



# 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	0 HR. 0.6
COLLAR ELEV. 647.6 ft	TOTAL DEPTH 32.0 ft	NORTHING 179,985	24 HR. 0.2
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.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
650																
645	644.0	3.6													647.6	GROUND SURFACE 0.0
640	639.0	8.6	2	4	5						SS-30	M		641.6	ALLUVIAL Gay & Tan Stiff Silty Fine Sandy Highly Plastic CLAY (A-7-6) 6.0	
635	635.4	12.2	20	45	52						SS-31	D		637.1	RESIDUAL Tan Very Dense Silty Fine SAND (A-2-4) 10.5	
630			60/0.1								SS-32	No Rec		635.4	WEATHERED ROCK (Gray Metamorphosed Rock) 12.2	
625																CRYSTALLINE ROCK Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock
620																REC = 98% RQD = 70%
615														615.6	32.0	Boring Terminated at Elevation 615.6 ft in Crystalline Rock: Gray Metamorphosed Rock
610																<ol style="list-style-type: none"> <li>1) Station and offset are in METRIC</li> <li>2) Advanced a 2-15/16" tri-cone to a depth of 12.2 feet.</li> <li>3) Set HW casing to 3 feet below the existing ground.</li> <li>4) Set NW casing to 12 feet below the existing ground.</li> <li>5) Advanced a NQ2 core barrel between 12.3 to 32 feet.</li> <li>6) Used swamp water as drilling fluid.</li> </ol>
605																
600																
595																
590																
585																
580																
575																
570																

NCDOT BORE SINGLE 10-0045.GPJ NC\_DOT.GDT 3/11/10



# 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) <b>0 HR.</b> 0.6 <b>24 HR.</b> 0.2
BORING NO. B-36	STATION 16+30	OFFSET 9 ft RT	
COLLAR ELEV. 647.6 ft	TOTAL DEPTH 32.0 ft	NORTHING 179,985	EASTING 450,381

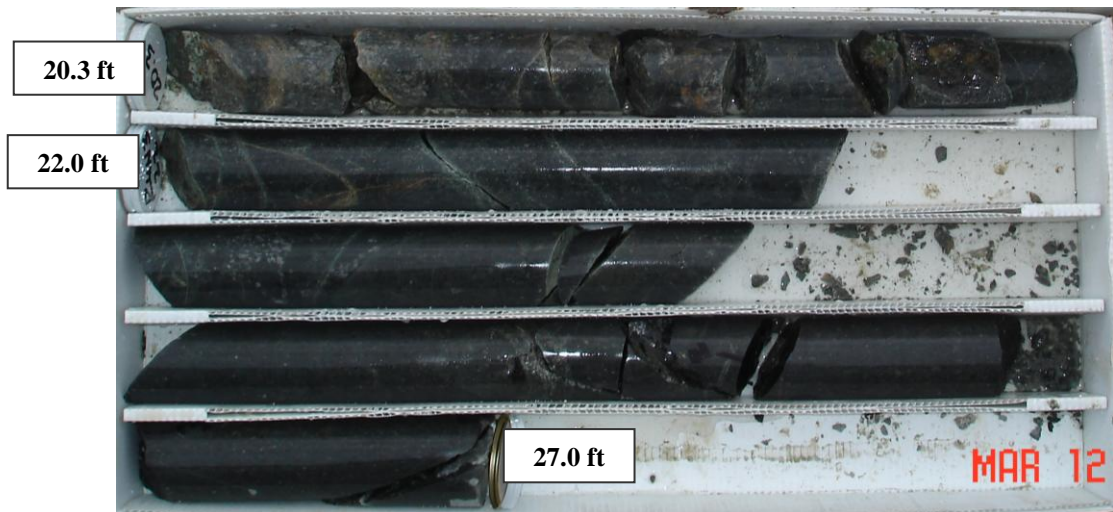
DRILL MACHINE Diedrich D-50	DRILL METHOD 2-15/16" tri-cone with rotary wash	HAMMER TYPE Automatic
DRILLER Duggins, W. T.	START DATE 03/09/10	COMP. DATE 03/10/10
CORE SIZE NQ	TOTAL RUN 19.8 ft	SURFACE WATER DEPTH N/A

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %		
635.3										Begin Coring @ 12.3 ft
630	630.6	17.0	5.0	5:21/1.0 5:02/1.0 4:56/1.0 3:55/0.8						<b>CRYSTALLINE ROCK</b> Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock (continued)
625	625.6	22.0	5.0	7:43/1.0 6:26/1.0 6:42/1.0 5:21/1.0 6:43/1.0	(5.0) 100%	(2.8) 56%				
620	620.6	27.0	5.0	7:10/1.0 7:55/1.0 7:05/1.0 6:22/1.0 5:48/1.0	(4.7) 94%	(4.2) 84%				
615	615.6	32.0	5.0	7:42/1.0 7:10/1.0 5:58/1.0 6:34/1.0 6:39/1.0	(5.0) 100%	(4.8) 96%				
610										Boring Terminated at Elevation 615.6 ft in Crystalline Rock: Gray Metamorphosed Rock
605										<b>1) Station and offset are in METRIC</b> 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.
600										
595										
590										
585										
580										
575										
570										
565										
560										

