



NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

PROJECT NO. 34379.1.17	ID. R-2123CE	COUNTY Mecklenburg	GEOLOGIST Smith, B.
SITE DESCRIPTION I-485 (Charlotte Eastern Outer Loop) at I-85			GROUND WTR (ft)
BORING NO. DB-17	STATION 39+60	OFFSET CL	ALIGNMENT -RAMP E-
COLLAR ELEV. 686.7 ft	TOTAL DEPTH 76.0 ft	NORTHING 586,368	EASTING 1,483,457
DRILL MACHINE CME-45C	DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic	
DRILLER Gower, S.	START DATE 06/21/10	COMP. DATE 06/21/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
690																
															686.7	GROUND SURFACE 0.0
685																RESIDUAL Gray to orange-brown, v. stiff, f. sandy silt (A-4).
680	682.0	4.7		27	11	14										
675	677.0	9.7		55	45/0.2										677.0	WEATHERED ROCK Gray to orange-brown, f. sand to silt, quartz diorite. Auger refusal @ 26.9', SPT refusal @ 27.0'.
670	672.0	14.7		100/0.3												
665	667.0	19.7		28	72/0.2											
660	662.0	24.7		26	74/0.3											
	659.8	26.9														
															659.7	CRYSTALLINE ROCK Black, white & gray, v. sli. to mod. weathering w/intervals mod. sev. weathering, hard to v. hard, mod. close to v. close frac. spacing, f. to med. crystalline quartz diorite, extensive iron oxide staining, quartz vein, healed fracs., some frac. surfaces exhibit thin clay coatings.
655																
650																
645																
640																
635																
630																
625																
620																
615																
610															610.7	76.0

NCDOT BORE SINGLE R-2123CE.GPJ NC_DOT.GDT 6/23/10



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SITE DESCRIPTION I-485 (Charlotte Eastern Outer Loop) at I-85			GROUND WTR (ft)
BORING NO. DB-17	STATION 39+60	OFFSET CL	ALIGNMENT -RAMP E-
COLLAR ELEV. 686.7 ft	TOTAL DEPTH 76.0 ft	NORTHING 586,368	EASTING 1,483,457
DRILL MACHINE CME-45C	DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic	
DRILLER Gower, S.	START DATE 06/21/10	COMP. DATE 06/21/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						ELEV. (ft)
610																
Match Line																
605																
600																
595																
590																
585																
580																
575																
570																
565																
560																
555																
550																
545																
540																
535																
530																

NCDOT BORE SINGLE R-2123CE.GPJ NC_DOT.GDT 6/23/10

Boring Terminated at Elevation 610.7 ft in Crystalline Rock (Quartz Diorite).
Boring caved in @ 22.0'.



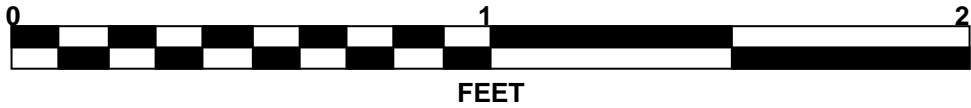
NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

