FROEHLING & ROBERTSON, INC.



Engineering • Environmental • Geotechnical

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October 22, 2015

Mr. Trapp Harris, PE South Carolina Department of Transportation Design-Build Section 955 Park Street Columbia, South Carolina 29201

Reference: Preliminary Geotechnical Subsurface Data Report

Richland County Emergency Bridge Package SC 769 Congaree Road over Cedar Creek

Richland County, South Carolina

F&R Project No. 65T-0191 SCDOT Project ID: 029341

Dear Mr. Harris:

The purpose of this geotechnical subsurface data report is to present the results of the subsurface investigation program undertaken by Froehling & Robertson, Inc. (F&R) in connection with the Richland County Emergency Bridge Package at State Route S-40-7 Congaree Road over Cedar Creek in Richland County, South Carolina. Our services were performed in general accordance with your work order request emailed to F&R on October 16, 2015, and as authorized by your office per our On-Call Contract with SCDOT. The attached report presents our understanding of the project, reviews our investigation procedures, describes existing site and general subsurface conditions, and presents the results of our soil laboratory tests.

Corporate HQ: 3015 Dumbarton Road Richmond, Virginia 23228 T 804.264.2701 F 804.264.1202 www.fandr.com



We have enjoyed working with you on this project. Please contact us if you have any questions regarding this report or if we may be of further service.

Sincerely, FROEHLING & ROBERTSON, INC.

Herry The Taylor, Gary R. Taylor, PE

Senior Geotechnical Engineer Registered SC No. 27330 Benedictus K. Azumah, PE Geotechnical Engineer Registered VA No. 052166







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1.0 PURPOSE & SCOPE OF SERVICES

The purpose of this Geotechnical Investigation was to explore the subsurface conditions at the site and perform soil laboratory tests on selected soil samples obtained from the investigation. F&R's scope of services included the following:

- Completion of two soil test borings to a depth of approximately 100 feet below the
 existing ground surface and as close as possible to each previous bridge abutment
 location.
- Preparation of typed SCDOT Soil Boring Logs;
- Performing soil laboratory tests including natural moisture contents, Atterberg
 Limits and Wash No. 200 Gradation tests;
- Preparation of this geotechnical subsurface data report by professional engineers.

This report was prepared in general accordance with the 2010 SCDOT Geotechnical Design Manual (GDM), Version 1.1.

Our scope of services did not include identification and evaluation of appropriate foundation systems for the proposed bridge, design capacities and other environmental aspects of the project site.

2.0 PROJECT INFORMATION

2.1 Site Description

The project site is on Congaree Road (State Route S-40-7) located about 2,200 ft southeast from the intersection with Air Base Road in Richland County, South Carolina. Cedar Creek flows in a north-south direction and crosses below the road at the site. The area around the creek and the road is generally wooded. A railroad runs parallel to the roadway and crosses the creek on the north Congaree Road. Project surroundings are shown on the attached Site Vicinity Map in Appendix I, Figure No. 1.

2.2 Project Description

Recent flooding in the region has caused extensive erosion around the bridge and resulted in a complete loss of the bridge. Emergency replacement of the roadway and bridge is planned. For this purpose, the geotechnical subsurface investigation and laboratory testing is required by SCDOT and will form part of a preliminary investigation of the site.

3.0 SUBSURFACE INVESTIGATION

3.1 Subsurface Investigation Program

The subsurface investigation program consisted of two soil test borings (STB). The borings, designated as B-01 and B-02 were advanced to a termination depth of 100 ft below the existing ground surface on the approaches adjacent to the previous location of the bridge. Approximate boring locations are identified on the Boring Location Plan included in Appendix I as Figure No. 2. Photographs of Borings B-01 and B-02 being drilled are also included in Appendix I as Figure No. 3 and No. 4, respectively.

3.2 Location Control

The STB locations were staked in the field by personnel from our office following instructions from your office. The borings were drilled in the centerline of the existing alignment a few feet from the remaining edge of the bridge approach closest to the creek. The ground surface elevation at the borings locations were not provided to us at the time of this writing. However, we have assumed the ground surface at the borings location is at Elevation 100 ft (above MSL). GPS coordinates of Borings B-01 (Latitude 33.913438 / Longitude -80.818005) and B-02 (Latitude 33.913348 and Longitude -80.817691) were obtained with a portable hand-held GPS and are recorded on the soil boring logs included in Appendix II of this report. Locations and elevations should be considered no more accurate that the methods and plans used to obtain them.

3.3 Subsurface Investigation Procedure

Subsurface investigation was performed on October 17, 2015 using an ATV-mounted CME/550X

drill rig used for this project equipped with an automatic hammer and the drilling method used

was the wash rotary boring. The energy ratio of this hammer reported to us indicates 81%. SPT

tests at boring locations were performed continuously from the existing ground surface to a

depth of 10 feet. Thereafter, boreholes were advanced and SPT performed at approximate 5-

foot intervals to their termination depths. The Standard Penetration Test (SPT) was performed

at the boring locations in general accordance with ASTM D1586.

Soil samples were obtained with a long split-spoon sampler with each SPT being driven with a

140-lb automatic hammer falling 30 inches. The number of blows required to drive the sampler

each 6-inch increment of penetration was recorded and are shown on the boring logs. The first

six-inch increment is used to seat the sampler with the sum of the second and third penetration

increments being termed the SPT value, "N". A representative portion of each disturbed split-

spoon sample was collected with each SPT, placed in a glass jar, and returned to our laboratory

for review and testing.

The recovered split-spoon samples were visually classified by F&R engineers in general

accordance with the ASTM D2488. The boring logs provided in Appendix II show the subsurface

conditions encountered on the dates and at the approximate locations indicated.

By the nature of the work performed, the drilling activities result in disturbances to the site. The

completed boreholes performed were backfilled upon completion. The borehole backfill may

subside at some time following our work. F&R assumes no responsibility for borehole subsidence

after completion of the field investigation and departing the site.

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3.4 Groundwater

Groundwater was encountered in all borings at a depth of approximately 13 feet. The test borings were backfilled after completion of drilling for safety. The depth at which groundwater was encountered in each individual boring is indicated on the attached soil boring logs in Appendix II.

