Preliminary Foundation Recommendations
Bridge 19: I-75 Reversible Lanes over SR 120
Northwest Corridor Project
GDOT Project No. NH000-0073-03(242), PI No. 714130
Cobb County, Georgia

WILLMER ENGINEERING INC.
Project No. ATL-171-3463BFI3

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Prepared For

GEORGIA TRANSPORTATION PARTNERS
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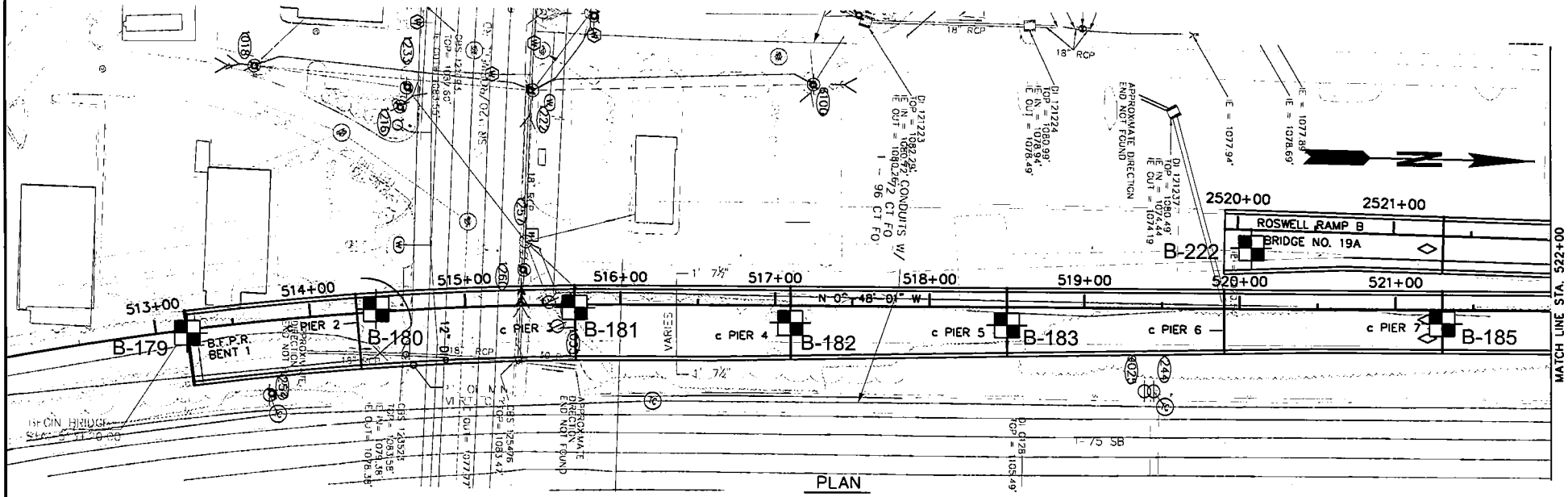
PWR AND AUGER REFUSAL ELEVATIONS (feet)			
Bent No.	**Reference Boring No.**	**Top of PWR**	**Auger Refusal**
1	B-179	1045	1043
2	B-180	-	1036
3	B-181	1051	1050.5
4	B-182	1040	1038.5
5	B-183	1008	1006
6	B-222	1031.5	-
7	B-185	1035	1025
8	B-186	1032	1030
9	B-187	1040	1035
10	B-188/B-188A	1071/1071	1069/1063
11	B-189	1051	1043
12	B-190	1073	-
13	B-191	1063	1059
14	B-192G	1078	1070
15	B-192	1076	-
16	B-193	1063.5	-
17	B-194	1047	-
18	B-195	1067	1021
19	B-196	1055	1029
20	B-197	1059	1017
21	B-198	1043	1032
22	B-199	1021	1020
23	B-200	1022	1012
24	B-201	997	996
25	B-202	982	-
26	B-203	957	-
27	B-204	964	-
28	B-205	958	952
29	B-206	-	960

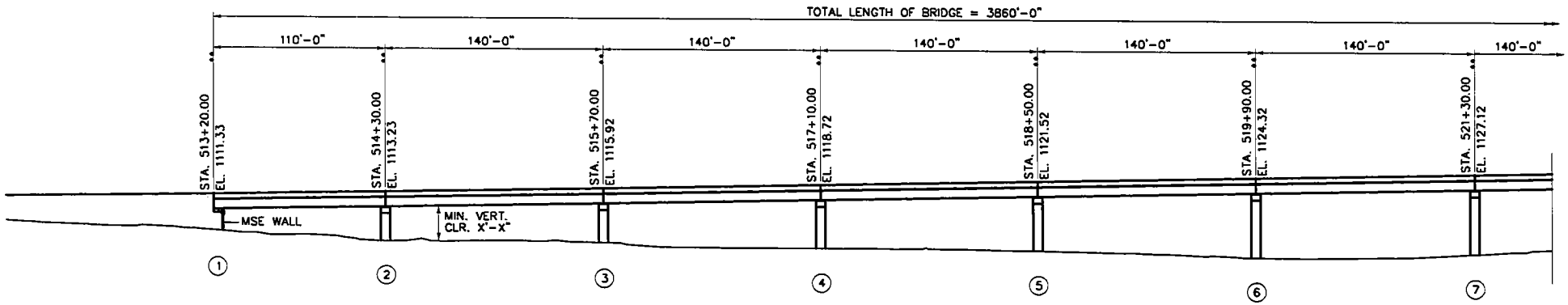
MAXIMUM PILE DESIGN LOADS			
Pile Type	**Load Transfer (%)**		**Design Load**
	Friction	**End Bearing**	
H-Piles	20	80	HP 10x42 = 55 Tons
			HP 12x53 = 70 Tons
			HP 14x73 = 96 Tons
			HP 14x89 = 117 Tons

FOUNDATION RECOMMENDATIONS						
Bent No.	Drilled Shaft			Spread Footing (Bearing) (ksf)	Pile Footing (Type)	Pile Bent (Type)
	Skin Friction (ksf)		End Bearing (ksf)			
	PWR	Rock				
1						H
2					H	
3					H	
4					H	
5					H	
6					H	
7					H	
8					H	
9					H	
10					H	
11					H	
12					H	
13					H	
14				10 ksf on PWR		
15				10 ksf on PWR		
16				6 ksf on soil (ALT)	H	
17					H	
18				10 ksf on PWR		
19					H	
20				10 ksf on PWR		
21					H	
22					H	
23					H	
24					H	
25					H	
26					H	
27					H	
28					H	
29						H

ELEVATIONS (feet)					
Bent No.	Reference Boring No.	Bottom of Drilled Shaft	Bottom of Spread Footing	H-Pile	
				Minimum Tip	Estimated Tip
1	B-179			1043±	1043±
2	B-180			1036±	1036±
3	B-181			1050±	1050±
4	B-182			1038±	1038±
5	B-183			1007±	1006±
6	B-222			1030±	1028±
7	B-185			1033±	1031±
8	B-186			1030±	1030±
9	B-187			1042±	1040±
10	B-188 & B-188A			1070±	1068±
11	B-189			1050±	1048±
12	B-190			1072±	1070±
13	B-191			1062±	1060±
14	B-192G		1077 or below		
15	B-192		1075 or below		
16	B-193		1073 or below (ALT)	1063±	1063±
17	B-194			1056±	1054±
18	B-195		1065 or below		
19	B-196			1054±	1052±
20	B-197		1054 or below		
21	B-198			1042±	1039±
22	B-199			1020±	1020±
23	B-200			1021±	1019±
24	B-201			996±	996±
25	B-202			980±	978±
26	B-203			956±	954±
27	B-204			964±	964±
28	B-205			957±	955±
29	B-206			960±	960±



PLAN



ELEVATION

LEGEND:

B-179 BORING LOCATION

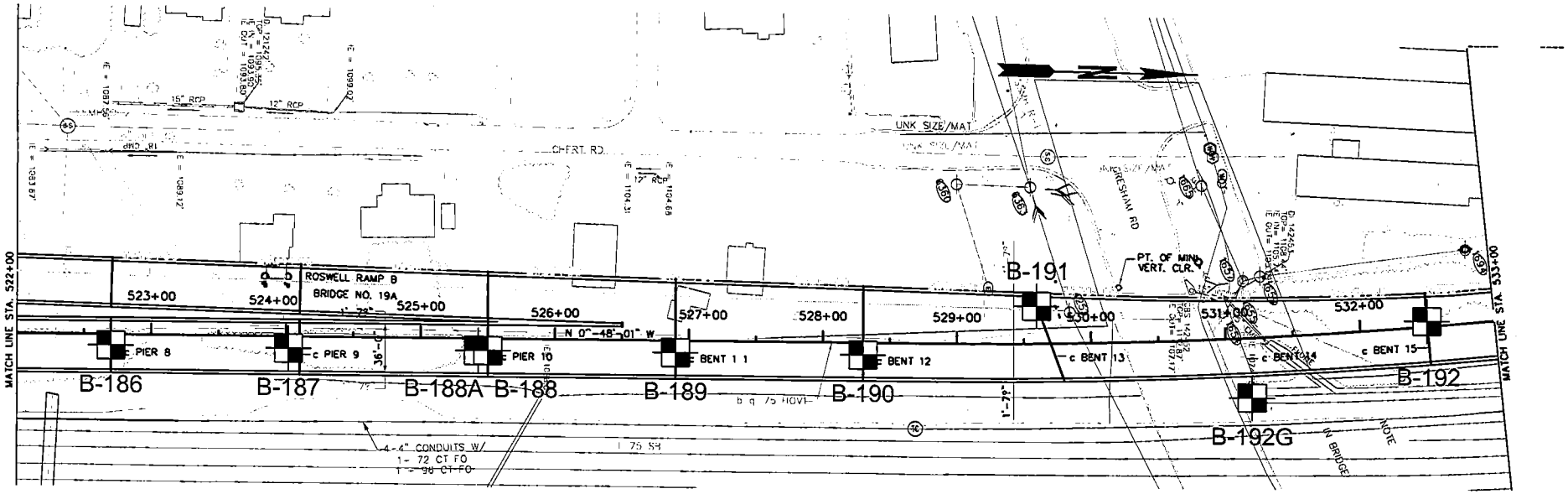
GDOT PROJECT NUMBER
NH000-0073-03(242)
PI No. 714130

SCALE: 1" = 100'	
DATE: 10/16/2009	
DRAWN BY: MJW	
REVIEWED BY: MK	

WILLMER ENGINEERING INC.

GEOTECHNICAL ENGINEERING ¤ CONSTRUCTION SERVICES
ENVIRONMENTAL SERVICES AND ENGINEERING
3772 PLEASANTDALE ROAD - SUITE 165
ATLANTA, GA 30340-4270

FIGURE 2 (SHEET 1 OF 4)
BORING LOCATION PLAN
BRIDGE 19: I-75 REVERSIBLE LANES OVER SR 120
NORTHWEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-171-3463BFI3



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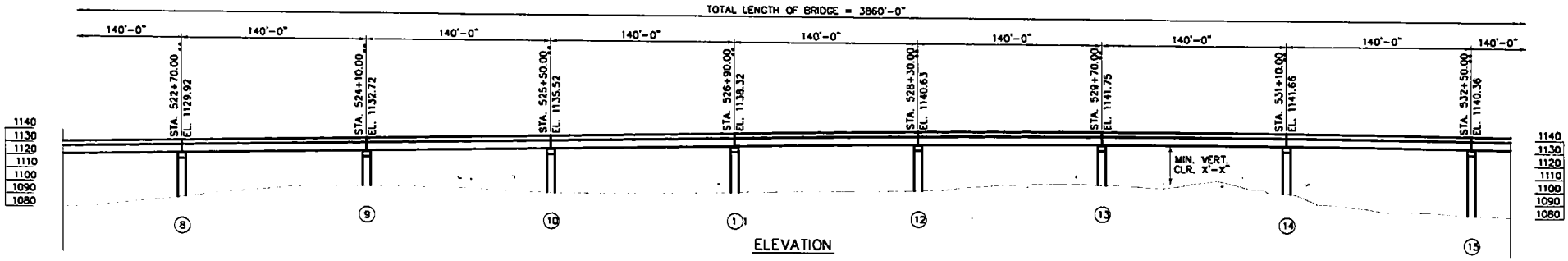

ELEVATION

LEGEND:

B-186 BORING LOCATION

GDOT PROJECT NUMBER
NH000-0073-03(242)
PI No. 714130

SCALE: 1" = 100'	
DATE: 10/16/2009	
DRAWN BY: MJW	
REVIEWED BY: MK	

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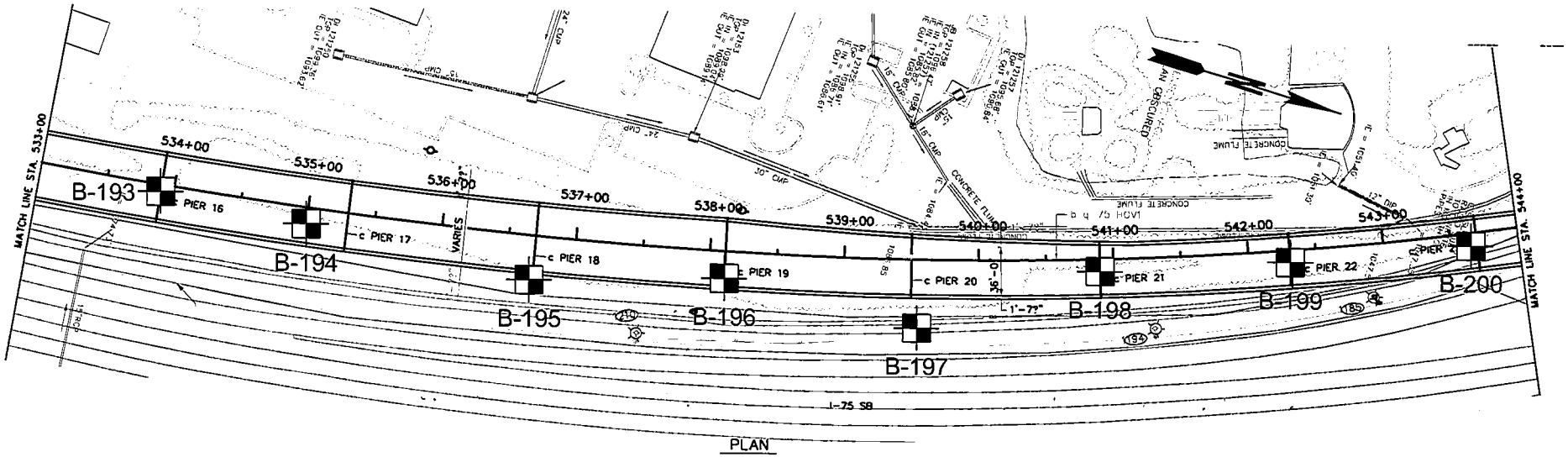
ENVIRONMENTAL SERVICES AND ENGINEERING
3772 PLEASANTDALE ROAD - SUITE 165
ATLANTA, GA 30340-4270

