7: LL=NP, PL=NP, PI=NP, NMC=32.1%, %#200=14.7		28.5						
-2.8										
-7.8										

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

Hard Drilling from 27.5 to 28.0 feet

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-25

Latitude: 33.433864
Longitude: -79.303738

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 17
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 4.9	Water 24 HR (ft): 3.1

Notes:

Elevation (ft)	Depth (ft)		Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		@28.5-ft: Very Dense, with Cemented Layers			SS-9	33	50/1.5"			100+
-12.8				33.5						
					SS-10	12	20	50/5"		70+
-17.8										
		@38.5-ft: Medium Dense		38.5						
					SS-11	7	5	12		17
-22.8										
		@43.5-ft: Very Dense		43.5						
					SS-12	4	12	50/5.5"		62+
-27.8										
		@48.5-ft: Loose, with Shell Fragments		48.5						
					SS-13	2	2	3		5
-32.8	50.0	Boring Termianted at 50 feet								
-37.8										

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70
Hard Drilling from 29.0 to 29.5 feet >>

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-26

Latitude: 33.43446
Longitude: -79.3024

Date Drilled: 9/10/2018	Supervisor: C. Piercy
Date Completed: 9/10/2018	Approx. Ground Elevation (ft): 15
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 7.5	Water 24 HR (ft): 2.0

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland							
	0.3	TOPSOIL (3")	0.0						
		Soft, Moist, Gray/Reddish Yellow, High Plasticity, Sandy Lean CLAY (CL/A-7-6(11))		SS-1	2	1	2	3	3
		@SS-2: LL=45, PL=19, PI=26, NMC=33.9%, %#200=56.1	2.0	SS-2	1	2	3	3	5
	4.0	Very Loose to Loose, Moist, Gray, Medium Plasticity, Clayey Fine SAND (SC/A-6(3))	4.0						
10.4		@5.2-ft: Wet		SS-3	2	2	2	1	4
		@SS-4: LL=33, PL=20, PI=13, NMC=49.5%, %#200=45.7	6.0	SS-4	WOH/24"				WOH
			8.0	SS-5	WOH/24"				WOH
5.4									
			13.5	SS-6	WOH/18"				WOH
0.4									
			18.5	SS-7	2	2	3		5
-4.6	20.0	@19.5-ft: with Shell Fragments Boring Terminated at 20 feet							

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-27

Latitude: 33.435142
Longitude: -79.30093

Date Drilled: 9/10/2018	Supervisor: C. Piercy
Date Completed: 9/10/2018	Approx. Ground Elevation (ft): 15
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 5.2	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland								
		TOPSOIL (3")		0.0						
	0.3	Very Loose, Moist, Gray, Clayey Fine SAND (SC) @0.7-ft: Gray/Reddish Yellow			SS-1	1	2	2	4	4
				2.0	SS-2	1	2	2	3	4
	4.0	Loose to Very Loose, Moist, Gray, Low Plasticity, Silty, Clayey Fine SAND (SC-SM/A-4(0)) @SS-3: LL=24, PL=20, PI=4, NMC=29.2%, %#200=40.5		4.0	SS-3	5	3	3	2	6
10.0		▽ @5.2-ft: Wet		6.0	SS-4		WOH/24"			WOH
				8.0	SS-5		WOH/24"			WOH
5.0	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-28

Latitude: 33.435899
Longitude: -79.299601

Date Drilled: 9/10/2018	Supervisor: C. Piercy
Date Completed: 9/10/2018	Approx. Ground Elevation (ft): 16
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 5.0	Water 24 HR (ft): Backfilled

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland								
		Loose, Moist, Dark Gray, Non-Plastic, Silty Fine SAND (SM/A-2-4) @SS-1: LL=NP, PL=NP, PI=NP, NMC=20.3%, %#200=28.5 @0.3-ft: Gray/Reddish Yellow		0.0	SS-1	2	3	2	2	5
	2.0	Soft to Firm, Moist, Light Gray/Reddish Yellow (Mottled), Sandy CLAY (CL)		2.0	SS-2	2	2	2	3	4
				4.0						
	4.5	Loose, Moist, Light Gray/Reddish Yellow (Mottled), Clayey Fine SAND (SC)								
11.4		@5-ft: Wet			SS-3	4	3	3	2	6
	6.0	Very Loose, Wet, Gray, Silty Fine SAND (SM)		6.0						
					SS-4	WOH/24"				WOH
	8.0	Loose, Wet, Gray, Clayey Fine SAND (SC)		8.0						
					SS-5	2	2	3	3	5
6.4	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-29

Latitude: 33.436404
Longitude: -79.298641

Date Drilled: 8/28/2018	Supervisor: C. Piercy
Date Completed: 8/28/2018	Approx. Ground Elevation (ft): 18
Drill Machine: CME 45B	Drilling Method: HSA
Water T.O.B. (ft): 4.2	Water 24 HR (ft): 3.0

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Shoulder		0.0						
		Loose, Moist, White/Black/Grayish Brown, Poorly Graded Fine SAND (SP-SM) with Silt			SS-1	1	3	3	2	6
	1.2	Loose, Moist, Light Brown, Silty Fine SAND (SM)		2.0						
		@2-ft: Brownish Yellow/Gray			SS-2	3	2	3	2	5
		@2.3-ft: Wet								
	4.0	Very Loose, Wet, Light Gray/Reddish Yellow, Clayey Fine SAND (SC)		4.0						
13.0					SS-3	2	1	2	1	3
				6.0						
	6.3	Very Soft, Wet, Reddish Yellow, Lean CLAY (CL)			SS-4	1/12"		1/12"		1
		@6.8-ft: Gray								
	8.0	Very Loose, Wet, Gray, Clayey Fine SAND (SC)		8.0						
		@8.9-ft: Bluish Gray			SS-5	WOR	1	2	2	3
8.0	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-30

Latitude: 33.437221
Longitude: -79.296888

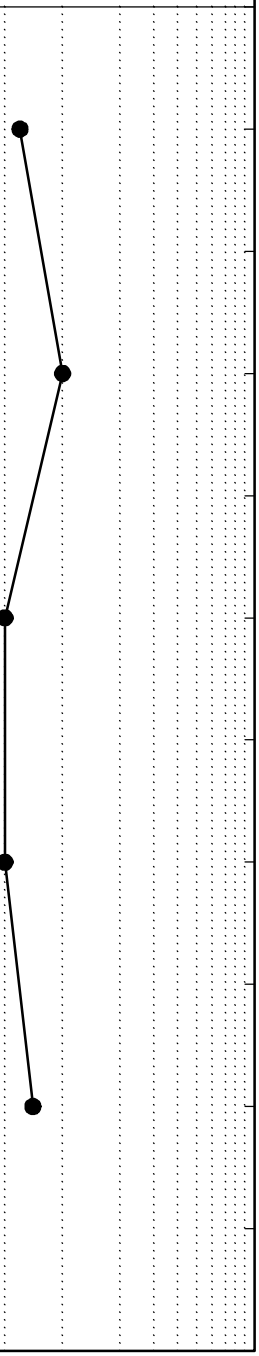
Date Drilled: 9/11/2018	Supervisor: C. Piercy
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 18
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 5.0	Water 24 HR (ft): 5.0

Notes:

Grass Field

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		TOPSOIL (6")	0.0						
	0.5	Loose, Moist, Light Brown, Silty Fine SAND (SM)							
	1.0	Loose, Moist, Reddish Yellow, Poorly Graded Fine <U>>SAND (SP-SC) with Clay		SS-1	2	2	4	4	6
	2.0	Loose, Moist, Light Gray/Red/Reddish Yellow (Mottled), Low Plasticity, Silty Fine SAND (SM/A-2-4)	2.0						
				SS-2	3	5	5	5	10
		@SS-3: LL=27, PL=24, PI=3, NMC=26.9%, %#200=23.6	4.0						
12.9		@5-ft: Wet		SS-3	4	2	3	2	5
	6.0	Firm, Wet, Gray, Lean CLAY (CL) with Sand	6.0						
	6.7	Loose, Wet, Light Gray, Silty Fine SAND (SM)							
		@7-ft: Dark Gray		SS-4	WOH	2	3	3	5
			8.0						
	8.3	Loose, Wet, Gray, Clayey Fine SAND (SC)							
	9.0	Loose, Moist, Gray, Silty Fine <U>>SAND (SM)		SS-5	1	3	4	4	7
7.9	10.0	Boring Terminated at 10 feet							

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-31

Latitude: 33.439391
Longitude: -79.292713

Date Drilled: 9/11/2018	Supervisor: C. Piercy
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 18
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 6.0	Water 24 HR (ft): 3.3

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Grass Field								
		TOPSOIL (7")		0.0						
	0.6	Loose, Moist, Gray/Reddish Yellow, Clayey Fine SAND (SC)			SS-1	WOH	2	3	4	7
				2.0						
					SS-2	1	2	3	3	5
		@3.3-ft: Gray		4.0						
	4.4	Loose to Very Loose, Light Gray, Moist, Silty Fine SAND (SM)								
12.8					SS-3	4	4	4	3	8
		@6-ft: Wet		6.0						
	6.9	Very Loose, Wet, Dark Gray, Clayey Fine SAND (SC)			SS-4	1	2	1/12"		2
	8.0	Very Soft, Wet, Dark Gray, Lean CLAY (CL) with Sand		8.0						
					SS-5	WOH/24"				WOH
7.8	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-32

Latitude: 33.440723
Longitude: -79.290542

Date Drilled: 9/11/2018	Supervisor: C. Piercy
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 20
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 7.8	Water 24 HR (ft): 4.7

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland								
		TOPSOIL (6")		0.0						
	0.5	Very Loose, Moist, Brownish Yellow, Silty Fine SAND (SM)								
	0.8	Very Loose, Brownish Yellow/Gray (Mottled), Clayey Fine SAND (SC)			SS-1	1	1	2	3	3
	2.0	Loose, Moist, Brownish Yellow/Gray (Mottled), Silty Fine SAND (SM)		2.0						
	3.0	Loose, Moist, Brownish Yellow/Gray/Red (Mottled), Clayey Fine SAND (SC)			SS-2	1	2	3	2	5
		@4-ft: Wet		4.0						
	4.5	Loose to Very Loose, Wet, Gray/Light Gray, Silty Fine SAND (SM)			SS-3	3	3	3	4	6
14.9				6.0						
					SS-4	WOH	1	1	1	2
				8.0						
	8.5	Very Soft, Wet, Dark Gray, Lean CLAY (CL)			SS-5	WOH/12"		1	1	1
9.9	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-33

Latitude: 33.442967
Longitude: -79.288477

Date Drilled: 9/11/2018	Supervisor: C. Piercy
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 17
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 6.6	Water 24 HR (ft): 4.2

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland								
		TOPSOIL (6")		0.0						
	0.5	Loose, Moist, Gray/Reddish Yellow, Silty Fine SAND (SM)								
	0.9	Loose to Medium Dense, Moist, Gray/Reddish Yellow (Mottled), Medium Plasticity, Clayey Fine SAND (SC/A-6(3))			SS-1	1	3	2	2	5
		@SS-2: LL=34, PL=16, PI=18, NMC=24.5%, %#200=42.2		2.0	SS-2	2	2	3	4	5
		▼ @4.0-ft: Gray		4.0						
	4.8	Medium Dense, Moist, Gray, Silty Fine SAND (SM)			SS-3	5	5	7	5	12
12.1				6.0						
	6.0	Very Soft, Wet, Dark Gray, Sandy Lean CLAY (CL)			SS-4	WOH/12"		1	2	1
		▽		8.0						
	8.5	Very Loose, Wet, Dark Gray, Silty, Clayey Fine SAND (SC-SM)			SS-5	WOH/24"				WOH
7.1	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-34

Latitude: 33.444326
Longitude: -79.287617

Date Drilled: 9/11/2018	Supervisor: C. Piercy
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 18
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 7.2	Water 24 HR (ft): 4.9

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland							
	0.4	TOPSOIL (5")	0.0						
	0.8	Very Loose, Moist, Gray, Silty Fine SAND (SM)		SS-1	WOH/12"		1	2	1
		Very Loose to Loose, Moist, Gray/Reddish Yellow (Mottled), Clayey Fine SAND (SC)	2.0						
				SS-2	2	3	4	5	7
			4.0						
	4.5	Loose, Moist, Gray, Silty Fine SAND (SM)		SS-3	5	5	4	3	9
12.6									
	6.0	@SS-4: No Recovery	6.0						
				SS-4	WOH/24"				WOH
	8.0	Very Soft, Wet, Dark Gray, Sandy Lean CLAY (CL)	8.0						
				SS-5	WOH/24"				WOH
7.6									
	13.5	Very Soft, Wet, Dark Gray, Lean CLAY (CL) with Sand	13.5						
				SS-6	WOH/18"				WOH
2.6									
	18.5	Very Loose, Wet, Bluish Gray, Clayey Fine SAND (SC)	18.5						
				SS-7	WOH/18"				WOH
-2.4	20.0	Boring Terminated at 20 feet							

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

Piece of Wood Blocking Sampler

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-35

Latitude: 33.446383
Longitude: -79.286441

Date Drilled: 9/11/2018	Supervisor: C. Piercy
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 21
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 8.5	Water 24 HR (ft): 6.2

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland								
		TOPSOIL (9")		0.0						
	0.8	Very Loose to Loose, Moist, Brownish Yellow, Non-Plastic, Silty Fine SAND (SM/A-2-4) @SS-1: LL=NP, PL=NP, PI=NP, NMC=12.4%, %#200=22.9			SS-1	WOH	1	3	4	4
		@2-ft: Yellow/Brownish Yellow		2.0	SS-2	2	2	3	2	5
	4.0	Loose, Moist, Reddish Yellow/Grayish Brown, Clayey Fine SAND (SC)		4.0	SS-3	3	4	4	3	8
16.2										
	6.0	▼ Very Loose, Wet, Gray/Yellow, Silty Fine SAND (SM)		6.0	SS-4	1	1	2	3	3
		@8-ft: Wet		8.0						
	8.4	▽ Very Loose, Wet, Gray, Clayey Fine SAND (SC)			SS-5	1	1	1	1	2
11.2	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-36

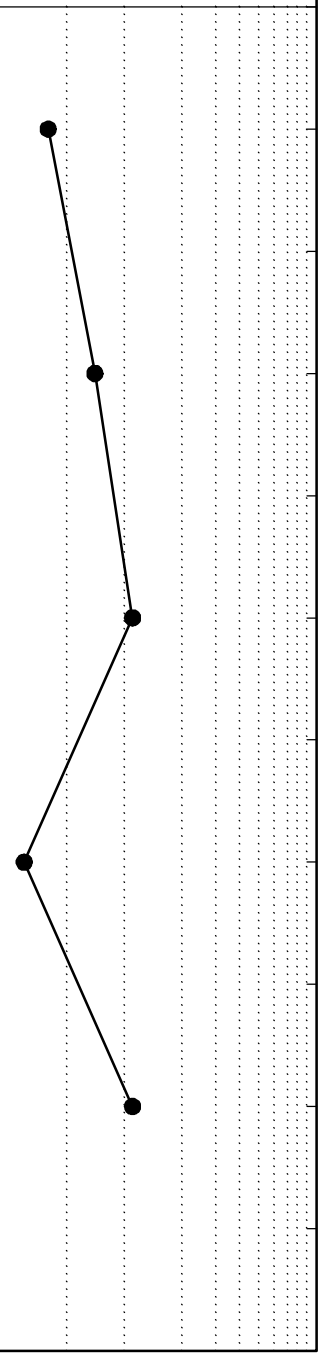
Latitude: 33.448115
Longitude: -79.285271

Date Drilled: 9/11/2018	Supervisor: C. Piercy
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 17
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 5.2	Water 24 HR (ft): 5.0

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland								
		TOPSOIL (8")		0.0						
	0.8	Very Loose to Loose, Moist, Brownish Gray, Silty Fine SAND (SM) @1-ft: Gray/Reddish Yellow (Mottled)			SS-1	2	2	2	3	4
				2.0	SS-2	1	3	4	4	7
		@4-ft: Medium Dense		4.0						
11.7		@4.8-ft: Reddish Yellow ▽ @5.2-ft: Wet, Light Gray			SS-3	4	6	5	3	11
		@6-ft: Very Loose, Dark Gray		6.0	SS-4	WOH	1	2	3	3
		@8-ft: Medium Dense		8.0						
	8.6	Medium Dense, Wet, Light Gray, Poorly Graded Fine SAND (SP-SM) with Silt			SS-5	4	5	6	6	11
6.7	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-37

Latitude: 33.449948
Longitude: -79.282821

Date Drilled: 9/11/2018	Supervisor: C. Piercy	Notes:
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 18	
Drill Machine: CME 550X	Drilling Method: HSA	
Water T.O.B. (ft): 5.2	Water 24 HR (ft): 4.1	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Grass Field								
	0.1	TOPSOIL (1")		0.0						
		Loose, Moist, GrayBrownish Yellow, Non-Plastic, Silty Fine SAND (SM/A-2-4) @SS-1: LL=NP, PL=NP, PI=NP, NMC=15.5%, %#200=27.4 @0.9-ft: Gray/Yellow/Red (Mottled)			SS-1	2	4	4	3	8
	2.0	Loose, Moist, Gray/Yellow/Red (Mottled), Silty, Clayey Fine SAND (SC-SM)		2.0	SS-2	3	3	5	4	8
		@4-ft: Reddish Yellow		4.0						
	4.5	Loose to Very Loose, Moist, Light Gray, Silty Fine SAND (SM)			SS-3	4	3	3	3	6
13.0		@5.2-ft: Wet		6.0						
		@6-ft: Dark Gray			SS-4	WOH	1	3	3	4
	8.4	Very Soft, Wet, Dark Gray, Lean CLAY (CL)		8.0						
					SS-5	WOH/24"				WOH
8.0	10.0	Boring Terminated at 10 feet								

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

Brick Chimney Road
Georgetown County, South Carolina
G5839

LOG OF BORING No. B-38

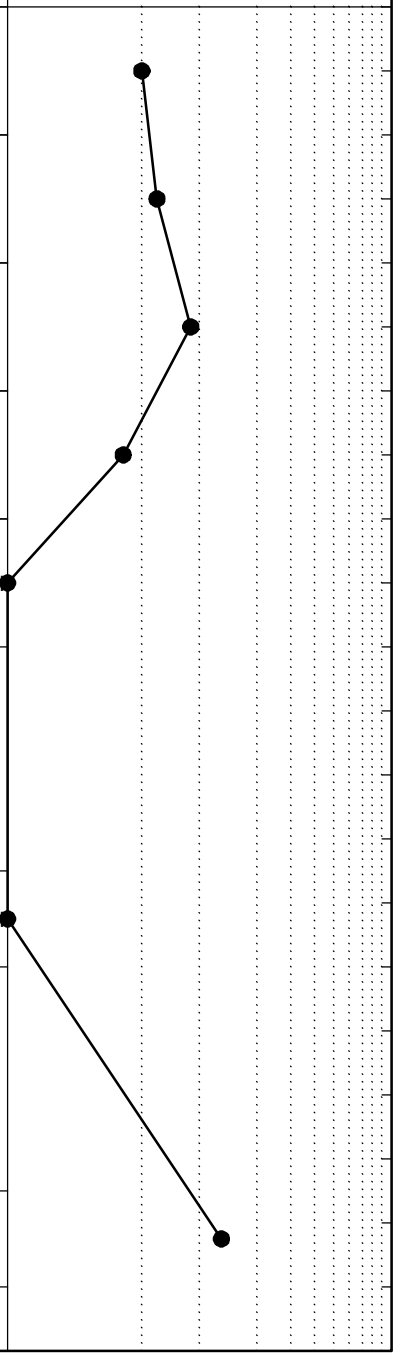
Latitude: 33.450739
Longitude: -79.279572

Date Drilled: 9/11/2018	Supervisor: C. Piercy
Date Completed: 9/11/2018	Approx. Ground Elevation (ft): 21
Drill Machine: CME 550X	Drilling Method: HSA
Water T.O.B. (ft): 6.7	Water 24 HR (ft): Cave at 2.2-ft

Notes:

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample Type-No.	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
		Cleared Woodland							
	0.4	TOPSOIL (5")	0.0						
		Loose, Moist, Gray, Silty Fine SAND (SM) @0.6-ft: Gray/Yellow		SS-1	1	2	3	4	5
	2.0	Loose, Moist, Gray/Reddish Yellow, Clayey Fine SAND (SC)	2.0	SS-2	3	3	3	3	6
			4.0						
15.8	4.9	Loose to Very Loose, Moist, Gray, Silty Fine SAND (SM)		SS-3	4	4	5	5	9
			6.0						
		@6.7-ft: Wet, Dark Gray		SS-4	1	2	2	1	4
			8.0						
	8.5	Very Loose, Wet, Dark Gray, Clayey Fine SAND (SC)							
	9.0	Very Soft, Wet, Dark Gray, Sandy Lean CLAY (CL)		SS-5	WOH/24"				WOH
10.8									
			13.5						
	13.5	Very Soft, Wet, Dark Gray, Lean CLAY (CL) with Sand		SS-6	WOH/18"				WOH
5.8									
			18.5						
	18.5	Stiff, Wet, Bluish Gray, Sandy Lean CLAY (CL)							
	19.2	Medium Dense, Wet, Bluish Gray, Clayey Fine SAND (SC)		SS-7	3	7	6		13
0.8	20.0	Boring Terminated at 20 feet							

STD. PENETRATION TEST DATA (blows/ft)
5 10 20 40 70



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	PHD - Percussion Hammer Drill

F&ME PRIVATE LOG G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

APPENDIX D

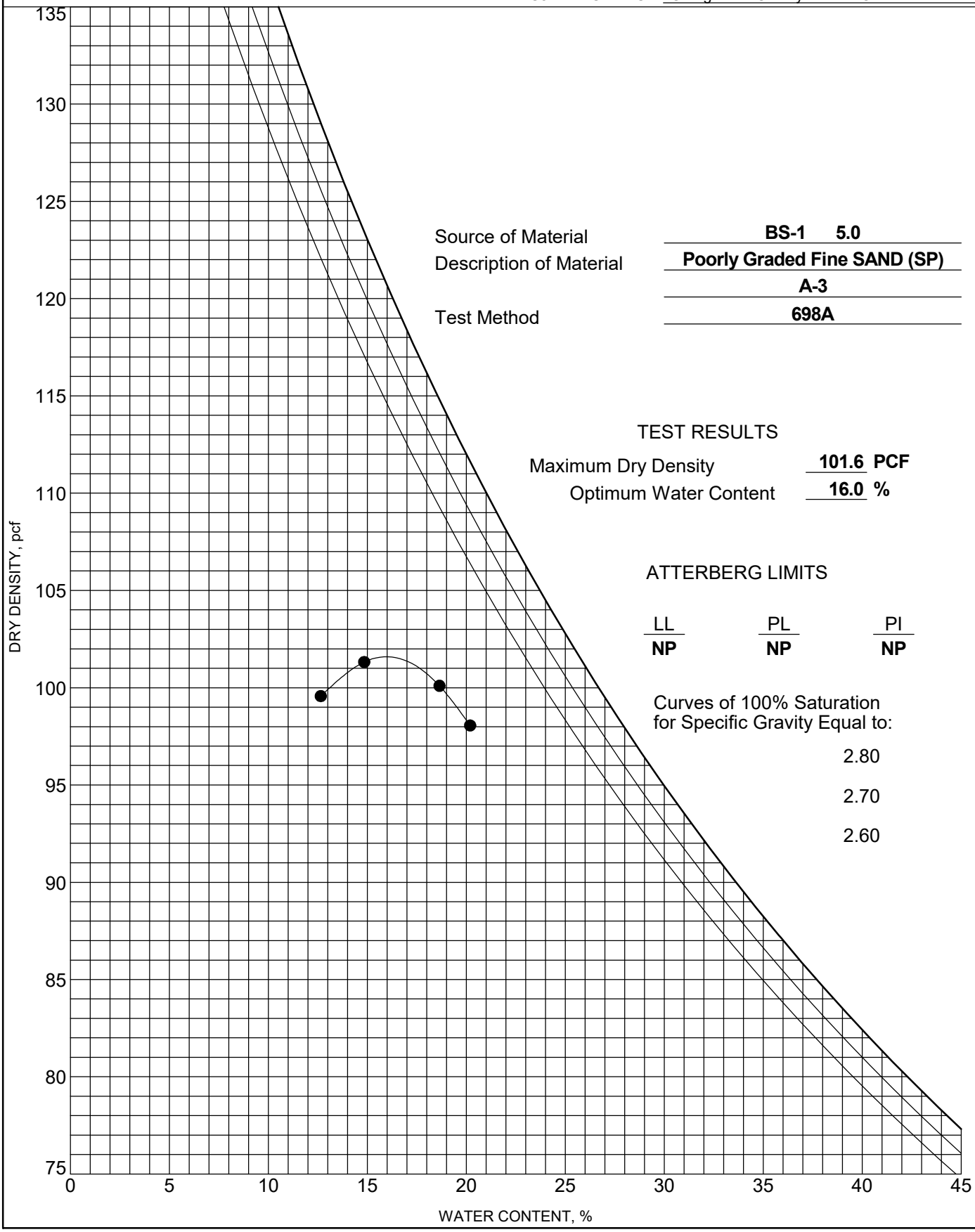
Laboratory Test Results

F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



Source of Material	**BS-1 5.0**
Description of Material	**Poorly Graded Fine SAND (SP)**
	A-3
Test Method	**698A**

TEST RESULTS

Maximum Dry Density	**101.6**	**PCF**
Optimum Water Content	**16.0**	**%**

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS
3112 Devine Street
Columbia, South Carolina 29205

CALIFORNIA BEARING RATIO TEST

AASHTO T193

PROJECT:	Brick Chimney	PROJECT NO.:	G5839
SAMPLE LOCATION:	BS-1	SAMPLE/BORING NUMBER:	18-1931E
SAMPLE ELEVATION/DEPTH:	0.5' - 5.0'	SAMPLED BY:	
SOIL DESCRIPTION:	Poorly Graded SAND (SP/A-3)	DATE SAMPLED:	
		DATE RECEIVED:	26-Sep
DATE TEST BEGAN:	27-Sep	DATE TEST COMPLETED:	10-Oct

PROCTOR TEST VALUES

MAXIMUM DRY DENSITY (PCF):	101.6
OPTIMUM MOISTURE (%):	16.0
METHOD:	

SOAKED CBR TEST VALUES (ASTM D-1883)

MOLDED DRY DENSITY (PCF):	101.1
% MAXIMUM DRY DENSITY:	99.6
MOLDED MOSITURE CONTENT (%):	17.52
SOAKING PERIOD (HRS):	96+
SURCHARGE (LBS):	10
% ± SHRINK/SWELL:	-0.02
CBR @ 0.1" PENETRATION:	25.9%
CBR @ 0.2" PENETRATION:	26.9%
PENETRATION RATE (mm/min):	

REMARKS:

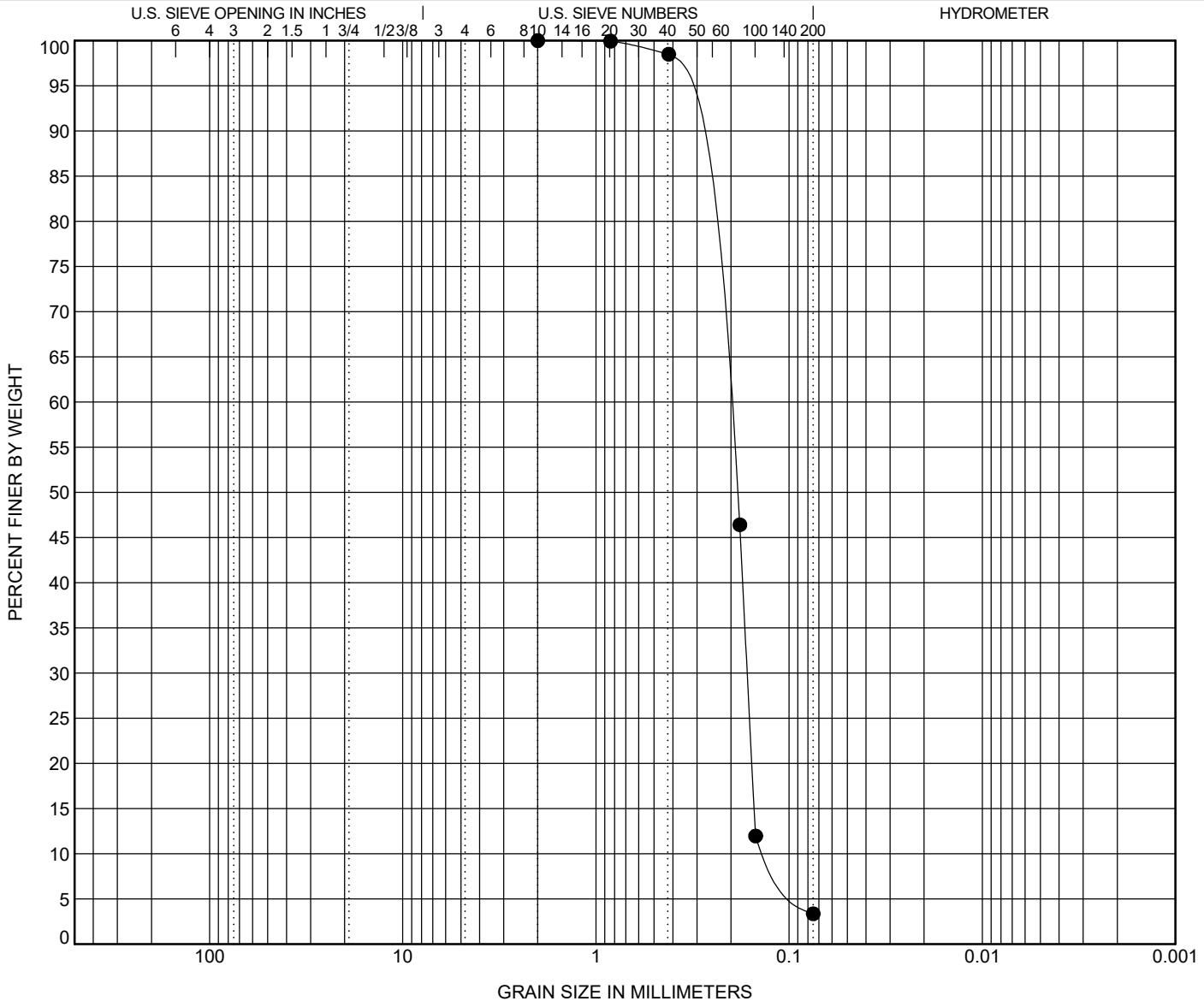
TECHNICIAN SIGNATURE: WAP

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **BS-1**	**5.0**	**Poorly Graded Fine SAND (SP) A-3**	**18.2**	**NP**	**NP**	**NP**	**0.95**	**1.76**

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **BS-1**	**5.0**	**2**	**0.397**	**0.191**	**0.127**	**0.0**	**96.6**	**3.4**	

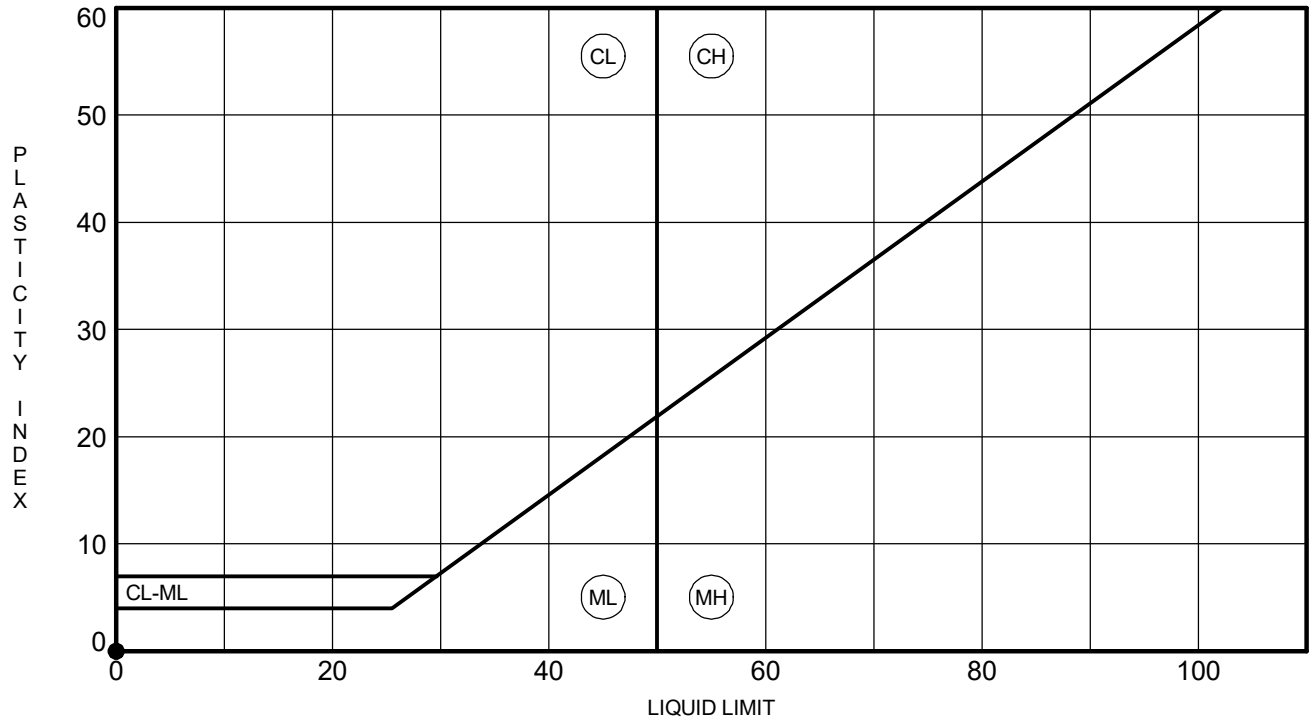
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
● **BS-1**	**5.0**	**NP**	**NP**	**NP**	**3**	**Poorly Graded Fine SAND (SP) A-3**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

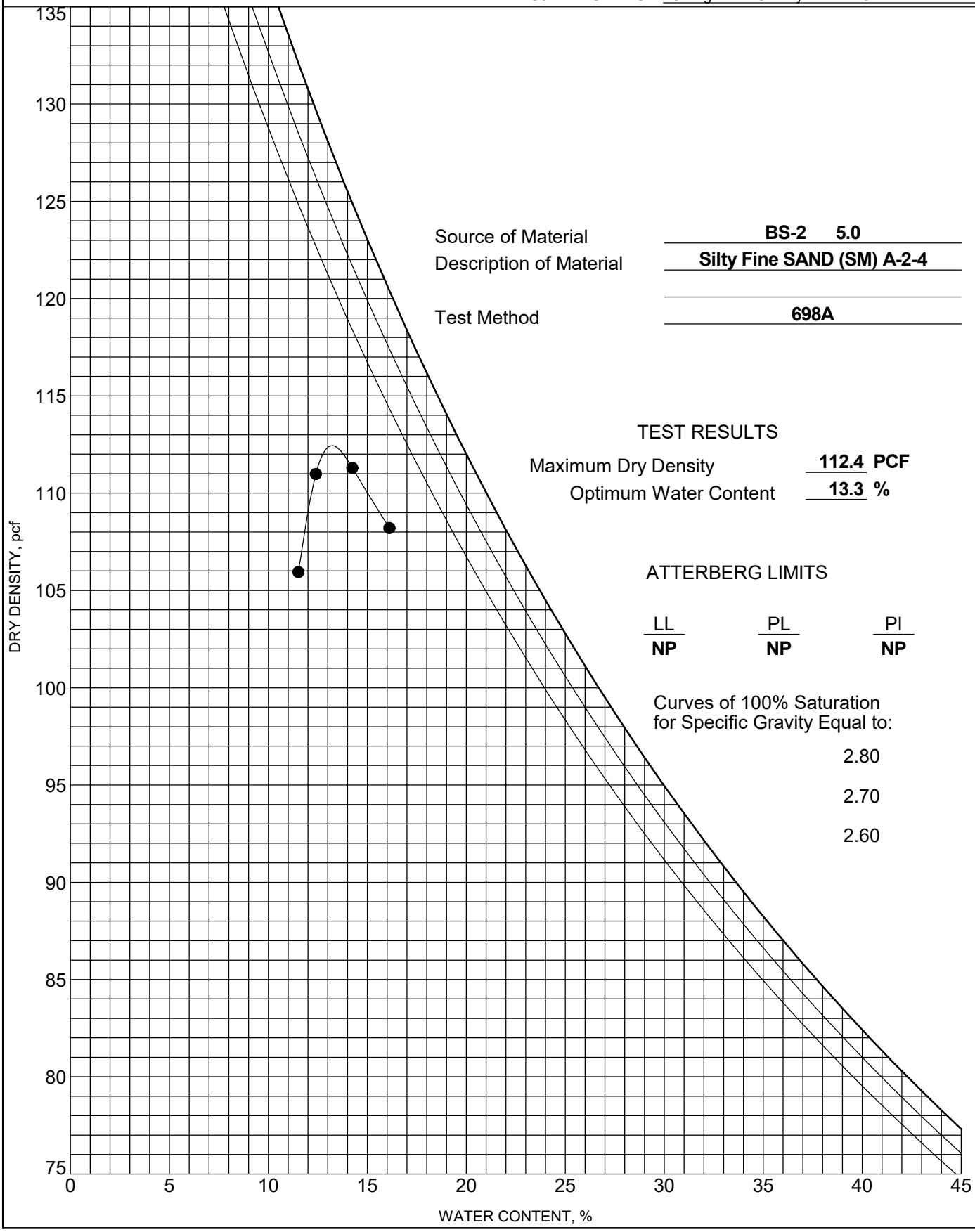
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
BS-1	**5.0**	**18.2**	**Poorly Graded Fine SAND (SP) A-3**

F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



Source of Material **BS-2 5.0**

Description of Material **Silty Fine SAND (SM) A-2-4**

Test Method **698A**

TEST RESULTS

Maximum Dry Density **112.4** **PCF**

Optimum Water Content **13.3** **%**

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS
3112 Devine Street
Columbia, South Carolina 29205

CALIFORNIA BEARING RATIO TEST

AASHTO T193

PROJECT:	Brick Chimney	PROJECT NO.:	G5839
SAMPLE LOCATION:	BS-2	SAMPLE/BORING NUMBER:	18-1932E
SAMPLE ELEVATION/DEPTH:	1.0' - 5.0'	SAMPLED BY:	
SOIL DESCRIPTION:	Silty SAND (SM/A-2-4)	DATE SAMPLED:	
		DATE RECEIVED:	26-Sep
DATE TEST BEGAN:	27-Sep	DATE TEST COMPLETED:	10-Oct

PROCTOR TEST VALUES

MAXIMUM DRY DENSITY (PCF):	112.4
OPTIMUM MOISTURE (%):	13.3
METHOD:	

SOAKED CBR TEST VALUES (ASTM D-1883)

MOLDED DRY DENSITY (PCF):	108.3
% MAXIMUM DRY DENSITY:	96.4
MOLDED MOSITURE CONTENT (%):	13.53
SOAKING PERIOD (HRS):	96+
SURCHARGE (LBS):	10
% ± SHRINK/SWELL:	-0.17
CBR @ 0.1" PENETRATION:	9.2%
CBR @ 0.2" PENETRATION:	15.5%
PENETRATION RATE (mm/min):	

REMARKS:

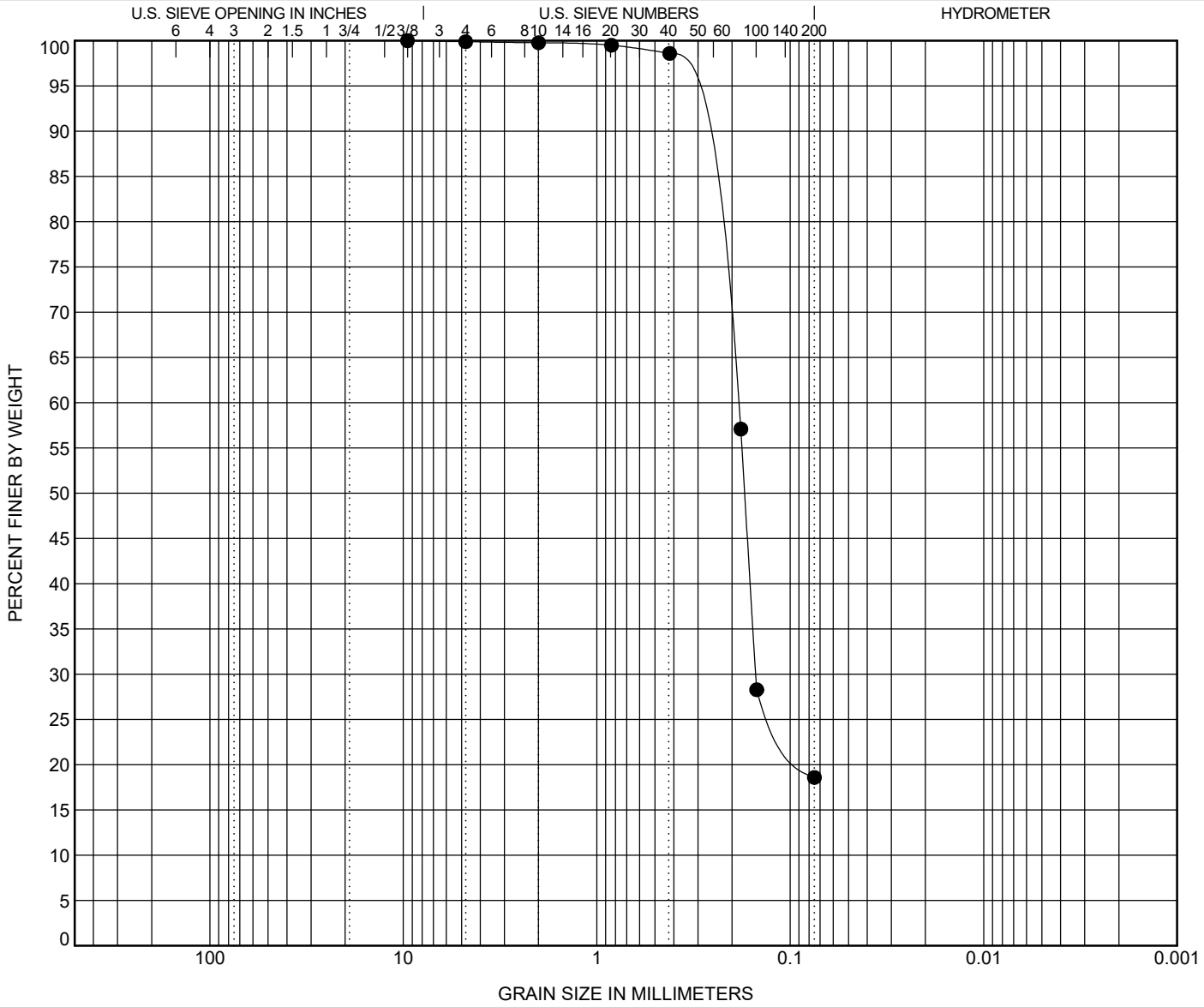
TECHNICIAN SIGNATURE: WAP

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **BS-2**	**5.0**	**Silty Fine SAND (SM) A-2-4**	**12.7**	**NP**	**NP**	**NP**		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **BS-2**	**5.0**	**9.52**	**0.39**	**0.172**		**0.1**	**81.3**	**18.6**	

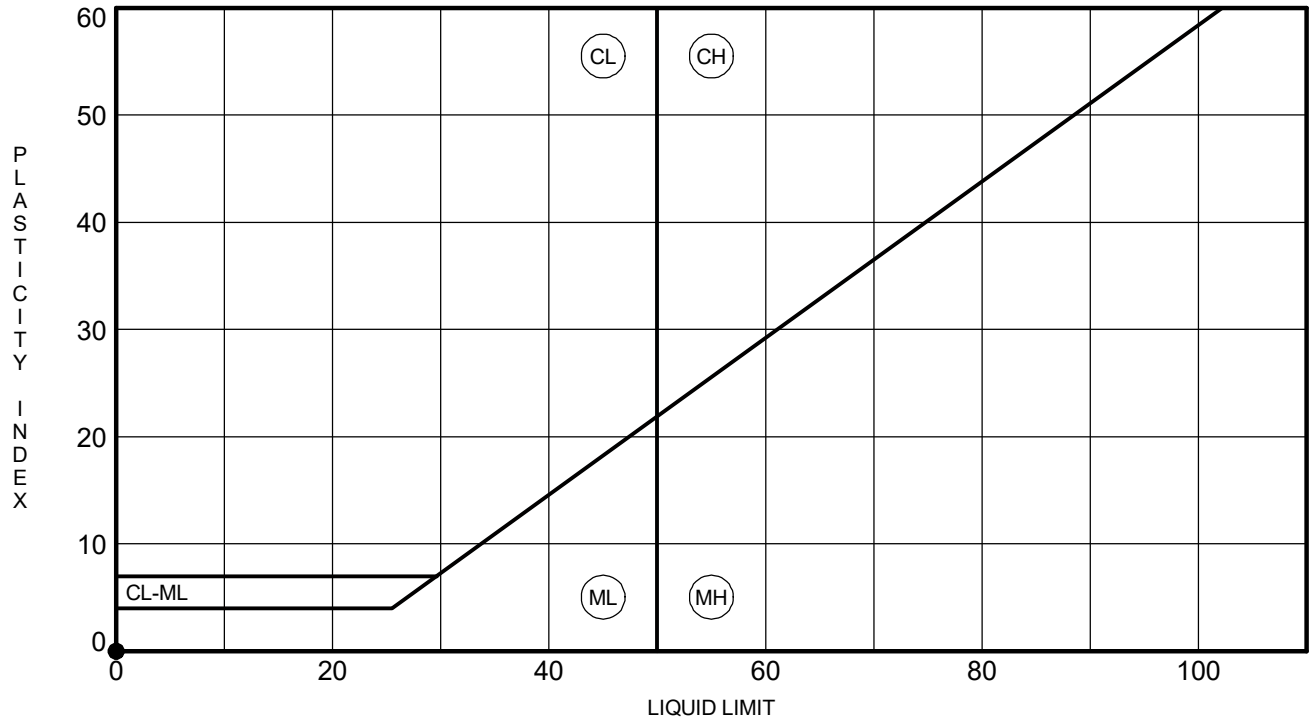
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**BS-2**	**5.0**	**NP**	**NP**	**NP**	**19**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

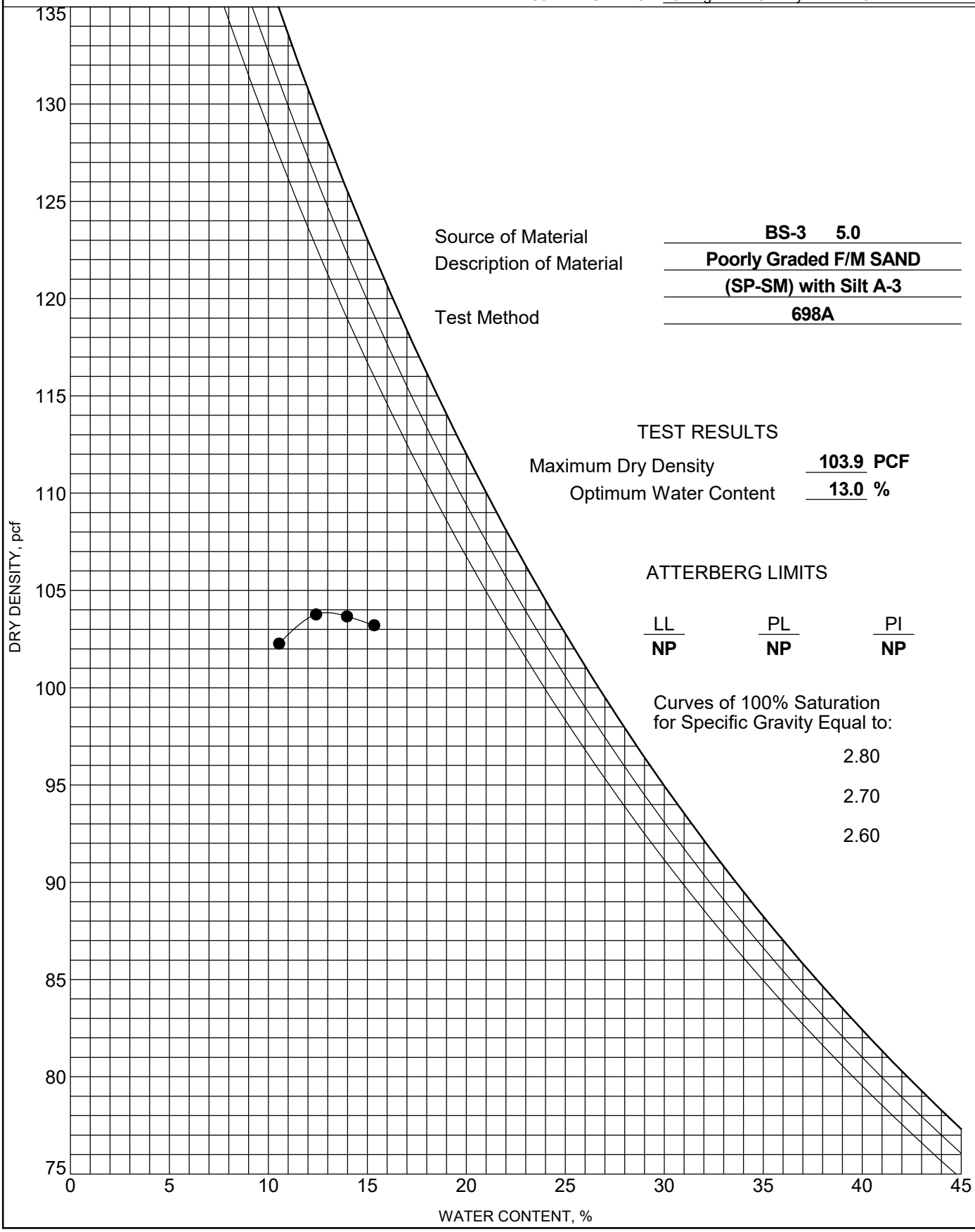
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
BS-2	**5.0**	**12.7**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



Source of Material	**BS-3 5.0**
Description of Material	**Poorly Graded F/M SAND (SP-SM) with Silt A-3**
Test Method	**698A**

TEST RESULTS

Maximum Dry Density	**103.9**	**PCF**
Optimum Water Content	**13.0**	**%**

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS
3112 Devine Street
Columbia, South Carolina 29205

CALIFORNIA BEARING RATIO TEST

AASHTO T193

PROJECT:	Brick Chimney	PROJECT NO.:	G5839
SAMPLE LOCATION:	BS-3	SAMPLE/BORING NUMBER:	18-1933E
SAMPLE ELEVATION/DEPTH:	0.0' - 5.0'	SAMPLED BY:	
SOIL DESCRIPTION:		DATE SAMPLED:	
Poorly Graded SAND (SP-SM/A-3) with Silt		DATE RECEIVED:	26-Sep
DATE TEST BEGAN:	27-Sep	DATE TEST COMPLETED:	10-Oct

PROCTOR TEST VALUES

MAXIMUM DRY DENSITY (PCF):	103.9
OPTIMUM MOISTURE (%):	13.0
METHOD:	

SOAKED CBR TEST VALUES (ASTM D-1883)

MOLDED DRY DENSITY (PCF):	102.6
% MAXIMUM DRY DENSITY:	98.7
MOLDED MOSITURE CONTENT (%):	12.94
SOAKING PERIOD (HRS):	96+
SURCHARGE (LBS):	10
% ± SHRINK/SWELL:	0.09
CBR @ 0.1" PENETRATION:	22.5%
CBR @ 0.2" PENETRATION:	20.8%
PENETRATION RATE (mm/min):	

REMARKS:

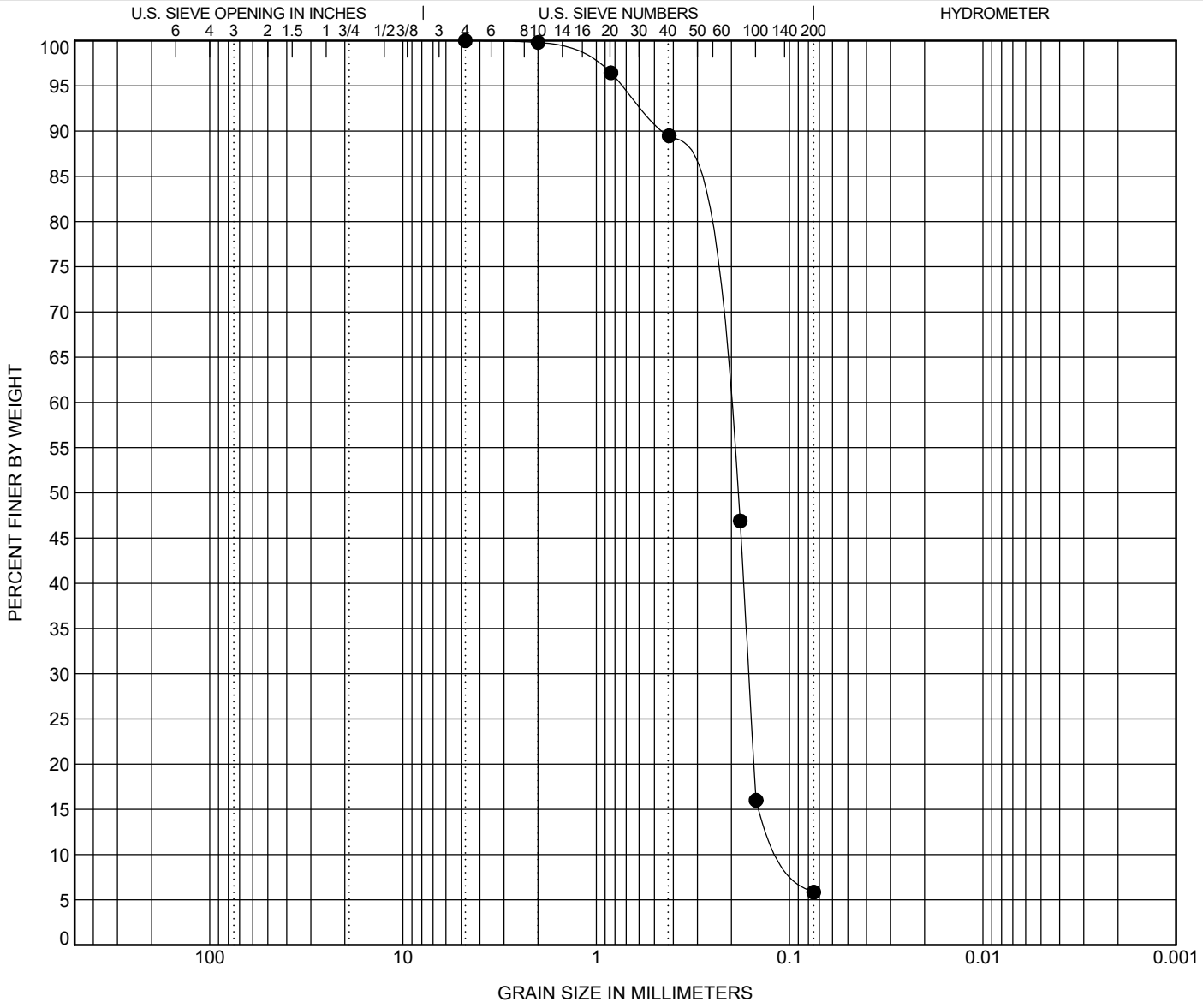
TECHNICIAN SIGNATURE: WAP

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**BS-3**	**5.0**	**Poorly Graded F/M SAND (SP-SM) with Silt A-3**	**21.7**	**NP**	**NP**	**NP**	**1.14**	**2.35**

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**BS-3**	**5.0**	**4.76**	**0.728**	**0.191**	**0.099**	**0.0**	**94.2**	**5.8**	

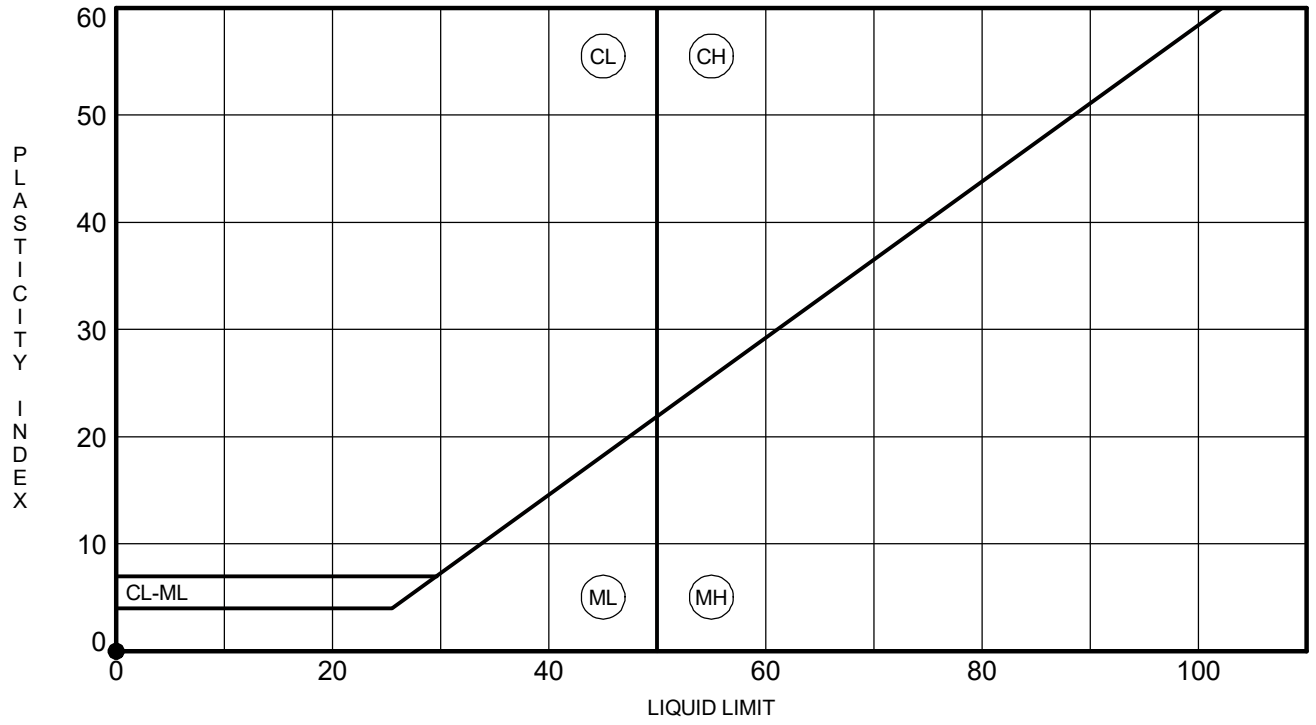
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**BS-3**	**5.0**	**NP**	**NP**	**NP**	**6**	**Poorly Graded F/M SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

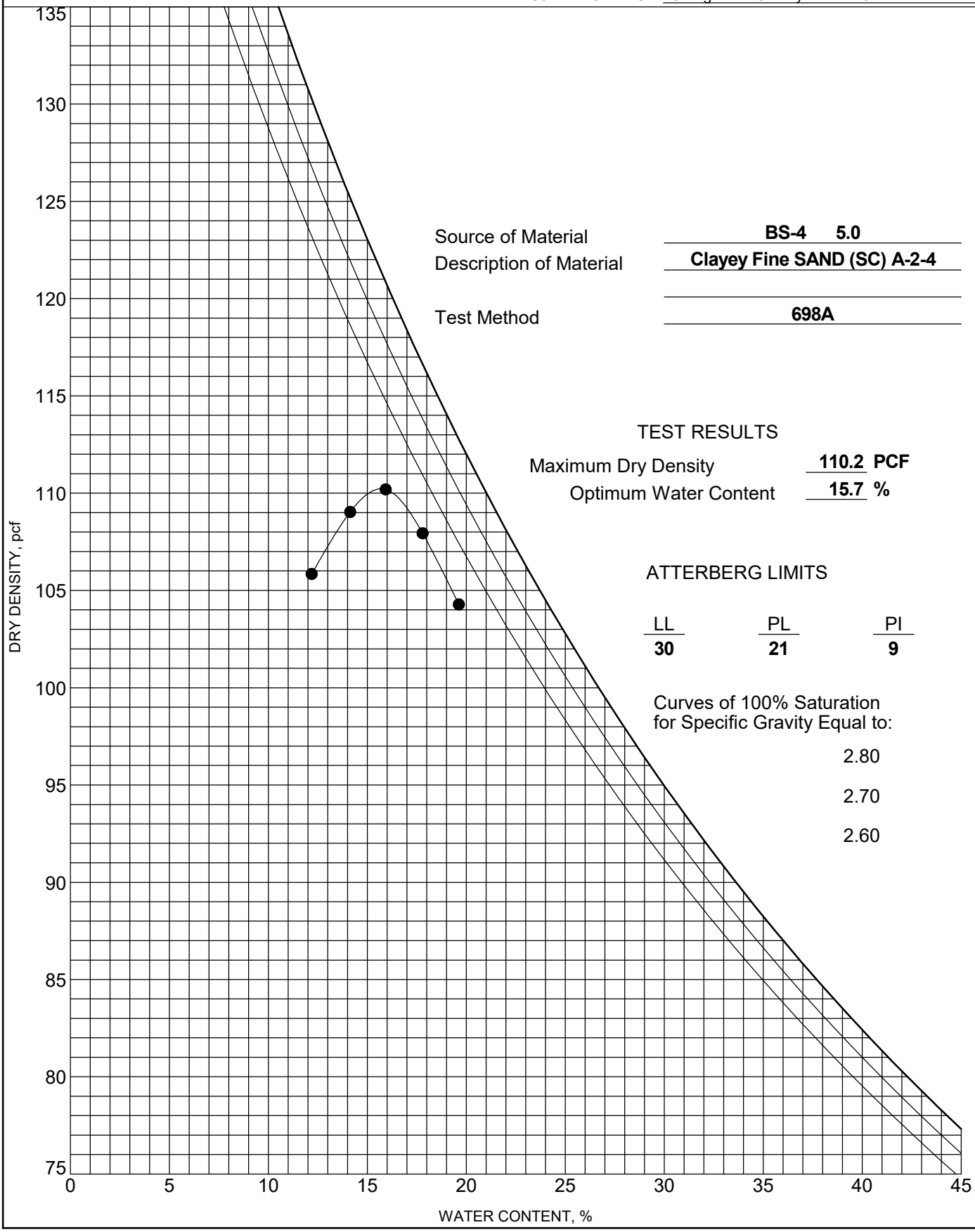
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
BS-3	**5.0**	**21.7**	**Poorly Graded F/M SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



Source of Material **BS-4 5.0**

Description of Material **Clayey Fine SAND (SC) A-2-4**

Test Method **698A**

TEST RESULTS

Maximum Dry Density **110.2** **PCF**

Optimum Water Content **15.7** **%**

ATTERBERG LIMITS

LL	PL	PI
30	**21**	**9**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS
3112 Devine Street
Columbia, South Carolina 29205

CALIFORNIA BEARING RATIO TEST

AASHTO T193

PROJECT:	Brick Chimney	PROJECT NO.:	G5839
SAMPLE LOCATION:	BS-4	SAMPLE/BORING NUMBER:	18-1934E
SAMPLE ELEVATION/DEPTH:	0.0' - 5.0'	SAMPLED BY:	
SOIL DESCRIPTION:	Clayey SAND (SC/A-2-4)	DATE SAMPLED:	
		DATE RECEIVED:	26-Sep
DATE TEST BEGAN:	27-Sep	DATE TEST COMPLETED:	10-Oct

PROCTOR TEST VALUES

MAXIMUM DRY DENSITY (PCF):	110.2
OPTIMUM MOISTURE (%):	15.7
METHOD:	

SOAKED CBR TEST VALUES (ASTM D-1883)

MOLDED DRY DENSITY (PCF):	107.6
% MAXIMUM DRY DENSITY:	97.6
MOLDED MOSITURE CONTENT (%):	15.04
SOAKING PERIOD (HRS):	96+
SURCHARGE (LBS):	10
% ± SHRINK/SWELL:	0.68
CBR @ 0.1" PENETRATION:	6.6%
CBR @ 0.2" PENETRATION:	8.5%
PENETRATION RATE (mm/min):	

REMARKS:

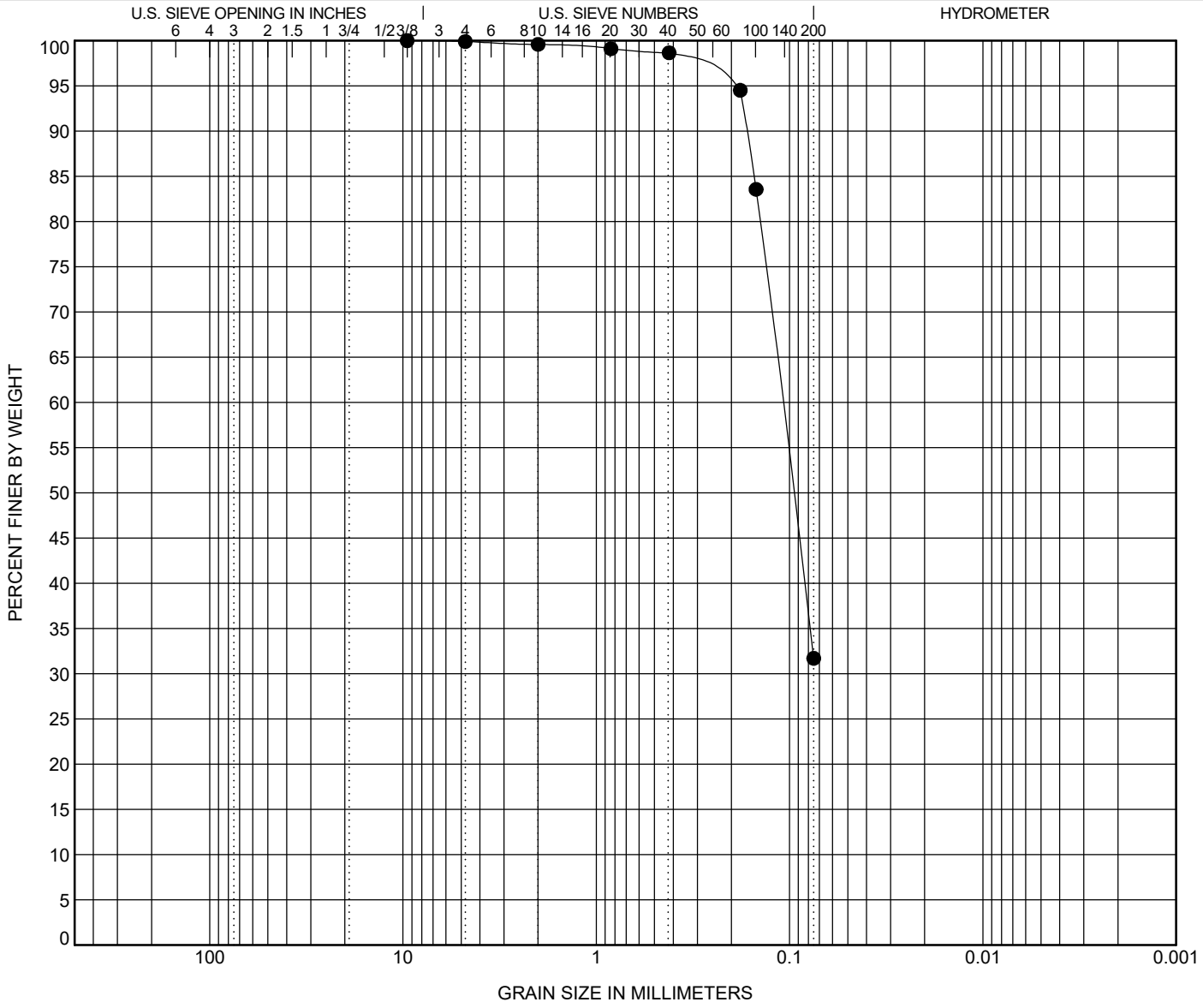
TECHNICIAN SIGNATURE: WAP

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **BS-4**	**5.0**	**Clayey Fine SAND (SC) A-2-4**	**21.3**	**30**	**21**	**9**		

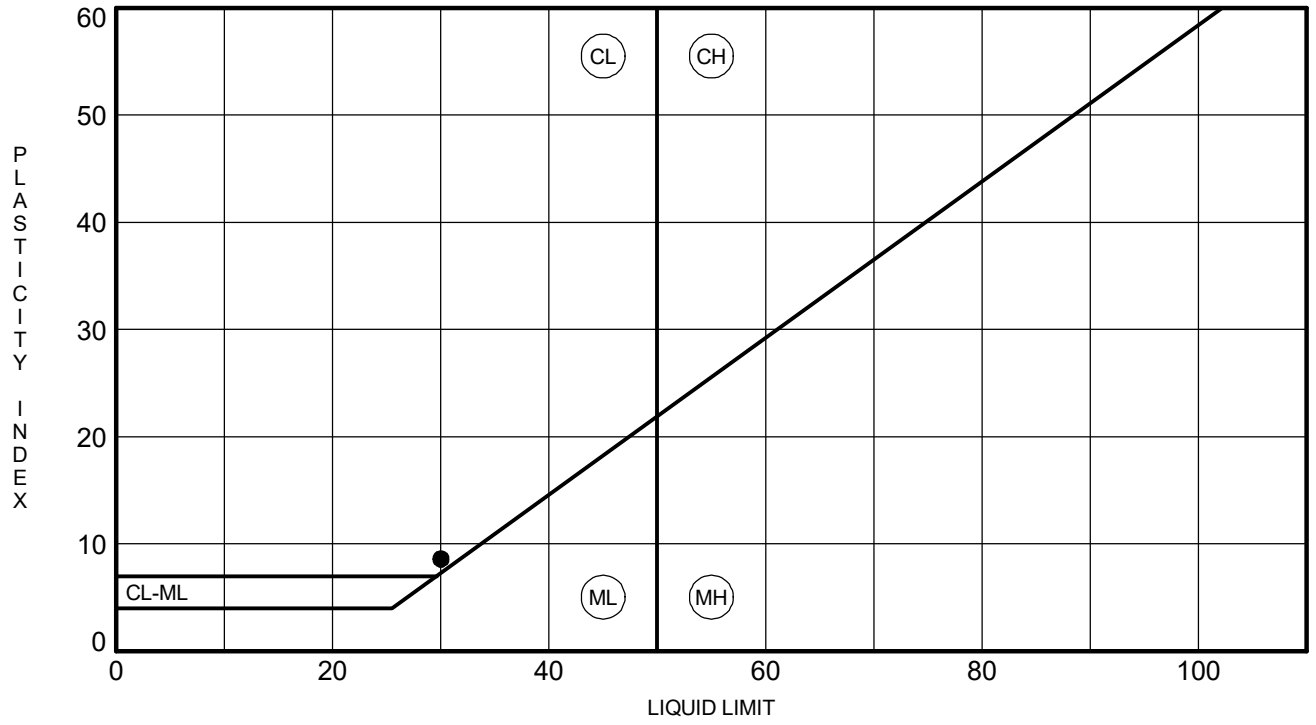
BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **BS-4**	**5.0**	**9.52**	**0.199**	**0.096**		**0.1**	**68.2**	**31.7**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**BS-4**	**5.0**	**30**	**21**	**9**	**32**	**Clayey Fine SAND (SC) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

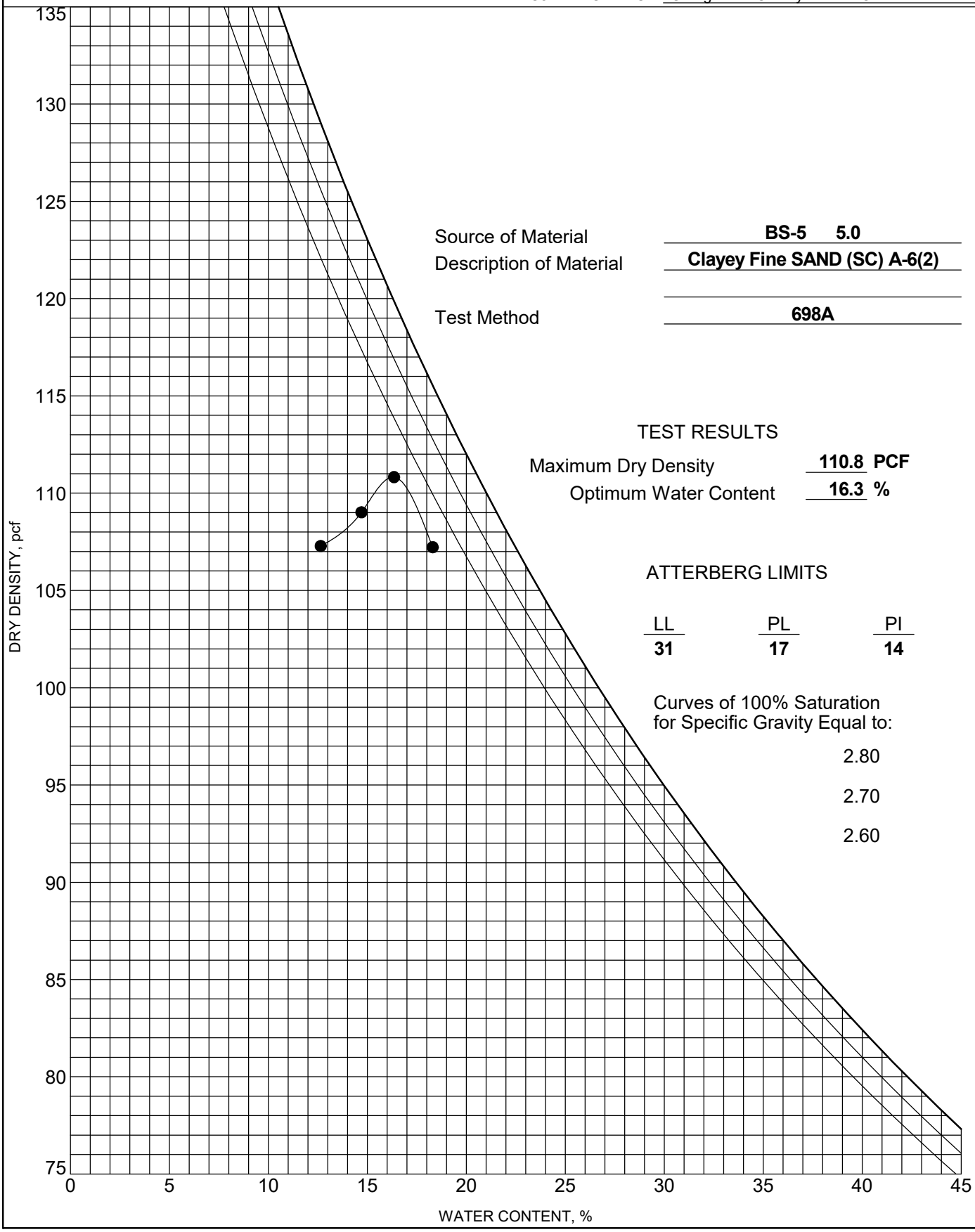
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
BS-4	**5.0**	**21.3**	**Clayey Fine SAND (SC) A-2-4**

F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



Source of Material **BS-5 5.0**

Description of Material **Clayey Fine SAND (SC) A-6(2)**

Test Method **698A**

TEST RESULTS

Maximum Dry Density **110.8 PCF**

Optimum Water Content **16.3 %**

ATTERBERG LIMITS

LL	PL	PI
31	**17**	**14**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS
3112 Devine Street
Columbia, South Carolina 29205

CALIFORNIA BEARING RATIO TEST

AASHTO T193

PROJECT:	Brick Chimney	PROJECT NO.:	G5839
SAMPLE LOCATION:	BS-5	SAMPLE/BORING NUMBER:	18-1923E
SAMPLE ELEVATION/DEPTH:	0.0' - 5.0'	SAMPLED BY:	
SOIL DESCRIPTION:	Clayey SAND (A-6(2))	DATE SAMPLED:	
		DATE RECEIVED:	26-Sep
DATE TEST BEGAN:	27-Sep	DATE TEST COMPLETED:	10-Oct

PROCTOR TEST VALUES

MAXIMUM DRY DENSITY (PCF):	110.8
OPTIMUM MOISTURE (%):	16.3
METHOD:	

SOAKED CBR TEST VALUES (ASTM D-1883)

MOLDED DRY DENSITY (PCF):	106.0
% MAXIMUM DRY DENSITY:	95.7
MOLDED MOSITURE CONTENT (%):	16.68
SOAKING PERIOD (HRS):	96+
SURCHARGE (LBS):	10
% ± SHRINK/SWELL:	0.35
CBR @ 0.1" PENETRATION:	4.6%
CBR @ 0.2" PENETRATION:	4.4%
PENETRATION RATE (mm/min):	

REMARKS:

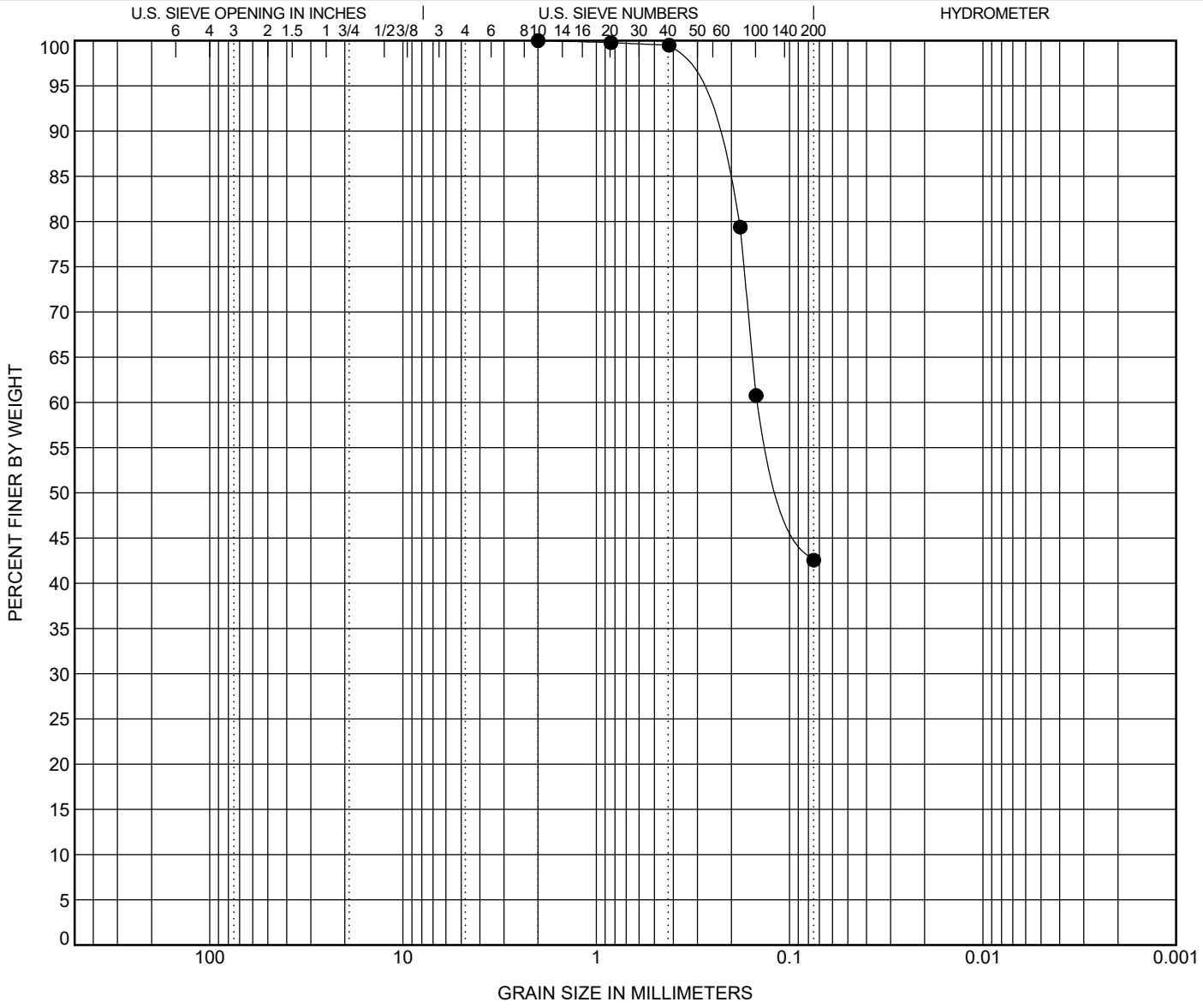
TECHNICIAN SIGNATURE: WAP

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **BS-5**	**5.0**	**Clayey Fine SAND (SC) A-6(2)**	**21.4**	**31**	**17**	**14**		