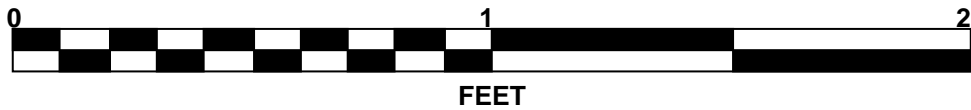
PROJECT NO. 34379.1.17		ID. R-2123CE		COUNTY Mecklenburg		GEOLOGIST Smith, B.					
SITE DESCRIPTION I-485 (Charlotte Eastern Outer Loop) at I-85							GROUND WTR (ft)				
BORING NO. DB-17		STATION 39+60		OFFSET CL		ALIGNMENT -RAMP E-					
COLLAR ELEV. 686.7 ft		TOTAL DEPTH 76.0 ft		NORTHING 586,368		EASTING 1,483,457					
DRILL MACHINE CME-45C		DRILL METHOD SPT Core Boring				HAMMER TYPE Automatic					
DRILLER Gower, S.		START DATE 06/21/10		COMP. DATE 06/21/10		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 49.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
659.7										Begin Coring @ 27.0 ft	
	659.7	27.0	4.0	2:49 2:28 3:50 3:02	(1.0) 25%	(0.0) 0%	(42.4) 87%	(22.0) 45%		<p style="text-align: center;">CRYSTALLINE ROCK</p> <p>Black, white & gray, v. sli. to mod. weathering w/intervals mod. sev. weathering, hard to v. hard, mod. close to v. close frac. spacing, f. to med. crystalline quartz diorite, extensive iron oxide staining, quartz vein, healed fracs., some frac. surfaces exhibit thin clay coatings.</p>	27.0
655	655.7	31.0	5.0	2:40 2:28 2:24 3:15 3:19	(4.0) 80%	(2.3) 46%					
650	650.7	36.0	5.0	3:13 1:32 2:50 5:42 5:03	(4.3) 86%	(0.0) 0%					
645	645.7	41.0	5.0	2:50 5:45 3:00 4:06 2:06	(4.4) 88%	(0.0) 0%					
640	640.7	46.0	5.0	1:44 1:31 1:49 1:21 1:52	(4.7) 94%	(3.1) 62%					
635	635.7	51.0	5.0	1:49 1:51 1:32 1:21 1:59	(4.9) 98%	(3.2) 64%					
630	630.7	56.0	5.0	2:10 1:20 2:02 1:59 2:01	(4.8) 96%	(2.2) 44%					
625	625.7	61.0	5.0	2:03 1:53 2:01 2:10 1:38	(4.6) 92%	(4.0) 80%					
620	620.7	66.0	5.0	2:29 2:13 3:53 3:06 4:11	(4.9) 98%	(3.5) 70%					
615	615.7	71.0	5.0	4:47 3:41 3:15 2:59 3:53	(4.8) 96%	(3.7) 74%					
610	610.7	76.0							Boring Terminated at Elevation 610.7 ft in Crystalline Rock (Quartz Diorite).		76.0
605									Boring caved in @ 22.0'.		
600											
595											
590											
585											
580											

