

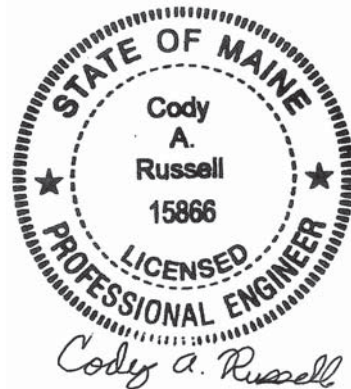
**MAINE DEPARTMENT OF TRANSPORTATION
HIGHWAY PROGRAM
GEOTECHNICAL SECTION
AUGUSTA, MAINE**

GEOTECHNICAL DESIGN REPORT

For the Reconstruction of:

**U.S. ROUTE 1
CAMDEN, MAINE**

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Knox County
WIN 18283.00

Soils Report 2020-02
Federal No. NH-1828(300)

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Table of Contents

1.0 INTRODUCTION	2
2.0 GEOLOGIC SETTING	2
3.0 SUBSURFACE INVESTIGATION.....	2
4.0 LABORATORY TESTING.....	3
5.0 SUBSURFACE CONDITIONS.....	3
5.1 PAVEMENT AND FILL SOILS.....	3
5.2 GLACIAL TILL.....	4
5.3 REFUSAL SURFACES AND BEDROCK	4
5.4 GROUNDWATER.....	5
6.0 GEOTECHNICAL RECOMMENDATIONS	5
6.1 LARGE CULVERT AT APPROXIMATE STATION 87+66	5
6.2 OVERSTEEPENED SLOPE FROM STATIONS 111+50 TO 114+00.....	6
6.3 SETTLEMENT	7
6.4 SCOUR AND RIPRAP	7
6.5 SEISMIC DESIGN CONSIDERATIONS	7
6.6 ADDITIONAL CONSTRUCTION CONSIDERATIONS	7
6.7 BEDROCK REMOVAL	7
7.0 CLOSURE.....	8

Sheets

Sheet 1 – Location Map

Sheets 2 through 14 – Boring Location Plans

Sheet 15 – Boring Location Plan & Interpretive Subsurface Profile with Boring Logs

Appendices

Appendix A – Boring Logs and Probe Information

Appendix B – Laboratory Test Results

Appendix C – Slope Stability Analysis

1.0 INTRODUCTION

The purpose of this Geotechnical Design Report is to present subsurface information and make geotechnical design and construction recommendations for the reconstruction of an approximately 1.54-mile portion of US Route 1 in Camden, shown on Sheet 1 – Location Map. The project is needed to make geometric and drainage improvements. The scope includes reconstruction of the existing travel lanes and shoulders, one (1) large culvert replacement, and drainage improvements. US Route 1 is a Highway Corridor Priority 1 road.

2.0 GEOLOGIC SETTING

According to the Surficial Geology Map entitled Camden Quadrangle, Maine, Open File No. 10-6 (2010) published by the Maine Geological Survey (MGS), the following surficial soils are present along the project:

- Till consisting of a mixture of sand, silt, and gravel-size rock deposited by glacial ice.
- Stream alluvium consisting of sand, silt, gravel, and organic material deposited on flood plains of modern streams and in stream channels.
- Artificial fill consisting of earth, rock, and/or man-made materials used as fill for roads.

According to the MGS map titled Bedrock Geologic Map of Maine (1985) the bedrock along the project is pelite of the Megunticook Formation.

3.0 SUBSURFACE INVESTIGATION

Subsurface conditions at the site were explored by drilling a total of forty-four (44) test borings and twelve (12) probes and digging five (5) test pits.

Borings HB-CAM-101 through HB-CAM-142 were drilled between June 10 and June 13, 2013 by the MaineDOT drill crew. The 100-series borings were drilled to depths ranging from approximately 1.6 to 15.0 feet below ground surface (bgs) using solid stem auger drilling techniques. Borings HB-CAM-201 through HB-CAM-203, probe HB-CAM-204, and twelve (12) unnamed probes were drilled between June 22 and June 25, 2015 by the MaineDOT drill rig. Borings HB-CAM-201 and HB-CAM-202 were drilled to depths of approximately 15.0 and 20.2 feet bgs, respectively using solid stem auger drilling techniques. Boring HB-CAM-203 was drilled to a depth of approximately 23.0 feet bgs including a 5-foot bedrock core using solid stem auger, cased wash boring, and rock core drilling techniques. Probe HB-CAM-204 was drilled to a depth of approximately 26.1 feet bgs using solid stem auger drilling techniques. Boring and probe locations are shown on Sheets 2 through 14 Boring Location Plans. Boring Logs and probe information are presented in Appendix A.

Soil samples were obtained off the auger flights in select 100-series borings. Soil samples were obtained in the 200-series borings at standard 5-foot intervals using Standard Penetration Testing (SPT). The MaineDOT drill rig is equipped with an automatic hammer to drive the split spoon. The MaineDOT calibrated automatic hammer delivers approximately 51 percent more energy

during driving than the standard rope and cathead system. All N-values discussed in this report are corrected values (N_{60}) computed by applying an average energy transfer factor of 0.908 to the raw field N-values. Several refusal surfaces were encountered along the project. The bedrock was cored in boring HB-CAM-203 using an NQ 2-inch core barrel and the Rock Quality Designation (RQD) of the core was calculated. The exact nature of the refusal surfaces in other explorations was not determined. No soil samples were obtained in the probes.

Details and sampling methods used, field data obtained, and soil and groundwater conditions encountered are shown in the Boring Logs in Appendix A. The MaineDOT Geotechnical Team member selected the boring locations, drilling methods, designated type and depth of sampling, reviewed field logs for accuracy and identified field and laboratory testing requirements. A North East Transportation Training and Certification Program (NETTCP) certified subsurface inspector logged the subsurface conditions encountered. The boring and probes were located in the field by taping to site features after completion of the drilling program.

The only information available for the test pits is the lab testing data. No logs were created for the test pits. Sampling methods and depths are unknown. Lab testing was done in August 2014, but the date(s) of the excavations are unknown. The station of each test pit is given in the lab testing data but not the offset from centerline. Because the test pit locations cannot be located accurately, they were not shown on the Boring Location Plans.

4.0 LABORATORY TESTING

A laboratory testing program was conducted on select soil samples obtained in the test borings and test pits to assist in soil classification, evaluation of engineering properties of the soils and geologic assessment of the project site. Laboratory testing consisted of thirty-one (31) standard grain size analyses and natural water content and three (3) grain size analyses with hydrometer and natural water content. The results of the laboratory tests are in Appendix B – Laboratory Test Results. Laboratory test results are also summarized on the boring logs in Appendix A.

5.0 SUBSURFACE CONDITIONS

Subsurface conditions encountered at the test borings, probes and test pits along the project generally consisted of pavement and fill soils overlying native till. The boring locations are shown on Sheets 2 through 14 – Boring Location Plans. The boring logs and probe information are in Appendix A – Boring Logs.

5.1 Pavement and Fill Soils

The subsurface investigations found areas of pavement and roadway fill soils along the project. Where present, the pavement thickness ranged from approximately 4 to 10 inches. In some areas an approximately 1 to 2 inch layer of macadam was encountered between the pavement and the fill layer. The fill soils consisted of:

- Brown to dark brown, dry to wet, fine to coarse sand, trace to some gravel, trace to some silt, occasional cobbles.
- Brown, damp to moist, gravelly fine to coarse sand, little to some silt, occasional cobbles.
- Brown to grey, wet, silty fine to coarse sand, trace to little gravel, trace clay.

The thickness of the fill ranged from approximately 0.9 feet to 14.0 feet but the fill soils were not fully penetrated in all the explorations. SPT N_{60} -values obtained in the fill ranged from 12 to 36 blows per foot (bpf) indicating that the fill is medium dense to dense in consistency.

Water contents from nineteen (19) samples obtained within the fill sand layer range from approximately 3.0% to 25.0%. Grain size analyses conducted on nineteen (19) samples of the fill sand resulted in the soil being classified as an A-1-a A-1-b, A-2-4, or A-4 under the AASHTO Soil Classification System and an SM, SW-SM, or SC-SM under the Unified Classification System.

5.2 Glacial Till

Throughout the project the fill is underlain by glacial till. The till consisted of:

- Light brown to brown, damp to wet, fine to coarse sandy silt, trace gravel.
- Light brown, olive-brown, or brown, damp to wet, silt, some fine to coarse sand, trace to little gravel, trace to little clay, occasional cobbles.
- Light brown, brown, or olive-brown, damp to moist, silty fine to coarse sand, trace gravel.
- Grey, wet, fine to coarse sand, little to some gravel, some silt, trace clay.
- Brown, wet, fine to coarse sandy gravel, little silt.

The thickness of the till ranged from approximately 1.1 feet to 12.9 feet but the till was not fully penetrated in all the explorations. Two (2) SPT N_{60} -values obtained in the sand and sandy gravel till ranged from 17 to 27 bpf indicating that the sand and sandy gravel till is medium dense in consistency. One (1) SPT N_{60} -value obtained in the silt till was 26 bpf, indicating that the silt till is very stiff in consistency.

Water contents from ten (10) samples obtained within the till range from approximately 9.5% to 20.5%. Grain size analyses conducted on ten (10) samples of the sand resulted in the soil being classified as an A-4 or A-1-a under the AASHTO Soil Classification System and an SM, ML, SC-SM, or GW-GM.

5.3 Refusal Surfaces and Bedrock

Shallow refusal surfaces were encountered at varying depths along the project. Refusal of the drilling tools varied from a depth of approximately 1.6 feet to 20.2 feet bgs. Bedrock was cored in boring HB-CAM-203. The Rock Quality Designation (RQD) of the bedrock was determined to be 43 percent which correlating to a Rock Quality of Poor. The exact nature of the refusal surfaces in other locations was not determined in the explorations. The table below summarizes the refusal surfaces encountered.

Approximate Station	Approximate Depth to Refusal (feet bgs)
87+85	20.2
96+90	13.9
98+70	9.7
117+00	17.6
131+32	4.1
149+95	2.4
150+85	1.6
155+33	17.8

5.4 Groundwater

Groundwater levels were not observed in the explorations. Groundwater levels can be expected to fluctuate subject to seasonal variations, local soil conditions, topography, precipitation, and construction activity.

6.0 GEOTECHNICAL RECOMMENDATIONS

The following sections discuss the geotechnical-related design features of this project. Areas of geotechnical concern are:

- Large Culvert at approximate Station 87+66
- Oversteepened Slope at Stations 111+50 to 114+00
- Potential Bedrock Removal

6.1 Large Culvert at approximate Station 87+66

6.1.1 General Information - The existing culvert at approximate Station 87+66 is a 36-inch reinforced concrete pipe (RCP). The proposed replacement structure is a 60-inch diameter, 76-foot long RCP on an approximately 19-degree skew with an inlet elevation of approximately 192.6 feet and an outlet elevation of approximately 190.8 feet.

One (1) boring, HB-CAM-202, was drilled near the existing culvert. The boring locations and the interpretive subsurface profile are shown on Sheet 15 – Boring Location Plan & Interpretive Subsurface Profile. The boring log is provided in Appendix A – Boring Logs.

Boring HB-CAM-202 was drilled through sand fill, cobbles, and sandy gravel till to a depth of approximately 20.2 feet bgs where it encountered a refusal surface. SPT N_{60} -values in the fill sand ranged from 12 to 36 indicating that the fill is medium dense to dense in consistency. One (1) SPT N_{60} -value obtained in the till ranged was 27 bpf indicating that the till is medium dense in consistency. The exact nature of the refusal surface was not determined in the exploration.

6.1.2 Construction – The proposed RCP culvert at approximate Station 87+66 shall be constructed in accordance with MaineDOT Standard Specification Section 603 and the Contract Plans.

The culvert shall be bedded on a 1-foot thick layer of Granular Borrow, Material for Underwater Backfill (MaineDOT Item 203.25, Granular Borrow). The bedding material should be placed in lifts of 6 to 8 inches loose measure and compacted to at least 95 percent of the AASHTO T-180 maximum dry density. The exposed subgrade shall be free of ponded water so that bedding material placement and compaction can be completed in the dry. The entire culvert bedding subgrade should be proof-rolled with multiple passes of a static roller to identify loose or weaving areas that require over-excavation and replacement and to achieve a firm and stable surface for construction. All subgrade surfaces shall be protected from any unnecessary construction traffic.

The full nature of the culvert bearing surface will not become evident until the culvert excavation is made at each location. Any loose soils or soft or unsuitable materials encountered in the excavations shall be removed and replaced with Granular Borrow Material for Underwater Backfill (MaineDOT 703.19) or Crushed Stone $\frac{3}{4}$ -Inch (MaineDOT 703.13). Any cobbles or boulders encountered in excess of 6 inches shall be removed and replaced with compacted Granular Borrow Material for Underwater Backfill or Crushed Stone $\frac{3}{4}$ -Inch.

The soil envelope and backfill shall also consist of Granular Borrow (703.19) with a maximum particle size of 4 inches. The granular borrow backfill material shall be placed in lifts of 6 to 8 inches loose measure and compacted to the manufacturer's specifications or, in the absence of manufacturer's specifications, the bedding and backfill soil shall be compacted to at least 92 percent of the AASHTO T-180 maximum dry density.

6.2 Oversteepened Slope from Stations 111+50 to 114+00

A 1.5H:1V fill slope is proposed from Stations 111+50 to 114+00. In accordance with AASHTO LRFD Bridge Design Specifications 8th Edition 2017 (LRFD) Article 11.6.2.3 evaluation of earth slopes that do not support or contain a structural element should achieve a factor of safety of 1.3 (equivalent to a resistance factor of 0.75). Analysis of the proposed 1.5H:1V slope using Geostudio Slope/W software determined that 3 feet of riprap armor was necessary for the slope to achieve a factor of safety of 1.3 or greater. Evaluation of the proposed slope with less than 3 feet of riprap resulted in unacceptable factors of safety. Appendix C – Slope Stability Analysis presents the stability results from this analysis. The stability analysis was based on subsurface conditions encountered in the borings drilled for the replacement of Spring Brook Bridge. The Boring Location Plan and boring logs for these explorations are included in Appendix C. Additional information is available in the Geotechnical Report for the Replacement of Spring Brook Bridge.

The slope shall be armored with riprap conforming to MaineDOT Standard Specification Section 703.26 Plain and Hand Laid Riprap underlain by a non-woven Class 1 erosion control geotextile that meets the requirements for MaineDOT Standard Specification 722.03 that is underlain by a 1-foot layer of protective aggregate cushion conforming to MaineDOT Standard Specification 703.19 Granular Borrow Material for Underwater Backfill.

6.3 Settlement

No settlement issues are anticipated for either the roadway or the proposed large culvert structure. The installation of the larger proposed culvert will result in a net unloading of the site soils at the structure location. Placement of fill soils at the location of the existing structure is not anticipated to exceed the past loading condition of the site soils.

6.4 Scour and Riprap

Both the inlet and outlet of the proposed large culvert shall be armored with riprap conforming to MaineDOT Standard Specification Section 703.26 Plain and Hand Laid Riprap on the inlet end and 726.28 Heavy Riprap on the outlet end. Riprap slopes shall not be steeper than 2H:1V. The riprap on the slopes shall be underlain by a non-woven Class 1 erosion control geotextile that meets the requirements for MaineDOT Standard Specification 722.03 that is underlain by a 1-foot layer of protective aggregate cushion conforming to MaineDOT Standard Specification 703.19 Granular Borrow Material for Underwater Backfill.

6.5 Seismic Design Considerations

In conformance with LRFD Article 3.10.1, seismic analysis is not required for buried structures, except where they cross active faults. There are no known active faults in Maine; therefore, seismic analysis is not required.

6.6 Additional Construction Considerations

Construction of the proposed RCP culvert will require deep soil excavation. Earth support systems will be required if laying back slopes is not feasible. Regardless of the method of excavation, all excavations and earth support systems shall meet all applicable OSHA regulations.

The Contractor shall control groundwater and surface water infiltration using temporary ditches, sumps, granular drainage blankets, stone ditch protection or hand-laid riprap with geotextile underlayment to divert groundwater and surface water to allow construction in the dry.

6.7 Bedrock Removal

Refusal of the drilling tools was encountered in several borings and probes along the project (see Section 5.3). Bedrock removal may be required for drainage and subgrade installation near these locations. Additional shallow bedrock may be encountered during construction at other locations. The nature, slope, and degree of fracturing in the bedrock surface will not be evident until the excavations are made.

Blasting, if required, shall be conducted in accordance with MaineDOT Standard Specifications Sections 105.2.7 and 203. The Contractor is required to conduct pre- and post-blast surveys, as

well as blast vibrations monitoring at nearby structures in accordance with industry standards at the time of the blast.

7.0 CLOSURE

This report has been prepared for the use of the MaineDOT Highway Program for specific application to the proposed reconstruction of US Route 1 in Camden, Maine in accordance with generally accepted geotechnical and foundation engineering practices. No other intended use or warranty is expressed or implied.

In the event that any changes in the nature, design, or location of the proposed project are planned, this report should be reviewed by a geotechnical engineer to assess the appropriateness of the conclusions and recommendations and to modify the recommendations as appropriate to reflect the changes in design. These analyses and recommendations are based in part upon a limited subsurface investigation at discrete exploratory locations completed at the site. If variations from the conditions encountered during the investigation appear evident during construction, it may also become necessary to re-evaluate the recommendations made in this report.

It is recommended that a geotechnical engineer be provided the opportunity for a review of the design and specifications in order that the earthwork and foundation recommendations and construction considerations presented in this report are properly interpreted and implemented in the design and specifications.

