

F&ME CONSULTANTS

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS

June 24, 2010

Mrs. Sara Stone
SCDOT
955 Park Street
Columbia, South Carolina 29203

Re.: S-80 Bridge Replacement Over I-26
Richland County, South Carolina
F&ME Project No.: G4800.26

Dear Mrs. Stone:

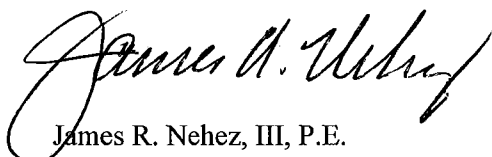
Submitted herein are the results of the field testing requested for the referenced project. There were no lab requests for this project. Enclosures consist of the following:


1. Soil Test Boring Logs;
2. Test Locations (Latitude/Longitude);
3. Spectral Analysis of Surface Waves (SASW); and,
4. Downhole Shear-Wave Investigation.

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.

Sincerely,

F&ME CONSULTANTS


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Vice President


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Engineering Associate

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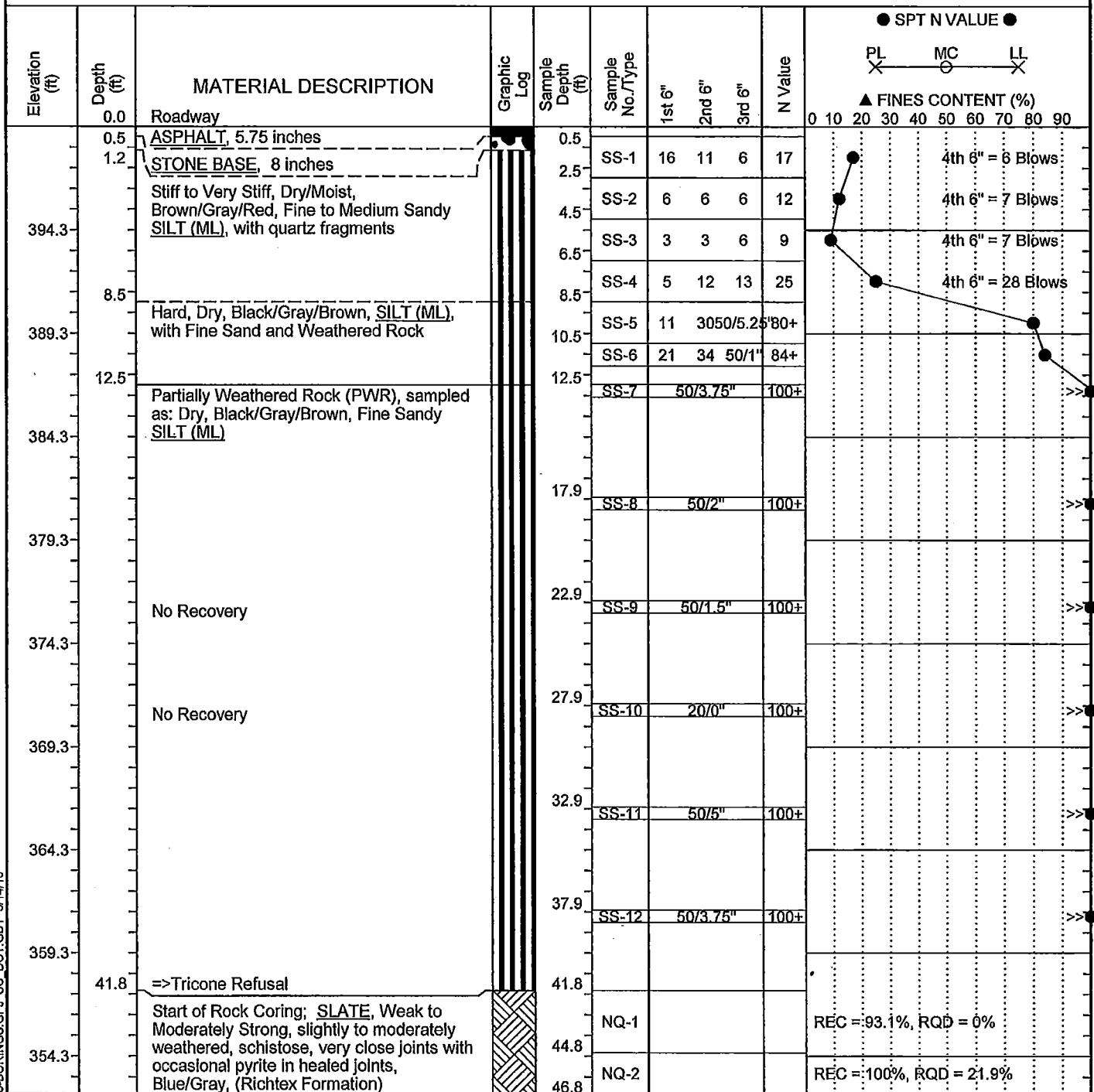