NCDOT CORE SINGLE R-2123CE.GPJ NC_DOT.GDT 6/23/10

CORE PHOTOGRAPHIC RECORD
I-485 (Charlotte Eastern Outer Loop) at I-85

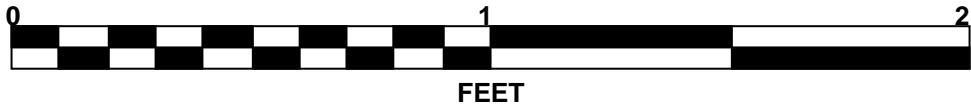


Boring DB-17 – Station 39+60 @ CL Box 1 of 5

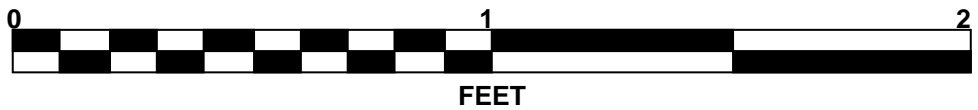


Boring DB-17 – Station 39+60 @ CL Box 2 of 5

CORE PHOTOGRAPHIC RECORD
I-485 (Charlotte Eastern Outer Loop) at I-85

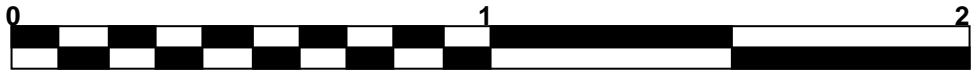


Boring DB-17 – Station 39+60 @ CL Box 3 of 5



Boring DB-17 – Station 39+60 @ CL Box 4 of 5

CORE PHOTOGRAPHIC RECORD
I-485 (Charlotte Eastern Outer Loop) at I-85



FEET



Boring DB-17 – Station 39+60 @ CL Box 5 of 5



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34379.1.17	ID. R-2123CE	COUNTY Mecklenburg	GEOLOGIST Smith, B.
SITE DESCRIPTION I-485 (Charlotte Eastern Outer Loop) at I-85			GROUND WTR (ft)
BORING NO. DB-18	STATION 35+25	OFFSET CL	ALIGNMENT -RAMP H-
COLLAR ELEV. 675.9 ft	TOTAL DEPTH 80.7 ft	NORTHING 586,606	EASTING 1,483,322
DRILL MACHINE CME-45C	DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic	
DRILLER Cassell, R.	START DATE 06/16/10	COMP. DATE 06/18/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
680																
675															675.9	0.0
670	671.6	4.3	5	13	15								M		RESIDUAL Orange-brown to brown, v. stiff to hard, f. sandy silt (A-4).	
665	666.6	9.3	6	14	19								M			
660	661.6	14.3	10	15	19								M			
655	656.6	19.3	23	40	60/0.3								D		655.6	20.3
650	651.6	24.3	60/0.1												651.5	24.4
645																
640																
635	635.1	40.8	60/0.1													
630																
625															626.0	49.9
620																
615																
610															612.2	63.7
605																
600																

NCDOT BORE SINGLE R-2123CE.GPJ NC_DOT.GDT 6/23/10



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BORELOG REPORT

PROJECT NO. 34379.1.17	ID. R-2123CE	COUNTY Mecklenburg	GEOLOGIST Smith, B.
SITE DESCRIPTION I-485 (Charlotte Eastern Outer Loop) at I-85			GROUND WTR (ft)
BORING NO. DB-18	STATION 35+25	OFFSET CL	ALIGNMENT -RAMP H-
COLLAR ELEV. 675.9 ft	TOTAL DEPTH 80.7 ft	NORTHING 586,606	EASTING 1,483,322
DRILL MACHINE CME-45C	DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic	
DRILLER Cassell, R.	START DATE 06/16/10	COMP. DATE 06/18/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
600						Match Line										
595									597.4	78.5	Light pink to lt. gray, mod. to mod. sev. weathering, mod. to med. hard w/intervals soft, close to v. close frac. spacing, f. crystalline, micaceous, trace pyrite, altered quartz diorite, sli. foliated. Boring Terminated at Elevation 595.2 ft in Crystalline Rock (Altered/ Meta-Quartz Diorite).
590													595.2	80.7		
585																
580																
575																
570																
565																
560																
555																
550																
545																
540																
535																
530																
525																
520																

NCDOT BORE SINGLE R-2123CE.GPJ NC_DOT.GDT 6/23/10



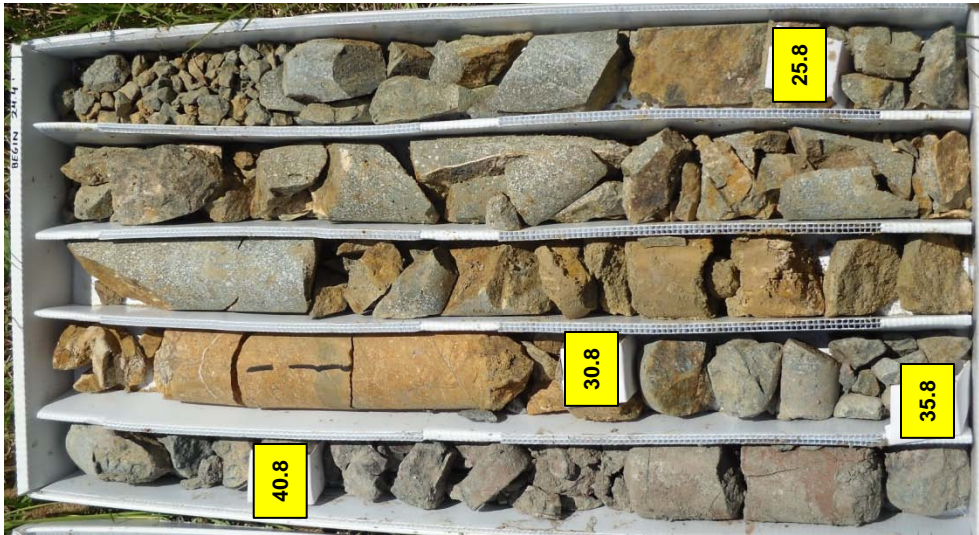
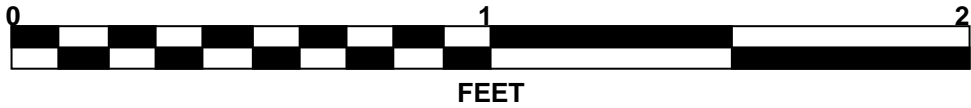
NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