Sheets



CAMDEN, MAINE



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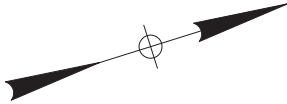
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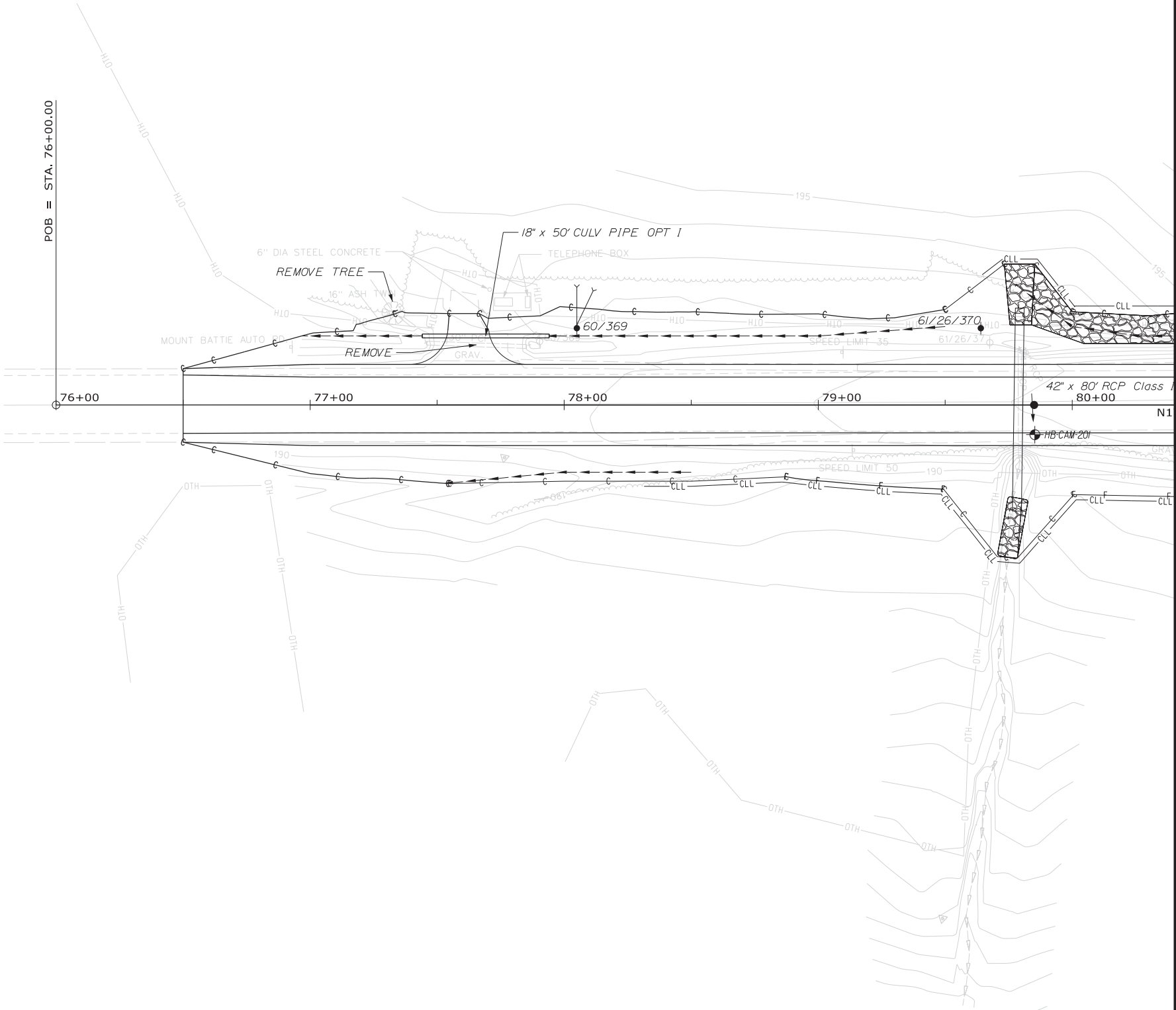
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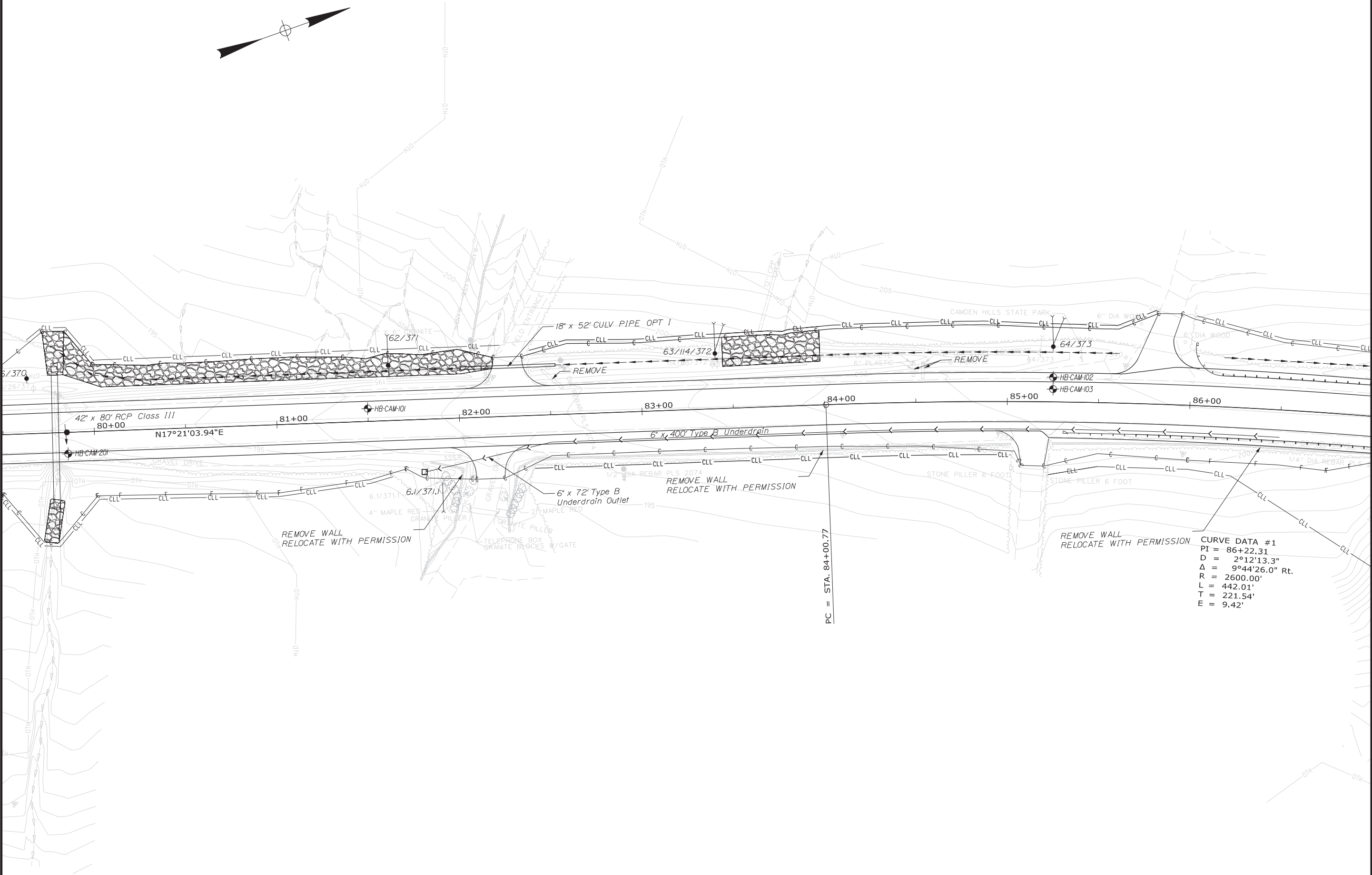
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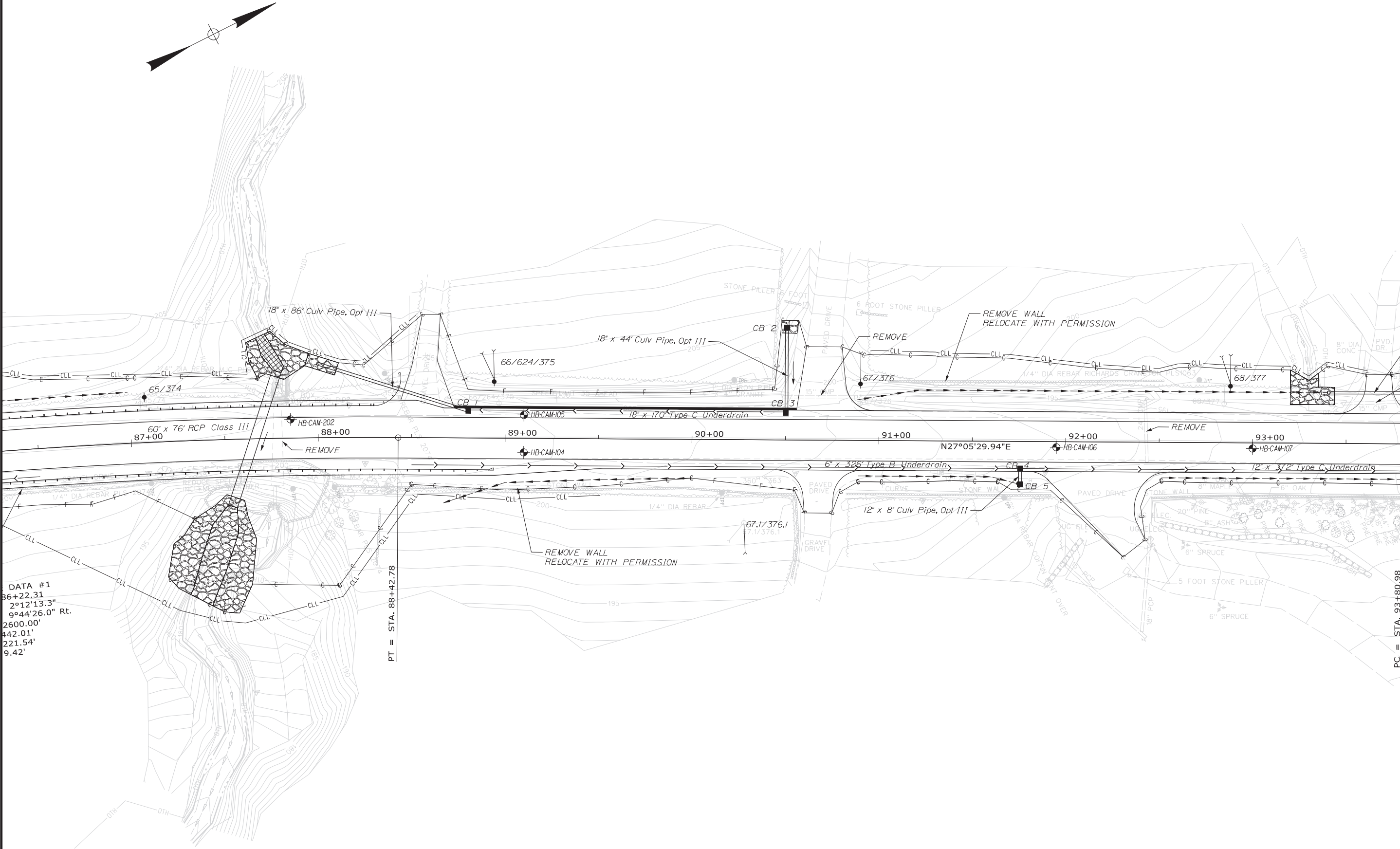
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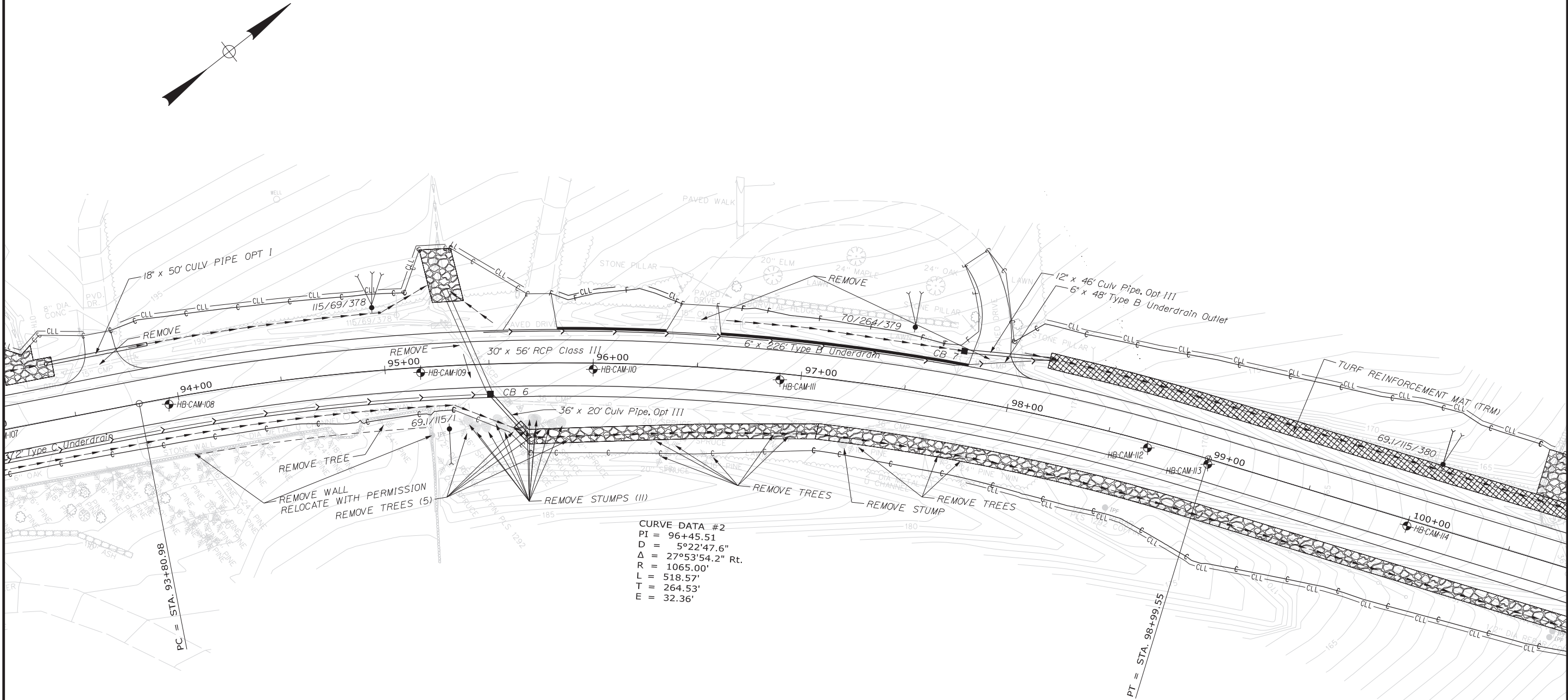