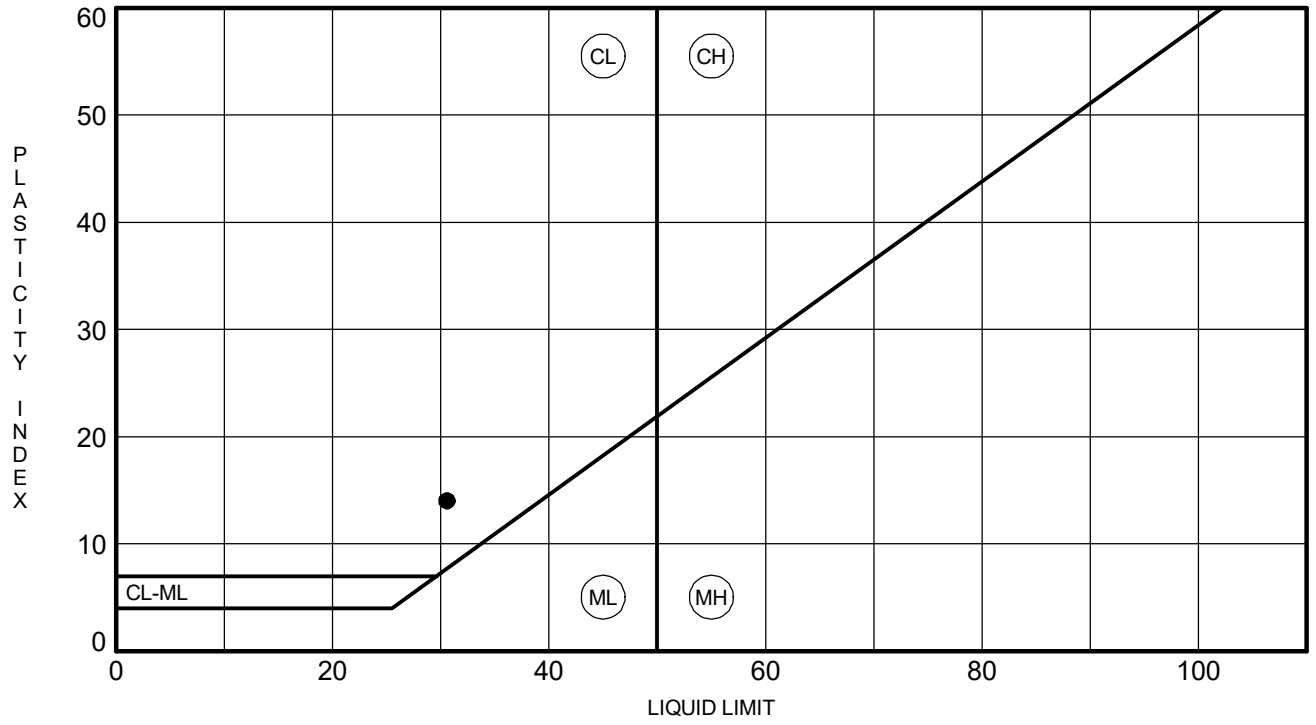
BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **BS-5**	**5.0**	**2**	**0.348**	**0.099**		**0.0**	**57.4**	**42.6**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**BS-5**	**5.0**	**31**	**17**	**14**	**43**	**Clayey Fine SAND (SC) A-6(2)**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

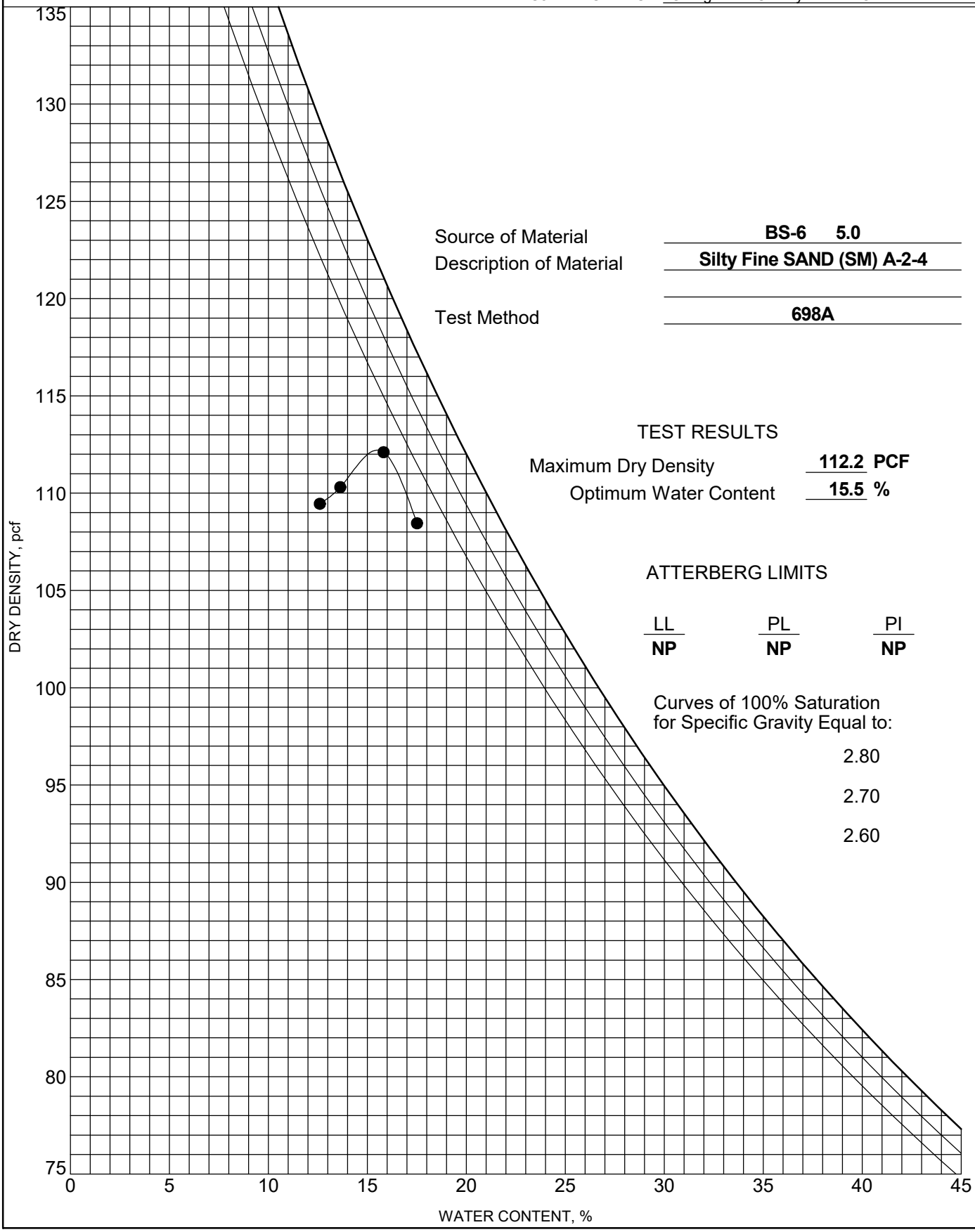
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
BS-5	**5.0**	**21.4**	**Clayey Fine SAND (SC) A-6(2)**

F&ME CONSULTANTS

MOISTURE-DENSITY RELATIONSHIP

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



Source of Material **BS-6 5.0**

Description of Material **Silty Fine SAND (SM) A-2-4**

Test Method **698A**

TEST RESULTS

Maximum Dry Density **112.2** **PCF**

Optimum Water Content **15.5** **%**

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

COMPACTION - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS
3112 Devine Street
Columbia, South Carolina 29205

CALIFORNIA BEARING RATIO TEST

AASHTO T193

PROJECT:	Brick Chimney	PROJECT NO.:	G5839
SAMPLE LOCATION:	BS-6	SAMPLE/BORING NUMBER:	18-1924E
SAMPLE ELEVATION/DEPTH:	0.0' - 5.0'	SAMPLED BY:	
SOIL DESCRIPTION:	Silty SAND (SM/A-2-4)	DATE SAMPLED:	
		DATE RECEIVED:	26-Sep
DATE TEST BEGAN:	27-Sep	DATE TEST COMPLETED:	10-Oct

PROCTOR TEST VALUES

MAXIMUM DRY DENSITY (PCF):	112.2
OPTIMUM MOISTURE (%):	15.5
METHOD:	

SOAKED CBR TEST VALUES (ASTM D-1883)

MOLDED DRY DENSITY (PCF):	129.4
% MAXIMUM DRY DENSITY:	115.3
MOLDED MOSITURE CONTENT (%):	14.91
SOAKING PERIOD (HRS):	96+
SURCHARGE (LBS):	10
% ± SHRINK/SWELL:	0.07
CBR @ 0.1" PENETRATION:	5.9%
CBR @ 0.2" PENETRATION:	6.5%
PENETRATION RATE (mm/min):	

REMARKS:

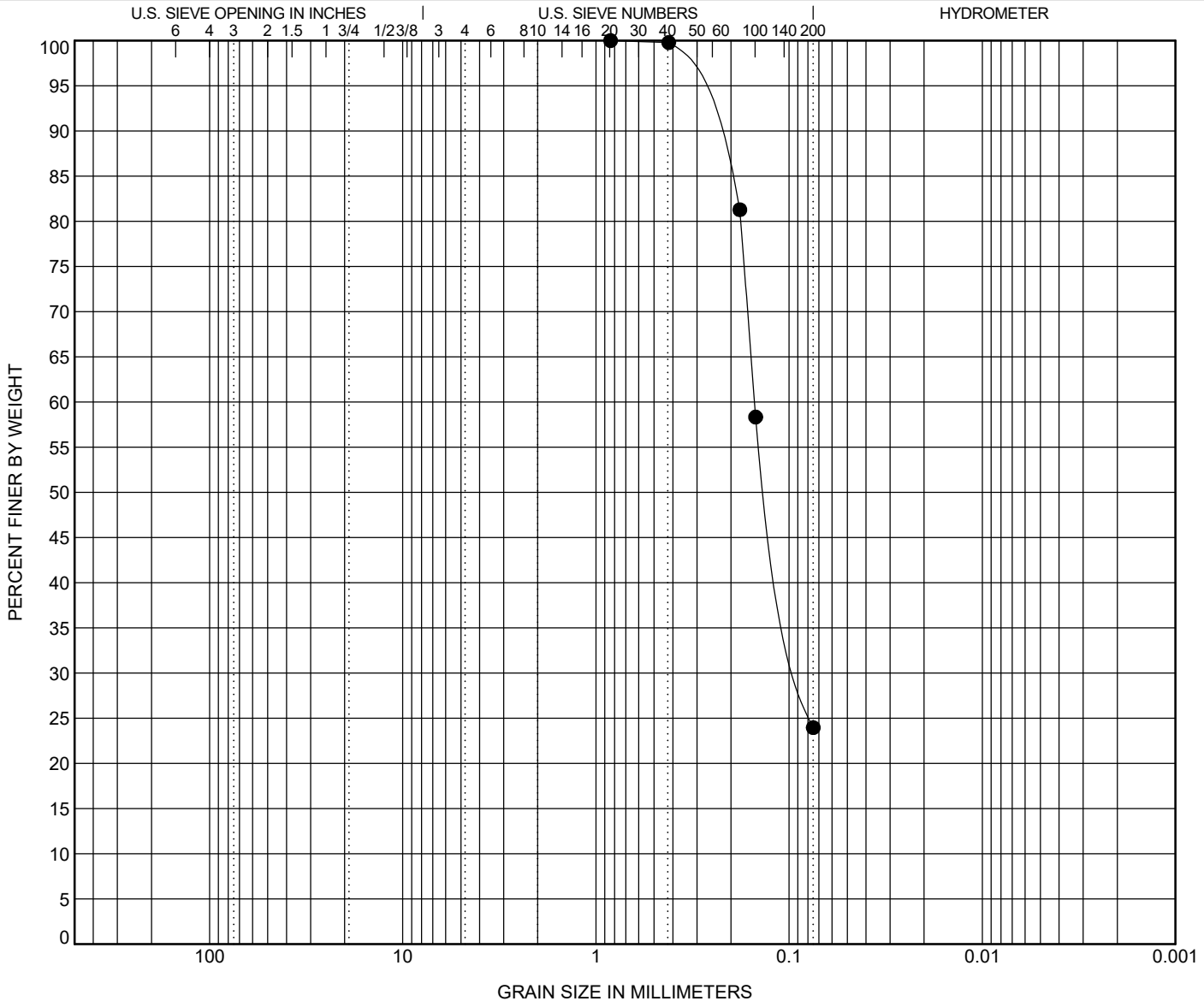
TECHNICIAN SIGNATURE: WAP

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **BS-6**	**5.0**	**Silty Fine SAND (SM) A-2-4**	**23.4**	**NP**	**NP**	**NP**		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **BS-6**	**5.0**	**0.84**	**0.337**	**0.126**		**0.0**	**76.0**	**24.0**	

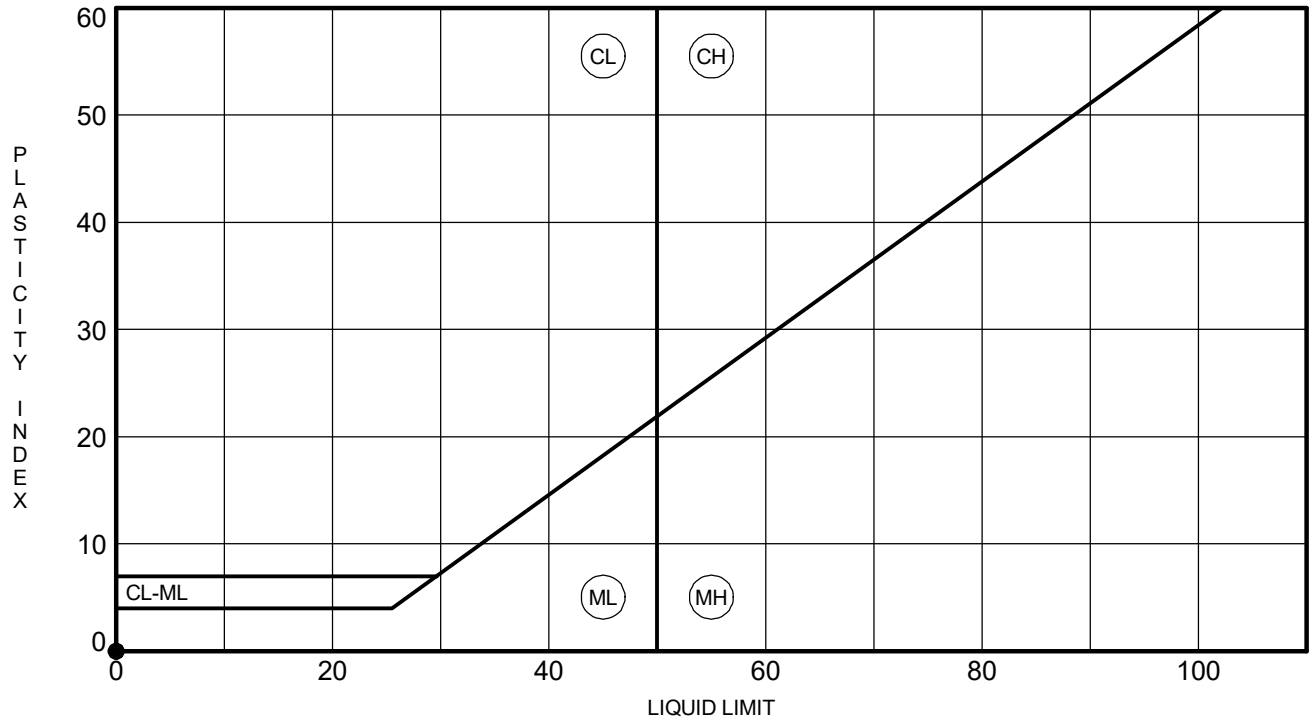
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
● **BS-6**	**5.0**	**NP**	**NP**	**NP**	**24**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

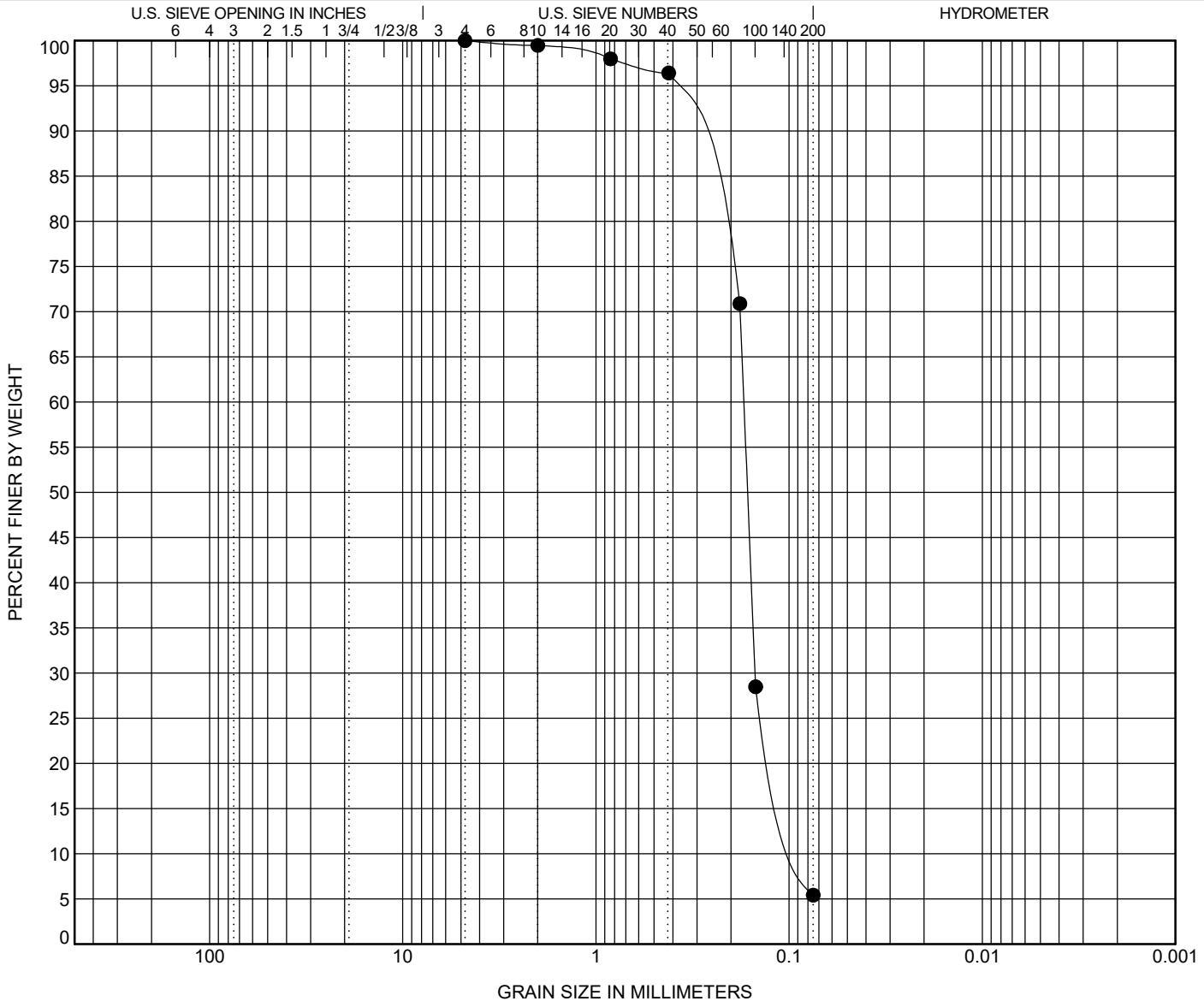
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
BS-6	**5.0**	**23.4**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-1**	**8.0**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**	**26.0**	**NP**	**NP**	**NP**	**1.53**	**1.99**

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-1**	**8.0**	**4.76**	**0.401**	**0.164**	**0.086**	**0.0**	**94.6**	**5.4**	

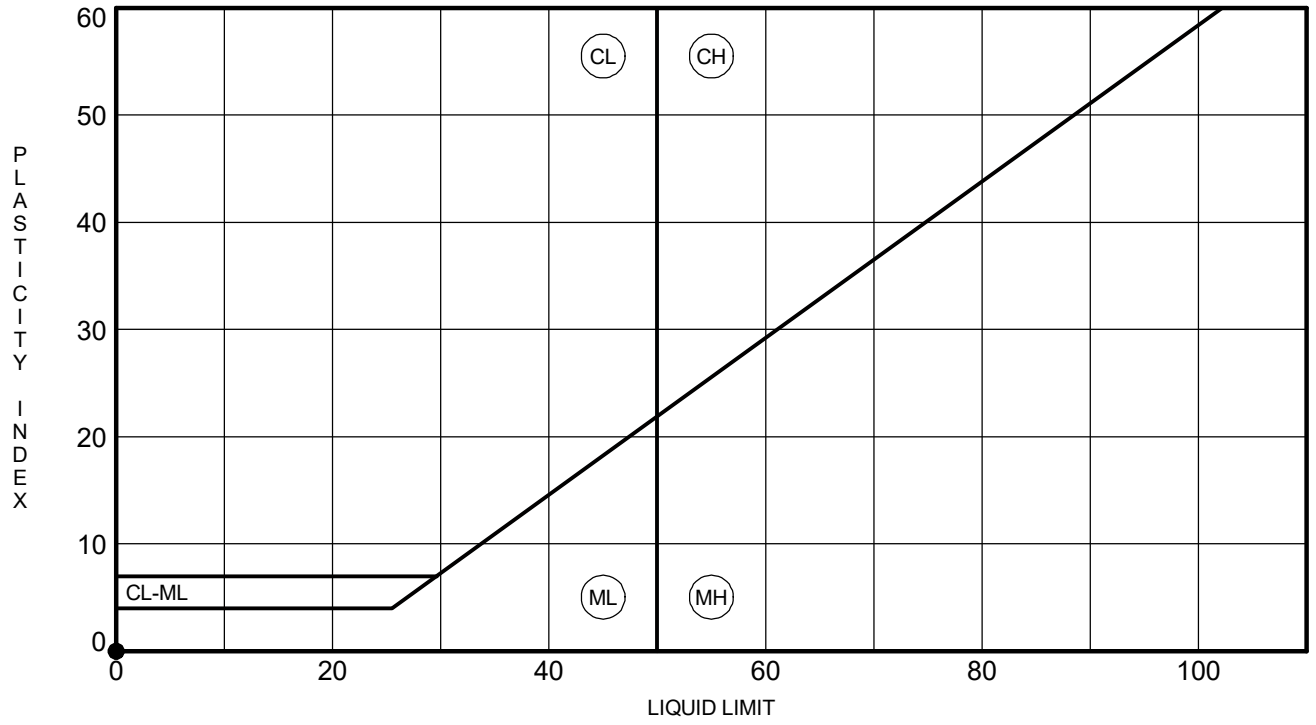
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-1**	**8.0**	**NP**	**NP**	**NP**	**5**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

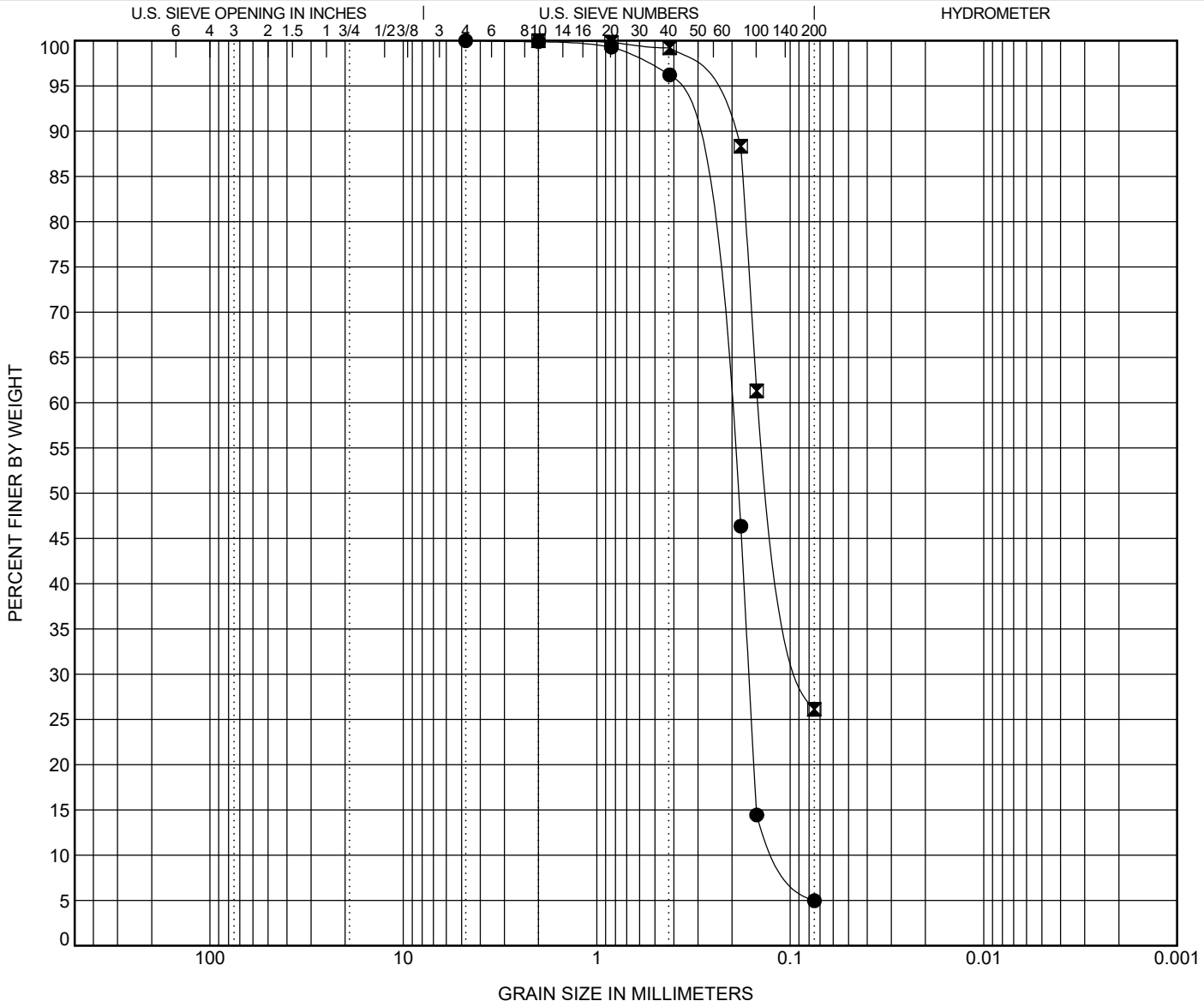
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-1	**8.0**	**26.0**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-5**	**2.0**	**Poorly Graded Fine SAND (SP) A-3**	**14.5**	**NP**	**NP**	**NP**	**1.09**	**2.10**
⊠	**B-5**	**8.0**	**Silty, Clayey Fine SAND (SC-SM) A-2-4**	**32.0**	**23**	**17**	**6**		

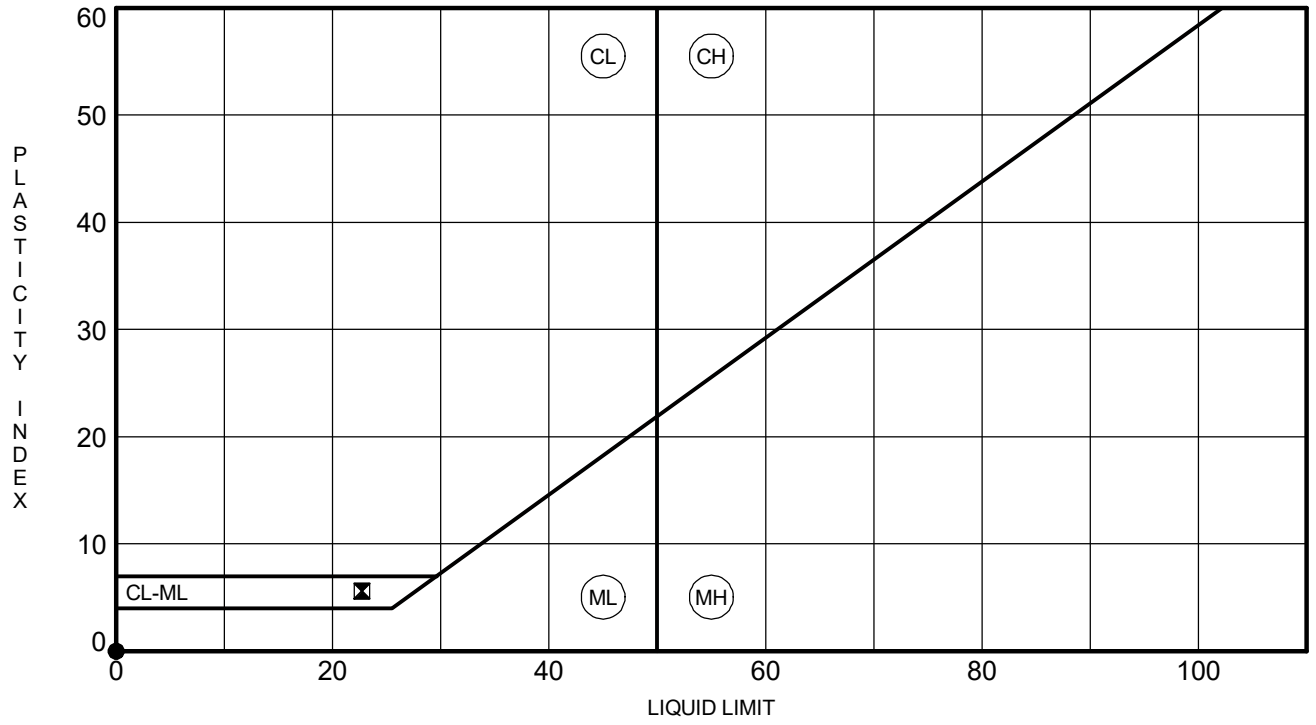
	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-5**	**2.0**	**4.76**	**0.411**	**0.191**	**0.108**	**0.0**	**95.0**	**5.0**	
⊠	**B-5**	**8.0**	**2**	**0.303**	**0.12**		**0.0**	**73.9**	**26.1**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-5**	**2.0**	**NP**	**NP**	**NP**	**5**	**Poorly Graded Fine SAND (SP) A-3**
⊠	**B-5**	**8.0**	**23**	**17**	**6**	**26**	**Silty, Clayey Fine SAND (SC-SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

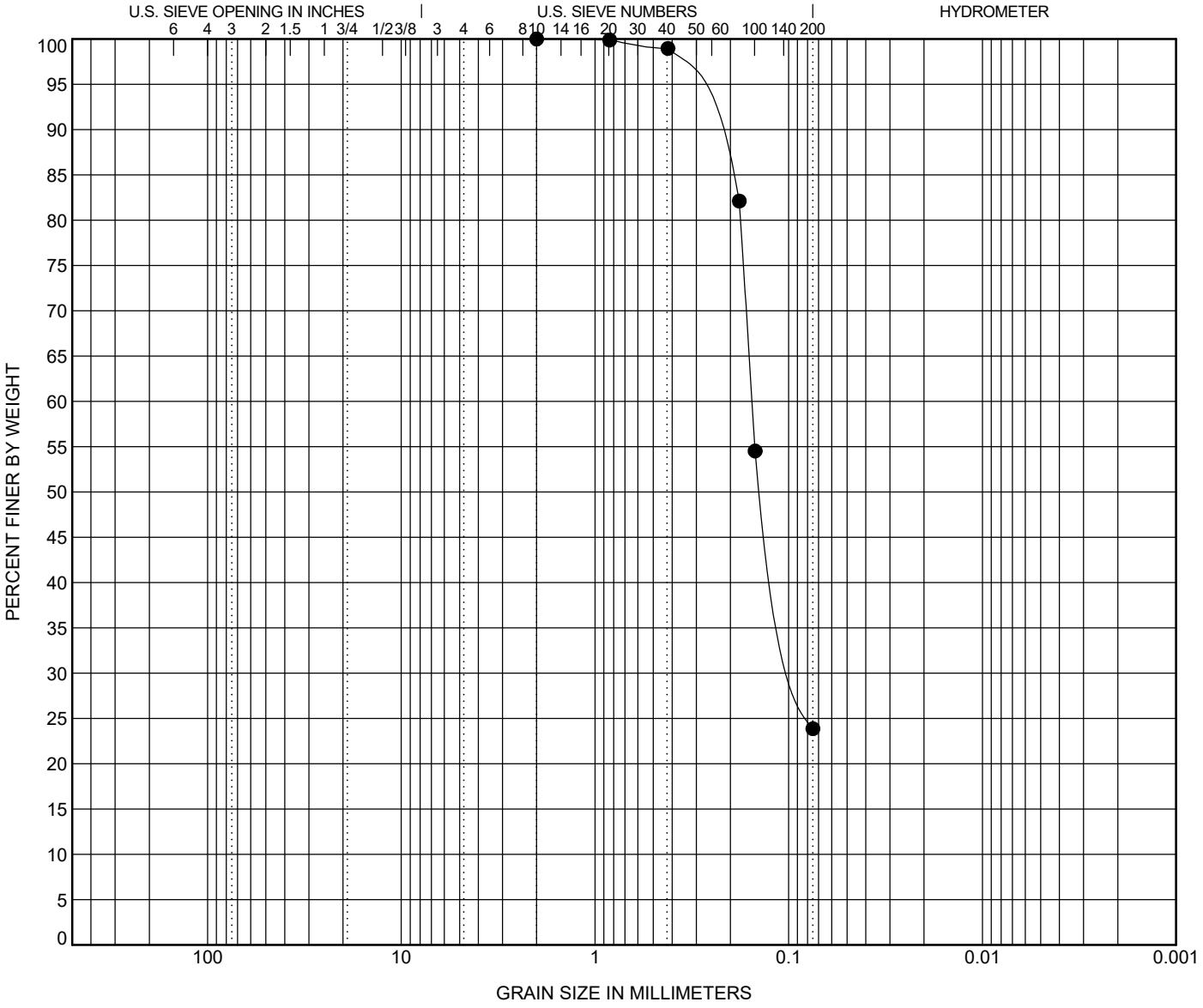
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-5	**2.0**	**14.5**	**Poorly Graded Fine SAND (SP) A-3**
B-5	**8.0**	**32.0**	**Silty, Clayey Fine SAND (SC-SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-7**	**6.0**	**Silty Fine SAND (SM) A-2-4**	**24.5**	**23**	**20**	**3**		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-7**	**6.0**	**2**	**0.344**	**0.135**		**0.0**	**76.1**	**23.9**	

GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

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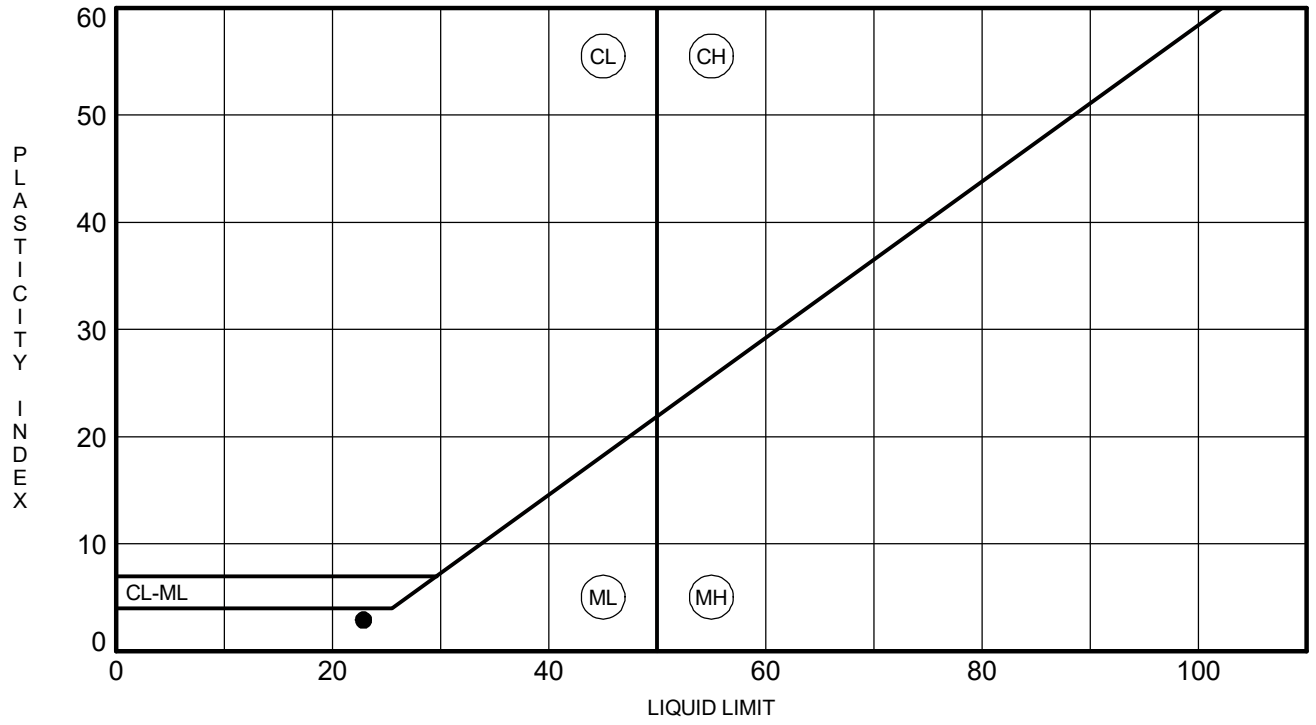
PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-7**	**6.0**	**23**	**20**	**3**	**24**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