NCDOT CORE SINGLE 10-0045.GPJ NC\_DOT.GDT 3/11/10

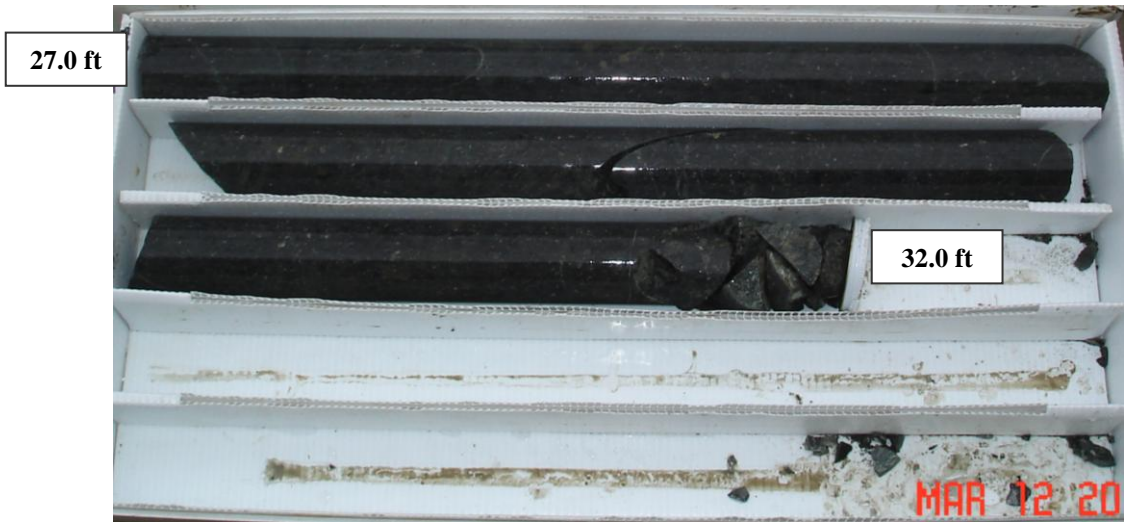
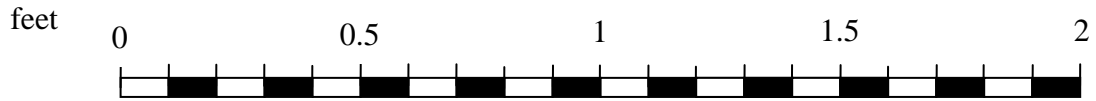
North Carolina Department of Transportation  
 Geotechnical Unit  
 Rock Core Photo

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-36	Station: --	Offset: --	Alignment: -Y22-
Total Depth: 32.0 feet	Collar Elev.: 647.6 ft	Start Date: 3/9/2010	Comp. Date: 3/10/2010
Driller: Willie Duggins		Core Size: NQ	Drill Machine: Diedrich D-50



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-36	<i>Station:</i> --	<i>Offset:</i> --	<i>Alignment:</i> -Y22-
<i>Total Depth:</i> 32.0 feet	<i>Collar Elev.:</i> 647.6 ft	<i>Start Date:</i> 3/9/2010	<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-37	STATION 16+55	OFFSET 9 ft RT	ALIGNMENT -Y22-
COLLAR ELEV. 646.6 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.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
650																
645																
640	643.1	3.5	4	5	14											
640	640.0	6.6	60/0.1													
635																
630																
625																
620																
615																
610																
605																
600																
595																
590																
585																
580																
575																
570																

646.6 WATER SURFACE (03/10/10) 0.0

642.1 ALLUVIAL 4.5

641.4 Gay & Tan Stiff Silty Fine Sandy CLAY (A-7-5) 5.2

639.9 RESIDUAL 6.7

637.0 Tan Medium Dense Silty Coarse to Fine SAND (A-2-4), with Rock Fragments, Saprolitic 9.6

620.5 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 = 73% 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 620.5 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 3/11/10



