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
Atlanta, Georgia

Prepared By

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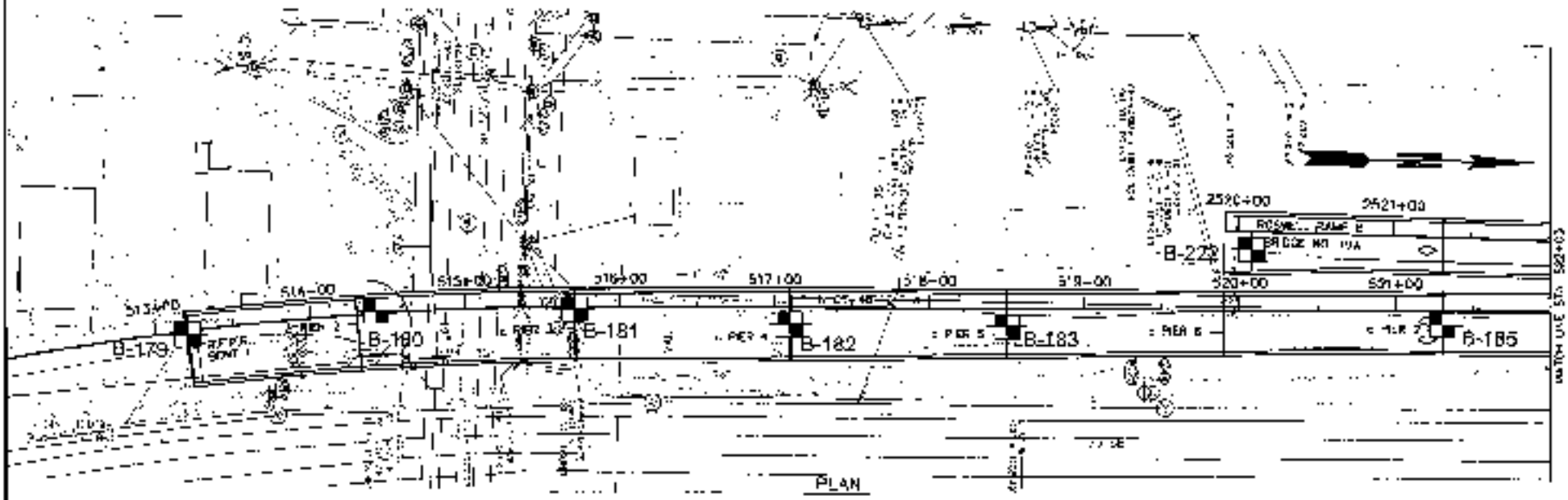
Bent No.	Reference Boring No.	Top of PWR	Auger Refusal
1	B-179	1045	1043
2	B-180	-	1036
3	B-181	1051	1050.5
4	B-182	1040	1038.5
5	B-183	1008	1006
6	B-222	1031.5	-
7	B-185	1035	1025
8	B-186	1032	1030
9	B-187	1040	1035
10	B-188/B-188A	1071/1071	1069/1063
11	B-189	1051	1043
12	B-190	1073	-
13	B-191	1063	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	1056	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

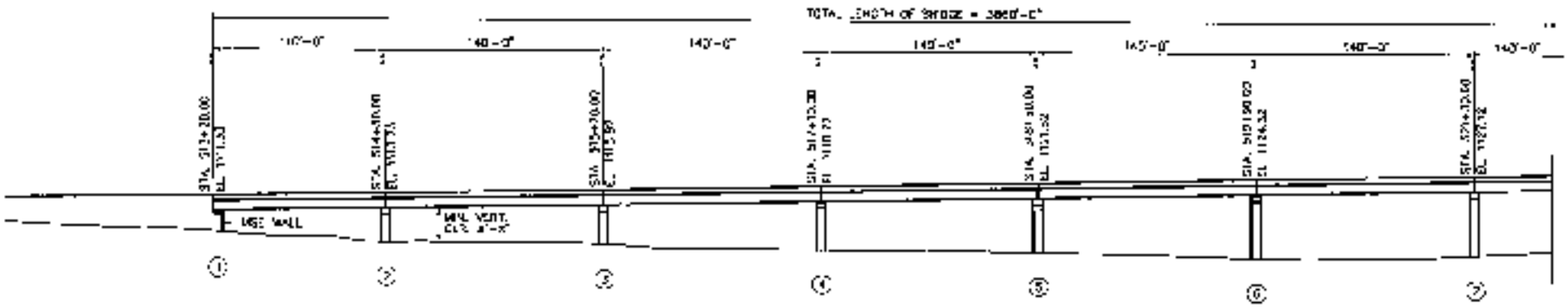
Pile Type	Load Transfer (%)		Design Load
	Friction	End Bearing	
H-Piles	20	80	HP 10x42 = 55 Tons
			HP 12x53 = 70 Tons
			HP 14x73 = 96 Tons
			HP 14x89 = 117 Tons

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

Bent No.	Reference Boring No.	Bottom of Drilled Shaft	Bottom of Spread Footing	H-Pile Minimum Tip	H-Pile 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)	1083±	1083±
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			960±	978±
26	B-203			956±	954±
27	B-204			964+	964±
28	B-205			957±	955±
29	B-206			960±	960±





LEGEND:

BORING LOCATION
B-179

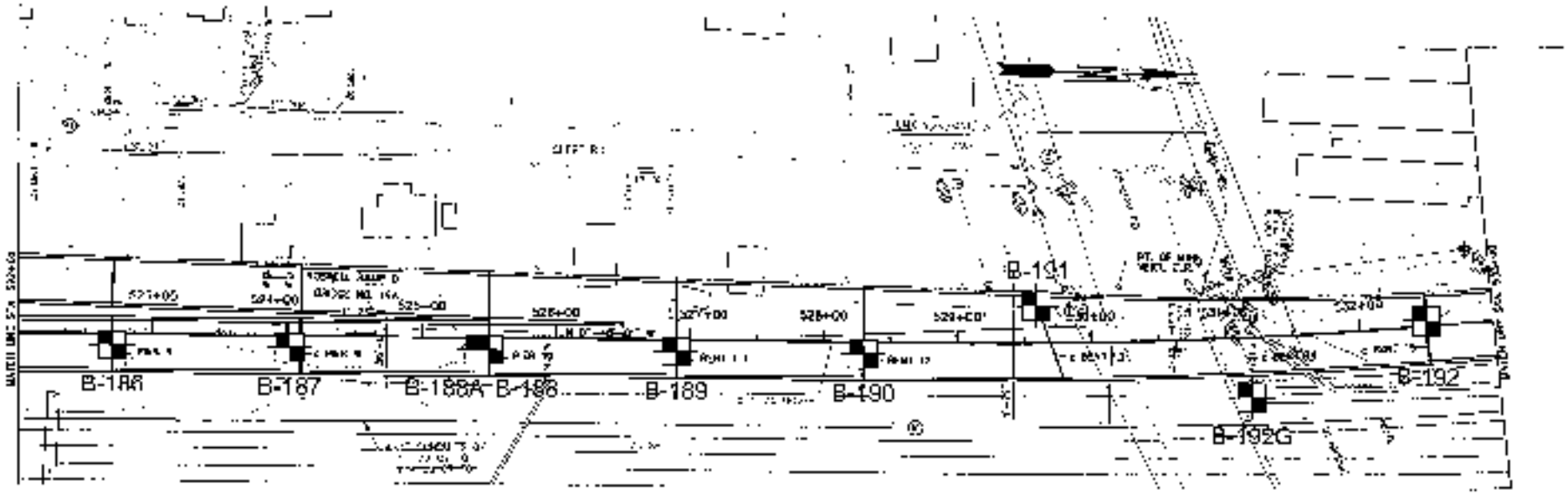
GDOT PROJECT NUMBER
NH-300-0073-03(242)
PI No. 714130

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

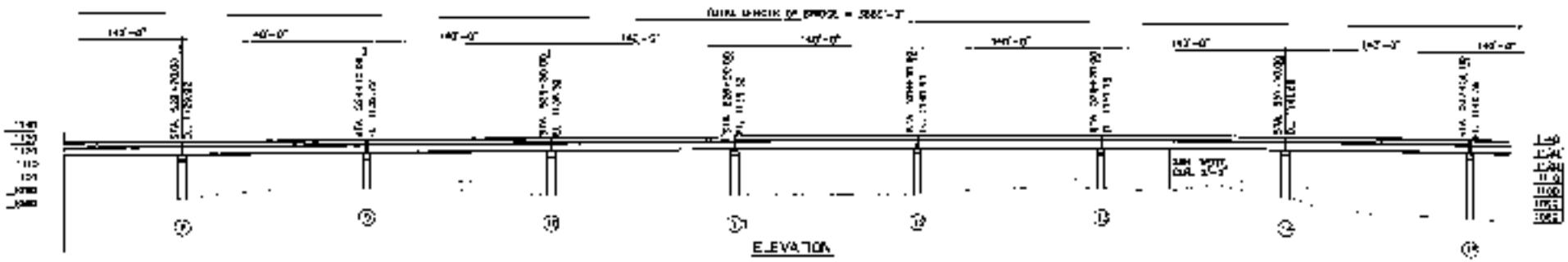
WELLMER ENGINEERING INC.

WELLMER ENGINEERING INC. CONSTRUCTION SERVICES
GEOTECHNICAL SERVICES AND ENGINEERING
3072 PIEDMONT ROAD - SUITE 100
ATLANTA, GA 30305-4203

FIGURE 2 (SHEET 1 OF 4)
BORING LOCATION PLAN
BRIDGE 16: I-75 REVERSIBLE LANES OVER SR 120
NORTH WEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WELLMER PROJECT No. ATL-171-3463BFS



PLAN



ELEVATION

LEGEND:

BORING LOCATION

B-186

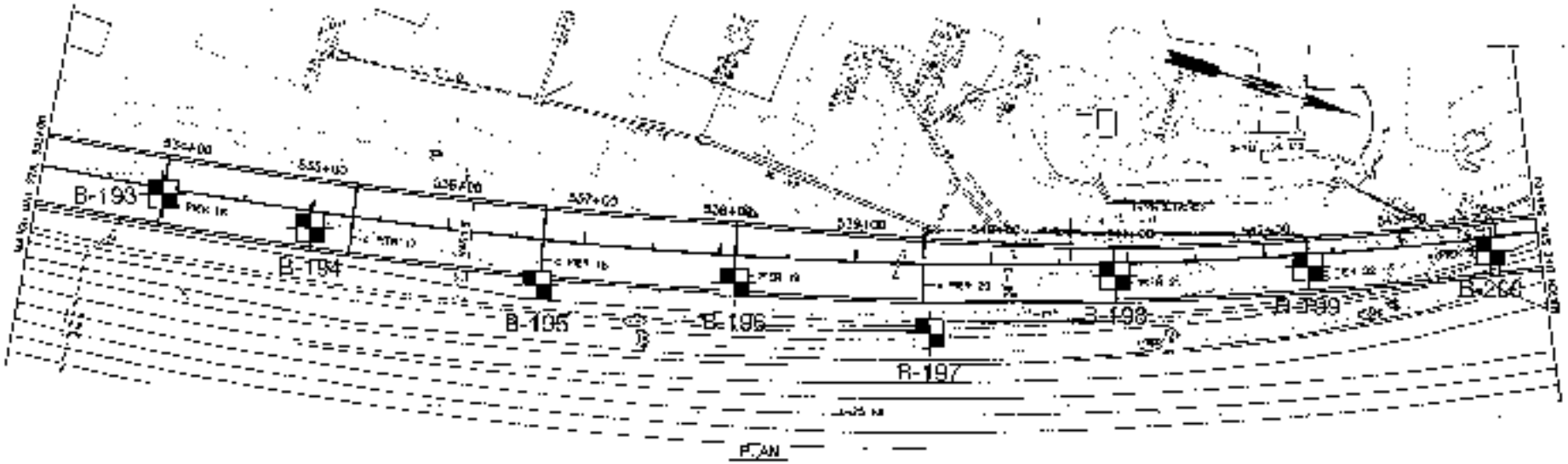
SCALE: 1" = 100'	
DATE: 10/16/2009	
DRAWN BY: NJW	
REVIEWED BY: NK	

WILLMER ENGINEERING INC.