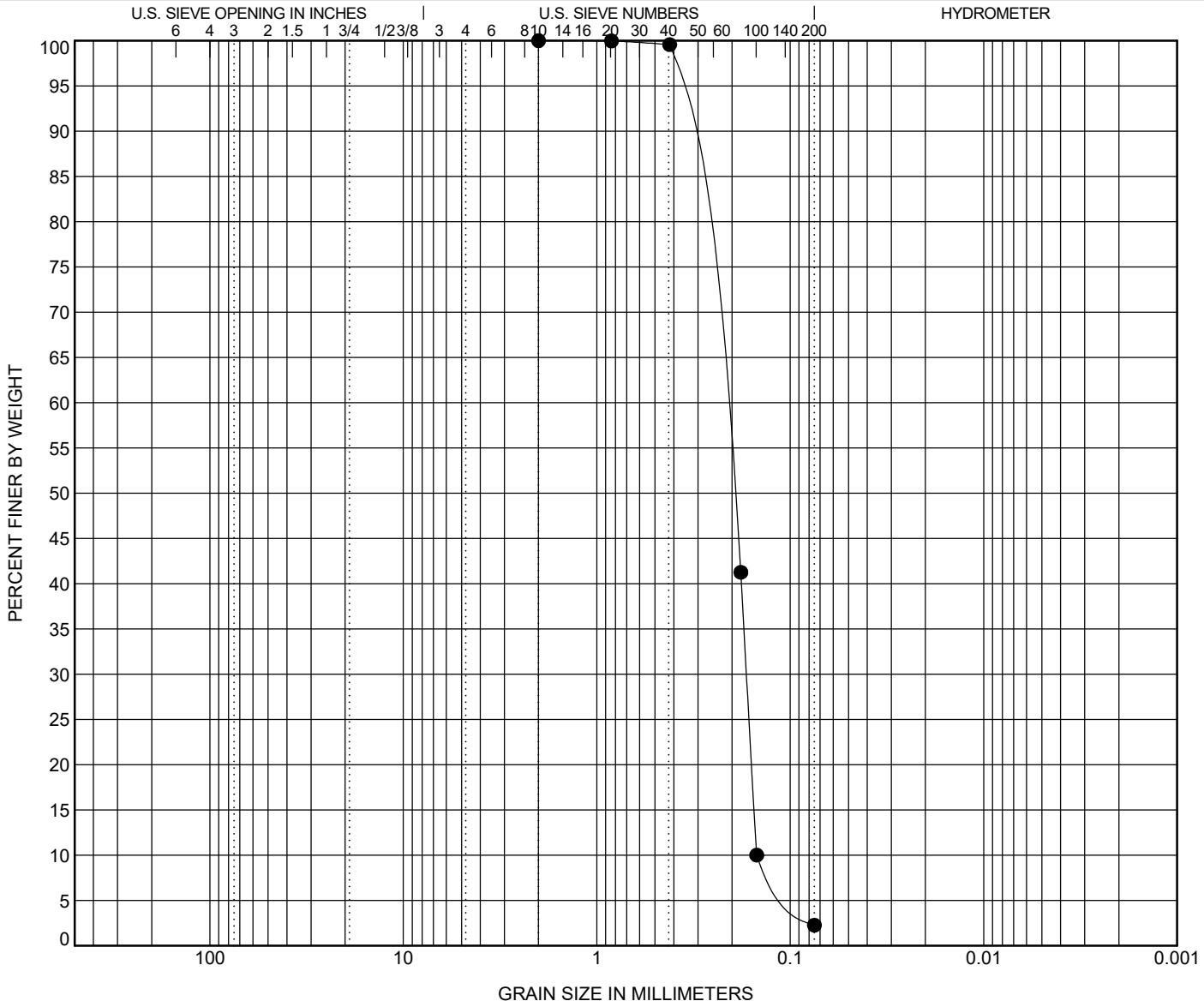
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-7	**6.0**	**24.5**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-8**	**4.0**	**Poorly Graded Fine SAND (SP) A-3**	**23.5**	**NP**	**NP**	**NP**	**0.80**	**1.59**

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-8**	**4.0**	**2**	**0.393**	**0.204**	**0.149**	**0.0**	**97.7**	**2.3**	

GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

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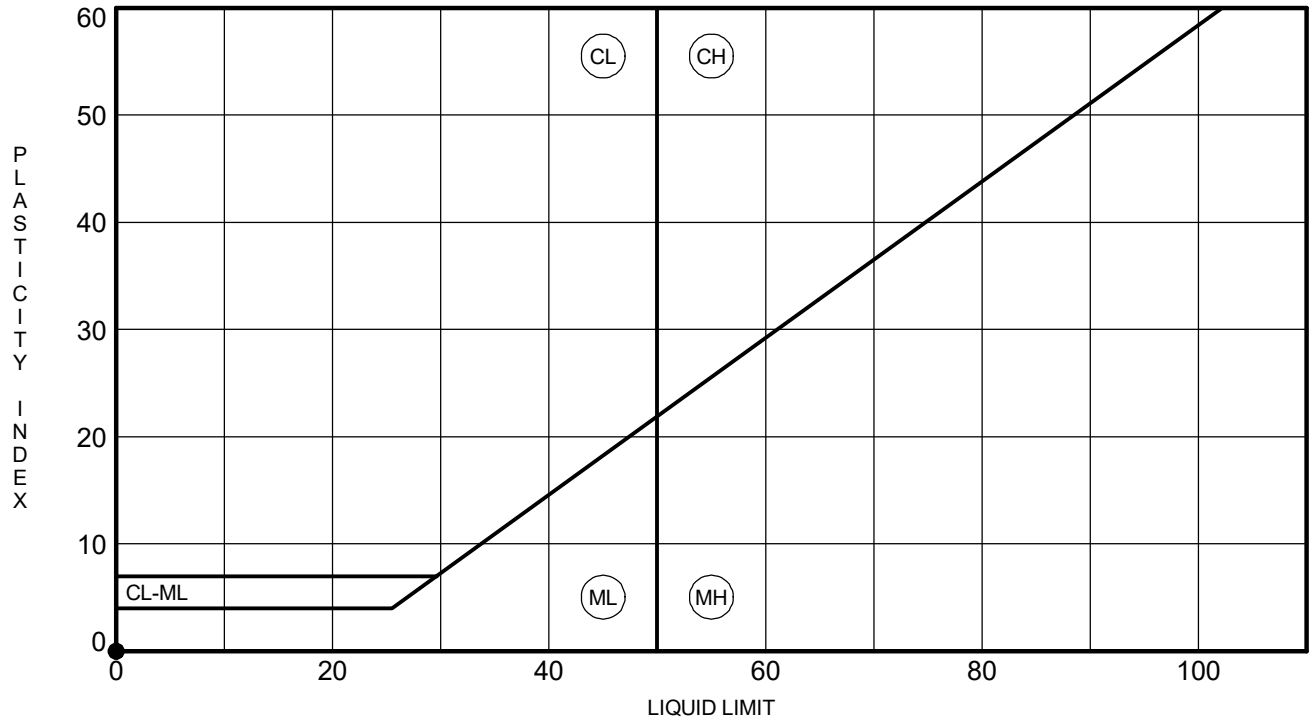
PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-8**	**4.0**	**NP**	**NP**	**NP**	**2**	**Poorly Graded Fine SAND (SP) A-3**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

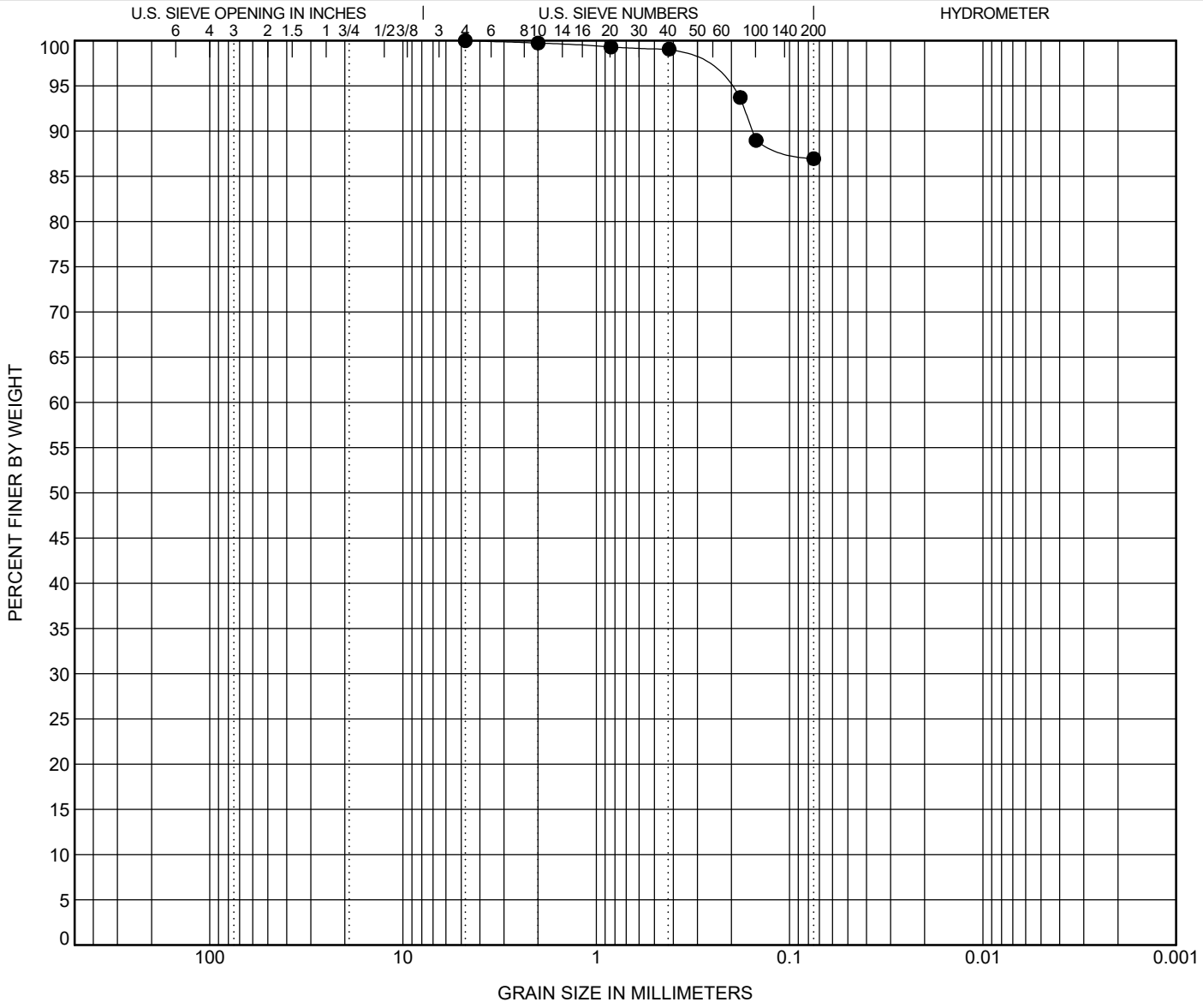
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-8	**4.0**	**23.5**	**Poorly Graded Fine SAND (SP) A-3**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-9**	**6.0**	**Lean CLAY (CL) A-6(16)**	**45.9**	**37**	**16**	**21**		

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-9**	**6.0**	**4.76**	**0.221**			**0.0**	**13.1**	**86.9**	

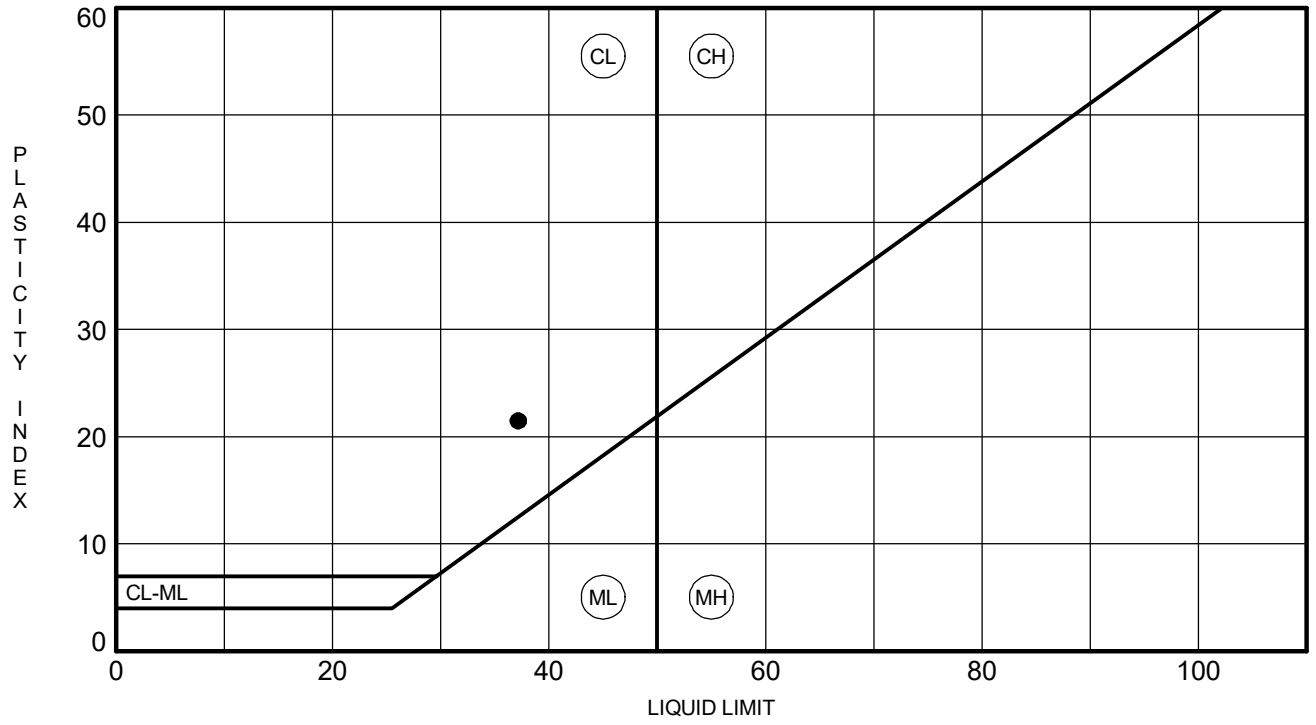
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-9**	**6.0**	**37**	**16**	**21**	**87**	**Lean CLAY (CL) A-6(16)**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

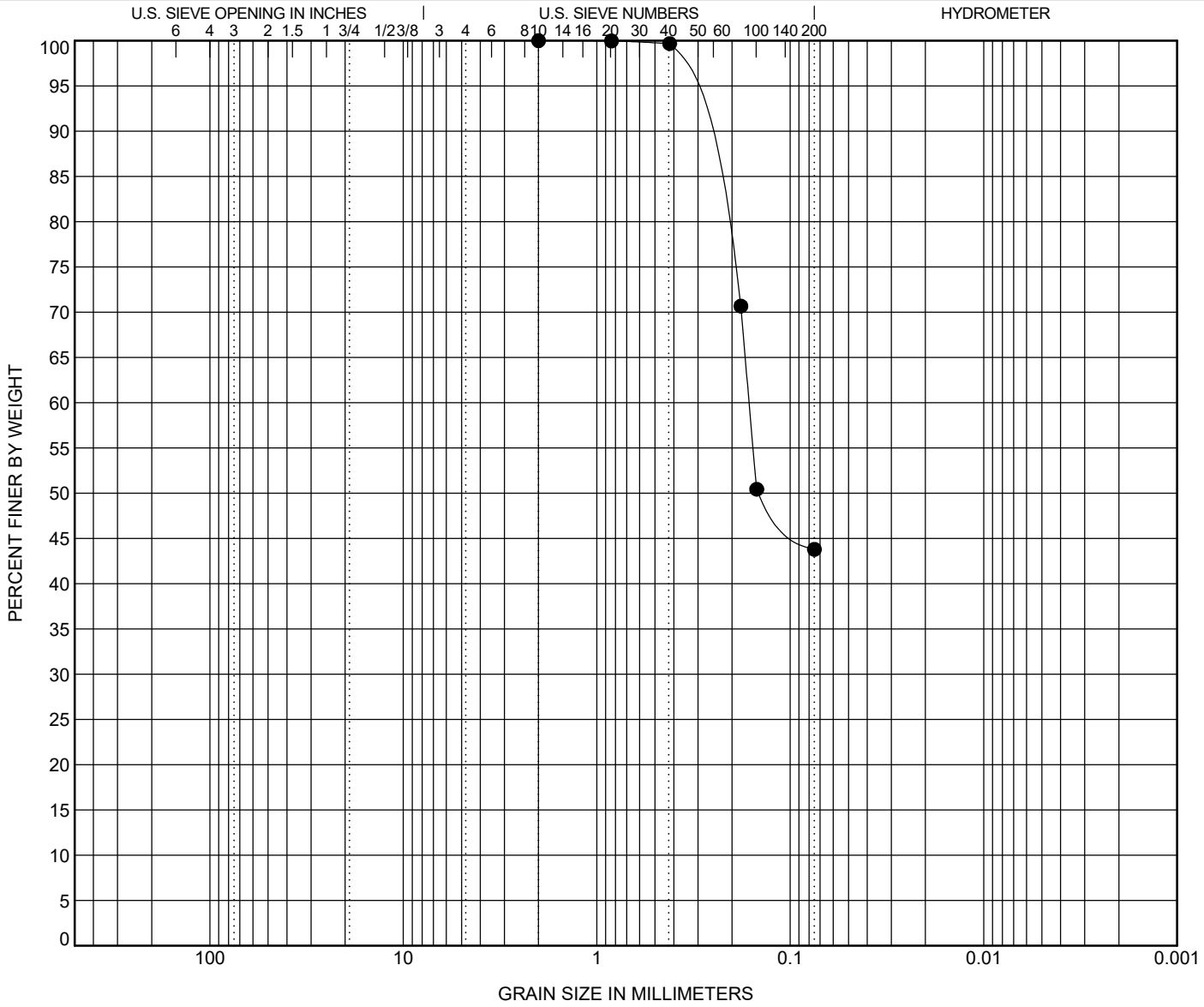
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-9	**6.0**	**45.9**	**Lean CLAY (CL) A-6(16)**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-10**	**4.0**	**Silty Fine SAND (SM) A-4(0)**	**30.8**	**NP**	**NP**	**NP**		

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-10**	**4.0**	**2**	**0.366**	**0.142**		**0.0**	**56.2**	**43.8**	

GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

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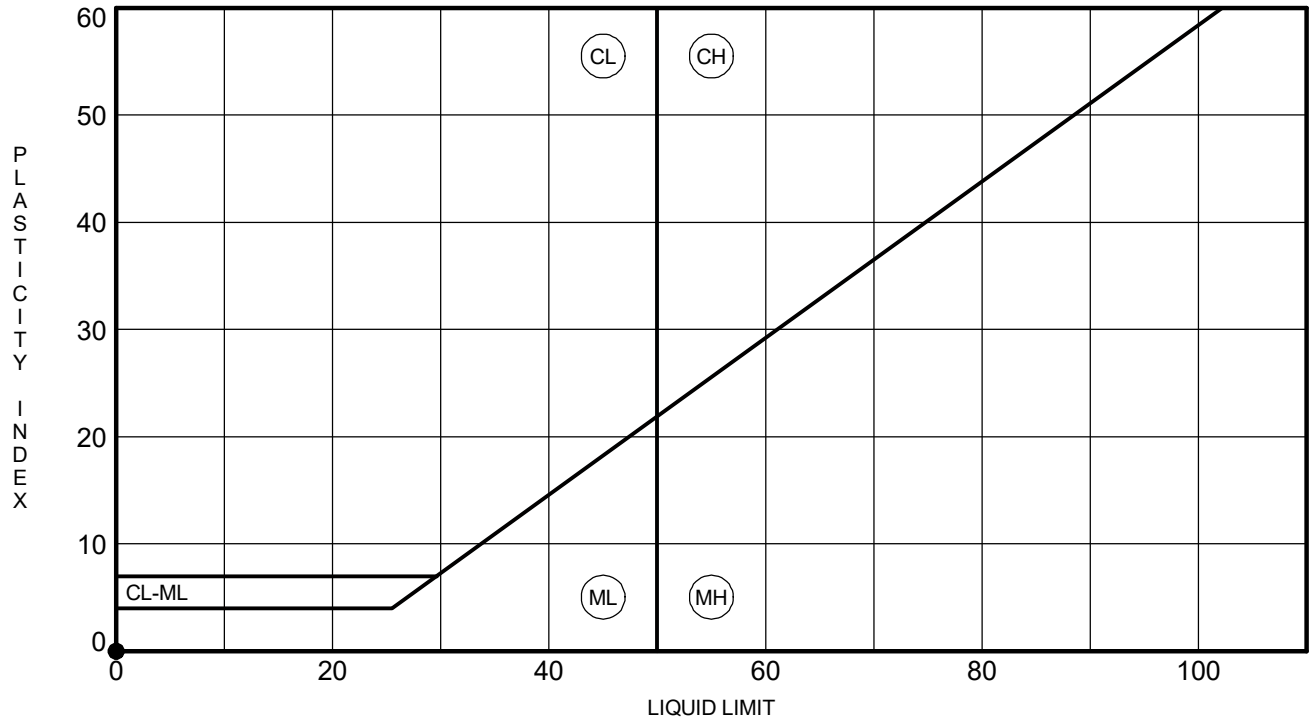
PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-10**	**4.0**	**NP**	**NP**	**NP**	**44**	**Silty Fine SAND (SM) A-4(0)**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

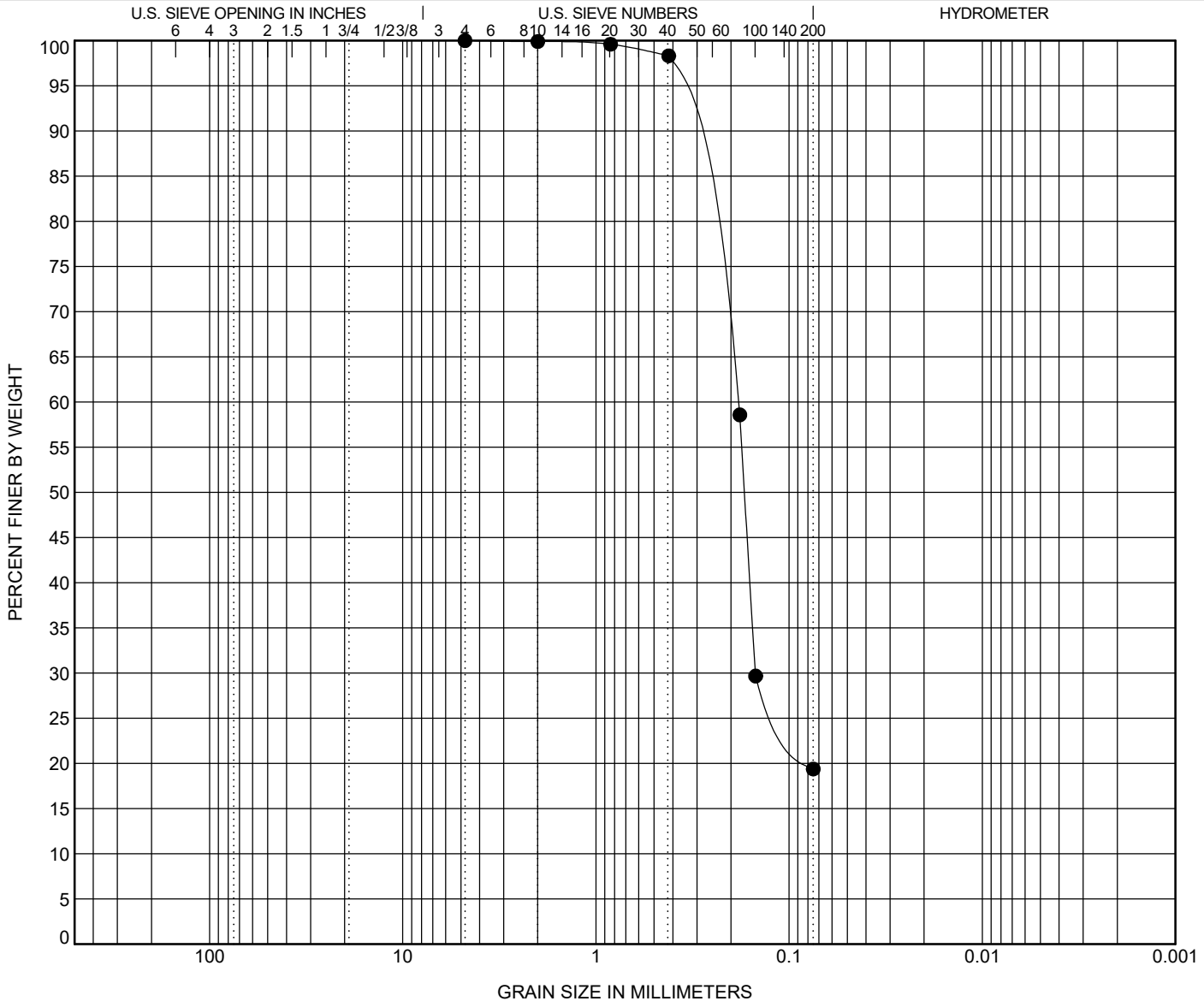
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-10	**4.0**	**30.8**	**Silty Fine SAND (SM) A-4(0)**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-11**	**2.0**	**Silty Fine SAND (SM) A-2-4**	**12.9**	**NP**	**NP**	**NP**		

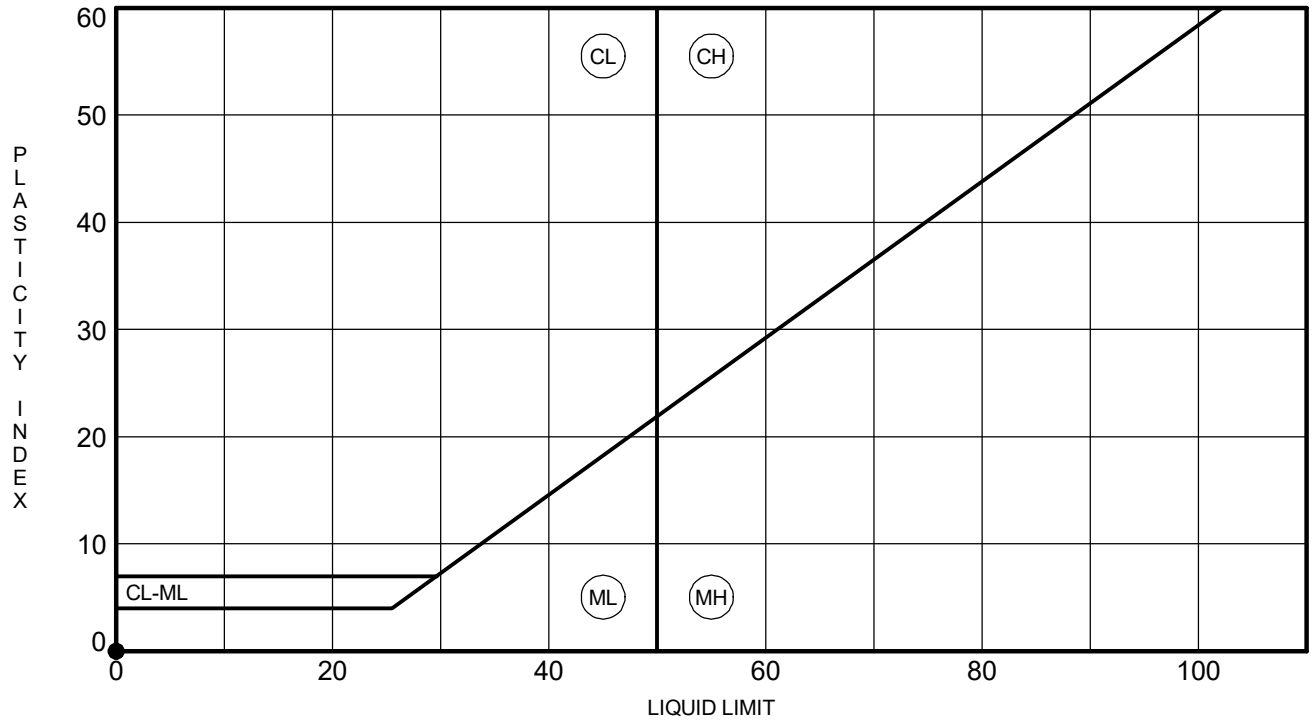
	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-11**	**2.0**	**4.76**	**0.391**	**0.17**		**0.0**	**80.6**	**19.4**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
● **B-11**	**2.0**	**NP**	**NP**	**NP**	**19**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-11	**2.0**	**12.9**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

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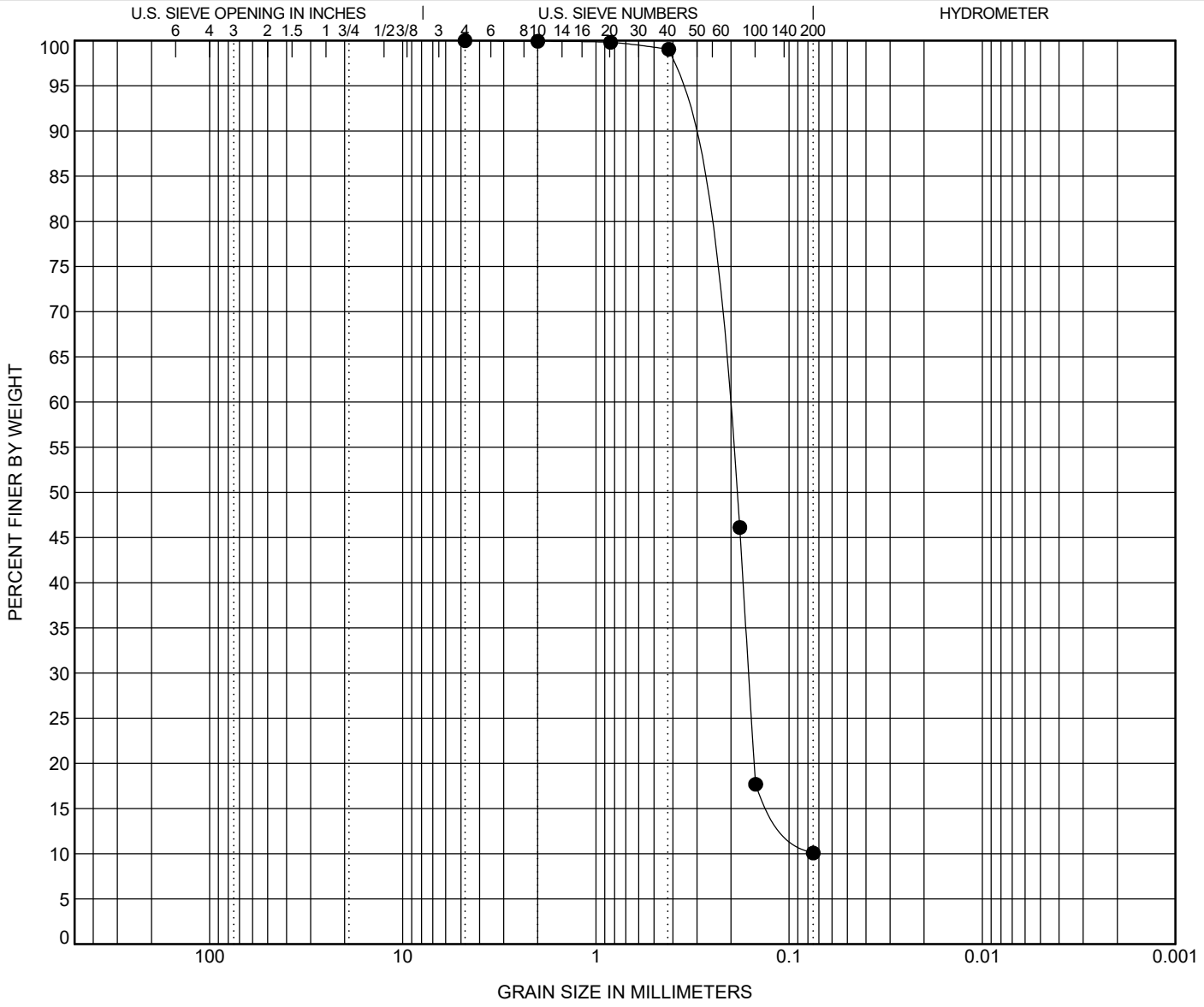
PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-13**	**1.5**	**Poorly Graded Fine SAND (SP-SM) with Silt A-2-4**	**7.0**	**NP**	**NP**	**NP**	**1.56**	**3.02**

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-13**	**1.5**	**4.76**	**0.394**	**0.192**		**0.0**	**89.9**	**10.1**	

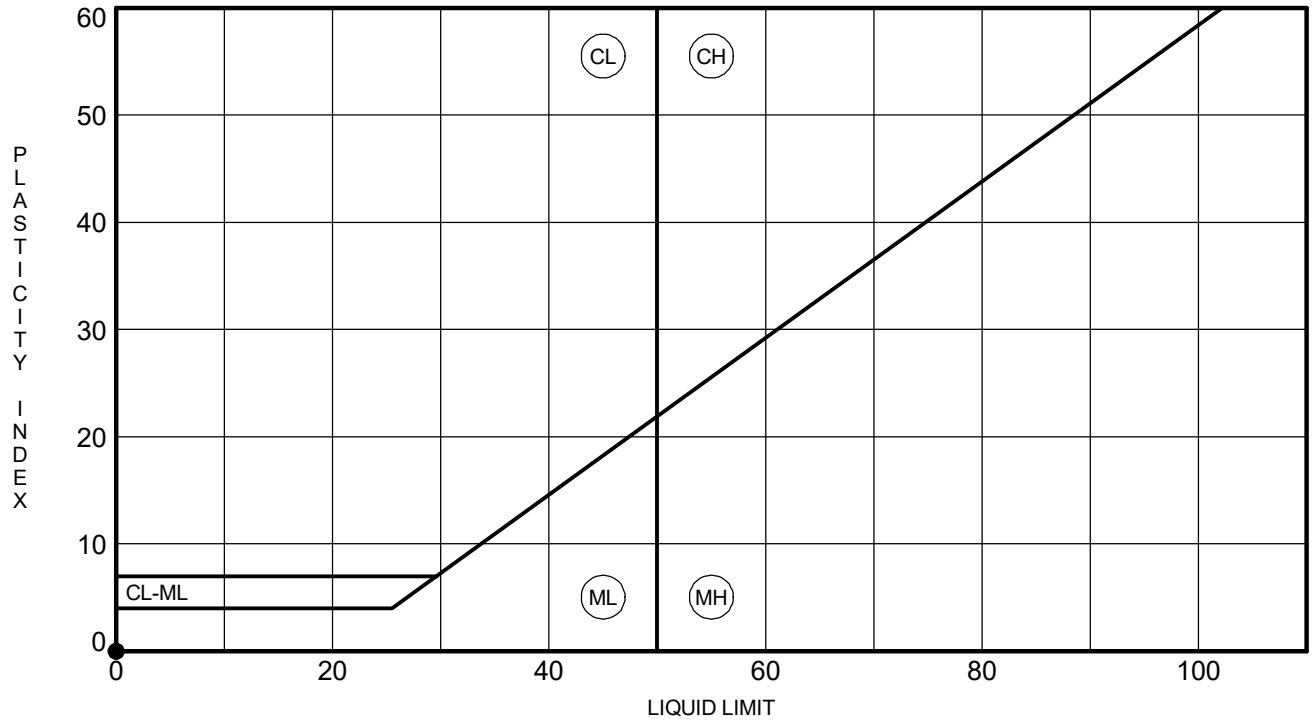
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-13**	**1.5**	**NP**	**NP**	**NP**	**10**	**Poorly Graded Fine SAND (SP-SM) with Silt A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

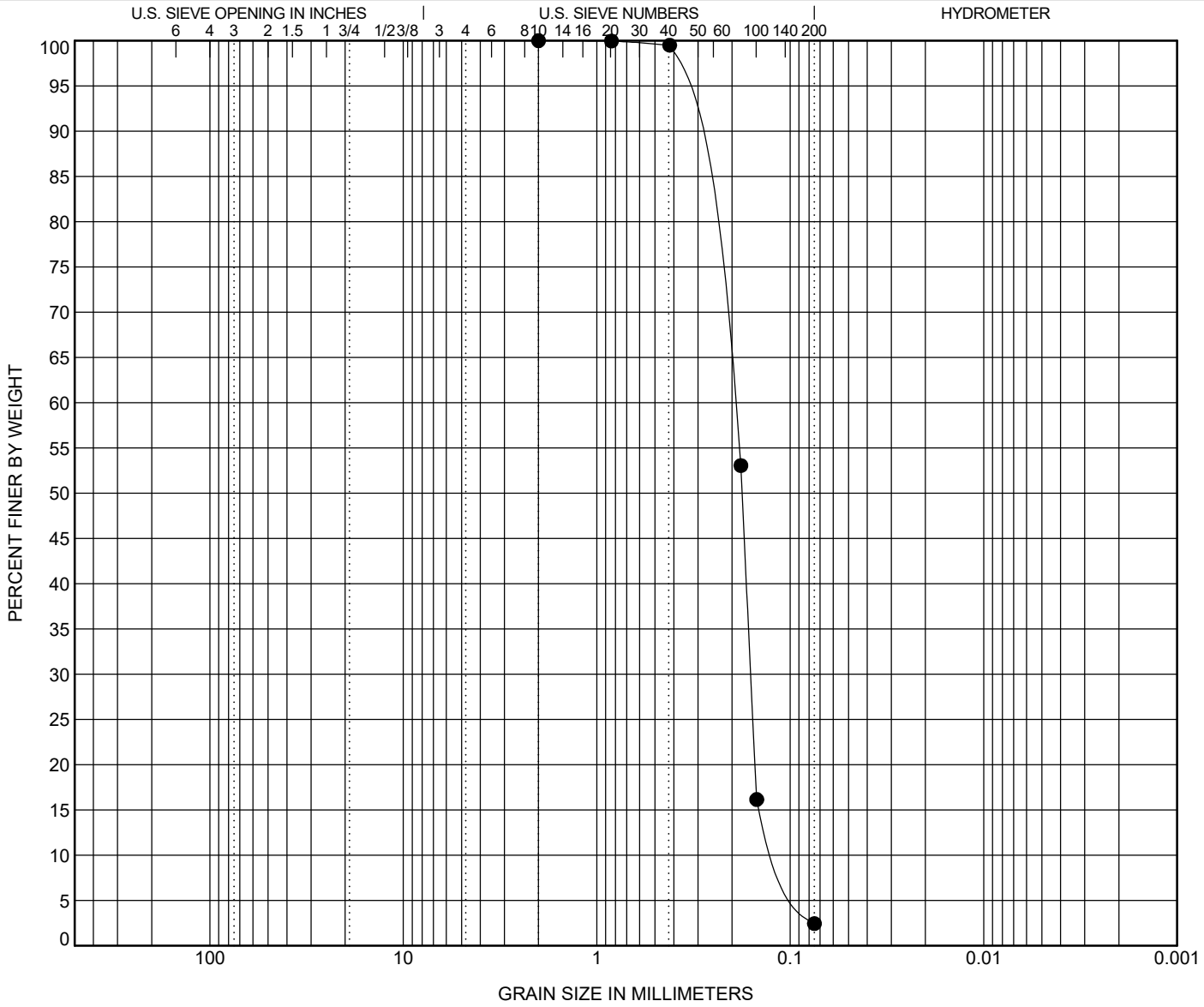
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-13	**1.5**	**7.0**	**Poorly Graded Fine SAND (SP-SM) with Silt A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-15**	**4.0**	**Poorly Graded Fine SAND (SP) A-3**	**23.1**	**NP**	**NP**	**NP**	**1.14**	**1.87**

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-15**	**4.0**	**2**	**0.387**	**0.177**	**0.109**	**0.0**	**97.6**	**2.4**	