# NCDOT GEOTECHNICAL ENGINEERING UNIT

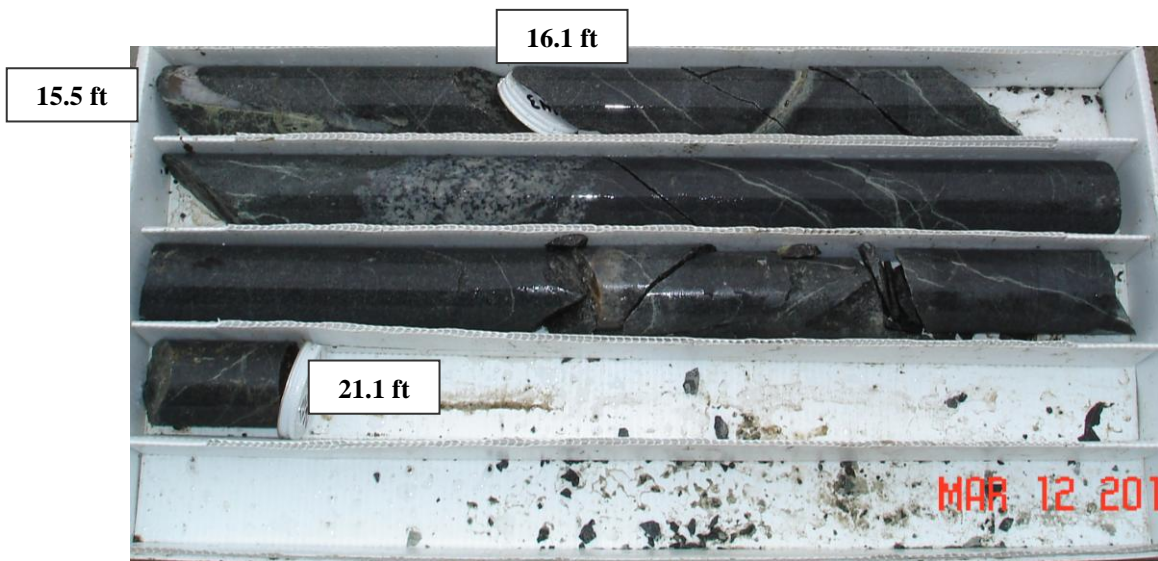
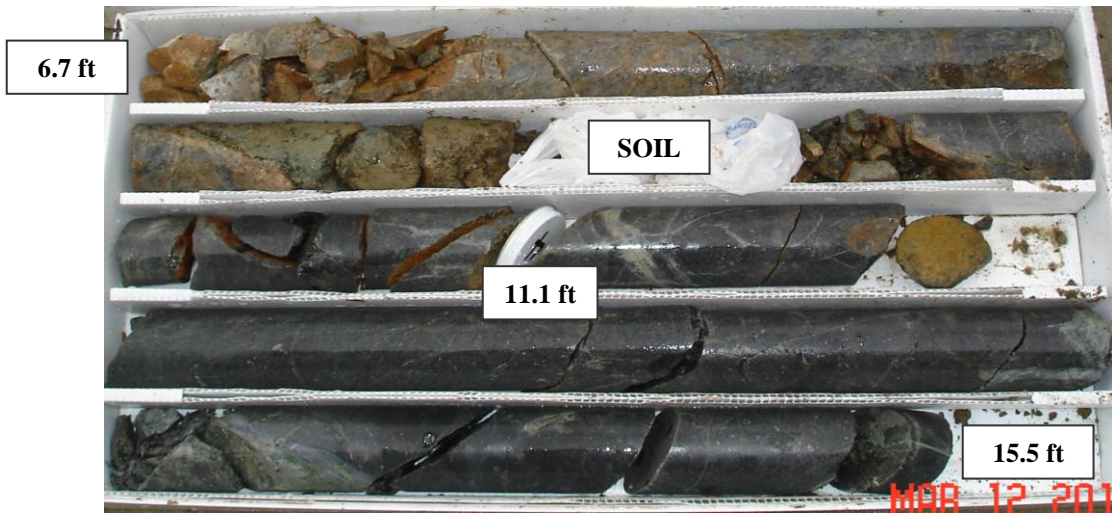
## CORE BORING REPORT

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. 646.6 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									
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) %			
639.9	639.9	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%				Begin Coring @ 6.7 ft	
635	635.5	11.1	5.0	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%				639.9 637.0 Tan & Gray, Moderately to Very Severely Weathered, Hard to Soft, Close to Very Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock	6.7 9.6
630	630.5	16.1	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%				<b>CRYSTALLINE ROCK</b> Gray, Fresh to Very Slightly Weathered, Hard to Very Hard, Moderately Close to Closely Fractured Spacing, Very Thickly Bedded, Metamorphosed Rock	
625	625.5	21.1	5.0	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%					
620	620.5	26.1								Boring Terminated at Elevation 620.5 ft in Crystalline Rock: Gray Metamorphosed Rock	26.1
615										<b>1) Station and offset are in METRIC</b> 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.	
610											
605											
600											
595											
590											
585											
580											
575											
570											
565											
560											