FIGURE 2 (SHEET 2 OF 4)
BORING LOCATION PLAN
BRIDGE 19: I-75 REVERSIBLE LANES OVER SR 120
NORTHWEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-171-3463BFI3



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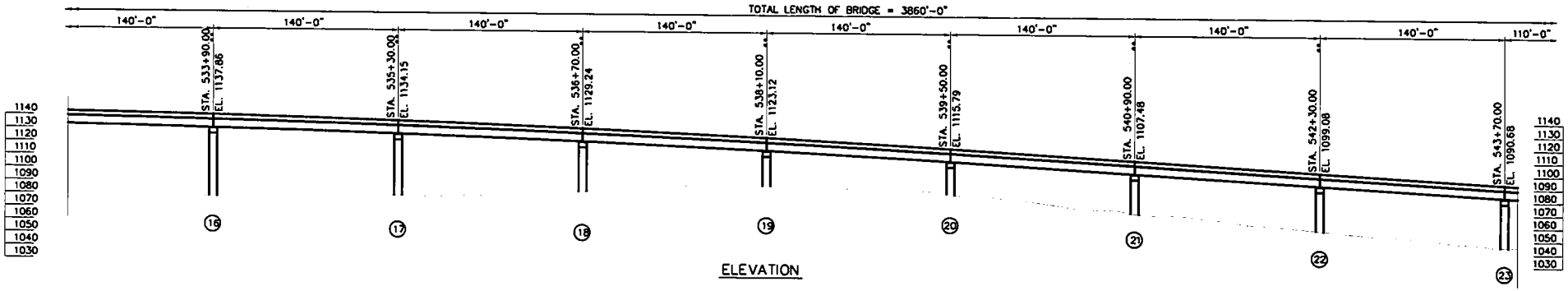


ELEVATION

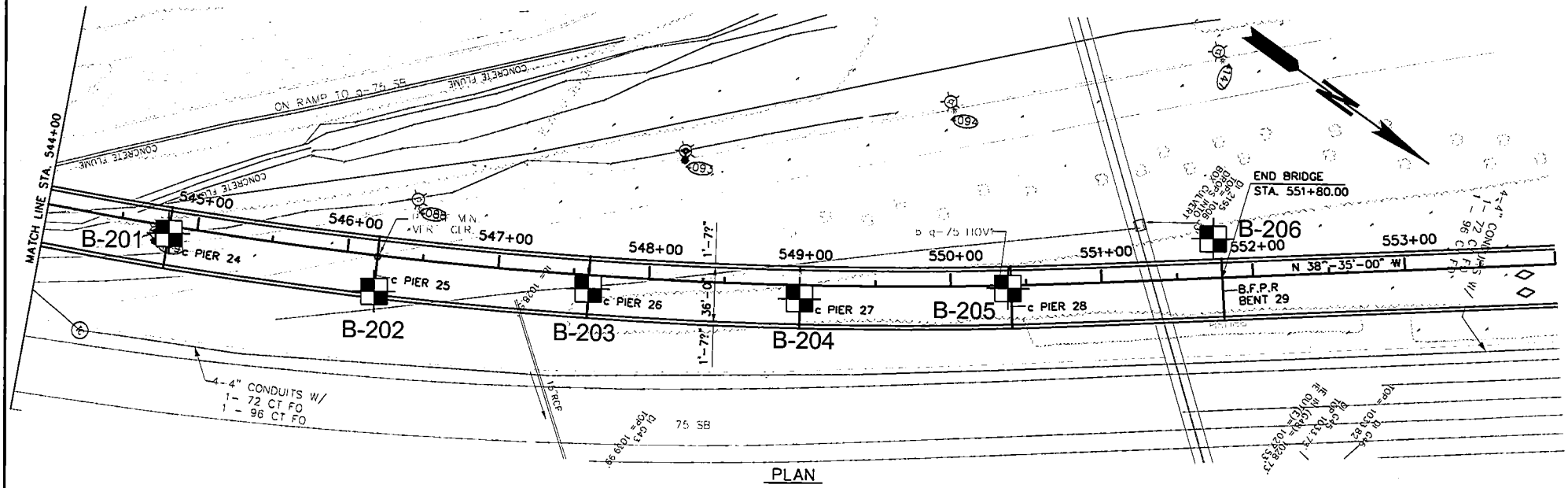
LEGEND:

B-193 BORING LOCATION

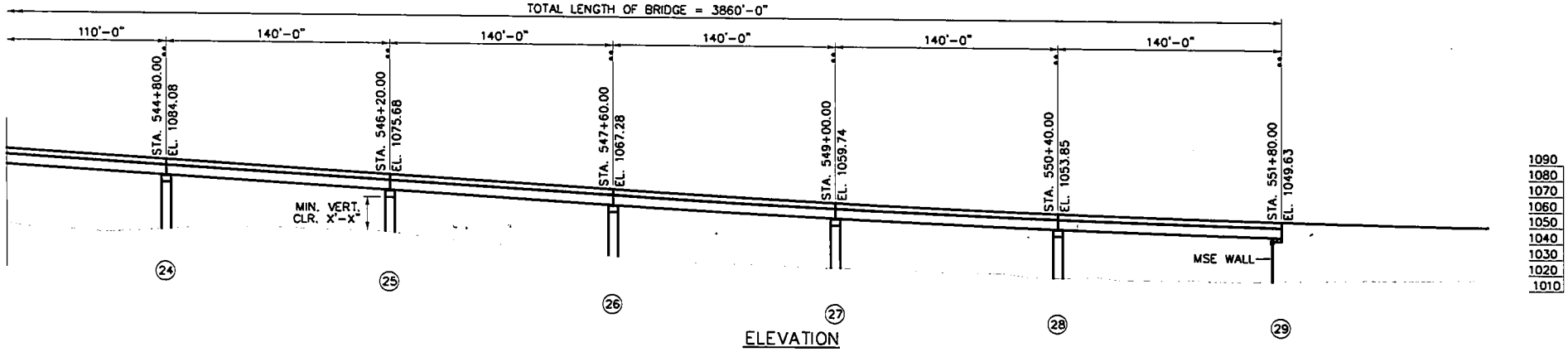
GDOT PROJECT NUMBER
NH000-0073-03(242)
PI No. 714130

SCALE: 1" = 120'	WILLMER ENGINEERING INC.	GEOTECHNICAL ENGINEERING ▪ CONSTRUCTION SERVICES ENVIRONMENTAL SERVICES AND ENGINEERING 3772 PLEASANTDALE ROAD - SUITE 165 ATLANTA, GA 30340-4270
DATE: 10/19/2009		
DRAWN BY: MJW		
REVIEWED BY: MK		

FIGURE 2 (SHEET 3 OF 4)
BORING LOCATION PLAN
BRIDGE 19: I-75 REVERSIBLE LANES OVER SR 120
NORTHWEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-171-3463BFI3



PLAN



ELEVATION

LEGEND:

B-201 BORING LOCATION

GDOT PROJECT NUMBER
NH000-0073-03(242)
PI No. 714130

SCALE: 1" = 120'	
DATE: 10/19/2009	
DRAWN BY: MJW	
REVIEWED BY: MK	

WILLMER ENGINEERING INC.

GEOTECHNICAL ENGINEERING ▫ CONSTRUCTION SERVICES
ENVIRONMENTAL SERVICES AND ENGINEERING
3772 PLEASANTDALE ROAD - SUITE 165
ATLANTA, GA 30340-4270

FIGURE 2 (SHEET 4 OF 4)
BORING LOCATION PLAN
BRIDGE 19: I-75 REVERSIBLE LANES OVER SR 120
NORTHWEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-171-3463BFI3

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-179**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 1**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1089.52** Station: **ST 513+20, 2' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **12** Overburden (ft): **46** Rock (ft): **NA** Total Depth (ft): **46.0**

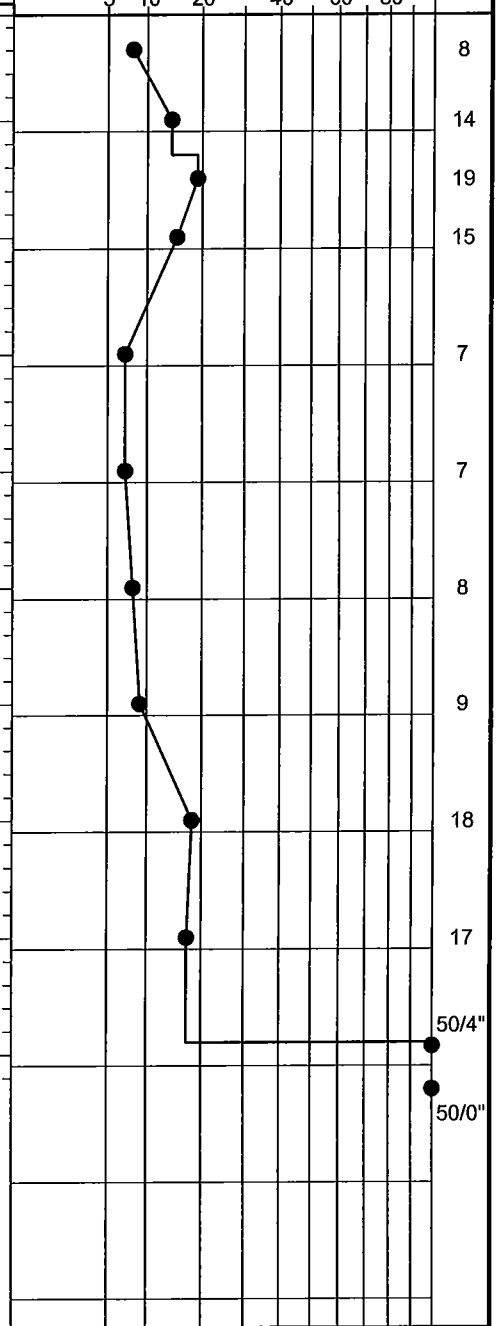
Logged By: **PT** Date Drilled: **9/1/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
					ASPHALT - 3 inches	GAB	1089.5
		SS			GAB - 3 inches	FILL	
					FILL: Loose reddish brown silty medium to fine **SAND** with rock fragments	FILL	
5		SS					1085
					Stiff reddish brown medium to fine sandy silty **CLAY** with rock fragments	ML	
		SS					
					RESIDUUM: Very stiff to stiff reddish brown medium to fine sandy clayey **SILT**		
10		SS					1080
					Loose orange brown, brown and gray silty medium to fine **SAND** (slightly micaceous)	SM	
15		SS					1075
20		SS					1070
25		SS					1065
30		SS					1060
					Medium dense gray and brown silty medium to fine **SAND** with quartz fragments (slightly micaceous)	SM	
35		SS					1055
40		SS					1050
45		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray silty medium to fine **SAND** with rock fragments	PWR	1045
		SS					

Auger refusal was encountered at 46 feet below the existing ground surface.

Ground water was encountered at 38 feet below the existing ground surface at

Continued Next Page



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-179
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-179

Sheet 2 of 2

Location: **BENT - 1**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					the time of boring.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-179**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-180**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1084.13** Station: **ST 514+43, 2' Lt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

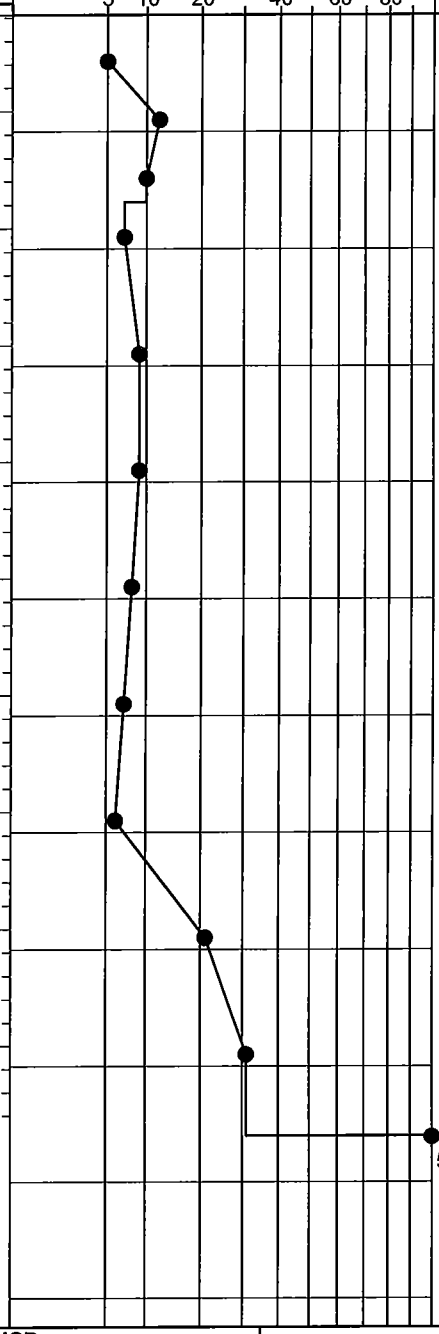
Core Boxes: **NA** Samples: **12** Overburden (ft): **48** Rock (ft): **NA** Total Depth (ft): **48.0**

Logged By: **MT** Date Drilled: **9/22/09**

VERTICAL DEPTH (ft)	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
	SS			FILL: Loose reddish brown medium to fine sandy **SILT**	FILL	1084.1
	SS			Medium dense to loose reddish brown silty medium to fine **SAND**	FILL	1080
5	SS					
	SS			RESIDUUM: Loose brown and gray silty medium to fine **SAND**	SM	1075
10	SS					
15	SS					1070
20	SS					1065
25	SS					1060
30	SS					1055
35	SS					1050
40	SS			Medium dense to dense tan and gray silty medium to fine **SAND**		1045
45	SS					1040
	SS			Auger refusal was encountered at 48 feet below the existing ground surface.		