**AASHTO ACCREDITED
LABORATORY**

www.fmecol.com

SCDOT Soil Test Boring Log

File No.:	40.038744	Project No. (PIN):	38744 RD01	County:	Richland County	Eng./Geo.:	Wade Myers
Site Description:	S-80 Bridge Replacement Over I-26					Route:	S-80
Boring No.:	B-1	Boring Location:	10'-S of Bridge	Offset:	7'-L	Alignment:	S-80
Elev.:	399.3 ft	Latitude:	34.136118	Longitude:	81.217611	Date Started:	5/5/2010
Total Depth:	76.8 ft	Soil Depth:	41.8 ft	Core Depth:	35 ft	Date Completed:	5/5/2010
Bore Hole Diameter (in):	6.5	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 45B	Drill Method:	RW/RC	Hammer Type:	Gravity	Energy Ratio:	73%
Core Size:	NQ	Driller:	Mark Brown	Groundwater:	TOB	24HR	



LEGEND

Continued Next Page

SAMPLER TYPE	
SS - Split Spoon	NQ - Rock Core, 1-7/8"
ST - Shelby Tube	CU - Cuttings
AWG - Rock Core, 1-1/8"	CT - Continuous Tube

DRILLING METHOD	
HSA - Hollow Stem Auger	RW - Rotary Wash
CFA - Continuous Flight Augers	RC - Rock Core
DC - Driving Casing	

SCDOT Soil Test Boring Log

File No.:	40.038744	Project No. (PIN):	38744 RD01	County:	Richland County	Eng./Geo.:	Wade Myers
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Bore Hole Diameter (in):	6.5	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 45B	Drill Method:	RW/RC	Hammer Type:	Gravity	Energy Ratio:	73%
Core Size:	NQ	Driller:	Mark Brown	Groundwater:	TOB	24HR	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> 0 10 20 30 40 50 60 70 80 90 </div> </div>
349.3		SLATE, Weak to Moderately Strong, slightly to moderately weathered, schistose, very close joints with occasional pyrite in healed joints, Blue/Gray, (Richtex Formation)			NQ-3					REC = 95.0%, RQD = 38.6%
				51.8						
344.3					NQ-4					REC = 91.3%, RQD = 90.0%
				56.8						
339.3					NQ-5					REC = 100%, RQD = 34.2%
				61.8						
334.3					NQ-6					REC = 100%, RQD = 78.3%
				66.8						
329.3		Boring Terminated at 76.8 feet			NQ-7					REC = 100%, RQD = 98.8%
				71.8						
324.3					NQ-8					REC = 98.3%, RQD = 91.5%
319.3	76.8									
314.3										
309.3										

LEGEND

SAMPLER TYPE

SS - Split Spoon NQ - Rock Core, 1-7/8"
 ST - Shelby Tube CU - Cuttings
 AWG - Rock Core, 1-1/8" CT - Continuous Tube