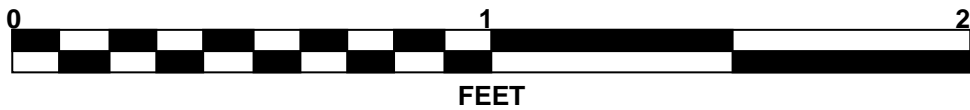
PROJECT NO. 34379.1.17		ID. R-2123CE		COUNTY Mecklenburg		GEOLOGIST Smith, B.						
SITE DESCRIPTION I-485 (Charlotte Eastern Outer Loop) at I-85							GROUND WTR (ft)					
BORING NO. DB-18		STATION 35+25		OFFSET CL		ALIGNMENT -RAMP H-						
COLLAR ELEV. 675.9 ft		TOTAL DEPTH 80.7 ft		NORTHING 586,606		EASTING 1,483,322						
DRILL MACHINE CME-45C		DRILL METHOD SPT Core Boring				HAMMER TYPE Automatic						
DRILLER Cassell, R.		START DATE 06/16/10		COMP. DATE 06/18/10		SURFACE WATER DEPTH N/A						
CORE SIZE NQ2		TOTAL RUN 56.3 ft										
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
651.5											Begin Coring @ 24.4 ft	
650	651.5 650.7	24.4 25.8	1.4	0:50/0.4 3:47	(1.3) 93%	(0.0) 0%		(6.1) 95%	(0.9) 14%		CRYSTALLINE ROCK Black, white, light to dk. gray, mod. to mod. sev. weathering, mod. hard to hard, close to v. close frac. spacing, quartz diorite, extensive iron oxide staining, numerous quartz veins.	24.4
645	645.1	30.8	5.0	1:46 1:27 1:09 1:21 1:30	(4.8) 96%	(0.9) 18%						645.1
640	640.1	35.8	5.0	1:37 1:59 1:57 4:00 1:59	(0.6) 12%	(0.0) 0%		(8.5) 45%	(1.0) 5%		Gray to dk. green & brown, mod. sev. weathering w/intervals sev. weathering, mod. to med. hard w/intervals soft, close to v. close frac. spacing, quartz diorite, significant core loss attributed to sev. weathered zones.	
635	635.1	40.8	5.0	1:48 1:34 1:43 2:10 2:37	(0.6) 12%	(0.0) 0%						
630	630.2	45.7	4.9	N=60/0.1 3:25/0.8 2:45 2:19 2:00 3:33	(4.8) 98%	(1.0) 20%						
625	625.2	50.7	5.0	2:24 2:07 4:20 2:30 2:20	(2.5) 50%	(0.0) 0%						626.0
620	620.2	55.7	5.0	1:45 1:46 2:11 1:41 2:28	(4.8) 96%	(1.2) 24%		(12.2) 88%	(1.7) 12%		Light pink to lt. gray, mod. to mod. sev. weathering, mod. to med. hard w/intervals soft, close to v. close frac. spacing, f. crystalline, micaceous, trace pyrite, metamorphosed quartz diorite, sli. foliated.	49.9
615	615.2	60.7	5.0	2:15 2:21 1:50 1:53 3:16	(4.9) 98%	(0.5) 10%						
610	610.2	65.7	5.0	4:52 3:21 2:21 6:15 4:38	(4.5) 90%	(0.0) 0%		(13.6) 92%	(2.4) 16%		Green & gray, sli. to mod. weathering, hard, close frac. spacing, f. crystalline quartz diorite, numerous quartz veins & healed fracs.	63.7
605	605.2	70.7	5.0	1:37 1:29 1:40 2:10 1:45	(4.9) 98%	(1.5) 30%						
600	600.2	75.7	5.0	1:50 1:58 2:04 2:06 2:32	(4.7) 94%	(0.9) 18%						
595	595.2	80.7	5.0	2:15 1:49 2:20 2:03 1:38	(4.4) 88%	(1.7) 34%		(2.2) 100%	(1.0) 45%		Light pink to lt. gray, mod. to mod. sev. weathering, mod. to med. hard w/intervals soft, close to v. close frac. spacing, f. crystalline, micaceous, trace pyrite, altered quartz diorite, sli. foliated.	78.5
590											Boring Terminated at Elevation 595.2 ft in Crystalline Rock (Altered/ Meta-Quartz Diorite).	80.7
585												
580												
575												