The groundwater levels at the boring locations were determined based on our observation of free water in the split-spoon soil samples following removal of the sampler. Upon completion of drilling, the boreholes were backfilled for safety, hence the absence of 24-hour water level readings on the boring logs.

The groundwater levels on the soil boring logs indicate our estimate of the hydrostatic water table at the time of our investigation. The final design should anticipate the fluctuation of the hydrostatic water table depending on variations in precipitation, surface runoff, evaporation, creek levels and similar factors.

4.0 LABORATORY TESTING

Laboratory testing consisted of Atterberg Limits Tests, No. 200 Sieve Cut grain size analyses (Wash #200), and Natural Moisture Content tests performed on specific soil samples. The specific tests performed on the selected samples are listed in Table No. 1 below.



Table No. 1: Soil Laboratory Tests Performed on Selected Soil Samples

Item	Boring	Depth (ft)	Atterberg Limits	Percent Fines Wash # 200	Natural Moisture Content
1	B-01	13.5-15	yes	yes	yes
2	B-01	18.5-20	1	yes	yes
3	B-01	23.5-25	ı	yes	yes
4	B-01	28.5-30	yes	yes	yes
5	B-01	33.5-35	ı	yes	yes
6	B-01	43.5-45	-	yes	yes
7	B-01	58.5-60	yes	yes	yes
8	B-01	63.5-65	ı	yes	yes
9	B-02	13.5-15	-	yes	yes
10	B-02	23.5-25	yes	yes	yes
11	B-02	28.5-30	-	yes	yes
12	B-02	33.5-35	-	yes	yes
13	B-02	38.5-40	-	yes	yes
14	B-02	58.5-60	yes	yes	yes
15	B-02	68.5-70	yes	yes	yes
16	B-02	53.5-55	yes	yes	yes

The laboratory testing results are presented in Appendix III and the laboratory test data sheets are presented in Appendix IV.

F&R greatly appreciates the opportunity to work with you on this project. If there are any questions concerning this report or if any additional information is required, please do not hesitate to contact us.

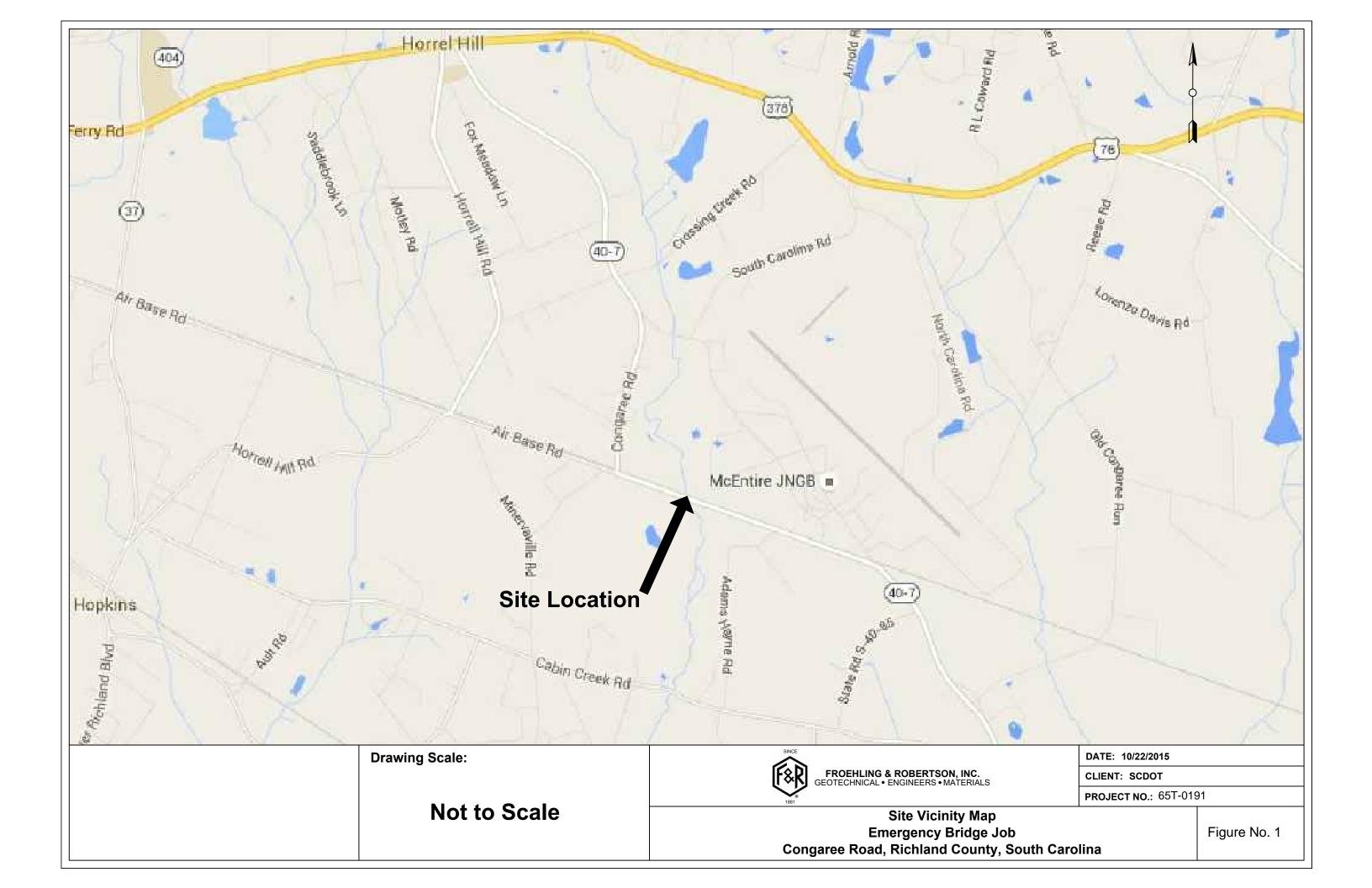


6.0 LIMITATIONS

This report has been prepared for the exclusive use of South Carolina Department of Transportation or their agent, for specific application to the referenced site in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. Our investigation is based on site location information furnished to us; and generally accepted geotechnical engineering practice. The subsurface investigation logs included herein, do not reflect variations in subsurface conditions which could exist intermediate of the boring locations or in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to perform additional subsurface exploration based upon on-site observations of the conditions.