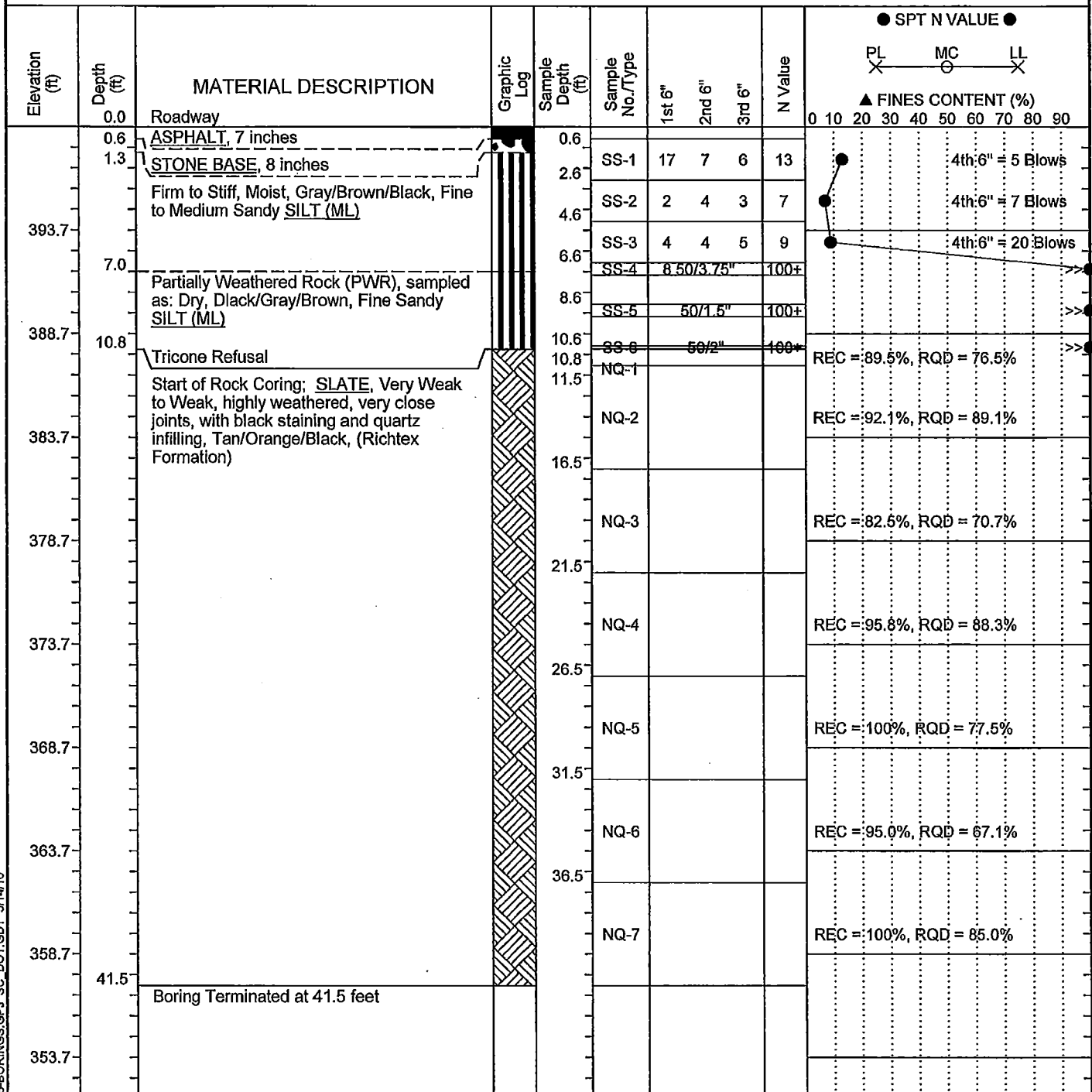
DRILLING METHOD

HSA - Hollow Stem Auger RW - Rotary Wash
 CFA - Continuous Flight Augers RC - Rock Core
 DC - Driving Casing

SC DOT G-4300-26-BORINGS.GPJ SC DOT.GDT 5/14/10



SCDOT Soil Test Boring Log

File No.:	40.038744	Project No. (PIN):	38744 RD01	County:	Richland County	Eng./Geo.:	Wade Myers
Site Description:	S-80 Bridge Replacement Over I-26					Route:	S-80
Boring No.:	B-2	Boring Location:	10'-N of Bridge	Offset:	7'-R	Alignment:	S-80
Elev.:	398.7 ft	Latitude:	34.136766	Longitude:	81.217478	Date Started:	5/6/2010
Total Depth:	41.5 ft	Soil Depth:	10.8 ft	Core Depth:	30.8 ft	Date Completed:	5/6/2010
Bore Hole Diameter (in):	6.5	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 45B	Drill Method:	RW/RC	Hammer Type:	Gravity	Energy Ratio:	73%
Core Size:	NQ	Driller:	Mark Brown	Groundwater:	TOB	24HR	



