



NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-30	STATION 15+84	OFFSET 12 ft LT	ALIGNMENT -Y22-
COLLAR ELEV. 694.9 ft	TOTAL DEPTH 10.8 ft	NORTHING 179,970	EASTING 450,377
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/04/10	COMP. DATE 03/04/10	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)	DEPTH (ft)
695														694.9	0.0	GROUND SURFACE	
690	691.1	3.8	17	18	18						SS-16	M		687.9	7.0	RESIDUAL Tan & Gray Hard Fine Sandy SILT (A-4), Saprolitic	
685	686.1	8.8	100/0.5								SS-17	M		684.1	10.8	WEATHERED ROCK (Orange & Gray Metamorphosed Rock)	
	684.2	10.7	60/0.1								SS-18					Boring Terminated by Tri-cone Refusal at Elevation 684.1 ft on Crystalline Rock: Gray Metamorphosed Rock	
680																	1) Station and offset are in METRIC 2) Advanced a 2-15/16" tri-cone to a depth of 10.7 feet. 3) Set HW casing to 3.0 feet below the existing ground. 4) Used swamp water as drilling fluid.
675																	
670																	
665																	
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NCDOT BORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-31	STATION 16+20	OFFSET 11 ft LT	ALIGNMENT -Y22-
COLLAR ELEV. 689.9 ft	TOTAL DEPTH 26.6 ft	NORTHING 179,993	EASTING 450,396
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/03/10	COMP. DATE 03/04/10	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	689.9	0.0	WOH	2	4									689.9	0.0	GROUND SURFACE
685	686.4	3.5		4	2	3								687.4	2.5	ALLUVIAL Brown & Gray Medium Stiff Fine Sandy Silty CLAY (A-7-5), with Trace Organic Matter
														682.9	7.0	RESIDUAL Gray Loose Clayey Fine Sand (A-2-6) with Some Gravel/Rock Fragments & Cobbles
680	681.4	8.5		63	37/0.1					100/0.6			680.3	9.6	WEATHERED ROCK (Gray Metamorphosed Rock)	
	680.3	9.6		60/0						60/0						CRYSTALLINE ROCK Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock REC = 94% RQD = 91%
675																
670																
665																
660														663.3	26.6	Boring Terminated at Elevation 663.3 ft in Crystalline Rock: Gray Metamorphosed Rock
655																
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NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-31	STATION 16+20	OFFSET 11 ft LT	ALIGNMENT -Y22-
COLLAR ELEV. 689.9 ft	TOTAL DEPTH 26.6 ft	NORTHING 179,993	EASTING 450,396
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/03/10	COMP. DATE 03/04/10	SURFACE WATER DEPTH N/A