APPENDIX I











APPENDIX II



KEY TO SOIL CLASSIFICATION

Correlation of Penetration Resistance with Relative Density and Consistency

Sands and	<u>Gravels</u>	Silts and C	<u>Clays</u>
No. of	Relative	No. of	
Blows, N	<u>Density</u>	Blows, N	<u>Consistency</u>
0 - 4	Very loose	0 - 2	Very soft
5 - 10	Loose	3 - 4	Soft
11 - 30	Medium dense	5 - 8	Firm
31 - 50	Dense	9 - 15	Stiff
Over 50	Very dense	16 - 30	Very stiff
		31 - 50	Hard
		Over 50	Very hard

Particle Size Identification

(Unified Classification System)

Boulders: Diameter exceeds 12-in. (300-mm)

Cobbles: 3-in. (75-mm) to 12-in. (300-mm) diameter

Gravel: Coarse - ¾-in. (19-mm) to 3 in. (75-mm) diameter

<u>Fine</u> - No. 4 (4.75-mm) sieve to ¾-in. (19-mm) diameter

Sand: Coarse – No. 10 (2.0-mm) to No. 4 (4.76 mm) sieve

<u>Medium</u> – No. 40 (0.425-mm) to No. 10 (2.0-mm) sieve <u>Fine</u> - No. 200 (0.075-mm) to No. 40 (0.425-mm) sieve

Silt and Clay: Less than No. 200 (0.075-mm) sieve



Modifiers

The modifiers provide our estimate of the amount of silt, clay or sand size particles in the soil sample.

Approximate Content ≤ 5%:	Modifiers Trace
5 to 10%: 15 to 25%:	Few Little
30 to 45%:	Some
50 to 100%	Mostly

	Field Moisture
	<u>Description</u>
Dry	Absence of moisture, dusty, dry
	to touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table



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otal D	epth:	100 ft		Soil [Depth:	10	00 ft	Co	re D	epth:	0	ft		Date	Con	nple	ted:	10	/18	/2015	5
Bore Ho	ole Dia	meter (ir	າ):		Sam	pler	Conf	iguratio			ner R	equi	red:	Y	(1	1)	Line	r Use	d:	Υ	(
Orill Ma			-550X		orill Meth	•	_	ary Wa		Hamr					tic	E	nergy		_	86%	`
ore Si					riller:	SC		•		Grou		• •	то		13 ft	_		4HR	_	N/A	_
														<u> </u>							
																	● SPT	N VA	LUE	•	
Elevation (ft)	O Depth	MA	ATERI	AL D	ESCRIP	TION	1	Graphic Log	Sample Depth	Sample No /Tvne	1st 6"	2nd 6"	3rd 6"	N Value	0 10	_	PL FINES 30 40				Ç
_		∖ Asphalt I	Paveme	ent 6"				7 2000	0.0	1/SS	8 8	9	9	18					:		
4	2.0_				moist, bro	wn, fir	ne to	17//	2.0	·+				+		_		:			
+	_	coarse,			(SM), cont				4.0	2/SS	3	3	5	8		:		:			
95.0	_	\gravel						<u> </u>		3/55	3	7	5	12	\vdash	•		:	:	<u> </u>	
+	-				ine to coar				6.0				5		\dashv	. :		:	:		
]	_	medium		(30),	contains o	yravel			8.0	4/SS	6 4	4	5	9	"	' :		:	:		
-	-	loose	uciist							5/SS	3 4	3	3	6	•	:		:	:		
90.0	_	10036														:					_
-	13.0	∇								-						:		:			
	- 0.0	medium			orownish g	ray, S	ILTY		13.5		+-			4-	1			:	:		
85.0	_	SAND (S	-		-					6/88	3	6	9	15	1	•	-	:	-		
	_	SS-6: NA	ИС=16.	5%, %	⁶ 200=9.7					1						:		:	:		
7	_								18.5	5-						:	: :	:		: :	
000	_									7/SS	3 4	14	16	30] :	:	•	:			
80.0	_									1						÷		:			_
4	23.0									-						:		:	:		
	0.0				dense, wet				23.5		3 2		0	12	1			:	:		
75.0	-			, fine	to medium	, SILT	Υ			8/SS	2	5	8	13	1	• :	- : :	<u>:</u>	-		_
]	_	SAND (S		30% 0	6200=12.8					1						:		:			
]	_				%200=12.8 %200=16.1				28.5	5						:		:	:		
70.0	_				%200=16.1 %200=22.					9/88	6 4	5	8	13		•		:	<u>:</u> _	<u> </u>	
70.0	=	55-10. IV		,	,0200-22.	J				4									:		
+	-								00 -	.						:		:			
1	_								33.5	10/S	S 5	5	8	13	1			:	:		
65.0	_									10/0				13		-	- : :	:	:		_
1]						:		:			
4	38.0_	COASTA	I PI AI	IN me	 edium dens				38.5		\perp					:		:	:		
60.0	_	light gray	ish bro	wn, fi	ne, POORI	LY	τ,			11/S	S 2	11	12	23				- :	<u>:</u>		
-	-				SILT (SP-	-				+						:		:	:		
	_	SS-11: N	IMC=21	1.7%,	%200=11.	1			43.5	,]								:	:		
	-									12/S	S 11	9	15	24	1			:	:		
55.0	_															:		:	-		_
4	48.0									4						:		:			
_	40.0_				 ight grayisl		 vn,		48.5					4-				:			
50.0	=	fine to m	edium,		Y SAND (S		•			13/S	S 7	8	9	17	1	-	<u> </u>	:	:		
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]	53.0		. 			· — —	. = -		53.5	5						:		:			
4	-	very loos SAND (S		light	pinkish bro	own, S	ILTY		00.0		S 1/18	3" 0	0	0	•	:		:	:		
		ONIAD (S	, 141 <i>)</i>					LF.	GENI						<u> </u>	•	Co	ntinu	ed	Next	P
			SAMPL											RILLII			OD				_
	Split Spo Shelby T				Q - Rock Co J - Cuttings		//8"			SA - Ho FA - Co				Inere			- Rotary - Rock (h		
AWG - F	Rock Co	re, 1-1/8"			Γ - Continu		ıbe			C - Dri				-9013	1			2010			



