



PROJECT NO. 34424.1.1	ID. R-2404A	COUNTY BERTIE	GEOLOGIST Tom Stetler
SITE DESCRIPTION US 17 (Windsor Bypass) from US 13-17 TO EAST OF SR 1503 (Davis Drive)			
BORING NO. CB-98 (LLB1A)	BORING LOCATION 154+95	OFFSET 14ft RT	ALIGNMENT -L-
COLLAR ELEV. 13.1 ft	NORTHING 830,102	EASTING 2,607,032	GROUND WATER (ft) 0 HR. 4.6 24 HR. 10.5
TOTAL DEPTH 85.0 ft	DRILL MACHINE CME 45B ATV	DRILL METHOD Mud Rotary	HAMMER TYPE Manual
DATE STARTED 6/30/04	COMPLETED 6/30/04	CORE BARREL TYPE N/A	SURFACE WATER DEPTH N/A

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100
														CONTINUED FROM PREVIOUS PAGE
-50.4	63.5	2	3	20										Greenish gray, SILTY, to v.f. SANDY CLAY interbedded with SILTY, v.f. SAND. Clay is low to med. plasticity. Trace organic fragments. (continued)
-55.4	68.5	22	30	24								Sat.		Gray, f. to v.f. SAND. Moderately poorly graded. Trace, cse. to gravel sized, well rounded, quartz grains.
-60.4	73.5	10	12	15								M		Dark greenish-gray, v.f. SANDY to SILTY CLAY. Some f. to v.f. opaque minerals. Well graded.
-65.4	78.5	12	23	26										Dark greenish gray, SILTY, v.f. to cse. SAND. Weathered Limestone. Moderately indurated at 77 feet (driller noted hard layers) to poorly indurated overall. White shell fragments throughout.
-70.4	83.5	23	39	33										
														Boring Terminated at Elevation -71.9 ft in SILTY, v.f. to cse. SAND. Weathered Limestone. Yorktown Formation

NCDOT BORE DOUBLE - 204-049 WINDSOR BYPASS-CATLIN.GPJ, NC\_DOT\_GDT\_10/01/04



PROJECT NO. 34424.1.1	ID. R-2404A	COUNTY BERTIE	GEOLOGIST Tom Stetler
SITE DESCRIPTION US 17 (Windsor Bypass) from US 13-17 TO EAST OF SR 1503 (Davis Drive)			GROUND WATER (ft)
BORING NO. CB-95 (LLEB1B)	BORING LOCATION 154+11	OFFSET 18ft LT	ALIGNMENT -L-
COLLAR ELEV. 12.3 ft	NORTHING 830,098	EASTING 2,606,943	0 HR. 10.8
TOTAL DEPTH 80.0 ft	DRILL MACHINE CME 45B ATV	DRILL METHOD Mud Rotary	24 HR. 9.6
DATE STARTED 6/30/04	COMPLETED 6/30/04	CORE BARREL TYPE N/A	HAMMER TYPE Manual
		SURFACE WATER DEPTH N/A	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				
					CONTINUED FROM PREVIOUS PAGE								
-51.2	63.5	13	30	27								Sat.	Dark gray, well graded, SILTY, f. to v.f. SAND interbedded (~.3 ft.) with SILTY CLAY. Some cse. blue quartz grains. (continued)
-56.2	68.5	14	35	36								Sat.	
													-58.2 70.5 -58.5 70.8 DRILLER'S NOTE: HARD LAYER.
-61.2	73.5	7	11	37								Sat.	Dark greenish gray, v.f. SANDY to SILTY CLAY. Well graded. Some cse. sand to gravel sized well rounded quartz grains.
													-62.7 75.0
-66.2	78.5	6	9	17								Sat.	Dark green and light gray, poorly indurated LIMESTONE. Manganese rich nodules and large shell fragments.
													-67.7 80.0
													Boring Terminated at Elevation -67.7 ft in poorly indurated LIMESTONE. Yorktown Formation