LEGEND

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

S-80 Bridge Replacement over I-26 Richland County, South Carolina 40.038744				LOG OF BORING No. HA-1 Station: 53'-N of Beginning of Existing Bridge Offset: 10'-L			
Date Performed: 4/30/2010				Notes: REF: Dynamic Cone for Shallow In-Situ Penetration Testing; Sowers & Hedges			
Supervisor: Brad Jolley							
Ground Elevation (ft):							
Water Level: None at T.O.B.							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	N Value	COMMENTS
		Very Loose to Loose, Moist, Brown/Tan, Silty Fine to Medium <u>SAND (SM)</u>		0.0	DS-1	4	
				0.5	DS-2	9	
	1.5			1.5		8	
	2.0	Firm, Moist, Brown, Fine to Medium Sandy <u>SILT (ML)</u> , with gravel			DS-3		
		Boring Terminated at 2.0 feet Due to Auger Refusal					

LEGEND

SAMPLER TYPE	
DS - Disturbed Sample	DT - Drive Tube
ST - Shelby Tube	CU - Cuttings
VS - Vane Shear	CT - Continuous Tube

ABBREVIATIONS

WOH- Weight Of Hammer	T.O.B.- Time Of Boring
MC - Moisture Content	LL - Liquid Limit
Fines- Percent Passing #200 Sieve	PI - Plasticity Index

S-80 Bridge Replacement Over I-26 Richland County, South Carolina 40.038744				LOG OF BORING No. HA-2 Station: 113'-N of Beginning of Existing Bridge Offset: 10'-R			
Date Performed: 4/30/2010				Notes: REF: Dynamic Cone for Shallow In-Situ Penetration Testing; Sowers & Hedges			
Supervisor: Brad Jolley							
Ground Elevation (ft):							
Water Level: None at T.O.B.							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	N Value	COMMENTS
		Firm to Stiff, Moist, Brown/Tan, Fine to Medium Sandy <u>SILT (ML)</u>		0.0	DS-1	6	
				0.5	DS-2	10	
				1.5	DS-3	7	
		=> with gravel		2.5	DS-4	13	
	3.0	Boring Terminated at 3.0 feet Due to Auger Refusal					

LEGEND

SAMPLER TYPE			ABBREVIATIONS	
DS - Disturbed Sample	DT - Drive Tube		WOH- Weight Of Hammer	T.O.B.- Time Of Boring
ST - Shelby Tube	CU- Cuttings		MC - Moisture Content	LL - Liquid Limit
VS - Vane Shear	CT- Continuous Tube		Fines - Percent Passing #200 Sieve	PI - Plasticity Index

**S-80 Bridge Replacement over I-26
Richland County, South Carolina
40.038744**

LOG OF BORING No. HA-3

Station: 53'-S of End of Existing Bridge
Offset: 10'-L

Date Performed: 4/30/2010




Supervisor: Brad Jolley

Ground Elevation (ft):

Water Level: None at T.O.B.

Notes:

REF: Dynamic Cone for Shallow In-Situ
Penetration Testing; Sowers & Hedges

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample Type-No.	N Value	COMMENTS
		Loose, Moist, Brown, Silty Fine to Medium <u>SAND (SM)</u> , with gravel		0.0	DS-1	8	
				0.5	DS-2	7	
	1.5	Soft, Moist, Brown/Tan, Fine to Medium Sandy <u>SILT (ML)</u> , with gravel		1.5	DS-3	4	
	2.5	Stiff, Moist, Brown/Tan, Fine to Medium Sandy <u>SILT (ML)</u> , with gravel		2.5	DS-4	14	
	3.0	Boring Terminated at 3.0 feet Due to Auger Refusal					