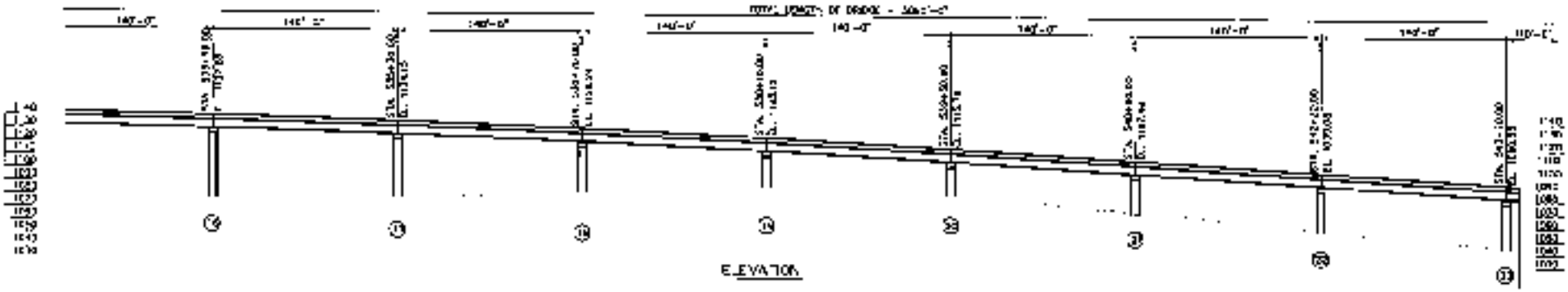
GEOTECHNICAL ENGINEERING · MATERIALS TESTING · SERVICES
ENVIRONMENTAL SERVICES AND ENGINEERING
5772 PLEASANTDALE ROAD · SUITE 100
ATLANTA, GA 30340-2310

FIGURE 2 (SHEET 2 OF 4)
BORING LOCATION PLAN
BRIDGE 19: I-75 REVERSIBLE LANES OVER SR 120
NORTH WEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-17-54633FIS

GDOT PROJECT NUMBER
N 1000-0070 03(242)
PI No. 710130



PLAN



ELEVATION

LEGEND:

B-193 BORING LOCATION

GDOT PROJECT NUMBER
NHDDC-0073-03(242)
PI No. 712120

SCALE: 1" = 120'