CORE SIZE NQ	TOTAL RUN 17.0 ft
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ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)	
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %				
680.3											Begin Coring @ 9.6 ft		
	680.3	9.6	2.0	7:36/1.0	(1.5)	(0.8)	SS-15	(16.0)	(15.5)		680.3	9.6	
	678.3	11.6		7:36/1.0	75%	40%			94%				91%
			5.0	N=60/0 14:33/1.0	(5.0)	(5.0)							
675				8:31/1.0	100%	100%							
				7:26/1.0									
				6:33/1.0									
	673.3	16.6		6:40/1.0									
			5.0	7:00/1.0	(5.0)	(5.0)							
				9:40/1.0	100%	100%							
670				8:29/1.0									
				5:47/1.0									
				5:31/1.0									
	668.3	21.6		6:40/1.0									
			5.0	6:33/1.0	(4.5)	(4.5)							
				7:06/1.0	90%	90%							
665				5:57/1.0									
				5:07/1.0									
	663.3	26.6		5:31/1.0							663.3	26.6	
660											Boring Terminated at Elevation 663.3 ft in Crystalline Rock: Gray Metamorphosed Rock		
655											<p>1) Station and offset are in METRIC</p> <p>2) Advanced a 2-15/16" tri-cone to a depth of 9.6 feet.</p> <p>3) Set HW casing to 4.0 feet below the existing ground.</p> <p>4) Set NW casing to 9.5 feet below the existing ground.</p> <p>5) Advanced a NQ2 core barrel between 9.7 to 26.6 feet.</p> <p>6) Used swamp water as drilling fluid.</p>		
650													
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NCDOT CORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-32	STATION 16+40	OFFSET 11 ft LT	ALIGNMENT -Y22-
COLLAR ELEV. 689.3 ft	TOTAL DEPTH 12.4 ft	NORTHING 180,007	EASTING 450,411
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash		HAMMER TYPE Automatic
DRILLER Duggins, W. T.	START DATE 03/02/10	COMP. DATE 03/03/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
690	689.3	0.0													689.3	GROUND SURFACE	0.0
			WOH	WOH	1										687.3	ALLUVIAL Brown & Gray Very Soft Slightly Fine Sandy Silty CLAY (A-7-5), with Little Organic Matter	2.0
685	685.9	3.4	3	4	4										681.9	RESIDUAL Gray, Brown, & Orange Medium Stiff Silty Fine Sandy CLAY (A-7-5)	7.4
680	680.9	8.4	100/0.5													WEATHERED ROCK (Gray Metamorphosed Rock)	
675	676.9	12.4	60/0												676.9	Boring Terminated by Tri-cone Refusal at Elevation 676.9 ft on Crystalline Rock: Gray Metamorphosed Rock	12.4
670																	
665																	
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NCDOT BORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10

- 1) Station and offset are in METRIC
- 2) Advanced a 2-15/16" tri-cone to a depth of 12.4 feet.
- 3) Set HW casing to 4.0 feet below the existing ground.
- 4) Used swamp water as drilling fluid.



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-33	STATION 16+70	OFFSET 11 ft LT	ALIGNMENT -Y22-
COLLAR ELEV. 688.6 ft	TOTAL DEPTH 31.7 ft	NORTHING 180,026	EASTING 450,434
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/01/10	COMP. DATE 03/02/10	SURFACE WATER DEPTH 0.0ft

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															688.6	0.0	WATER SURFACE (03/01/10)	
685	685.0	3.6	5	8	14							S-5	W	687.1	1.5	ALLUVIAL Brown & Gray Very Soft Fine Sandy Silty CLAY (A-7-5), Moderately Organic		
680	680.0	8.6	60/0.2									SS-6	W	682.2	6.4	RESIDUAL Tan Very Stiff Fine Sandy SILT (A-4), with Trace Coarse Sand & Rock Fragments		
675												SS-7		680.0	8.6	WEATHERED ROCK (Gray Metamorphosed Rock)		
670																	CRYSTALLINE ROCK Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock	
665																	REC = 91% RQD = 69%	
660																		
655													No Return	656.9	31.7	Boring Terminated at Elevation 656.9 ft in Crystalline Rock: Gray Metamorphosed Rock		
650																		1) Station and offset are in METRIC
645																		2) Advanced a 2-15/16" tri-cone to a depth of 9.7 feet.
640																		3) Set HW casing to 4.0 feet below the existing ground.
635																		4) Set NW casing to 8.0 feet below the existing ground.
630																		5) Advanced a NQ2 core barrel between 9.7 to 31.7 feet.
625																		6) Used swamp water as drilling fluid.
620																		
615																		
610																		

NCDOT BORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10



NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft) 0 HR. N/A 24 HR. N/A
BORING NO. B-33	STATION 16+70	OFFSET 11 ft LT	
COLLAR ELEV. 688.6 ft	TOTAL DEPTH 31.7 ft	NORTHING 180,026	EASTING 450,434
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash		HAMMER TYPE Automatic
DRILLER Duggins, W. T.	START DATE 03/01/10	COMP. DATE 03/02/10	SURFACE WATER DEPTH 0.0ft