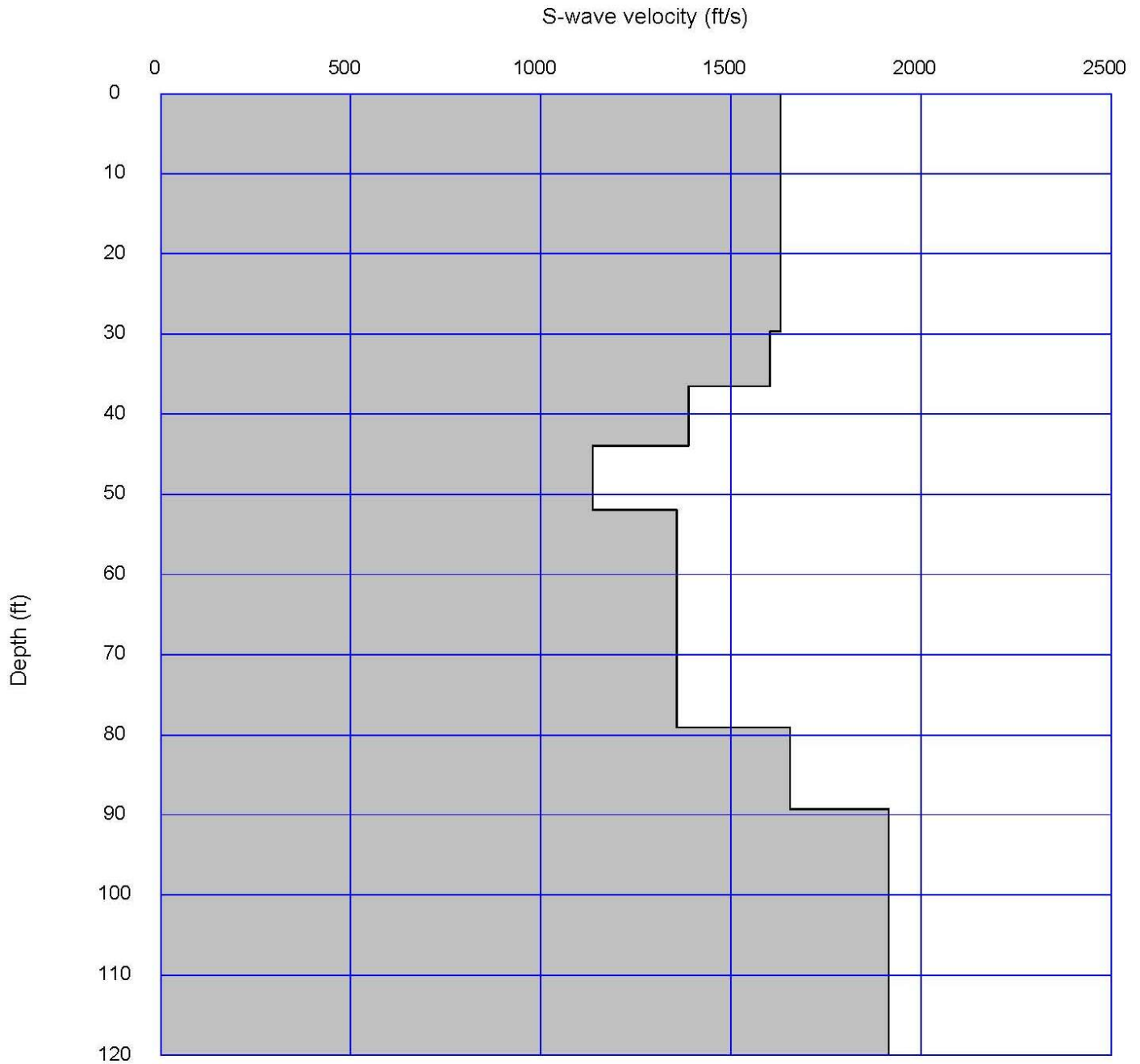
LEGEND

SAMPLER TYPE

DS - Disturbed Sample
ST - Shelby Tube
VS - Vane Shear
DT - Drive Tube
CU - Cuttings
CT - Continuous Tube

ABBREVIATIONS

WOH- Weight Of Hammer
MC - Moisture Content
Fines - Percent Passing #200 Sieve
T.O.B.- Time Of Boring
LL - Liquid Limit
PI - Plasticity Index



S-wave velocity model : Shady Grove Rd Vs100.rst

Average Vs 100ft = 1500.7 ft/sec

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VS 100 FOR SEISMIC SITE CLASSIFICATION
S-80 REPLACE BRIDGE OVER I-26
RICHLAND COUNTY, SOUTH CAROLINA