NCDOT BORE DOUBLE - 204-049 WINDSOR BYPASS-CATLIN.GPJ NC\_DOT\_GDT\_10/01/04





PROJECT NO. 34424.1.1	ID. R-2404A	COUNTY BERTIE	GEOLOGIST Tom Stetler
SITE DESCRIPTION US 17 (Windsor Bypass) from US 13-17 TO EAST OF SR 1503 (Davis Drive)			
BORING NO. CB-96 (RLEB1B)	BORING LOCATION 154+00	OFFSET 57ft RT	ALIGNMENT -L-
COLLAR ELEV. 12.1 ft	NORTHING 830,025	EASTING 2,606,963	GROUND WATER (ft) 0 HR. 9.4 24 HR. 9.5
TOTAL DEPTH 82.4 ft	DRILL MACHINE CME 45B ATV	DRILL METHOD Mud Rotary	HAMMER TYPE Manual
DATE STARTED 6/29/04	COMPLETED 6/29/04	CORE BARREL TYPE N/A	SURFACE WATER DEPTH N/A

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
-51.4	63.5	12	8	16	CONTINUED FROM PREVIOUS PAGE						M-D	Gray, v.f. SANDY to SILTY CLAY w/high plasticity interbedded with layers (~.5ft.) of well graded, silty, v.f. to cse. sand. Trace to little cse. to gravel sized well rounded quartz grains. Sharks teeth. (continued)
-56.4	68.5	5	16	17								
-61.4	73.5	7	9	34								
-66.4	78.5	7	17	21								
-68.9	81.0	42	42	58/3							Sat.	Light gray, weathered LIMESTONE. Shell casts and dark-green manganese nodules.
-70.3	82.4											Boring Terminated at Elevation -70.3 ft in weathered LIMESTONE. Yorktown Formation

NCDOT BORE DOUBLE - 204-049.WINDSOR.BYPASS-CATLIN.GPJ\_NC\_DOT\_GDT\_10/01/04





PROJECT NO. 34424.1.1	ID. R-2404A	COUNTY BERTIE	GEOLOGIST Tom Stetler
SITE DESCRIPTION US 17 (Windsor Bypass) from US 13-17 TO EAST OF SR 1503 (Davis Drive)			GROUND WATER (ft)
BORING NO. CB-97 (RLB1B)	BORING LOCATION 154+74	OFFSET 73ft RT	ALIGNMENT -L-
COLLAR ELEV. 13.0 ft	NORTHING 830,030	EASTING 2,607,038	0 HR. 7.2
TOTAL DEPTH 84.8 ft	DRILL MACHINE CME 45B ATV	DRILL METHOD Mud Rotary	24 HR. 10.6
DATE STARTED 7/1/04	COMPLETED 7/1/04	CORE BARREL TYPE N/A	HAMMER TYPE Manual
		SURFACE WATER DEPTH N/A	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
													CONTINUED FROM PREVIOUS PAGE
-50.5	63.5	2	4	5							M		Greenish gray, SILTY CLAY. Trace v.f. sand. Med. to high plasticity. (continued)
-55.5	68.5	17	22	37							Sat.		Gray, well graded, v.f. to cse. SAND. Thin hard layers noted throughout strata by driller.
-60.5	73.5	6	9	10							M		Dark greenish gray, SANDY to SILTY CLAY. V.f. sands. Some opaque grains throughout. Little cse. sand.
-65.5	78.5	57	43/2								M		Light gray to white, Calc. f. to cse. SAND w/shell fragments. Weathered limestone.
-70.5	83.5	44	55	45/3							W		Boring Terminated at Elevation -71.8 ft in Calc. f. to cse. SAND w/shell fragments. Weathered limestone. Yorktown Formation

