

**MAINE DEPARTMENT OF TRANSPORTATION
HIGHWAY/BRIDGE PROGRAM
GEOTECHNICAL SECTION
AUGUSTA, MAINE**

GEOTECHNICAL DESIGN REPORT

For the Reconstruction of:

**STATE ROUTE 136
DURHAM, MAINE**

Prepared by:
Kalia Breskin, P.E.
Senior Geotechnical Engineer

Androscoggin County
WIN 20268.00

Soils Report No. 2013-122

May 21, 2013



Brad Foley, Program Manager
Scott Bickford & Heath Cowan, Assistant Program Managers
Phone: 624-3480 Fax: 624-3481

Memorandum

To: Robert Betz, P.E.
Cc: Denis Lovely
From: Kitty Breskin
Date: May 17, 2013
Subject: Durham, PIN 20268.00

The purpose of this report is to present subsurface information for this project. Soils in this area are very similar to subsurface conditions immediately north of this project, and all recommendations from Maine DOT Soils Report 2012-14, "Geotechnical Design Report for the Reconstruction of State Route 136, Durham, Maine" apply to this project. Geoplans for the current project are included as Appendix A.

The four borings drilled for this project were not included in the original report because that project did not cover this area. All of these borings encountered brown, moist, loose to very loose SAND with varying amounts of silt above approximate Elevation 97 feet. Soils below this elevation were soft, wet sandy or clayey SILT with shear strengths generally between 550 and 850 psf. Conditions were reasonably uniform in these borings, however the borings were widely spaced and some variation in field conditions may be encountered during construction. Boring logs are included as Appendix B.

Limited laboratory testing was done because visual descriptions were similar to soils in the adjacent project. The laboratory test summary sheet and grain size curve are included as Appendix C.

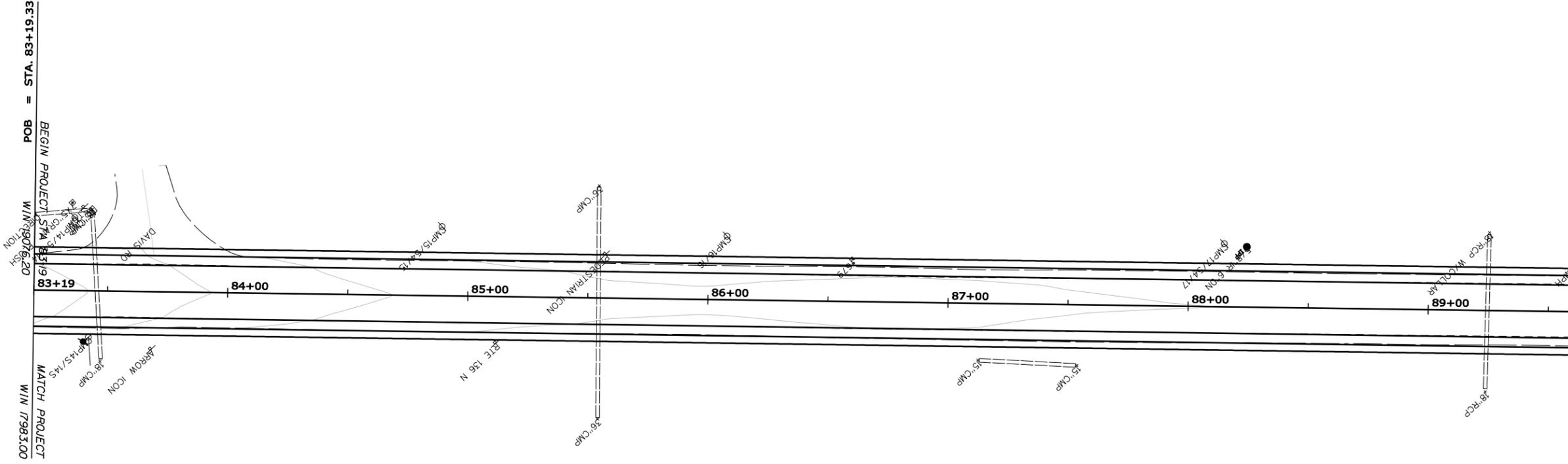
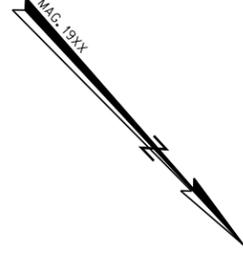


Map Scale 1:24000

The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch. Road names used on this map may not match official road names.

Appendix A

Geoplans



W/M 179833.00 MATCH PROJECT
 STA. 83+19.33
 W/M 19076.20 BEGIN PROJECT
 STA. 83+19.33
 POB = STA. 83+19.33

LEGEND

 CASED WASH BORING

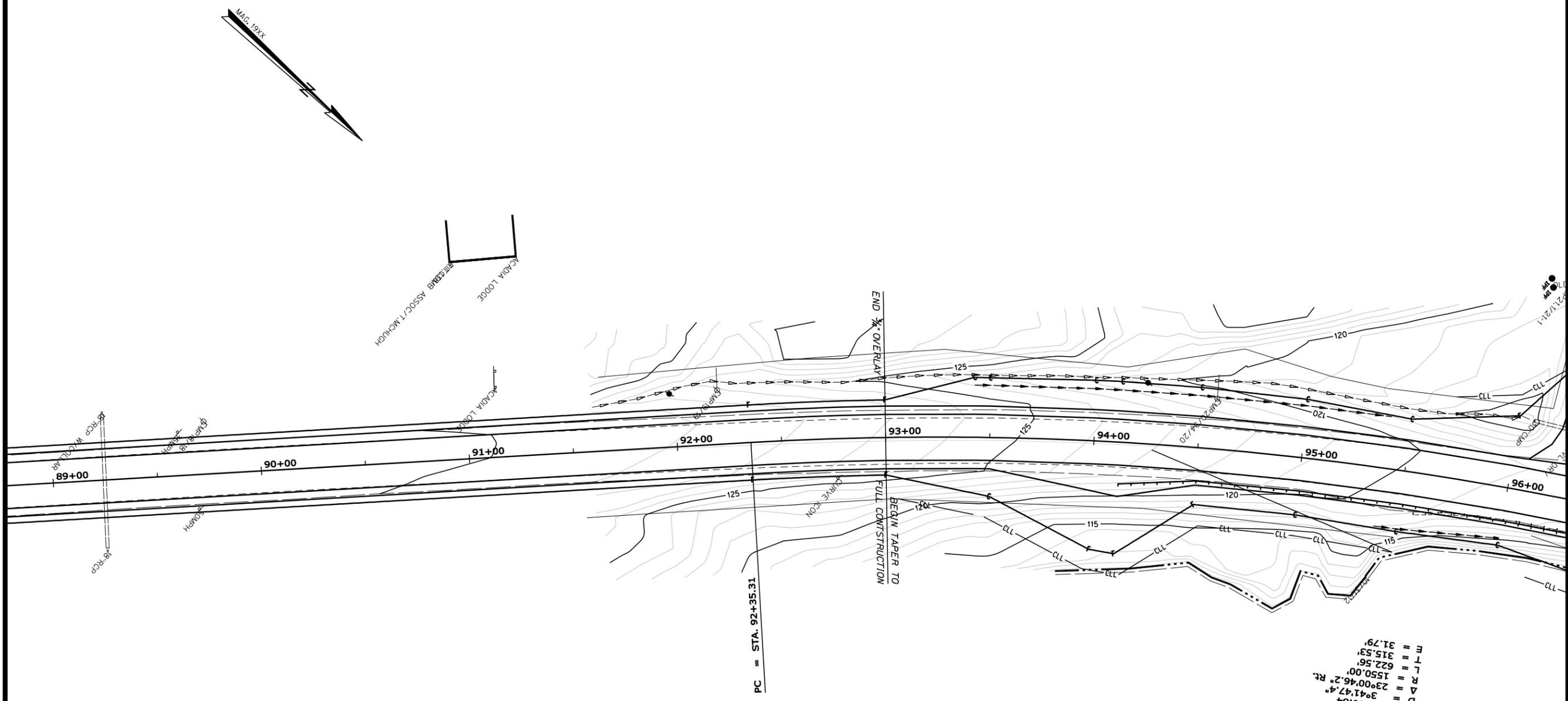
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 OF 12

DURHAM
ROUTE 136
GEOPLANS

PROJ. MANAGER	BY	DATE
CHECKED-REVIEWED		
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DESIGNS-DETAILED		
REVISIONS 1		
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REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

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STATE OF MAINE
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STP-2026(800)
WIN
20268.00
HIGHWAY PLANS