Ground water was encountered at 33 feet below the existing ground surface at the time of boring.

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-180
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-181**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 3**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1085.46** Station: **ST 515+70, 2' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **9** Overburden (ft): **35** Rock (ft): **NA** Total Depth (ft): **35.0**

Logged By: **PT** Date Drilled: **9/1/09**

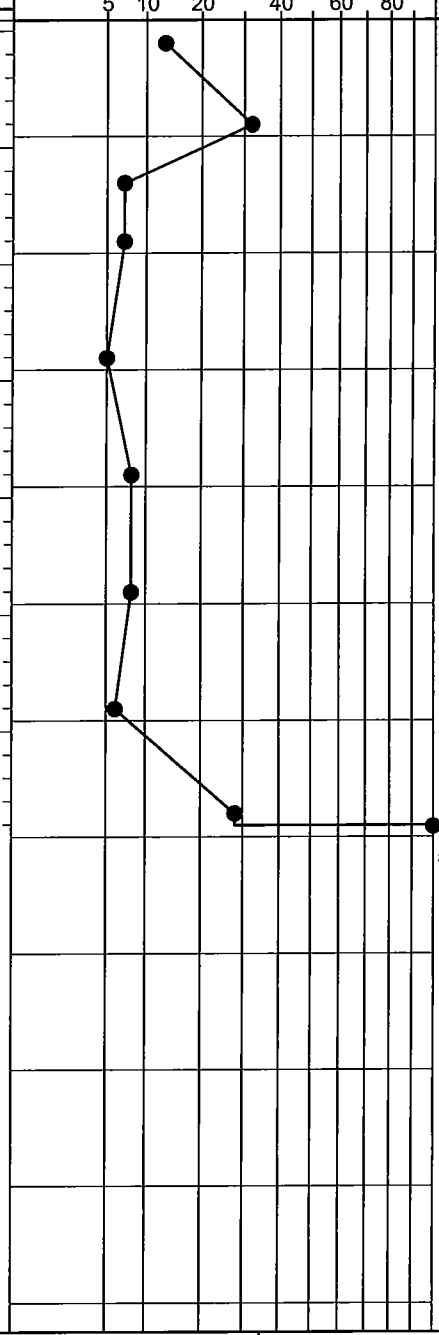
VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
		SS			TOPSOIL - 3 inches	FILL	1085.5
		SS			FILL: Medium dense to dense reddish brown silty medium to fine **SAND** with rock/asphalt fragments (slightly micaceous)		1085
5		SS					1080
		SS					
		SS			RESIDUUM: Loose brown silty medium to fine **SAND** with roots	SM	1075
10		SS					
					Loose orange brown, brown and gray silty medium to fine **SAND** (slightly micaceous)	SM	1070
15		SS					
20		SS					1065
25		SS					1060
30		SS					1055
					Medium dense brown and gray silty medium to fine **SAND**	SM	
		SS					
35		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock fragments	PWR	

Auger refusal was encountered at 35 feet below the existing ground surface.

No ground water was encountered at the time of boring.

Boring caved in at 31 feet below the existing ground surface 24 hours after boring completion.

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-181
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-182**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 4**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1084.23** Station: **ST 517+10, 12' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **12** Overburden (ft): **46** Rock (ft): **NA** Total Depth (ft): **46.0**

Logged By: **PT** Date Drilled: **8/31/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
		SS			TOPSOIL - 2 inches	FILL	1084.2	8
					FILL: Loose reddish brown silty medium to fine **SAND** (slightly micaceous)	SC		
5		SS			RESIDUUM: Medium dense brown and reddish brown clayey medium to fine **SAND**	ML	1080	14
		SS						6
10		SS			Firm to very stiff brown and reddish brown medium to fine sandy **SILT**		1075	7
15		SS					1070	17
20		SS			Loose orange brown, reddish brown and purple silty medium to fine **SAND** (micaceous)	SM	1065	8
25		SS					1060	8
30		SS					1055	8
35		SS			Loose gray and brown silty medium to fine **SAND** (micaceous)	SM	1050	8
40		SS					1045	7
45		SS					1040	8
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and orange brown silty medium to fine **SAND** with rock fragments	PWR		50/2"
		SS						50/0"

Auger refusal was encountered at 46 feet below the existing ground surface.

Ground water was encountered at 19 feet below the existing ground surface 24

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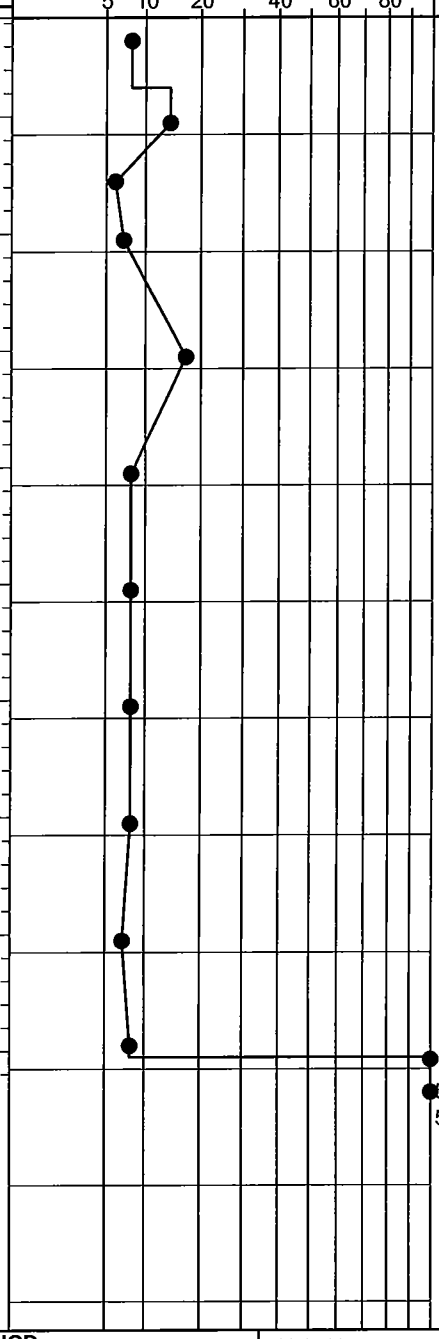
STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-182**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-182

Sheet 2 of 2

Location: **BENT - 4**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					hours after boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-182**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-183**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 5**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1082.10** Station: **ST 518+50, 12' Rt. of BL**

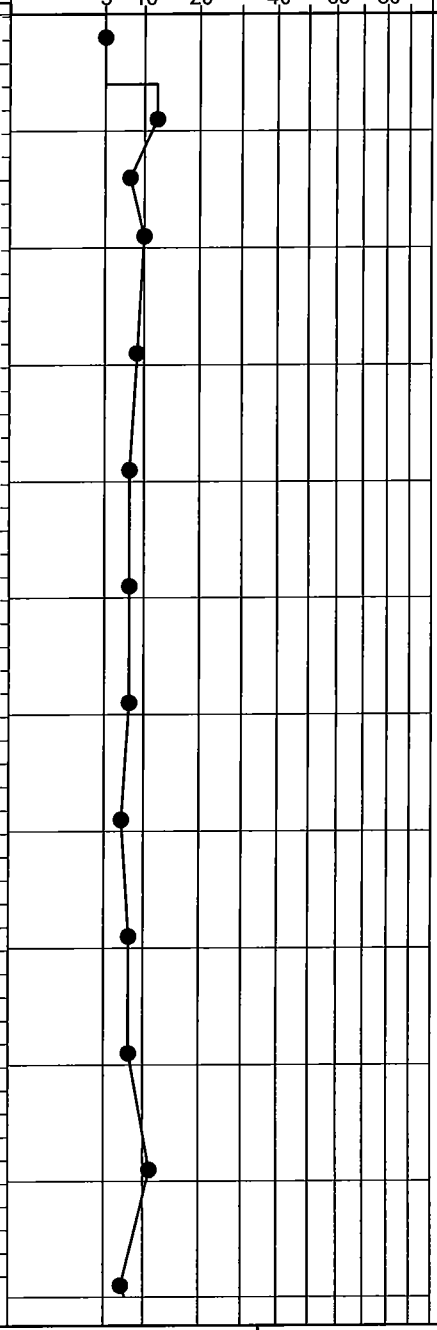
Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **18** Overburden (ft): **76** Rock (ft): **NA** Total Depth (ft): **76.0**

Logged By: **PT** Date Drilled: **8/31/09**

VERTICAL DEPTH (ft)	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
	SS			TOPSOIL - 2 inches	FILL	1082.1
				FILL: Loose reddish brown silty medium to fine **SAND** (slightly micaceous)	SM	1080
5	SS			RESIDUUM: Loose and medium dense orange brown and purple brown silty medium to fine **SAND** (micaceous)		
	SS					1075
10	SS					
						1070
15	SS					
						1065
20	SS					
						1060
25	SS					
						1055
30	SS					
						1050
35	SS					
						1045
40	SS			Loose and medium dense gray and brown silty medium to fine **SAND** (micaceous)	SM	
						1040
45	SS					
						1035
50	SS					
						1030
55	SS					

STANDARD PENETRATION TEST DATA (blows/foot)



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SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-183
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-183

Sheet 2 of 2

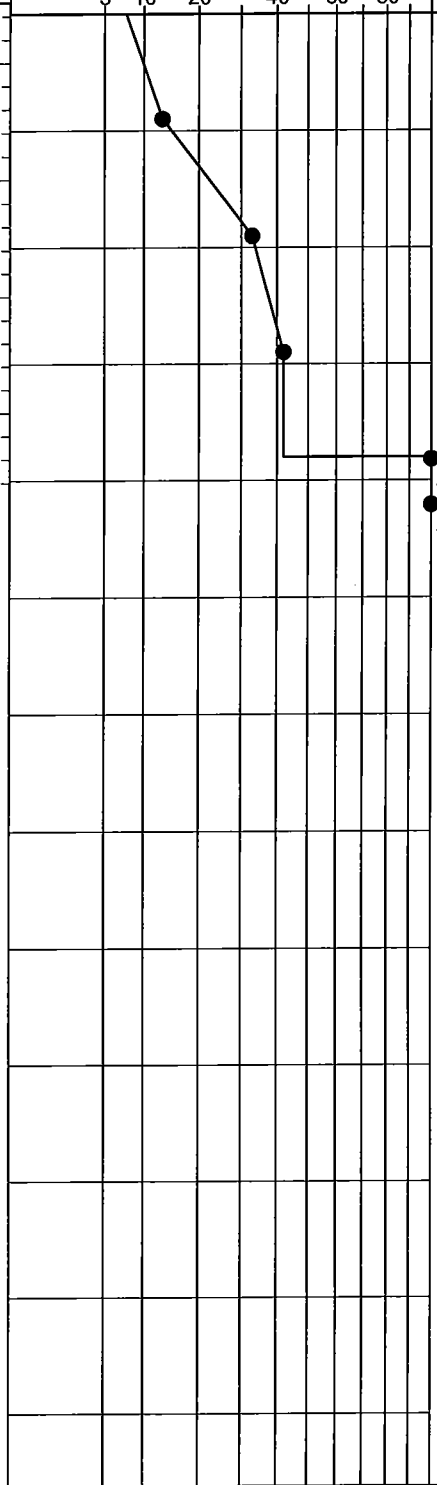
Location: **BENT - 5**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
60		SS				1025		13
						1020		
65		SS			Dense gray silty medium to fine **SAND** with quartz fragments (slightly micaceous) **SM**			33
						1015		
70		SS						42
						1010		
75		SS			PARTIALLY WEATHERED ROCk: Sampled as very dense gray and brown silty medium to fine **SAND** with rock fragments **PWR**			50/2"
		SS						50/1"

Auger refusal was encountered at 76 feet below the existing ground surface.

Ground water was encountered at 28 feet below the existing ground surface at the time of boring.

Boring caved in at 26 feet below the existing ground surface 24 hours after boring completion.