NCDOT BORE DOUBLE - 204-049 WINDSOR BYPASS-CATLIN.GPJ NC\_DOT.GDT 10/01/04



PROJECT NO.		ID.		COUNTY		GEOLOGIST		GROUND WATER (ft)					
34424.1.1		R-2404A		BERTIE		Tom Stetler							
SITE DESCRIPTION													
US 17 (Windsor Bypass) from US 13-17 TO EAST OF SR 1503 (Davis Drive)													
BORING NO.		BORING LOCATION		OFFSET		ALIGNMENT		GROUND WATER (ft)					
CB-98 (LLB1A)		154+95		14ft RT		-L-		0 HR. 4.6					
COLLAR ELEV.		NORTHING		EASTING				24 HR. 10.5					
13.1 ft		830,102		2,607,032									
TOTAL DEPTH		DRILL MACHINE		DRILL METHOD		HAMMER TYPE							
85.0 ft		CME 45B ATV		Mud Rotary		Manual							
DATE STARTED		COMPLETED		CORE BARREL TYPE		SURFACE WATER DEPTH							
6/30/04		6/30/04		N/A		N/A							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
													Land Surface
12.1	1.0												Topsoil.
		4	4	3								M	Light orange brown, SILTY, f. to v.f. SAND. Moderately poorly graded. Yorktown Formation.
9.6	3.5	4	6	8								M	
7.1	6.0	3	5	7								W	Light brown to orange-brown, v.f. to f. SAND. Grain size increases with depth. Trace opaque grains.
4.6	8.5	5	7	7								W	
-0.4	13.5	5	7	7								Sat.	GRAVELLY, cse. to f. SAND. Well graded. Layer of gravel at 14.5 ft. Graded bedding.
-5.4	18.5	2	2	3								CS-45 M	Light gray, SILTY to v.f. SANDY CLAY. Med. to low plasticity w/little to some organic matter.
-10.4	23.5	2	5	6								M	
-15.4	28.5	1	2	2								M	Dark brown, SILTY to v.f. SANDY CLAY. Little organic matter w/organic fragments oriented parallel to bedding.

NCDOT BORE DOUBLE - 204-049 WINDSOR BYPASS-CATLIN.GPJ NC\_DOT\_GDT\_10/01/04



PROJECT NO.		ID.		COUNTY		GEOLOGIST		GROUND WATER (ft)					
34424.1.1		R-2404A		BERTIE		Tom Stetler							
SITE DESCRIPTION													
US 17 (Windsor Bypass) from US 13-17 TO EAST OF SR 1503 (Davis Drive)													
BORING NO.		BORING LOCATION		OFFSET		ALIGNMENT		GROUND WATER (ft)					
CB-98 (LLB1A)		154+95		14ft RT		-L-		0 HR. 4.6					
COLLAR ELEV.		NORTHING		EASTING				24 HR. 10.5					
13.1 ft		830,102		2,607,032									
TOTAL DEPTH		DRILL MACHINE		DRILL METHOD		HAMMER TYPE							
85.0 ft		CME 45B ATV		Mud Rotary		Manual							
DATE STARTED		COMPLETED		CORE BARREL TYPE		SURFACE WATER DEPTH							
6/30/04		6/30/04		N/A		N/A							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
													CONTINUED FROM PREVIOUS PAGE
-20.4	33.5	1	3	3								CS-59	Dark brown, SILTY to v.f. SANDY CLAY. Little organic matter w/organic fragments oriented parallel to bedding. (continued)
-25.4	38.5	1	3	5								M	
-30.4	43.5	1	4	3								M	
-35.4	48.5	2	2	5								CS-47	Greenish gray, SILTY, to v.f. SANDY CLAY interbedded with SILTY, v.f. SAND. Clay is low to med. plasticity. Trace organic fragments.
-40.4	53.5	8	5	7								Sat.	
-45.4	58.5	6	7	9									







PROJECT NO.		34424.1.1		ID No.		R-2404A		COUNTY		Bertie		GEOLOGIST		D. Goodnight			
SITE DESCRIPTION											US 17 (Windsor Bypass)					GROUND WATER (ft)	
BORING NO.		TEB2-A-L-		BORING LOCATION		172+00		OFFSET		57ft LT		ALIGNMENT		-L-		0 HR.	11.9
COLLAR ELEV.		18.6 ft		NORTHING		830845.45		EASTING		2608570.03				24 HR.	11.1		
TOTAL DEPTH		95.0 ft		DRILL MACHINE		CME 850		DRILL METHOD		Wash/Mud Rotary		HAMMER TYPE		140 lb. Automatic			
DATE STARTED		6/9/04		COMPLETED		6/10/04		SURFACE WATER DEPTH		NA							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION				
		0.5ft	0.5ft	0.5ft	0	20	40	60	80								
18.6																	0.00
17.6	1.0	5	5	6							SS-T33	M					18.6
15.1	3.5	4	4	5								M					13.1
12.6	6.0	2	4	4								M					10.6
10.1	8.5	2	2	3								M					6.6
5.1	13.5	6	6	6								W					12.0
0.1	18.5	8	10	10								W					1.6
-4.9	23.5	WOH	WOH	1								W					-3.4
-9.9	28.5	WOH	WOH	WOH							SS-T34	54.6%					
-14.9	33.5	WOH	WOH	WOH								W					
-19.9	38.5	2	2	2								W					
-24.9	43.5	WOH	2	6								W					-25.9
-29.9	48.5	2	1	2							SS-T35	52.1%					-28.4
-34.9	53.5	2	3	5								W					-33.4
-39.9	58.5	5	6	13								W					-38.4
-44.9	63.5	4	5	6								W					-49.4
-49.9	68.5	5	5	10								W					-53.4
-54.9	73.5	11	11	13								W					