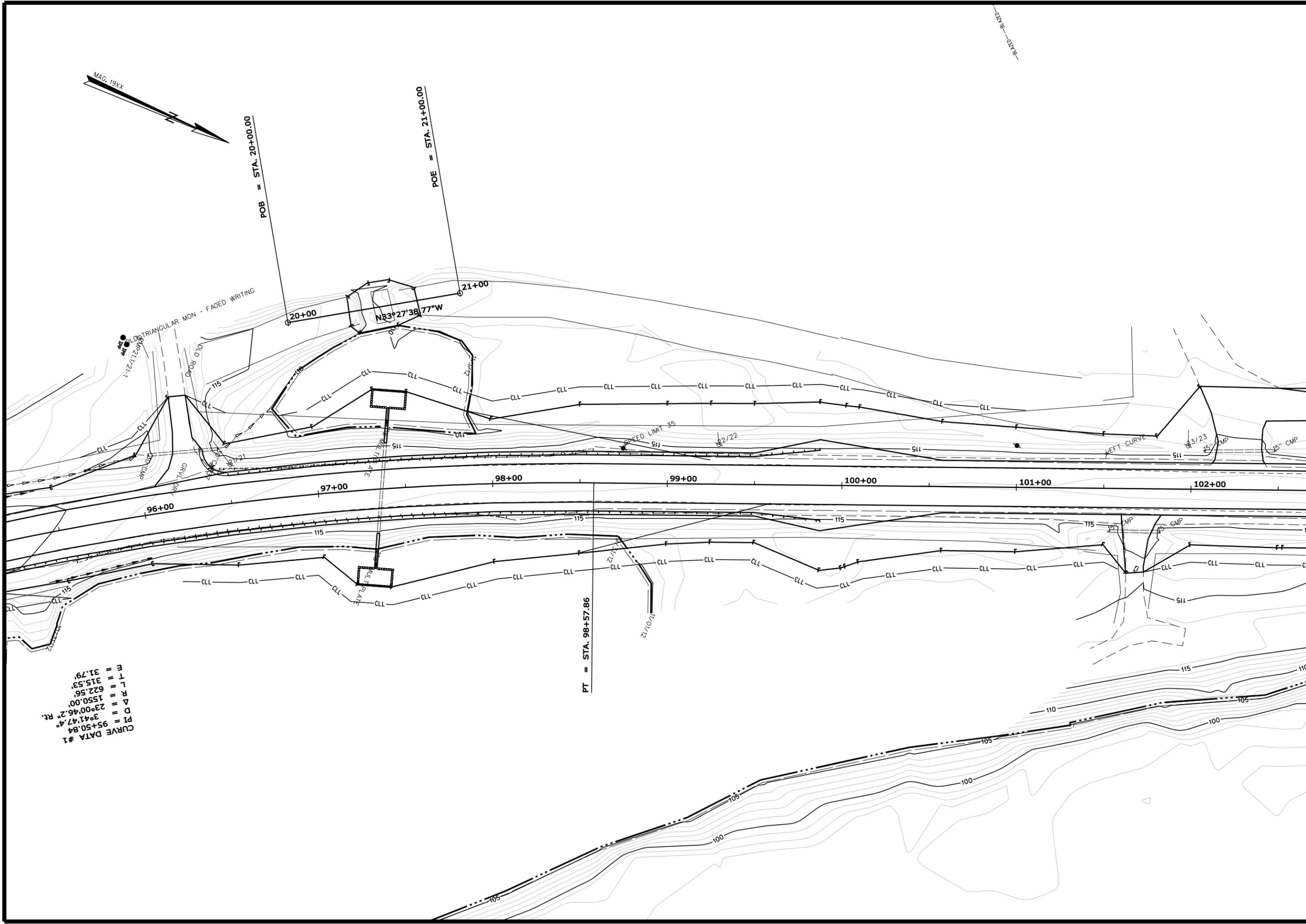
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DURHAM
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DURHAM
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 GEOPLANS

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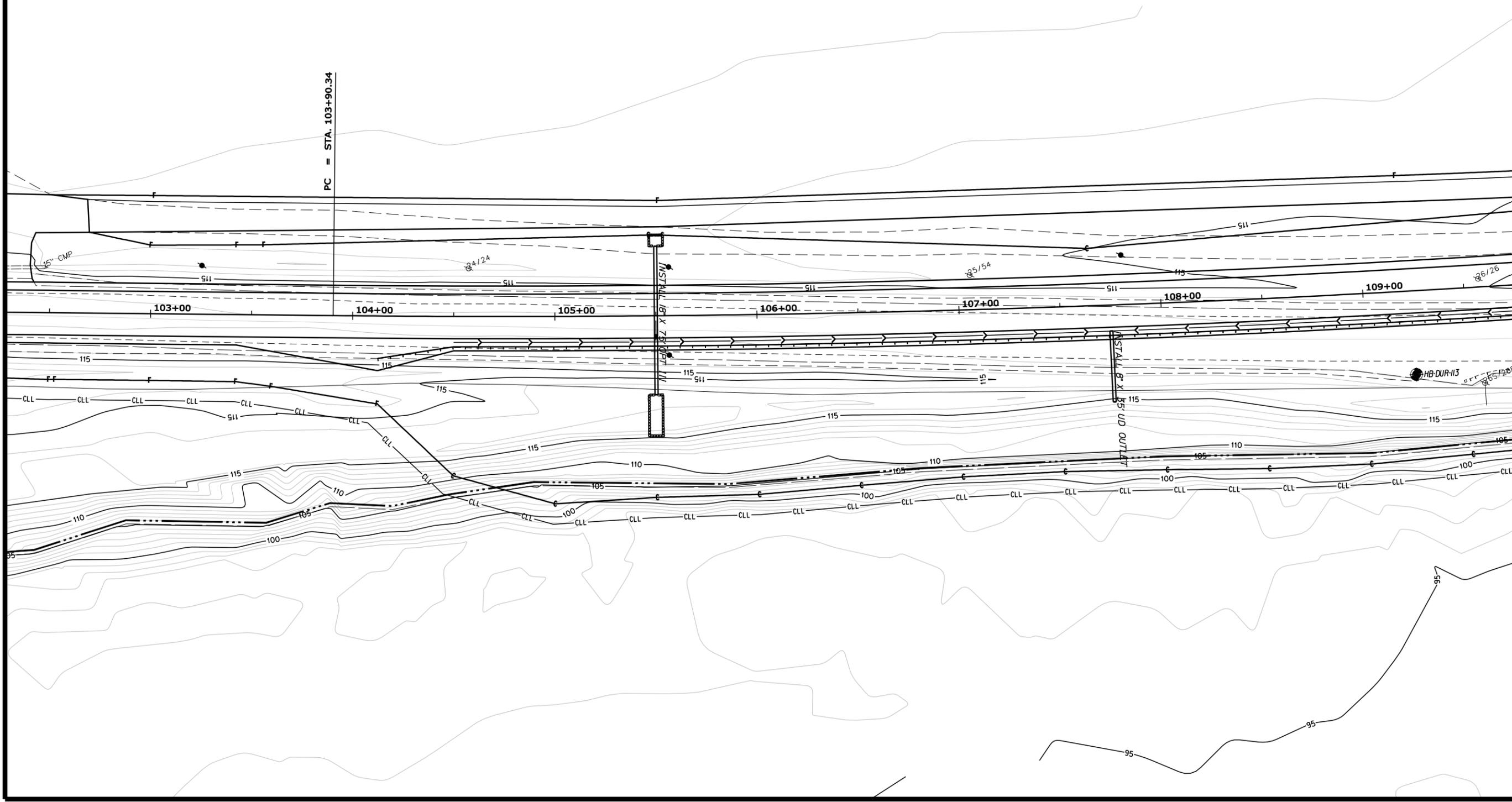
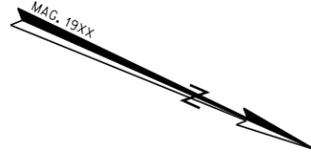
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Date: 5/20/2013