CORE SIZE NQ				TOTAL RUN 22.0 ft				L O G	DESCRIPTION AND REMARKS
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.		
678.9									
	678.9	9.7	3.5	3:14/1.0 9:13/1.0 12:53/1.0	(1.8) 51%	(0.0) 0%			
	675.4	13.2	5.0	4:34/0.5 5:55/1.0 6:48/1.0 6:26/1.0 6:20/1.0 9:15/1.0	(4.8) 96%	(4.0) 80%			
	670.4	18.2	5.0	7:02/1.0 5:45/1.0 6:06/1.0 5:05/1.0 6:31/1.0	(5.0) 100%	(3.0) 60%			
	665.4	23.2	5.0	5:38/1.0 4:15/1.0 3:45/1.0 4:45/1.0 6:06/1.0	(5.0) 100%	(4.7) 94%			
	660.4	28.2	3.5	6:45/1.0 5:25/1.0 4:36/1.0 3:54/0.5	(3.5) 100%	(3.5) 100%			
	656.9	31.7							
655									
650									
645									
640									
635									
630									
625									
620									
615									
610									
605									
600									



Begin Coring @ 9.7 ft
CRYSTALLINE ROCK
Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock *(continued)*

Boring Terminated at Elevation 656.9 ft in Crystalline Rock: Gray Metamorphosed Rock

- 1) Station and offset are in METRIC**
- 2) Advanced a 2-15/16" tri-cone to a depth of 9.7 feet.
 - 3) Set HW casing to 4.0 feet below the existing ground.
 - 4) Set NW casing to 8.0 feet below the existing ground.
 - 5) Advanced a NQ2 core barrel between 9.7 to 31.7 feet.
 - 6) Used swamp water as drilling fluid.

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NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-34	STATION 16+97	OFFSET 11 ft LT	ALIGNMENT -Y22-
COLLAR ELEV. 688.4 ft	TOTAL DEPTH 9.9 ft	NORTHING 180,044	EASTING 450,454
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/01/10	COMP. DATE 03/01/10	SURFACE WATER DEPTH 0.4ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
690																
685	684.5	3.9	3	7	20						S-1			688.4	687.4	1.0
680	679.5	8.9									SS-2			682.2		6.2
	678.5	9.9	60	40	0.3											
			60/0													
675																
670																
665																
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- 1) Station and offset are in METRIC
- 2) Advanced a 2-15/16" tri-cone to a depth of 9.9 feet.
- 3) Set HW casing to 3.0 feet below the existing ground.
- 4) Used swamp water as drilling fluid.



NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-35	STATION 15+83	OFFSET 9 ft RT	ALIGNMENT -Y22-
COLLAR ELEV. 701.7 ft	TOTAL DEPTH 12.3 ft	NORTHING 179,954	EASTING 450,381
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash		HAMMER TYPE Automatic
DRILLER Duggins, W. T.	START DATE 03/05/10	COMP. DATE 03/05/10	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)	
705															701.7	0.0
700	698.6	3.1	15	25	30						SS-19	M		RESIDUAL Tan & Gray Hard Fine Sandy SILT (A-4), Saprolitic		
695	693.6	8.1	31	69										694.0	7.7	
690	689.5	12.2	60/0.1											689.4	12.3	
685																
680																
675																
670																
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NCDOT BORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10

- Boring Terminated by Tri-cone Refusal at Elevation 689.4 ft on Crystalline Rock: Gray Metamorphosed Rock
- 1) Station and offset are in METRIC
 - 2) Advanced a 2-15/16" tri-cone to a depth of 12.2 feet.
 - 3) Set HW casing to 4.0 feet below the existing ground.
 - 4) Used swamp water as drilling fluid.