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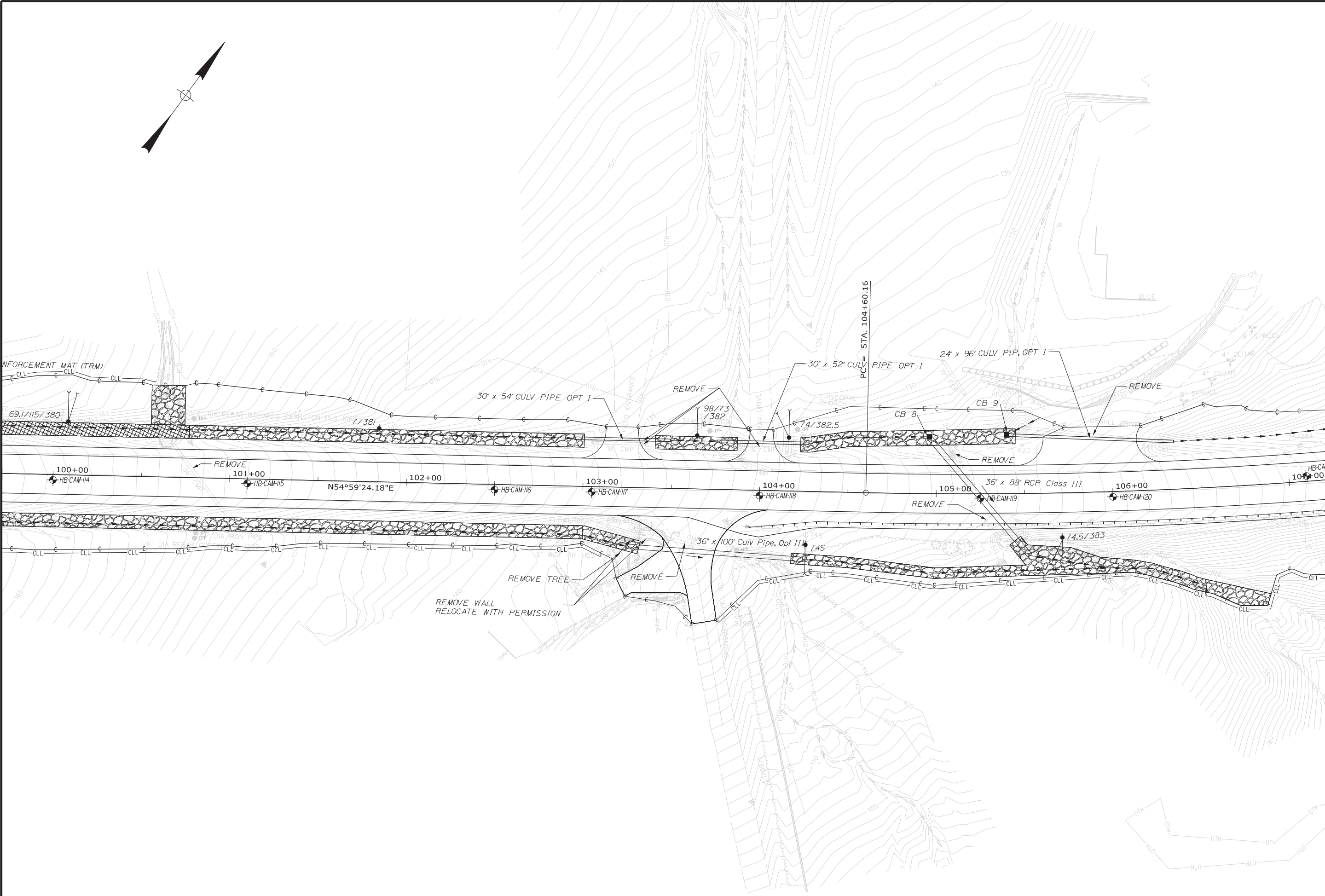
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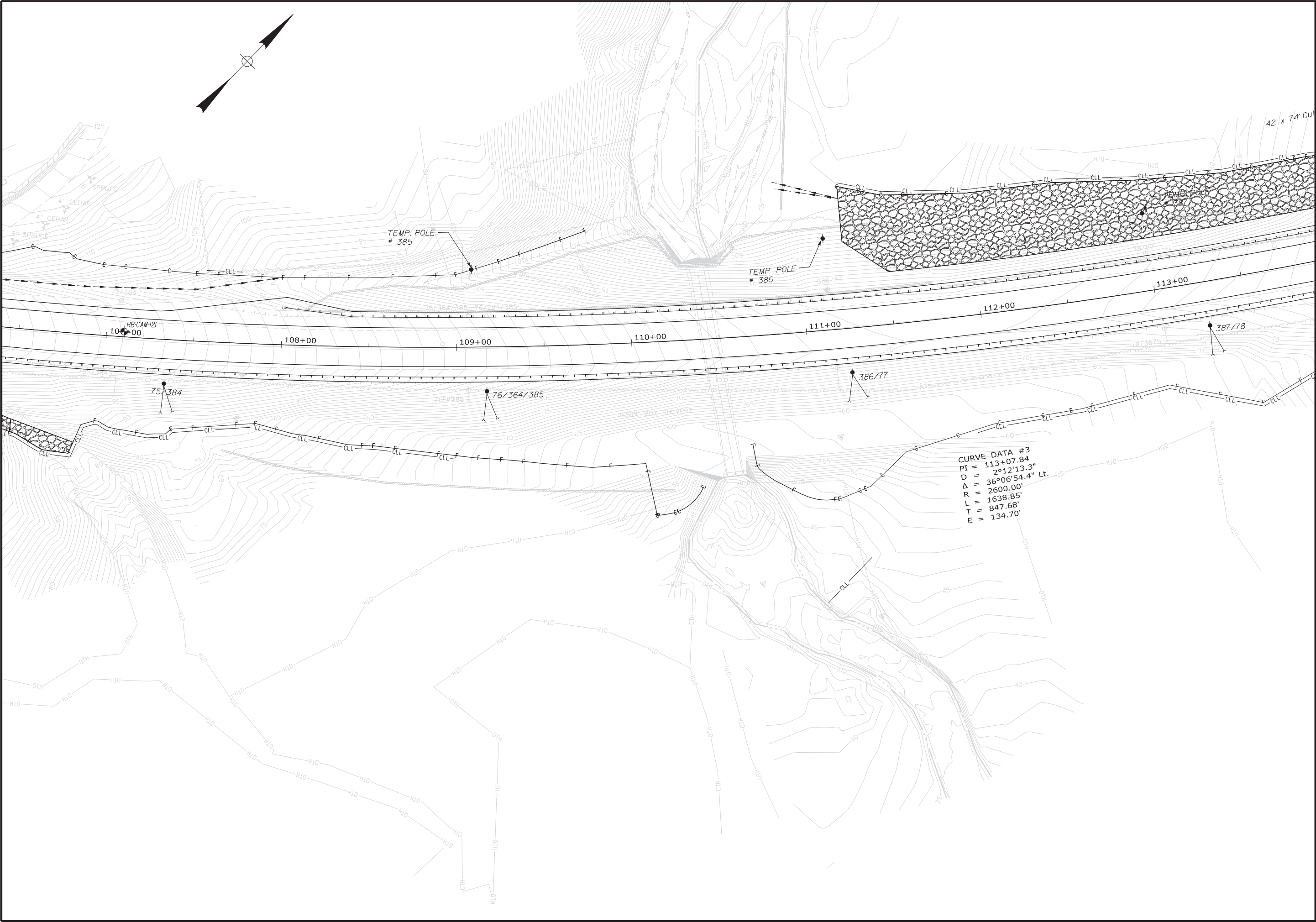
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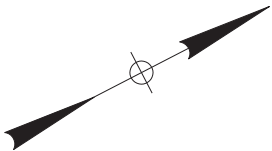
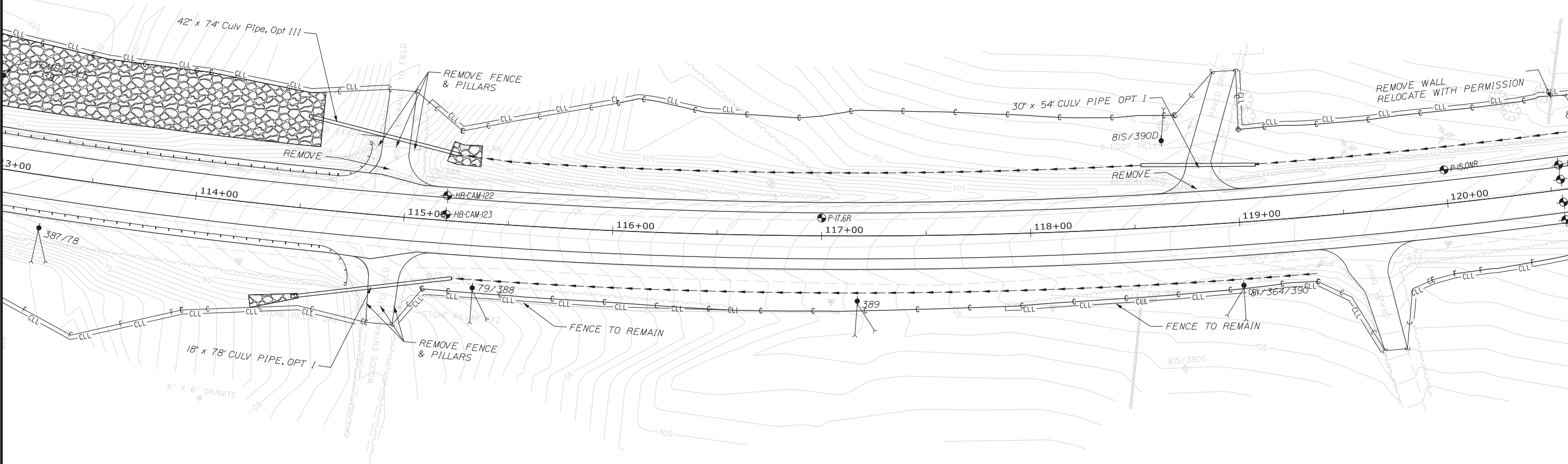
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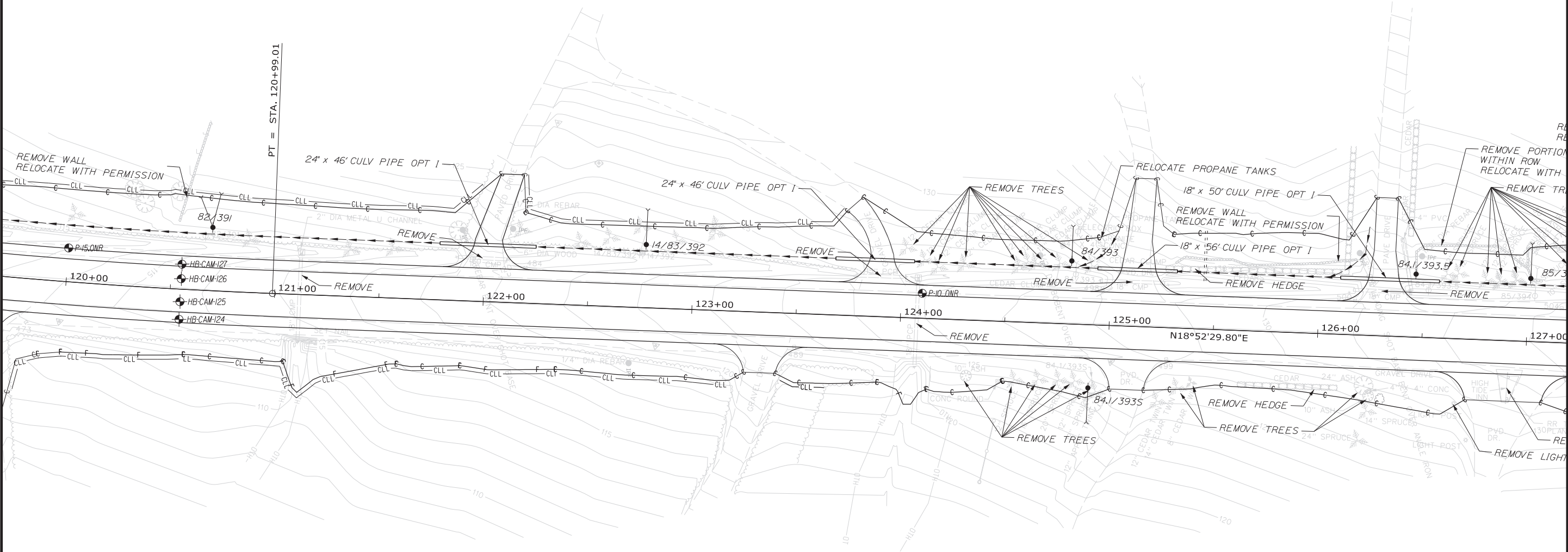
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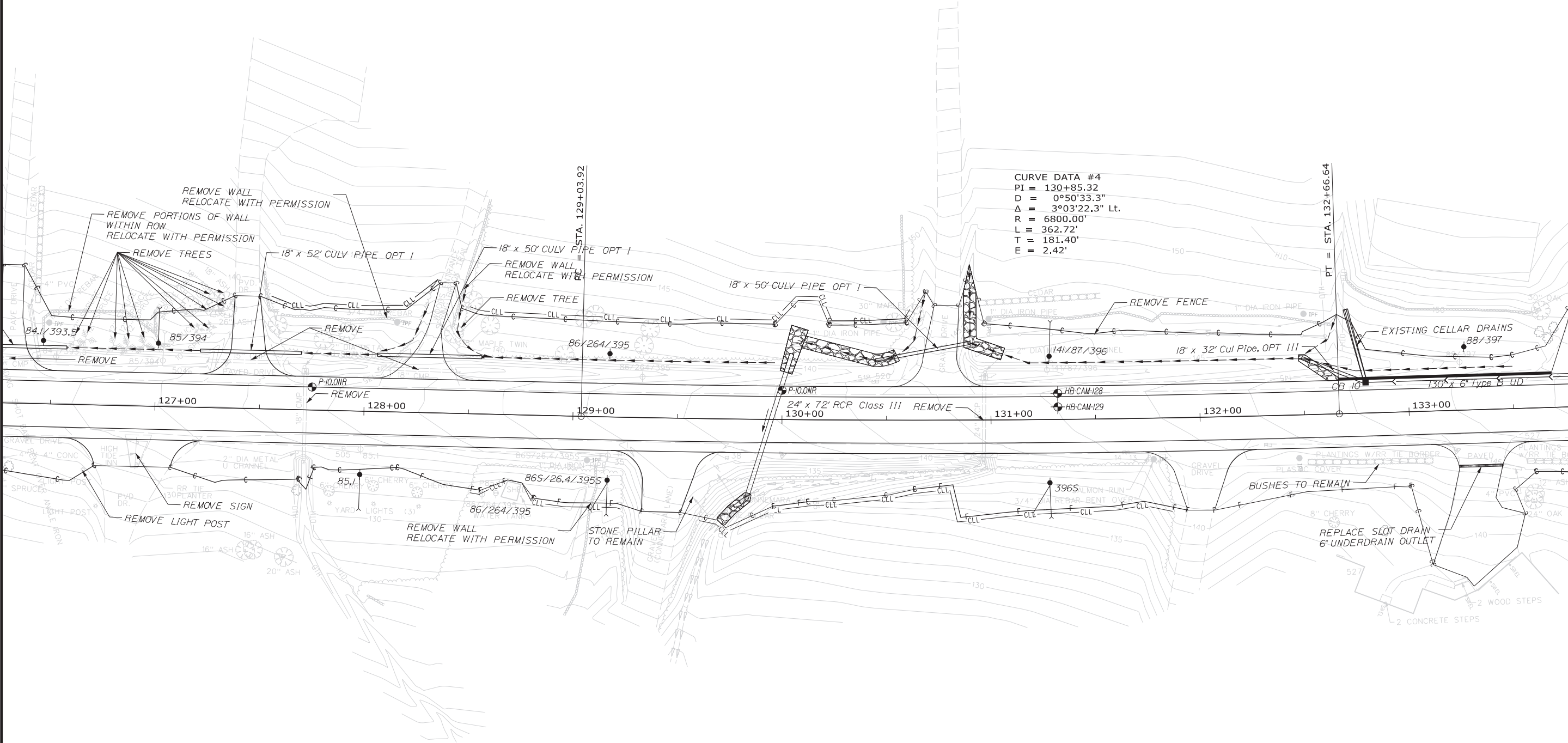
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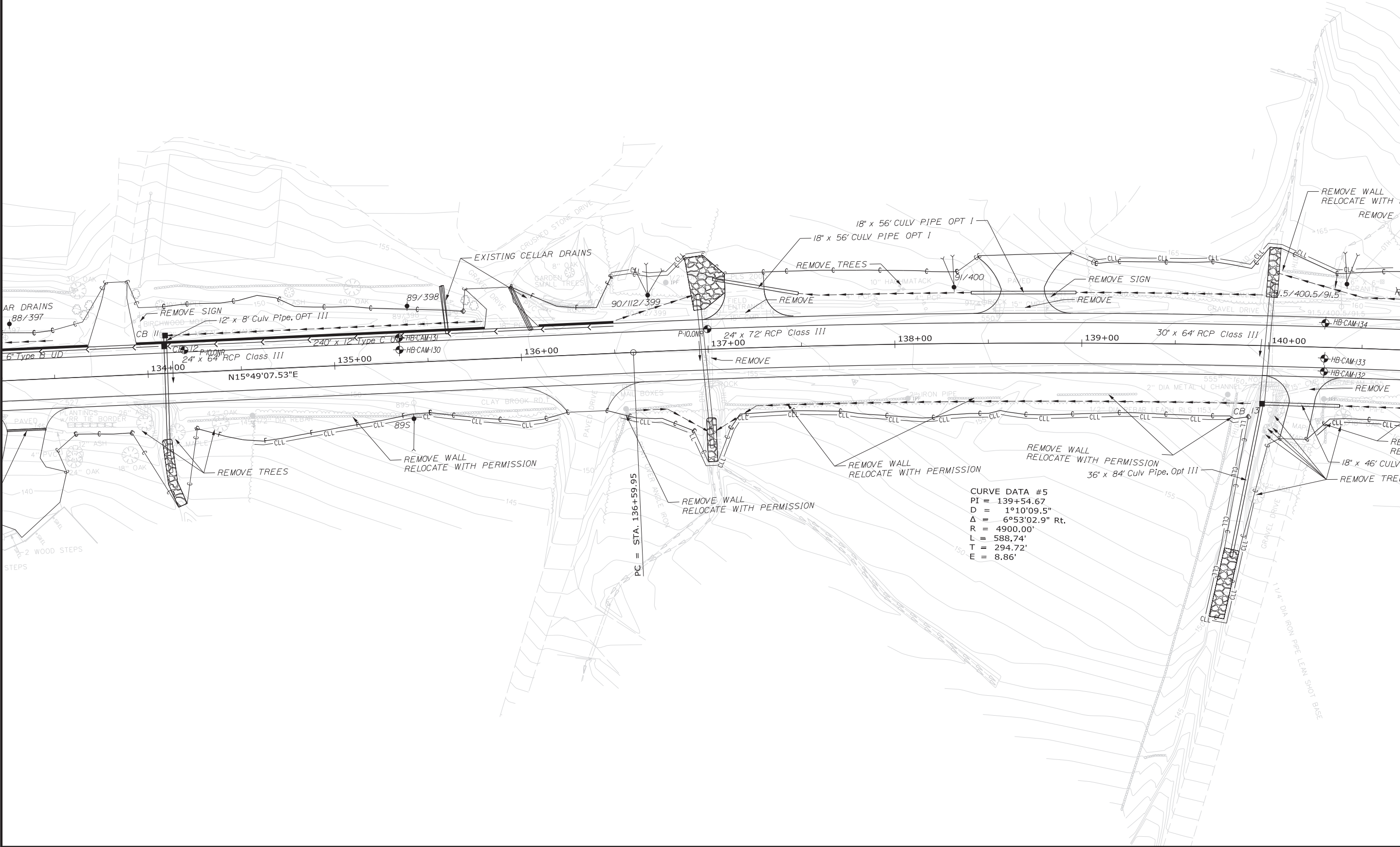
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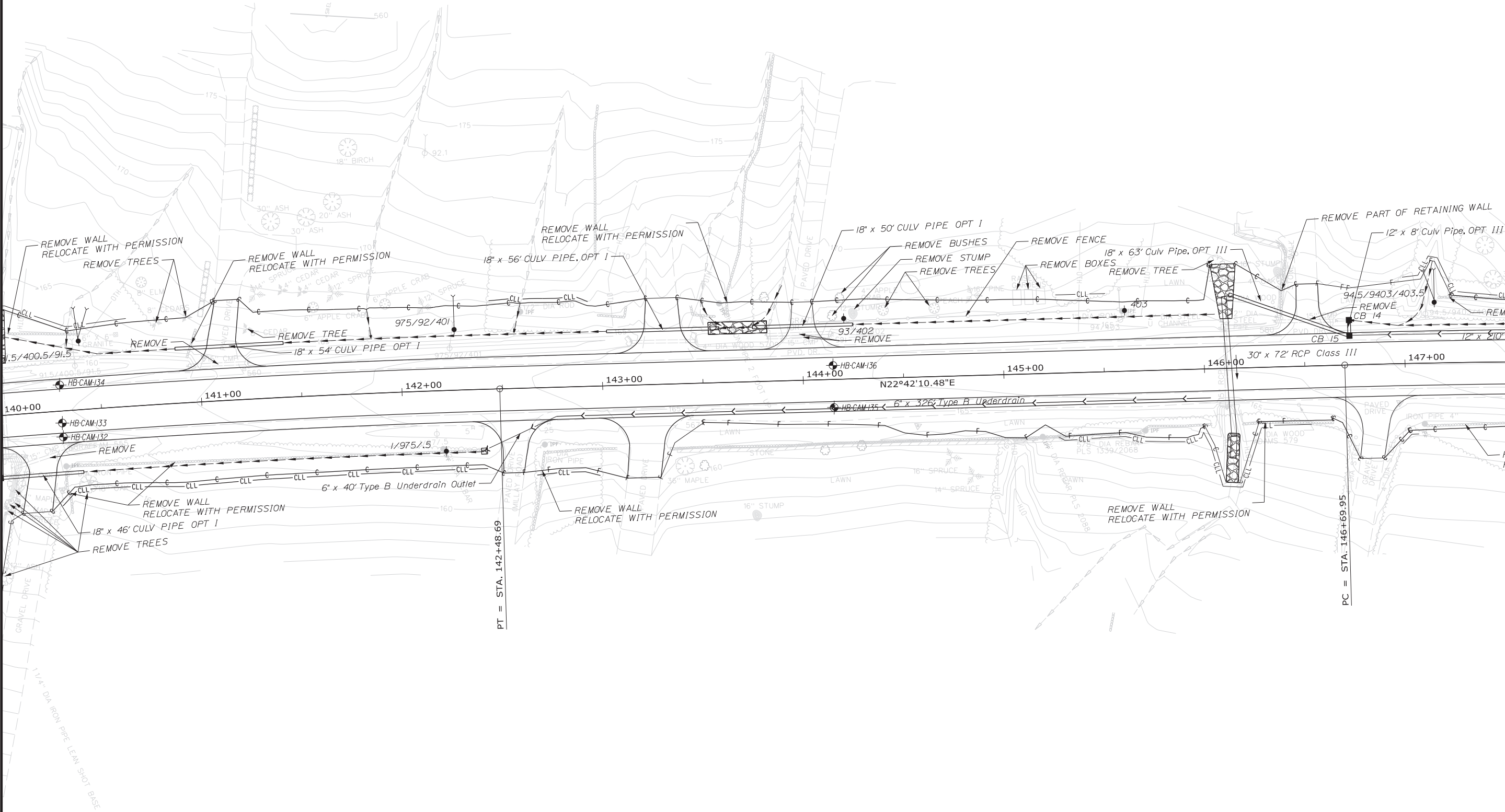
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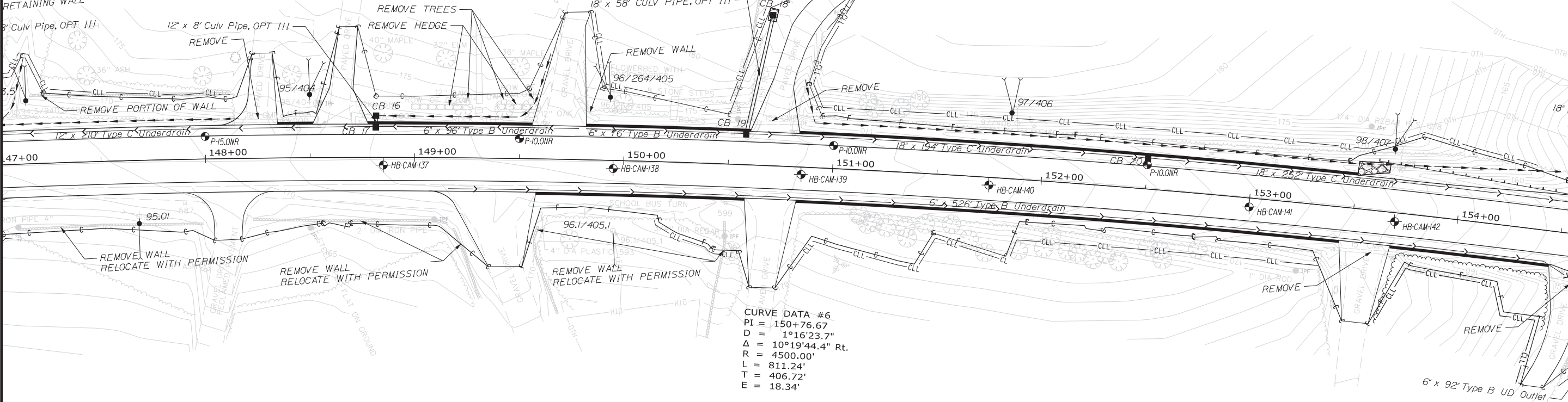
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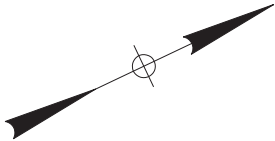
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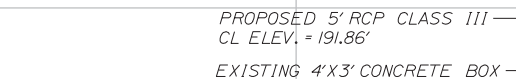
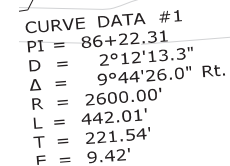
CAMDEN ROUTE 1		PROJ. MANAGER		E. MARTIN	BY	DATE	STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
		DESIGN-DETAILED		N. COLLINS	J. HARDEN			
BORING LOCATION PLAN		CHECKED-REVIEWED					SIGNATURE	
		DESIGN2-DETAILED2		C. RUSSELL	T. WHITE	JAN 2020		
		DESIGN3-DETAILED3					P.E. NUMBER	
		REVISIONS 1						
		REVISIONS 2						
SHEET NUMBER		REVISIONS 3					WIN	
		REVISIONS 4					18283.00	
		FIELD CHANGES					DATE	
OF 15								HIGHWAY PLANS