NCDOT BORE SINGLE 07104021.GPJ NC\_DOT.GDT 7/19/04



PROJECT NO.		34424.1.1		ID No.		R-2404A		COUNTY		Bertie		GEOLOGIST		D. Goodnight									
SITE DESCRIPTION												GROUND WATER (ft)											
US 17 (Windsor Bypass)												0 HR.		11.9									
BORING NO.		TEB2-A-L-		BORING LOCATION		172+00		OFFSET		57ft LT		ALIGNMENT		-L-									
COLLAR ELEV.		18.6 ft		NORTHING		830845.45		EASTING		2608570.03		24 HR.		11.1									
TOTAL DEPTH		95.0 ft		DRILL MACHINE		CME 850		DRILL METHOD		Wash/Mud Rotary		HAMMER TYPE		140 lb. Automatic									
DATE STARTED				6/9/04				COMPLETED				6/10/04				SURFACE WATER DEPTH				NA			
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION										
		0.5ft	0.5ft	0.5ft	0	20	40	60	80								100						
-56.2					Continued from previous page																		
-59.9	78.5										SS-T36	W		-57.4	76.0	COASTAL PLAIN MATERIAL: Medium Dense, Grey, Silty, Coarse to Fine SAND (Yorktown Formation) (continued)							
		14	15	16												COASTAL PLAIN MATERIAL: Dense, Grey, Fine to Coarse SAND with Some Gravel (Yorktown Formation)							
-64.9	83.5	4	6	8								M		-63.4	82.0	COASTAL PLAIN MATERIAL: Stiff, Grey, Fine Sandy, Silty CLAY with a Trace of Gravel (Yorktown Formation)							
-69.9	88.5	33	42	33								M		-68.4	87.0	COASTAL PLAIN MATERIAL: Very Dense to Dense, Grey and Green, Glauconitic, Silty, Clayey, Coarse to Fine SAND with Some Shell Fragments (Yorktown Formation)							
-74.9	93.5	25	24	24								W		-76.4	95.0	Boring Terminated at Elevation -76.4 feet in Coastal Plain Material: Dense, Glauconitic, Silty, Clayey, Coarse to Fine SAND (A-2-4) with Some Shell Fragments (Yorktown Formation)							
																Note: Mud mix = Bentonite mud slurry Mud density = 63.0 lbs./cu. ft.							

NCDOT BORE SINGLE 07104021.GPJ NC\_DOT.GDT 7/19/04



PROJECT NO.		34424.1.1		ID No.	R-2404A		COUNTY		Bertie		GEOLOGIST		D. Goodnight		
SITE DESCRIPTION											GROUND WATER (ft)				
US 17 (Windsor Bypass)											0 HR.		9.3		
BORING NO.		TEB2-B-L-		BORING LOCATION		172+00		OFFSET		57ft RT		ALIGNMENT		-L-	
COLLAR ELEV.		16.3 ft		NORTHING		830739.96		EASTING		2608613.26		24 HR.		8.8	
TOTAL DEPTH		90.0 ft		DRILL MACHINE		CME 850		DRILL METHOD		Wash/Mud Rotary		HAMMER TYPE		140 lb. Automatic	
DATE STARTED		6/8/04		COMPLETED		6/9/04		SURFACE WATER DEPTH		NA					
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80						100
16.3															0.00
15.3	1.0	2	2	1											3.0
12.8	3.5	5	4	5											5.5
10.3	6.0	3	2	5											8.5
7.8	8.5	5	7	8											17.0
2.8	13.5	2	5	9											22.0
-2.2	18.5	2	4	2											37.0
-7.2	23.5	WOH	WOH	WOH											42.0
-12.2	28.5	WOH	WOH	WOH											67.0
-17.2	33.5	WOH	1	2											
-22.2	38.5	WOH	2	1											
-27.2	43.5	2	2	5											
-32.2	48.5	7	4	10											
-37.2	53.5	6	11	10											
-42.2	58.5	10	9	14											
-47.2	63.5	6	12	15											
-52.2	68.5	3	5	11											
-57.2	73.5	2	3	2											