Username: kity.breskin

Division: GEOTECH

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DURHAM
 ROUTE 136
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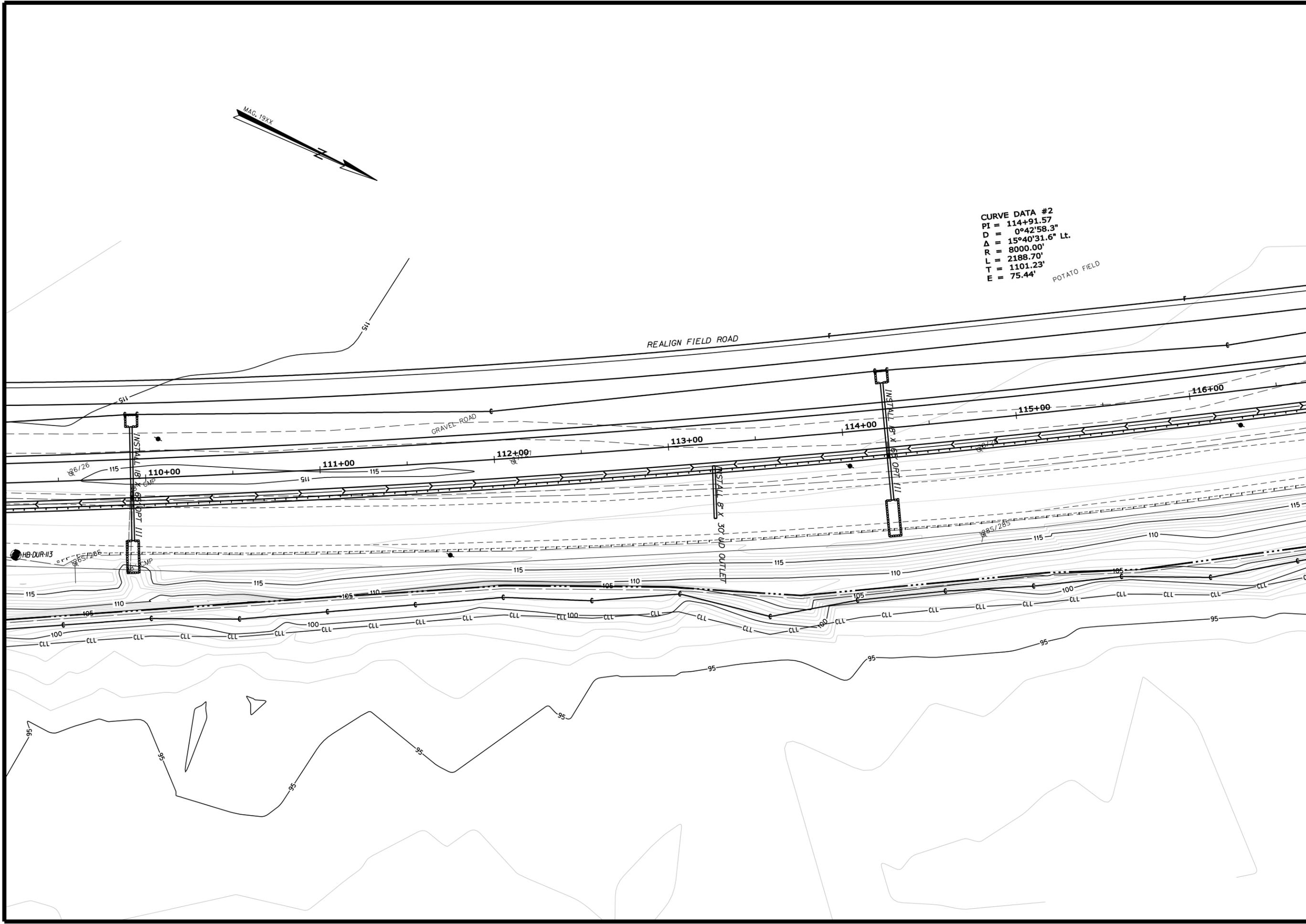
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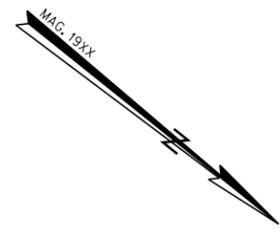
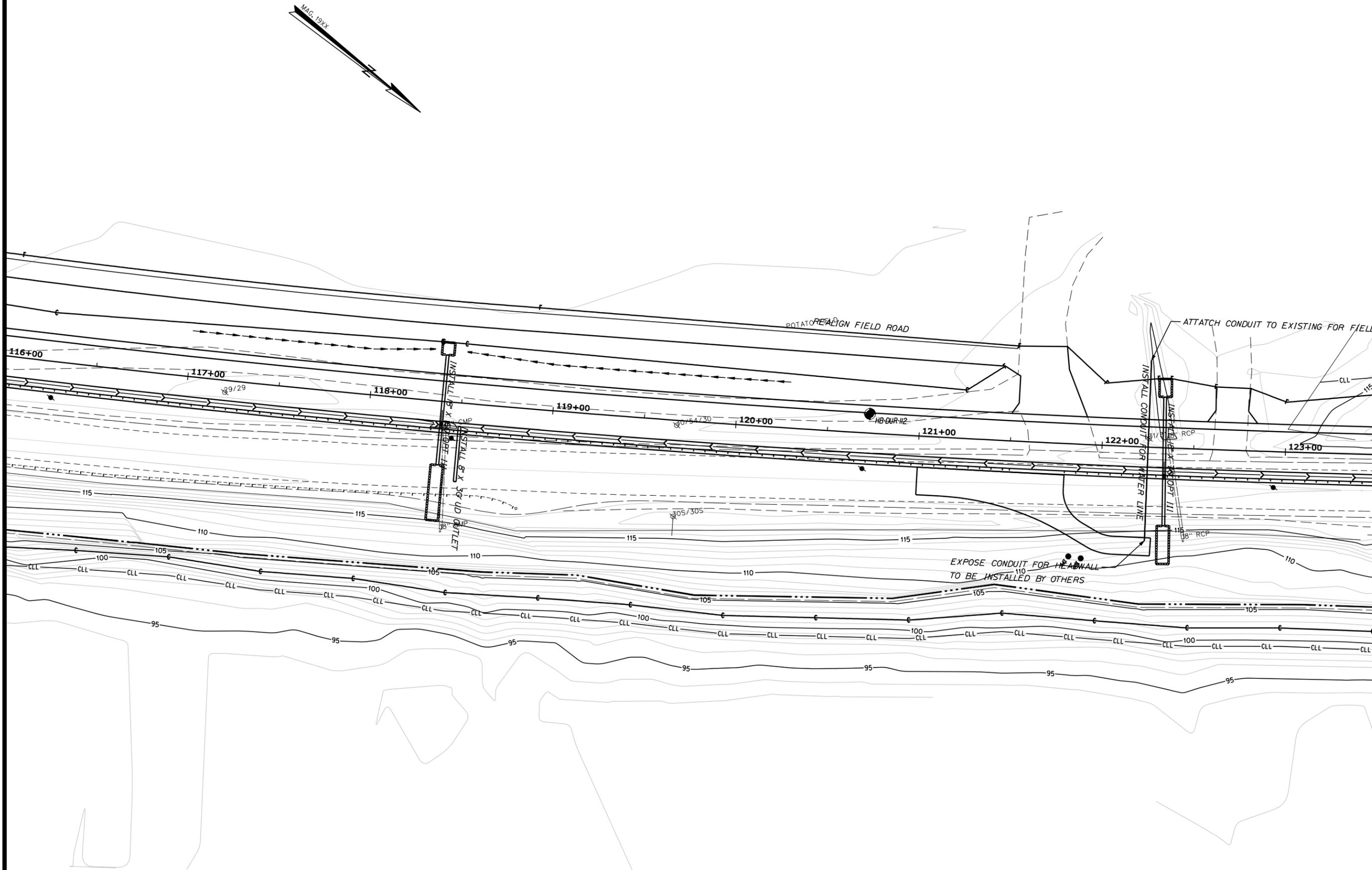
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DURHAM
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STATE OF MAINE
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DURHAM
 ROUTE 136
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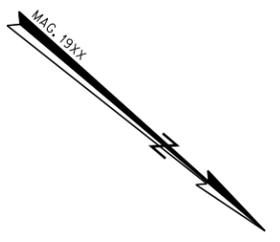
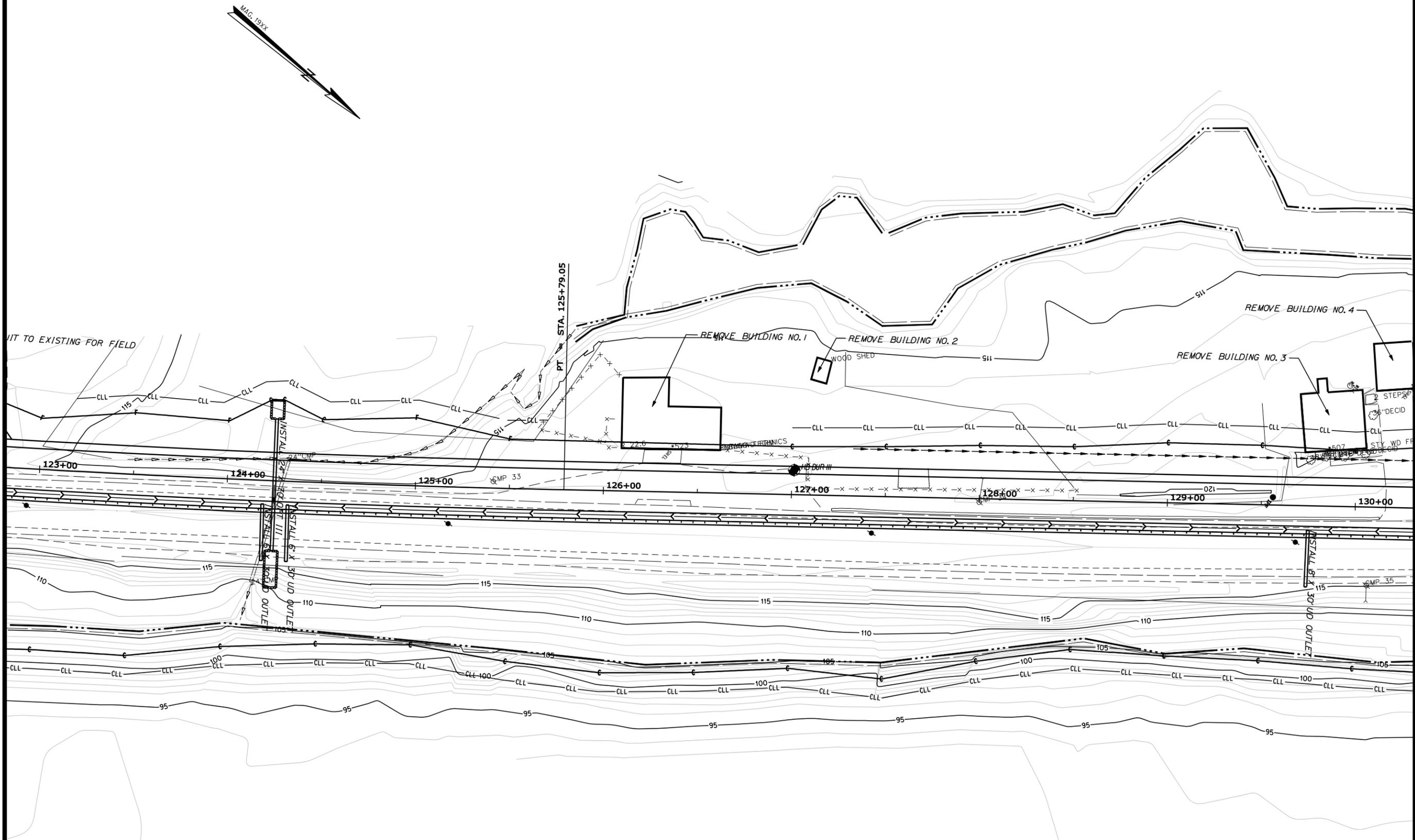
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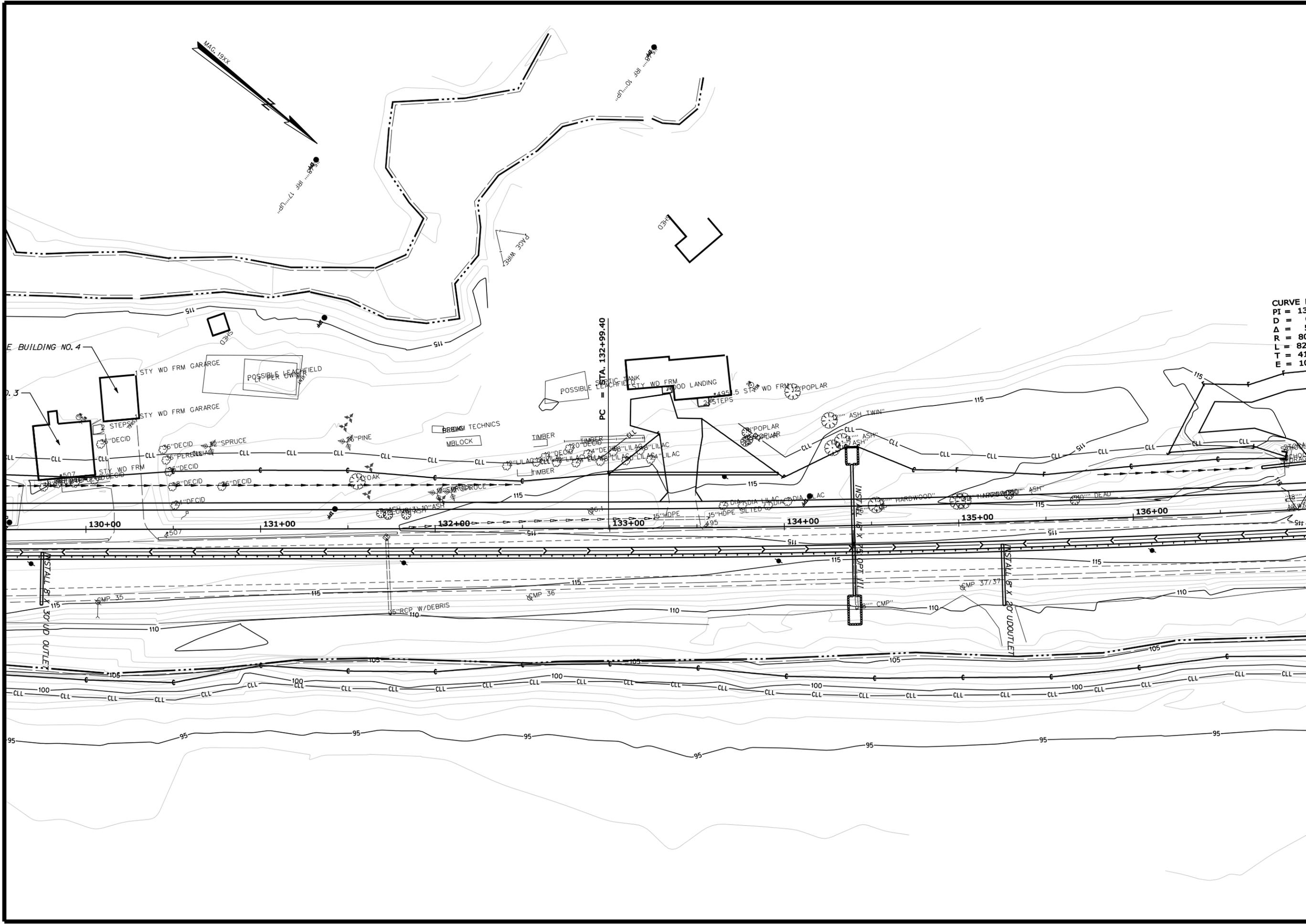
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Date: 5/20/2013