CURVE DATA #6
 PI = 150+76.67
 D = 1°16'23.7"
 Δ = 10°19'44.4" Rt.
 R = 4500.00'
 L = 811.24'
 T = 406.72'
 E = 18.34'



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
NH-1828(300)		WIN 18283.00	
HIGHWAY PLANS			
CAMDEN ROUTE 1		BORING LOCATION PLAN	
SHEET NUMBER		13	
OF 15			
PROJ. MANAGER	E. MARTIN	BY	J. HARDEN
CHECKED-REVIEWED	N. COLLINS	DATE	JAN 2020
DESIGN-DETAILED	C. RUSSELL	SIGNATURE	
DESIGN-DETAILED	T. WHITE	P.E. NUMBER	
REVISIONS 1		DATE	
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			



STATE OF MAINE	
DEPARTMENT OF TRANSPORTATION	
NH-1828(300)	
WIN	HIGHWAY PLANS
18283.00	

PROJ. MANAGER	E. MARTIN	BY	DATE
DESIGN-REVIEWED	N. COLLINS	J. HARDEN	
DESIGN2-Detailed	C. RUSSELL	T. WHITE	JAN 2020
DESIGN3-Detailed			
DESIGN4-Detailed			
DESIGN5-Detailed			
DESIGN6-Detailed			
DESIGN7-Detailed			
DESIGN8-Detailed			
DESIGN9-Detailed			
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DESIGN132-Detailed			
DESIGN133-Detailed			
DESIGN134-Detailed			
DESIGN135-Detailed			
DESIGN136-Detailed			
DESIGN137-Detailed			
DESIGN138-Detailed			

CAMDEN ROUTE 1 BORING LOCATION PLAN & INTERPRETIVE SUBSURFACE PROFILE WITH BORING LOGS

SHEET NUMBER

15

OF 15

Appendix A

Boring Logs and Probe Information

UNIFIED SOIL CLASSIFICATION SYSTEM					
MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES	
COARSE-GRAINED SOILS (more than half of material is larger than No. 200 sieve size)	GRAVELS (more than half of coarse fraction is larger than No. 4 sieve size)	CLEAN GRAVELS	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.	
		(little or no fines)	GP	Poorly-graded gravels, gravel sand mixtures, little or no fines.	
		GRAVEL WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.	
		GC	Clayey gravels, gravel-sand-clay mixtures.		
	SANDS (more than half of coarse fraction is smaller than No. 4 sieve size)	CLEAN SANDS	SW	Well-graded sands, Gravelly sands, little or no fines	
		(little or no fines)	SP	Poorly-graded sands, Gravelly sand, little or no fines.	
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures	
		SC	Clayey sands, sand-clay mixtures.		
FINE-GRAINED SOILS (more than half of material is smaller than No. 200 sieve size)	SILTS AND CLAYS (liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, Silty or Clayey fine sands, or Clayey silts with slight plasticity.		
		CL	Inorganic clays of low to medium plasticity, Gravelly clays, Sandy clays, Silty clays, lean clays.		
		OL	Organic silts and organic Silty clays of low plasticity.		
	SILTS AND CLAYS (liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine Sandy or Silty soils, elastic silts.		
		CH	Inorganic clays of high plasticity, fat clays.		
		OH	Organic clays of medium to high plasticity, organic silts.		
	HIGHLY ORGANIC SOILS	Pt	Peat and other highly organic soils.		

MODIFIED BURMISTER SYSTEM			
<u>Descriptive Term</u>		<u>Portion of Total (%)</u>	
trace		0 - 10	
little		11 - 20	
some		21 - 35	
adjective (e.g. Sandy, Clayey)		36 - 50	
TERMS DESCRIBING DENSITY/CONSISTENCY			
<u>Coarse-grained soils</u> (more than half of material is larger than No. 200 sieve): Includes (1) clean gravels; (2) Silty or Clayey gravels; and (3) Silty, Clayey or Gravelly sands. Density is rated according to standard penetration resistance (N-value).			
<u>Density of Cohesionless Soils</u>		<u>Standard Penetration Resistance N-Value (blows per foot)</u>	
Very loose		0 - 4	
Loose		5 - 10	
Medium Dense		11 - 30	
Dense		31 - 50	
Very Dense		> 50	
<u>Fine-grained soils</u> (more than half of material is smaller than No. 200 sieve): Includes (1) inorganic and organic silts and clays; (2) Gravelly, Sandy or Silty clays; and (3) Clayey silts. Consistency is rated according to undrained shear strength as indicated.			
<u>Consistency of Cohesive soils</u>		<u>SPT N-Value (blows per foot)</u>	<u>Approximate Undrained Shear Strength (psf)</u>
Very Soft		WOH, WOR, WOP, <2	0 - 250
Soft		2 - 4	250 - 500
Medium Stiff		5 - 8	500 - 1000
Stiff		9 - 15	1000 - 2000
Very Stiff		16 - 30	2000 - 4000
Hard		>30	over 4000
<u>Field Guidelines</u>			
Fist easily penetrates			
Thumb easily penetrates			
Thumb penetrates with moderate effort			
Indented by thumb with great effort			
Indented by thumbnail			
Indented by thumbnail with difficulty			
<u>Rock Quality Designation (RQD):</u>			
RQD (%) = $\frac{\text{sum of the lengths of intact pieces of core}^* > 4 \text{ inches}}{\text{length of core advance}}$			
*Minimum NQ rock core (1.88 in. OD of core)			
<u>Rock Quality Based on RQD</u>			
<u>Rock Quality</u>		<u>RQD (%)</u>	
Very Poor		≤25	
Poor		26 - 50	
Fair		51 - 75	
Good		76 - 90	
Excellent		91 - 100	
<u>Desired Rock Observations (in this order, if applicable):</u>			
Color (Munsell color chart)			
Texture (aphanitic, fine-grained, etc.)			
Rock Type (granite, schist, sandstone, etc.)			
Hardness (very hard, hard, mod. hard, etc.)			
Weathering (fresh, very slight, slight, moderate, mod. severe, severe, etc.)			
Geologic discontinuities/jointing:			
-dip (horiz - 0-5 deg., low angle - 5-35 deg., mod. dipping - 35-55 deg., steep - 55-85 deg., vertical - 85-90 deg.)			
-spacing (very close - <2 inch, close - 2-12 inch, mod. close - 1-3 feet, wide - 3-10 feet, very wide >10 feet)			
-tightness (tight, open, or healed)			
-infilling (grain size, color, etc.)			
Formation (Waterville, Ellsworth, Cape Elizabeth, etc.)			
RQD and correlation to rock quality (very poor, poor, etc.)			
ref: ASTM D6032 and FHWA NHI-16-072 GEC 5 - Geotechnical Site Characterization, Table 4-12			
Recovery (inch/inch and percentage)			
Rock Core Rate (X.X ft - Y.Y ft (min:sec))			
<u>Sample Container Labeling Requirements:</u>			
WIN		Blow Counts	
Bridge Name / Town		Sample Recovery	
Boring Number		Date	
Sample Number		Personnel Initials	
Sample Depth			

Maine Department of Transportation Geotechnical Section Key to Soil and Rock Descriptions and Terms Field Identification Information
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-101 WIN: 18283.00																																																																																																											
Drilling Contractor: MaineDOT				Elevation (ft.): 196.3				Auger ID/OD: 5" Dia.																																																																																																											
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																																											
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Date Start/Finish: 6/10/13-6/10/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																											
Boring Location: 81+50, 7.0 ft Lt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																											
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>																																																																																																																			
<table><tr><th rowspan="2">Depth (ft.)</th><th colspan="8">Sample Information</th><th rowspan="2">Visual Description and Remarks</th><th rowspan="2">Laboratory Testing Results/ AASHTO and Unified Class.</th></tr><tr><th>Sample No.</th><th>Pen./Rec. (in.)</th><th>Sample Depth (ft.)</th><th>Blows (6 in.) Shear Strength (psf) or RQD (%)</th><th>N-value</th><th>Casing</th><th>Blows</th><th>Elevation (ft.)</th><th>Graphic Log</th></tr><tr><td>0</td><td>S1</td><td></td><td>0.33 - 3.10</td><td></td><td></td><td>SSA</td><td></td><td>196.0</td><td></td><td>4" PAVEMENT. Brown, damp, fine to coarse SAND, some gravel, some silt, (Fill).</td><td>G#266826 A-1-b, SM WC=3.3%</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>193.2</td><td></td><td>Olive-brown, moist, Silty fine to coarse SAND, trace gravel, (Till).</td><td>G#266827 A-4, SM WC=14.8%</td></tr><tr><td>5</td><td>S2</td><td></td><td>3.10 - 5.00</td><td></td><td></td><td></td><td></td><td>191.3</td><td></td><td>Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL</td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>15</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>20</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>												Depth (ft.)	Sample Information								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-value	Casing	Blows	Elevation (ft.)	Graphic Log	0	S1		0.33 - 3.10			SSA		196.0		4" PAVEMENT. Brown, damp, fine to coarse SAND, some gravel, some silt, (Fill).	G#266826 A-1-b, SM WC=3.3%									193.2		Olive-brown, moist, Silty fine to coarse SAND, trace gravel, (Till).	G#266827 A-4, SM WC=14.8%	5	S2		3.10 - 5.00					191.3		Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL		10												15												20												25											
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Boring No.: HB-CAM-101																																																																																																																			

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-102</div> <div>WIN: 18283.00</div>			
Drilling Contractor: MaineDOT				Elevation (ft.): 201.8				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/10/13-6/10/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 85+25, 13.5 ft Lt.				Casing ID/OD: N/A				Water Level*: None Observed			
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>											
Depth (ft.)	Sample Information							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-value	Casing Blows	Elevation (ft.)				
0	S3		0.00 - 1.20			SSA	200.6	Dark brown, moist, fine to coarse SAND, some gravel, little silt, (Fill).	G#266828 A-1-b, SW-SM WC=5.8% G#266829 A-4, ML WC=13.1%		
	S4		1.20 - 5.00					Light brown, moist, SILT, some fine to coarse sand, trace gravel, (Till).			
5							196.8	Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL			
10											
15											
20											
25											
Remarks:											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.								Page 1 of 1			
* 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.								Boring No.: HB-CAM-102			

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-104</div> <div>WIN: 18283.00</div>																																																																																																																																																																																																																																																																																																																																						
Drilling Contractor: MaineDOT				Elevation (ft.): 201.1				Auger ID/OD: 5" Dia.																																																																																																																																																																																																																																																																																																																																						
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-105 WIN: 18283.00			
Drilling Contractor: MaineDOT				Elevation (ft.): 201.0				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/10/13-6/10/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 89+10, 12.5 ft Lt.				Casing ID/OD: N/A				Water Level*: None Observed			
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>											
Depth (ft.)	Sample Information							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-value	Casing Blows	Elevation (ft.)				
0	S8		0.00 - 1.80			SSA	199.2		Brown, damp, fine to coarse SAND, some gravel, little silt, (Fill).	G#266832 A-1-a, SW-SM WC=6.1%	
	S9		1.80 - 5.00								
5							196.0		Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL		
25											
Remarks:											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.									Page 1 of 1		
* 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.									Boring No.: HB-CAM-105		

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>						<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-106</div> <div>WIN: 18283.00</div>																																																																																																												
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Date Start/Finish: 6/10/13-6/10/13						Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																												
Boring Location: 91+95, 3.0 ft Rt.						Casing ID/OD: N/A				Water Level*: None Observed																																																																																																												
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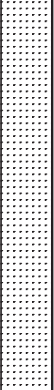


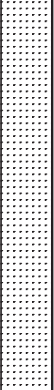


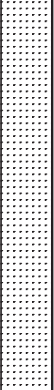
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-111 WIN: 18283.00			
Drilling Contractor: MaineDOT				Elevation (ft.): 182.8				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/10/13-6/10/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 96+90, 3.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed			
Definitions: D = Spilt Spoon Sample MU = Unsuccessful Thin Wall Tube Sample Attempt WO1P = Weight of 1 Person S = Sample off Auger Flights R = Rock Core Sample S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) B = Bucket Sample off Auger Flights SSA = Solid Stem Auger S _u (lab) = Lab Vane Undrained Shear Strength (psf) 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-value = Raw Field SPT N-value MV = Unsuccessful Field Vane Shear Test Attempt WOH = Weight of 140lb. Hammer T _v = Pocket Torvane Shear Strength (psf) V = Field Vane Shear Test, PP= Pocket Penetrometer WOR/C = Weight of Rods or Casing WC = Water Content, percent = = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test											
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	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows					
0	S14		0.58 - 2.20			SSA	182.2		7" PAVEMENT.	G#266836 A-1-b, SM WC=7.1%	
							180.6		Brown, moist, SAND, some gravel, some silt, (Fill).		
									Brown, moist, fine to coarse Sandy SILT, trace gravel, (Till).		
5											
	S15		6.50 - 13.90				176.3		Grey, wet, fine to coarse SAND, some gravel, some silt, (Till).		
10											
15							168.9	Bottom of Exploration at 13.9 feet below ground surface. REFUSAL			
20											
25											
Remarks:											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1	
* 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.										Boring No.: HB-CAM-111	

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>						Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine			Boring No.: HB-CAM-112																																																																																																																																																																																																																																																								
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Maine Department of Transportation

Soil/Rock Exploration Log

US CUSTOMARY UNITS

Project: Reconstruction of a 1.54 mile portion of Route 1

Location: Camden, Maine

Boring No.: HB-CAM-116

WIN: 18283.00

Drilling Contractor: MaineDOT

Elevation (ft.): 141.6

Auger ID/OD: 5" Dia.

Operator: Giles/Daggett

Datum: NAVD88

Sampler: Off Flights

Logged By: B. Wilder

Rig Type: CME 45C

Hammer Wt./Fall: N/A

Date Start/Finish: 6/10/13-6/10/13

Drilling Method: Solid Stem Auger

Core Barrel: N/A

Boring Location: 102+50, 3.0 ft Rt.

Casing ID/OD: N/A

Water Level*: None Observed

Definitions: D = Spilt Spoon Sample

S = Sample off Auger Flights

B = Bucket Sample off Auger Flights

MD = Unsuccessful Split Spoon Sample Attempt

U = Thin Wall Tube Sample

MV = Unsuccessful Field Vane Shear Test Attempt

V = Field Vane Shear Test, PP= Pocket Penetrometer

MU = Unsuccessful Thin Wall Tube Sample Attempt

R = Rock Core Sample

SSA = Solid Stem Auger

HSA = Hollow Stem Auger

RC = Roller Cone

WOH = Weight of 140lb. Hammer

WOR/C = Weight of Rods or Casing

WO1P = Weight of 1 Person

S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)

S_u(lab) = Lab Vane Undrained Shear Strength (psf)

q_p = Unconfined Compressive Strength (ksf)

N-value = Raw Field SPT N-value

T_v = Pocket Torvane Shear Strength (psf)

WC = Water Content, percent ≈ = Similar or Equal too

LL = Liquid Limit

PL = Plastic Limit

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-value	Casing Blows				
0						SSA	141.1		6" PAVEMENT.	
									Brown, damp, fine to coarse SAND, some gravel, little silt, (Fill).	0.5
							138.8		Olive-brown, damp, SILT, some fine to coarse sand, little gravel, (Till).	2.8
5										
10							131.6		Bottom of Exploration at 10.0 feet below ground surface. NO REFUSAL	10.0
25										

Remarks:







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

* 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.