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-183**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible Lanes over SR 120**	**HOLE No. B-222**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 6**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1080.46** Station: **ST 520+06, 40' Lt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **16** Overburden (ft): **63.5** Rock (ft): **NA** Total Depth (ft): **63.5**

Logged By: **CO** Date Drilled: **8/27/09**

VERTICAL DEPTH (ft)	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
0–10	SS, SS, SS, SS			FILL: Firm and stiff brown and reddish brown medium to fine sandy **CLAY**	FILL	1080.5
15–45	SS, SS, SS, SS, SS, SS, SS, SS			RESIDUUM: Loose brown and gray silty medium to fine **SAND** (micaceous)	SM	
45–50	SS, SS			Dense to medium dense brown and gray silty medium to fine **SAND** (micaceous)	SM	
50–55	SS, SS			PARTIALLY WEATHERED ROCK: Sampled as very dense white, gray and black silty medium to fine **SAND** (micaceous)	PWR	

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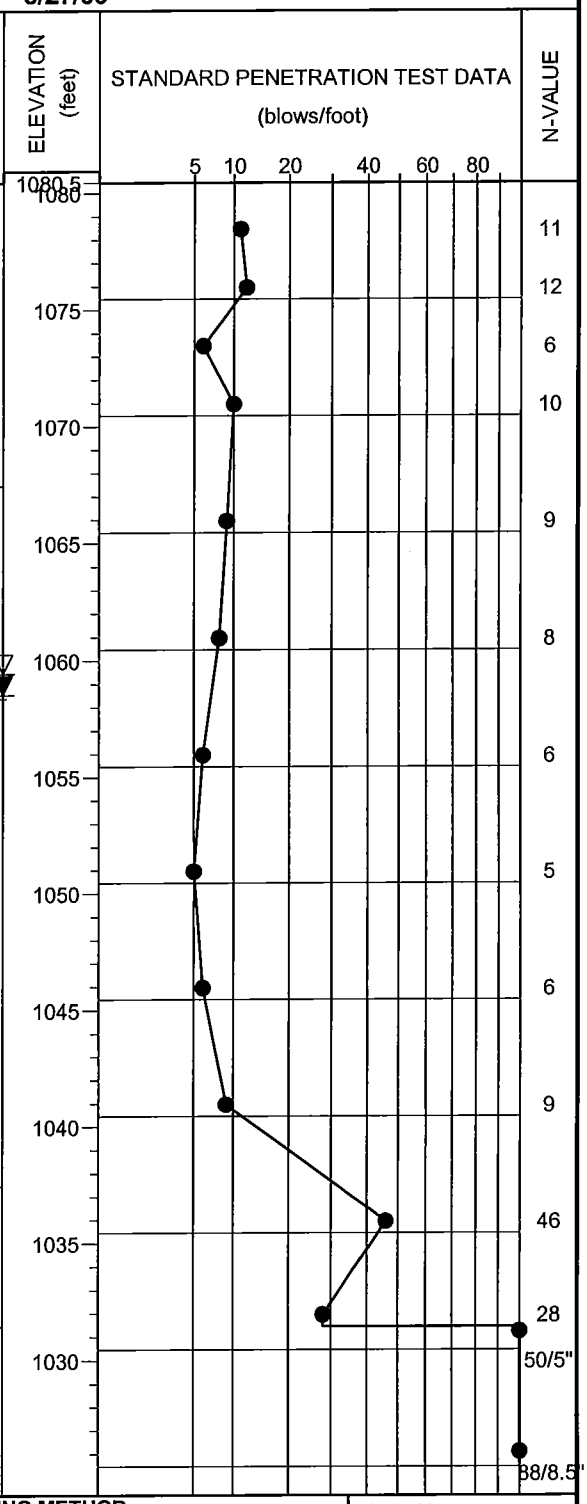

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-222
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible Lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-222

Location: **BENT - 6**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
						1025		
		SS						50/4"
60						1020		
		SS			Boring was terminated at 63.5 feet below the existing ground surface. Ground water was encountered at 21 feet below the existing ground surface at the time of boring.			50/1.5"

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-222**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-185**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 7**

Azimuth: Angle from Horizontal: **90** Surface Elevation (ft): **1078.72** Station: **ST 521+30, 9' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **13** Overburden (ft): **53.5** Rock (ft): **NA** Total Depth (ft): **53.5**

Logged By: **CO** Date Drilled: **8/25/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
		SS			RESIDUUM: Medium dense reddish brown and tan silty medium to fine **SAND**	SM	1078.7
		SS			Stiff orange brown medium to fine sandy **SILT**	ML	1075
5		SS					
		SS			Loose reddish brown and gray silty medium to fine **SAND** (micaceous)	SM	1070
10		SS					
							1065
15		SS					
							1060
20		SS					
							1055
25		SS					
							1050
30		SS					
							1045
35		SS					
		SS			Medium dense gray and white silty medium to fine **SAND** (micaceous)	SM	1040
40							
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense brown, white, and gray silty medium to fine **SAND** with rock fragments	PWR	1035
45							
		SS					1030
50							
		SS			Auger refusal was encountered at 53.5		

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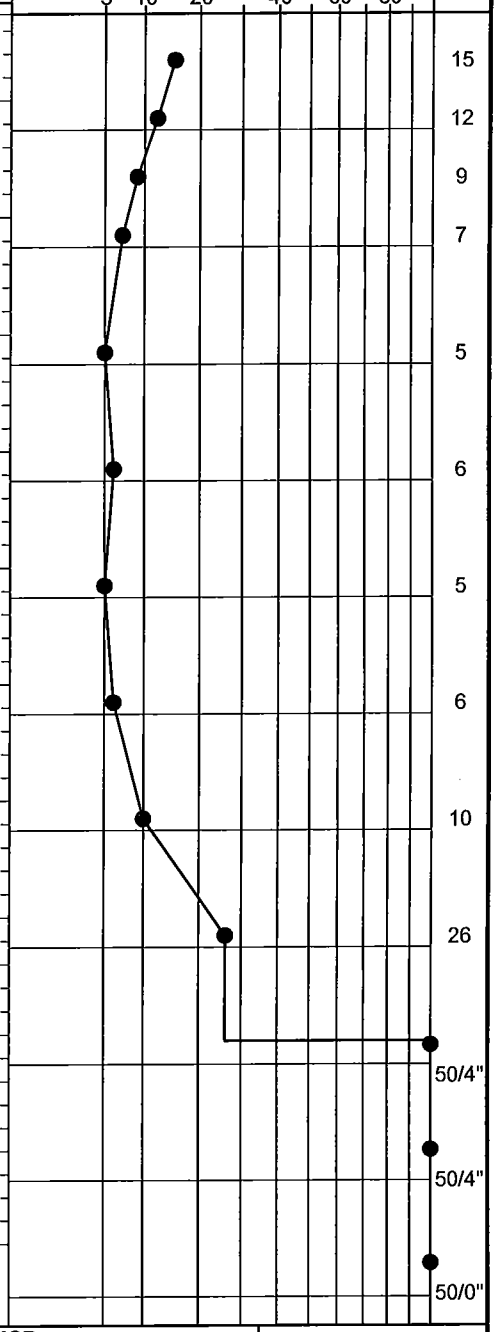


SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-185
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-185

Sheet 2 of 2

Location: **BENT - 7**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					feet below the existing ground surface.			
					Ground water was encountered at 29 feet below the existing ground surface at the time of boring and 24 hours after boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-185**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-186

Sheet 1 of 2

Location: **BENT - 8**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1088.86** Station: **ST 522+70, 9' Rt. of BL**

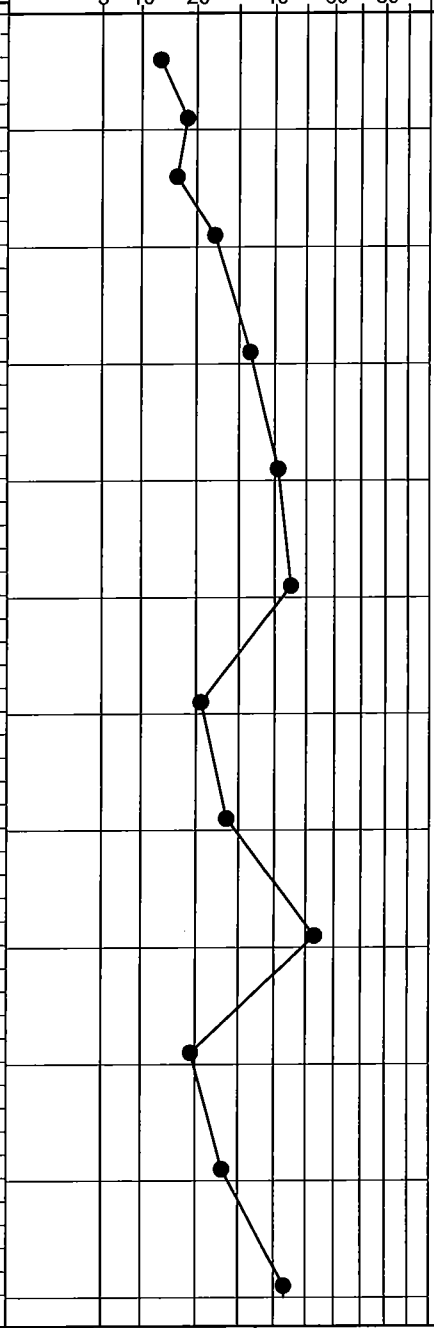
Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **14** Overburden (ft): **59** Rock (ft): **NA** Total Depth (ft): **59.0**

Logged By: **CO** Date Drilled: **8/24/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
		SS			RESIDUUM: Stiff reddish brown medium to fine sandy **SILT**	ML	1088.9	13
5		SS			Medium dense and dense brown, gray and white silty medium to fine **SAND** (micaceous)	SM	1085	18
		SS						16
10		SS					1080	24
15		SS					1075	33
20		SS					1070	41
25		SS					1065	45
30		SS					1060	21
35		SS					1055	27
40		SS			Very dense white and brown silty medium to fine **SAND** with quartz fragments (micaceous)	SM	1050	53
45		SS			Medium dense to dense gray, white, brown, black and reddish brown silty medium to fine **SAND** (micaceous)	SM	1045	19
50		SS					1040	26
55		SS					1035	43

STANDARD PENETRATION TEST DATA (blows/foot)



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SAMPLER TYPE
SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

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

Hole No. **B-186**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-186

Sheet 2 of 2

Location: **BENT - 8**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray, brown, white and black silty medium to fine **SAND** with rock fragments **PWR**	1030		50/4"
					Auger refusal was encountered at 59 feet below the existing ground surface.			
					Ground water was encountered at 40 feet below the existing ground surface at the time of boring completion and at 37 feet below the existing ground surface 24 hours after boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-186**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-187**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 9**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1097.84** Station: **ST 524+02, 9' Rt. of BL**

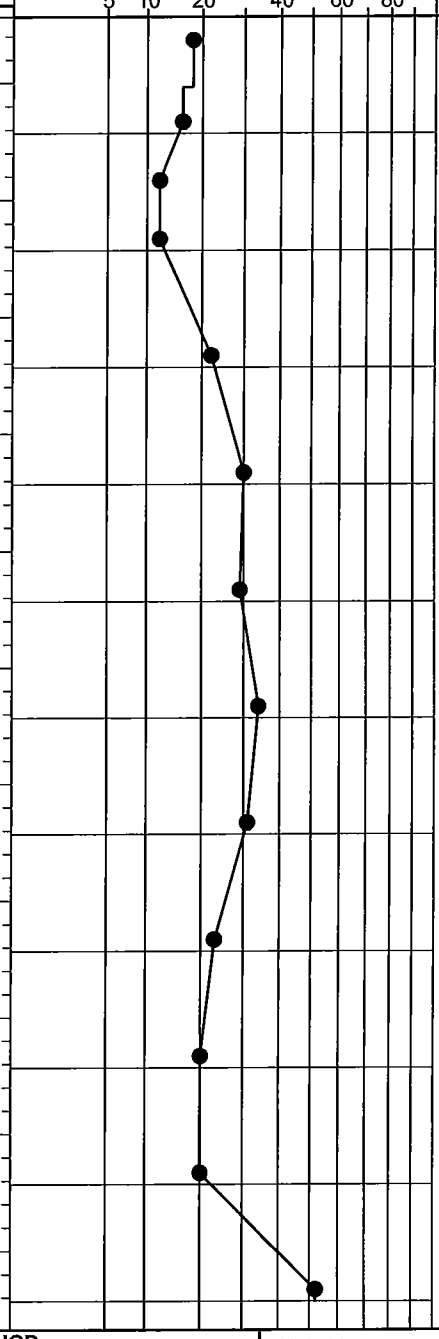
Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **15** Overburden (ft): **63** Rock (ft): **NA** Total Depth (ft): **63.0**

Logged By: **PT** Date Drilled: **8/10/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
		SS			TOPSOIL - 2 inches (FILL)	1097.8	18
					FILL: Medium dense reddish brown silty medium to fine **SAND** with rock fragments and roots (slightly micaceous) (SM)	1095	16
5		SS					
		SS			RESIDUUM: Medium dense and dense reddish brown to gray silty medium to fine **SAND** with occasional quartz fragments (slightly micaceous)	1090	12
10		SS					12
						1085	
15		SS					22
						1080	
20		SS					30
						1075	
25		SS					29
						1070	
30		SS					34
						1065	
35		SS					31
						1060	
40		SS					23
						1055	
45		SS					20
						1050	
50		SS					20
						1045	
55		SS			- becoming very dense		52

STANDARD PENETRATION TEST DATA (blows/foot)



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SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-187**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-187

Sheet 2 of 2

Location: **BENT - 9**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
						1040		
60		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with quartz fragments (slightly micaceous) **PWR**			50/5"
		SS				1035		50/0"

Auger refusal was encountered at 63 feet below the existing ground surface.

No ground water was encountered at the time of boring completion.