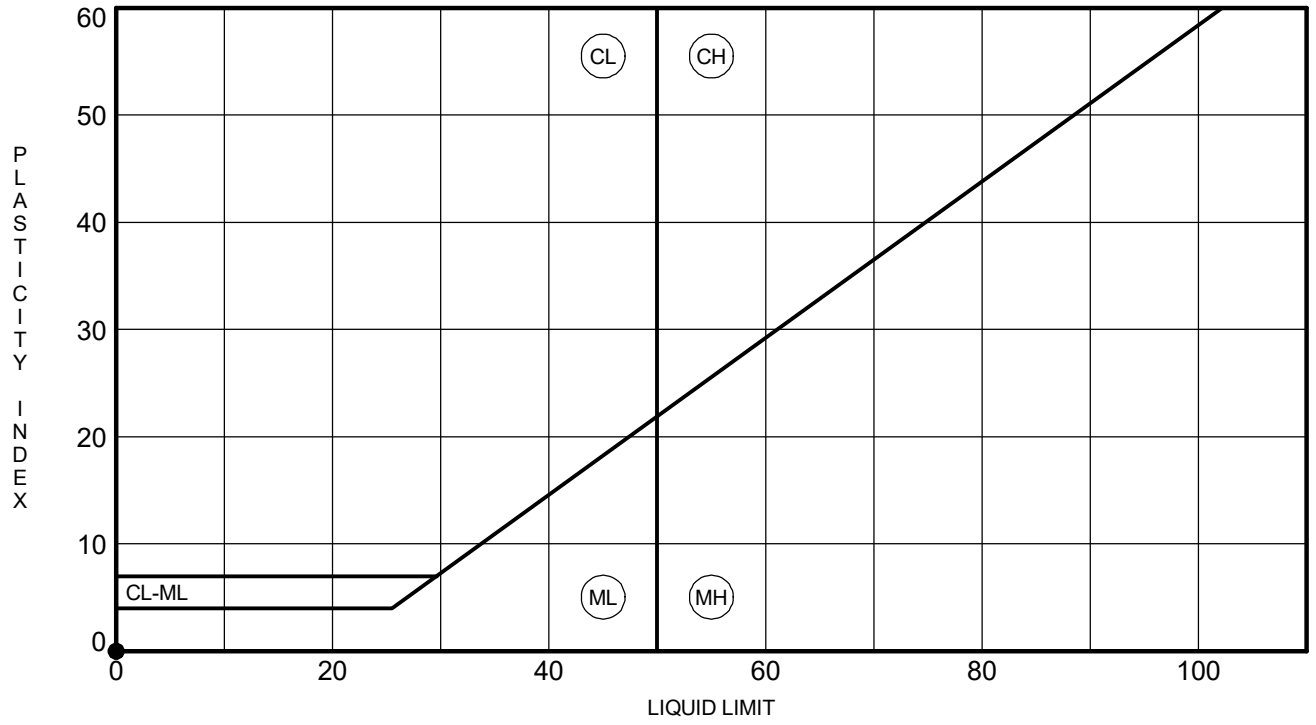
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-15**	**4.0**	**NP**	**NP**	**NP**	**2**	**Poorly Graded Fine SAND (SP) A-3**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

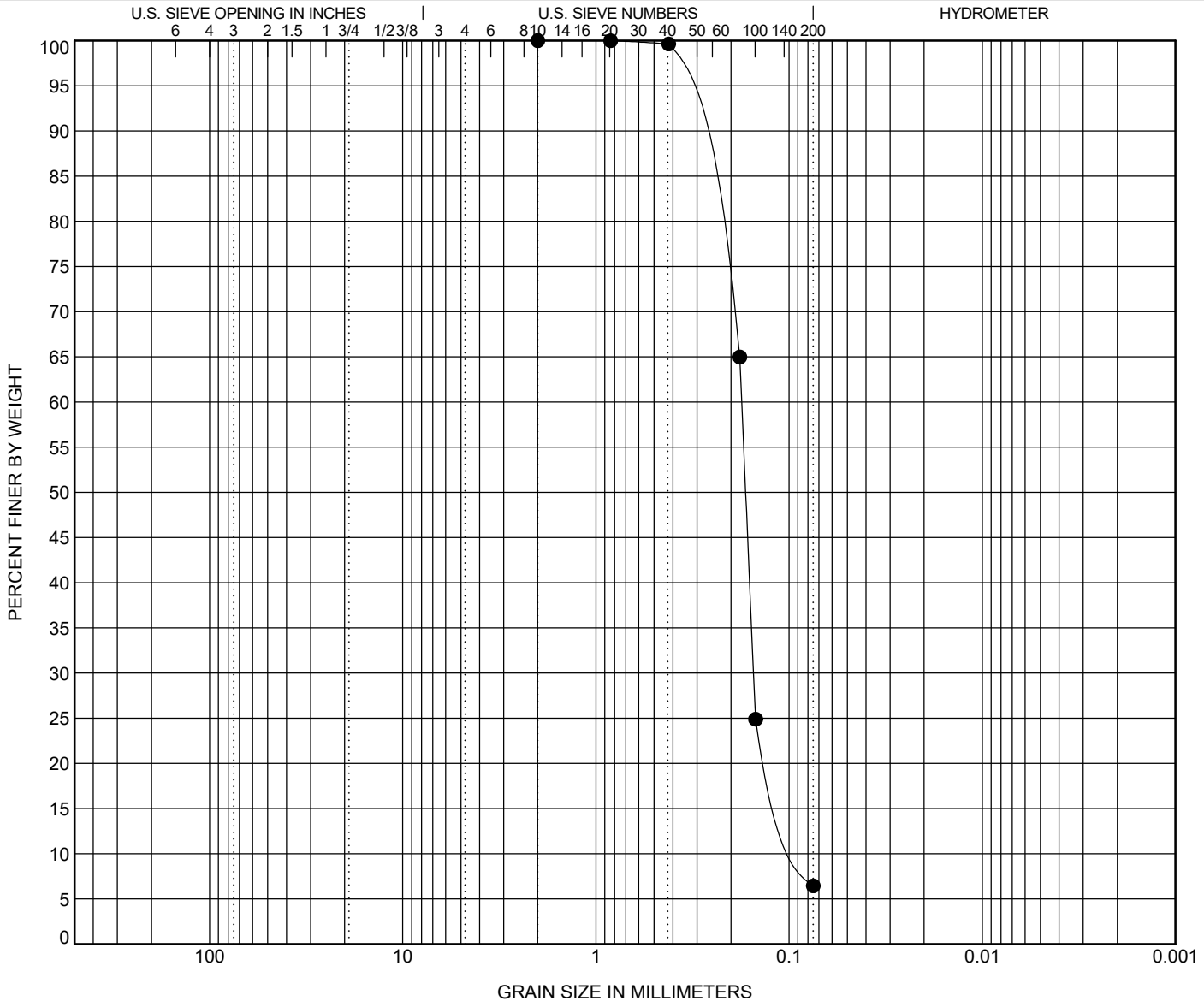
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-15	**4.0**	**23.1**	**Poorly Graded Fine SAND (SP) A-3**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-16**	**4.0**	**Pooly Graded Fine SAND (SP-SM) with Silt A-3**	**21.7**	**NP**	**NP**	**NP**	**1.55**	**2.05**

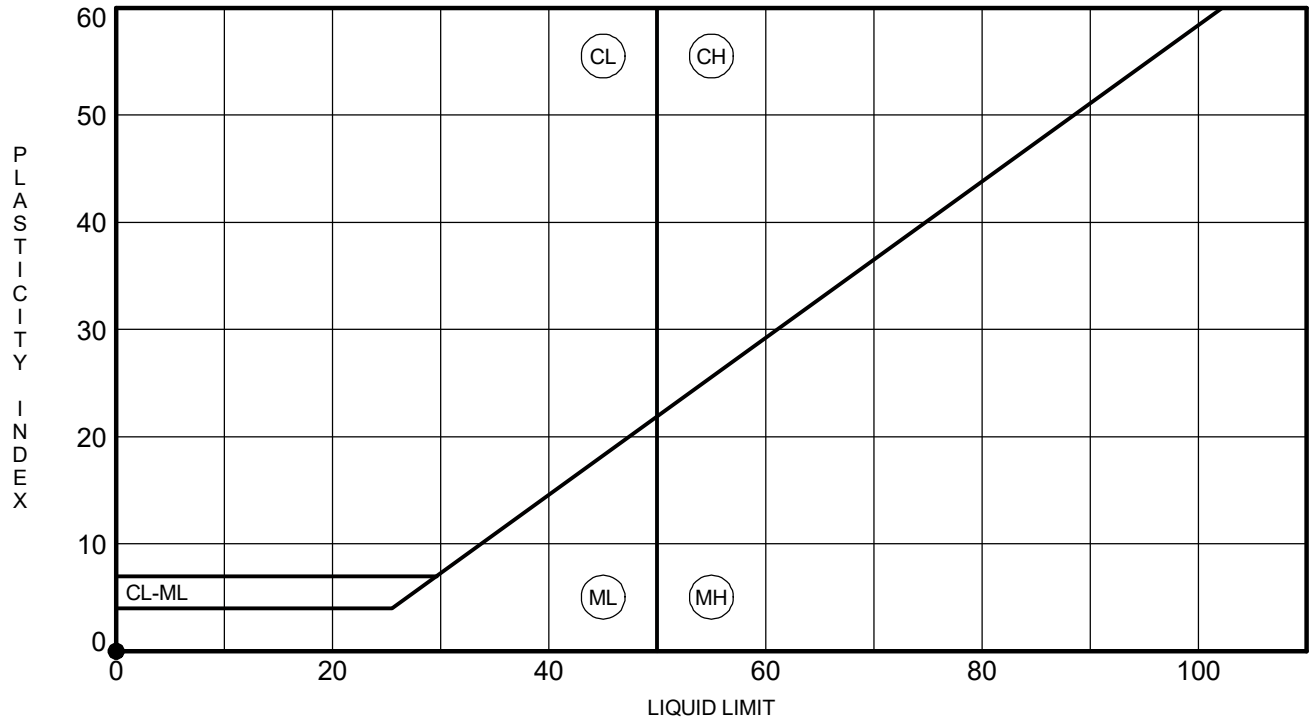
	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-16**	**4.0**	**2**	**0.375**	**0.168**	**0.086**	**0.0**	**93.6**	**6.4**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-16**	**4.0**	**NP**	**NP**	**NP**	**6**	**Pooly Graded Fine SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

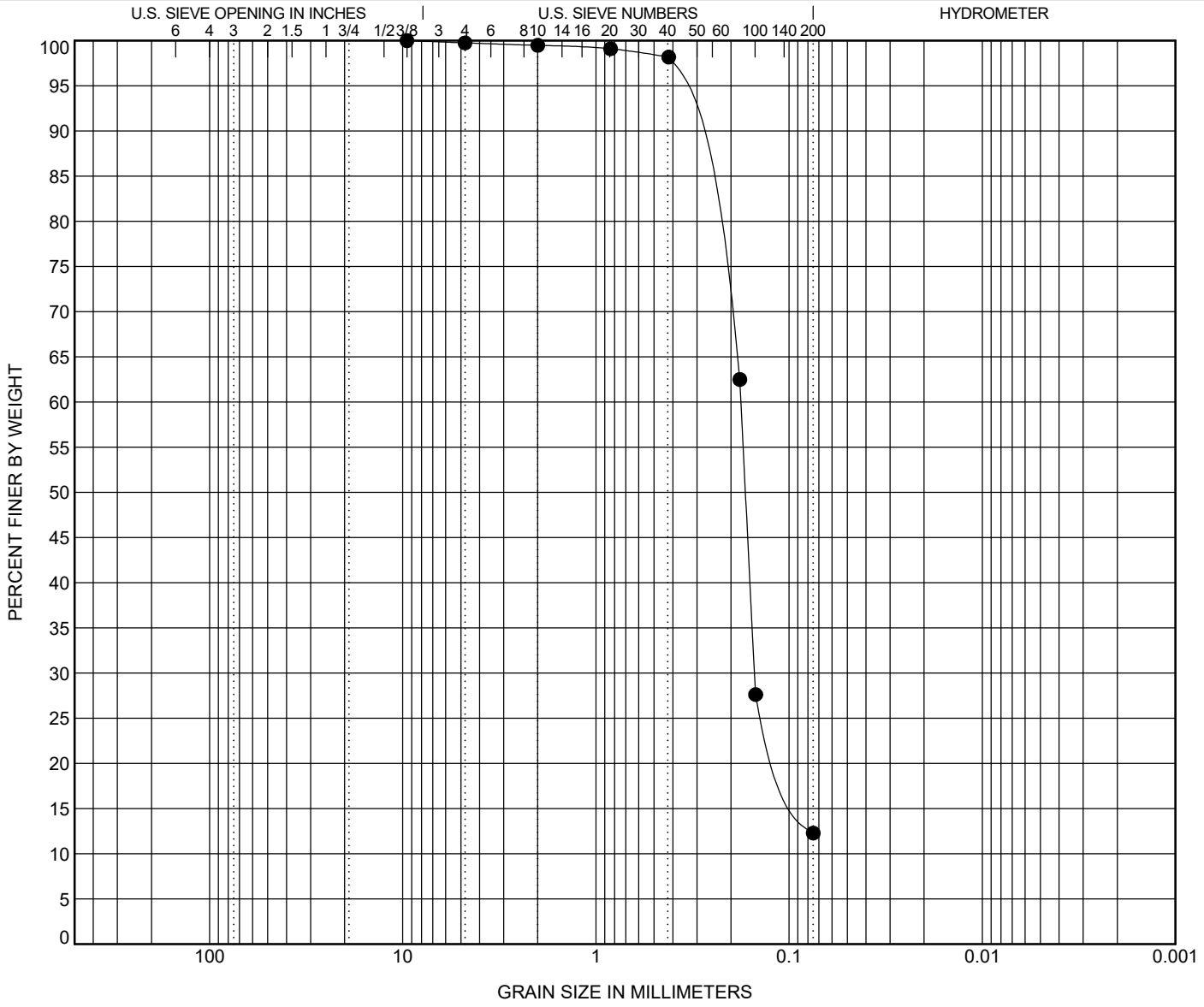
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-16	**4.0**	**21.7**	**Pooly Graded Fine SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-17**	**2.0**	**Silty Fine SAND (SM) A-2-4**	**22.1**	**NP**	**NP**	**NP**	**1.89**	**2.62**

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-17**	**2.0**	**9.52**	**0.389**	**0.168**		**0.2**	**87.5**	**12.3**	

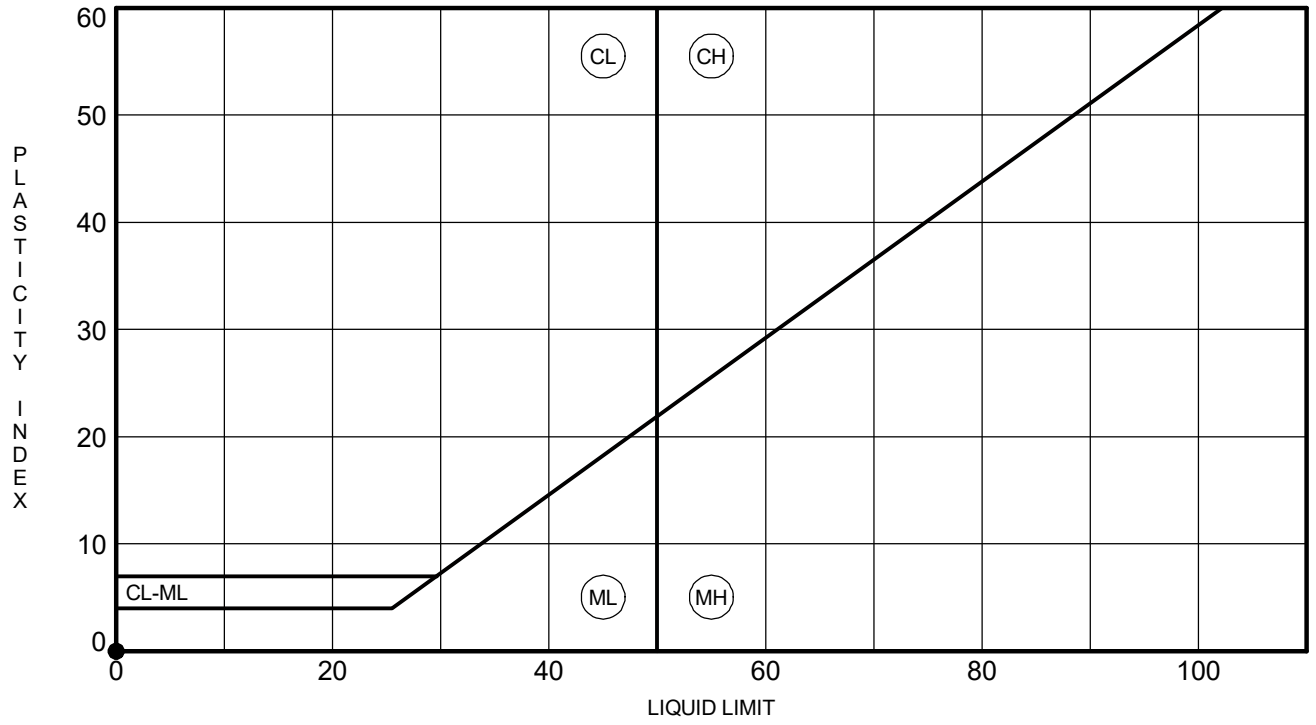
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
● **B-17**	**2.0**	**NP**	**NP**	**NP**	**12**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

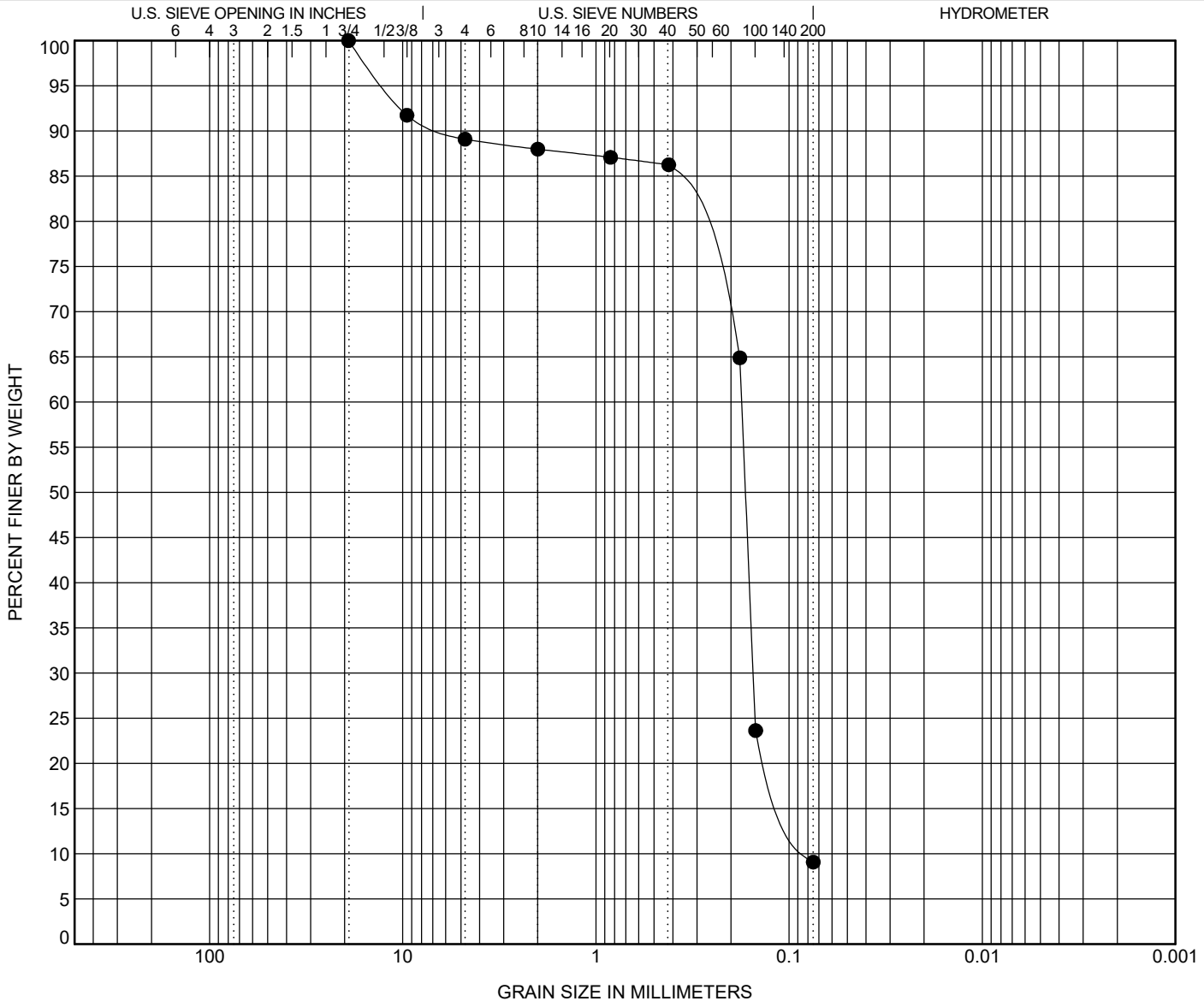
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-17	**2.0**	**22.1**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-18**	**2.0**	**Poorly Graded F/M SAND (SP-SM) with Silt A-3**	**13.9**	**NP**	**NP**	**NP**	**1.71**	**2.25**

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-18**	**2.0**	**19.1**	**12.532**	**0.168**	**0.078**	**10.9**	**80.0**	**9.1**	

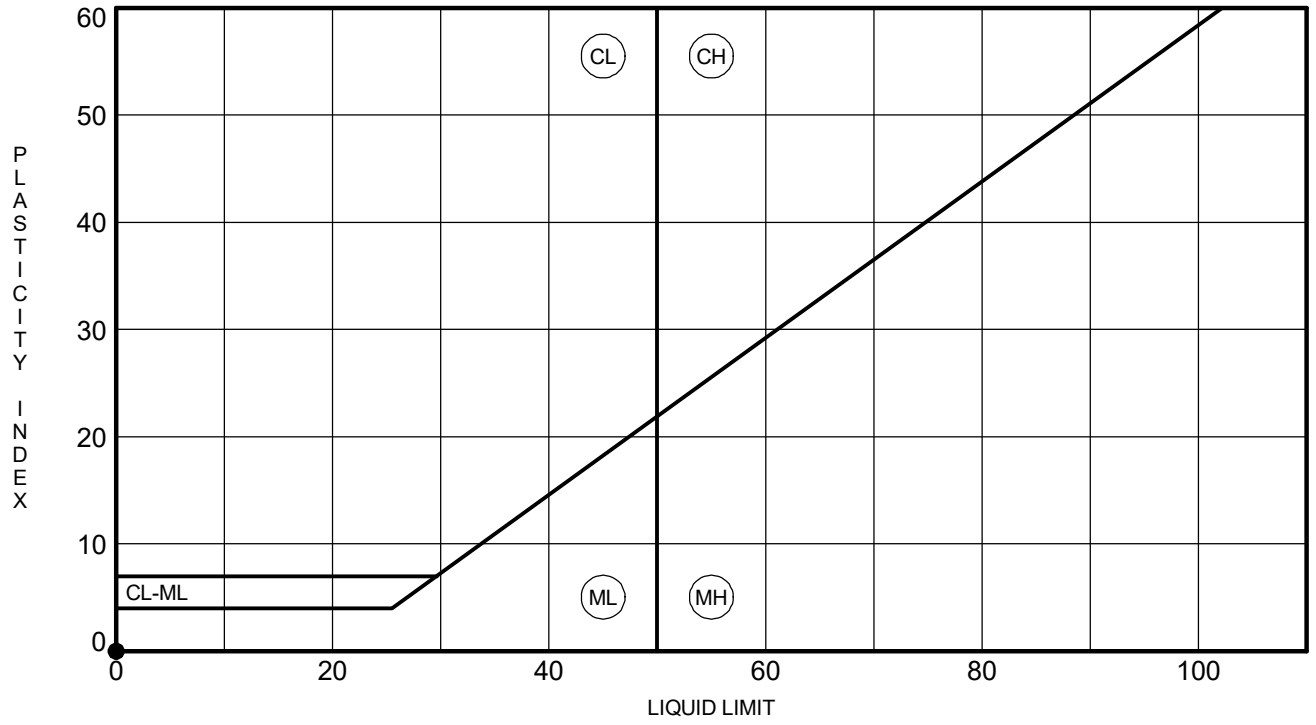
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-18**	**2.0**	**NP**	**NP**	**NP**	**9**	**Poorly Graded F/M SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

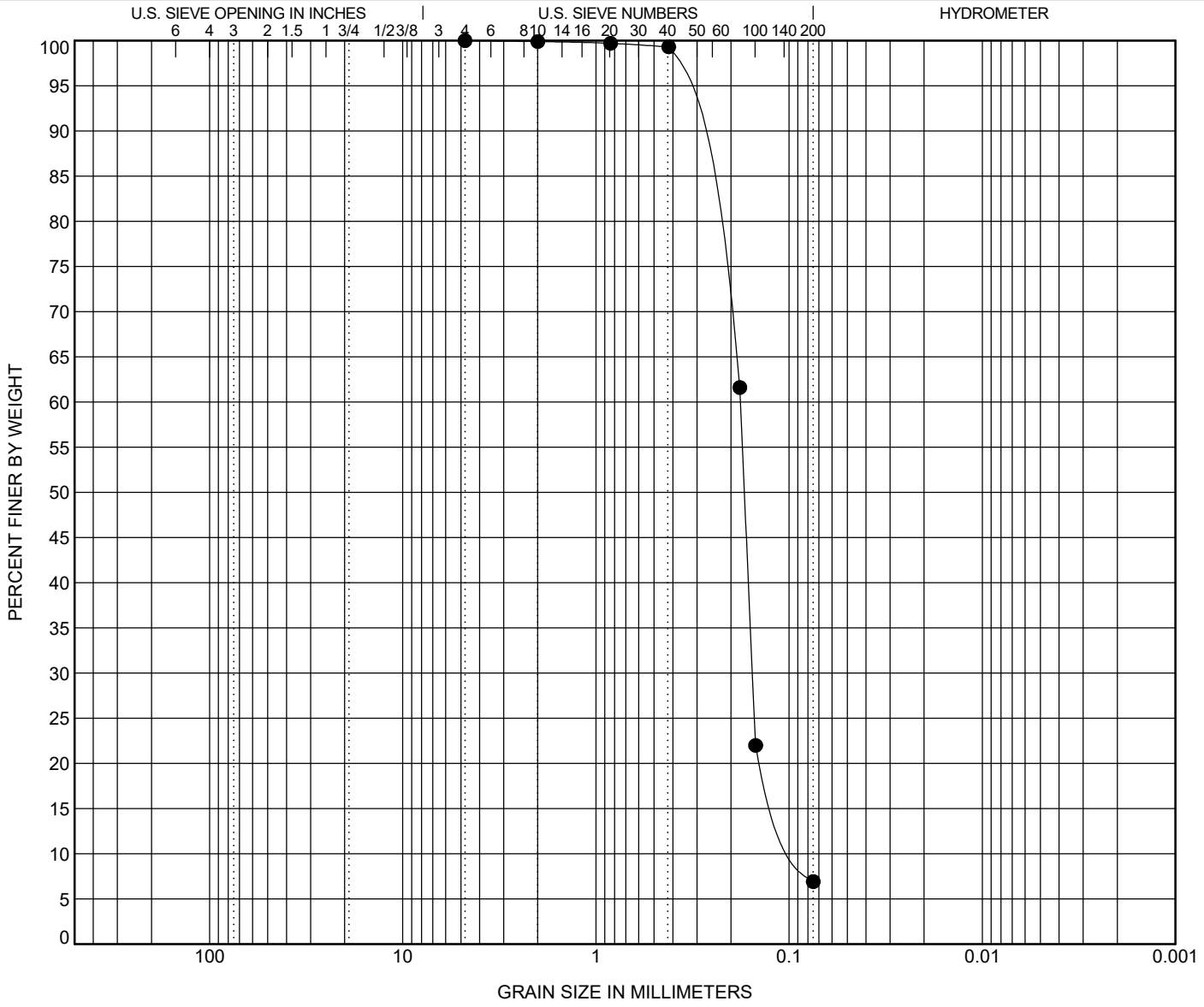
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-18	**2.0**	**13.9**	**Poorly Graded F/M SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-20**	**4.5**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**	**34.7**	**NP**	**NP**	**NP**	**1.55**	**2.07**

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-20**	**4.5**	**4.76**	**0.381**	**0.17**	**0.086**	**0.0**	**93.1**	**6.9**	

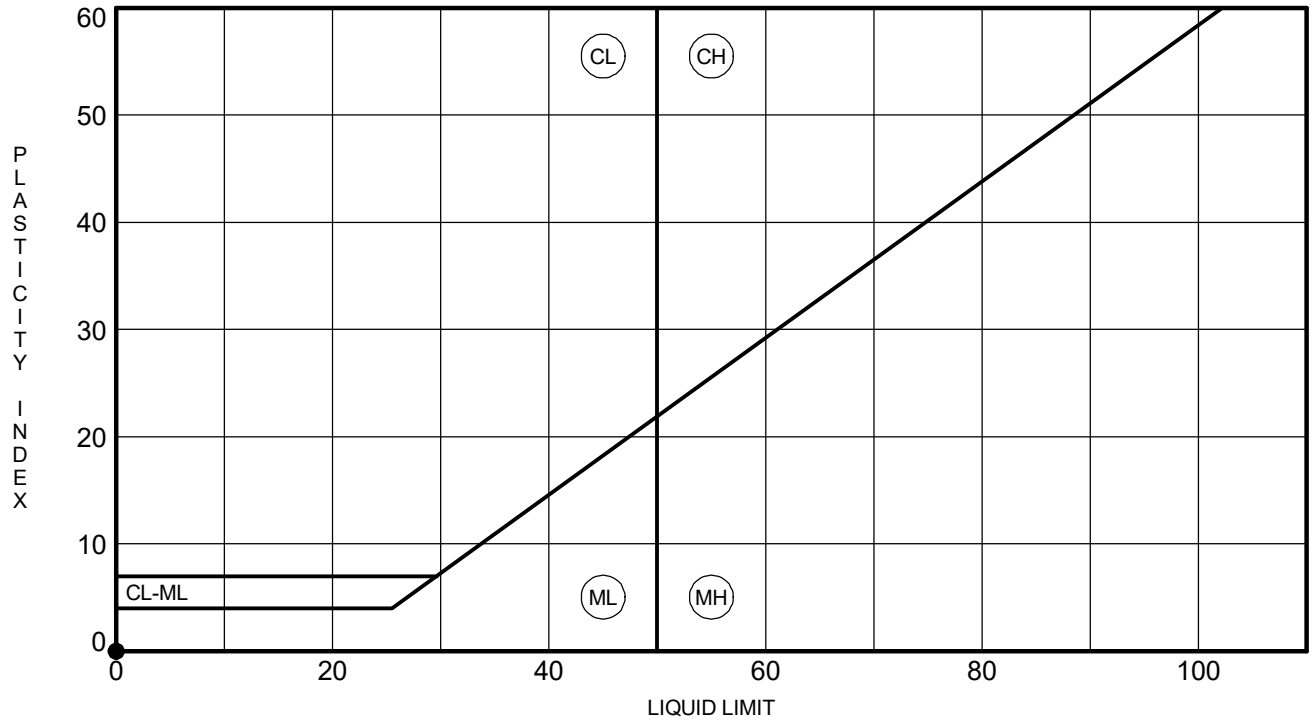
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-20**	**4.5**	**NP**	**NP**	**NP**	**7**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

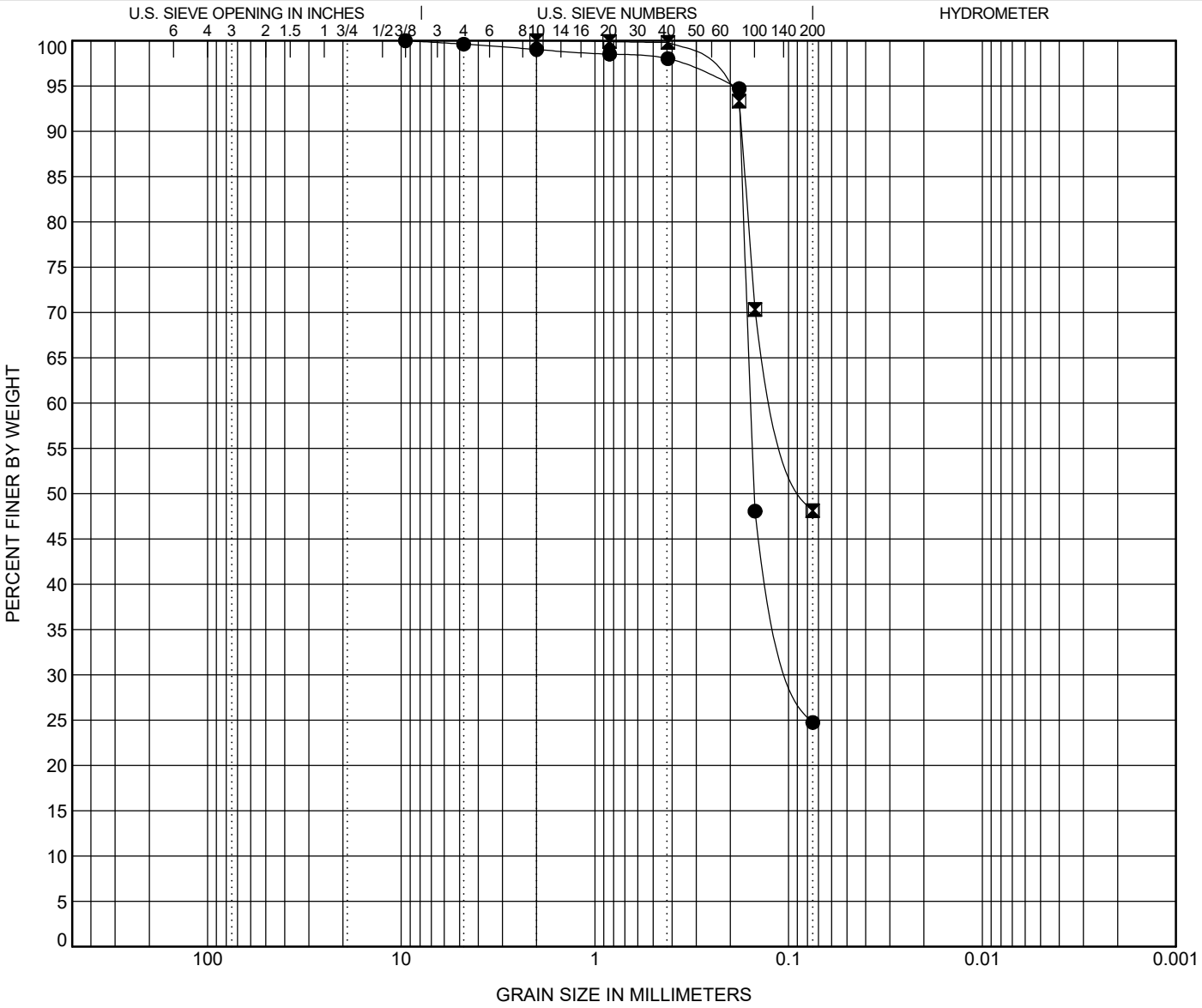
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-20	**4.5**	**34.7**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-22**	**2.0**	**Silty Fine SAND (SM) A-2-4**	**17.5**	**NP**	**NP**	**NP**		
⊠	**B-22**	**10.0**	**Silty Fine SAND (SM) A-4(0)**	**64.7**	**24**	**23**	**1**		

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-22**	**2.0**	**9.52**	**0.194**	**0.15**		**0.4**	**74.9**	**24.7**	
⊠	**B-22**	**10.0**	**2**	**0.224**	**0.079**		**0.0**	**51.9**	**48.1**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

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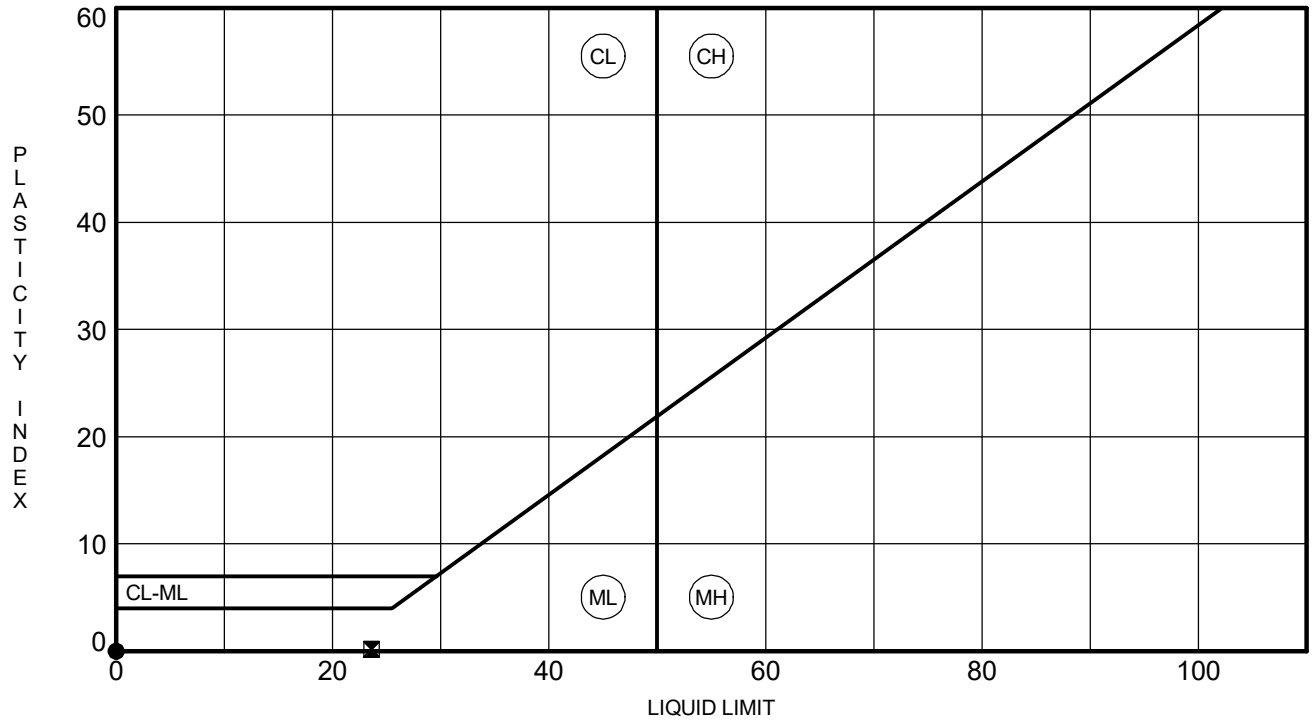
PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-22**	**2.0**	**NP**	**NP**	**NP**	**25**	**Silty Fine SAND (SM) A-2-4**
⧓	**B-22**	**10.0**	**24**	**23**	**1**	**48**	**Silty Fine SAND (SM) A-4(0)**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