DATE: 10/13/2008

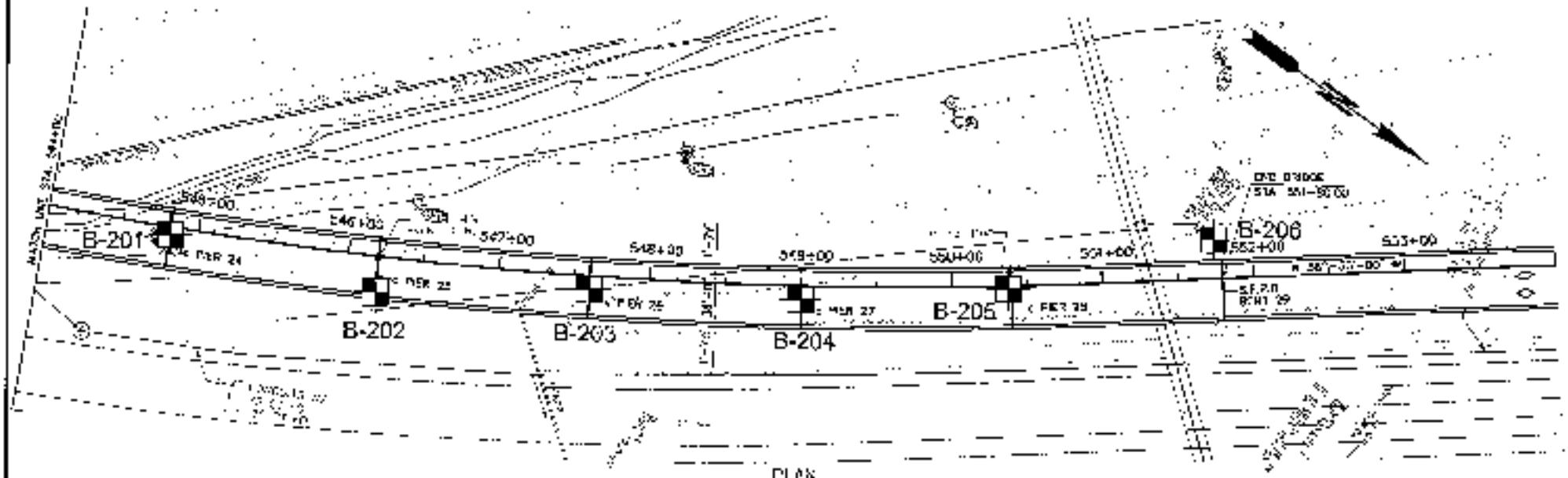
DRAWN BY: MJW

REVIEWED BY: MK

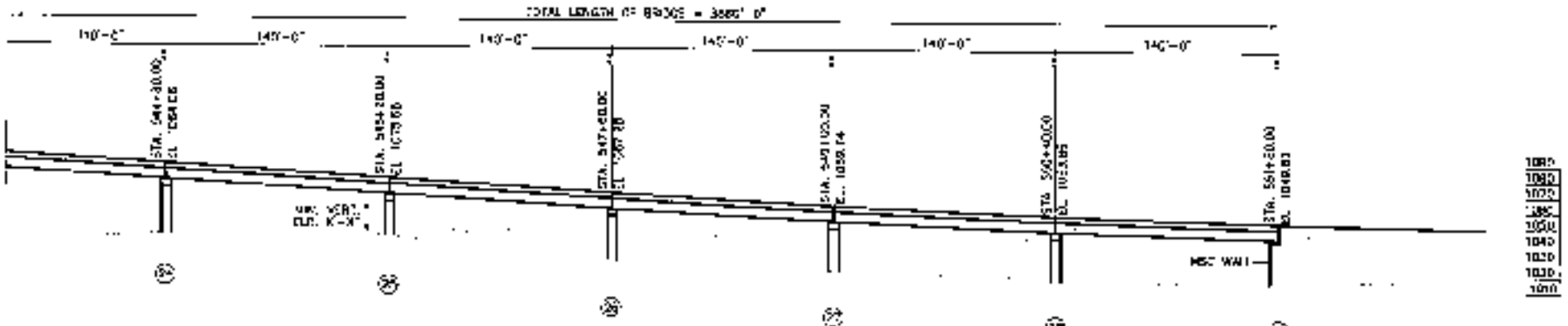
WILLMER ENGINEERING INC.

GEOTECHNICAL ENGINEERING AND TESTING SERVICES
ENVIRONMENTAL CONSULTING AND ENGINEERING
3773 RIVER HILLS PLACE, SUITE 100
ATLANTA, GA 30339-4233

FIGURE 2 (SHEET 3 OF 4):
BORING LOCATION PLAN
BRIDGE ID: I-75 REVERSIBLE LANES OVER SR 120
NORTHWEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-171-0469BHS



PLAN



ELEVATION

LEGEND:

HORING LOCATION

B-201

GDOT PROJECT NUMBER
NHPP-0078-03(242)
PI No. 714150

SCALE: 1" = 100'	WILLMER ENGINEERING INC.	FIGURE 2 (SHEET 1 OF 2)
DATE: 10/19/2009		BORING LOCATION PLAN
DRAWN BY: JJW		BRIDGE 19 I-75 REVERSIBLE LANES OVER SR 120
REVIEWED BY: MK		NORTHWEST CORRIDOR PROJECT
		COBB COUNTY, GEORGIA
		WILLMER PROJECT No. ATL-171-3463GFB

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)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
					ASPHALT - 3 inches	GAB	1089.5		
					GAB - 3 inches	FILL			
		SS			FILL: Loose reddish brown silty medium to fine **SAND** with rock fragments	FILL			
5		SS			Stiff reddish brown medium to fine sandy silty **CLAY** with rock fragments	ML	1085		14
		SS			RESIDUUM: Very stiff to stiff reddish brown medium to fine sandy clayey **SILT**				19
10		SS					1080		19
					Loose orange brown, brown and gray silty medium to fine **SAND** (slightly micaceous)	SM			
15		SS					1075		7
20		SS					1070		7
25		SS					1065		8
30		SS					1060		9
					Medium dense gray and brown silty medium to fine **SAND** with quartz fragments (slightly micaceous)	SM			
35		SS					1055		16
40		SS					1050		17
45		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray silty medium to fine **SAND** with rock fragments	PWR	1045		50/4"
		SS							50/0"

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

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

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Auger
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**
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**

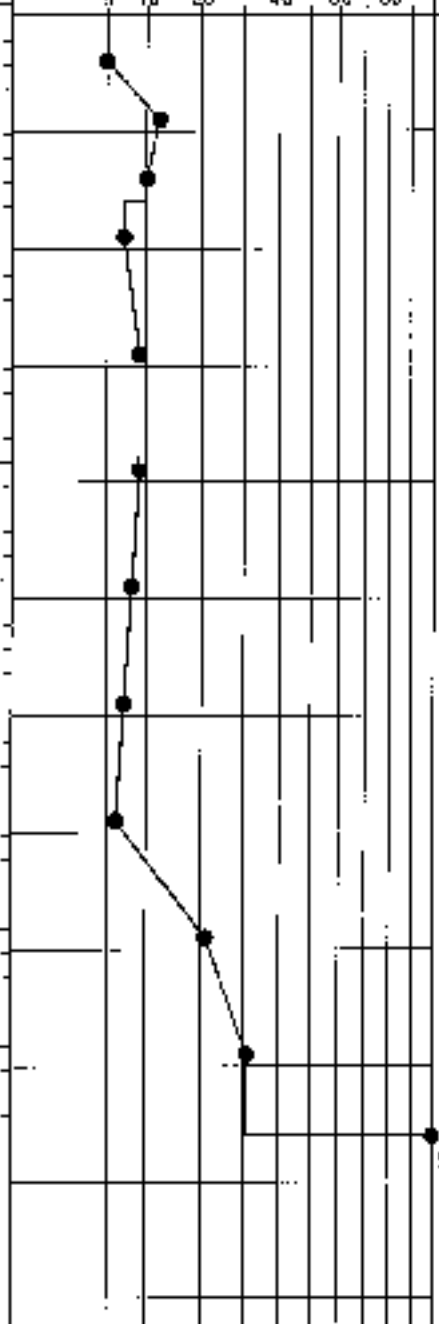
Core Boxes: **NA** Samples: **12** Overburden (ft) **48** Rock (ft): **NA** Total Depth (ft): **48.0**

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

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	RECS	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
		SS			FILL: Loose reddish brown medium to fine sandy **SILT**	FILL	1084.1
5		SS			Medium dense to loose reddish brown silty medium to fine **SAND**	FILL	1080
		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

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 - Drilling Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **B-180**

SFN 171-3463BF.GPJ 10/1/09

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 Barrel: 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)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		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		13
5		SS					1080		32
		SS							7
		SS			RESIDUUM: Loose brown silty medium to fine **SAND** with roots	SM	1075		7
10		SS							
					Loose orange brown, brown and gray silty medium to fine **SAND** (slightly micaceous)	SM	1070		5
15		SS							
20		SS					1065		8
							1060		8
25		SS							
30		SS					1055		6
					Medium dense brown and gray silty medium to fine **SAND**	SM			
		SS							28
35		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock fragments	PWR			50/1"

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.