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-187**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-188**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 10**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1094.14** Station: **ST 525+50, 9' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **8** Overburden (ft): **25** Rock (ft): **NA** Total Depth (ft): **25.0**

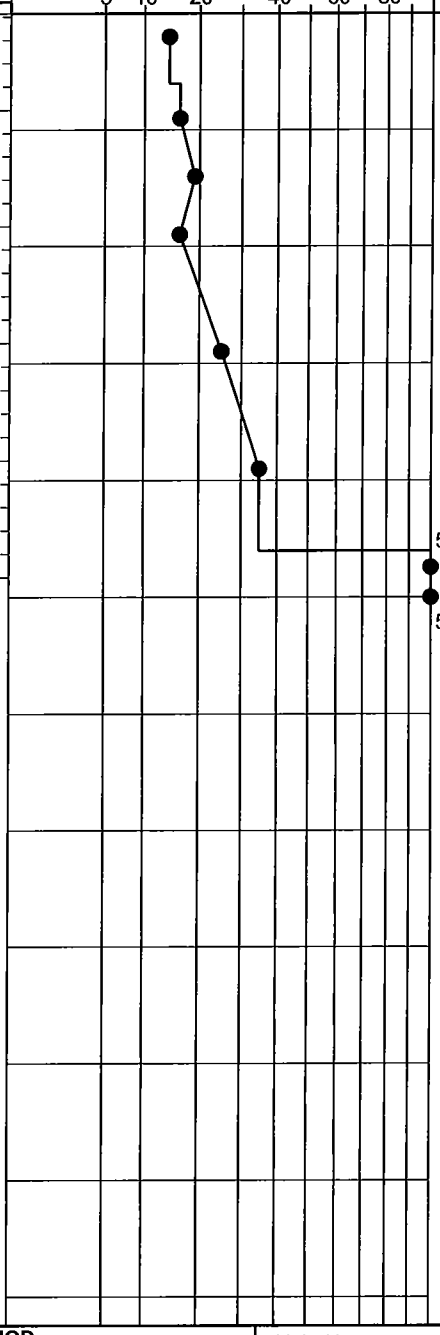
Logged By: **PT** Date Drilled: **8/10/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
		SS			TOPSOIL - 1 inch (FILL)	1094.1	14
					FILL: Medium dense reddish brown silty medium to fine **SAND** with rock fragments (slightly micaceous) (SM)		
5		SS				1090	16
		SS			RESIDUUM: Medium dense to dense reddish brown to gray, brown and tan silty medium to fine **SAND**		19
10		SS				1085	16
15		SS				1080	25
20		SS				1075	35
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock fragments (slightly micaceous). (PWR)		50/5"
25		SS				1070	50/0"

Auger refusal was encountered at 25 feet below the existing ground surface.

No ground water was encountered at the time of boring completion.

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-188
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-188A**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 10**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1094.14** Station: **ST 525+43, 9' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **3** Overburden (ft): **31** Rock (ft): **NA** Total Depth (ft): **31.0**

Logged By: **PT** Date Drilled: **8/10/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					Auger boring from 0 to 23 feet .	1094.1		
5						1090		
10						1085		
15						1080		
20						1075		
25		SS			PARTIALLY WEATHERED ROCK: **PWR** Sampled as very dense gray, brown and tan silty medium to fine **SAND** with rock fragments (slightly micaceous)	1070		50/5"
30		SS SS				1065		33/10" 50/2"
					Auger refusal was encountered at 31 feet below the existing ground surface. No ground water was encountered at the time of boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-188A**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-189**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 11**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1094.34** Station: **ST 526+90, 9' Rt. of BL**

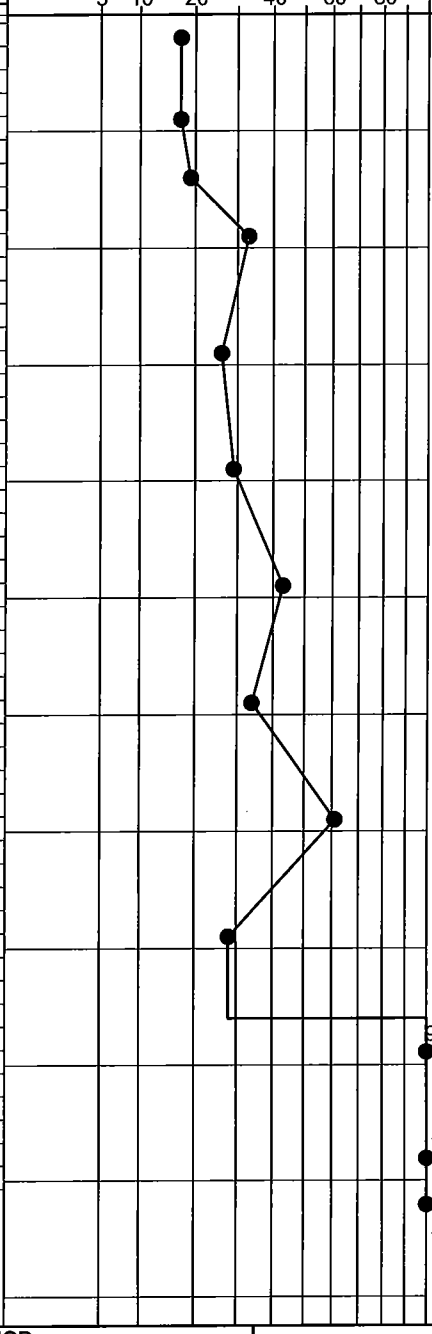
Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **13** Overburden (ft): **51** Rock (ft): **NA** Total Depth (ft): **51.0**

Logged By: **PT** Date Drilled: **8/10/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
		SS			TOPSOIL - 2 inches (FILL)	1094.3	17
					FILL: Medium dense reddish brown silty medium to fine **SAND** with rock fragments (SM)		
5		SS			RESIDUUM: Medium dense and dense brown, reddish brown and gray silty medium to fine **SAND** with occasional rock fragments (micaceous)	1090	17
		SS					19
10		SS				1085	33
15		SS				1080	26
20		SS				1075	29
25		SS				1070	43
30		SS				1065	34
35		SS			- with very dense layer	1060	61
40		SS				1055	28
45		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock and quartz fragements (micaceous) (PWR)	1050	91/11"
50		SS				1045	50/2"
		SS			Auger refusal was encountered at 51 feet below the existing ground surface.		50/1"

STANDARD PENETRATION TEST DATA (blows/foot)



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SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-189**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-189

Sheet 2 of 2

Location: **BENT - 11**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					Ground water was encountered at 39 feet below the existing ground surface at the time of boring completion and 24 hours after boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-189**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-190**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 12**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1096.25** Station: **ST 528+30, 9' Rt. of BL**

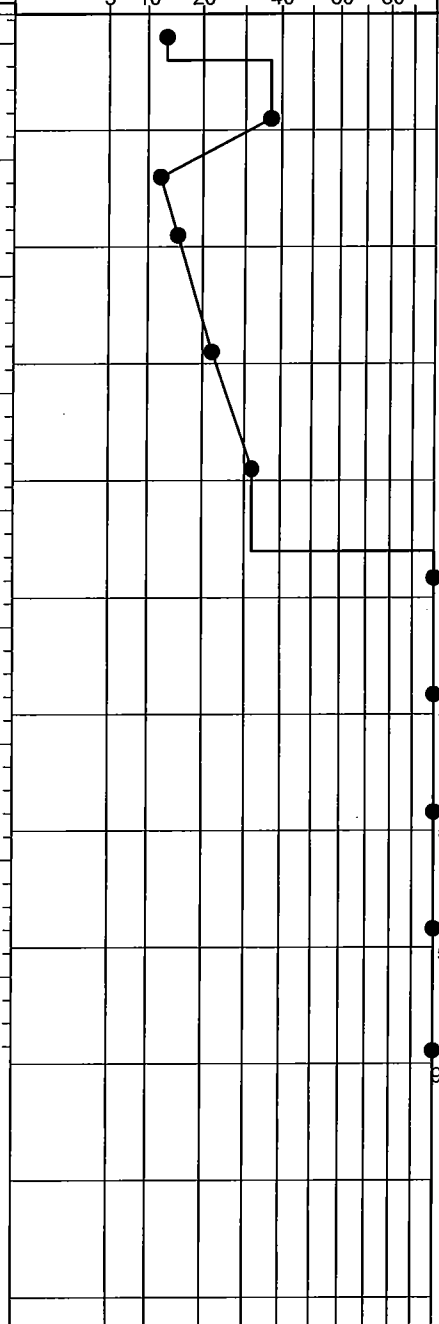
Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **11** Overburden (ft): **45** Rock (ft): **NA** Total Depth (ft): **45.0**

Logged By: **PT** Date Drilled: **8/11/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
		SS			TOPSOIL - 2 inches **FILL**	1096.3	
					FILL: Medium dense reddish brown silty medium to fine **SAND** with rock fragments and roots. **SM**	1095	13
5		SS			RESIDUUM: Dense and medium dense brown, reddish brown and gray silty medium to fine **SAND** with rock and quartz fragments (micaceous).		37
		SS				1090	12
10		SS					15
						1085	
15		SS					22
						1080	
20		SS					32
						1075	
25		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock and quartz fragments (micaceous). **PWR**		50/3"
						1070	
30		SS					50/4"
						1065	
35		SS					50/5"
						1060	
40		SS					50/5"
						1055	
45		SS					94/11"
					Boring terminated at 45 feet below the existing ground surface.		
					No ground water was encountered at the time of boring completion.		

STANDARD PENETRATION TEST DATA (blows/foot)



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SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-190
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-190

Sheet 2 of 2

Location: **BENT - 12**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-190**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-191**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 13**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1110.00** Station: **ST 529+59, 28' Lt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **13** Overburden (ft): **50.5** Rock (ft): **NA** Total Depth (ft): **50.5**

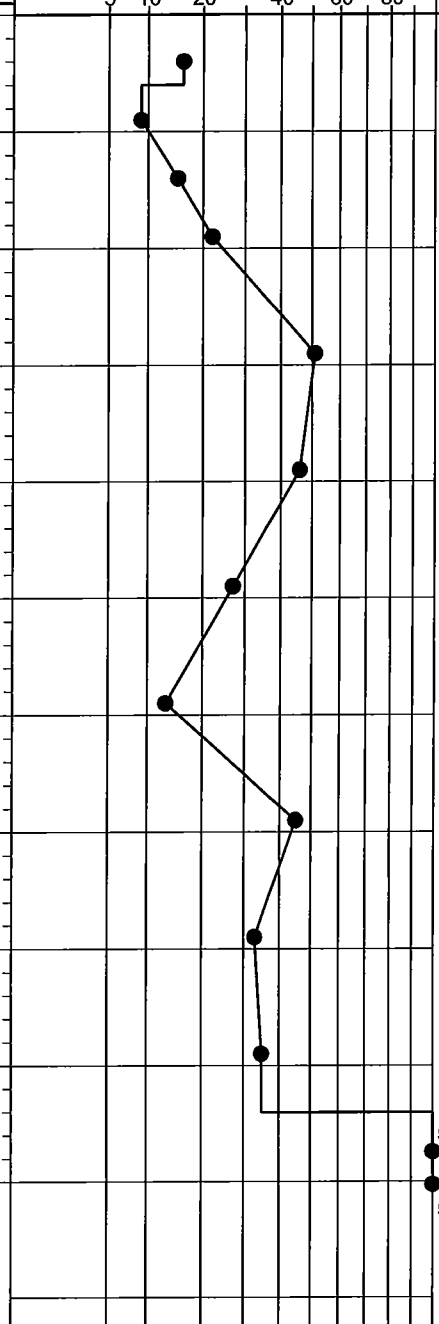
Logged By: **CO** Date Drilled: **8/19/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
		SS			FILL: Medium dense reddish brown silty medium to fine **SAND**	FILL	1110.0	16
5		SS			RESIDUUM: Stiff reddish brown medium to fine sandy **SILT**	ML	1105	9
		SS			Medium dense reddish brown and tan silty medium to fine **SAND** (micaceous)	SM		15
10		SS					1100	22
15		SS			Very dense to dense brown, gray, and white silty medium to fine **SAND** with rock fragments (micaceous)	SM	1095	51
20		SS					1090	46
25		SS			Medium dense brown, gray, black and white silty medium to fine **SAND** (micaceous)	SM	1085	27
30		SS					1080	13
35		SS			Dense brown, gray, black and white silty medium to fine **SAND** (micaceous)	SM	1075	45
40		SS					1070	33
45		SS					1065	35
50		SS SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock fragments	PWR	1060	50/5" 50/3"

Auger refusal was encountered at 50.5 feet below the existing ground

Continued Next Page

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-191**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-191

Sheet 2 of 2

Location: **BENT - 13**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					surface.			
					Ground water was encountered at 44 feet below the existing ground surface 24 hours after boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-191**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-192**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 15**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1082.47** Station: **ST 532+50, 4' Lt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

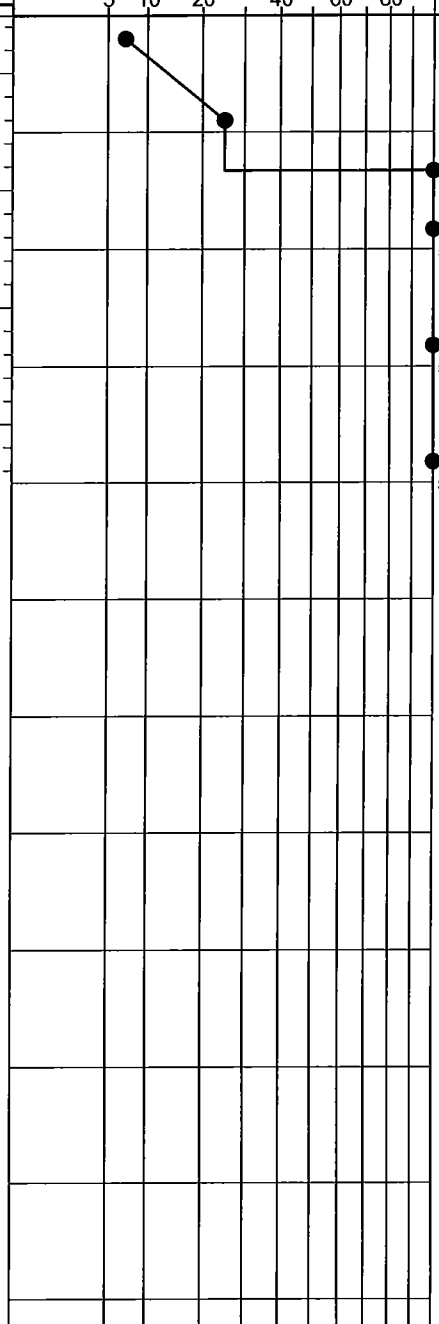
Core Boxes: **NA** Samples: **6** Overburden (ft): **20** Rock (ft): **NA** Total Depth (ft): **20.0**

Logged By: **PT** Date Drilled: **8/11/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
					TOPSOIL - 1 inch **SM**	1082.5	
		SS			RESIDUUM: Loose to medium dense reddish brown and tan silty medium to fine **SAND** (micaceous)	1080	7
5		SS					25
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and orange-brown silty medium to fine **SAND** with rock fragements (micaceous) **PWR**	1075	50/3"
10		SS					50/3"
						1070	
15		SS					50/2"
						1065	
20		SS					50/2"

Boring terminated at 20 feet below the existing ground surface.