File No				t No. (PIN	,	P029			unty:		land		En	g./Geo			
Site De	scripti		CDOT	- Emerge	ncy Bri	idge F	ackaç	ge 1 -	Congar	ee Ro	oad			Rout	te: SC	769	
3oring		B-02		oring Loca						Offset			A	ignme		xisting	<u> </u>
lev.:			atitude:		0.81769		Longi			91334	18		Started		10/1		
Total D	•	100 ft		oil Depth:		00 ft		ore De	-	0 ft			Compl			8/201	5
		meter (in)			mpler (uired:		N		r Used:		(
	chine:	CME-	550X	Drill Me			ry Wa	ash	Hamme						Ratio:		
Core Si	ıze:			Driller:	SC	;			Ground	dwate	r: TC	B	13 ft	2	4HR	N/A	
														● SPT	N VALU	IF 🖨	
Elevation (ft)	Depth (ft)	MA	TERIAI	L DESCR	IPTION	I	Graphic Log	Sample Depth	Sample No./Type	1st 6"	2nd 6" 3rd 6"	N Value		PL ×——	MC ONTE	LL × NT (%)	
	_	SS-14: LL %200=33.		=27, PI=6, I	VMC=31	.2%,				=	<u> </u>		0 10 2	0 30 40	50 60	70 80) (
-	58.0			rown, fine t				58.5									
40.0-		SILTY SA	ND (SM))	o mediai	11,			15/SS	4	10 13	23		•			
	-	SS-6:NMC	C=21.1%	, %200=11	.5			: :	-								
7								63.5	;	<u></u>		\perp					
35.0 -								1	16/SS	7	9 18	17	•		<u> </u>		
33.0								· :	-								
_	68.0							68.5									
-				n and pinkis H) TRACE :		,		00.0	17/SS	13	30 43	73				•	
30.0-			-	=35, PI=22,		5.1%.			_					: :	: :	: :	
-	73.0	%200=95.		>-,·· ,		,		-						: :			
7		dense, we	 t, dark b	rownish pir	k, fine to	 o		73.5	18/SS	10	13 15	28	1 ! !	•			
25.0-	-	medium,	SILTY S	AND (ML)	,				10,00	10	.0 10	20		- :			
=	70 0							:	-								
	78.0	hard, wet,	light bro	own, SAND	Y SILT (N	 VIL)	- - -	78.5		7	10 11				: :		
20.0-		. ,	-		•	•			19/SS	7	12 14	26			- : :	: :	
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10.0		` '							-								
_	93.0						<u> </u>	93.5	<u>-</u> i-								
		medium d medium, \$	ense, we	et, grayish b AND (SM)	orown, fir	ne to		. 33.0	22/SS	8	7 16	23	1 ! !	•			
5.0 -		modium, C		(0111)					1								
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=	100.0							98.5	23/SS	10	15 14	29		•			
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			SAMPLEI	D TVDF			LE	GENI)			יי ו יוםר	NG METH	IOD			
SS - S	Split Spo	on	MIVIPLE	NQ - Rock	Core, 1-7	7/8"			SA - Hollo		Auger		RW	- Rotary			
	Shelby T	ube re, 1-1/8"		CU - Cuttir CT - Conti				CF	FA - Conti C - Drivir	inuous l	Flight A	ugers	RC	- Rock	Core		



APPENDIX III



FROEHLING & ROBERTSON, INC.

LABORATORY TEST SUMMARY SHEET

F&R Project No: 65T-0191

Client: South Carolina Department of Transportation
Project: SC 769 Congaree Road Bridge over Cedar Creek

SCDOT Proj ID P029341

City/State: Richland County, SC

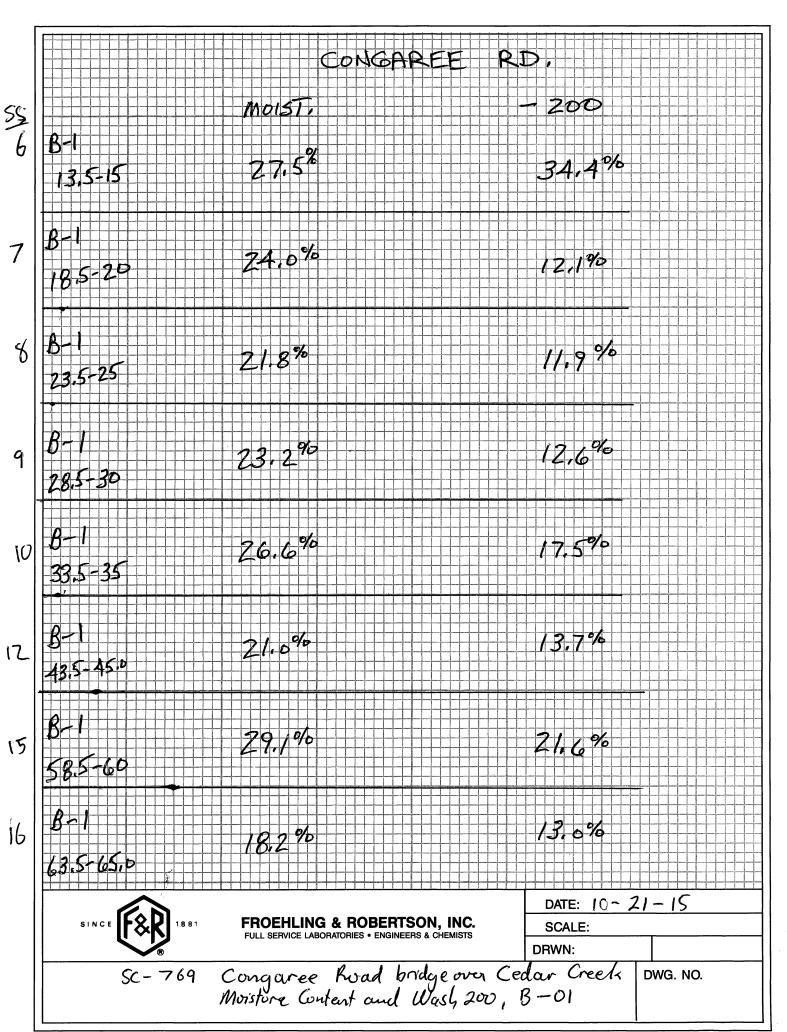
Boring/Sample No.	Depth (ft)	LL	PL	PI	USCS Classification	Water Content (%)	Percent Passing No. 200
							Sieve
B-01	13.5 - 15.0	26	18	8	SM	27.5	34.4
B-01	18.5 - 20.0					24.0	12.1
B-01	23.5 - 25.0					21.8	11.9
B-01	28.5 - 30.0	NP	NP		SM	23.2	12.6
B-01	33.5 - 35.0					26.6	17.5
B-01	43.5 - 45.0					21.0	13.7
B-01	58.5 - 60.0	NP	NP		SM	29.1	21.6
B-01	63.5 - 65.0					18.2	13.0
B-02	13.5 - 15.0					16.5	9.7
B-02	23.5 - 25.0	NP	NP		SM	25.3	12.8
B-02	28.5 - 30.0					29.3	16.1
B-02	33.5 - 35.0					22.5	22.9
B-02	38.5 - 40.0					21.7	11.1
B-02	53.5 - 55.0	33	27	6	SM	21.1	33.8
B-02	58.5 - 60.0	NP	NP		SM	25.1	11.5
B-02	68.5-70.0	57	35	22	MH	31.2	95.9