Username: kity.breskin

Division: GEOTECH

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 L = 821
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DURHAM
 ROUTE 136
 GEOPLANS

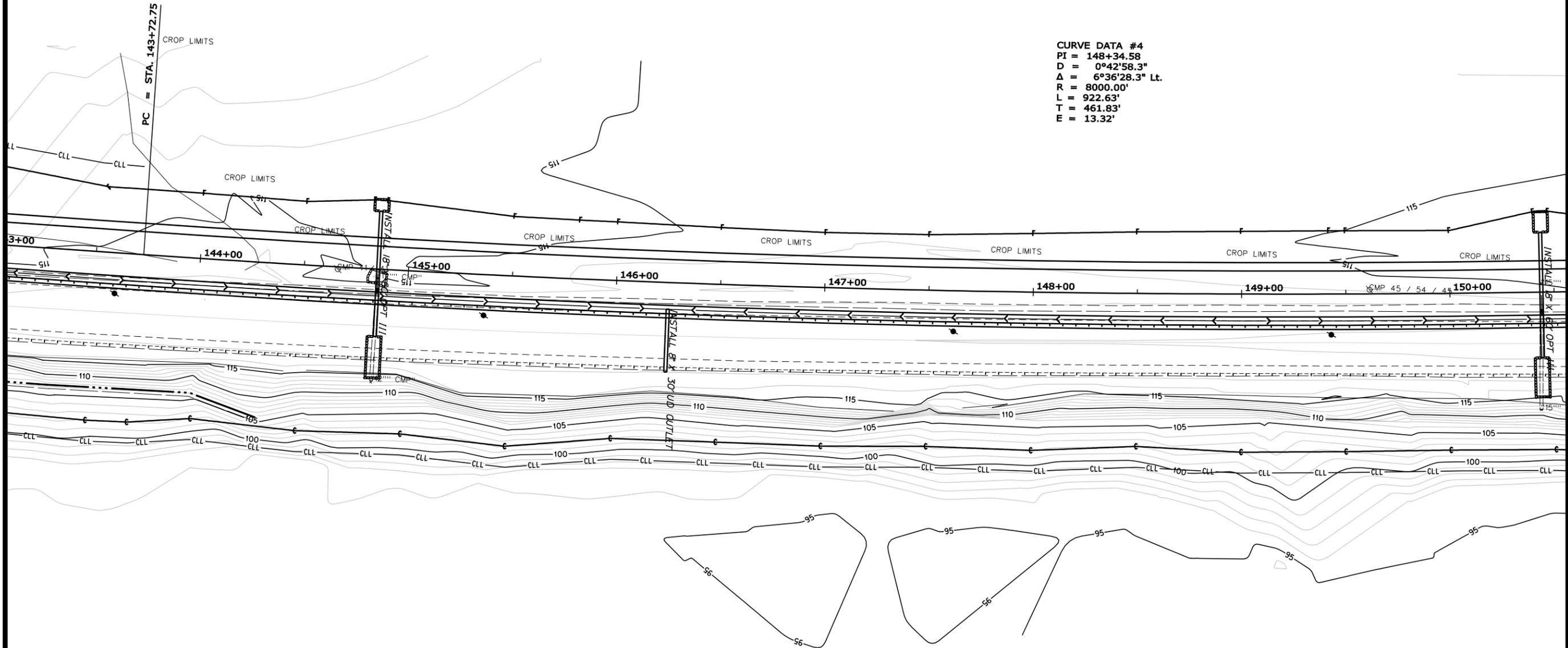
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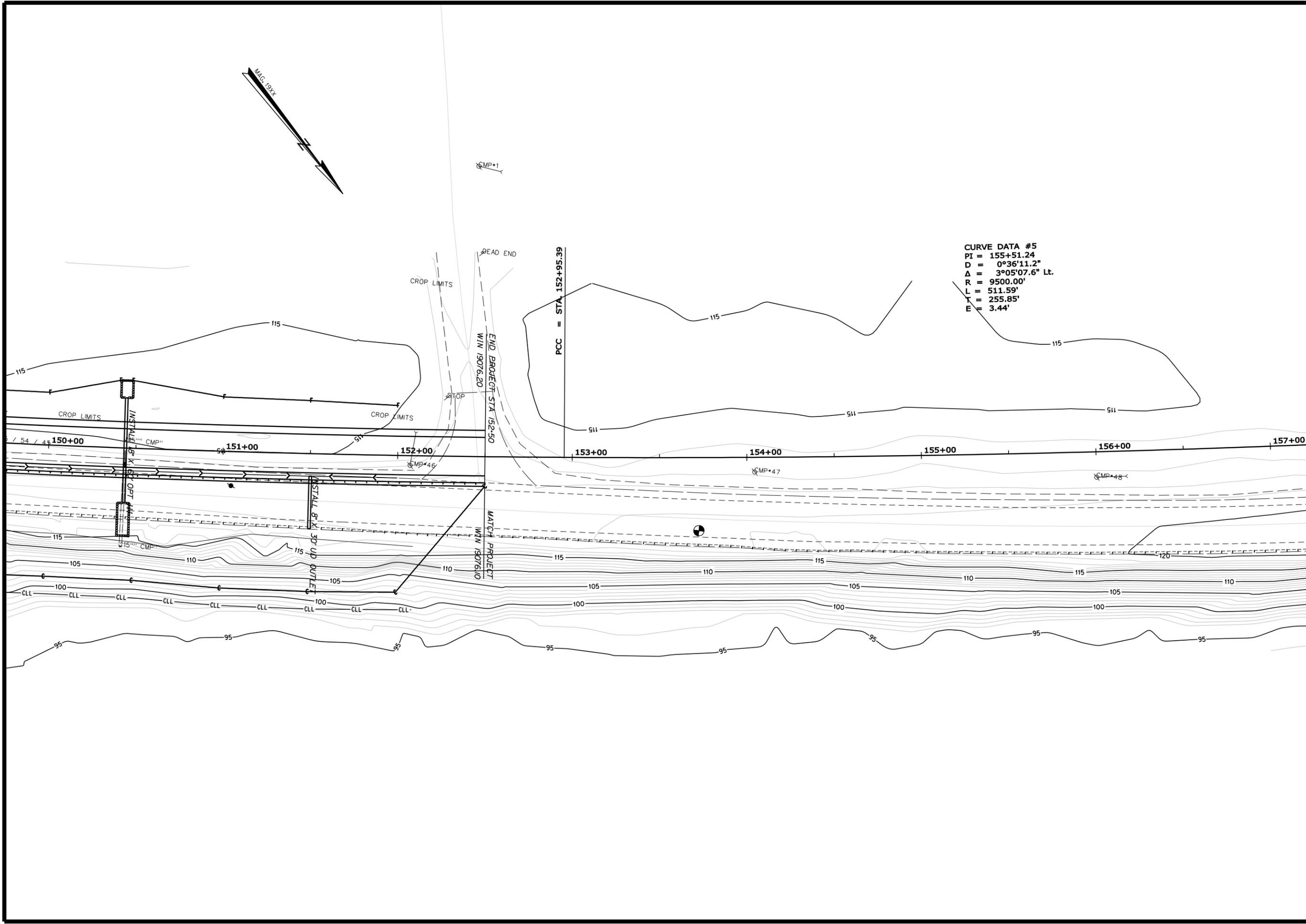