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-181

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 1 of 2

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)	STANDARD PENETRATION TEST DATA (blows/foot)	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		9
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			PARTIALLY WEATHERED ROCK. Sampled as very dense gray and orange brown silty medium to fine **SAND** with rock fragments	PWR	1040		5
		SS							50/2" 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

Continued Next Page

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

WILLMER ENGINEERING INC.

Project: Bridge 19: I-75 Reversible lanes over SR 120
Location: Cobb County, Georgia
Project Number: 171-3463BF13; 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"
CUT - 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 171-3463BF13.GPJ - 001479

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 1 of 2

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**

VERT CAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	RECS	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			TOPSOIL - 2 inches / FILL	1082.1		5
					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)			12
		SS				1075		8
10		SS						10
						1070		
15		SS						9
						1065		
20		SS						6
						1060		
25		SS						8
						1055		
30		SS						6
						1050		
35		SS						7
						1045		
					Loose and medium dense gray and brown silty medium to fine **SAND** (micaceous) / SM			
40		SS						8
						1040		
45		SS						8
						1035		
50		SS						11
						1030		
55		SS						7

Continued Next Page

SAMPLER TYPE
SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CI. - 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**
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
65		SS			Dense gray silty medium to fine **SAND** with quartz fragments (slightly micaceous)	1020 SM		33
70		SS				1015		42
75		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock fragments	1010 PWR		50/4"
		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"
CL - 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
Location: Cobb County, Georgia
Project Number: 171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130

HOLE No. B-222

Sheet 1 of 2

Location: BENT - B

Azmuth: -- 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)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			FILL: Firm and stiff brown and reddish brown medium to fine sandy **CLAY**	FILL	1080.5		
5		SS					1075		11, 12, 8
		SS							
10		SS					1070		10
					RESIDUUM: Loose brown and gray silty medium to fine **SAND** (micaceous)	SM			
15		SS					1065		9
20		SS					1060		8
25		SS					1055		6
30		SS					1050		5
35		SS					1045		8
40		SS					1040		9
					Dense to medium dense brown and gray silty medium to fine **SAND** (micaceous)	SM			
45		SS					1035		46
		SS							
50		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense white, gray and black silty medium to fine **SAND** (micaceous)	PWR	1030		28, 50/5"
55		SS							50/6.5"

Continued Next Page

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 Auger
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**
Location: **Cobb County, Georgia**
Project Number: **171-3463BFI3; GDOT Proj. #: NH000-0073-03(242); PI #: 714130**

HOLE No. B-222

Sheet 2 of 2

Location: **BENT - 6**

VERTICAL DEPTH (ft)	HAND-D 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		
60		SS				1020		50/4"
		SS			Boring was terminated at 63.5 feet below the existing ground surface.			50/1.5"

Ground water was encountered at 21 feet below the existing ground surface at 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-222

WELLMER 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: **171-3463BF13; 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)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			RESIDUUM: Medium dense reddish brown and tan silty medium to fine **SAND**	SM	1078.7		15
		SS			Stiff orange brown medium to fine sandy **SILT**	ML	1075		12
5		SS							9
		SS			Loose reddish brown and gray silty medium to fine **SAND** (micaceous)	SM	1070		7
10									
		SS					1065		5
15									
		SS					1060		6
20									
		SS					1055		5
25									
		SS					1050		6
30									
		SS					1045		10
35									
					Medium dense gray and white silty medium to fine **SAND** (micaceous)	SM	1040		26
40		SS							
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense brown, white, and gray silty medium to fine **SAND** with rock fragments	PWR	1035		50/4"
45									
		SS					1030		50/4"
50									
		SS			Auger refusal was encountered at 53.5				50/0"

Continued Next Page

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NU - Rock Core, 1 7/8"
NX - Rock Core, 2 1/8"
CL - 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**

WELLMER ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**
Location: **Cobb County, Georgia**
Project Number: **171-3483BFI3: 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 Augers
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No.
B-185

WILLMOR ENGINEERING INC.

Project: Bridge 19: I-75 Reversible lanes over SR 120	**HOLE No. B-186**
Location: Cobb County, Georgia	Sheet 1 of 2
Project Number: 171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130	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)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			RESIDUUM: Stiff reddish brown medium to fine sandy **SILT**	ML	1090.9		13
		SS			Medium dense and dense brown, gray and white silty medium to fine **SAND** (micaceous)	SM	1085		18
5		SS							10
		SS					1080		24
10		SS							
		SS					1075		10
15									
		SS					1070		47
20									
		SS					1065		45
25									
		SS					1060		21
30									
		SS					1055		27
35									
		SS			Very dense white and brown silty medium to fine **SAND** with quartz fragments (micaceous)	SM	1050		53
40									
		SS			Medium dense to dense gray, white, brown, black and reddish brown silty medium to fine **SAND** (micaceous)	SM	1045		19
45									
		SS					1040		26
50									
		SS					1035		45
55									

Continued Next Page

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

WILLIAMS 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: PWR Sampled as very dense gray, brown, white and black silty medium to fine **SAND** with rock fragments	1020		50/4"
					Auger refusal was encountered at 58 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

WILLIAMS 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): 53 Rock (ft): NA Total Depth (ft): 53.0

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)	N-VALUE
		SS			TOPSOIL - 2 Inches	1097.8		18
					FILL: Medium dense reddish brown silty medium to fine SAND with rock fragments and roots (slightly micaceous)	FILL / SM		
5		SS				1095		10
		SS			RESIDUUM: Medium dense and dense reddish brown to gray silty medium to fine SAND with occasional quartz fragments (slightly micaceous)			17
10		SS				1090		12
		SS				1085		22
15						1080		30
20		SS				1075		29
25		SS				1070		34
30		SS				1065		31
35		SS				1060		25
40		SS				1055		20
45		SS				1050		20
50		SS				1045		52
55		SS			- becoming very dense			

Continue Next Page

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	HFC%	RQD %	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 50 60	N-VALUE
60		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with quartz fragments (slightly micaceous) PWR	1040		50/5"
		SS			Auger refusal was encountered at 63 feet below the existing ground surface	1036		50/0"
					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