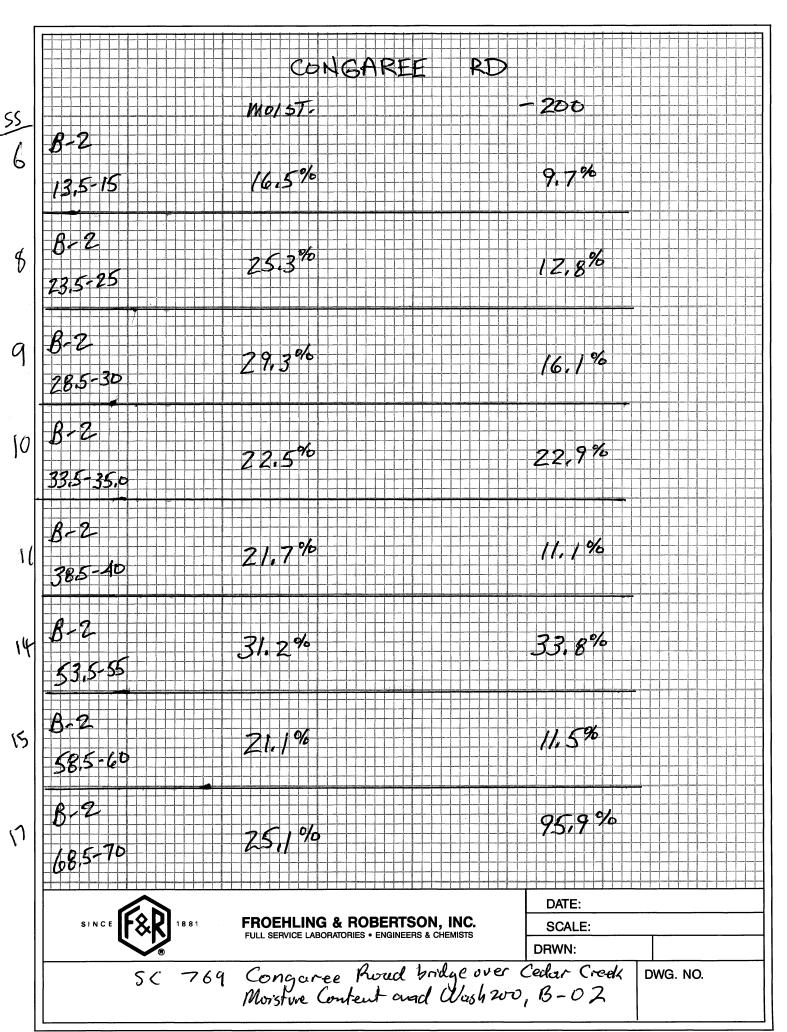
NP: non-plastic

Date: 10/22/15



APPENDIX IV





	*		vo s⊤uRE	CONTEN	- (%;		*	_
	: 出1	·	#3	#4	#5	#6	;	Ì 5
	B-1 135-1	\$	B-1	O	B-1 23.5-	25	B-1	<u></u> ₹₹
Sample I.D	1	i				- 	430,50	1
Wet Soil + Tare	345.90	!	523.58	1	503, 74		377. 25	1
Dry Soils + Tare	303.55	-	461.74	<u>t</u>	439.62	<u> </u>	1	i .
Tare # & Weight	J 149.39	<u> </u>	L 204.25		B 146.05		58 147.85	
। ¦Weight of Water	42.35		61.84	,	64,12		53.25	-
Weight of Dry Soils	154.16	: !	257,49		293.57		229.4	
Vioisture Content	0.275		0.240		0.218		0.232	
			-		*			ł
	#8	#9	#10	#11	#12	#13	#14 B-1 63.5	-6:
Sample ! D.	B-1 33.5-	35	B-1 43.5-2	13	B-1 58.5	160		
Wet Soil + Tare	557.30		583.34		526.01		551,51	
Ory Soils + Tare	471.40		517.61		440.63		489.32	!
Tare#& VVeight	59 148,73		AE 204.26		5123 147.6	.	521 147.73	
Veight of Water	85.9		65.73		85.38		62.19	
Weight of Dry Soils	1 1		313.35		293,03		341.59	
vioisture Content	0.266		0.210	·	0.291		0.182	
						1 1100	#21	•
	#15	#15	#17	#18	j #19	#20 	1 #21	
ample I.D.						'	_	
Vet Soil ÷ Таге								
ry Soils ÷ Tare								
are#&Weight					<u>{</u>			
leight of Water						!	-	
eight of Dry Soils				•	.,			
oisture Content			·		}	:		
	•		101	#0.C	#26	#27	#28	
	#22	#23	#24	#25	#20	<u>π21</u>	1120	
mple I.D.						•		
et Soil + Tare				•				
y Soils ÷ Tare						ı		
re#& Weight				· ·				
eight of Water					! !			
eight of Dry Spils							1	
isture Content	1				!		<u> </u>	

CONGAREE RD.