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DURHAM
 ROUTE 136
 GEOPLANS

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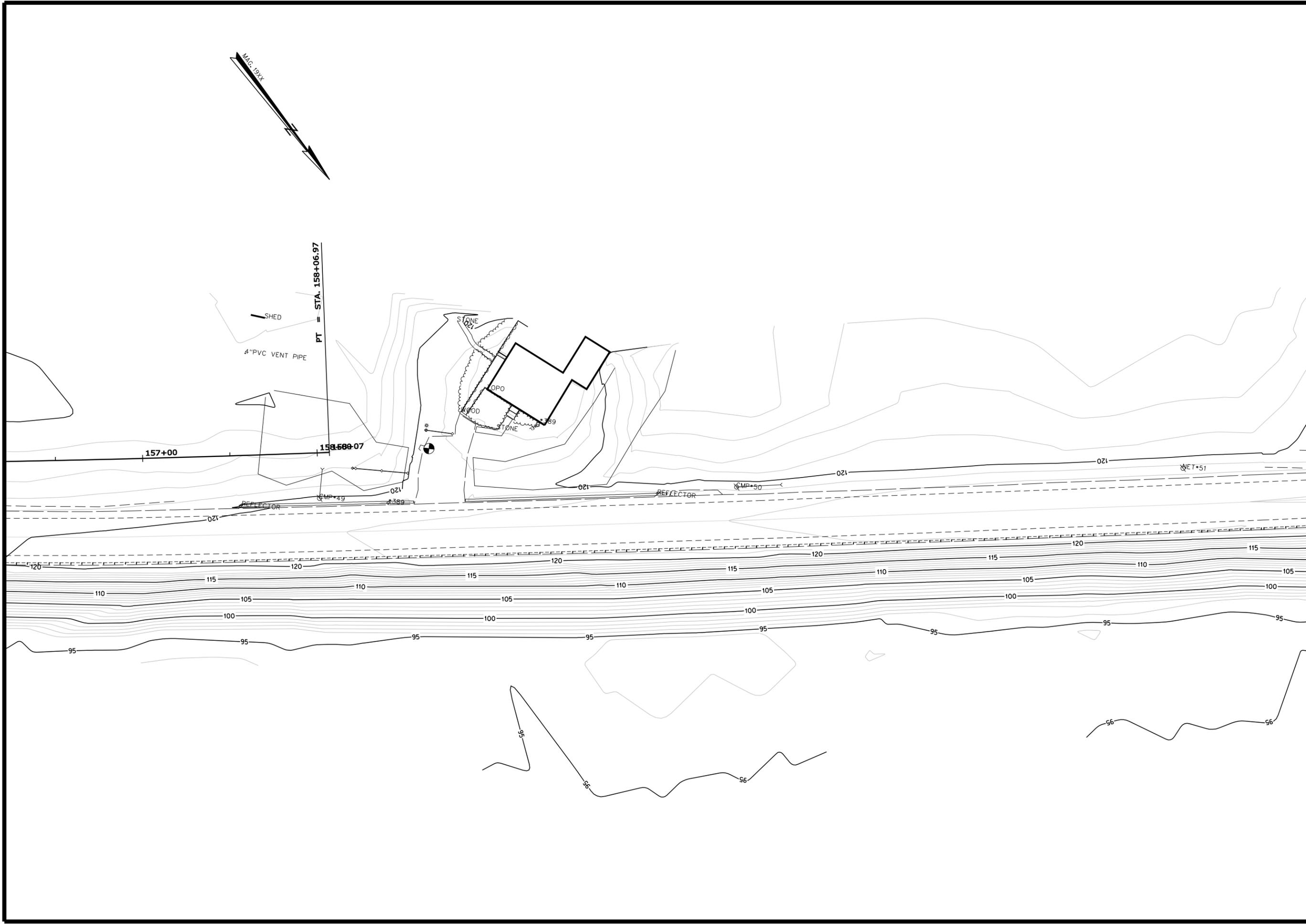


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FIELD CHANGES		

DURHAM
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Appendix B

Boring Logs

Driller: Northern Test Boring	Elevation (ft.): 111.6	Auger ID/OD: 5" Solid Stem
Operator: Mike/Alan	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Wilder	Rig Type: Diedrich D50 Track	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 7/11/12; 07:30-12:00	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 141+34.7, 8.1 ft Lt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.768 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions:
D = Split Spoon Sample R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
MD = Unsuccessful Split Spoon Sample attempt SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
U = Thin Wall Tube Sample HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
MU = Unsuccessful Thin Wall Tube Sample attempt RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PI = Plasticity Index
MV = Unsuccessful Insitu Vane Shear Test attempt WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/20	0.00 - 2.00	1/1/1/2	2	3	SSA	111.30		3.6" SOD, Grass.	G#175441 A-2-4, SM WC=40.6%	
										Brown, moist, very loose, silty fine to medium SAND.		
5	2D	24/24	5.00 - 7.00	1/1/1/1	2	3				Similar to above.		
10	3D	24/20	10.00 - 12.00	1/1/2/8	3	4	10	102.60		Grey, wet, loose, fine to coarse SAND, some silt, trace gravel.		
							12					
							36					
							52					
							66					
15	4D	24/24	15.00 - 17.00	WOH/WOH/WOH/3	---		OPEN HOLE	97.10		Grey, wet, very soft, clayey-SILT.		
20	5D V1	24/24	20.00 - 22.00	WOR/WOR/WOR/ WOR	---						Similar to above.	
	V2		21.57 - 22.00	Su=989/179 psf Su=851/165 psf							65x130 mm vane raw torque reading: V1: 236.0/6.5 ft-lbs V2: 31.0/6.0 ft-lbs	
25												

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

Driller: MaineDOT	Elevation (ft.): 117.0	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: K. Breskin	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 7/11/12; 10:30-	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 127+01.5, 16.1 ft Lt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84 **Hammer Type:** Automatic Hydraulic Rope & Cathead

 Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
 MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf)
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value
 MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value
 V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency
 MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
 LL = Liquid Limit PL = Plasticity Index
 G = Grain Size Analysis C = Consolidation Test