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash & Skeen
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-36	STATION 16+30	OFFSET 9 ft RT	ALIGNMENT -Y22-
COLLAR ELEV. 689.2 ft	TOTAL DEPTH 32.0 ft	NORTHING 179,985	EASTING 450,381
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash		HAMMER TYPE Automatic
DRILLER Duggins, W. T.	START DATE 03/09/10	COMP. DATE 03/10/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
690													GROUND SURFACE	0.0
685	685.6	3.6	2	4	5						SS-30	M	ALLUVIAL Gay & Tan Stiff Silty Fine Sandy Highly Plastic CLAY (A-7-6)	6.0
680	680.6	8.6	20	45	52						SS-31	D	RESIDUAL Tan Very Dense Silty Fine SAND (A-2-4)	10.5
675	677.0	12.2	60/0.1								SS-32	No Rec	WEATHERED ROCK (Gray Metamorphosed Rock)	12.2
670													CRYSTALLINE ROCK Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock	
665													REC = 98% RQD = 70%	
660														
655													Boring Terminated at Elevation 657.2 ft in Crystalline Rock: Gray Metamorphosed Rock	32.0
650													<ol style="list-style-type: none"> 1) Station and offset are in METRIC 2) Advanced a 2-15/16" tri-cone to a depth of 12.2 feet. 3) Set HW casing to 3 feet below the existing ground. 4) Set NW casing to 12 feet below the existing ground. 5) Advanced a NQ2 core barrel between 12.3 to 32 feet. 6) Used swamp water as drilling fluid. 	
645														
640														
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615														
610														

NCDOT BORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10



NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

PROJECT NO. 34410.1.25		ID. R-2248E		COUNTY Mecklenburg		GEOLOGIST Nash & Skeen					
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek							GROUND WTR (ft)				
BORING NO. B-36		STATION 16+30		OFFSET 9 ft RT		ALIGNMENT -Y22-					
COLLAR ELEV. 689.2 ft		TOTAL DEPTH 32.0 ft		NORTHING 179,985		EASTING 450,381					
DRILL MACHINE Diedrich D-50		DRILL METHOD 2-15/16" tri-cone with rotary wash				HAMMER TYPE Automatic					
DRILLER Duggins, W. T.		START DATE 03/09/10		COMP. DATE 03/10/10		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 19.8 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 (%)	REC. (ft)	RQD (%)			
677	677.0	12.2	4.8	12:45/1.0	(4.8)	(2.1)					677.0
675				12:45/1.0 N=60/0.7	100%	44%			<p>Begin Coring @ 12.2 ft CRYSTALLINE ROCK Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock</p>		12.2
	672.2	17.0		5:21/1.0 5:02/1.0 4:56/1.0							
670			5.0	3:55/0.8	(5.0)	(2.8)					
				7:43/1.0 6:26/1.0 6:42/1.0	100%	56%					
	667.2	22.0		5:21/1.0 6:43/1.0							
665			5.0	7:10/1.0 7:55/1.0 7:05/1.0	(4.7)	(4.2)					
				6:22/1.0 5:48/1.0	94%	84%					
	662.2	27.0		7:42/1.0 7:10/1.0	(5.0)	(4.8)					
660			5.0	5:58/1.0 6:34/1.0 6:39/1.0	100%	96%					
										657.2	
655										657.2	
<p>Boring Terminated at Elevation 657.2 ft in Crystalline Rock: Gray Metamorphosed Rock</p> <p>1) Station and offset are in METRIC 2) Advanced a 2-15/16" tri-cone to a depth of 12.2 feet. 3) Set HW casing to 3 feet below the existing ground. 4) Set NW casing to 12 feet below the existing ground. 5) Advanced a NQ2 core barrel between 12.3 to 32 feet. 6) Used swamp water as drilling fluid.</p>											
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NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-37	STATION 16+55	OFFSET 9 ft RT	ALIGNMENT -Y22-
COLLAR ELEV. 688.2 ft	TOTAL DEPTH 26.1 ft	NORTHING 180,001	EASTING 450,435
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/10/10	COMP. DATE 03/10/10	SURFACE WATER DEPTH 0.3ft