Page 1 of 1



Boring No.: HB-CAM-116

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>						<div>Project:</div> <div>Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location:</div> <div>Camden, Maine</div>							<div>Boring No.:</div> <div>HB-CAM-117</div> <div>WIN:</div> <div>18283.00</div>											
Drilling Contractor: MaineDOT									Elevation (ft.): 137.3							Auger ID/OD: 5" Dia.								
Operator: Giles/Daggett									Datum: NAVD88							Sampler: Off Flights								
Logged By: B. Wilder									Rig Type: CME 45C							Hammer Wt./Fall: N/A								
Date Start/Finish: 6/10/13-6/10/13									Drilling Method: Solid Stem Auger							Core Barrel: N/A								
Boring Location: 103+05, 3.0 ft Rt.									Casing ID/OD: N/A							Water Level*: None Observed								
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Boring No.: HB-CAM-117																								

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-118 WIN: 18283.00																																																																																																																																																																																																																																																																																															
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Page 1 of 1										Boring No.: HB-CAM-118																																																																																																																																																																																																																																																																																													

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-119 WIN: 18283.00																																																																																															
Drilling Contractor: MaineDOT				Elevation (ft.): 119.8				Auger ID/OD: 5" Dia.																																																																																															
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																															
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A																																																																																															
Date Start/Finish: 6/10/13-6/10/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																															
Boring Location: 105+25, 2.5 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																															
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Boring No.: HB-CAM-119																																																																																																							

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-120 WIN: 18283.00																																																																																																																							
Drilling Contractor: MaineDOT				Elevation (ft.): 113.6				Auger ID/OD: 5" Dia.																																																																																																																							
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Date Start/Finish: 6/10/13-6/10/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																																							
Boring Location: 106+00, 3.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																																							
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Boring No.: HB-CAM-120																																																																																																																															

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-121</div> <div>WIN: 18283.00</div>			
Drilling Contractor: MaineDOT				Elevation (ft.) 104.9				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/10/13-6/10/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 107+10, 3.0 ft Lt.				Casing ID/OD: N/A				Water Level*: None Observed			
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>											
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-value	Casing Blows					
0						SSA	104.4		6" PAVEMENT. Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).	0.5	
							102.2		Brown, moist, Silty fine to coarse SAND, trace gravel, (Till).	2.7	
5							99.9		Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL	5.0	
10											
15											
20											
25											
Remarks:											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1	
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-122 WIN: 18283.00																																																																																																																	
Drilling Contractor: MaineDOT				Elevation (ft.): 89.9				Auger ID/OD: 5" Dia.																																																																																																																	
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Date Start/Finish: 6/10/13-6/10/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																																	
Boring Location: 115+20, 12.0 ft Lt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																																	
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-123 WIN: 18283.00																																																																																																																							
Drilling Contractor: MaineDOT				Elevation (ft.): 90.7				Auger ID/OD: 5" Dia.																																																																																																																							
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																																																							
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Boring No.: HB-CAM-123																																																																																																																															

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-124</div> <div>WIN: 18283.00</div>			
Drilling Contractor: MaineDOT				Elevation (ft.) 115.4				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/13/13-6/13/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 120+55, 14.5 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed			
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>											
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							113.4	Light brown, moist, SILT, some fine to coarse sand, trace gravel, (Till).	2.0		
5							110.4	Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL	5.0		
10											
15											
20											
25											
Remarks:											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.								Page 1 of 1			
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-125 WIN: 18283.00																																																																																																																							
Drilling Contractor: MaineDOT				Elevation (ft.): 115.8				Auger ID/OD: 5" Dia.																																																																																																																							
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																																																							
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A																																																																																																																							
Date Start/Finish: 6/13/13-6/13/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																																							
Boring Location: 120+55, 6.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																																							
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Page 1 of 1										Boring No.: HB-CAM-125																																																																																																																					

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-126 WIN: 18283.00																																																																																																																																
Drilling Contractor: MaineDOT				Elevation (ft.) 115.6				Auger ID/OD: 5" Dia.																																																																																																																																
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																																																																
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<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-130</div> <div>WIN: 18283.00</div>																																																																																																																																
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Boring No.: HB-CAM-130																																																																																																																																								

Maine Department of Transportation

Soil/Rock Exploration Log

US CUSTOMARY UNITS

Project:

Reconstruction of a 1.54 mile portion of Route 1

Location:

Camden, Maine

Boring No.:

HB-CAM-131

WIN:

18283.00

Drilling Contractor:

MaineDOT

Elevation (ft.):

151.2

Auger ID/OD:

5" Dia.

Operator:

Giles/Daggett

Datum:

NAVD88

Sampler:

Off Flights

Logged By:

B. Wilder

Rig Type:

CME 45C

Hammer Wt./Fall:

N/A

Date Start/Finish:

6/13/13-6/13/13

Drilling Method:

Solid Stem Auger

Core Barrel:

N/A

Boring Location:

135+35, 13.5 ft Lt.

Casing ID/OD:

N/A

Water Level*:

None Observed

Definitions:

D = Spilt Spoon Sample

S = Sample off Auger Flights

B = Bucket Sample off Auger Flights

MD = Unsuccessful Split Spoon Sample Attempt

U = Thin Wall Tube Sample

MV = Unsuccessful Field Vane Shear Test Attempt

V = Field Vane Shear Test

PP= Pocket Penetrometer

MU = Unsuccessful Thin Wall Tube Sample Attempt

R = Rock Core Sample

SSA = Solid Stem Auger

HSA = Hollow Stem Auger

RC = Roller Cone

WOH = Weight of 140lb. Hammer

WOR/C = Weight of Rods or Casing

WO1P = Weight of 1 Person

S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)

S_{u(lab)} = Lab Vane Undrained Shear Strength (psf)

q_p = Unconfined Compressive Strength (ksf)

N-value = Raw Field SPT N-value

T_v = Pocket Torvane Shear Strength (psf)

WC = Water Content, percent

≡ = Similar or Equal too

LL = Liquid Limit

PL = Plastic Limit

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-value	Casing Blows					
0						SSA			<div></div>	Brown, wet, fine to coarse SAND, some silt, some gravel, (Fill).	
								147.5		Light brown, wet, SILT, some fine to coarse sand, trace gravel, (Till).	3.7
5								146.2			
										Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL	5.0
25											

Remarks:

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

* 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.

Page 1 of 1

Boring No.: HB-CAM-131

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-132</div> <div>WIN: 18283.00</div>			
Drilling Contractor: MaineDOT				Elevation (ft.) 161.5				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/13/13-6/13/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 140+30, 13.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed			
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>											
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10											
15											
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<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-133</div> <div>WIN: 18283.00</div>			
Drilling Contractor: MaineDOT				Elevation (ft.): 161.7				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/13/13-6/13/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 140+30, 6.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed			
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	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)				
0	S28		0.67 - 2.10			SSA	161.2 161.0	6" PAVEMENT. 2" Macadam.	G#266846 A-1-b, SM WC=4.3%		
							159.6	Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).			
	S29		2.10 - 5.00					Light brown, damp, Silty fine to coarse SAND, (Till).			
5							156.7				
10											
15											
20											
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Remarks:											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.								Page 1 of 1			
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-134 WIN: 18283.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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Shear Strength (psf) or RQD (%)</th><th>N-value</th><th>Casing</th><th>Blows</th><th>Elevation (ft.)</th><th>Graphic Log</th></tr><tr><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td>SSA</td><td></td><td rowspan="10"></td><td rowspan="10">Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).</td><td rowspan="10"></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>156.5</td><td></td><td rowspan="10">Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL</td><td rowspan="10"></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>15</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>20</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></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(ft.)	Sample Information								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-value	Casing	Blows	Elevation (ft.)	Graphic Log	0							SSA			Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).																																																																																			5								156.5		Bottom of Exploration at 5.0 feet below ground surface. 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<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-135</div> <div>WIN: 18283.00</div>			
Drilling Contractor: MaineDOT				Elevation (ft.) 165.1				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/13/13-6/13/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 144+15, 14.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed			
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>											
Depth (ft.)	Sample Information							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-value	Casing Blows	Elevation (ft.)				
0	S30		0.00 - 2.70			SSA	162.4	Brown, moist, fine to coarse SAND, some gravel, little silt, (Fill).			
								Light brown, damp, Silty fine to medium SAND, (Till).	2.7		
5							160.1	Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL	5.0		
10											
15											
20											
25											
Remarks:											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.								Page 1 of 1			
* 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.								Boring No.: HB-CAM-135			

[illegible]

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-137 WIN: 18283.00			
Drilling Contractor: MaineDOT				Elevation (ft.) 172.1				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A			
Date Start/Finish: 6/13/13-6/13/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 148+85, 3.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed			
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>											
Depth (ft.)	Sample Information							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-value	Casing Blows	Elevation (ft.)				
0						SSA	171.6 171.4 170.0	6½" PAVEMENT. 2" Macadam. Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill). Light brown, damp, Silty fine to coarse SAND, (Till).	0.5 0.7 2.1		
5							167.1	Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL	5.0		
10											
15											
20											
25											
Remarks:											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.									Page 1 of 1		
* 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.									Boring No.: HB-CAM-137		

Maine Department of Transportation

Soil/Rock Exploration Log

US CUSTOMARY UNITS

Project:

Reconstruction of a 1.54 mile portion of Route 1

Location:

Camden, Maine

Boring No.:

HB-CAM-138

WIN:

18283.00

Drilling Contractor:

MaineDOT

Elevation (ft.):

173.3

Auger ID/OD:

5" Dia.

Operator:

Giles/Daggett

Datum:

NAVD88

Sampler:

Off Flights

Logged By:

B. Wilder

Rig Type:

CME 45C

Hammer Wt./Fall:

N/A

Date Start/Finish:

6/13/13-6/13/13

Drilling Method:

Solid Stem Auger

Core Barrel:

N/A

Boring Location:

149+95, 3.0 ft Rt.

Casing ID/OD:

N/A

Water Level*:

None Observed

Definitions:

D = Spilt Spoon Sample

S = Sample off Auger Flights

B = Bucket Sample off Auger Flights

MD = Unsuccessful Split Spoon Sample Attempt

U = Thin Wall Tube Sample

MV = Unsuccessful Field Vane Shear Test Attempt

V = Field Vane Shear Test

PP= Pocket Penetrometer

MU = Unsuccessful Thin Wall Tube Sample Attempt

R = Rock Core Sample

SSA = Solid Stem Auger

HSA = Hollow Stem Auger

RC = Roller Cone

WOH = Weight of 140lb. Hammer

WOR/C = Weight of Rods or Casing

WO1P = Weight of 1 Person

S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)

S_u(lab) = Lab Vane Undrained Shear Strength (psf)

q_p = Unconfined Compressive Strength (ksf)

N-value = Raw Field SPT N-value

T_v = Pocket Torvane Shear Strength (psf)

WC = Water Content, percent

= = Similar or Equal too

LL = Liquid Limit

PL = Plastic Limit

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-value	Casing Blows					
0							SSA	172.8		6" PAVEMENT.	
								172.6		2" Macadam.	0.5
											0.7
								170.9		Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).	2.4
										Bottom of Exploration at 2.4 feet below ground surface. REFUSAL	
5											
10											
15											
20											
25											

Remarks:

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

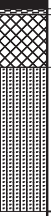
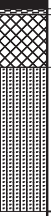
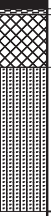
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Page 1 of 1

Boring No.: HB-CAM-138

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS								Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine						Boring No.: HB-CAM-139 WIN: 18283.00								
Drilling Contractor: MaineDOT										Elevation (ft.) 173.0						Auger ID/OD: 5" Dia.						
Operator: Giles/Daggett										Datum: NAVD88						Sampler: Off Flights						
Logged By: B. Wilder										Rig Type: CME 45C						Hammer Wt./Fall: N/A						
Date Start/Finish: 6/13/13-6/13/13										Drilling Method: Solid Stem Auger						Core Barrel: N/A						
Boring Location: 150+85, 2.5 ft Rt.										Casing ID/OD: N/A						Water Level*: None Observed						
<div style="font-size: small; padding: 5px;"><div>Definitions:</div>D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer<div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div></div> <div style="float: right; font-size: x-small;">WO1P = Weight of 1 Person Su = Peak/Remolded Field Vane Undrained Shear Strength (psf) Su(lab) = Lab Vane Undrained Shear Strength (psf) qp = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value Tv = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div> <div style="clear: both;"></div> <div style="text-align: right; font-size: x-small;">LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>																						
Sample Information										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-value	Casing Blows	Elevation (ft.)	Graphic Log														
0						SSA	172.5 172.3 171.4		6" PAVEMENT. -----0.5' 2" Macadam. -----0.7' Brown, dry, fine to coarse SAND, little gravel, little silt, (Fill). -----1.6' Bottom of Exploration at 1.6 feet below ground surface. REFUSAL													
5																						
10																						
15																						
20																						
25																						
Remarks:																						
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.																						
Page 1 of 1																						
Boring No.: HB-CAM-139																						

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-140 WIN: 18283.00																																																																																																																										
Drilling Contractor: MaineDOT				Elevation (ft.): 171.4				Auger ID/OD: 5" Dia.																																																																																																																										
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																																																										
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A																																																																																																																										
Date Start/Finish: 6/13/13-6/13/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																																										
Boring Location: 151+75, 2.5 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																																										
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>																																																																																																																																		
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	S32		1.70 - 5.00					170.8																																																																																																																										
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Page 1 of 1										Boring No.: HB-CAM-140																																																																																																																								

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-141 WIN: 18283.00																																																																																															
Drilling Contractor: MaineDOT				Elevation (ft.): 167.2				Auger ID/OD: 5" Dia.																																																																																															
Operator: Giles/Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																															
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A																																																																																															
Date Start/Finish: 6/13/13-6/13/13				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																															
Boring Location: 153+00, 3.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																															
<div>Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>																																																																																																							
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Depth (ft.)	Sample Information								Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.																																																																																													
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Page 1 of 1										Boring No.: HB-CAM-141																																																																																													

Maine Department of Transportation						Project: Reconstruction of a 1.54 mile portion of Route 1			Boring No.: HB-CAM-142																					
Soil/Rock Exploration Log US CUSTOMARY UNITS						Location: Camden, Maine			WIN: 18283.00																					
Drilling Contractor: MaineDOT						Elevation (ft.): 164.0			Auger ID/OD: 5" Dia.																					
Operator: Giles/Daggett						Datum: NAVD88			Sampler: Off Flights																					
Logged By: B. Wilder						Rig Type: CME 45C			Hammer Wt./Fall: N/A																					
Date Start/Finish: 6/13/13-6/13/13						Drilling Method: Solid Stem Auger			Core Barrel: N/A																					
Boring Location: 153+70, 3.0 ft Rt.						Casing ID/OD: N/A			Water Level*: None Observed																					
<div>Definitions: D = Spilt Spoon Sample MU = Unsuccessful Thin Wall Tube Sample Attempt WO1P = Weight of 1 Person</div> <div>S = Sample off Auger Flights R = Rock Core Sample S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)</div> <div>B = Bucket Sample off Auger Flights SSA = Solid Stem Auger S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) LL = Liquid Limit</div> <div>MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) PL = Plastic Limit</div> <div>U = Thin Wall Tube Sample RC = Roller Cone N-value = Raw Field SPT N-value PI = Plasticity Index</div> <div>MV = Unsuccessful Field Vane Shear Test Attempt WOH = Weight of 140lb. Hammer T_v = Pocket Torvane Shear Strength (psf) G = Grain Size Analysis</div> <div>V = Field Vane Shear Test PP= Pocket Penetrometer WOR/C = Weight of Rods or Casing WC = Water Content, percent ≡ = Similar or Equal too C = Consolidation Test</div>																														
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Depth (ft.)	Sample Information								Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.																				
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0						SSA	163.5		6" PAVEMENT. Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).	-0.5																				
							161.0		Brown, moist, Silty fine to coarse SAND, (Till).	-3.0																				
5							159.0		Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL	-5.0																				
10																														
15																														
20																														
25																														

Remarks:

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

* 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.

Page 1 of 1

Boring No.: HB-CAM-142

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: Reconstruction of a 1.54 mile portion of Route 1</div> <div>Location: Camden, Maine</div>				<div>Boring No.: HB-CAM-201</div> <div>WIN: 18283.00</div>																																																																																																																																																																																																																																																																																																																							
Driller: MaineDOT				Elevation (ft.): 193.4				Auger ID/OD: 5" Dia.																																																																																																																																																																																																																																																																																																																							
Operator: Giles/Daggett/Giles				Datum: NAVD88				Sampler: Standard Split Spoon																																																																																																																																																																																																																																																																																																																							
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"																																																																																																																																																																																																																																																																																																																							
Date Start/Finish: 6/24/2015; 6:45-8:00				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																																																																																																																																																																																																																																							
Boring Location: 79+85, 11.7 ft Rt. Shoulder				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																																																																																																																																																																																																																																							
Hammer Efficiency Factor: 0.908				Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>																																																																																																																																																																																																																																																																																																																											
<div>Definitions:</div> <div>D = Split Spoon Sample</div> <div>MD = Unsuccessful Split Spoon Sample Attempt</div> <div>U = Thin Wall Tube Sample</div> <div>MU = Unsuccessful Thin Wall Tube Sample Attempt</div> <div>V = Field Vane Shear Test, PP = Pocket Penetrometer</div> <div>MV = Unsuccessful Field Vane Shear Test Attempt</div> <div>R = Rock Core Sample</div> <div>SSA = Solid Stem Auger</div> <div>HSA = Hollow Stem Auger</div> <div>RC = Roller Cone</div> <div>WOH = Weight of 140lb. Hammer</div> <div>WOR/C = Weight of Rods or Casing</div> <div>WO1P = Weight of One Person</div> <div>S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)</div> <div>S_u(lab) = Lab Vane Undrained Shear Strength (psf)</div> <div>q_p = Unconfined Compressive Strength (ksf)</div> <div>N-uncorrected = Raw Field SPT N-value</div> <div>Hammer Efficiency Factor = Rig Specific Annual Calibration Value</div> <div>N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency</div> <div>N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected</div> <div>T_v = Pocket Torvane Shear Strength (psf)</div> <div>WC = Water Content, percent</div> <div>LL = Liquid Limit</div> <div>PL = Plastic Limit</div> <div>PI = Plasticity Index</div> <div>G = Grain Size Analysis</div> <div>C = Consolidation Test</div>																																																																																																																																																																																																																																																																																																																															
<table><thead><tr><th rowspan="2">Depth (ft.)</th><th colspan="8">Sample Information</th><th rowspan="2">Graphic Log</th><th rowspan="2">Visual Description and Remarks</th><th rowspan="2">Laboratory Testing Results/ AASHTO and Unified Class.</th></tr><tr><th>Sample No.</th><th>Pen./Rec. (in.)</th><th>Sample Depth (ft.)</th><th>Blows (/6 in.) Shear Strength (psf) or RQD (%)</th><th>N-uncorrected</th><th>N₆₀</th><th>Casing</th><th>Blows</th></tr></thead><tbody><tr><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>SSA</td><td rowspan="5"></td><td rowspan="5">Brown, damp, fine to coarse SAND, some gravel, (Fill).</td><td rowspan="5"></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td>1D</td><td>24/18</td><td>5.00 - 7.00</td><td>4/5/7/8</td><td>12</td><td>18</td><td></td><td></td><td rowspan="5"></td><td rowspan="5">Brown, wet, medium dense, fine to coarse SAND, some silt, some gravel, (Fill).</td><td rowspan="5">G#264797 A-2-4, SM WC=19.0%</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td>2D</td><td>24/20</td><td>10.00 - 12.00</td><td>3/8/9/9</td><td>17</td><td>26</td><td></td><td></td><td rowspan="5"></td><td rowspan="5">Brown, wet, very stiff, SILT, some fine to coarse sand, little clay, trace gravel, (Till).</td><td rowspan="5">G#264798 A-4, ML WC=20.5%</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>15</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td rowspan="5"></td><td rowspan="5">Bottom of Exploration at 15.0 feet below ground surface. NO REFUSAL, Similar to above, on auger.</td><td rowspan="5"></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>20</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5"></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5"></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>												Depth (ft.)	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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-202 WIN: 18283.00			
Driller: MaineDOT				Elevation (ft.): 201.0				Auger ID/OD: 5" Dia.			
Operator: Giles/Daggett/Giles				Datum: NAVD88				Sampler: Standard Split Spoon			
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"			
Date Start/Finish: 6/22/2015; 8:00-9:30				Drilling Method: Solid Stem Auger				Core Barrel: N/A			
Boring Location: 87+85, 10.0 ft Lt.				Casing ID/OD: N/A				Water Level*: None Observed			
Hammer Efficiency Factor: 0.908				Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>							
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit 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							SSA	200.5		6" PAVEMENT. Layer of old Pavement at 3.0 ft bgs. Brown, moist, medium dense, fine to coarse SAND, some gravel, little silt, (Fill). Brown, moist, dense, fine to coarse SAND, some gravel, some silt, (Fill). Very dense layer of Cobbles. Brown, wet, medium dense, fine to coarse Sandy GRAVEL, little silt, (Till). Failed sample attempt. Bottom of Exploration at 20.2 feet below ground surface. SPOON REFUSAL	G#264799 A-2-4, SM WC=14.6% G#264800 A-1-a, GW-GM WC=9.5%
5	1D	24/19	5.00 - 7.00	7/5/3/2	8	12					
10	2D	24/8	10.00 - 12.00	6/11/13/35	24	36					
15	3D	24/12	15.00 - 17.00	4/4/14/8	18	27					
20	MD	2.4/0	20.00 - 20.20					180.8			
25											
Remarks: 7.0-8.0 ft below Streambed.											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual. * 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.										Page 1 of 1 Boring No.: HB-CAM-202	