Depth (ft.)	Sample Information								Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)			
0	1D	24/24	0.00 - 2.00	3/3/2/2	5	7	SSA			Brown, damp, loose, fine SAND, little silt.	
5	2D	24/24	5.00 - 7.00	1/2/3/3	5	7				Brown, moist, loose, fine SAND, some silt.	
10	3D	24/16	10.00 - 12.00	7/7/6/7	13	18	39			Brown, moist, medium dense, fine to medium SAND, red-brown strata, trace silt, trace gravel.	G#175442 A-1-b, SP WC=9.3%
15	4D	24/10	15.00 - 17.00	4/4/3/3	7	10	31			Brown, wet, loose, fine silty SAND.	
20	5D/AB	24/24	20.00 - 22.00	1/WOH/WOH/WOH	---		21			5D/A (20.0-21.0 ft) Grey, wet, loose, fine silty SAND. 5D/B (21.0-22.0 ft) Grey, wet, soft, sandy SILT.	
25							OPEN				

Remarks:

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS	Project: Route 136 Slope Stabilization Location: Durham, Maine	Boring No.: HB-DUR-111 WIN: 20268.00
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Driller: MaineDOT	Elevation (ft.): 117.0	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: K. Breskin	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 7/11/12; 10:30-	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 127+01.5, 16.1 ft Lt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84 Hammer Type: Automatic Hydraulic Rope & Cathead

Definitions:
D = Split Spoon Sample R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_u(lab) = Lab Vane Shear Strength (psf)
MD = Unsuccessful Split Spoon Sample attempt SSA = Solid Stem Auger T_y = Pocket Torvane Shear Strength (psf) WC = water content, percent
U = Thin Wall Tube Sample HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
MU = Unsuccessful Thin Wall Tube Sample attempt RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
V = Insitu Vane Shear Test, WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PI = Plasticity Index
PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Sample Information										Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)				
25	6D V1	24/13	25.00 - 27.00	WOH/WOH/WOH/ WOH	---		HOLE				Grey, wet, medium stiff, CLAY SILT, with sand seams and layers. 65x130 mm vane raw torque reading: V1: 31.0/6.0 ft-lbs	
	V2		25.57 - 26.00	Su=851/165 psf					V2: 25.0/4.0 ft-lbs			
30	7D V3	24/24	30.00 - 32.00	WOR/WOR/WOR/ WOR	---						Grey, wet, medium stiff, CLAY SILT, with layers of grey, fine sand. 65x130 mm vane raw torque reading: V3: 21.0/5.0 ft-lbs	
	V4		30.57 - 31.00	Su=577/137 psf					V4: 27.0/7.0 ft-lbs			
35	8D V5	24/24	35.00 - 37.00	WOR/WOR/WOR/ WOR	---						Grey, wet, medium stiff, CLAY SILT, with layers of grey, fine sand. 65x130 mm vane raw torque reading: V5: 326.0/7.0 ft-lbs	
	V6		35.57 - 36.00	Su=714/192 psf					V6: 24.0/6.0 ft-lbs			
40	V7		40.57 - 41.00	Su=769/192 psf							65x130 mm vane raw torque reading: V7: 28.0/7.0 ft-lbs	
	V8		42.57 - 43.00	Su=851/179 psf					V8: 31.0/6.5 ft-lbs			
								74.00			Bottom of Exploration at 43.00 feet below ground surface. NO REFUSAL	43.00
45												
50												

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

Driller: MaineDOT	Elevation (ft.): 116.9	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: K. Breskin	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 7/11/12; 07:00-10:00	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 120+71.9, 29.3 ft Lt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84 **Hammer Type:** Automatic Hydraulic Rope & Cathead
 Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
 MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PI = Plasticity Index
 V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
 MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/15	0.00 - 2.00	5/4/3/4	7	10	SSA		106.50	Brown, moist, loose, fine SAND, some silt.	G#175443 A-3, SP WC=14.4%	
5	2D	24/20	5.00 - 7.00	1/1/3/3	4	6				Brown, moist, loose, fine SAND, some silt.		
10	3D	24/24	10.00 - 12.00	5/5/4/5	9	13	38			Brown, moist, loose, coarse SAND, trace silt, trace gravel.		
15	4D	24/12	14.00 - 16.00	4/4/5/7	9	13	7			Brown, wet, loose, fine to medium SAND, trace silt.		
20	MV		19.00 - 19.00				OPEN			Failed 65x130 mm vane attempt. Change of color of wash water at 19.0 to 20.0 ft bgs. Failed spoon sample.		
20	MD	24/0	20.00 - 22.00	3/3/4/6	7	10	HOLE					
25												

Remarks:
Consistency based on vanes, these were all very soft by field guidelines.

Driller: MaineDOT	Elevation (ft.): 116.9	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: K. Breskin	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 7/11/12; 07:00-10:00	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 120+71.9, 29.3 ft Lt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84
 Hammer Type: Automatic Hydraulic Rope & Cathead

Definitions:
 R = Rock Core Sample
 S_u = Insitu Field Vane Shear Strength (psf)
 S_{u(lab)} = Lab Vane Shear Strength (psf)
 D = Split Spoon Sample
 SSA = Solid Stem Auger
 T_y = Pocket Torvane Shear Strength (psf)
 WC = water content, percent
 MD = Unsuccessful Split Spoon Sample attempt
 HSA = Hollow Stem Auger
 q_p = Unconfined Compressive Strength (ksf)
 LL = Liquid Limit
 U = Thin Wall Tube Sample
 RC = Roller Cone
 N-uncorrected = Raw field SPT N-value
 PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample attempt
 WOH = weight of 140lb. hammer
 Hammer Efficiency Factor = Annual Calibration Value
 PI = Plasticity Index
 V = Insitu Vane Shear Test, PP = Pocket Penetrometer
 N₆₀ = SPT N-uncorrected corrected for hammer efficiency
 G = Grain Size Analysis
 MV = Unsuccessful Insitu Vane Shear Test attempt
 WO1P = Weight of one person
 N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
 C = Consolidation Test

Depth (ft.)	Sample Information								Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)				
25	5D/MV	24/24	25.00 - 27.00	WOR/1/WOR/WOR	1	1				Failed 65x130 mm vane attempt. Grey, wet, medium stiff, sandy SILT.		
30	6D V1	24/24	30.00 - 32.00 30.57 - 31.00	Vane Sample Su=742/206 psf	---							Grey, wet, medium stiff, clayey SILT, trace fine sand. 65x130 mm vane raw torque reading: V1: 27.0/7.5 ft-lbs
	V2		32.57 - 33.00	Su=714/220 psf								V2: 26.0/8.0 ft-lbs
35	7D V3	24/24	35.00 - 37.00 35.57 - 36.00	Vane Sample Su=769/179 psf	---							Grey, wet, medium stiff, clayey SILT, trace fine sand. 65x130 mm vane raw torque reading: V3: 28.0/6.5 ft-lbs
	V4		37.57 - 38.00	Su=714/220 psf								V4: 26.0/8.0 ft-lbs
40	8D/MV V5	24/24	40.00 - 42.00 40.57 - 41.00	WOH/WOH/WOH/ WOH Su=769/192 psf	---							Similar to 7D, except very soft, (sample not kept). Failed 65x130 mm vane attempt. 65x130 mm vane raw torque reading: V5: 28.0/7.0 ft-lbs
	V6		42.57 - 43.00	Su=879/179 psf								V6: 32.0/6.5 ft-lbs
							73.90					Bottom of Exploration at 43.00 feet below ground surface. NO REFUSAL
45												
50												

Remarks:
 Consistency based on vanes, these were all very soft by field guidelines.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Driller: MaineDOT	Elevation (ft.): 116.7	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Schonewald	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 7/10/12; 12:40-15:55	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 109+22, 49.8 ft Rt.	Casing ID/OD: HW	Water Level*: 12.0 ft bgs.

Hammer Efficiency Factor: 0.84 Hammer Type: Automatic Hydraulic Rope & Cathead

Definitions:
D = Split Spoon Sample R = Rock Core Sample S_u = In situ Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
MD = Unsuccessful Split Spoon Sample attempt SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (ksf) WC = water content, percent
U = Thin Wall Tube Sample HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
MU = Unsuccessful Thin Wall Tube Sample attempt RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
V = In situ Vane Shear Test, PP = Pocket Penetrometer WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value
MV = Unsuccessful Insitu Vane Shear Test attempt WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/15	0.50 - 2.50	3/3/3/2	6	8	SSA		115.10	1D: Brown, damp, fine to coarse SAND, little gravel, trace silt.		
										Brown, fine to medium SAND, little silt.		
5	2D	24/14	5.00 - 7.00	1/2/0.5/0.5	2.5	4				Greyish-brown, moist, very loose, fine SAND, little to some silt, with minor organic material.		
10	3D	24/20	10.00 - 12.00	1/1/2/3	3	4				Greyish-brown, moist to wet, very sandy SILT, with minor organic material.	G#175444 A-4, ML WC=29.6%	
15	4D	24/22	15.00 - 17.00	WOH/WOH/WOH/1	---					Olive-brown with minor mottling grading to grey, wet, very soft, clayey SILT grading to CLAY and SILT. (No silt-clay observed on augers at 15.0 ft bgs.)		
20	5D V1	24/24	20.00 - 22.00	---			OPEN HOLE		96.70	Grey, silty CLAY. 55x110 mm vane raw torque readings: V1: 13.0/2.0 ft-lbs V2: 11.5/0.5 ft-lbs		
	V2		21.63 - 22.00									
25												

Remarks:

Driller: MaineDOT	Elevation (ft.): 116.7	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Schonewald	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 7/10/12; 12:40-15:55	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 109+22, 49.8 ft Rt.	Casing ID/OD: HW	Water Level*: 12.0 ft bgs.