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): 26 Rock (ft): NA Total Depth (ft): 25.0

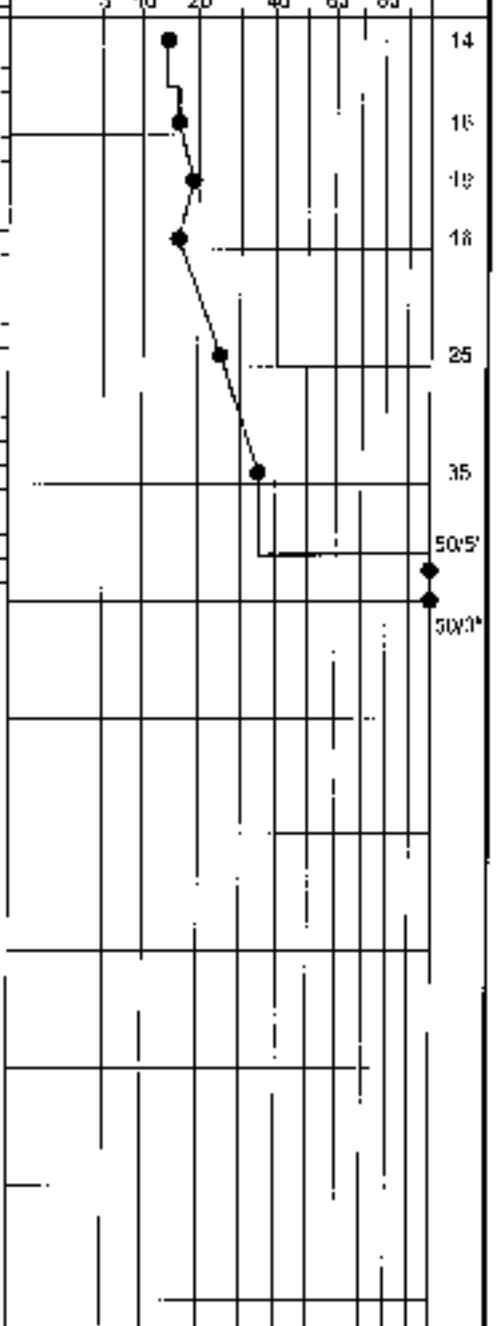
Logged By: PT Date Drilled: 8/10/09

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

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		

WILLIAMS 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-188A

Sheet 1 of 1

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	RFD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
					Auger boring from 0 to 23 feet.	1094.1		
5						1090		
10						1085		
15						1080		
20						1075		
25		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray, brown and tan silty medium to fine SAND with rock fragments (slightly micaceous) PWR	1070		50/5"
30		SS SS			Auger refusal was encountered at 31 feet below the existing ground surface.	1065		23/10" 50/2"
					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"
CL - 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**
Location: **Cobb County, Georgia**
Project Number: **171-3483BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-189

Sheet 1 of 2

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)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			TOPSOIL - 2 inches	TILL	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		38
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		50/11"
		SS					1045		50/2"
50		SS			Auger refusal was encountered at 51 feet below the existing ground surface.				50/1"

Continued Next Page

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	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

WILLIBER 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	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
		SS		TOPSOIL - 2 Inches	FILL	1096.3
				FILL: Medium dense reddish brown silty medium to fine **SAND** with rock fragments and roots.	SM	1095
5		SS		RESIDUUM: Dense and medium dense brown, reddish brown and gray silty medium to fine **SAND** with rock and quartz fragments (micaceous).		1090
		SS				
10		SS				1085
15		SS				1080
20		SS				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	1070
30		SS				1065
35		SS				1060
40		SS				1055
45		SS		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) 5 10 20 40 60 80

N-VALUE: 13, 31, 12, 15, 22, 32, 50/3", 50/4", 50/4", 50/5", 94/11"

Continued Next Page

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
CF4 - 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
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

WILLIGER 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: 171-3463BFIS; 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	SAMP. TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	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			19
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		46
40		SS					1070		33
45		SS					1065		35
50		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** with rock fragments	PWR	1060		50/3"
		SS							50/3"

Auger refusal was encountered at 50.5 feet below the existing ground

Continued Next Page

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 Auger
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

WILLIAMS 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 Barrel: **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)	STANDARD PENETRATION TEST DATA (blows/foot)	MVA UF
		SS			TOPSOIL - 1 inch / SM	1082.5	5 10 20 40 60 80	
		SS			RESIDUUM. Loose to medium dense reddish brown and tan silty medium to fine **SAND** (micaceous)	1080		25
5		SS						50/3"
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense grey and orange-brown silty medium to fine **SAND** with rock fragements (micaceous) PWR	1075		50/3"
10		SS				1070		50/2"
15		SS				1065		50/2"
20		SS						

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

WILDER 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-192G

Sheet 1 of 1

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)	GRAPHIC LOG	SAMPLE TYPE	RC-%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 5 10 20 40 60 80	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			50/5"
		SS				1075		84/0.5
10		SS						50/5"
		SS				1070		50/1"
		RC	71	0	ROCK CORE: Medium hard dark gray MICA SCHIST			
		RC	86	51	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 26.5 feet below the existing ground surface.

Ground water was encountered at 9 feet below the existing ground surface at 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-192G

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 Holes: 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) 5 10 20 40 60 80	N-VALUE
		SS			TOPSOIL - 2 inches	FILL	1077.6		
					FILL: Loose reddish brown to brown silty medium to fine **SAND** with rock fragments (slightly micaceous).	SM	1075		5
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
		SS							59
10							1065		
15		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense reddish brown and gray silty medium to fine **SAND** with rock fragments (micaceous).	PWR			17/4"
							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.