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Reconstruction of a 1.54 mile portion of Route 1 Location: Camden, Maine				Boring No.: HB-CAM-203 WIN: 18283.00				
Driller: MaineDOT				Elevation (ft.): 154.9				Auger ID/OD: 5" Dia.				
Operator: Giles/Daggett/Giles				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 6/24/2015; 12:30-15:00				Drilling Method: Cased Wash Boring				Core Barrel: NQ-2"				
Boring Location: 155+33, 13.0 ft Rt. Shoulder				Casing ID/OD: NW				Water Level*: None Observed				
Hammer Efficiency Factor: 0.908				Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = 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							SSA			Brown, damp, fine to coarse SAND, some gravel.	G#263892 A-4, SM WC=13.3%	
5	1D	24/16	5.00 - 7.00	3/4/5/7	9	14	9			Brown, wet, medium dense, Silty fine to coarse SAND, little gravel, (Fill).		
							26					
							23					
							33					
							99					
10	2D	24/15	10.00 - 12.00	3/4/4/4	8	12	41			Grey, wet, medium dense, Silty fine to coarse SAND, trace clay, trace gravel, (Fill).		G#263893 A-4, SC-SM WC=25.0%
							32					
							34					
							33					
							77					
15	3D	24/13	15.00 - 17.00	4/7/4/6	11	17			Grey, wet, medium dense, fine to coarse SAND, some silt, little gravel, trace clay, (Till).			
									Roller Coned ahead to 18.0 ft bgs.			
	R1	60/36	18.00 - 23.00	RQD = 43%			NQ-2		Top of Bedrock at Elev. 137.1 ft. R1:Bedrock: PELITE of the Megunticook Formation R1:Core Times (min:sec) 18.0-19.0 ft (3:22) 19.0-20.0 ft (2:32) 20.0-21.0 ft (2:42) 21.0-22.0 ft (2:04) 22.0-23.0 ft (3:15) 60% Recovery Left 2.0 ft of Core in hole.	G#263894 A-4, SC-SM WC=10.7%		
20												
25									Bottom of Exploration at 23.0 feet below ground surface.			
Remarks:												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1		
* 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.										Boring No.: HB-CAM-203		

[illegible]

[illegible]

Work Number: 18283.00

[illegible]

Appendix B

Laboratory Test Results

Town(s): Camden **Work Number: 18283.00**

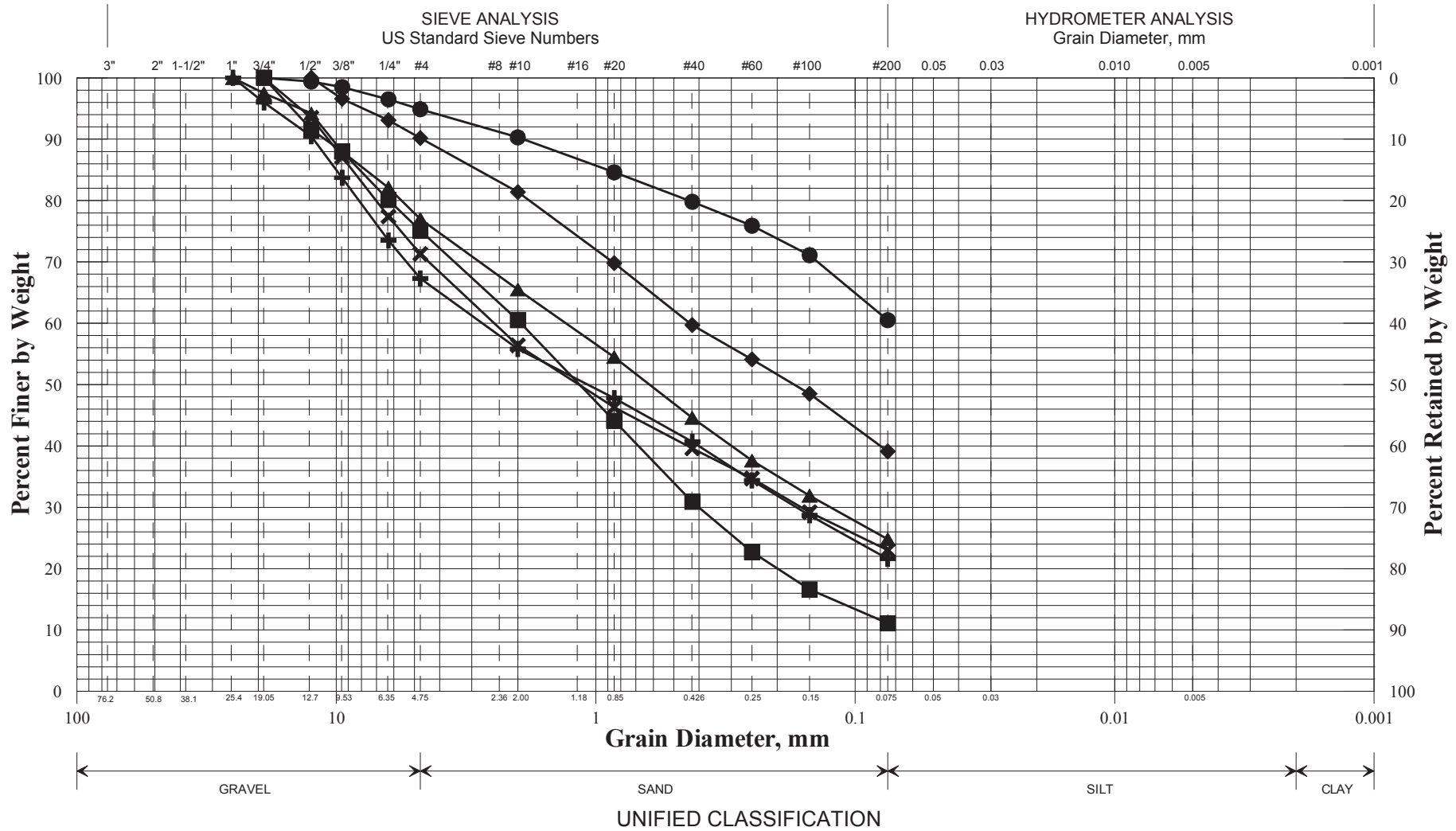
Classification of these soil samples is in accordance with AASHTO Classification System M-145-40. This classification is followed by the "Frost Susceptibility Rating" from zero (non-frost susceptible) to Class IV (highly frost susceptible). The "Frost Susceptibility Rating" is based upon the MaineDOT and Corps of Engineers Classification Systems.

PI = Plasticity Index as determined by AASHTO 90-96 and/or ASTM D4318-98

Work Number: 18283.00

PI = Plasticity Index as determined by AASHTO 90-96 and/or ASTM D4318-98

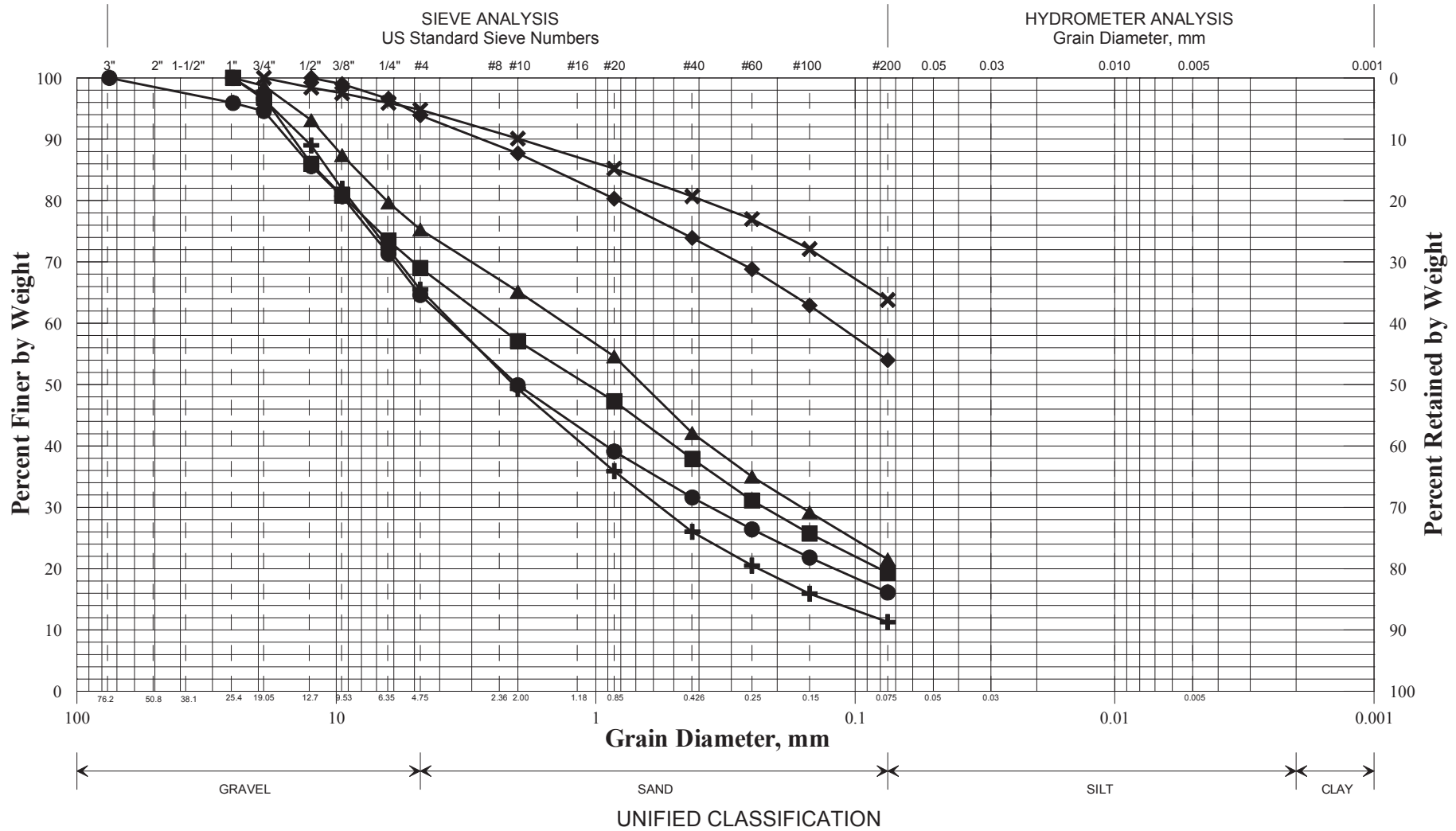
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-CAM-101/S1	81+50	7.0 LT	0.33-3.1	SAND, some gravel, some silt.	3.3			
◆	HB-CAM-101/S2	81+50	7.0 LT	3.1-5.0	Silty SAND, trace gravel.	14.8			
■	HB-CAM-102/S3	85+25	13.5 LT	0.0-1.2	SAND, some gravel, little silt.	5.8			
●	HB-CAM-102/S4	85+25	13.5 LT	1.2-5.0	SILT, some sand, trace gravel.	13.1			
▲	HB-CAM-103/S5	85+25	7.0 LT	0.83-3.0	SAND, some silt, some gravel.	5.3			
×	HB-CAM-104/S6	89+10	7.5 RT	0.79-3.0	SAND, some gravel, some silt.	3.0			

WIN
018283.00
Town
Camden
Reported by/Date
WHITE, TERRY A 7/9/2013

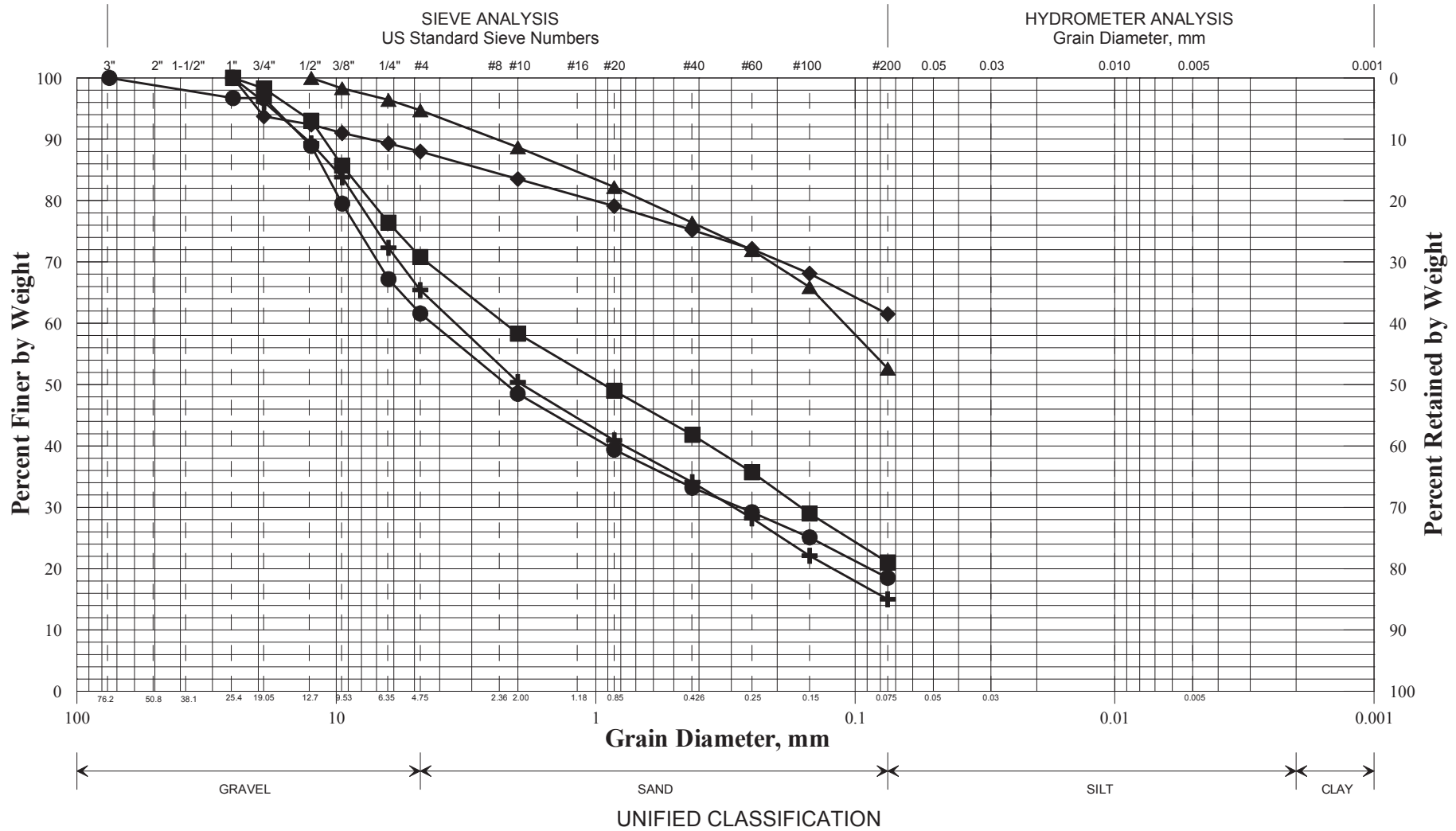
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-CAM-105/S8	89+10	12.5 LT	0.0-1.8	SAND, some gravel, little silt.	6.1			
◆	HB-CAM-105/S9	89+10	12.5 LT	1.8-5.0	Sandy SILT, trace gravel.	13.4			
■	HB-CAM-106/S10	91+95	3.0 RT	0.75-2.3	SAND, some gravel, little silt.	4.5			
●	HB-CAM-108/S12	93+95	3.0 RT	0.67-3.9	SAND, some gravel, little silt.	5.8			
▲	HB-CAM-111/S14	96+90	3.0 RT	0.58-2.2	SAND, some gravel, some silt.	7.1			
×	HB-CAM-112/S16	98+70	3.0 RT	1.7-9.7	SILT, some sand, trace gravel.	12.8			

WIN
018283.00
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WHITE, TERRY A 7/9/2013