	· 岸1	#2	. #3	#4	#5	#6	<u> </u>
Sample I.D	B-213,5-	15	#3 B-2	25.0	#5 B-2 ²⁸⁵	30	#7 B-Z 33.5
 Wet Soil + Tare	560.6A	,	412.90		568,35		634,44
Dry Soils + Tare	502.0	1	359.75		472,63		555.51
Tare # & Weight	5G 146.61		G 149.70		K 145AZ		AD 204.36
	:	;	53.15	,	95.72		78.93
Weight of Water	58.63	<u> </u>	210.05		327.21		351.15
Weight of Dry Soils			0.253		0.293		0.225
Mioisture Content	0.165		*		*		**
	#8	#9		#11	1 "40 1	#13	
	#8 β-2 ^{38.5}	40	B-2 58.5-		B-2 68.5	-70	B-2 53.5
			451.10		546.69		469.11
Wet Soil + Tare	603.81		398.56		466.32		392.73
Ory Soils + Tare	522.48	· · · · · · · · · · · · · · · · · · ·	53 149.20		L 146.29		Sio 148.28
	5-7 147.14		52.54		80.37		76.38
Veight of VVater	81.33		249.36		320.03	•	244.45
Veight of Dry Soils	375,34		0.211		0.251		0.312
Moisture Content	0.217						
· .	#15 <u> </u>	#1 5	#17	#18	j #19	#20	#21
ample I.D.						,	
/et Soil + Tare							
ry Soils + Tare							
are#&Weight							
eight of Water						<u> </u>	
eight of Dry Soils				•			
oisture Content	}		-			·	
				//0.5	1 490 1	#07	#28
	#22	#23	#24	#25	#26	#27	πΔυ
mple I.D.			1 '		1 1.		
et Soil + Tare							1
y Soils + Tare	1						
re#& VVeighi							<u> </u>
ight of Water	1						
ight of Dry Soils	(}						

Project: F&R Project No.: Client:

Item Code/Use:

Scoot

CONGAREE RD.

3.5-15.0 9 Sample No: Location: **B**-Material Source:

40.0

Date Received: 10/20/15

Date Processed:

		dulo IIII	
Tare No.	0 0	15	
Cup & Wet Soil	37.94	37,89	37.26
Cup & Dry Soil	35,11	7,2	34.18
Moisture Loss	2.83	3,05	306
Cup Weight	23.15	23,64	23,05
Dry Soil	11.96	11.80	11.13
Blows	34	24	9
Moisture %	0.237	0.237 0.258	0.277
	임습	Plastic Limit	
Tare No.	MZ	82	
Cup & Wet Soil	30.20	30.70	
Cup & Dry Soil	29.14	29.55	,
Moisture Loss	go.}	1.15	
Cup Weight	23.28	23.27	
Dry Soil	5.86	6.28	
Moisture %	181.0	681.0	

										10		Number of Blows		= 77
38.0							Na	22.0	20.0					
											٠.]
37.26	34.18	3,08	23,05	11.13	9	258 0.277								281.0
	28	ر آن	40	90		.58	imit	 10	55	/^	12		63	0.0

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Laboratory Technician:
Reviewed By:
Program Administrator

 $121.0\left(\frac{52}{+2}\right)$

Froehling & Robertson, Inc. Laboratory Sample Analyses

F&R Project No.: Item Code/Use: Project: Client:

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1001	NEAREE	
ñ	202	

Cup & Wet Soil

are No.

Cup & Dry Soil Moisture Loss Sup Weight

	<i>b</i>	28.5-30	
		B-1	
Material	Sample No:	Location:	Source:

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B-1	28.5-30	Date Processed:

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			Number of Blows
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		9	
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Source:	Water Content		
So	7		

Plastic Limit

Moisture %

Blows

Dry Soil

Moisture Loss Cup Weight

Vioisture %

Dry Soil

Cup & Wet Soil Cup & Dry Soil

are No.

 PL=	<u> </u>	USCS =

Laboratory Technician:
Reviewed By:
Program Administrator

SCDOT

F&R Project No.: Item Code/Use: Project: Client:

90,0 58.5-Sample No: Location: **8**— Material Source:

Date Received: 10/

Date Processed:__

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id Limit			-	レーフ					tic Limit							
				N	<i>Y</i>			-	Plastic							
		Sup & Wet Soil	Sup & Dry Soil	e Loss	sight			· % e			Sup & Wet Soil	Cup & Dry Soil	Moisture Loss	sight		% е
	Tare No.	Cup & V	Cup & [Moisture Loss	Cup Weight	Dry Soil	Blows	Moisture %		Tare No.	Cup & \	Cup & [Moistur	Cup Weight	Dry Soil	Moisture %

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40.0	38.0	34.0	30.0	28.0	24.0 22.0 20.0	2	
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 	님	<u></u>	USCS=

Laboratory Technician:
Reviewed By:
Program Administrator

> F&R Project No.: Item Code/Use: Project: Client:

CONCAREE Scool

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		B -	
Material	Sample No:	Location:	Source:

Date Received: 10/20/15

Date Processed:

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	ON-PASTIC						

Moisture Loss Cup Weight

Ory Soil

Blows

Sup & Wet Soil

are No.

Cup & Dry Soil

Cup & Wet Soil

are No.

Moisture %

Sup & Dry Soil

Moisture Loss **Cup Weight**

Moisture %

Dry Soil

PL II	<u>교</u> Ⅱ	1100001

9

Laboratory Technician:
Reviewed By:
Program Administrator

XX 123

Project: F&R Project No.: Item Code/Use: Client:

CONGAREE RD Scoot

	4/	B-2 53,5-55	
. Material	Sample No:	Location:	ישכייוויסט.