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	B-193
ST - Shelby Tube	CL - 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

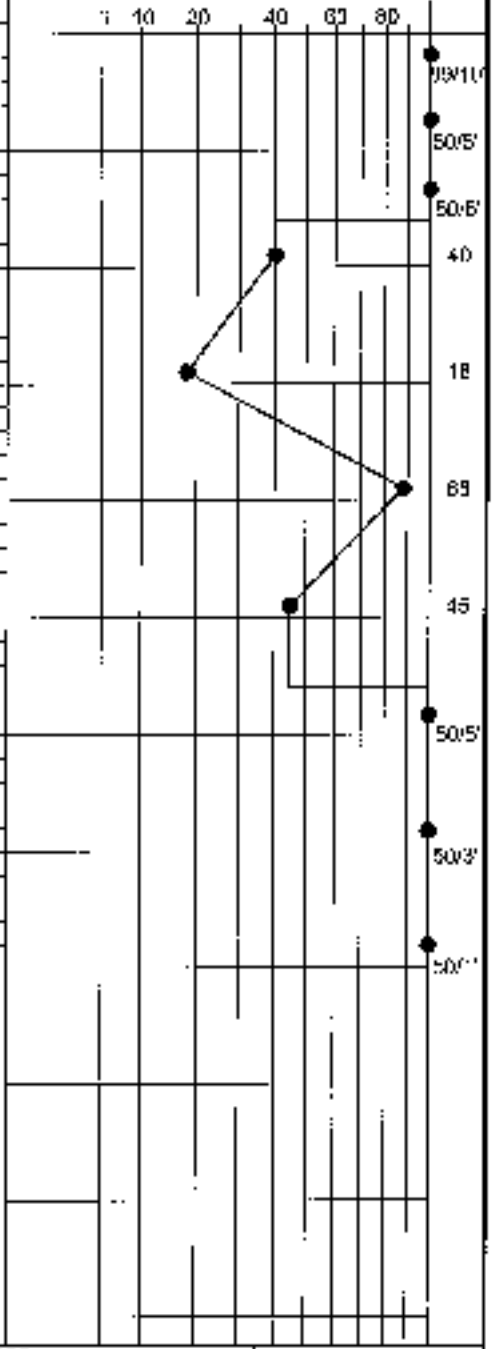
HOLE No. B-194
Sheet 1 of 1
Location: BENT - 17

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: 6/11/09

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
		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)		1070
5		SS					
10		SS			RESIDUUM: Medium dense, dense and very dense reddish brown, tan, and gray silty medium to fine **SAND** with rock fragments (micaceous)	SM	1065
15		SS					1060
20		SS					1055
25		SS					1050
30		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense reddish brown and gray silty medium to fine **SAND** with rock fragments	PWR	1045
35		SS					1040
40		SS			Boring terminated at 40 feet below the existing ground surface		1035

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 Auge
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No.
B-194

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 1 of 2

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)	SAMPLE TYPE	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
0			1070.1	
	SS	RESIDUUM: Medium dense reddish brown and white silty medium to fine SAND (SM)		17
	SS	PARTIALLY WEATHERED ROCK: Sampled as very dense brown, purple, gray and white silty medium to fine SAND with quartz fragments (PWR)		50/0.5"
5	SS		1065	50/4"
	SS			50/0"
10			1060	
15	SS		1055	95/11.5"
20	SS		1050	95/11.5
	SS			50/1"
25			1045	
	SS			50/3"
30			1040	
	SS			50/0.5"
35			1035	
	SS			50/1"
40			1030	
	SS			50/1"
45			1025	
	SS			50/0"

STANDARD PENETRATION TEST DATA (blows/foot): 7 10 20 40 60 80

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

Ground 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	
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		B-195

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 50 60	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 Auger
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No.
B-195

WILLIAMS 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-196

Sheet 1 of 1

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	RFC%	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
		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		23
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		50/0"
35		SS					1040		50/5"
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
Location: Cobb County, Georgia
Project Number: 171-3463BF13; GDOT Proj. # : NH000-0073-03(242); PI #: 714130

HOLE No. B-197
Sheet 1 of 1
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	RECOVERY %	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N VALUE
					PARTIALLY WEATHERED ROCK: Sampled as very dense reddish brown, orange and gray silty medium to fine **SAND** (slightly micaceous)	PWR	1059.0		
5		SS, SS, SS					1055		50/5.5", 50/5"
10		SS			- with rock fragments		1050		50/2"
15		SS					1045		50/10"
20		SS					1040		50/2"
25		SS			Very dense white, brown and light orange silty coarse to fine **SAND**	PWR	1035		50/3"
30		SS					1030		50/3.1"
35		SS					1025		50/5.5"
40		SS, SS					1023		50/4.5", 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
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 Auger
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No.
B-197

WILLMER ENGINEERING INC.

Project: Bridge 19: I-75 Reversible lanes over SR 120
Location: Cobb County, Georgia
Project Number: 171-3463BF(3); GDOT Proj. # : NH000-0073-03(242); PI #: 714130

HOLE No. B-198
Sheet 1 of 1
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)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			RESIDUUM: Medium dense and loose reddish brown, gray, and tan silty medium to fine SAND	SM	1060.4 / 1060		15
5		SS					1055		11
		SS							9
10		SS					1050		18
15		SS					1045		12
					PARTIALLY WEATHERED ROCK: Sampled as very dense gray silty medium to fine SAND with quartz fragments.	PWR			
20		SS					1040		50/4"
25		SS					1035		50/4"
		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.

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 Auger
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No.
B-198

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	1054.6		10
					FILL: Loose reddish brown and tan silty medium to fine **SAND** (slightly micaceous) SM			
5		SS				1050		10
		SS			RESIDUUM: Loose, medium dense and dense reddish brown, brown, and gray silty medium to fine **SAND** (micaceous) with rock fragments.			7
10		SS				1045		6
						1040		7
15		SS						
20		SS				1035		40
						1030		15
25		SS						
30		SS			- becoming very dense	1025		54
		SS			PARTIALLY WEATHERED ROCK: PWR Sampled as very dense gray silty medium to fine **SAND** with rock fragements			50/5"
		SS						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