Hammer Efficiency Factor: 0.84 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger T_y = Pocket Torvane Shear Strength (psf) WC = water content, percent
 MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PI = Plasticity Index
 V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
 MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Sample Information										Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.									
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)													
25	6D	24/24	25.00 - 27.00	---							Grey, silty CLAY. 65x130 mm vane raw torque readings: V3: 24.0/1.5 ft-lbs V4: 19.0/1.0 ft-lbs										
	V3		25.57 - 26.00	Su=659/41 psf																	
	V4		26.57 - 27.00	Su=522/27 psf																	
30	7D	24/24	30.00 - 32.00	---										Grey, silty CLAY. 65x130 mm vane raw torque readings: V5: 12.0/1.5 ft-lbs V6: 21.0/1.0 ft-lbs							
	V5		30.57 - 31.00	Su=330/41 psf																	
	V6		31.57 - 32.00	Su=577/27 psf																	
35	8D	24/24	35.00 - 37.00	---													Grey, silty CLAY. 65x130 mm vane raw torque readings: V7: 16.0/1.0 ft-lbs V8: 18.5/0.5 ft-lbs				
	V7		35.57 - 36.00	Su=440/27 psf																	
	V8		36.57 - 37.00	Su=508/14 psf																	
40	9D	24/24	40.00 - 42.00	---																Grey, silty CLAY. 65x130 mm vane raw torque readings: V9: 9.0/1.0 ft-lbs V10: 13.0/1.0 ft-lbs	
	V9		40.57 - 41.00	Su=247/27 psf																	
	V10		41.57 - 42.00	Su=357/27 psf																	
45	10D	24/24	45.00 - 47.00	---							Grey, silty CLAY. 65x130 mm vane raw torque readings: V11: 32.0/2.0 ft-lbs V12: 34.0/1.0 ft-lbs										
	V11		45.57 - 46.00	Su=879/55 psf																	
	V12		46.57 - 47.00	Su=934/27 psf																	
50														Grey, silty CLAY. 65x130 mm vane raw torque readings: V11: 32.0/2.0 ft-lbs V12: 34.0/1.0 ft-lbs							

Remarks:

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Driller: MaineDOT	Elevation (ft.): 116.7	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Schonewald	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 7/10/12; 12:40-15:55	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 109+22, 49.8 ft Rt.	Casing ID/OD: HW	Water Level*: 12.0 ft bgs.

Hammer Efficiency Factor: 0.84 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_u(lab) = Lab Vane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
 MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PI = Plasticity Index
 V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
 MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Depth (ft.)	Sample Information								Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)			
50	11D V13 V14	24/24	50.00 - 52.00 50.57 - 51.00 51.57 - 52.00	--- Su=508/82 psf Su=810/55 psf						Grey, silty CLAY. 65x130 mm vane raw torque readings: V13: 18.5/3.0 ft-lbs V14: 29.5/2.0 ft-lbs *WOR to 56.4 ft, then drove casing. Grey, silty CLAY. 65x130 mm vane raw torque readings: V15: 36.0/2.0 ft-lbs Grey, fine SAND, trace to little silt, with layers of silty sand. failed 65x130 mm vane attempt. Bottom of Exploration at 57.00 feet below ground surface. NO REFUSAL	
55	12D V15 MV		55.00 - 57.00 55.57 - 56.00 56.57 - 56.57	*WOR/WOR/1/1 Su=989/55 psf Would not push				60.60 59.70			
60											
65											
70											
75											

Remarks:

Driller: MaineDOT	Elevation (ft.): 119.4	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Wilder/B. Schonewald	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/27/12-6/28/12, 7/9/12	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 153+72.5, 41.8 ft Rt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf)
U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value
MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value
V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency
MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0									119.07	4" PAVEMENT.		
										Brown, damp, gravelly, fine to coarse SAND, trace silt, (Fill). Material description from auger flight.		
5	1D	24/18	5.00 - 7.00	2/2/2/2	4	6			115.90	Brown, moist, very loose, SILT, little fine to medium sand.	G#175428 A-4, ML WC=40.7%	
10	2D	24/20	10.00 - 12.00	2/2/1/1	3	4	19			Brown, wet, very loose, SILT, some fine sand.	G,#175429 A-4, ML WC=N/A	
15	3D	24/18	15.00 - 17.00	2/2/1/3	3	4	15			Brown, wet SAND, little silt, trace gravel.	G#175430 A-2-4, SM WC=23.6%	
							14			Grey, wet, fine to medium SAND, little silt.		
20	4D	24/22	20.00 - 22.00	WOR/WOR/WOR/ WOR	---		24		99.40	Grey, wet, very soft, SILT, some clay trace sand. Washed ahead to 22.0 ft bgs.	G#175431 A-4, CL-ML WC=27.8% LL=22 PL=18 PI=4	
	V1		22.00 - 22.43	Su=522/165 psf			17			65x130 mm vane raw torque readings: V1: 19.0/6.0 ft-lbs		
	V2		23.00 - 23.43	Su=494/165 psf			19			V2: 18.0/6.0 ft-lbs		
25							23					

Remarks:
DS = Direct Shear Test

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS	Project: Route 136 Slope Stabilization Location: Durham, Maine	Boring No.: HB-DUR-101 WIN: 19076.10
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Driller: MaineDOT	Elevation (ft.): 119.4	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Wilder/B. Schonewald	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/27/12-6/28/12, 7/9/12	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 153+72.5, 41.8 ft Rt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84 Hammer Type: Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf)
U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value LL = Liquid Limit
MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PL = Plastic Limit
V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency PI = Plasticity Index
MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected G = Grain Size Analysis
C = Consolidation Test

Sample Information										Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.	
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)					
25	MU/5D	24/20	25.00 - 27.00	WOR/WOR/WOR/ WOR	---		OPEN HOLE			[Hatched Pattern]	Failed thin wall tube sample attempt. Grey, wet, medium stiff, clayey-SILT.	G#175432 A-4, CL WC=32.3% LL=28 PL=20 PI=8	
	V3		27.00 - 27.43	Su=563/137 psf									65x130 mm vane raw torque readings: V3: 20.5/5.0 ft-lbs V4: 26.5/7.0 ft-lbs
	V4		28.00 - 28.43	Su=728/192 psf									
30	1U	24/24	30.00 - 32.00	Hydraulic Push							Similar to above.		
	V5		32.00 - 32.43	Su=742/206 psf							65x130 mm vane raw torque readings: V5: 27.0/7.5 ft-lbs V6: 24.0/6.5 ft-lbs		
	V6		33.00 - 33.43	Su=659/179 psf									
35	6D V7	24/24	35.00 - 37.00 35.57 - 36.00	WOR/WOR/WOR/ WOR	---						Similar to above.	G#175433 A-4, CL WC=30.4% LL=28 PL=20 PI=8	
	V8		36.57 - 37.00	Su=426/179 psf Su=769/247 psf							65x130 mm vane raw torque readings: V7: 15.5/6.5 ft-lbs V8: 28.0/9.0 ft-lbs		
40	2U	24/24	40.00 - 42.00	Hydraulic Push							Similar to above.		
	V9		42.00 - 42.43	Su=755/165 psf							65x130 mm vane raw torque readings: V9: 27.5/6.0 ft-lbs V10: 26.0/6.5 ft-lbs		
	V10		43.00 - 43.43	Su=714/179 psf									
45	7D V11	24/24	45.00 - 47.00 45.57 - 46.00	WOR/WOR/WOR/ WOR	---						Similar top above.		
	V12		46.57 - 47.00	Su=522/165 psf Su=714/179 psf							65x130 mm vane raw torque readings: V11: 19.0/6.0 ft-lbs V12: 26.0/6.5 ft-lbs		

Remarks:
DS = Direct Shear Test

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS	Project: Route 136 Slope Stabilization Location: Durham, Maine	Boring No.: HB-DUR-101 WIN: 19076.10
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Driller: MaineDOT	Elevation (ft.): 119.4	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Wilder/B. Schonewald	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/27/12-6/28/12, 7/9/12	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 153+72.5, 41.8 ft Rt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84 Hammer Type: Automatic Hydraulic Rope & Cathead