NCDOT BORE SINGLE 07104021.GPJ NC\_DOT.GDT 7/19/04



PROJECT NO.		34424.1.1		ID No.		R-2404A		COUNTY		Bertie		GEOLOGIST		D. Goodnight									
SITE DESCRIPTION												GROUND WATER (ft)											
US 17 (Windsor Bypass)												0 HR.		9.3									
BORING NO.		TEB2-B-L-		BORING LOCATION		172+00		OFFSET		57ft RT		ALIGNMENT		-L-									
COLLAR ELEV.		16.3 ft		NORTHING		830739.96		EASTING		2608613.26		24 HR.		8.8									
TOTAL DEPTH		90.0 ft		DRILL MACHINE		CME 850		DRILL METHOD		Wash/Mud Rotary		HAMMER TYPE		140 lb. Automatic									
DATE STARTED				6/8/04				COMPLETED				6/9/04				SURFACE WATER DEPTH				NA			
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION										
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100									
-58.5					Continued from previous page																		
-62.2	78.5	7	4	8						SS-T39	29.9%		-60.7 77.0 COASTAL PLAIN MATERIAL: Stiff, Grey, Fine Sandy, Silty CLAY (Yorktown Formation)										
-67.2	83.5	6	10	13								M	-65.7 82.0 COASTAL PLAIN MATERIAL: Medium Dense, Grey, Glauconitic, Silty, Clayey, Coarse to Fine SAND with a Trace of Shells (Yorktown Formation)										
-72.2	88.5	5	10	14								W	-73.7 90.0 Boring Terminated at Elevation -73.7 feet in Coastal Plain Material: Medium Dense, Silty, Clayey, Coarse to Fine SAND (A-2-4) (Yorktown Formation)  Note: Mud mix = Bentonite, mud slurry Mud density = 63 to 69 lbs./cu. ft.										

NCDOT BORE SINGLE 07104021.GPJ NC\_DOT.GDT 7/19/04

WBS No.34424.1.1  
TIP No. R-2404A

US 17 (Windsor Bypass)  
Bertie County, North Carolina

**SUMMARY OF LABORATORY TEST DATA**

Boring Number	Sample Depth (ft.)	Sample No.*	Natural Moisture Content (%)	AASHTO Class (Group Index)	N-Value (blows/ft.)	Atterberg Limits			Gradation Results							
						L.L.	P.L.	P.I.	Pass #10 Sieve	Pass #40 Sieve	Pass #200 Sieve	Retained #270 Sieve	Coarse Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)
TEB2-A	1.0-2.5	SS-T33	-	A-2-4 (0)	11	22	NP	NP	100	95	35	67	32	35	12	21
TEB2-A	28.5-30.0	SS-T34	54.6	A-7-6 (16)	W.O.H.	41	23	18	100	99	87	24	2	22	61	15
TEB2-A	48.5-50.0	SS-T35	52.1	A-4 (1)	3	36	NP	NP	100	99	67	48	2	45	37	16
TEB2-A	78.5-80.0	SS-T36	-	A-1 b (0)	31	12	NP	NP	90	42	5	96	78	17	4	1
TEB2-B	18.5-20.0	SS-T37	-	A-1-b (0)	6	14	NP	NP	91	22	5	95	87	8	4	1
TEB2-B	53.5-55.0	SS-T38	-	A-2-4 (0)	21	16	NP	NP	100	80	13	88	50	39	11	0
TEB2-B	78.5-80.0	SS-T39	29.9	A-7-6 (18)	12	41	21	20	100	99	86	33	2	31	67	0

\* SS = Split-Spoon Sample (ASTM-D-1586)

\*\* G = Grab Sample

\*\*\*ST=Shelby Tube (Undisturbed) Sample

NP -- Non Plastic

NA-- Non Applicable

TRIGON ENGINEERING CONSULTANTS, INC.  
GREENSBORO, NORTH CAROLINA

Trigon Job Number: 071-04-021

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