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					
690															
													▼	688.2	0.0
685	684.7	3.5	4	5	14						SS-33	W		683.7	4.5
														683.0	5.2
680	681.6	6.6	60/0.1								SS-34	No Rec		681.5	6.7
														678.6	9.6
675															
670															
665															
														662.1	26.1
660															
655															
650															
645															
640															
635															
630															
625															
620															
615															
610															

WATER SURFACE (03/10/10)

ALLUVIAL
Gay & Tan Stiff Silty Fine Sandy CLAY (A-7-5)

RESIDUAL
Tan Medium Dense Silty Coarse to Fine SAND (A-2-4), with Rock Fragments, Saprolitic

WEATHERED ROCK
(Gray & Orange Metamorphosed Rock)

CRYSTALLINE ROCK
Tan & Gray, Moderately to Very Severely Weathered, Hard to Soft, Close to Very Closely Fractured Spacing, Very Thickly Bedded, Metamorphic Granite

Between 8.7 to 9.6 was Very Severely Weathered Seam

REC = 72% RQD = 0%

CRYSTALLINE ROCK
Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock

REC = 98% RQD = 72%

Boring Terminated at Elevation 662.1 ft in Crystalline Rock: Gray Metamorphosed Rock

- 1) Station and offset are in METRIC
- 2) Advanced a 2-15/16" tri-cone to a depth of 6.6 feet.
- 3) Set HW casing to 3 feet below the existing ground.
- 4) Set NW casing to 6.5 feet below the existing ground.
- 5) Advanced a NQ2 core barrel between 6.6 to 26 feet.
- 6) Used swamp water as drilling fluid.

NCDOT BORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10



NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-37	STATION 16+55	OFFSET 9 ft RT	ALIGNMENT -Y22-
COLLAR ELEV. 688.2 ft	TOTAL DEPTH 26.1 ft	NORTHING 180,001	EASTING 450,435
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/10/10	COMP. DATE 03/10/10	SURFACE WATER DEPTH 0.3ft

CORE SIZE NQ				TOTAL RUN 19.4 ft				STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %	RQD (ft) %			
681.5											Begin Coring @ 6.7 ft	
680	681.5	6.7	4.4	9:20/1.0 9:59/1.0 6:41/1.0 5:40/1.0 2:56/0.4	(3.6) 82%	(6.0) 136%		(2.1) 72%	(0.0) 0%	681.5	6.7	
	677.1	11.1		5:28/1.0 4:47/1.0 5:28/1.0 6:00/1.0 5:59/1.0	(5.0) 100%	(3.2) 64%		(16.2) 98%	(11.8) 72%	678.6	9.6	
675			5.0	6:04/1.0 5:50/1.0 6:39/1.0 7:24/1.0 6:48/1.0	(5.0) 100%	(3.7) 74%						
670	672.1	16.1		5:53/1.0 5:25/1.0 6:34/1.0 6:58/1.0 6:45/1.0	(4.7) 94%	(4.3) 86%						
665	667.1	21.1								662.1	26.1	
660	662.1	26.1									26.1	
660										Boring Terminated at Elevation 662.1 ft in Crystalline Rock: Gray Metamorphosed Rock 1) Station and offset are in METRIC 2) Advanced a 2-15/16" tri-cone to a depth of 6.6 feet. 3) Set HW casing to 3 feet below the existing ground. 4) Set NW casing to 6.5 feet below the existing ground. 5) Advanced a NQ2 core barrel between 6.6 to 26 feet. 6) Used swamp water as drilling fluid.		
655												
650												
645												
640												
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625												
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610												
605												