Definitions:
D = Split Spoon Sample R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
MD = Unsuccessful Split Spoon Sample attempt SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
U = Thin Wall Tube Sample HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
MU = Unsuccessful Thin Wall Tube Sample attempt RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PI = Plasticity Index
MV = Unsuccessful Insitu Vane Shear Test attempt WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Depth (ft.)	Sample Information								Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)				
50	3U	24/24	50.00 - 52.00	Hydraulic Push						Grey, wet, medium stiff, clayey-SILT.		
	V13		52.00 - 52.43	Su=467/165 psf						65x130 mm vane raw torque readings: V13: 17.0/6.0 ft-lbs V14: 28.0/8.0 ft-lbs		
	V14		53.00 - 53.43	Su=769/220 psf								
55	8D	24/24	55.00 - 57.00	WOR/WOR/Hyd-Push	---						Similar to above.	
	V15		55.57 - 56.00	Su=796/165 psf							65x130 mm vane raw torque readings: V15: 29.0/6.0 ft-lbs	
	MV		56.57 - 56.57	would not push							Failed 65x130 mm vane attempt.	
60	4U	24/24	60.00 - 62.00	Hydraulic Push							Similar to above.	
	V17		62.00 - 62.37	Su=580/223 psf							55x110 mm vane raw torque readings: V17: 13.0/5.0 ft-lbs V18: 11.5/4.0 ft-lbs	
	V18		63.00 - 63.37	Su=513/179 psf								
65	9D	24/24	65.00 - 67.00	WOR/WOR/WOR/WOR	---						Similar to above.	
	V19		65.63 - 66.00	Su=536/223 psf						55x110 mm vane raw torque readings: V19: 12.0/5.0 ft-lbs V20: 13.0/5.0 ft-lbs		
	V20		66.63 - 67.00	Su=580/223 psf								
70	5U	24/24	70.00 - 72.00	Hydraulic Push						Similar to above.		
	V21		72.00 - 72.37	Su=536/179 psf						55x110 mm vane raw torque readings: V21: 12.0/4.0 ft-lbs V22: 16.0/4.0 ft-lbs		
	V22		73.00 - 73.37	Su=714/179 psf								
75												

Remarks:
DS = Direct Shear Test

Driller: MaineDOT	Elevation (ft.): 119.4	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Wilder/B. Schonewald	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/27/12-6/28/12, 7/9/12	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 153+72.5, 41.8 ft Rt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84 Hammer Type: Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PI = Plasticity Index
V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Depth (ft.)	Sample Information								Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)				
75	10D	24/24	75.00 - 77.00	WOR/WOR/WOR/ WOR	---					Grey, wet, medium stiff, clayey-SILT. 55x110 mm vane raw torque readings: V23: 13.0/5.0 ft-lbs V24: 17.0/5.0 ft-lbs		
	V23		75.63 - 76.00									Su=580/223 psf
	V24		76.63 - 77.00									Su=759/179 psf
80	6U	24/24	80.00 - 82.00	WOR/WOR						Similar to above. 55x110 mm vane raw torque readings: V25: 12.0/5.5 ft-lbs V26: 13.0/5.0 ft-lbs		
	V25		82.00 - 82.37									Su=536/246 psf
	V26		83.00 - 83.37									Su=580/223 psf
85	11D	24/24	85.00 - 87.00	WOR/WOR/WOR/ WOR	---					55x110 mm vane raw torque readings: V27: 13.0/5.0 ft-lbs V28: 13.5/5.0 ft-lbs		
	V27		85.63 - 86.00									Su=580/223 Ppsf
	V28		86.63 - 87.00									Su=603/223 psf
90	7U	24/24	90.00 - 92.00	WOR/WOR						55x110 mm vane raw torque readings: V29: 15.0/3.0 ft-lbs V30: 36.0/6.0 ft-lbs		
	V29		92.00 - 92.37									Su=670/134 psf
	V30		93.00 - 93.37									Su=1607/268 psf
95	12D	24/24	95.00 - 97.00	WOR/WOR/WOR/ WOR	---					Dark grey, wet, stiff, clayey-SILT. 55x110 mm vane raw torque readings: V31: 24.0/5.0 ft-lbs V32: 45.0/3.0 ft-lbs		
	V31		95.63 - 96.00									Su=1071/223 psf
	V32		96.63 - 97.00									Su=2009/134 psf
100												

Remarks:
DS = Direct Shear Test

Driller: MaineDOT	Elevation (ft.): 119.4	Auger ID/OD: 5" Solid Stem
Operator: Giguere/Giles/Daggett	Datum: NAVD88	Sampler: Standard Split Spoon
Logged By: B. Wilder/B. Schonewald	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/27/12-6/28/12, 7/9/12	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 153+72.5, 41.8 ft Rt.	Casing ID/OD: HW	Water Level*: None Observed

Hammer Efficiency Factor: 0.84 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_u(lab) = Lab Vane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
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 MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

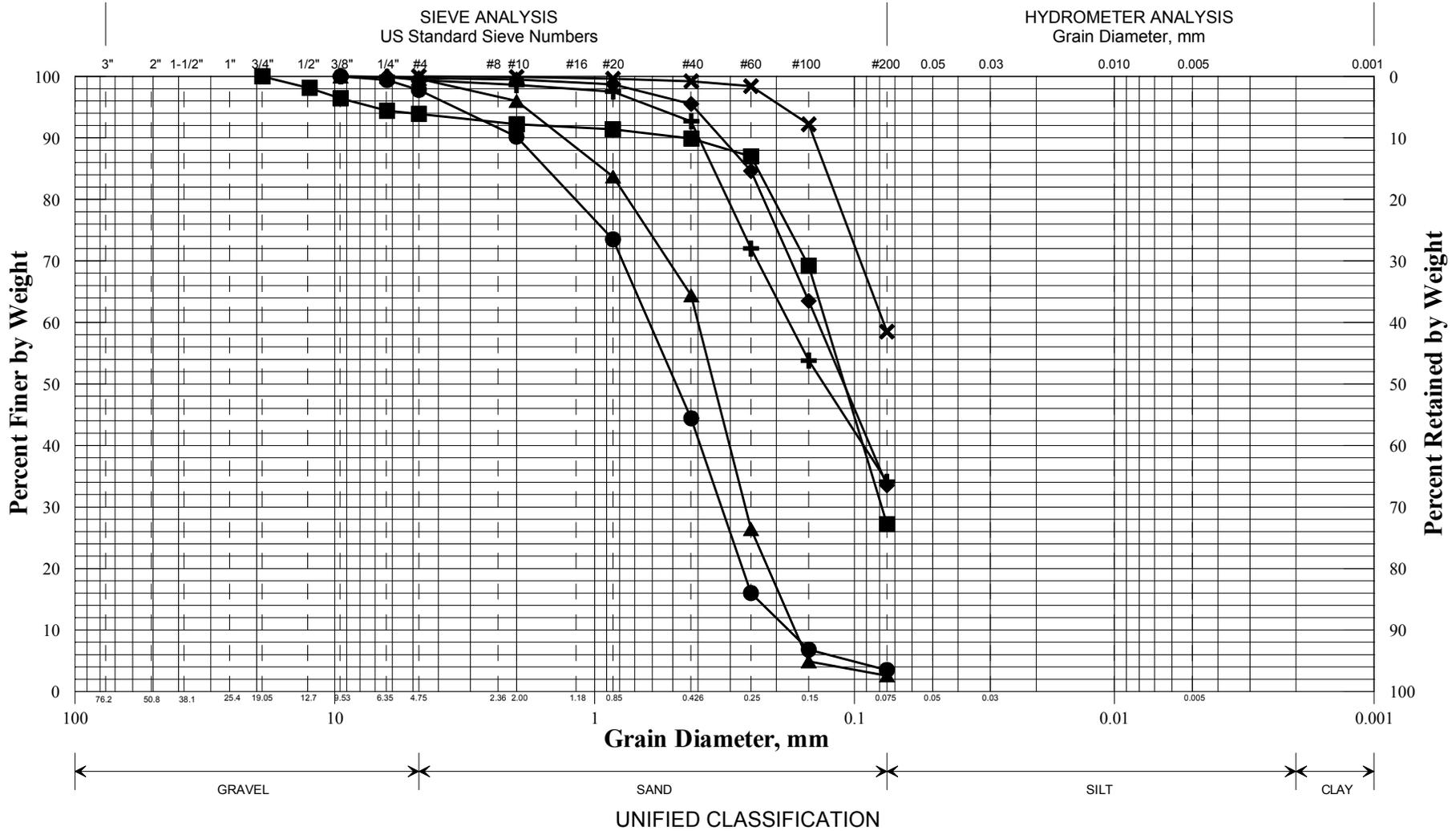
Sample Information										Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)				
125								-7.30		Roller cone to denser material. Fine sand encountered at approximately 126.70 ft bgs.		
130												
135												
140												
145								-22.90		Bottom of Exploration at 142.30 feet below ground surface. Roller cone REFUSAL, dense Till or Rock encountered.		
150												

Remarks:
DS = Direct Shear Test

Appendix C

Laboratory Data

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-DUR-109/3D	168+11.1	53.9 RT	10.0-12.0	SAND, some silt, trace gravel.	13.6			
◆	HB-DUR-109/4D	168+11.1	53.9 RT	15.0-17.0	SAND, some silt, trace gravel.	22.4			
■	HB-DUR-110/3D	141+34.2	17.9 LT	10.0-12.0	SAND, some silt, trace gravel.	40.6			
●	HB-DUR-111/3D	127+00	24.5 LT	10.0-12.0	SAND, trace silt, trace gravel.	9.3			
▲	HB-DUR-112/3D	120+70.7	33.1 LT	10.4-11.0	SAND, trace silt, trace gravel.	14.4			
×	HB-DUR-113/3D	109+20	44.2 RT	10.0-12.0	Sandy SILT.	29.6			

WIN	
019076.10	
Town	
Durham	
Reported by/Date	
WHITE, TERRY A	7/19/2012