NCDOT CORE SINGLE 10-0045.GPJ NC\_DOT.GDT 3/11/10

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-37	Station: --	Offset: --	Alignment: -Y22-
Total Depth: 26.1 feet	Collar Elev.: 646.6 ft	Start Date: 3/10/2010	Comp. Date: 3/10/2010
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-37	Station: --	Offset: --	Alignment: -Y22-
Total Depth: 26.1 feet	Collar Elev.: 646.6 ft	Start Date: 3/10/2010	Comp. Date: 3/10/2010
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-38	STATION 16+80	OFFSET 9 ft RT	ALIGNMENT -Y22-
COLLAR ELEV. 646.7 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.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						ELEV. (ft)
650																
	646.7	0.0														
645	644.6	2.1	WOH	WOH	WOH						SS-26	W		ALLUVIAL		
											SS-27	D		Gay & Tan Very Soft Fine Sandy Silty Highly Plastic CLAY (A-7-6)	2.6	
640	639.6	7.1												RESIDUAL		
														Tan Very Stiff Fine Sandy SILT (A-4)	5.5	
														WEATHERED ROCK		
														(Gray & Orange Metamorphosed Rock)		
635	635.7	11.0									SS-28	D				
630																
625																
620																
615																
610																
605																
600																
595																
590																
585																
580																
575																
570																

NCDOT BORE SINGLE 10-0045.GPJ NC\_DOT.GDT 3/11/10

Boring Terminated at Elevation 610.9 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 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.

REC = 96% RQD =51%



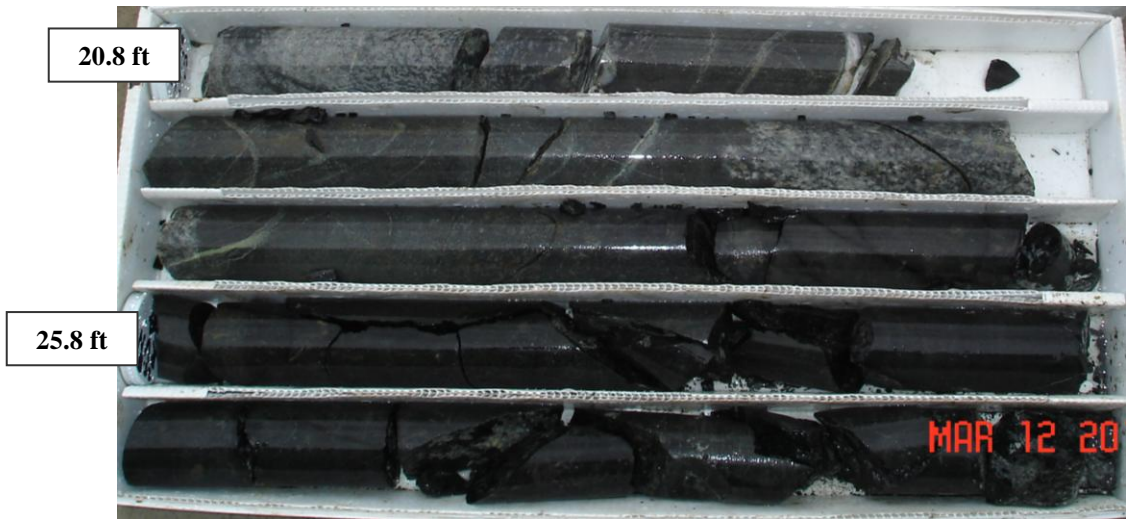
# NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

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-38		STATION 16+80		OFFSET 9 ft RT		ALIGNMENT -Y22-					
COLLAR ELEV. 646.7 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									
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) %			
635.7										Begin Coring @ 11.0 ft	
635.7	635.7	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%				635.7	11.0
630	630.9	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%					
625	625.9	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%					
620	620.9	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%					
615	615.9	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%					
610	610.9	35.8								610.9	35.8
Boring Terminated at Elevation 610.9 ft in Crystalline Rock: Gray Metamorphosed Rock											
<p><b>1) Station and offset are in METRIC</b></p> <p>2) Advanced a 2-15/16" tri-cone to a depth of 11.0 feet.</p> <p>3) Set HW casing to 3.5 feet below the existing ground.</p> <p>4) Set NW casing to 13.0 feet below the existing ground.</p> <p>5) Advanced a NQ2 core barrel between 11.0 to 35.8 feet.</p> <p>6) Used swamp water as drilling fluid.</p>											

NCDOT CORE SINGLE 10-0045.GPJ NC\_DOT.GDT 3/11/10

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.: 646.7 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.: 646.7 ft	Start Date: 3/8/2010	Comp. Date: 3/9/2010
Driller: Willie Duggins	Core Size: NQ	Drill Machine: Diedrich D-50	