Ground water was encountered at 20 feet below the existing ground surface at the time of boring and at 8 feet below the existing ground surface 24 hours after boring completion.



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-192**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-192G**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 14**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1082.30** Station: **ST 531+17, 45' Rt. of BL**

Drilling Equipment: **CME 550/ Gable Drilling Co., Inc.** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **5** Overburden (ft): **12.5** Rock (ft): **NA** Total Depth (ft): **12.5**

Logged By: **PL** Date Drilled: **9/14/09**

VERTICAL DEPTH (ft)	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
				CONCRETE - 5.5 inches	1082.3	
	SS			RESIDUUM: Dense gray and brown silty medium to fine **SAND** (micaceous) **SM**	1080	37
5	SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** **PWR**		50/6"
	SS				1075	84/5.5"
10	SS					50/5"
	SS				1070	50/0"
	RC	71	0	ROCK CORE: Medium hard dark gray **MICA SCHIST**		
	RC	96	64	Hard black and white **GNEISS**		
	RC	100	96			

Auger refusal was encountered at 12.5 feet below the existing ground surface.

Coring was terminated at 25.5 feet below the existing ground surface.

Ground water was encountered at 9 feet below the existing ground surface at the time of boring.

STANDARD PENETRATION TEST DATA (blows/foot): 5 10 20 40 60 80

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-192G
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-193**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 16**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1077.64** Station: **ST 533+90, 5' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **8** Overburden (ft): **30** Rock (ft): **NA** Total Depth (ft): **30.0**

Logged By: **PT** Date Drilled: **8/11/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			TOPSOIL - 2 inches FILL	1077.6		9
					FILL: Loose reddish brown to brown silty medium to fine **SAND** with rock fragments (slightly micaceous). SM	1075		
5		SS						48
		SS			RESIDUUM: Dense to very dense reddish brown and gray silty medium to fine **SAND** with rock fragments (very micaceous).	1070		73
10		SS						59
						1065		
15		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense reddish brown and gray silty medium to fine **SAND** with rock fragments (micaceous). PWR			50/4"
						1060		
20		SS						50/5"
						1055		
25		SS						50/5"
						1050		
30		SS						50/4"

Boring terminated at 30 feet below the existing ground surface.

Ground water was encountered at 24 feet below the existing ground surface at the time of boring and at 3.5 feet below the existing ground surface 24 hours after boring completion.

STANDARD PENETRATION TEST DATA (blows/foot): 5 10 20 40 60 80

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-193**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-194**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 17**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1075.00** Station: **ST 535+00, 12' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **10** Overburden (ft): **40** Rock (ft): **NA** Total Depth (ft): **40.0**

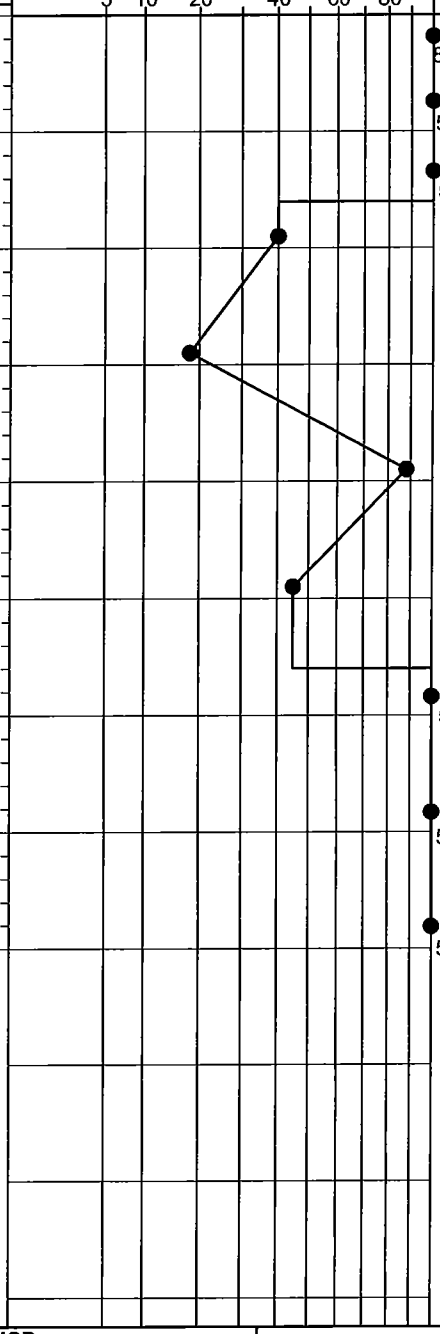
Logged By: **PT** Date Drilled: **8/11/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
		SS			TOPSOIL - 1 inch (PWR)	1075.0	
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock fragments (micaceous)		39/10"
5		SS				1070	50/5"
		SS					50/5"
		SS			RESIDUUM: Medium dense,dense and very dense reddish brown, tan, and gray silty medium to fine **SAND** with rock fragments (micaceous) (SM)	1065	40
10		SS					
15		SS				1060	18
20		SS				1055	88
25		SS				1050	45
30		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense reddish brown and gray silty medium to fine **SAND** with rock fragments (PWR)	1045	50/5"
35		SS				1040	50/3"
40		SS				1035	50/1"

Boring terminated at 40 feet below the existing ground surface

Ground water was encountered at 12 feet below the existing ground surface at the time of boring and at 8.5 feet below the existing ground surface at 24 hours after boring completion.

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-194**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-195**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 18**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1070.11** Station: **ST 536+68, 33' Rt. of BL**

Drilling Equipment: **CME 550 / Gable** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **12** Overburden (ft): **48.5** Rock (ft): **NA** Total Depth (ft): **48.5**

Logged By: **CO** Date Drilled: **9/1/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			RESIDUUM: Medium dense reddish brown and white silty medium to fine **SAND** SM	1070.1		17
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense brown, purple, gray and white silty medium to fine **SAND** with quartz fragments PWR			50/5.5"
5		SS				1065		50/4"
		SS						50/3"
10						1060		
15		SS				1055		95/11.5"
20		SS				1050		85/11.5"
25		SS				1045		50/4"
30		SS				1040		50/3"
35		SS				1035		50/3.5"
40		SS				1030		50/1"
45		SS				1025		50/1"
		SS						50/0"

Auger refusal was encountered at 48.5 feet below the existing ground surface.

Gorund water was encountered at 15.7

Continued Next Page

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-195
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-195

Sheet 2 of 2

Location: **BENT - 18**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					feet below the existing ground surface at the time of boring and at 2.5 feet below the existing ground surface 24 hours after boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-195**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-196**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 19**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1074.25** Station: **ST 538+10, 20' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **12** Overburden (ft): **45** Rock (ft): **NA** Total Depth (ft): **45.0**

Logged By: **PT** Date Drilled: **8/11/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			RESIDUUM: Medium dense white, brown, and gray silty medium to fine **SAND** (micaceous) with quartz fragments.	SM	1074.3		18
5		SS					1070		30
		SS			Very stiff white, brown and gray medium to fine sandy **SILT** with quartz fragments.	ML			16
10		SS					1065		17
					Medium dense white and gray silty medium to fine **SAND** with quartz fragments.	SM			
15		SS					1060		29
20		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense brown, tan and gray silty medium to fine **SAND** with rock and quartz fragments.	PWR	1055		50/5"
25		SS					1050		50/3"
30		SS					1045		50/5"
35		SS					1040		89/5"
40		SS					1035		50/4"
45		SS					1030		50/3"
		SS							50/0"

Auger refusal was encountered at 45 feet below the existing ground surface.

Ground water was encountered at 30 feet below the existing ground surface at the time of boring and at 15.5 feet below the existing ground surface at 24 hours after boring completion.

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-196**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-197**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 20**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1059.34** Station: **ST 539+55, 51' Rt. of BL**

Drilling Equipment: **CME 550 / Gable** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **11** Overburden (ft): **42.5** Rock (ft): **NA** Total Depth (ft): **42.5**

Logged By: **CO** Date Drilled: **9/1/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense reddish brown, orange and gray silty medium to fine **SAND** (slightly micaceous) PWR	1059.3		50/5"
		SS				1055		50/5.5"
5		SS						50/5"
		SS				1050		50/2"
10					- with rock fragments			
		SS				1045		95/10"
15								
		SS				1040		50/2"
20								
		SS			Very dense white, brown and light orange silty coarse to fine **SAND** PWR	1035		50/3"
25								
		SS				1030		91/11"
30								
		SS				1025		50/5.5"
35								
		SS				1020		50/4.5"
40								
		SS						50/0"

Auger refusal was encountered at 42.5 feet below the existing ground surface.

Ground water was encountered at 7 feet below the existing ground surface at the time of boring and at 1 feet below the existing ground surface 24 hours after boring completion.

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-197
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-198**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 21**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1060.43** Station: **ST 540+90, 9' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **8** Overburden (ft): **28** Rock (ft): **NA** Total Depth (ft): **28.0**

Logged By: **PT** Date Drilled: **8/12/09**

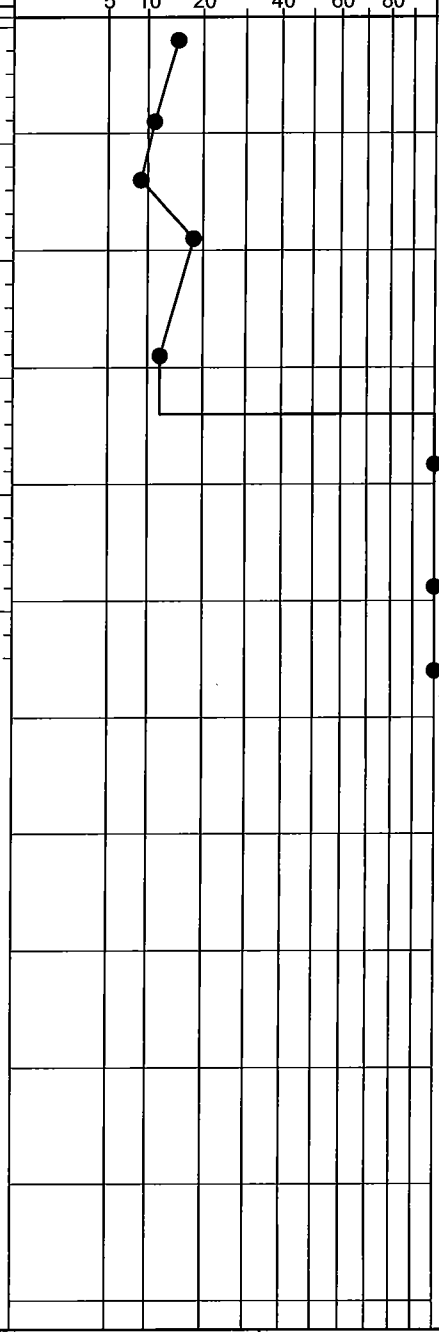
VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
		SS			RESIDUUM: Medium dense and loose reddish brown, gray, and tan silty medium to fine **SAND** **SM**	1060.4	15
5		SS				1055	11
		SS					9
10		SS				1050	18
15		SS				1045	12
20		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray silty medium to fine **SAND** with quartz fragments. **PWR**	1040	50/4"
25		SS				1035	81/4"
		SS					50/0"

Auger refusal was encountered at 28 feet below the existing ground surface.

Ground water was encountered at 14 feet below the existing ground surface 6 hours after boring completion.

Boring caved in at 22 feet below the existing ground surface 24 hours after boring completion.