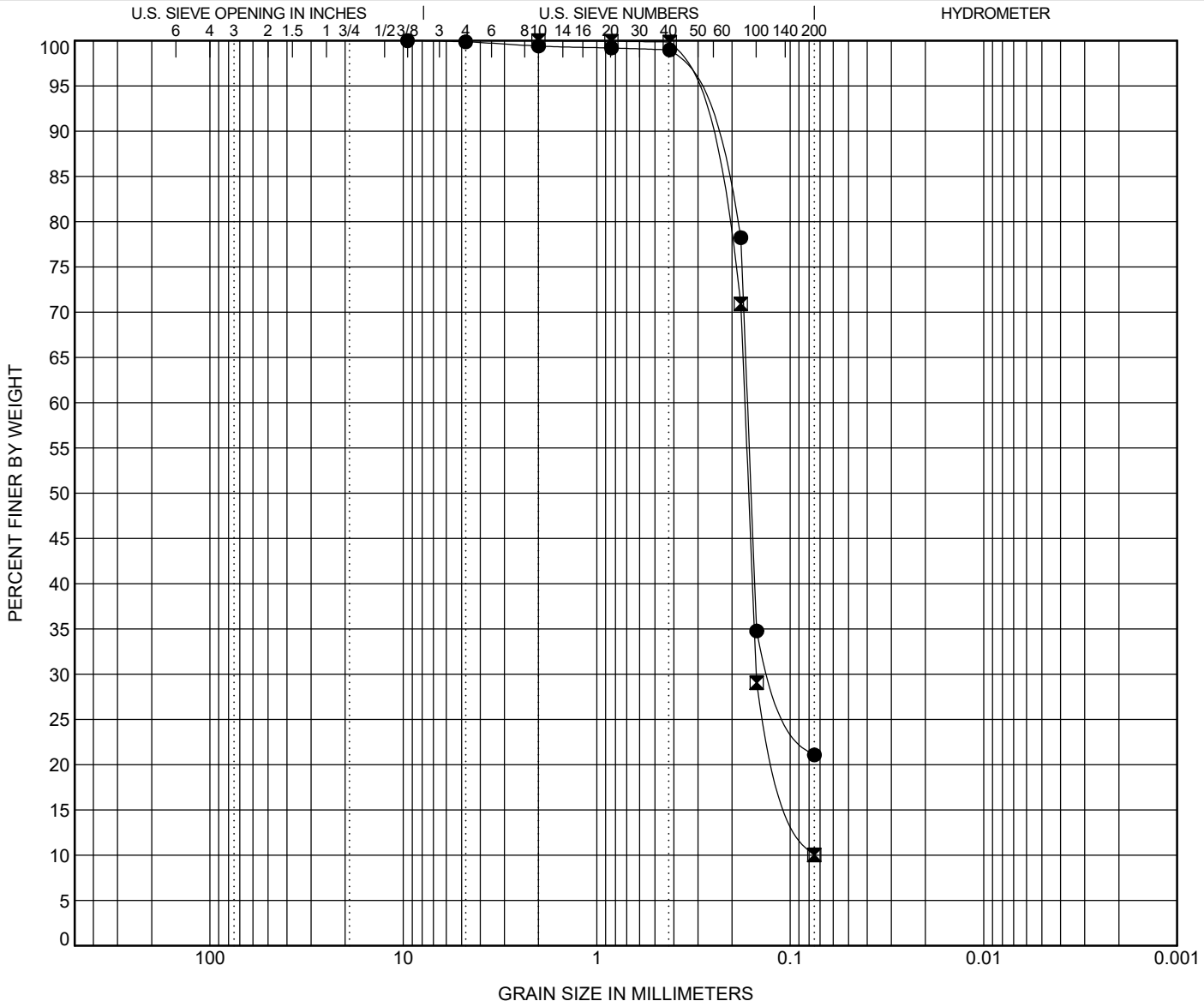
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-22	**2.0**	**17.5**	**Silty Fine SAND (SM) A-2-4**
B-22	**10.0**	**64.7**	**Silty Fine SAND (SM) A-4(0)**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-23**	**4.0**	**Silty Fine SAND (SM) A-2-4**	**20.6**	**NP**	**NP**	**NP**		
⊠	**B-23**	**8.0**	**Poorly Graded Fine SAND (SP-SM) with Silt A-2-4**	**29.6**	**NP**	**NP**	**NP**	**1.74**	**2.29**

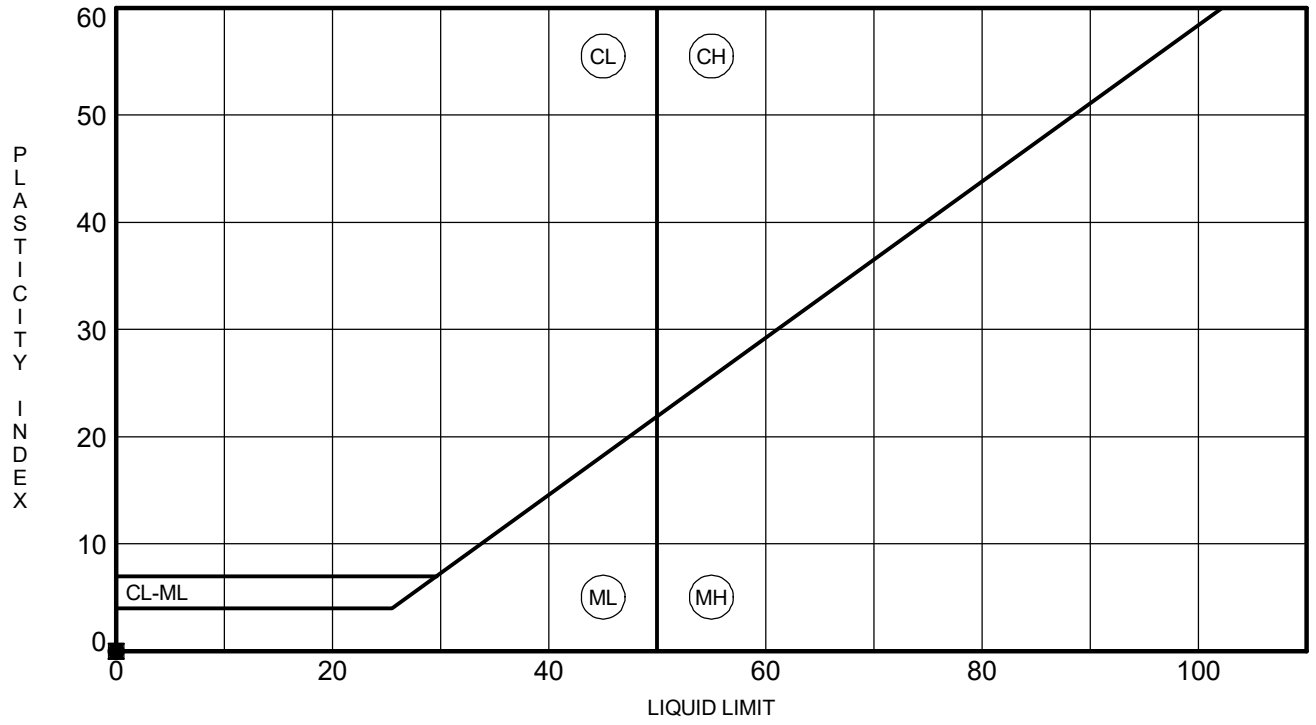
	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-23**	**4.0**	**9.52**	**0.357**	**0.159**		**0.1**	**78.8**	**21.1**	
⊠	**B-23**	**8.0**	**2**	**0.364**	**0.164**		**0.0**	**90.0**	**10.0**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-23**	**4.0**	**NP**	**NP**	**NP**	**21**	**Silty Fine SAND (SM) A-2-4**
⧓	**B-23**	**8.0**	**NP**	**NP**	**NP**	**10**	**Poorly Graded Fine SAND (SP-SM) with Silt A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

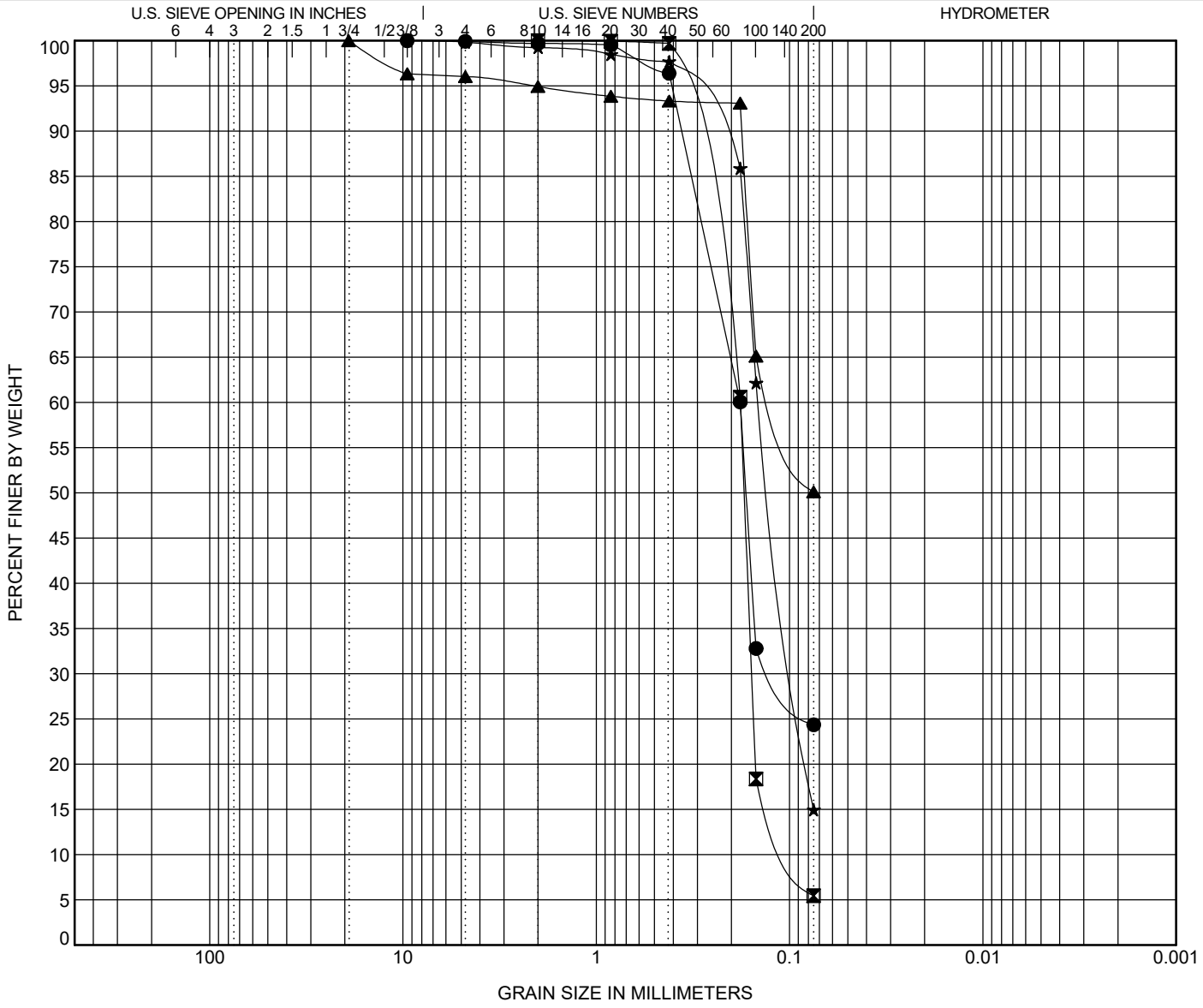
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-23	**4.0**	**20.6**	**Silty Fine SAND (SM) A-2-4**
B-23	**8.0**	**29.6**	**Poorly Graded Fine SAND (SP-SM) with Silt A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-24**	**8.0**	**Silty Fine SAND (SM) A-2-4**	**28.9**	**NP**	**NP**	**NP**		
⊠	**B-24**	**10.0**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**	**25.8**	**NP**	**NP**	**NP**	**1.44**	**1.88**
▲	**B-24**	**15.0**	**Sandy Lean CLAY (CL) A-7-6(8)**	**74.2**	**46**	**19**	**27**		
★	**B-24**	**20.0**	**Silty Fine SAND (SM) A-2-4**	**33.1**	**NP**	**NP**	**NP**		

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-24**	**8.0**	**9.52**	**0.407**	**0.168**		**0.1**	**75.6**	**24.4**	
⊠	**B-24**	**10.0**	**2**	**0.379**	**0.172**	**0.096**	**0.0**	**94.6**	**5.4**	
▲	**B-24**	**15.0**	**19.1**	**2.132**			**4.0**	**45.9**	**50.1**	
★	**B-24**	**20.0**	**9.52**	**0.346**	**0.125**		**0.2**	**84.9**	**15.0**	

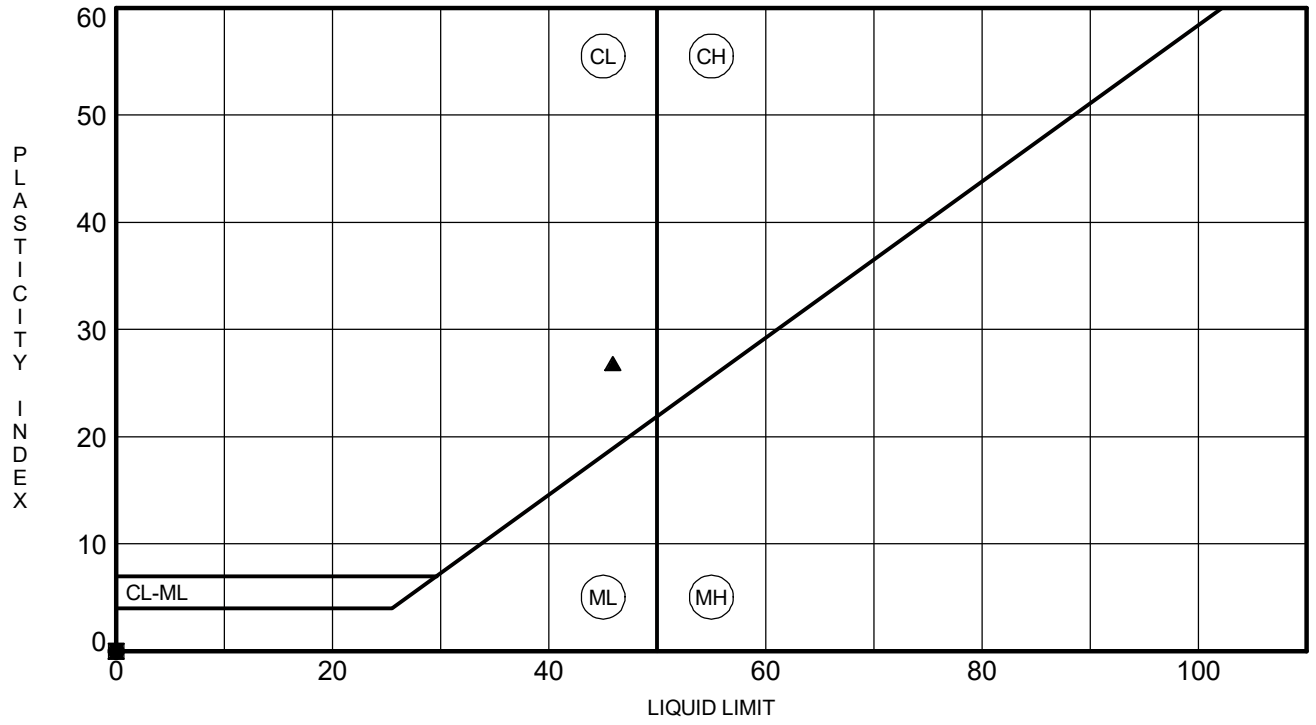
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-24**	**8.0**	**NP**	**NP**	**NP**	**24**	**Silty Fine SAND (SM) A-2-4**
⊠	**B-24**	**10.0**	**NP**	**NP**	**NP**	**5**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**
▲	**B-24**	**15.0**	**46**	**19**	**27**	**50**	**Sandy Lean CLAY (CL) A-7-6(8)**
★	**B-24**	**20.0**	**NP**	**NP**	**NP**	**15**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

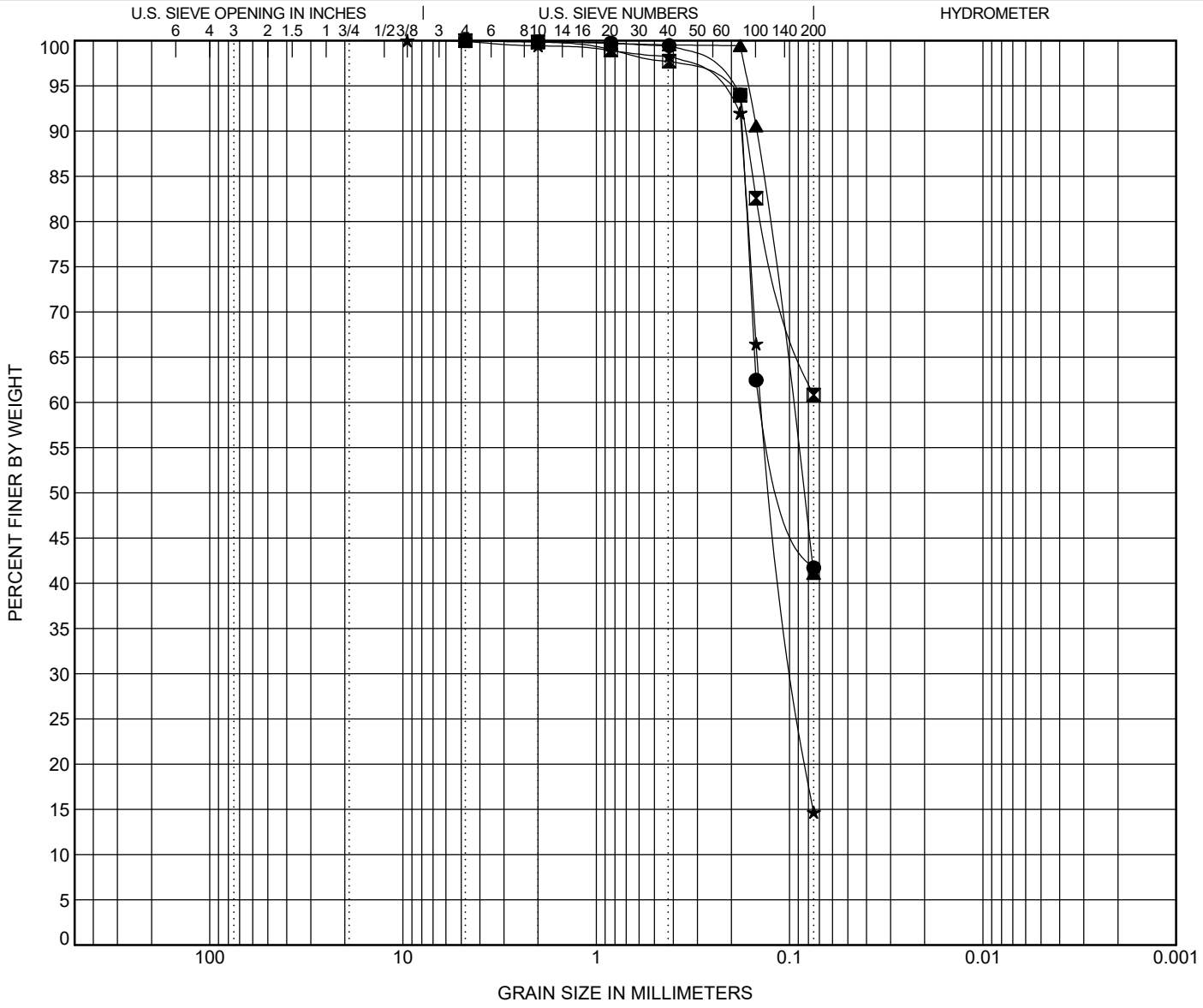
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-24	**8.0**	**28.9**	**Silty Fine SAND (SM) A-2-4**
B-24	**10.0**	**25.8**	**Poorly Graded Fine SAND (SP-SM) with Silt A-3**
B-24	**15.0**	**74.2**	**Sandy Lean CLAY (CL) A-7-6(8)**
B-24	**20.0**	**33.1**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-25**	**6.0**	**Silty, Clayey Fine SAND (SC-SM) A-4(0)**	**19.5**	**23**	**17**	**6**		
⊠	**B-25**	**10.0**	**Sandy Lean CLAY (CL) A-7-6(12)**	**46.9**	**41**	**16**	**25**		
▲	**B-25**	**15.0**	**Silty Fine SAND (SM) A-4(0)**	**63.7**	**27**	**24**	**3**		
★	**B-25**	**20.0**	**Silty Fine SAND (SM) A-2-4**	**32.1**	**NP**	**NP**	**NP**		

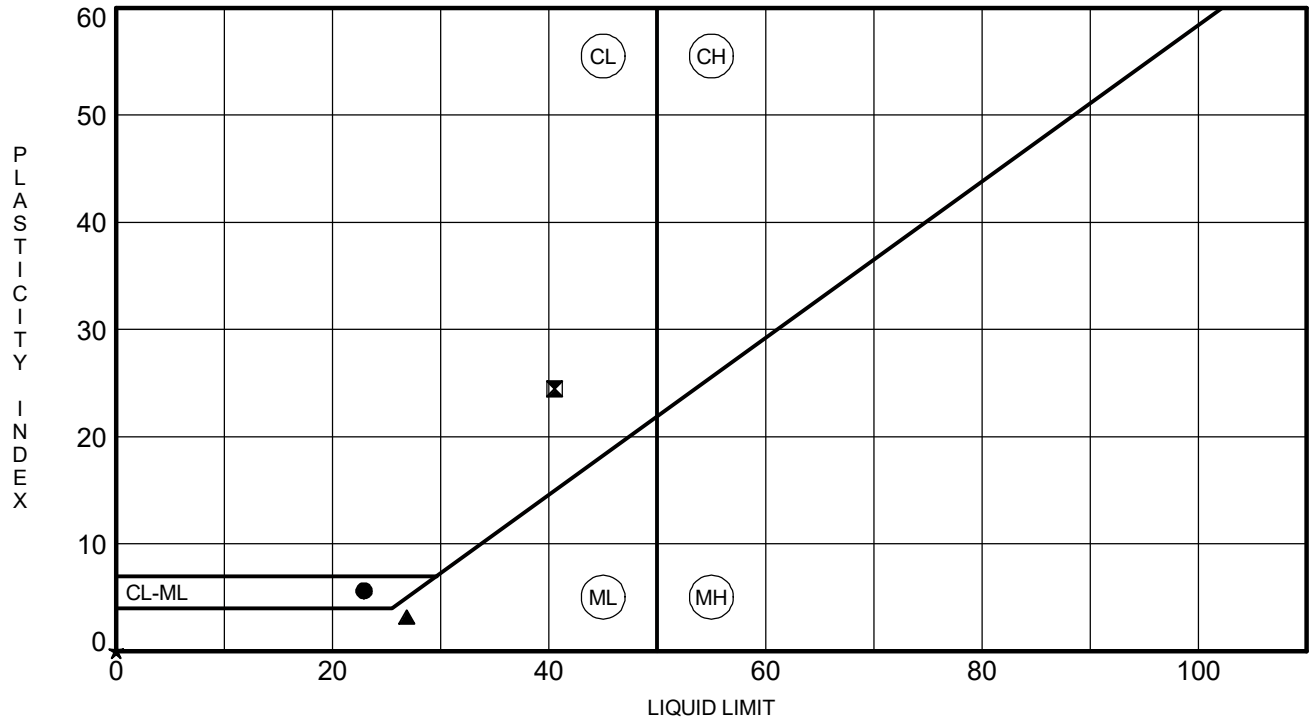
	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-25**	**6.0**	**4.76**	**0.21**	**0.099**		**0.0**	**58.3**	**41.7**	
⊠	**B-25**	**10.0**	**4.76**	**0.227**			**0.0**	**39.2**	**60.8**	
▲	**B-25**	**15.0**	**4.76**	**0.164**	**0.085**		**0.0**	**58.9**	**41.1**	
★	**B-25**	**20.0**	**9.52**	**0.269**	**0.12**		**0.1**	**85.2**	**14.7**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-25**	**6.0**	**23**	**17**	**6**	**42**	**Silty, Clayey Fine SAND (SC-SM) A-4(0)**
⊠	**B-25**	**10.0**	**41**	**16**	**25**	**61**	**Sandy Lean CLAY (CL) A-7-6(12)**
▲	**B-25**	**15.0**	**27**	**24**	**3**	**41**	**Silty Fine SAND (SM) A-4(0)**
★	**B-25**	**20.0**	**NP**	**NP**	**NP**	**15**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

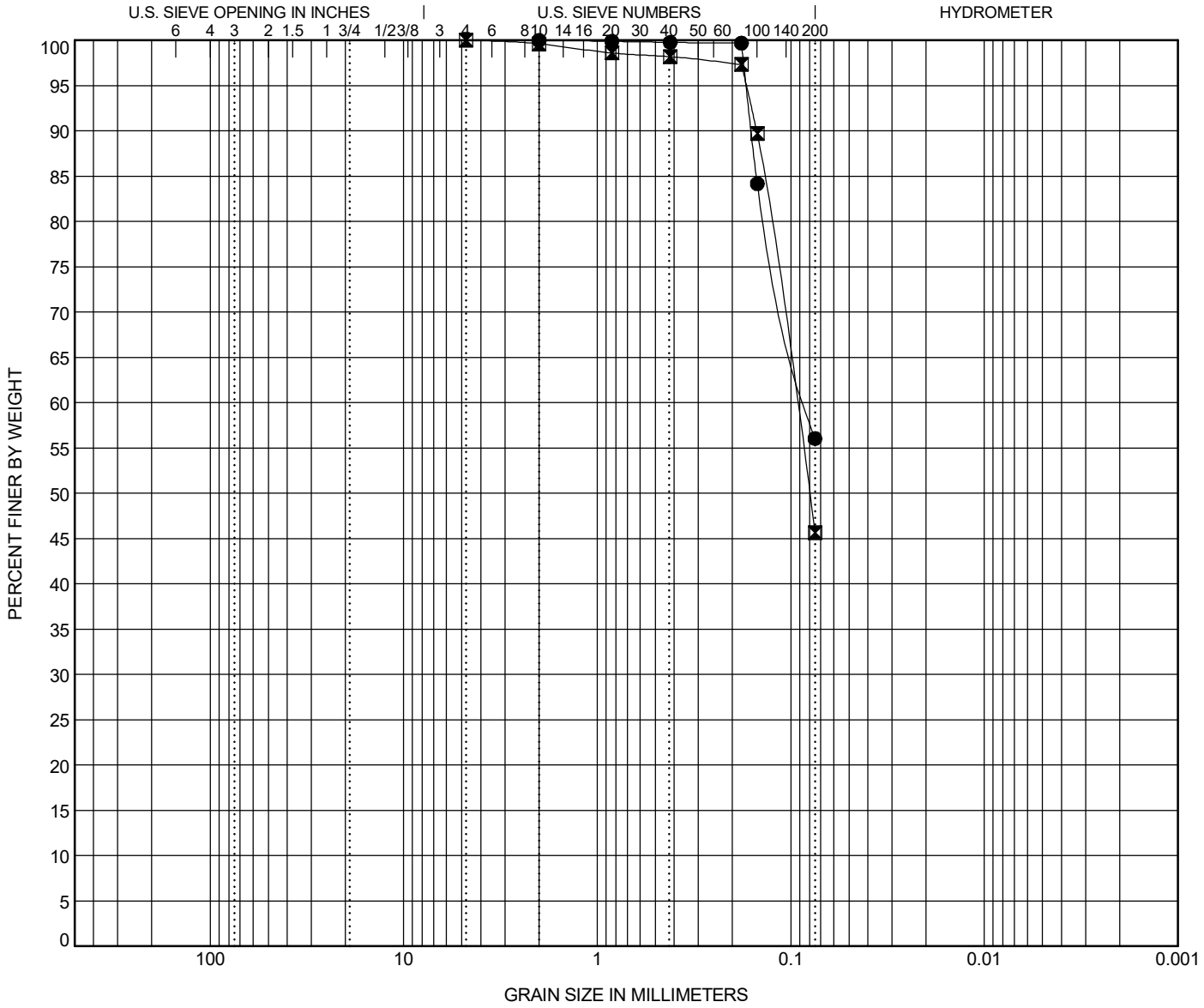
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-25	**6.0**	**19.5**	**Silty, Clayey Fine SAND (SC-SM) A-4(0)**
B-25	**10.0**	**46.9**	**Sandy Lean CLAY (CL) A-7-6(12)**
B-25	**15.0**	**63.7**	**Silty Fine SAND (SM) A-4(0)**
B-25	**20.0**	**32.1**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
●	**B-26**	**4.0**	**Sandy Lean CLAY (CL) A-7-6(11)**	**33.9**	**45**	**19**	**26**		
⊠	**B-26**	**8.0**	**Clayey Fine SAND (SC) A-6(3)**	**49.5**	**33**	**20**	**13**		

	BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-26**	**4.0**	**2**	**0.17**			**0.0**	**43.9**	**56.1**	
⊠	**B-26**	**8.0**	**4.76**	**0.17**	**0.08**		**0.0**	**54.3**	**45.7**	

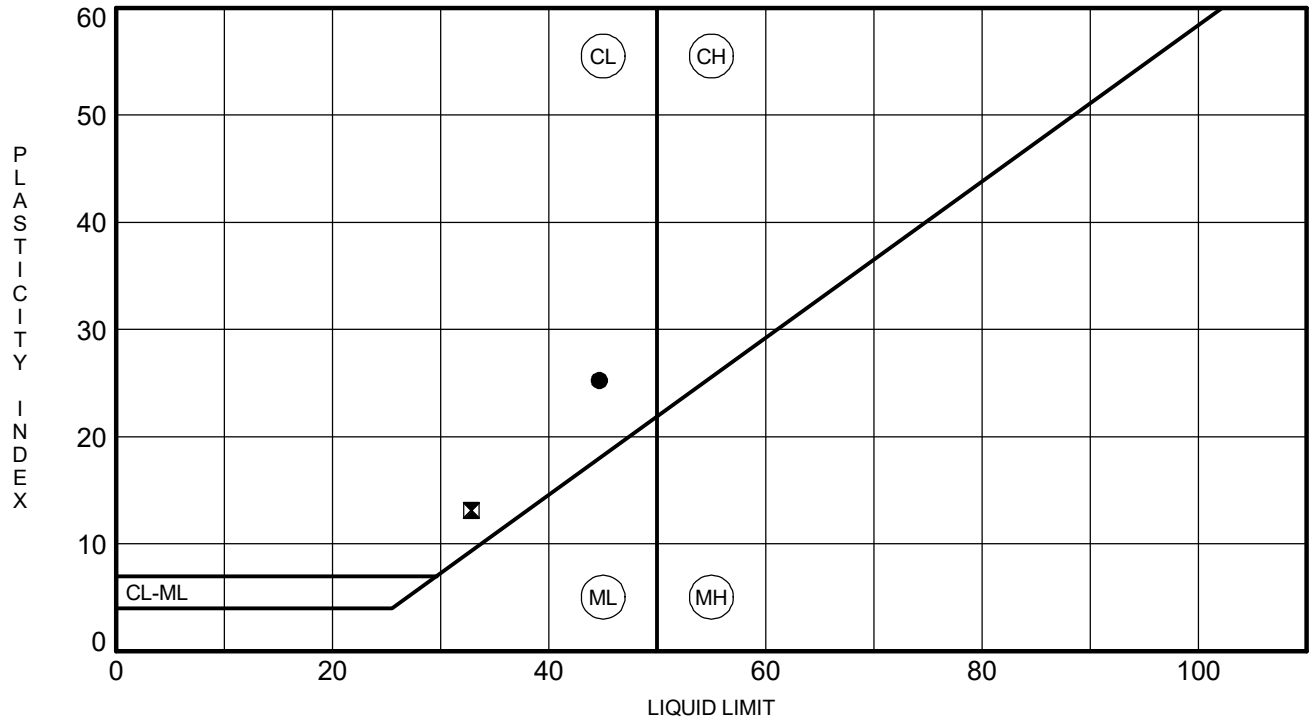
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/15/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-26**	**4.0**	**45**	**19**	**26**	**56**	**Sandy Lean CLAY (CL) A-7-6(11)**
⊠	**B-26**	**8.0**	**33**	**20**	**13**	**46**	**Clayey Fine SAND (SC) A-6(3)**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

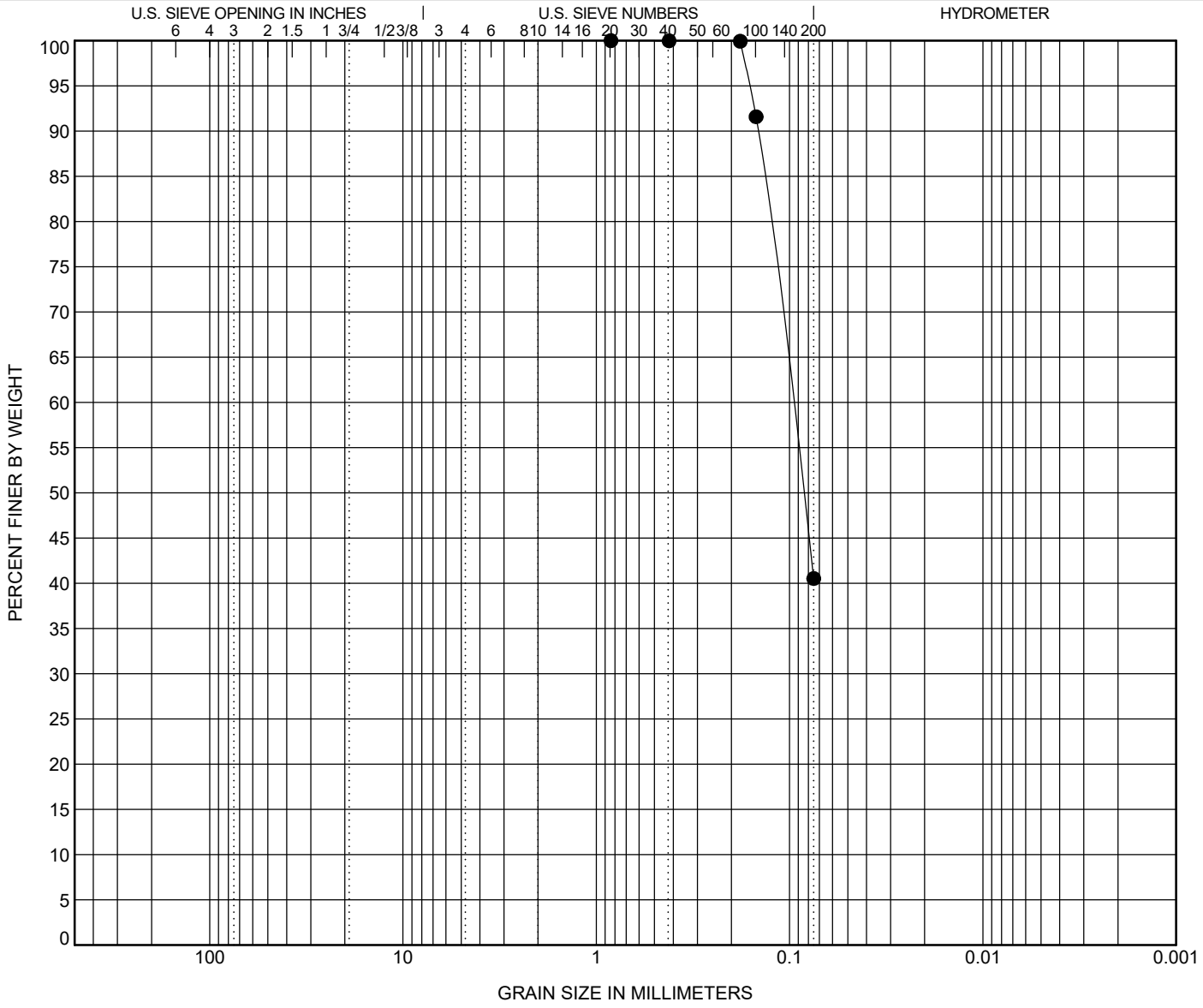
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-26	**4.0**	**33.9**	**Sandy Lean CLAY (CL) A-7-6(11)**
B-26	**8.0**	**49.5**	**Clayey Fine SAND (SC) A-6(3)**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-27**	**6.0**	**Silty, Clayey Fine SAND (SC-SM) A-4(0)**	**29.2**	**24**	**20**	**4**		

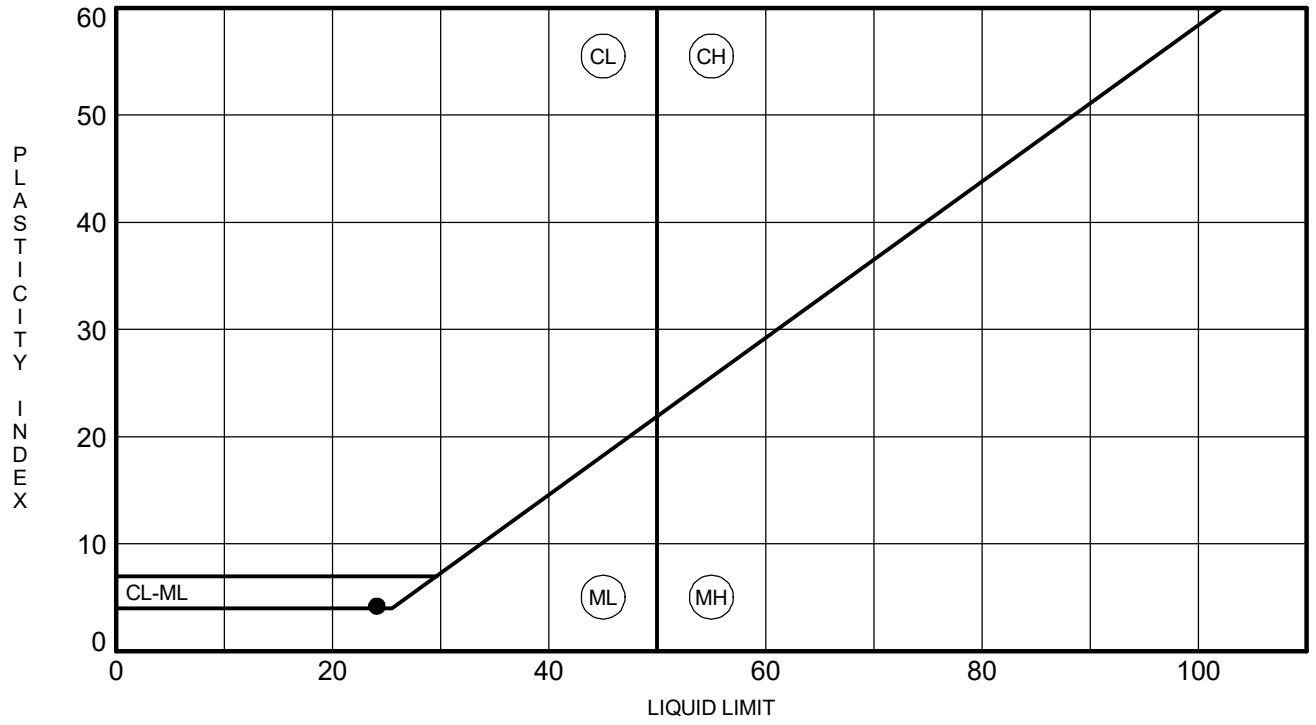
BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-27**	**6.0**	**0.84**	**0.161**	**0.085**		**0.0**	**59.5**	**40.5**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-27**	**6.0**	**24**	**20**	**4**	**41**	**Silty, Clayey Fine SAND (SC-SM) A-4(0)**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