NCDOT CORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10

North Carolina Department of Transportation
 Geotechnical Unit
 Rock Core Photo

<i>Project No.:</i> 34410.1.25	<i>I.D. No.:</i> R-2248E	<i>County:</i> Mecklenburg	<i>Geologist:</i> A. A. Nash
<i>Site Description:</i> Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			
<i>Boring No.:</i> B-37	<i>Station:</i> --	<i>Offset:</i> --	<i>Alignment:</i> -Y22-
<i>Total Depth:</i> 26.1 feet	<i>Collar Elev.:</i> 688.2 ft	<i>Start Date:</i> 3/10/2010	<i>Comp. Date:</i> 3/10/2010
<i>Driller:</i> Willie Duggins		<i>Core Size:</i> NQ	<i>Drill Machine:</i> Diedrich D-50





NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-38	STATION 16+80	OFFSET 9 ft RT	ALIGNMENT -Y22-
COLLAR ELEV. 688.3 ft	TOTAL DEPTH 35.8 ft	NORTHING 180,017	EASTING 450,454
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/08/10	COMP. DATE 03/09/10	SURFACE WATER DEPTH 1.2ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
690	688.3	0.0													WATER SURFACE (03/08/10)	
	688.2	2.1	WOH	WOH	WOH						SS-26	W		688.3	GROUND SURFACE	0.0
685			2	8	12						SS-27	D		685.7	ALLUVIAL Gay & Tan Very Soft Fine Sandy Silty Highly Plastic CLAY (A-7-6)	2.6
680	681.2	7.1												682.8	RESIDUAL Tan Very Stiff Fine Sandy SILT (A-4)	5.5
			38	62/0.3							SS-28	D			WEATHERED ROCK (Gray & Orange Metamorphosed Rock)	
675	677.3	11.0												677.3		11.0
			60/0								SS-29	No Rec			CRYSTALLINE ROCK Gray to Dark Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Very Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock	
670															REC = 96% RQD = 51%	
665																
660																
655																
650														652.5	Boring Terminated at Elevation 652.5 ft in Crystalline Rock: Gray Metamorphosed Rock	35.8
645															1) Station and offset are in METRIC	
640															2) Advanced a 2-15/16" tri-cone to a depth of 11.0 feet.	
635															3) Set HW casing to 3.5 feet below the existing ground.	
630															4) Set NW casing to 13.0 feet below the existing ground.	
625															5) Advanced a NQ2 core barrel between 11.0 to 35.8 feet.	
620															6) Used swamp water as drilling fluid.	
615																
610																

NCDOT BORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10



NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft) 0 HR. N/A 24 HR. N/A
BORING NO. B-38	STATION 16+80	OFFSET 9 ft RT	
COLLAR ELEV. 688.3 ft	TOTAL DEPTH 35.8 ft	NORTHING 180,017	EASTING 450,454
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash		HAMMER TYPE Automatic
DRILLER Duggins, W. T.	START DATE 03/08/10	COMP. DATE 03/09/10	SURFACE WATER DEPTH 1.2ft