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-198**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-199**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 22**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1054.45** Station: **ST 542+30, 9' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

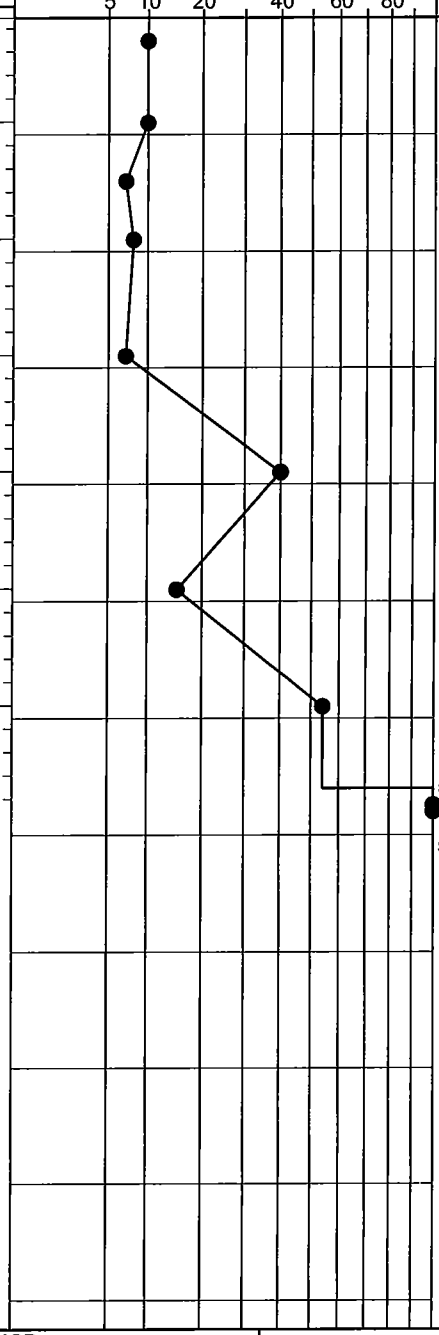
Core Boxes: **NA** Samples: **10** Overburden (ft): **34** Rock (ft): **NA** Total Depth (ft): **34.0**

Logged By: **PT** Date Drilled: **8/12/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			TOPSOIL - 2 inches **FILL**	1054.5		10
					FILL: Loose reddish brown and tan silty medium to fine **SAND** (slightly micaceous) **SM**			
5		SS			RESIDUUM: Loose, medium dense and dense reddish brown, brown, and gray silty medium to fine **SAND** (micaceous) with rock fragments.	1050		10
		SS						7
10		SS				1045		8
15		SS				1040		7
20		SS				1035		40
25		SS				1030		15
30		SS			- becoming very dense	1025		54
		SS						50/5"
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray silty medium to fine **SAND** with rock fragements. **PWR**			50/0"

Auger refusal was encountered at 34 feet below the existing ground surface.

Groundwater was encountered at 28 feet below the existing ground surface at the time of boring completion and 20 feet below the existing ground surface 24 hours after boring completion.



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-199**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-200**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 23**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1039.19** Station: **ST 543+65, 9' Rt. of BL**

Drilling Equipment: **CME 550 / Gable** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **8** Overburden (ft): **27.5** Rock (ft): **NA** Total Depth (ft): **27.5**

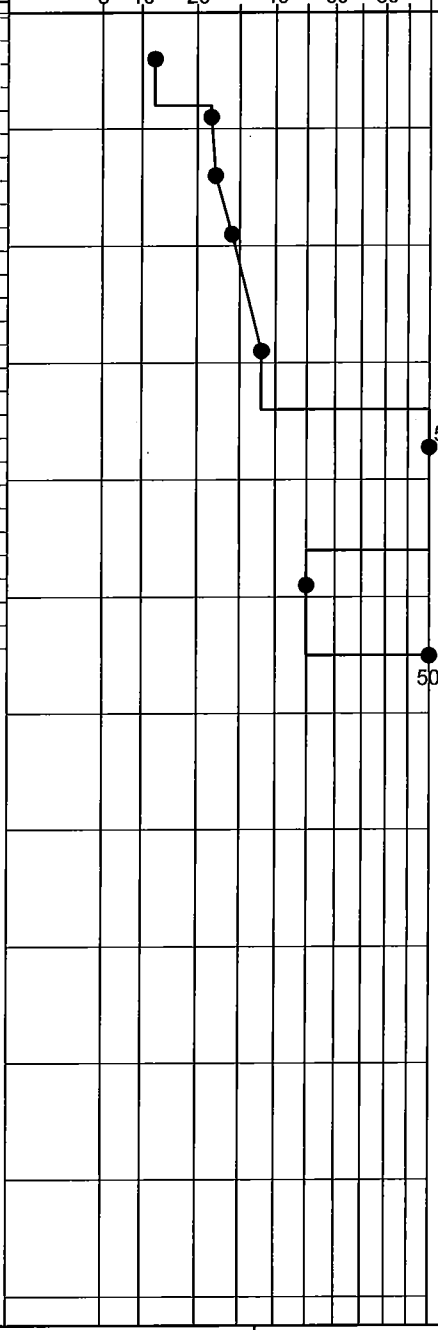
Logged By: **CO** Date Drilled: **9/1/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
		SS			FILL: Medium dense reddish brown silty medium to fine **SAND** with roots (micaceous)	FILL	1039.2
5		SS			RESIDUUM: Medium dense to dense brown, tan, white and black silty medium to fine **SAND** (micaceous)	SM	1035
		SS					
10		SS					1030
15		SS					1025
20		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense brown, tan, black and white silty medium to fine **SAND** (micaceous)	PWR	1020
25		SS			RESIDUUM: Dense brown, white and black silty medium to fine **SAND** (micaceous)	SM	1015
		SS			Auger refusal was encountered at 27.5 feet below the existing ground surface.		

No ground water was encountered at the time of boring completion.

Boring caved in to 12 feet below the existing ground surface.

STANDARD PENETRATION TEST DATA (blows/foot)



N-VALUE

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-200
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-201**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 24**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1040.89** Station: **ST 544+70, 5' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **11** Overburden (ft): **45** Rock (ft): **NA** Total Depth (ft): **45.0**

Logged By: **PT** Date Drilled: **8/12/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			TOPSOIL - 3 inches (FILL)	1040.9		11
					FILL: Medium dense reddish brown silty medium to fine **SAND** with rock fragments and roots (slightly micaceous) (SM)	1040		
5		SS						16
		SS			RESIDUUM: Loose and medium dense reddish brown, brown, and gray silty medium to fine **SAND** (slightly micaceous)	1035		8
10		SS				1030		7
15		SS				1025		5
20		SS				1020		7
25		SS				1015		6
30		SS				1010		6
35		SS				1005		20
40		SS				1000		25
45		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with quartz fragments (slightly micaceous) (PWR)			50/2"

Auger refusal was encountered at 45 feet below the existing ground surface.

Ground water was encountered at 14 feet

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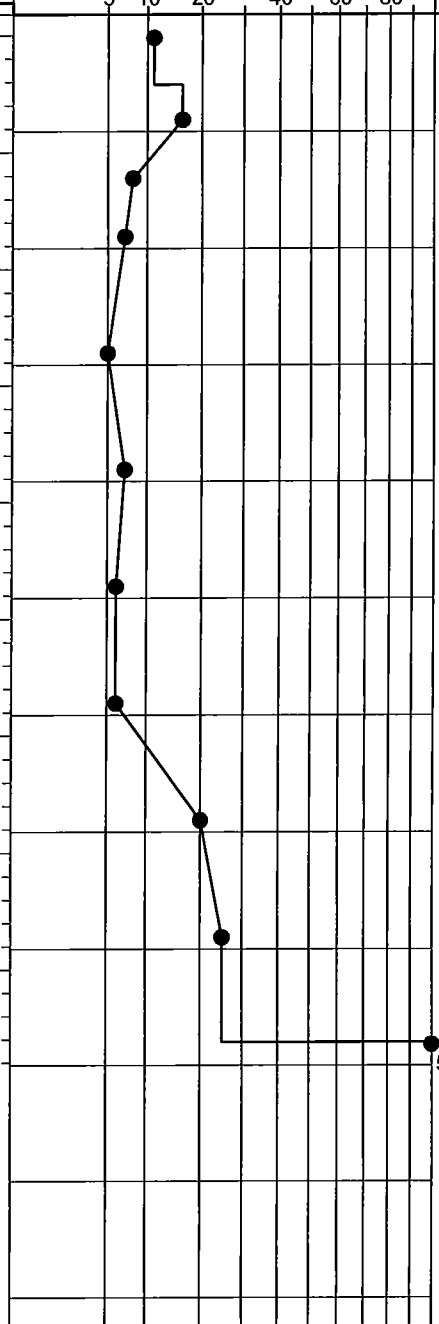


SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-201
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-201

Location: **BENT - 24**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					below the existing ground surface at the time of boring and 24 hours after boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-201**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-202**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 25**

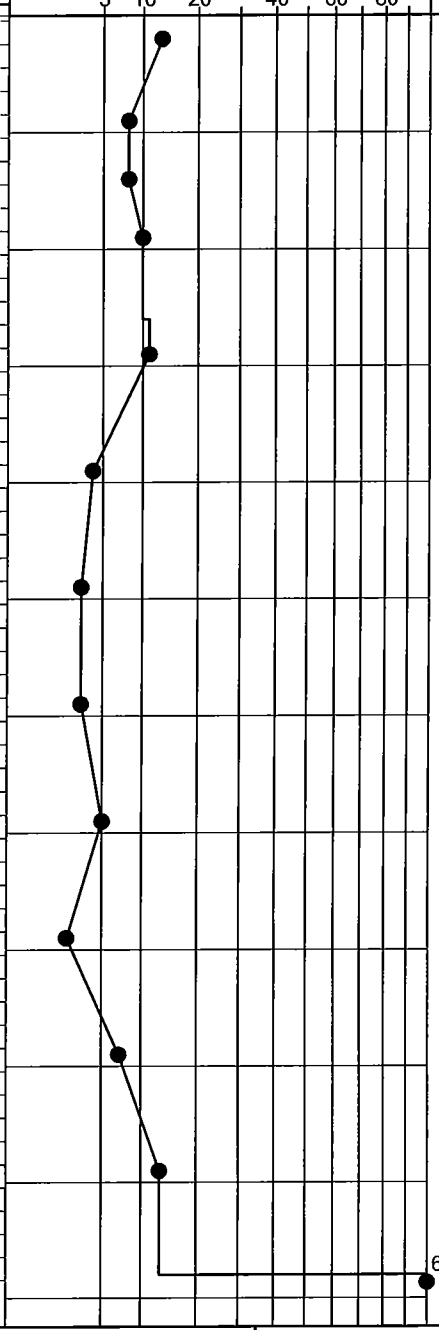
Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1036.22** Station: **ST 546+20, 24' Rt. of BL**

Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **16** Overburden (ft): **70** Rock (ft): **NA** Total Depth (ft): **70.0**

Logged By: **PT** Date Drilled: **8/13/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)
		SS			TOPSOIL - 1 inch / FILL	1036.2
		SS			FILL: Medium dense and loose reddish brown silty medium to fine **SAND** with roots and rock fragments.	1035
5		SS				1030
		SS				
		SS			Loose brown and black silty medium to fine **SAND** with rock, decayed wood and roots / FILL	
10		SS				1025
		SS			RESIDUUM: Medium dense and very loose reddish brown and gray silty medium to fine **SAND** (micaceous) / SM	
15		SS				1020
20		SS				1015
		SS			Very loose and loose gray and brown silty medium to fine **SAND** with quartz fragments (slightly micaceous) / SM	
25		SS				1010
30		SS				1005
35		SS				1000
40		SS				995
45		SS				990
50		SS			- becoming medium dense	985
55		SS			PWR	



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SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-202**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-202

Location: **BENT - 25**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with quartz fragments (slightly micaceous)	980		
60		SS				975		38/11"
65		SS				970		91/11.5"
70		SS						50/3"

Boring terminated at 70 feet below the existing ground surface.

Ground water was encountered at 25 feet below the existing ground surface at time of boring completion and 23 feet below the existing ground surface 24 hours after boring completion.

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-202**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-203**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 26**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1026.62** Station: **ST 547+60, 9' Rt. of BL**

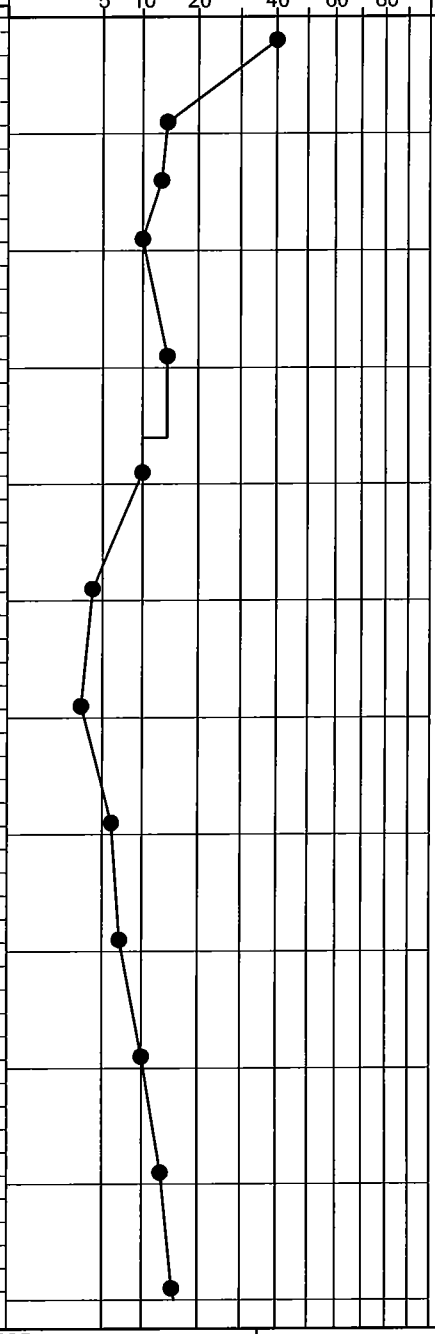
Drilling Equipment: **CME 550 / MACTEC** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **18** Overburden (ft): **80** Rock (ft): **NA** Total Depth (ft): **80.0**