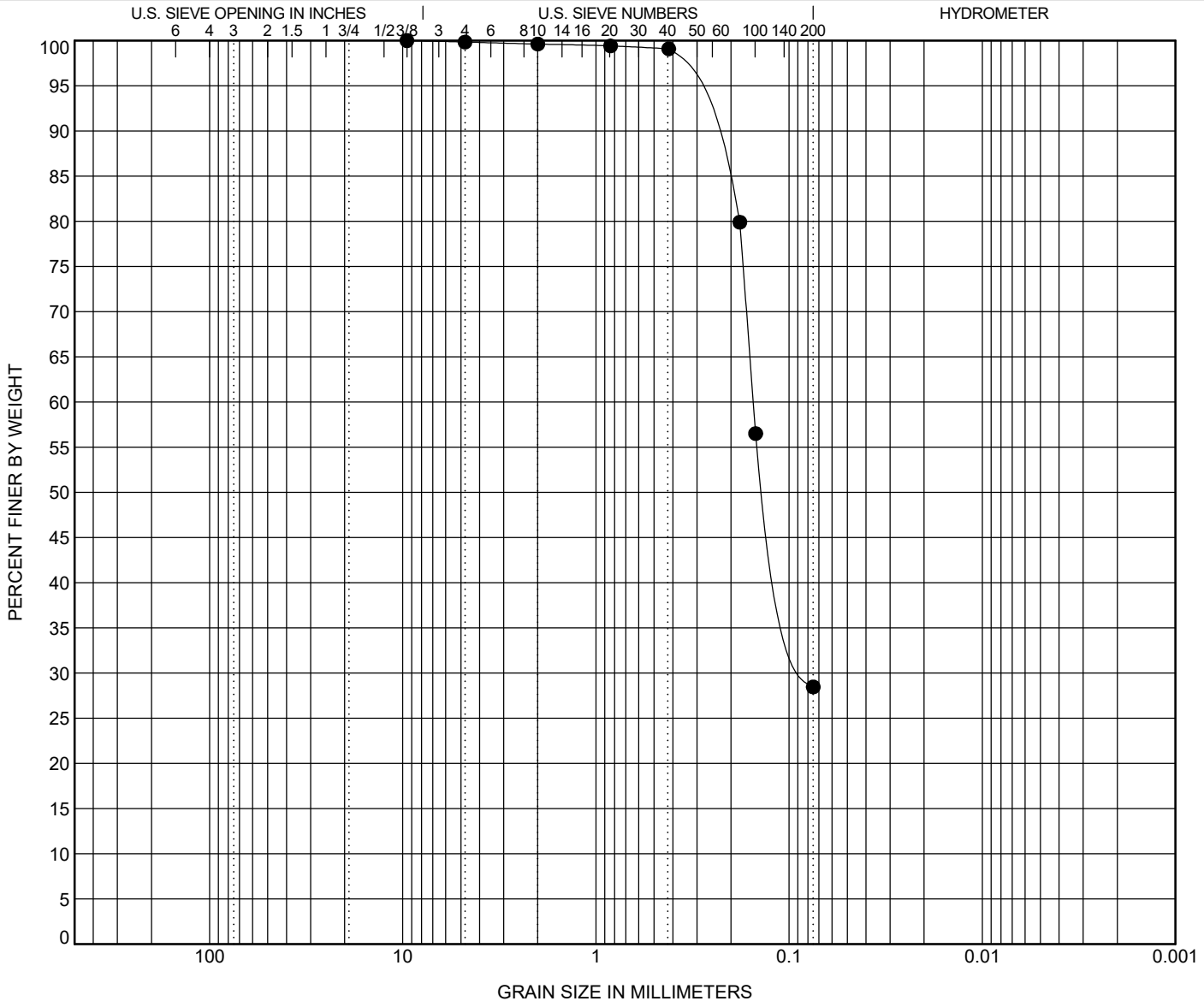
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-27	**6.0**	**29.2**	**Silty, Clayey Fine SAND (SC-SM) A-4(0)**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-28**	**2.0**	**Silty Fine SAND (SM) A-2-4**	**20.3**	**NP**	**NP**	**NP**		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-28**	**2.0**	**9.52**	**0.351**	**0.127**		**0.2**	**71.4**	**28.5**	

GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

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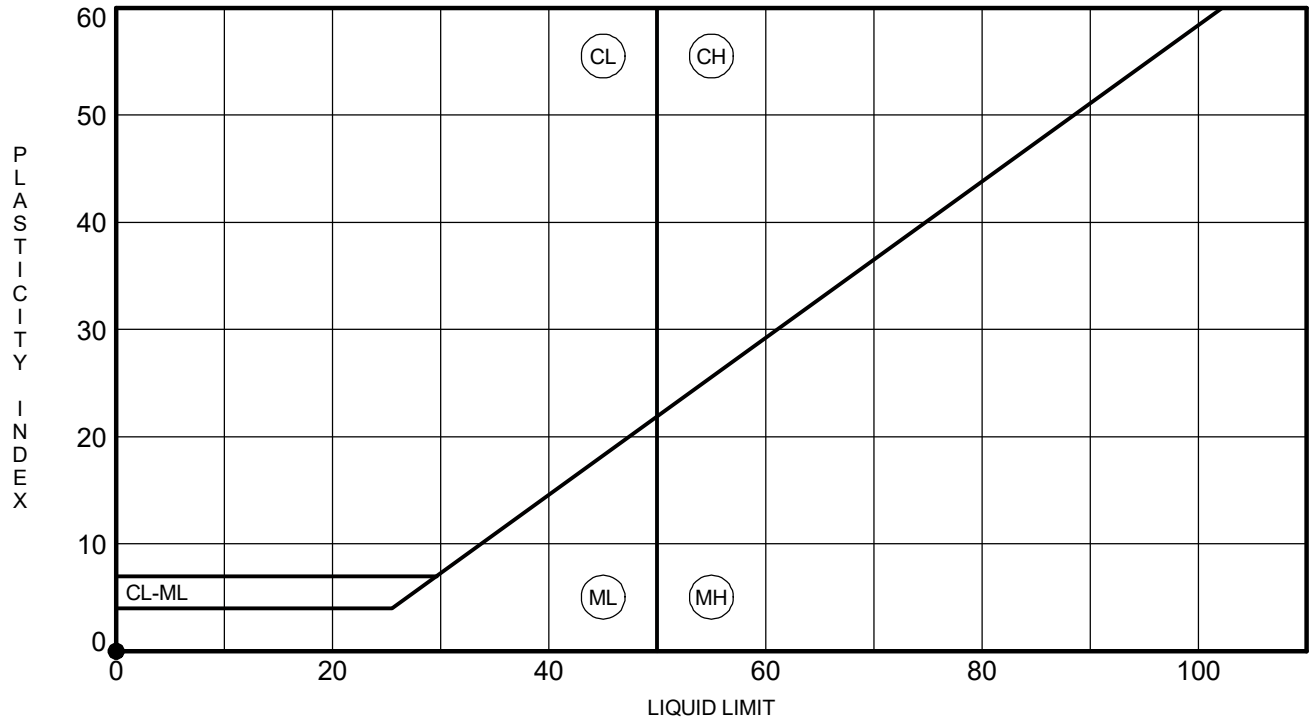
PROJECT LOCATION Georgetown County - South Carolina



BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
● **B-28**	**2.0**	**NP**	**NP**	**NP**	**28**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

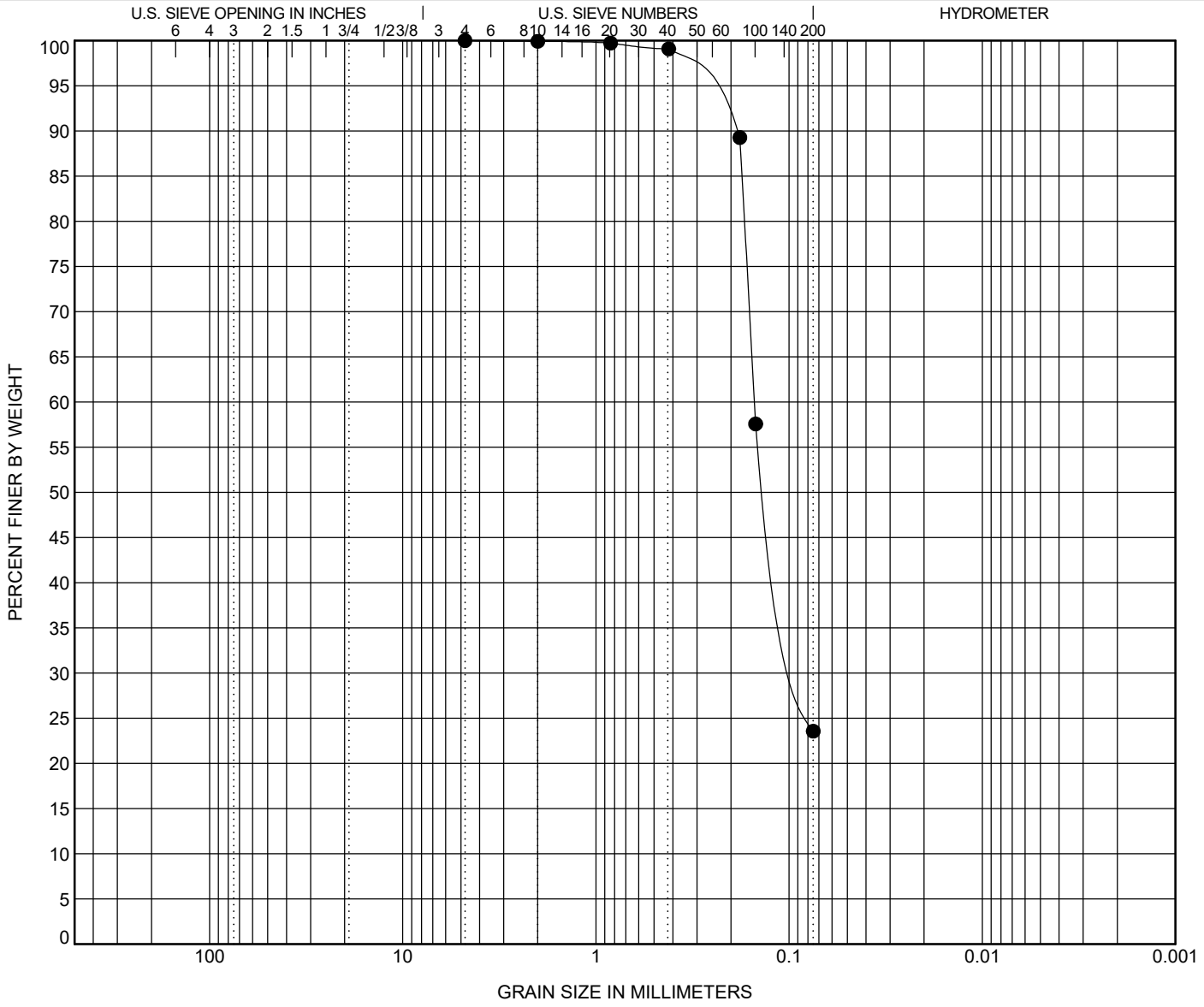
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-28	**2.0**	**20.3**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-30**	**6.0**	**Silty Fine SAND (SM) A-2-4**	**26.9**	**27**	**24**	**3**		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-30**	**6.0**	**4.76**	**0.295**	**0.128**		**0.0**	**76.4**	**23.6**	

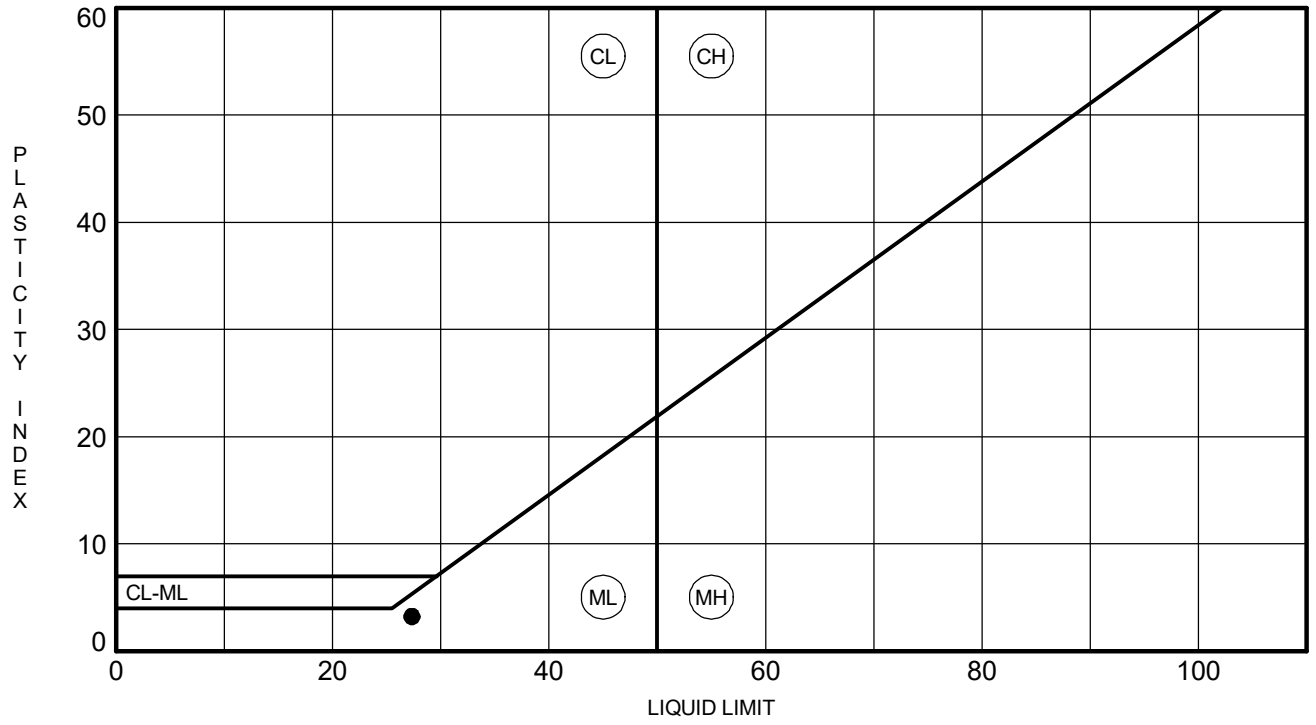
GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-30**	**6.0**	**27**	**24**	**3**	**24**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

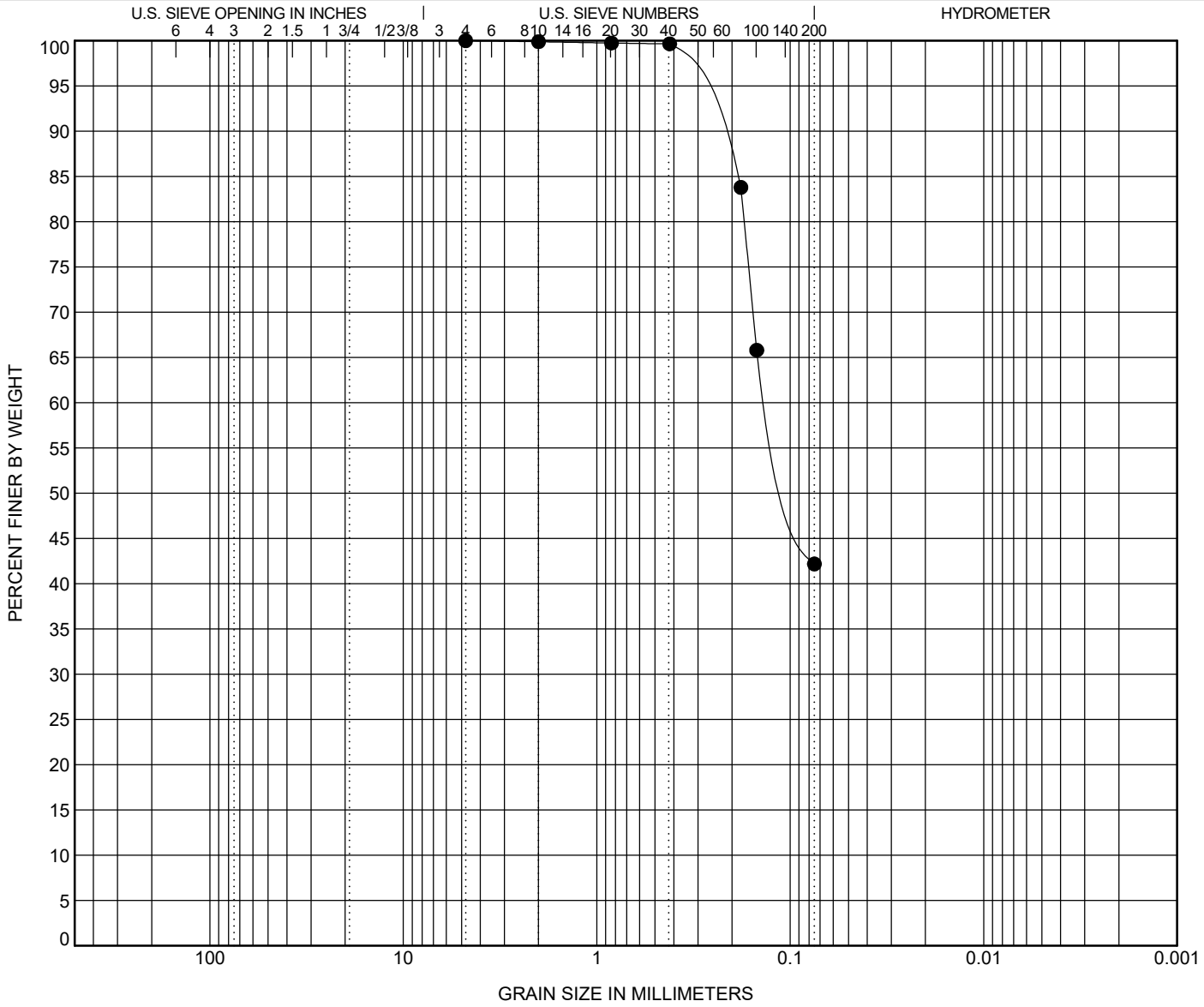
BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-30	**6.0**	**26.9**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-33**	**4.0**	**Clayey Fine SAND (SC) A-6(3)**	**24.5**	**34**	**16**	**18**		

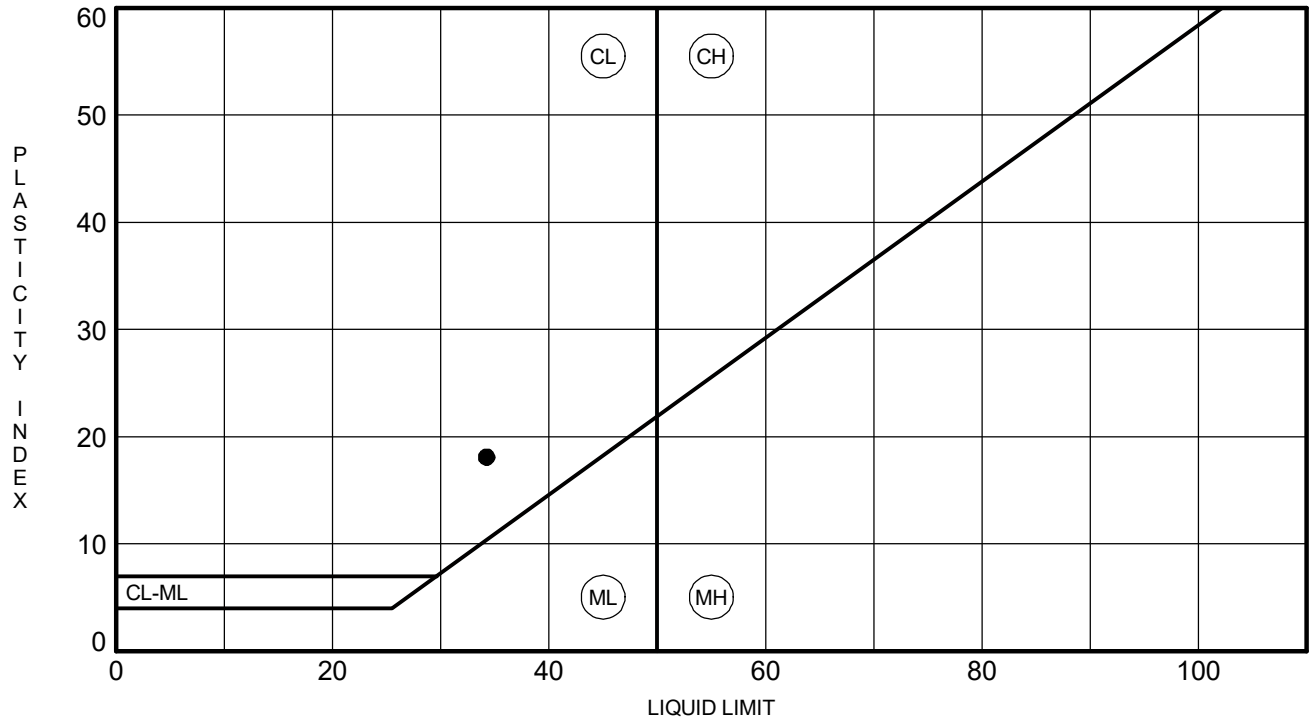
BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-33**	**4.0**	**4.76**	**0.328**	**0.094**		**0.0**	**57.8**	**42.2**	

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

PROJECT ID G5839 **PROJECT NAME** Brick Chimney Road

PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-33**	**4.0**	**34**	**16**	**18**	**42**	**Clayey Fine SAND (SC) A-6(3)**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-33	**4.0**	**24.5**	**Clayey Fine SAND (SC) A-6(3)**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

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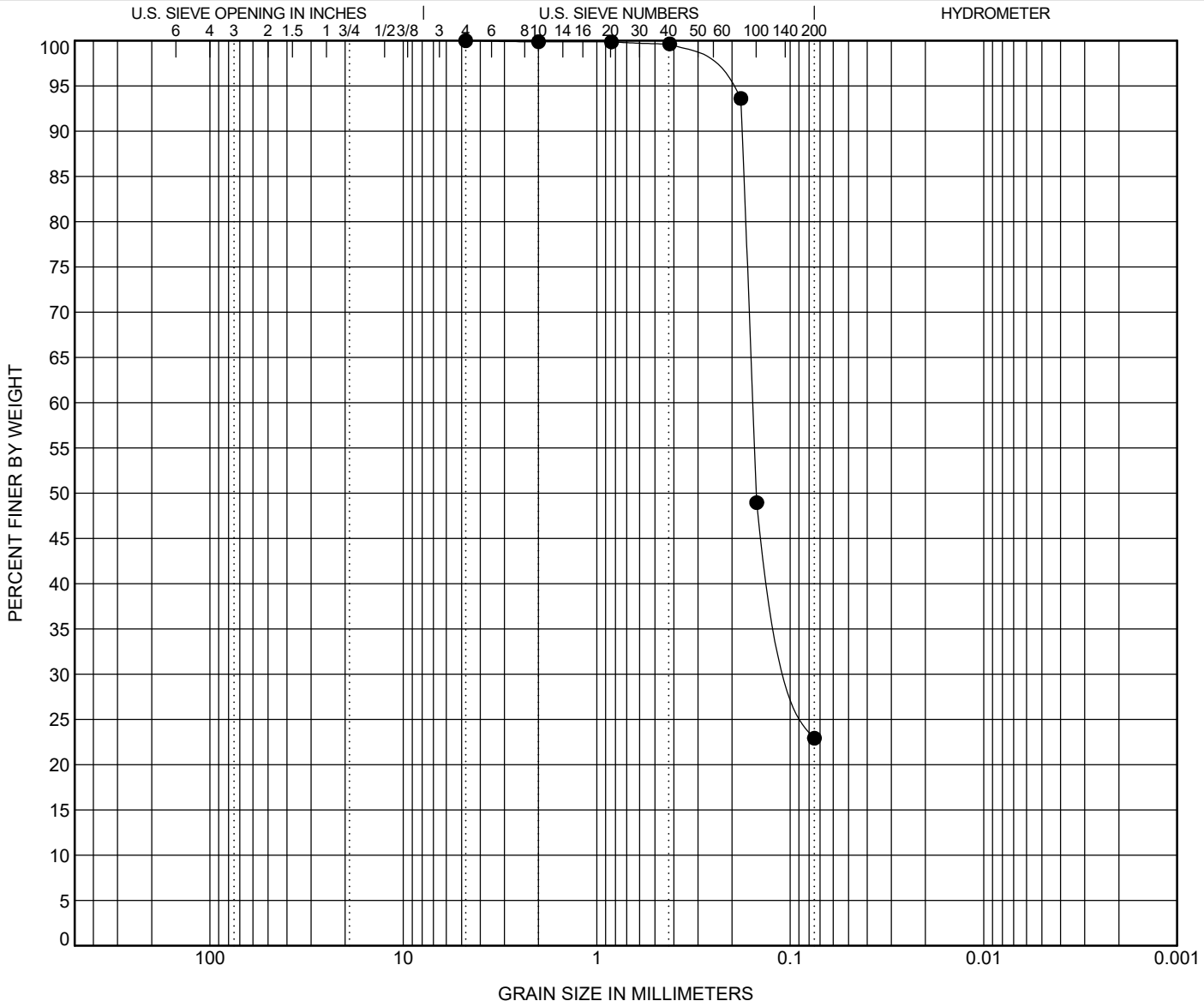
PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-35**	**2.0**	**Silty Fine SAND (SM) A-2-4**	**12.4**	**NP**	**NP**	**NP**		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-35**	**2.0**	**4.76**	**0.219**	**0.15**		**0.0**	**77.1**	**22.9**	

GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

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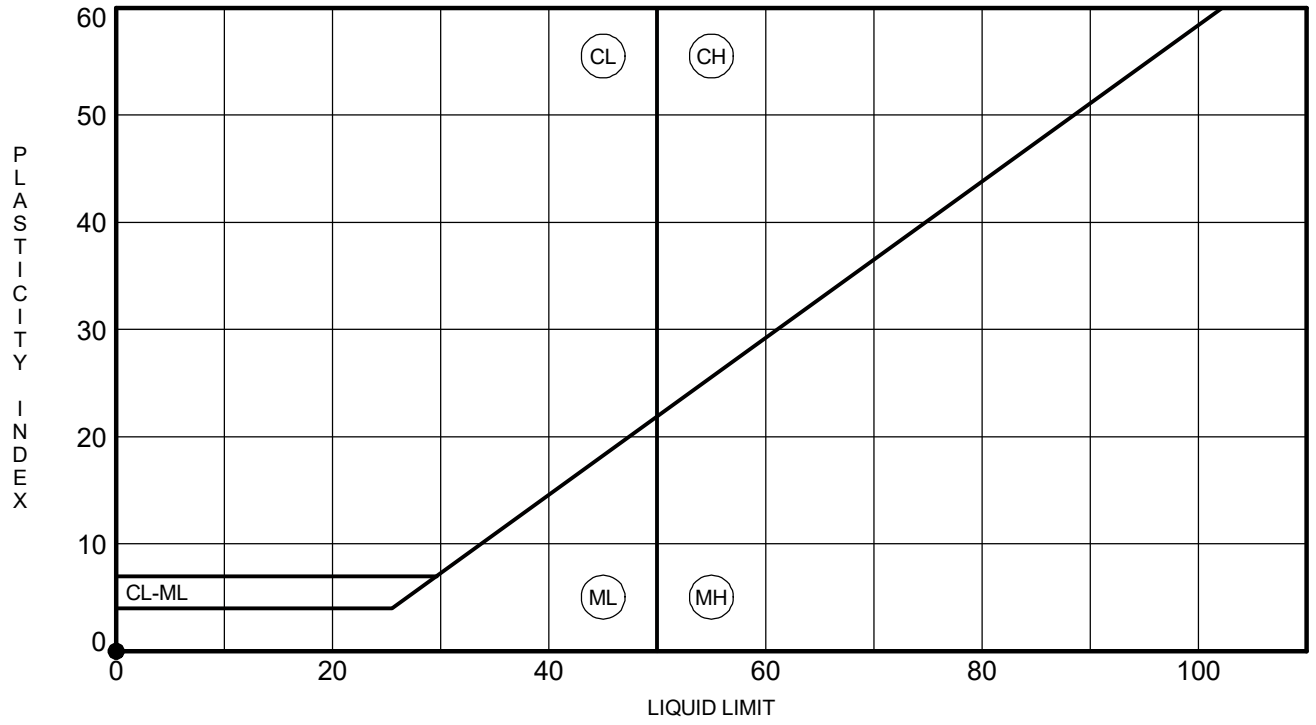
PROJECT LOCATION Georgetown County - South Carolina



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	**B-35**	**2.0**	**NP**	**NP**	**NP**	**23**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-35	**2.0**	**12.4**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

GRAIN SIZE DISTRIBUTION

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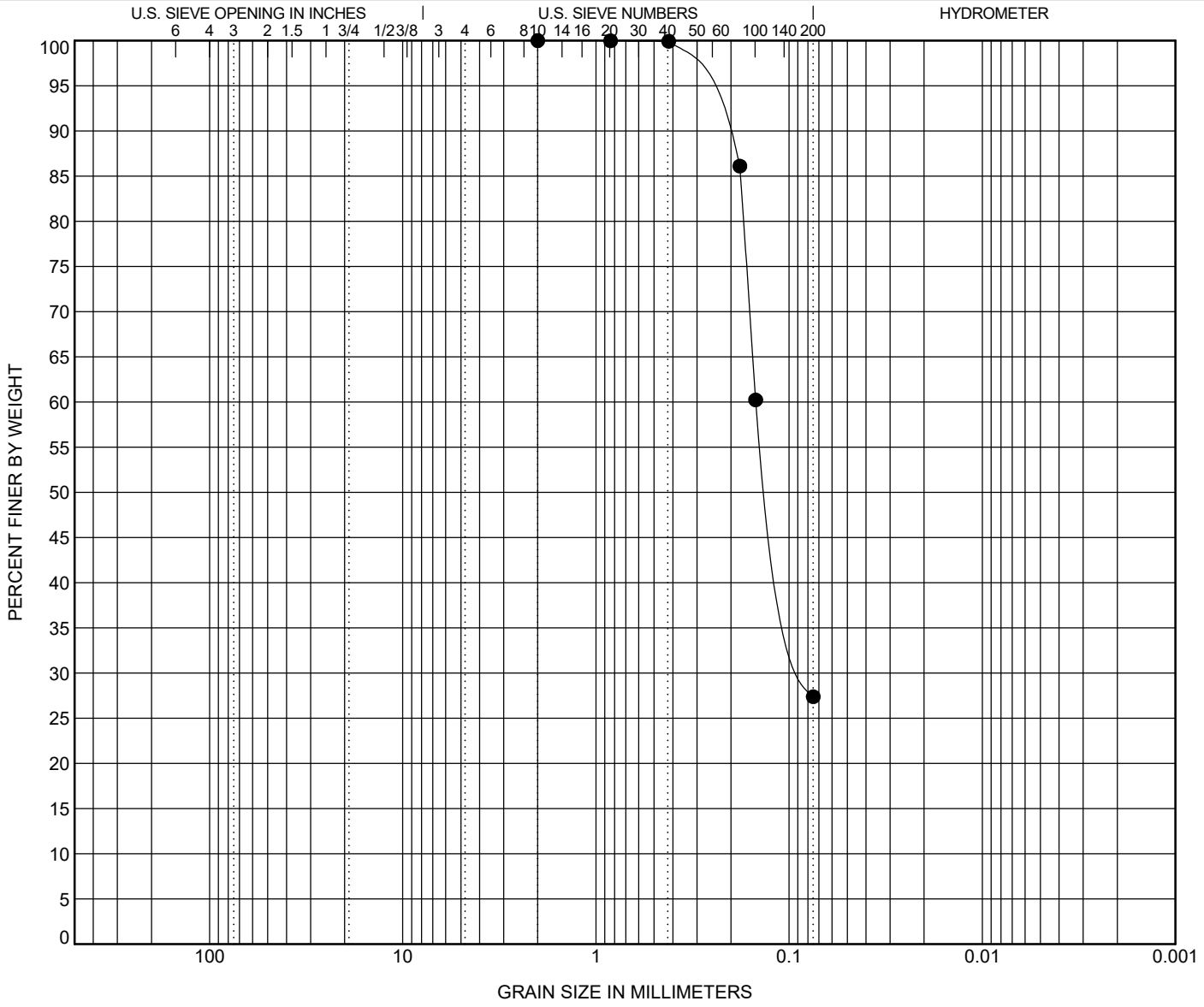
PROJECT LOCATION Georgetown County - South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	MC%	LL	PL	PI	Cc	Cu
● **B-37**	**2.0**	**Silty Fine SAND (SM) A-2-4**	**15.5**	**NP**	**NP**	**NP**		

BOREHOLE	DEPTH	D100	D95	D50	D10	%Gravel	%Sand	%Silt	%Clay
● **B-37**	**2.0**	**2**	**0.311**	**0.12**		**0.0**	**72.6**	**27.4**	

GRAIN SIZE - F&ME G5839 BRICK CHIMNEY.GPJ FME2017.GDT 10/12/18

F&ME CONSULTANTS

ATTERBERG LIMITS' RESULTS

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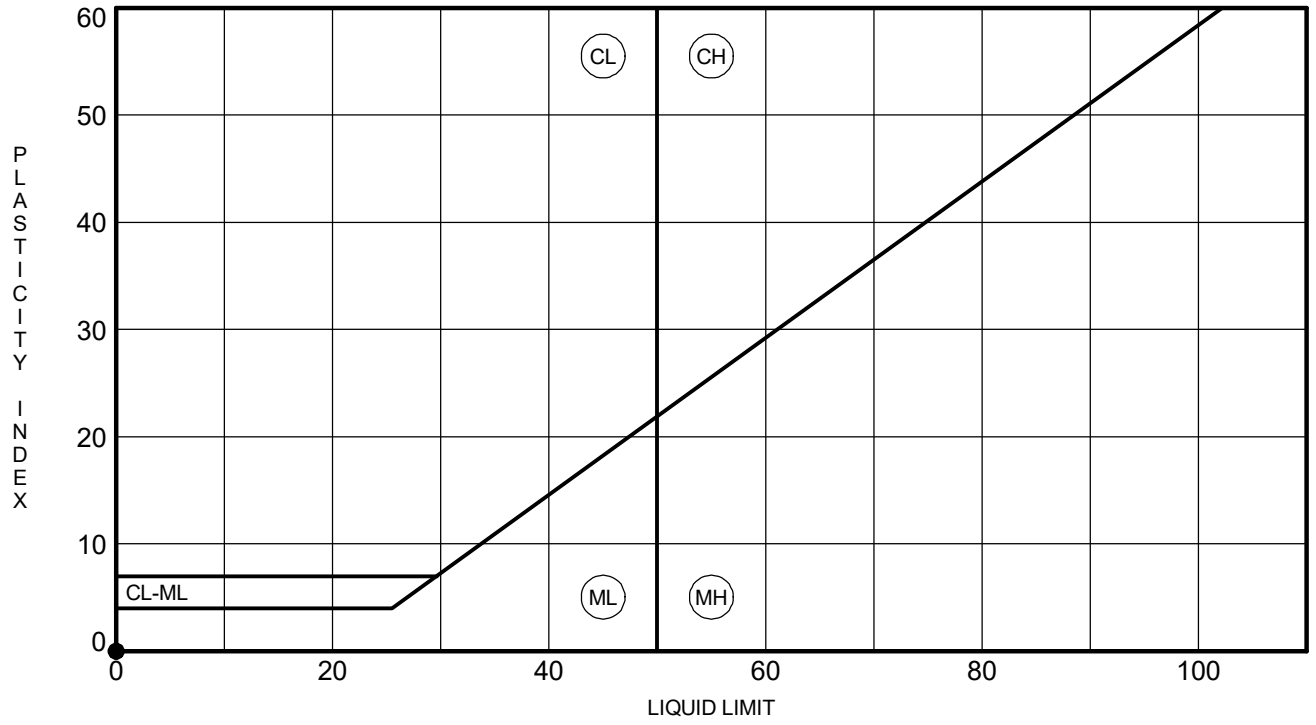
PROJECT LOCATION Georgetown County - South Carolina



BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
● **B-37**	**2.0**	**NP**	**NP**	**NP**	**27**	**Silty Fine SAND (SM) A-2-4**

F&ME CONSULTANTS

NATURAL MOISTURE CONTENT

PROJECT ID G5839 **PROJECT NAME** Brick Chimney

PROJECT LOCATION Georgetown County - South Carolina

BOREHOLE	DEPTH	Natural Moisture Content %	Classification
B-37	**2.0**	**15.5**	**Silty Fine SAND (SM) A-2-4**

APPENDIX E

LPILE Output

LPile Plus for Windows, Version 2013-07.007

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This copy of LPile is used by:

Mike Miller
F&ME, Inc.

Serial Number of Security Device: 228740981
This copy of LPile is licensed for exclusive use by: F&ME Consultants, Charlotte, Nor

Use of this program by any entity other than F&ME Consultants, Charlotte, Nor
is forbidden by the software license agreement.

Files Used for Analysis

Path to file locations: P:\Geotechnical\G5800's\G5839.000 - Brick Chimney Road\LPILE\
Name of input data file: 18 in x 0.500 PP - Longitudnal Service Loading.lp7d
Name of output report file: 18 in x 0.500 PP - Longitudnal Service Loading.lp7o
Name of plot output file: 18 in x 0.500 PP - Longitudnal Service Loading.lp7p
Name of runtime messeage file: 18 in x 0.500 PP - Longitudnal Service Loading.lp7r

Date and Time of Analysis

Date: April 17, 2019 Time: 8:49:48

Problem Title

Project Name: Brick Chimney Road Bridge over IP Canal

Job Number: G5839.000

Client: Davis & Floyd

Engineer: MSM

Description: LPILE Lateral Analyses - End Bent - Long. Service Load Case

Program Options and Settings

Engineering Units of Input Data and Computations:
 - Engineering units are US Customary Units (pounds, feet, inches)

Analysis Control Options:
- Maximum number of iterations allowed = 500
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in
- Number of pile increments = 100

Loading Type and Number of Cycles of Loading:
 - Static loading specified

Computational Options:
 - Use unfactored loads in computations (conventional analysis)
 - Compute pile response under loading and nonlinear bending properties of pile
   (only if nonlinear pile properties are input)
 - Use of p-y modification factors for p-y curves not selected
 - Loading by lateral soil movements acting on pile not selected
 - Input of shear resistance at the pile tip not selected
 - Computation of pile-head foundation stiffness matrix not selected
 - Push-over analysis of pile not selected
 - Buckling analysis of pile not selected

Output Options:
 - No p-y curves to be computed and reported for user-specified depths
 - Report only summary tables of pile-head deflection, maximum bending moment,
   and maximum shear force in output report file.

Pile Structural Properties and Geometry

Total number of pile sections = 1

Total length of pile = 25.00 ft

Depth of ground surface below top of pile = 0.00 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	18.0000000
2	25.000000	18.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	= Steel Pipe Pile
Section Length	= 25.00000 ft
Pile Diameter	= 18.00000 in

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	= 0.0000 ft
Distance from top of pile to bottom of layer	= 7.00000 ft
Effective unit weight at top of layer	= 42.60000 pcf
Effective unit weight at bottom of layer	= 42.60000 pcf
Friction angle at top of layer	= 30.00000 deg.
Friction angle at bottom of layer	= 24.00000 deg.
Subgrade k at top of layer	= 20.00000 pci
Subgrade k at bottom of layer	= 20.00000 pci

Layer 2 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	37.60000 pcf
Effective unit weight at bottom of layer	=	37.60000 pcf
Undrained cohesion at top of layer	=	350.00000 psf
Undrained cohesion at bottom of layer	=	350.00000 psf
Epsilon-50 at top of layer	=	0.02000
Epsilon-50 at bottom of layer	=	0.02000

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	12.00000 ft
Distance from top of pile to bottom of layer	=	21.50000 ft
Effective unit weight at top of layer	=	42.60000 pcf
Effective unit weight at bottom of layer	=	42.60000 pcf
Friction angle at top of layer	=	24.00000 deg.
Friction angle at bottom of layer	=	24.00000 deg.
Subgrade k at top of layer	=	20.00000 pci
Subgrade k at bottom of layer	=	20.00000 pci

Layer 4 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	21.50000 ft
Distance from top of pile to bottom of layer	=	40.00000 ft
Effective unit weight at top of layer	=	67.60000 pcf
Effective unit weight at bottom of layer	=	67.60000 pcf
Friction angle at top of layer	=	38.00000 deg.
Friction angle at bottom of layer	=	38.00000 deg.
Subgrade k at top of layer	=	125.00000 pci
Subgrade k at bottom of layer	=	125.00000 pci

(Depth of lowest soil layer extends 15.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Strain Factor Epsilon 50	kpy pci
1	Sand (Reese, et al.)	0.00	42.600	--	30.000	--	20.000
		7.000	42.600	--	24.000	--	20.000
2	Soft Clay	7.000	37.600	350.000	--	0.02000	--
		12.000	37.600	350.000	--	0.02000	--
3	Sand (Reese, et al.)	12.000	42.600	--	24.000	--	20.000
		21.500	42.600	--	24.000	--	20.000
4	Sand (Reese, et al.)	21.500	67.600	--	38.000	--	125.000
		40.000	67.600	--	38.000	--	125.000

Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 15800. lbs	M = 230400. in-lbs	134000.	Yes

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Steel Pipe Pile:

Length of Section	=	25.00000 ft
Outer Diameter of Pipe	=	18.00000 in
Pipe Wall Thickness	=	0.50000 in
Yield Stress of Pipe	=	36.00000 ksi
Elastic Modulus	=	29000. ksi
Cross-sectional Area	=	27.48894 sq. in.
Moment of Inertia	=	1053.16985 in^4
Elastic Bending Stiffness	=	30541926. kip-in^2
Plastic Modulus, Z	=	153.16667 in^3
Plastic Moment Capacity = Fy Z	=	5514.00000 in-kip

Axial Structural Capacities:

Nom. Axial Structural Capacity = Fy As	=	989.602 kips
Nominal Axial Tensile Capacity	=	-989.602 kips

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	134.000

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip
1	134.000	5328.6

Note that the values in the above table are not factored by a strength reduction factor for LRFD.