Date Received: 10/20/15

Date Processed:

	5	iquid Limit	
Tare No.	02	7	ので
Cup & Wet Soil	36,03	37,73	38.75
Cup & Dry Soil	32,97	74.0	34,55
Moisture Loss	3,06	3.72	7.20
Cup Weight	23.14	23.06	23,02
Dry Soil	9,83	56.0)	1.53
Blows	29	77	
Moisture %	0,311	0,340	6.34
	<u>U</u>	Plastic Limit	
Tare No.	44	so	
Cup & Wet Soil	31,49	29.87	
Cup & Dry Soil	29,63	28.48	
Moisture Loss	1.86	1,39	
Cup Weight	22,79	23,10	
Dry Soil	6.84	8.38	,
Moisture %	5.272	0.258	

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											of Bio	
											Number of Blows	
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Laboratory Technician:
Reviewed By:
Program Administrator

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1 33 $= \left(\frac{62}{27}\right)$) 太二川

F&R Project No.: Item Code/Use: Project:

	80
SCDOT	CONGAREE

	B	
SCD01	CONCAREE	

Cup & Dry Soil Moisture Loss

Sup Weight

Dry Soil Blows

Vioisture %

Cup & Wet Soil

		58.5-60	
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Date Received: $10/29/15$		Date Processed:	
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Plastic Limit

Cup & Wet Soil

are No.

Cup & Dry Soil Moisture Loss Cup Weight

Moisture %

Dry Soil

F&R Project No.: Item Code/Use: Project: Client:

CONGAPPEE RD. SCOOT

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	17	B-2	
Material	Sample No:	Location:	Source:

Date Received: (0/20/15

Date Processed:

	91	iquid Limit	
Tare No.	ā	42	של
Cup & Wet Soil	35,53	35,30	35, is
Cup & Dry Soil	31, 19	30.84	30.63
Moisture Loss	4,34	4.46	4.52
Cup Weight	23,02	22,95	23.29
Dry Soil	2:12	6872	7,34
Blows	X	26	7
Moisture %	0.531	0.565	o.616
		Plastic Limit	
Tare No.	80	C3	
Cup & Wet Soil	30.46	29.87	
Cup & Dry Soil	28.82	11.82	
Moisture Loss	1.88	1.76	
Cup Weight	23.22	23.05	
Dry Soil	5,36	5.0G	
Moisture %	1381	0.348	

				0			
			التأك	19			
					SM		
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111					Number of Blows		
					fin		
				9			
28.0 38.0 36.0	; o c		2 4 7	0.0			
4 8 8 9	6 66 6	7 % c	12 12 13	ŭ			
цı	Water Content						
,	,	- ,					

USCS=_

Laboratory Technician:
Reviewed By:
Program Administrator

6.3495

$$\angle S = \left(\frac{52}{72}\right) \le 7S = 77$$



WASH 200 (C 117)

CLIENT SCDOT PROJECT CONGAREE RECORD NO. 657-0191	B-2 13.5-15.0 SOIL CLASSIFICATION	TECHNICIAN D. Durham TEST DATE 10-21-15
TARE #	TARE WEIGHT 397.	87
are and Dry Soil ry Soil (A-Tare) are and Dry Soil After Wash ry Soil After Wash (C-Tare) aterial Lost (B-D)	753, 90 <u>356, 03</u> 719, 33 321, 46 34,57	

 $(B-D)/B \times 100=$

Percent Passing #200

9.7%



CLIENT SCOOT		_ B-Z	TECHNICIAN	
PROJECT CONGARE	E	23.5-25.0	TEST DATE	
RECORD NO.				
	•	SOIL CLASSIFICATION	7	
. tare #	_	TARE WEIGHT 250.	10	
Tare and Dry Soil		460.55		
Dry Soil	(A-Tare)	210.45	_	
Tare and Dry Soil After Wash	(C.T.)	433.64		
Dry Soil After Wash	(C-Tare)	183, 34		
Material Lost	(B-D)	26.91		

 $(B-D)/B \times 100 =$

Percent Passing #200

12.8%



CLIENT SCOOL		_ B-2	TECHNICIAN_	
PROJECT CONGAR	EE	- Z8.5-30	TEST DATE	
RECORD NO.		78.5		
		SOIL CLASSIFICATION		
TARE #		TARE WEIGHT 388.	44	
		71/ 22	·	
A Tare and Dry Soil		716.22	·	
B Dry Soil	(A-Tare)	327,78		
C Tare and Dry Soil After Wash		663, 37	·	
D Dry Soil After Wash	(C-Tare)	274, 93		
Material Lost	(B-D)	52.85		
r				

 $(B-D)/B \times 100=$

Percent Passing #200

16.1%



CLIENT SCOOT		B-2	TECHNICIAN_	
PROJECT CONGAREE	-	225-35	TEST DATE _	
RECORD NO.		55,5 50		
		SOIL CLASSIFICAT	ION	
TARE #	TA	ARE WEIGHT	12,44	
A Tare and Dry Soil 3 Dry Soil ((A-Tare)	793,99		
C Tare and Dry Soil After Wash		713.61		
D Dry Soil After Wash ((C-Tare)	271.17		
Material Lost ((B-D)	80.38		
	•			
Percent Passing #200 ([B-D)/B x 100:		22.9%	



CLIENT SCDOT		_ R-2	TECHNICIAN	
PROJECT CONGAR	EE	38.5-40.0	TEST DATE	
RECORD NO.		- 3612		
		SOIL CLASSIFICATION		
TARE # 1, 18		TARE WEIGHT	28	
A Tare and Dry Soil		911.94	-	
B Dry Soil	(A-Tare)	375.66	_	
C Tare and Dry Soil After Wash C Dry Soil After Wash	(C-Tare)	334. b	-	
Material Lost	(B-D)	41.66	- - -	

 $(B-D)/B \times 100=$

Percent Passing #200

11 1 1%



	CLIENT SC DOT	B-2 TECHNICIAN	
	PROJECT CONGAREE	53,5~ 55 TEST DATE	_
	RECORD NO.		
		SOIL CLASSIFICATION	
	TARE #	TARE WEIGHT	
Δ	Tare and Dry Soil	493.15	
3	Dry Soil (A-Tare)	245.10	
	Tare and Dry Soil After Wash Dry Soil After Wash (C-Tare)	162.32	
	Material Lost (B-D)	82.78	
		33.8 [%]	
	Percent Passing #200 (B-D)/B >	(100=	