Logged By: **PT** Date Drilled: **8/12/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)
		SS			TOPSOIL - 1 inch / FILL	1026.6
		SS			FILL: Medium dense and dense tan, gray, and brown silty medium to fine **SAND** with rock fragments and roots (micaceous).	1025
5		SS				
		SS				1020
10		SS				1015
15		SS				1010
20		SS			RESIDUUM: Very loose, loose, and medium dense gray, tan, and reddish brown silty medium to fine **SAND** (micaceous). SM	1005
25		SS				1000
30		SS				995
35		SS				990
40		SS				985
45		SS				980
50		SS				975
55		SS				

STANDARD PENETRATION TEST DATA (blows/foot)



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SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-203**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

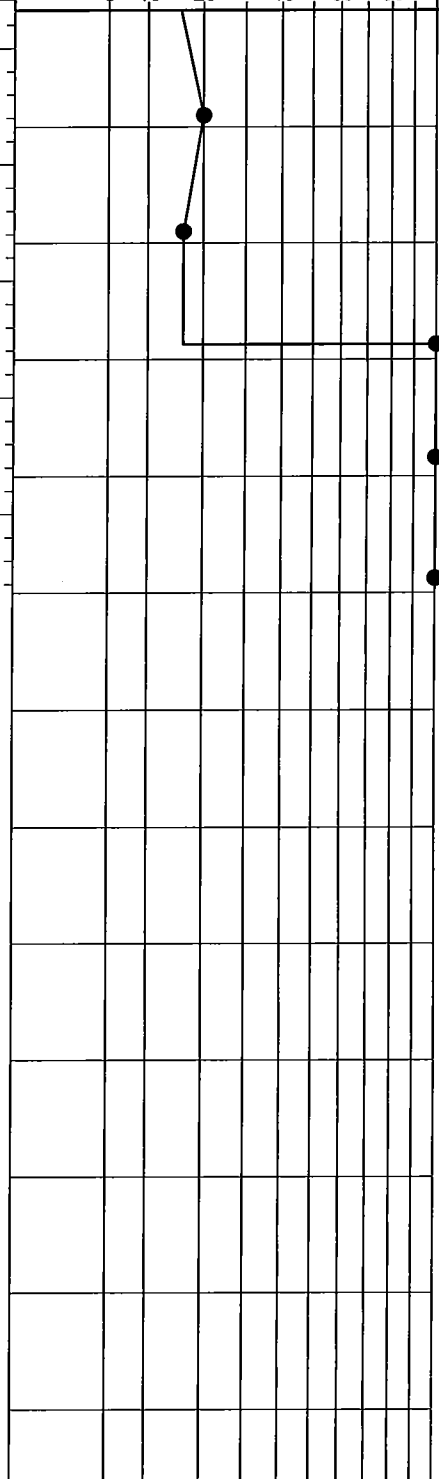
HOLE No. B-203

Sheet 2 of 2

Location: **BENT - 26**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
60		SS				970		20
65		SS				965		16
70		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** (slightly micaceous). **PWR**	960		62/8"
75		SS				955		50/5"
80		SS			Boring terminated at 80 feet below the existing ground surface.	950		50/9"

Ground water was encountered at 35 feet below the existing ground surface at the time of boring completion and at 21 feet below the existing ground surface 24 hours after boring completion.



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-203**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-204**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 27**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **1022.29** Station: **ST 549+00, 9' Rt of BL**

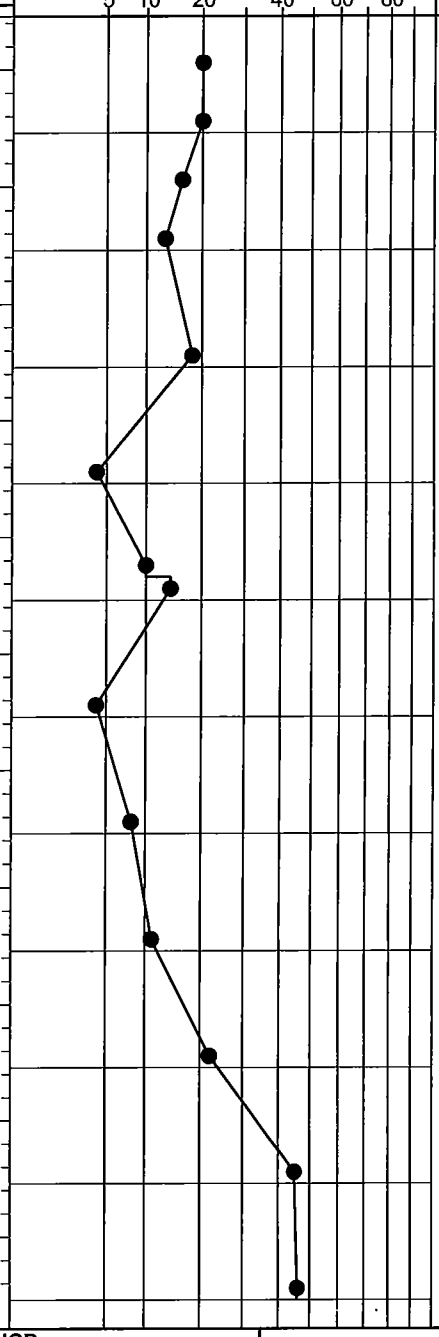
Drilling Equipment: **CME 550/ Gable Drilling Co., Inc.** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **16** Overburden (ft): **70** Rock (ft): **NA** Total Depth (ft): **70.0**

Logged By: **MT** Date Drilled: **8/25/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
		SS			FILL: Medium dense tan, brown and gray silty medium to fine **SAND** with rock fragments (micaceous)	FILL	1022.3	
		SS					1020	20
5		SS						20
		SS					1015	16
10		SS						13
							1010	
15		SS						18
							1005	
20		SS			Very loose and loose reddish brown silty medium to fine **SAND** with wood pieces and roots	FILL		4
		SS					1000	
25		SS			RESIDUUM: Medium dense brown and gray silty medium to fine **SAND** with quartz fragments	SM		10 14
30		SS			Very loose reddish brown and gray silty medium to fine **SAND**	SM	995	4
35		SS			Loose and medium dense gray and brown silty medium to fine **SAND**	SM	990	8
							985	
40		SS						11
							980	
45		SS						22
50		SS			Very dense gray and brown silty medium to fine **SAND**	SM	975	45
							970	
55		SS						46

STANDARD PENETRATION TEST DATA (blows/foot)



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SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-204**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-204

Sheet 2 of 2

Location: **BENT - 27**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
						965		
60		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray, white and brown silty medium to fine **SAND** PWR			50/5.5"
						960		
65		SS						50/4"
						955		
70		SS						93/9"

Boring was terminated at 70 feet below the existing ground surface.

Ground water was encountered at 18 feet below the existing ground surface at the time of boring and 24 hours after boring completion.

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-204**

SPTN 171-3463BFI.GPJ 10/14/09

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-205**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 28**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1016.19** Station: **ST 550+38, 2' Rt. of BL**

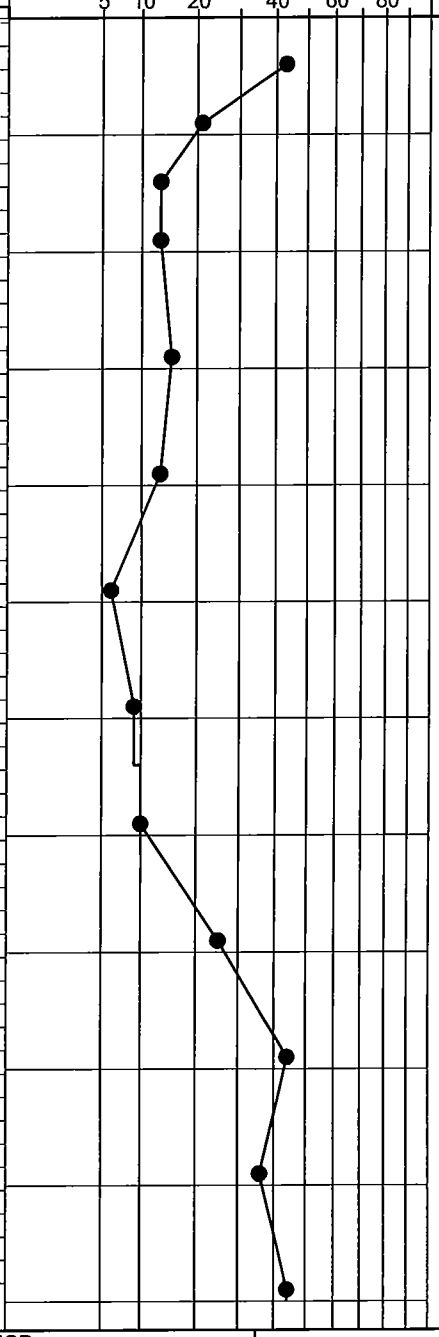
Drilling Equipment: **CME 550/ Gable Drilling Co., Inc.** Drilling Method: **HSA Auto Hammer**

Core Boxes: **NA** Samples: **15** Overburden (ft): **64** Rock (ft): **NA** Total Depth (ft): **64.0**

Logged By: **MT** Date Drilled: **8/24/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
		SS			FILL: Dense to medium dense reddish brown, tan, and white silty medium to fine **SAND** with rock fragments (slightly micaceous)	FILL	1016.2	
		SS					1015	43
5		SS						21
		SS					1010	13
10		SS						13
							1005	
15		SS						15
							1000	
20		SS						13
							995	
25		SS			Loose reddish brown and white silty medium to fine **SAND** with wood pieces	FILL		6
							990	
30		SS			Loose gray and white silty medium to fine **SAND**	FILL		9
							985	
35		SS			RESIDUUM: Loose gray and white silty medium to fine **SAND** (slightly micaceous)	SM		10
							980	
40		SS			Medium dense to dense gray and white silty medium to fine **SAND** with quartz fragments (slightly micaceous)	SM		25
							975	
45		SS						44
							970	
50		SS						36
							965	
55		SS						44

STANDARD PENETRATION TEST DATA (blows/foot)



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SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-205**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-205

Sheet 2 of 2

Location: **BENT - 28**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
						960		
60		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and white silty medium to fine **SAND** **PWR**	955		50/11"
		SS						50/2"
					Auger refusal was encountered at 64 feet below the existing ground surface.			
					Groundwater was encountered at 18 feet below the existing ground surface at the time of boring completion and 24 hours after boring completion.			

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

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

Hole No. **B-205**

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**	**HOLE No. B-206**
Location: **Cobb County, Georgia**	Sheet 1 of 2
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**	Location: **BENT - 29**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **1008.34** Station: **ST 551+75, 26' Lt. of BL**

Drilling Equipment: **CME 550/ Gable Drilling Co., Inc.** Drilling Method: **HSA Auto Hammer**

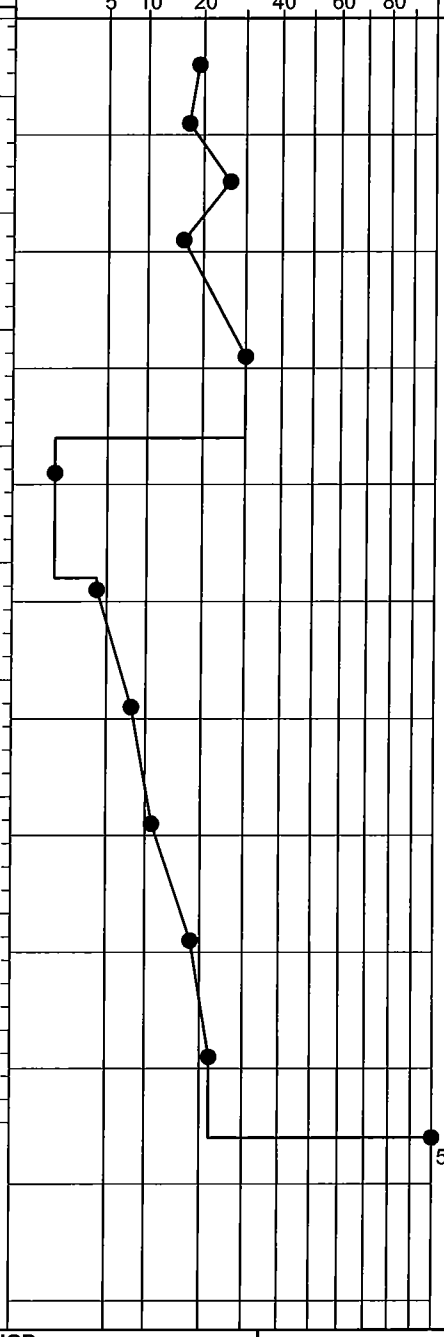
Core Boxes: **NA** Samples: **12** Overburden (ft): **48** Rock (ft): **NA** Total Depth (ft): **48.0**

Logged By: **MT** Date Drilled: **8/24/09**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)
		SS			FILL: Medium dense reddish brown and gray silty medium to fine **SAND** (slightly micaceous) **FILL**	1008.3
5		SS				1005
		SS				
10		SS				1000
15		SS				995
20		SS			POSSIBLE ALLUVIUM: no recovery	990
25		SS			RESIDUUM: Very loose to loose gray, black, brown and white silty medium to fine **SAND** **SM**	985
30		SS				980
35		SS			Medium dense gray, black, brown and white silty medium to fine **SAND** **SM**	975
40		SS				970
45		SS				965
		SS			Auger refusal was encountered at 48 feet below the existing ground surface.	

Ground water was encountered at 15 feet below the existing ground surface at the time of boring completion and at

Continued Next Page



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-206
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-206

Location: **BENT - 29**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	N-VALUE
					17 feet below the existing ground surface 24 hours after boring completion.			

SAMPLER TYPE
SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD
HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
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Hole No. **B-206**