The value of the strength reduction factor depends on the provisions of the LRFD code being followed.

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to the LRFD structural design standard being followed.

Pile-head Deflection vs. Pile Length for Load Case 1

Boundary Condition Type 1, Shear and Moment

Shear   =   15800. lb
Moment   =   230400. in- lb
Axial Load =   134000. lb

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
25.0000	1.2547310	1513995.	15800.
23.7500	1.2926872	1497633.	-15992.
22.5000	1.4568461	1485192.	-17874.
21.2500	2.4162308	1554614.	-23567.
20.0000	4.3720988	1699426.	-31001.

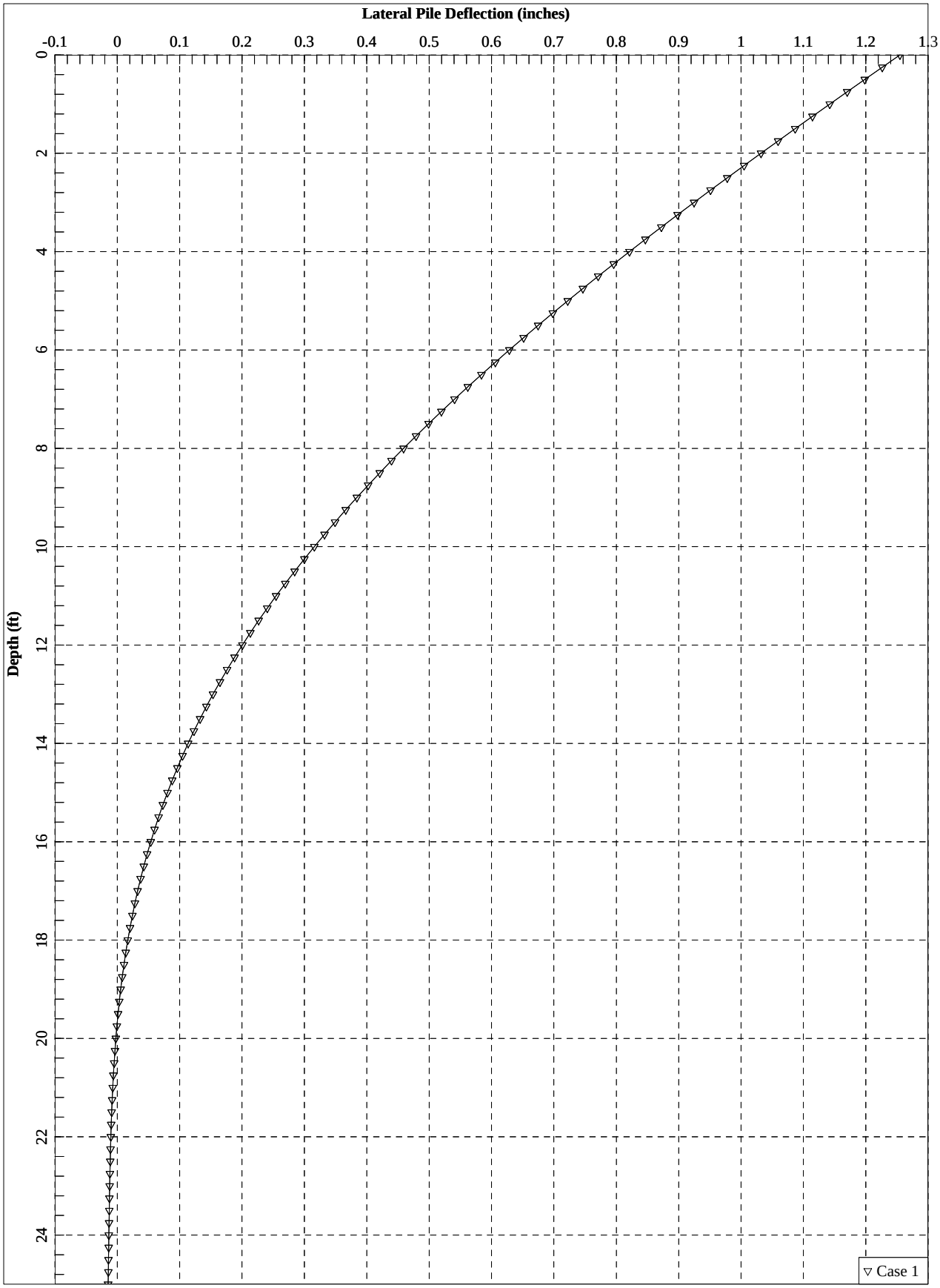
Summary of Pile Response(s)

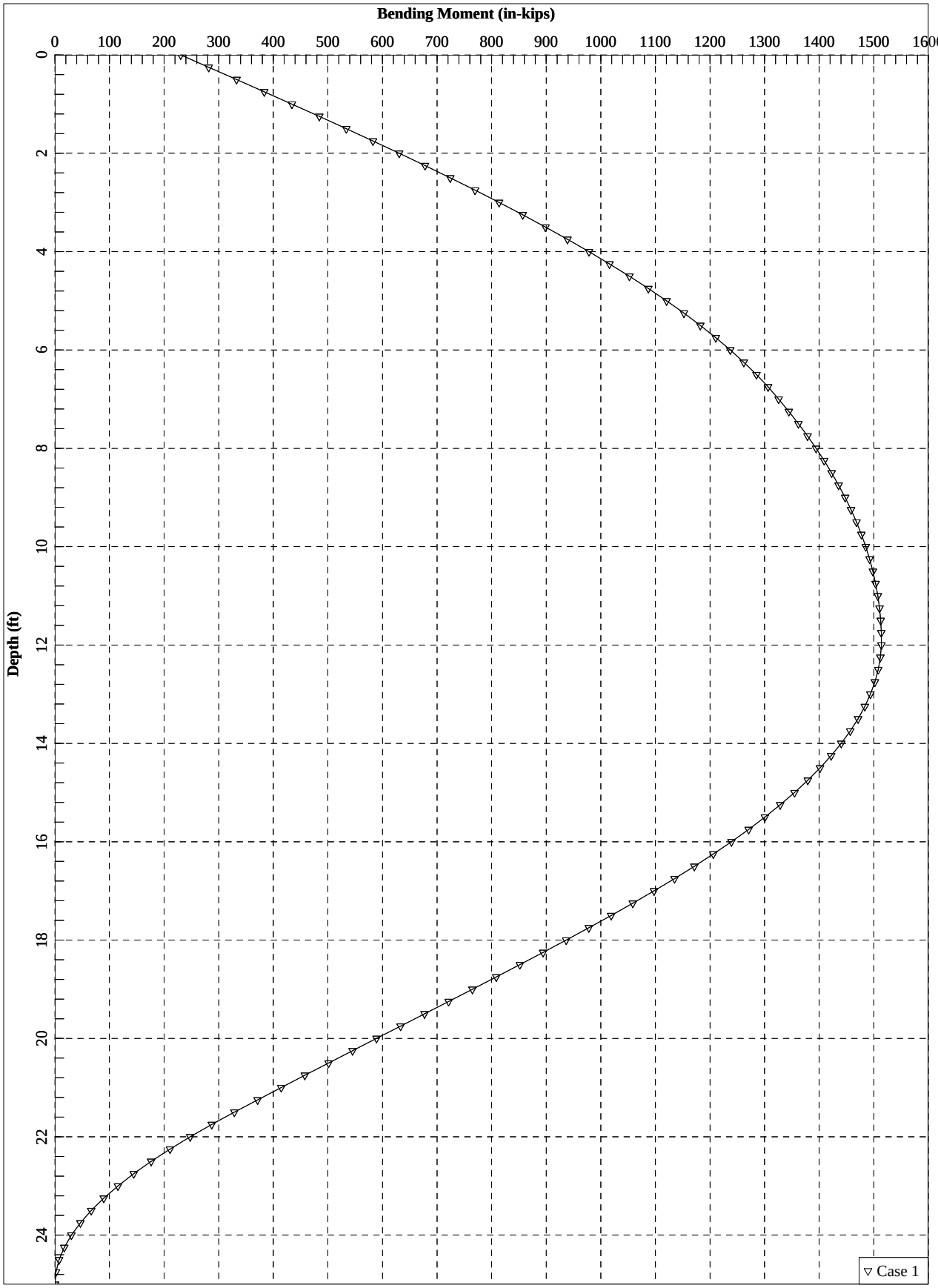
Definitions of Pile-head Loading Conditions:

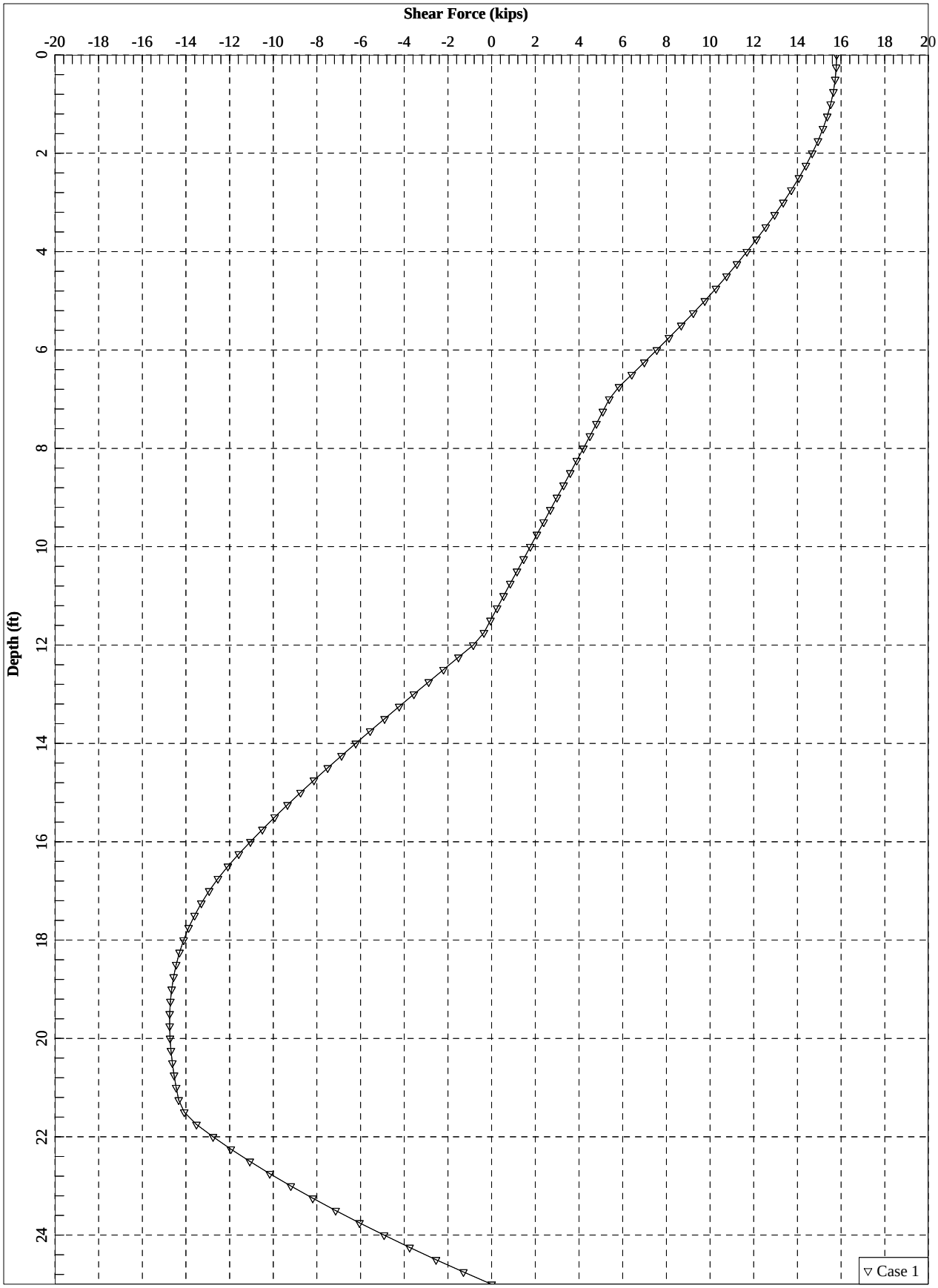
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

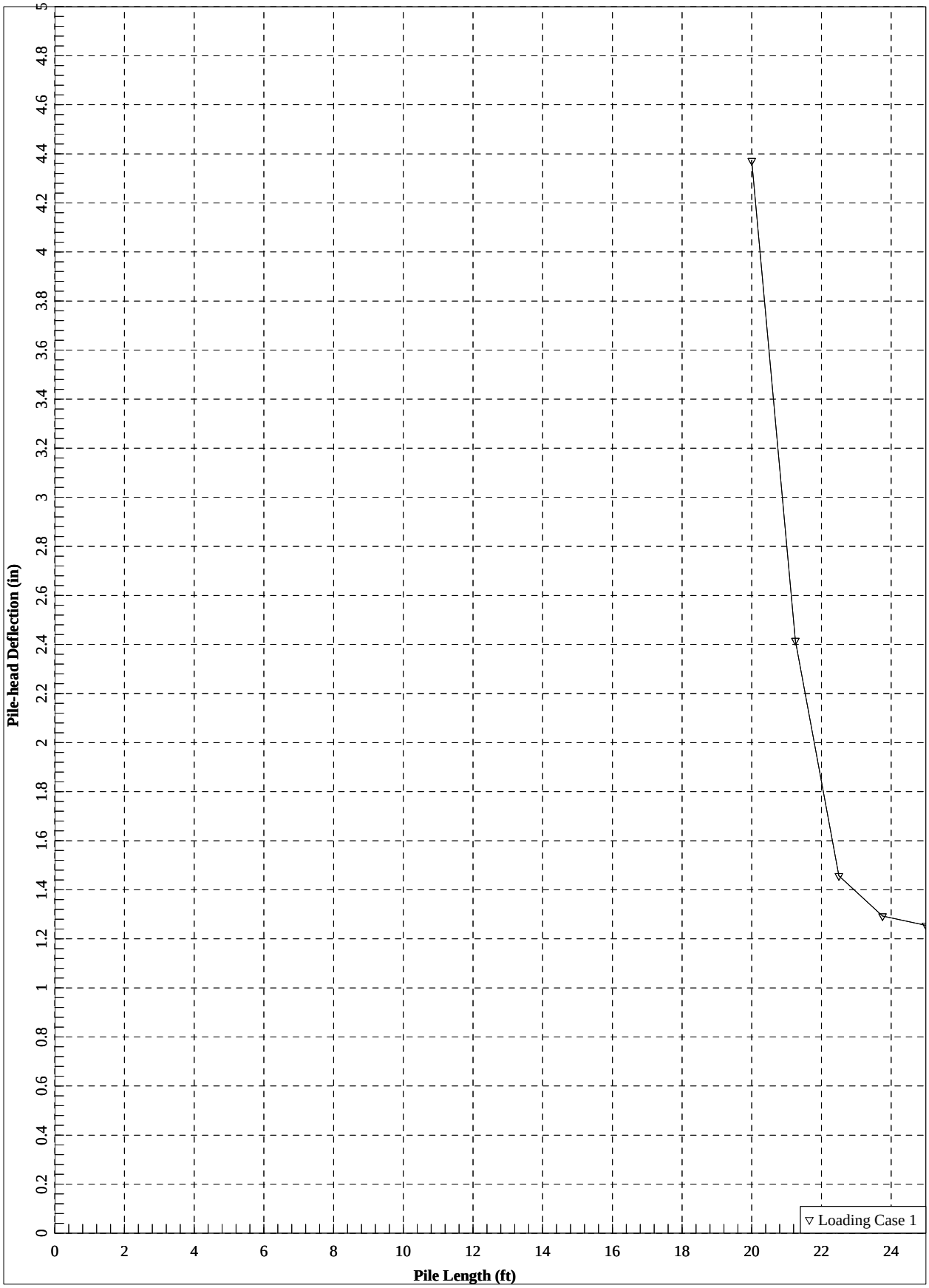
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in Pile in-lbs	Maximum Shear in Pile lbs	Pile-head Rotation radians
1	1	V = 15800.	M = 230400.	134000.	1.25473102	1513995.	15800.	-0.00942269

The analysis ended normally.


Lateral Pile Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1


Bending Moment (in-kips)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1


Shear Force (kips)
-20
-18
-16
-14
-12
-10
-8
-6
-4
-2
0
2
4
6
8
10
12
14
16
18
20
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
0
2
4
6
8
10
12
14
16
18
20
22
24
Pile Length (ft)
Loading Case 1

LPile Plus for Windows, Version 2013-07.007

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This copy of LPile is used by:

Mike Miller
F&ME, Inc.

Serial Number of Security Device: 228740981
This copy of LPile is licensed for exclusive use by: F&ME Consultants, Charlotte, Nor

Use of this program by any entity other than F&ME Consultants, Charlotte, Nor
is forbidden by the software license agreement.

Files Used for Analysis

Path to file locations: P:\Geotechnical\G5800's\G5839.000 - Brick Chimney Road\LPILE\
Name of input data file: 18 in x 0.500 PP - Transverse Service Loading.lp7d
Name of output report file: 18 in x 0.500 PP - Transverse Service Loading.lp7o
Name of plot output file: 18 in x 0.500 PP - Transverse Service Loading.lp7p
Name of runtime messeage file: 18 in x 0.500 PP - Transverse Service Loading.lp7r

Date and Time of Analysis

Date: April 17, 2019 Time: 8:57:22

Problem Title

Project Name: Brick Chimney Road Bridge over IP Canal

Job Number: G5839.000

Client: Davis & Floyd

Engineer: MSM

Description: LPILE Lateral Analyses - End Bent - Trans. Service Load Case

Program Options and Settings

Engineering Units of Input Data and Computations:
 - Engineering units are US Customary Units (pounds, feet, inches)

Analysis Control Options:
- Maximum number of iterations allowed = 500
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in
- Number of pile increments = 100

Loading Type and Number of Cycles of Loading:
 - Static loading specified

Computational Options:
 - Use unfactored loads in computations (conventional analysis)
 - Compute pile response under loading and nonlinear bending properties of pile
   (only if nonlinear pile properties are input)
 - Use of p-y modification factors for p-y curves not selected
 - Loading by lateral soil movements acting on pile not selected
 - Input of shear resistance at the pile tip not selected
 - Computation of pile-head foundation stiffness matrix not selected
 - Push-over analysis of pile not selected
 - Buckling analysis of pile not selected

Output Options:
 - No p-y curves to be computed and reported for user-specified depths
 - Report only summary tables of pile-head deflection, maximum bending moment,
   and maximum shear force in output report file.

Pile Structural Properties and Geometry

Total number of pile sections = 1

Total length of pile = 25.00 ft

Depth of ground surface below top of pile = 0.00 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	18.0000000
2	25.000000	18.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	= Steel Pipe Pile
Section Length	= 25.00000 ft
Pile Diameter	= 18.00000 in

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	= 0.0000 ft
Distance from top of pile to bottom of layer	= 7.00000 ft
Effective unit weight at top of layer	= 42.60000 pcf
Effective unit weight at bottom of layer	= 42.60000 pcf
Friction angle at top of layer	= 30.00000 deg.
Friction angle at bottom of layer	= 24.00000 deg.
Subgrade k at top of layer	= 20.00000 pci
Subgrade k at bottom of layer	= 20.00000 pci

Layer 2 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	37.60000 pcf
Effective unit weight at bottom of layer	=	37.60000 pcf
Undrained cohesion at top of layer	=	350.00000 psf
Undrained cohesion at bottom of layer	=	350.00000 psf
Epsilon-50 at top of layer	=	0.02000
Epsilon-50 at bottom of layer	=	0.02000

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	12.00000 ft
Distance from top of pile to bottom of layer	=	21.50000 ft
Effective unit weight at top of layer	=	42.60000 pcf
Effective unit weight at bottom of layer	=	42.60000 pcf
Friction angle at top of layer	=	24.00000 deg.
Friction angle at bottom of layer	=	24.00000 deg.
Subgrade k at top of layer	=	20.00000 pci
Subgrade k at bottom of layer	=	20.00000 pci

Layer 4 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	21.50000 ft
Distance from top of pile to bottom of layer	=	40.00000 ft
Effective unit weight at top of layer	=	67.60000 pcf
Effective unit weight at bottom of layer	=	67.60000 pcf
Friction angle at top of layer	=	38.00000 deg.
Friction angle at bottom of layer	=	38.00000 deg.
Subgrade k at top of layer	=	125.00000 pci
Subgrade k at bottom of layer	=	125.00000 pci

(Depth of lowest soil layer extends 15.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Strain Factor Epsilon 50	kpy pci
1	Sand (Reese, et al.)	0.00	42.600	--	30.000	--	20.000
		7.000	42.600	--	24.000	--	20.000
2	Soft Clay	7.000	37.600	350.000	--	0.02000	--
		12.000	37.600	350.000	--	0.02000	--
3	Sand (Reese, et al.)	12.000	42.600	--	24.000	--	20.000
		21.500	42.600	--	24.000	--	20.000
4	Sand (Reese, et al.)	21.500	67.600	--	38.000	--	125.000
		40.000	67.600	--	38.000	--	125.000

Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	2	V = 1100.00000 lbs	S = 0.0000 in/in	134000.	Yes

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Steel Pipe Pile:

Length of Section	=	25.00000 ft
Outer Diameter of Pipe	=	18.00000 in
Pipe Wall Thickness	=	0.50000 in
Yield Stress of Pipe	=	36.00000 ksi
Elastic Modulus	=	29000. ksi
Cross-sectional Area	=	27.48894 sq. in.
Moment of Inertia	=	1053.16985 in^4
Elastic Bending Stiffness	=	30541926. kip-in^2
Plastic Modulus, Z	=	153.16667 in^3
Plastic Moment Capacity = Fy Z	=	5514.00000 in-kip

Axial Structural Capacities:

Nom. Axial Structural Capacity = Fy As	=	989.602 kips
Nominal Axial Tensile Capacity	=	-989.602 kips

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	134.000

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip
1	134.000	5328.6

Note that the values in the above table are not factored by a strength reduction factor for LRFD.

The value of the strength reduction factor depends on the provisions of the LRFD code being followed.

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to the LRFD structural design standard being followed.

Pile-head Deflection vs. Pile Length for Load Case 1

Boundary Condition Type 2, Shear and Slope

Shear   =   1100. lb
Slope   =   0.00000
Axial Load =   134000. lb

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
25.0000	0.0080718	-69448.	1100.0000000
23.7500	0.0081467	-69677.	1100.0000000
22.5000	0.0082104	-69792.	1100.0000000
21.2500	0.0082247	-69766.	1100.0000000
20.0000	0.0083743	-70027.	1100.0000000
18.7500	0.0087000	-70896.	1100.0000000
17.5000	0.0090876	-72304.	1100.0000000
16.2500	0.0095916	-74212.	1100.0000000
15.0000	0.0101002	-76468.	1100.0000000
13.7500	0.0105472	-78770.	1100.0000000
12.5000	0.0108092	-80759.	1100.0000000
11.2500	0.0110406	-83457.	1100.0000000
10.0000	0.0110097	-85923.	1100.0000000
8.7500	0.0121739	-78364.	1100.0000000
7.5000	0.0157430	-65589.	1099.9999999
6.2500	0.0212986	-54377.	1099.9999998
5.0000	0.0313702	-43990.	1099.9999996
3.7500	0.0546655	-33046.	1100.0000003
2.5000	0.1901247	-21887.	1101.9632370

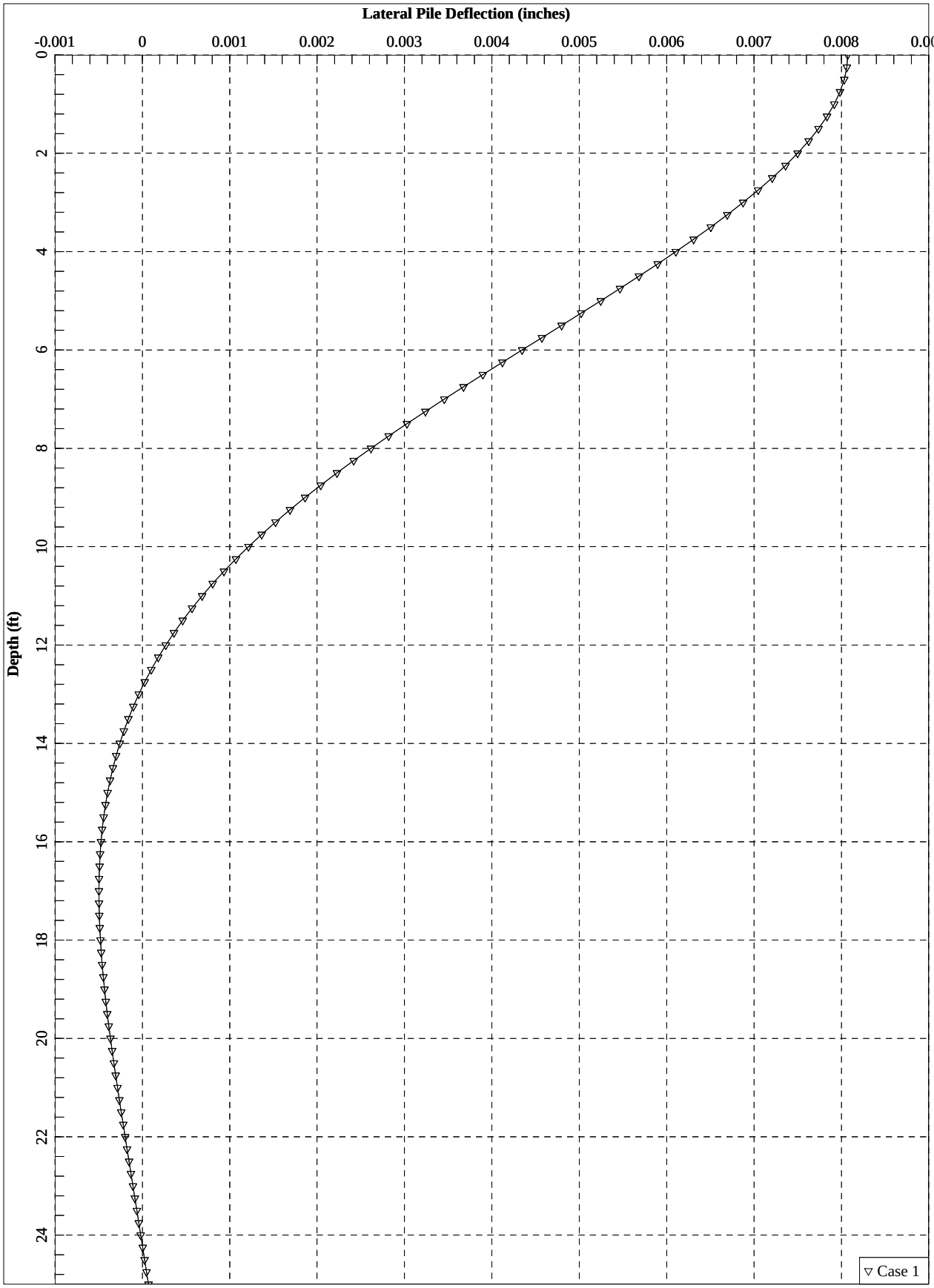
Summary of Pile Response(s)

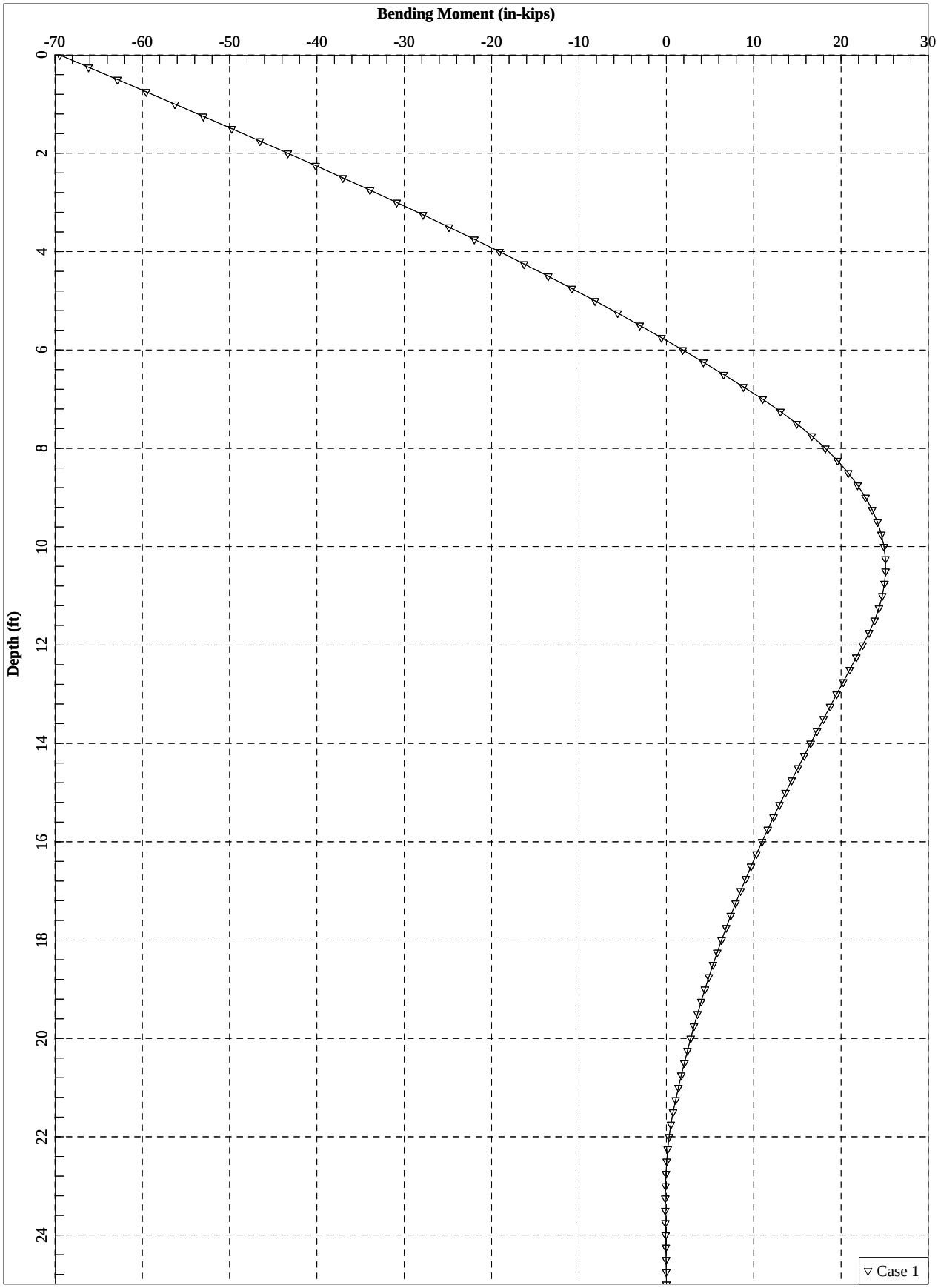
Definitions of Pile-head Loading Conditions:

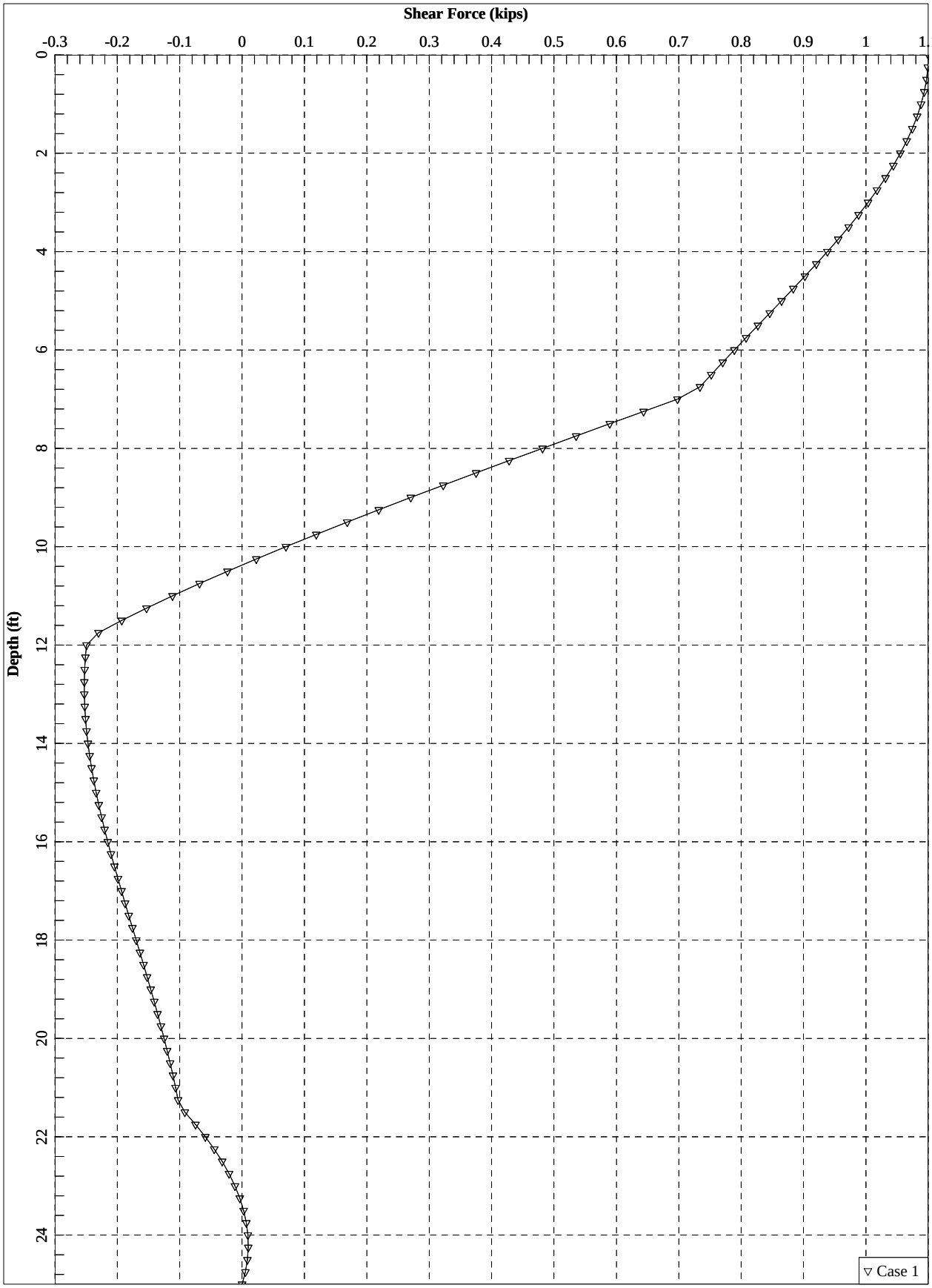
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

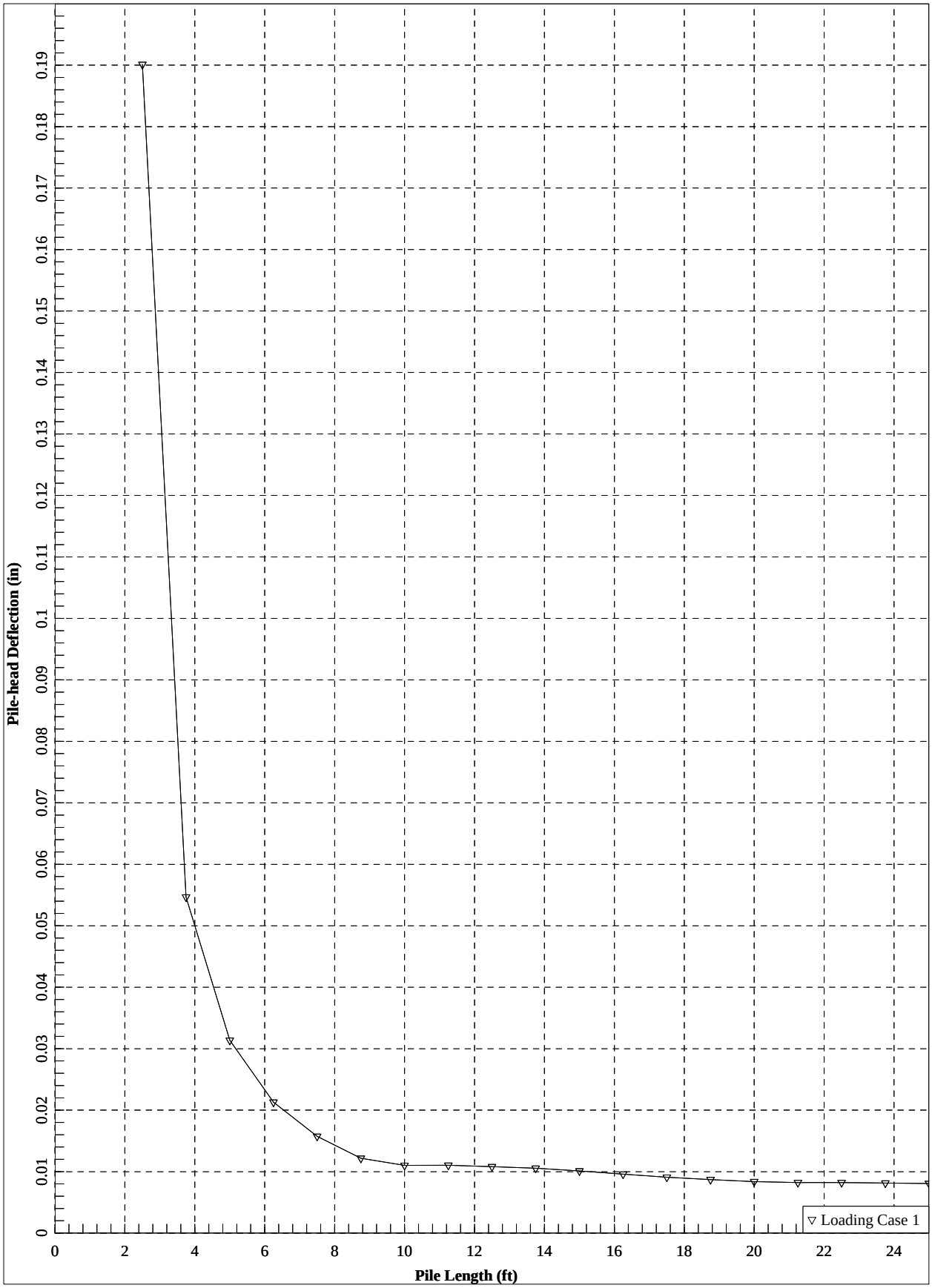
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in Pile in-lbs	Maximum Shear in Pile lbs	Pile-head Rotation radians
1	2	V = 1100.0000	S = 0.000	134000.	0.00807229	-69448.	1100.0000	-0.00000000

The analysis ended normally.


Lateral Pile Deflection (inches)
-0.001
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
▽ Case 1


Bending Moment (in-kips)
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1


Shear Force (kips)
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
Case 1


Pile-head Deflection (in)
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11
0.12
0.13
0.14
0.15
0.16
0.17
0.18
0.19
0
2
4
6
8
10
12
14
16
18
20
22
24
Pile Length (ft)
Loading Case 1