CLIENT JCD6T		_ B-Z	TECHNICIAN	
PROJECT CONCA	REE	58,5-60	TEST DATE	
		SOIL CLASSIFICATION		
TARE # ACC		TARE WEIGHT 255	. 1)	
A Tare and Dry Soil B Dry Soil C Tare and Dry Soil After Wash D Dry Soil After Wash	(A-Tare) (C-Tare)	504,74 249.63 475.97 220.86	 	
E Material Lost	(B-D)	28.77	<u>.</u>	
Percent Passing #200	(B-D)/B x :	100=	5%	
5	ζ // - · · ·			



CLIENT SCDOT	<u> </u>	TECHNICIAN_	i .
PROJECT CONGAREF	— 68.5-70	TEST DATE _	
RECORD NO			
	SOIL CLASSIFICATION		•
TARE #	TARE WEIGHT _ 394.	76	
A Tare and Dry Soil	715.63		
B Dry Soil (A-Tare) C Tare and Dry Soil After Wash	321.37 407.38		
D Dry Soil After Wash (C-Tare)			
Material Lost (B-D)	308,25		

 $(B-D)/B \times 100=$

Percent Passing #200

95,9%



CLILIVI	CDOT PAGAREE RD.	B-1 - 13.5-		TECHNICIAN TEST DATE	D. Durhan 10 - 21- 15	_
TARE #	3	SOIL CLASSIF		97		
Fare and Dry Soil Dry Soil Fare and Dry Soil Afte		404.1	7			
Ory Soil After Wash Material Lost	(C-Tare) (B-D)	53.5	-			

 $(B-D)/B \times 100=$



	CLIENT SCDOT PROJECT CONGAR RECORD NO.	EE	TECHNICIAN TEST DATE SOIL CLASSIFICATION
	TARE #		TARE WEIGHT 306.19
A B C E	Tare and Dry Soil After Wash Dry Soil After Wash	(A-Tare) (C-Tare) (B-D)	562.99 256.80 531,92 225.73 31.07

(B-D)/B \times 100=

Percent Passing #200

12,10/0



	CLIENT SCOOT	-	R-1	TECHNICIAN		
	PROJECT CONGA	REE		TEST DATE	-	
	RECORD NO.		23.5-25.6			
		•	SOIL CLASSIFICATION			
	TARE # N4		TARE WEIGHT 330	.51		
Α	Tare and Dry Soil		624.15			
В	Dry Soil	(A-Tare)	293.64			
þ	Tare and Dry Soil After Wash		589, 33			
d	Dry Soil After Wash	(C-Tare)	258.82	a, A.A.		
Е	Material Lost	(B-D)	34.82			
	·					
			•			

(B-D)/B x 100=

Percent Passing #200

11,9%



	CLIENT SCDO PROJECT CONGAR		B-1	TECHNICIAN	
	RECORD NO.		28.5-30.0		
			SOIL CLASSIFICATION		
	TARE # D	_	TARE WEIGHT 304.	24	
A	Tare and Dry Soil		533.73		
В		(A-Tare)	229.49		
þ	Tare and Dry Soil After Wash		504.70		
þ	Dry Soil After Wash	(C-Tare)	200.46		
F	Material Lost	(B-D)	29,03	_	

 $(B-D)/B \times 100=$

Percent Passing #200

12.6%



CLIENT SCOOT	B-\ TECHNICIAN
PROJECT CONGAREE	33.5-35 TEST DATE
RECORD NO.	
	SOIL CLASSIFICATION
TARE # N 2	TARE WEIGHT
Tare and Dry Soil	642,82
Dry Soil (A-Tare	e) 322.89
Tare and Dry Soil After Wash	586.18
Dry Soil After Wash (C-Tar	e) <u>266. 25</u>
Material Lost (B-D)	56.6A

Percent Passing #200

 $(B-D)/B \times 100=$

17.5%



	CLIENT SCOOT		B-1	TECHNICIAN	
	PROJECT CONGARE	E RD	43,5-45.0	TEST DATE	
	RECORD NO.		- 	•	
		•	SOIL CLASSIFICATION		
	TARE # 8A		TARE WEIGHT 337.	70	
A	Tare and Dry Soil		651.05		
В	Dry Soil	(A-Tare)	313,35		
þ	Tare and Dry Soil After Wash		608,18		
D	Dry Soil After Wash	(C-Tare)	270.48	a. A.A.	
Ę	Material Lost	(B-D)	42.87		

 $(B-D)/B \times 100 =$

Percent Passing #200

13.7%



The second second	CLIENT SCDOT		_ B-1	TECHNICIAN	
	PROJECT CONGAREE		- 58.5-60	TEST DATE	
	RECORD NO.		_		
	·		SOIL CLASSIFICATION		
	TARE # 		TARE WEIGHT 327	23	
	•	-			
1	Tare and Dry Soil		620.50		
3	_ ·	(A-Tare)	293, 27	····	
1	Tare and Dry Soil After Wash		557. o8		
1	Dry Soil After Wash	(C-Tare)	229.85	omodisti 	
1	Material Lost	(B-D)	63.42	·	
1					

 $(B-D)/B \times 100=$

Percent Passing #200

21.6%



	CLIENT SCOOT		B-1	TECHNICIAN	
	PROJECT CON GAF	JEE RD,	63,5-65.0	TEST DATE	
	RECORD NO.		65,5 63,6	•	
			SOIL CLASSIFICATION		
	TARE # KC	·	TARE WEIGHT374	4.60	
Δ	Tare and Dry Soil		716.44		
3	Dry Soil	(A-Tare)	341.84		
q	Tare and Dry Soil After Wash		672,06		
9	Dry Soil After Wash	(C-Tare)	297, 46	en et et e	
=	Material Lost	(B-D)	44.38		
	·				
			1:	3.0%	
	Percent Passing #200	(B-D)/B x 10	00=	0.00	