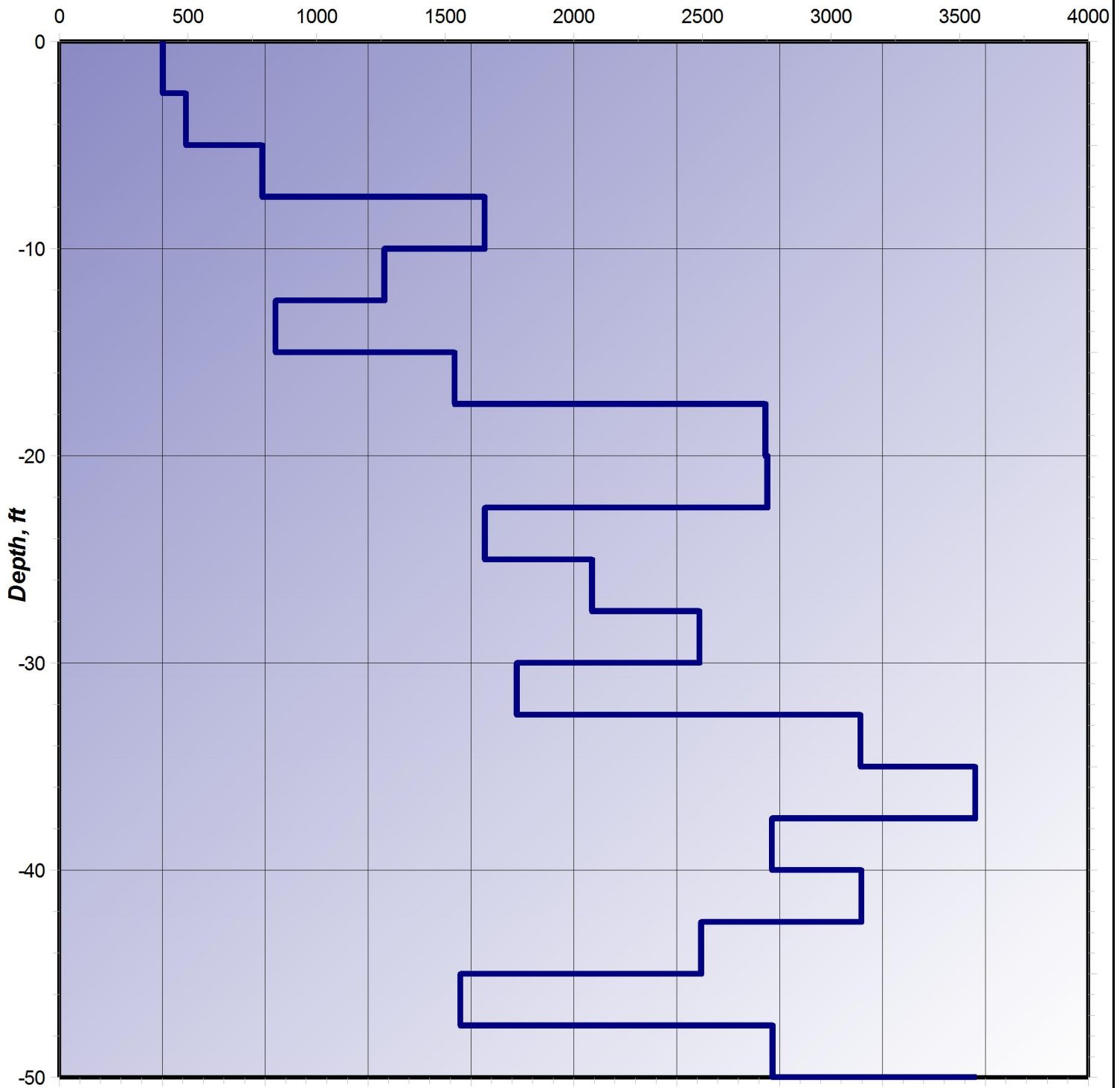
SOUTH CAROLINA DEPARTMENT
OF TRANSPORTATION

DWN BY	N/A	SCALE: N.T.S.
CKD.BY	N/A	F&ME PROJECT: G4800.26
APPR'D.	N/A	SCDOT FILE: 40.038744

Downhole Shear-Wave Investigation

34 08' 09.9.7"N 81 13' 02.7"W

Shear-Wave Velocity, ft/sec



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www.geowavesolutions.com

I-26 Bridge Site – Columbia, SC

F&ME Consultants

Downhole Shear-Wave Investigation

Project Manager: M. Stone

June 16, 2010