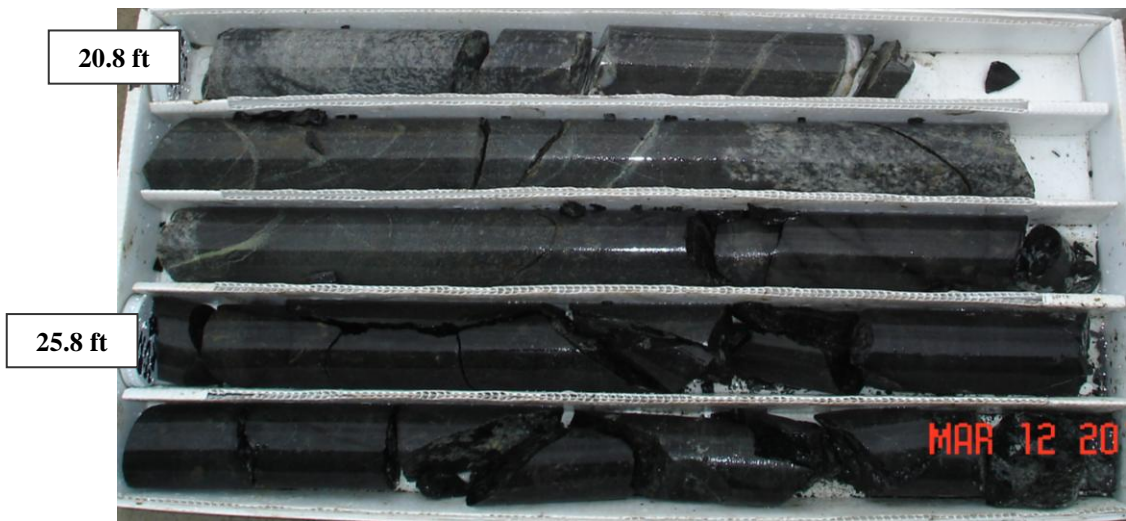
CORE SIZE NQ	TOTAL RUN 24.8 ft		
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ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
677.3											Begin Coring @ 11.0 ft	
675	677.3	11.0	4.8	5:51/1.0 5:51/1.0 N=60/0 6:20/1.0 5:19/1.0 5:47/1.0 4:40/0.8	(4.6) 96%	(2.1) 44%	SS-29	(23.9) 96%	(12.7) 51%	677.3	CRYSTALLINE ROCK Gray to Dark Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Very Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock	11.0
670	672.5	15.8	5.0	4:38/1.0 7:50/1.0 7:51/1.0 9:20/1.0 13:38/1.0	(4.7) 94%	(2.7) 54%						
665	667.5	20.8	5.0	8:44/1.0 5:50/1.0 5:38/1.0 6:48/1.0 6:12/1.0	(4.8) 96%	(4.0) 80%						
660	662.5	25.8	5.0	7:31/1.0 7:38/1.0 7:02/1.0 5:58/1.0 5:02/1.0	(5.0) 100%	(0.4) 8%						
655	657.5	30.8	5.0	4:38/1.0 4:16/1.0 4:02/1.0 5:26/1.0 5:04/1.0	(4.8) 96%	(3.5) 70%						
650	652.5	35.8								652.5	Boring Terminated at Elevation 652.5 ft in Crystalline Rock: Gray Metamorphosed Rock	35.8
645											1) Station and offset are in METRIC 2) Advanced a 2-15/16" tri-cone to a depth of 11.0 feet. 3) Set HW casing to 3.5 feet below the existing ground. 4) Set NW casing to 13.0 feet below the existing ground. 5) Advanced a NQ2 core barrel between 11.0 to 35.8 feet. 6) Used swamp water as drilling fluid.	
640												
635												
630												
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610												
605												
600												

NCDOT CORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10

North Carolina Department of Transportation
Geotechnical Unit
Rock Core Photo

Project No.: 34410.1.25	I.D. No.: R-2248E	County: Mecklenburg	Geologist: A. A. Nash
Site Description: Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			
Boring No.: B-38	Station: --	Offset: --	Alignment: -Y22-
Total Depth: 35.8 feet	Collar Elev.: 688.3 ft	Start Date: 3/8/2010	Comp. Date: 3/9/2010
Driller: Willie Duggins		Core Size: NQ	Drill Machine: Diedrich D-50



North Carolina Department of Transportation
 Geotechnical Unit
 Rock Core Photo

Project No.: 34410.1.25	I.D. No.: R-2248E	County: Mecklenburg	Geologist: A. A. Nash
Site Description: Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			
Boring No.: B-38	Station: --	Offset: --	Alignment: -Y22-
Total Depth: 35.8 feet	Collar Elev.: 688.3 ft	Start Date: 3/8/2010	Comp. Date: 3/9/2010
Driller: Willie Duggins	Core Size: NQ	Drill Machine: Diedrich D-50	





NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34410.1.25	ID. R-2248E	COUNTY Mecklenburg	GEOLOGIST Nash, A. A.
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			GROUND WTR (ft)
BORING NO. B-39	STATION 16+97	OFFSET 9 ft RT	ALIGNMENT -Y22-
COLLAR ELEV. 688.3 ft	TOTAL DEPTH 15.1 ft	NORTHING 180,028	EASTING 450,468
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic	
DRILLER Duggins, W. T.	START DATE 03/05/10	COMP. DATE 03/05/10	SURFACE WATER DEPTH 0.5ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
690															
														- - - - -	- - - - -
														688.3	0.0
														685.3	3.0
685	684.8	3.5	5	10	11										
680	679.8	8.5	71	29/0.3											
	678.2	10.1	60/0												
675															
670															
665															
660															
655															
650															
645															
640															
635															
630															
625															
620															
615															
610															

NCDOT BORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10

REC = 96% RQD = 60%

Boring Terminated at Elevation 673.2 ft in Crystalline Rock: Gray Metamorphosed Rock

- 1) Station and offset are in METRIC
- 2) Advanced a 2-15/16" tri-cone to a depth of 10.1 feet.
- 3) Set HW casing to 3.5 feet below the existing ground.
- 4) Set NW casing to 10 feet below the existing ground.
- 5) Advanced a NQ2 core barrel between 10.1 to 15.1 feet.
- 6) Used swamp water as drilling fluid.



NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

PROJECT NO. 34410.1.25		ID. R-2248E		COUNTY Mecklenburg		GEOLOGIST Nash, A. A.					
SITE DESCRIPTION Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek							GROUND WTR (ft)				
BORING NO. B-39		STATION 16+97		OFFSET 9 ft RT		ALIGNMENT -Y22-					
COLLAR ELEV. 688.3 ft		TOTAL DEPTH 15.1 ft		NORTHING 180,028		EASTING 450,468					
DRILL MACHINE Diedrich D-50		DRILL METHOD 2-15/16" tri-cone with rotary wash				HAMMER TYPE Automatic					
DRILLER Duggins, W. T.		START DATE 03/05/10		COMP. DATE 03/05/10		SURFACE WATER DEPTH 0.5ft					
CORE SIZE NQ		TOTAL RUN 5.0 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) %	SAMP. NO.	REC. (ft) %			
678.2	678.2	10.1	5.0	7:37/1.0 7:37/1.0 N=60/0 6:08/1.0 7:08/1.0 7:24/1.0 5:28/1.0	(4.8) 96%	(3.0) 60%	SS-25	(4.8) 96%	(3.0) 60%		678.2
675	673.2	15.1									673.2
670											
665											
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600											

NCDOT CORE SINGLE 10-0045.GPJ NC_DOT.GDT 3/16/10

Begin Coring @ 10.1 ft

CRYSTALLINE ROCK

Gray, Freshly Weathered, Hard to Very Hard, Very Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock

Boring Terminated at Elevation 673.2 ft in Crystalline Rock: Gray Metamorphosed Rock

1) Station and offset are in METRIC

- 2) Advanced a 2-15/16" tri-cone to a depth of 10.1 feet.
- 3) Set HW casing to 3.5 feet below the existing ground.
- 4) Set NW casing to 10 feet below the existing ground.
- 5) Advanced a NQ2 core barrel between 10.1 to 15.1 feet.
- 6) Used swamp water as drilling fluid.

North Carolina Department of Transportation
 Geotechnical Unit
 Rock Core Photo

Project No.: 34410.1.25	I.D. No.: R-2248E	County: Mecklenburg	Geologist: A. A. Nash
Site Description: Bridge on -Y22- (Mallard Creek Road) over tributary to Stone Creek			
Boring No.: B-39	Station: --	Offset: --	Alignment: -Y22-
Total Depth: 15.1 feet	Collar Elev.: 688.3 ft	Start Date: 3/5/2010	Comp. Date: 3/5/2010
Driller: Willie Duggins	Core Size: NQ	Drill Machine: Diedrich D-50	