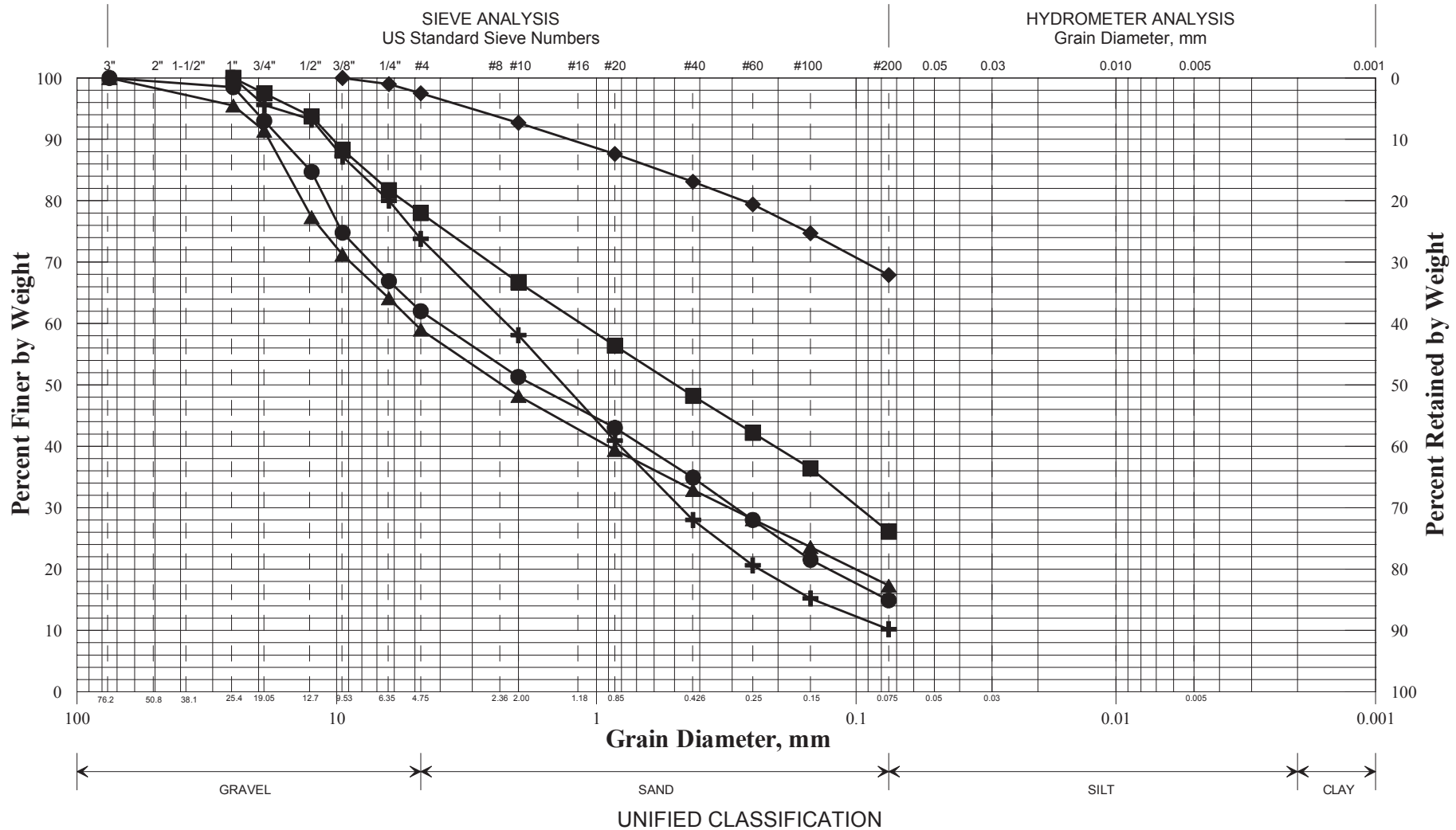
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-CAM-114/S17	100+00	3.0 RT	0.58-2.5	SAND, some gravel, little silt.	3.8			
◆	HB-CAM-115/S18	101+10	2.5 RT	2.1-10.0	SILT, some sand, little gravel.	11.8			
■	HB-CAM-118/S19	104+00	3.0 RT	0.5-3.8	SAND, some gravel, some silt.	4.0			
●	HB-CAM-125/S23	120+55	6.0 RT	0.71-2.3	Gravelly SAND, little silt.	7.4			
▲	HB-CAM-125/S24	120+55	6.0 RT	2.3-5.0	SILT, some sand, trace gravel.	15.6			
×									

WIN
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WHITE, TERRY A 7/9/2013

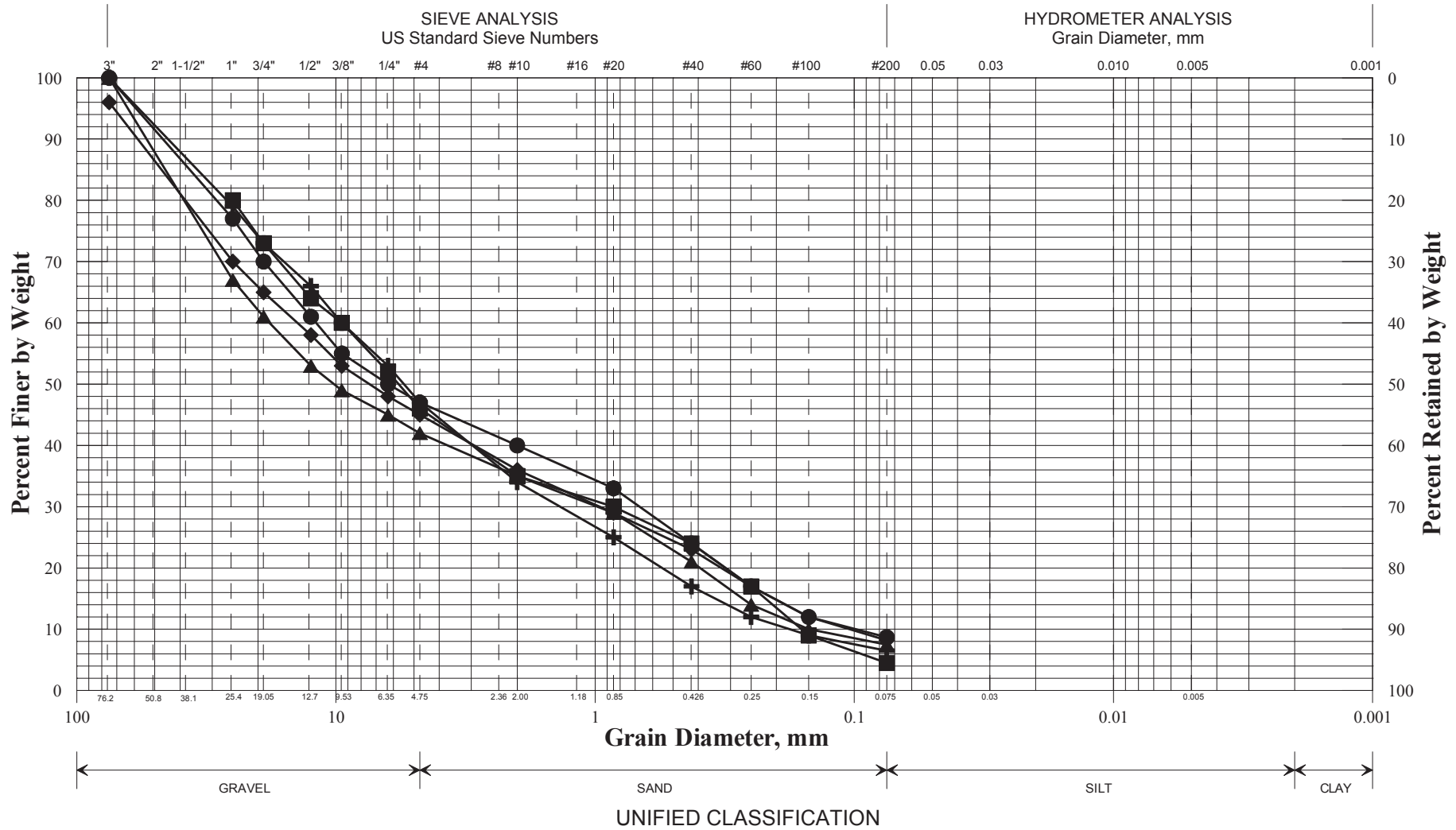
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-CAM-127/S25	120+55	12.0 LT	0.0-2.0	SAND, some gravel, trace silt.	7.5			
◆	HB-CAM-127/S26	120+55	12.0 LT	2.0-5.0	SILT, some sand, trace gravel.	11.1			
■	HB-CAM-129/S27	131+32	6.0 LT	0.54-2.7	SAND, some silt, some gravel.	6.4			
●	HB-CAM-133/S28	140+30	6.0 RT	0.67-2.1	Gravelly SAND, little silt.	4.3			
▲	HB-CAM-140/S31	151+75	2.5 RT	0.63-1.7	Gravelly SAND, little silt.	4.0			
×									

WIN
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WHITE, TERRY A 7/9/2013

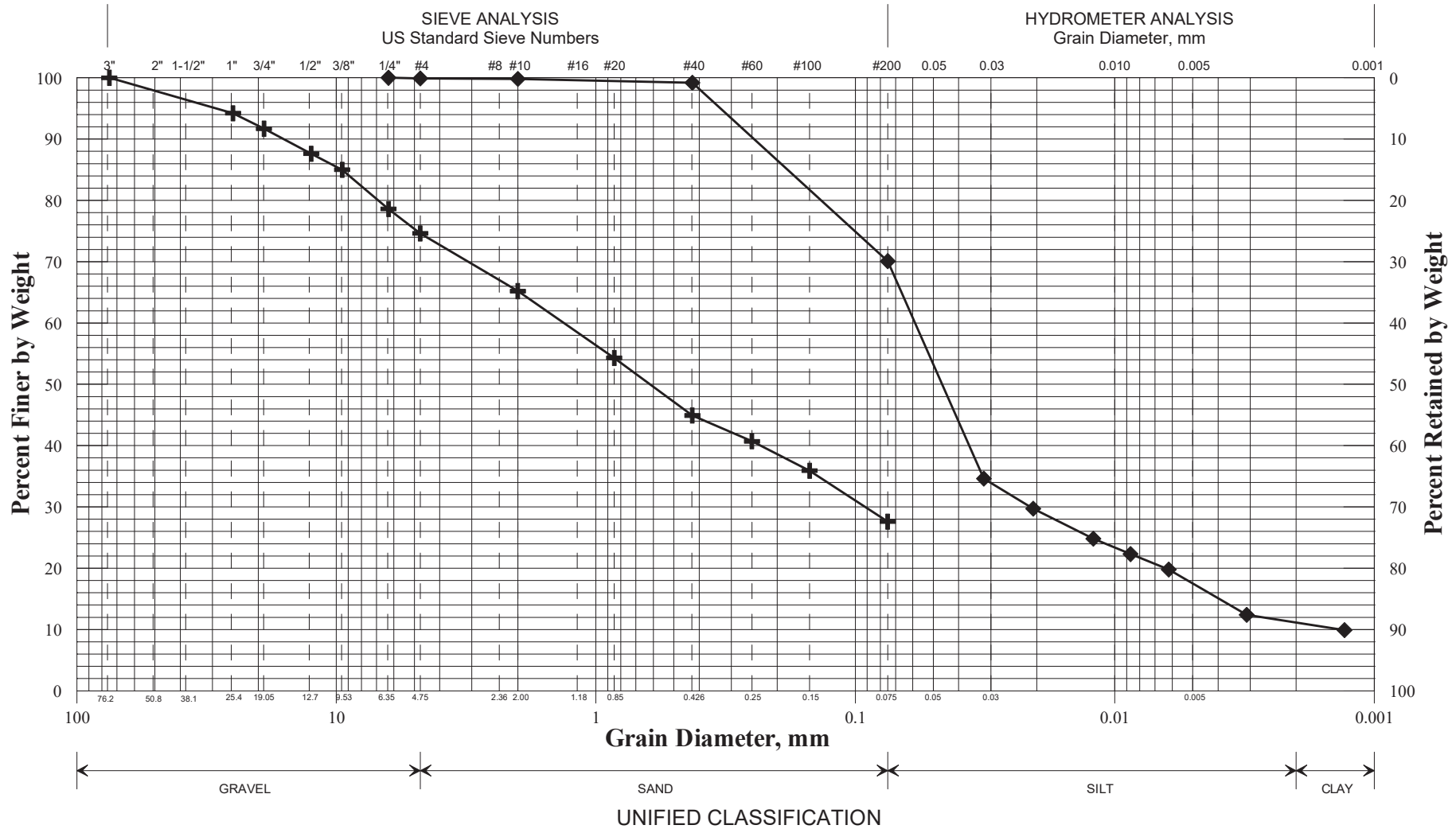
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	TP-1	91+00	RT		Sandy GRAVEL, trace silt.	2.0			
◆	TP-2	102+00	RT		Sandy GRAVEL, trace silt.	1.2			
■	TP-3	126+50	LT		Sandy GRAVEL, trace silt.	2.0			
●	TP-4	135+50	LT		Sandy GRAVEL, trace silt.	2.5			
▲	TP-5	147+00	RT		GRAVEL, some sand, trace silt.	2.1			
×									

WIN
018283.00
Town
Camden
Reported by/Date
WHITE, TERRY A 8/25/2014

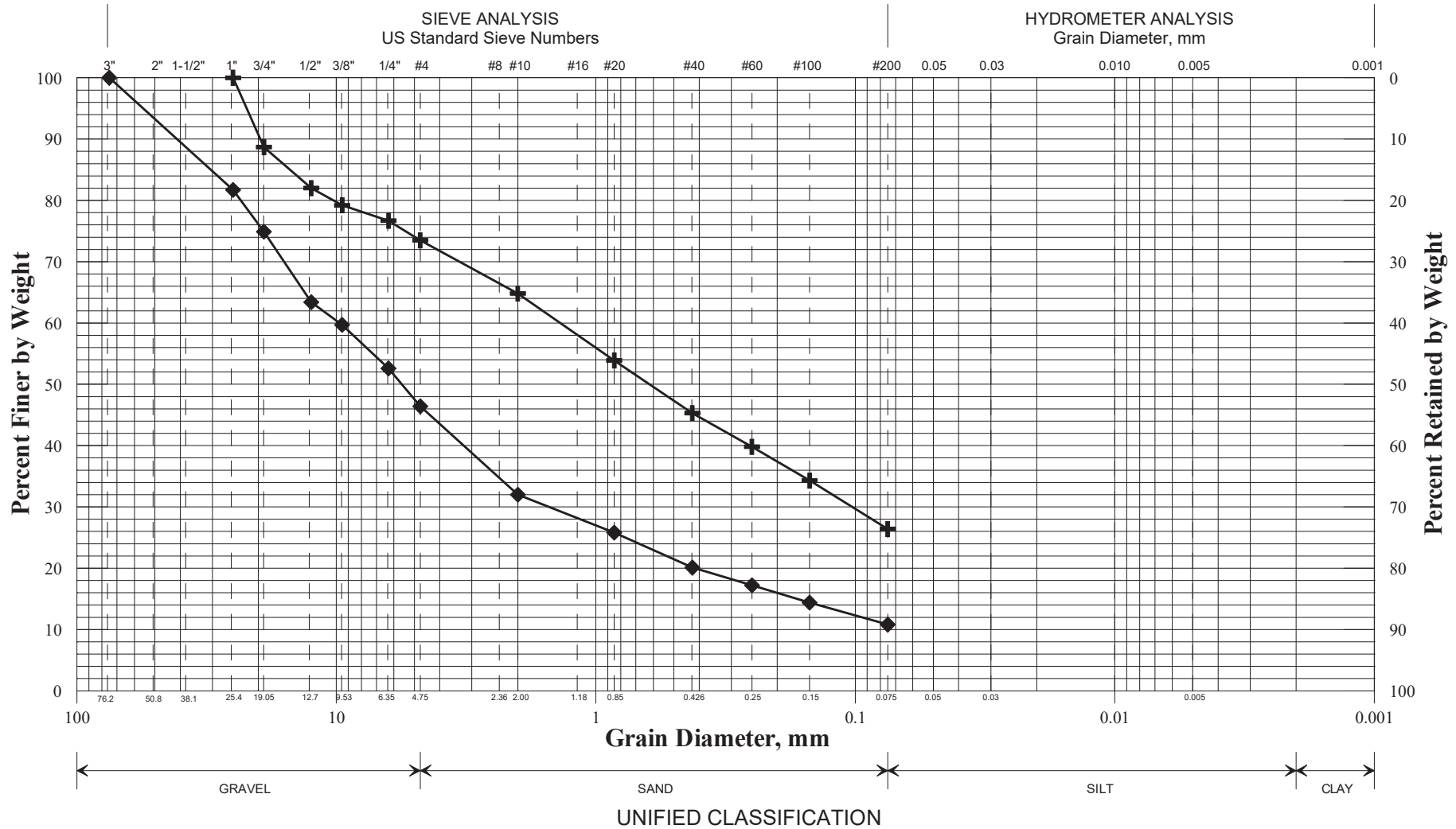
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-CAM-201/1D	79+85	11.7 RT	5.0-7.0	SAND, some silt, some gravel.	19.0			
◆	HB-CAM-201/2D	79+85	11.7 RT	10.0-12.0	SILT, some sand, little clay, trace gravel.	20.5			
■									
●									
▲									
×									

WIN	
018283.00	
Town	
Camden	
Reported by/Date	
WHITE, TERRY A	8/18/2015

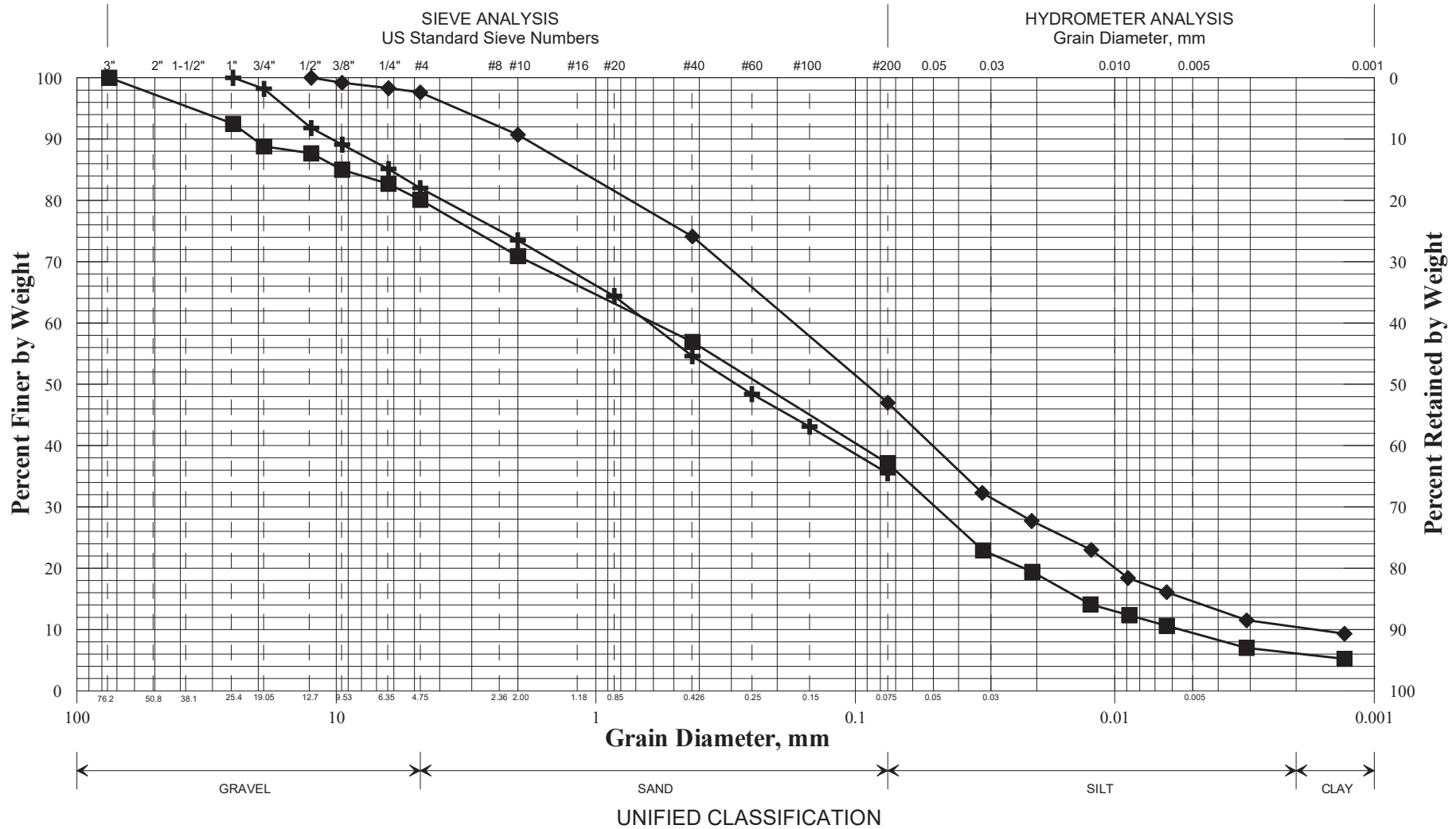
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-CAM-202/2D	87+85	10.0 LT	10.0-12.0	SAND, some gravel, some silt.	14.6			
◆	HB-CAM-202/3D	87+85	10.0 LT	15.0-17.0	Sandy GRAVEL, little silt.	9.5			
■									
●									
▲									
×									