NCDOT CORE SINGLE R-2123CE.GPJ NC_DOT.GDT 6/23/10

CORE PHOTOGRAPHIC RECORD
I-485 (Charlotte Eastern Outer Loop) at I-85



Boring DB-18 – Station 35+25 @ CL Box 1 of 5



Boring DB-18 – Station 35+25 @ CL Box 2 of 5

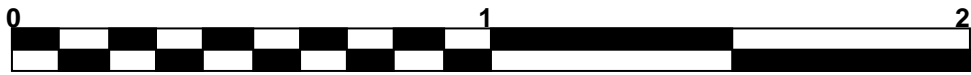
CORE PHOTOGRAPHIC RECORD
I-485 (Charlotte Eastern Outer Loop) at I-85



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Boring DB-18 – Station 35+25 @ CL Box 3 of 5

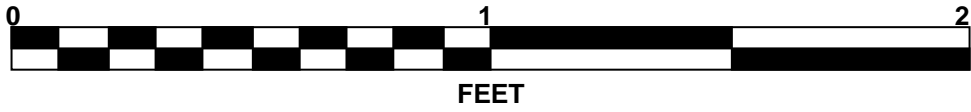


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Boring DB-18 – Station 35+25 @ CL Box 4 of 5

CORE PHOTOGRAPHIC RECORD
I-485 (Charlotte Eastern Outer Loop) at I-85



Boring DB-18 – Station 35+25 @ CL Box 5 of 5



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34379.1.17	ID. R-2123CE	COUNTY Mecklenburg	GEOLOGIST Smith, B.
SITE DESCRIPTION I-485 (Charlotte Eastern Outer Loop) at I-85			GROUND WTR (ft)
BORING NO. DB-21	STATION 43+50	OFFSET CL	ALIGNMENT -RAMP E- 0 HR. Dry
COLLAR ELEV. 677.9 ft	TOTAL DEPTH 24.7 ft	NORTHING 586,599	EASTING 1,483,815 24 HR. Caved
DRILL MACHINE CME-45C	DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
DRILLER Gower, S.	START DATE 06/19/10	COMP. DATE 06/19/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
680																
															677.9	GROUND SURFACE 0.0
675																RESIDUAL Orange-brown, hard, micaceous silt w/f grain sand (A-4).
	673.6	4.3	10	37	60											
670																
	668.6	9.3	12	27	58											
665																
	663.6	14.3	37	63/0.3											663.1	WEATHERED ROCK Light gray, brown, gray, f. sandy silt, quartz diorite.
660																
	658.6	19.3	27	31	69/0.2											
655																
	653.6	24.3	100/0.4												653.2	Boring Terminated at Elevation 653.2 ft in Weathered Rock (Quartz Diorite).
650																
645																
640																
635																
630																
625																
620																
615																
610																
605																
600																

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