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)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			FILL: Medium dense reddish brown silty medium to fine **SAND** with roots (micaceous)	FILL	1039.2		12
5		SS			RESIDUUM: Medium dense to dense brown, tan, white and black silty medium to fine **SAND** (micaceous)	SM	1035		23
		SS							24
10		SS					1030		28
15		SS					1025		36
		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense brown, tan, black and white silty medium to fine **SAND** (micaceous)	PWR	1020		50/3"
20									
25		SS			RESIDUUM: Dense brown, white and black silty medium to fine **SAND** (micaceous)	SM	1015		50
		SS			Auger refusal was encountered at 27.5 feet below the existing ground surface.				50/0.5"

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

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

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	CL - 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	1040.9		
					FILL: Medium dense reddish brown silty medium to fine **SAND** with rock fragments and roots (slightly micaceous)	1040 /FILL		11
5		SS						16
		SS			RESIDUUM: Loose and medium dense reddish brown, brown, and gray silty medium to fine **SAND** (slightly micaceous)	1035 SM		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		RC			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

Continued Next Page

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 Auger
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
Location: Cobb County, Georgia
Project Number: 171-3463BFI3; GDOT Proj. # : NH000-0073-03(242); PI #: 714130

HOLE No. B-201
Sheet 2 of 2
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

GPJ 171 3463F.GPJ 10/1/09

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)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		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		13
5		SS						8
		SS				1030		8
		SS			Loose brown and black silty medium to fine **SAND** with rock, decayed wood and roots (FILL)			10
10						1025		
		SS			RESIDUUM: Medium dense and very loose reddish brown and gray silty medium to fine **SAND** (micaceous) (SM)			11
15						1020		
		SS						4
20						1015		
		SS			Very loose and loose gray and brown silty medium to fine **SAND** with quartz fragments (slightly micaceous) (SM)			3
25						1010		
		SS						3
30						1005		
		SS						5
35						1000		
		SS						2
40						995		
		SS						7
45						990		
		SS			- becoming medium dense			12
50						985		
		SS			(PWR)			52/8"
55								

Continued Next Page

SAMPLER TYPE
SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CC - 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
Sheet 2 of 2
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		88/11"
65		SS				970		94/11" 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"
CL - 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

WILLMOR 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	RECOV. %	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	NATURAL
		SS			TOPSOIL - 1 inch	FILL	1026.6		40
		SS			FILL: Medium dense and dense tan, gray, and brown silty medium to fine **SAND** with rock fragments and roots (micaceous).		1025		14
5		SS					1020		13
		SS							10
10		SS					1015		14
15		SS					1010		10
					RESIDUUM: Very loose, loose, and medium dense gray, tan, and reddish brown silty medium to fine **SAND** (micaceous).	SM			
20		SS					1005		4
25		SS					1000		3
30		SS					995		6
35		SS					990		7
40		SS					985		10
45		SS					980		13
50		SS					975		15
55		SS							

Continued Next Page

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) 5 10 20 40 60 80	N-VALUE
50		SS				970		20
55		SS				965		16
						960		
70		SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray and brown silty medium to fine **SAND** (slightly micaceous). PWR	955		82/8"
75		SS						50/5"
						950		
80		SS						50/2"

Boring terminated at 80 feet below the existing ground surface.

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

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 1 of 2
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	RECOV	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			FILL: Medium dense tan, brown and gray silty medium to fine **SAND** with rock fragments (micaceous)	FILL	1022.3		30
5		SS					1020		20
		SS					1015		16
10		SS					1010		13
15		SS					1005		18
20		SS			Very loose and loose reddish brown silty medium to fine **SAND** with wood pieces and roots	FILL	1000		4
		SS					1000		10
25		SS			RESIDUUM: Medium dense brown and gray silty medium to fine **SAND** with quartz fragments	SM	995		14
30		SS			Very loose reddish brown and gray silty medium to fine **SAND**	SM	990		4
					Loose and medium dense gray and brown silty medium to fine **SAND**	SM	985		8
35		SS					980		1[illegible]
40		SS					975		22
45		SS			Very dense gray and brown silty medium to fine **SAND**	SM	970		45
50		SS							46
55		SS							

Continued Next Page

SAMPLER TYPE
SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CL - 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: 171-3463BF13; 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	RFC%	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	960		505.5
65		SS				955		504*
70		SS						503*

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

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)	STANDARD PENETRATION TEST DATA (blows/foot)	N VALUE
					FILL: Dense to medium dense reddish brown, tan, and white silty medium to fine **SAND** with rock fragments (slightly micaceous)	FILL	1016.2		
5		SS					1015		43
		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		
					RESIDUUM: Loose gray and white silty medium to fine **SAND** (slightly micaceous)	SM			
35		SS							10
							980		
					Medium dense to dense gray and white silty medium to fine **SAND** with quartz fragments (slightly micaceous)	SM			
40		SS					975		25
45		SS					970		44
50		SS							36
							965		
55		SS							41

Continued Next Page

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
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	RQD%	RQD (s)	MATERIAL DESCRIPTION (Continued)	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot) 0 10 20 40 60 80	N-VALUE
						950		
50		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"
CL - 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

WILLIAMS ENGINEERING INC.

Project: **Bridge 19: I-75 Reversible lanes over SR 120**

Location: **Cobb County, Georgia**

Project Number: **171-3463BFB; GDOT Proj. # : NH000-0073-03(242); PI #: 714130**

HOLE No. B-206

Sheet 1 of 2

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)	STANDARD PENETRATION TEST DATA (blows/6in)	N-VALUE
		SS			FILL: Medium dense reddish brown and gray silty medium to fine **SAND** (slightly micaceous)	Fill	1008.3	5 10 20 40 60 90	19
5		SS					1005		17
		SS							26
10		SS					1000		18
							995		
15		SS							30
					POSSIBLE ALLUVIUM: no recovery		990		1
20		SS							
							985		4
25		SS			RESIDUUM: Very loose to loose gray, black, brown and white silty medium to fine **SAND**	SM			
30		SS					980		8
					Medium dense gray, black, brown and white silty medium to fine **SAND**	SM	975		11
35		SS							
40		SS					970		16
							965		
45		SS							27
		SS							50/0"

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

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-206**

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
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
					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
RC - Rock Core

Hole No.
B-206