WIN	
018283.00	
Town	
Camden	
Reported by/Date	
WHITE, TERRY A	8/18/2015

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-CAM-203/1D	155+33	13.0 RT	5.0-7.0	Silty SAND, little gravel.	13.3			
◆	HB-CAM-203/2D	155+33	13.0 RT	10.0-12.0	Silty SAND, trace clay, trace gravel.	25.0			
■	HB-CAM-203/3D	155+33	13.0 RT	15.0-17.0	SAND, some silt, little gravel, trace clay.	10.7			
●									
▲									
×									

WIN	
018283.00	
Town	
Camden	
Reported by/Date	
WHITE, TERRY A	8/18/2015

Appendix C

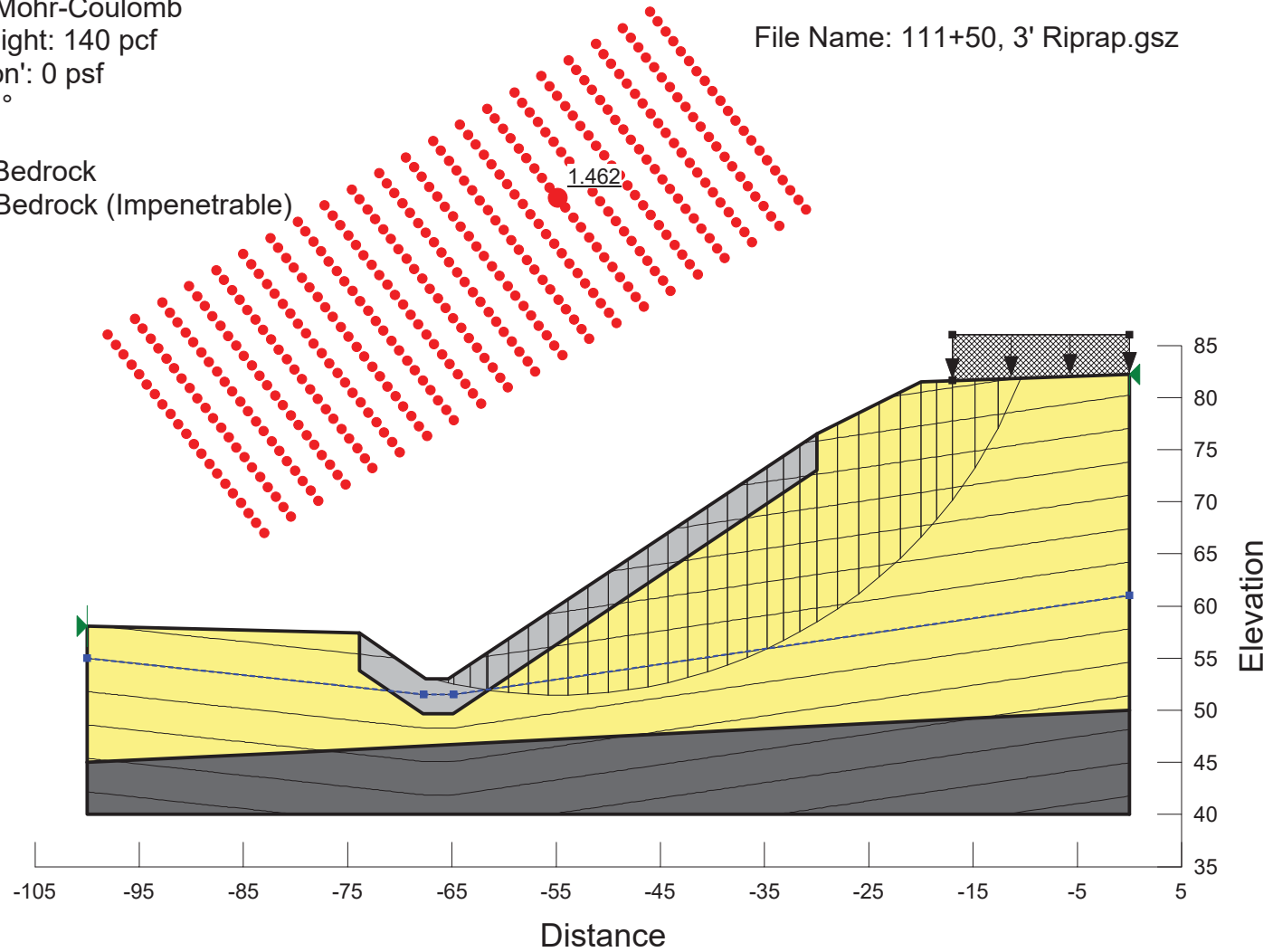
Slope Stability Analysis

Name: Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 34 °

Name: Rip rap
Model: Mohr-Coulomb
Unit Weight: 140 pcf
Cohesion': 0 psf
Phi': 45 °

Name: Bedrock
Model: Bedrock (Impenetrable)

File Name: 111+50, 3' Riprap.gsz

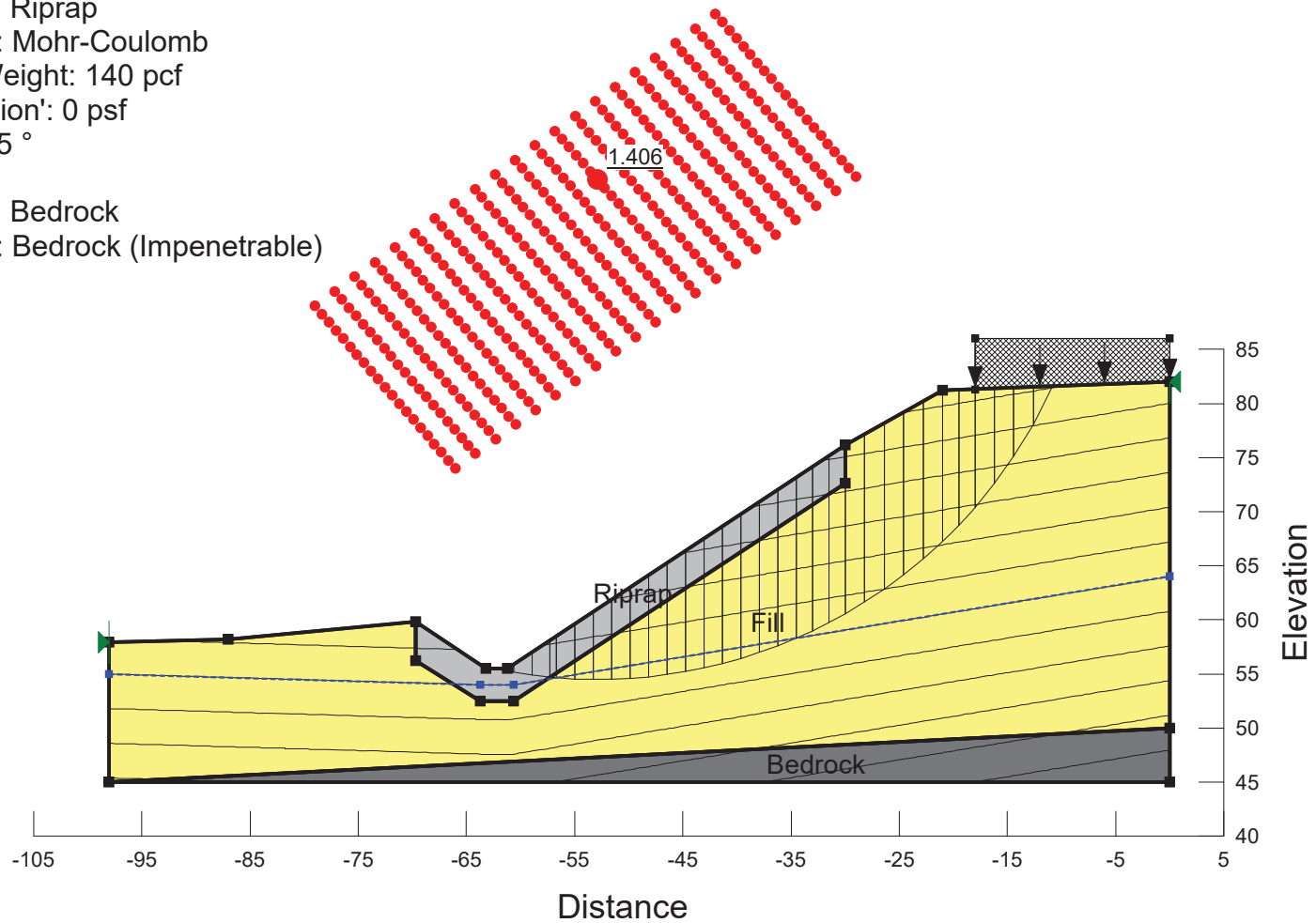


Name: Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 34 °

File Name: 112+00, 3' Riprap.gsz

Name: Riprap
Model: Mohr-Coulomb
Unit Weight: 140 pcf
Cohesion': 0 psf
Phi': 45 °

Name: Bedrock
Model: Bedrock (Impenetrable)

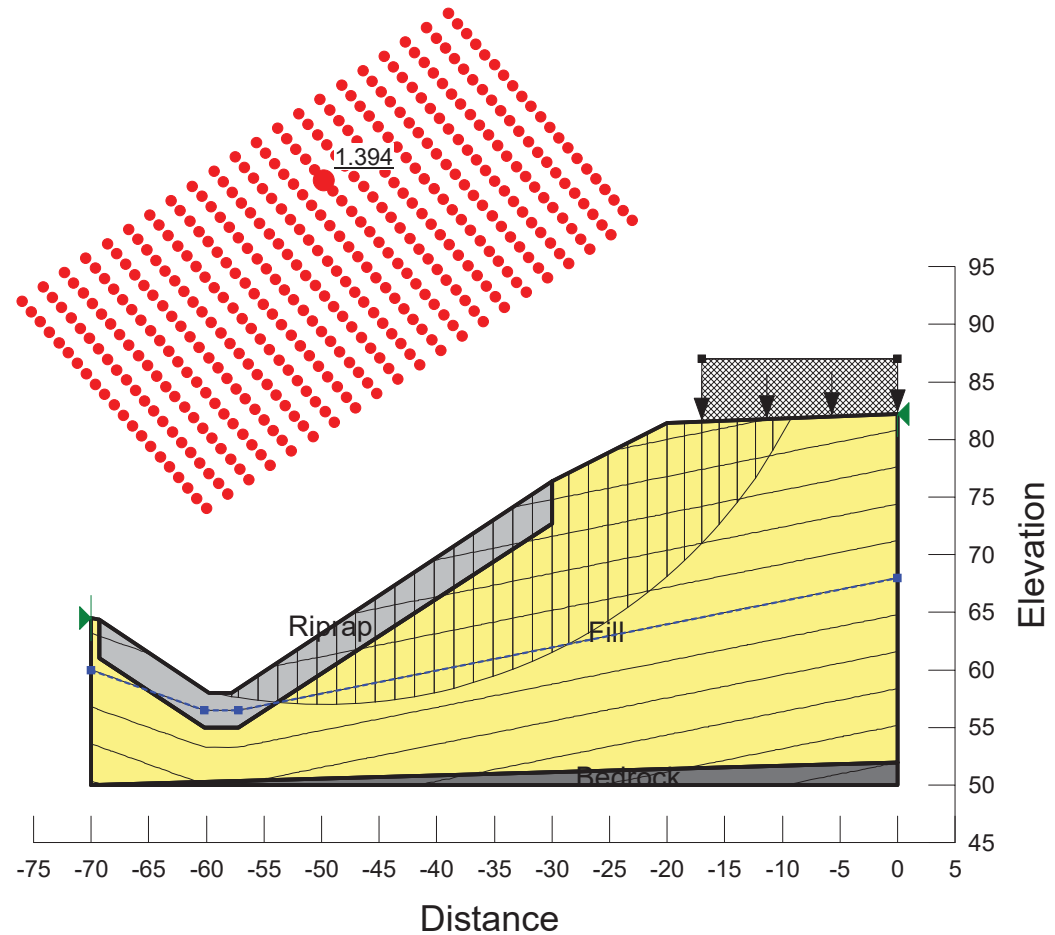


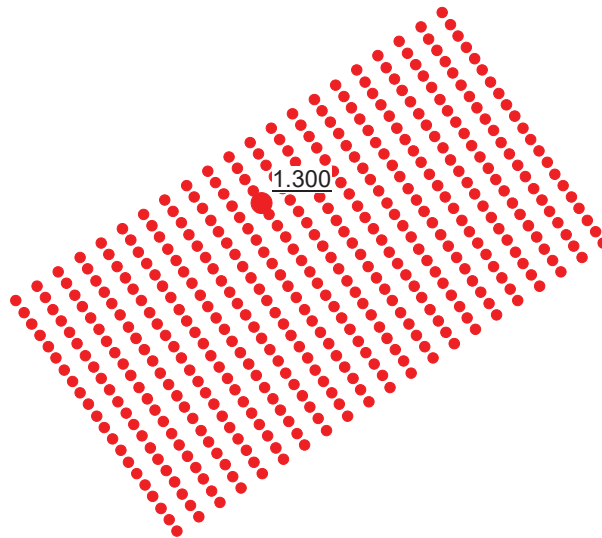
File Name: 112+50, 3' Riprap.gsz

Name: Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 34 °

Name: Riprap
Model: Mohr-Coulomb
Unit Weight: 140 pcf
Cohesion': 0 psf
Phi': 45 °

Name: Bedrock
Model: Bedrock (Impenetrable)



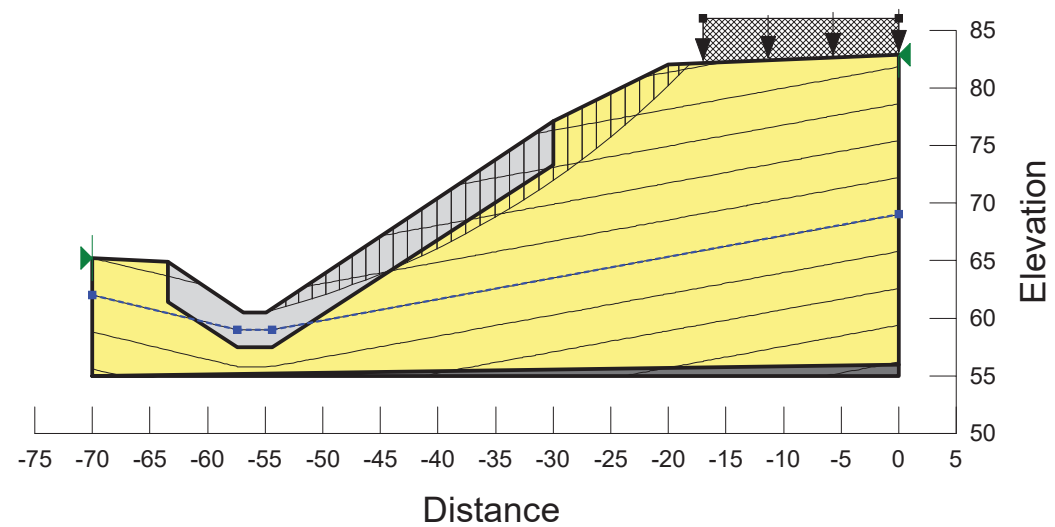


File Name: 113+00, 3' Riprap.gsz

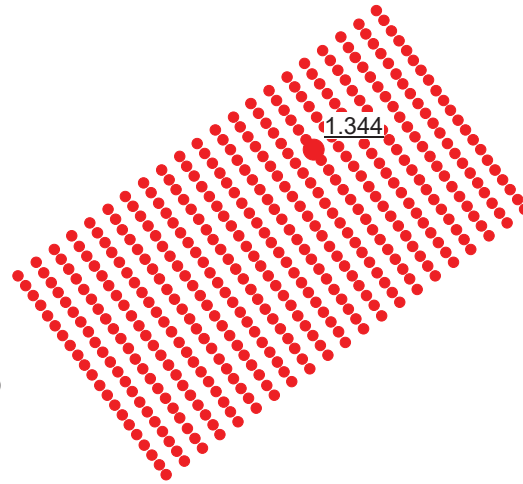
Name: Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 34 °

Name: Riprap
Model: Mohr-Coulomb
Unit Weight: 140 pcf
Cohesion': 0 psf
Phi': 45 °

Name: Bedrock
Model: Bedrock (Impenetrable)



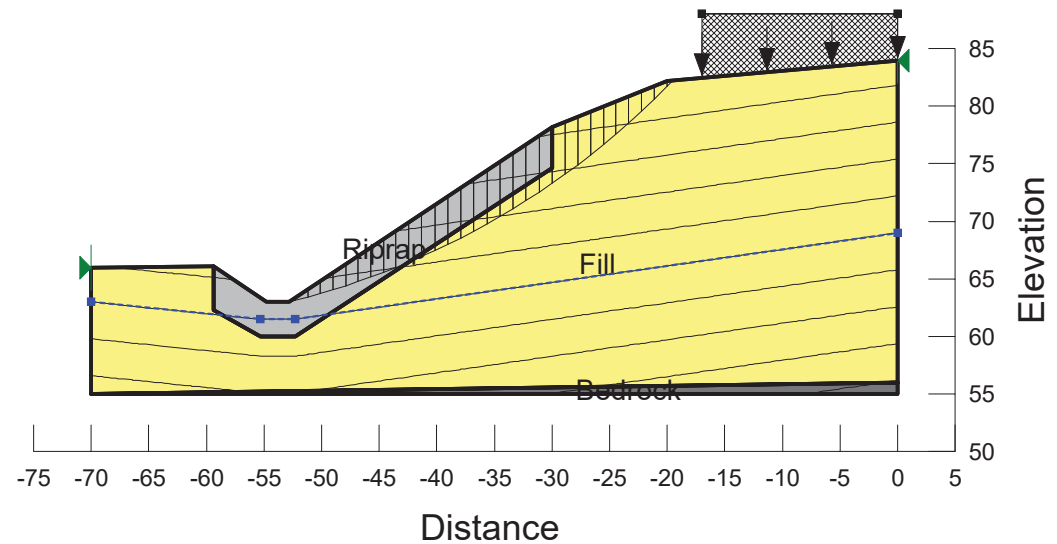
File Name: 113+50, 3' Riprap.gsz

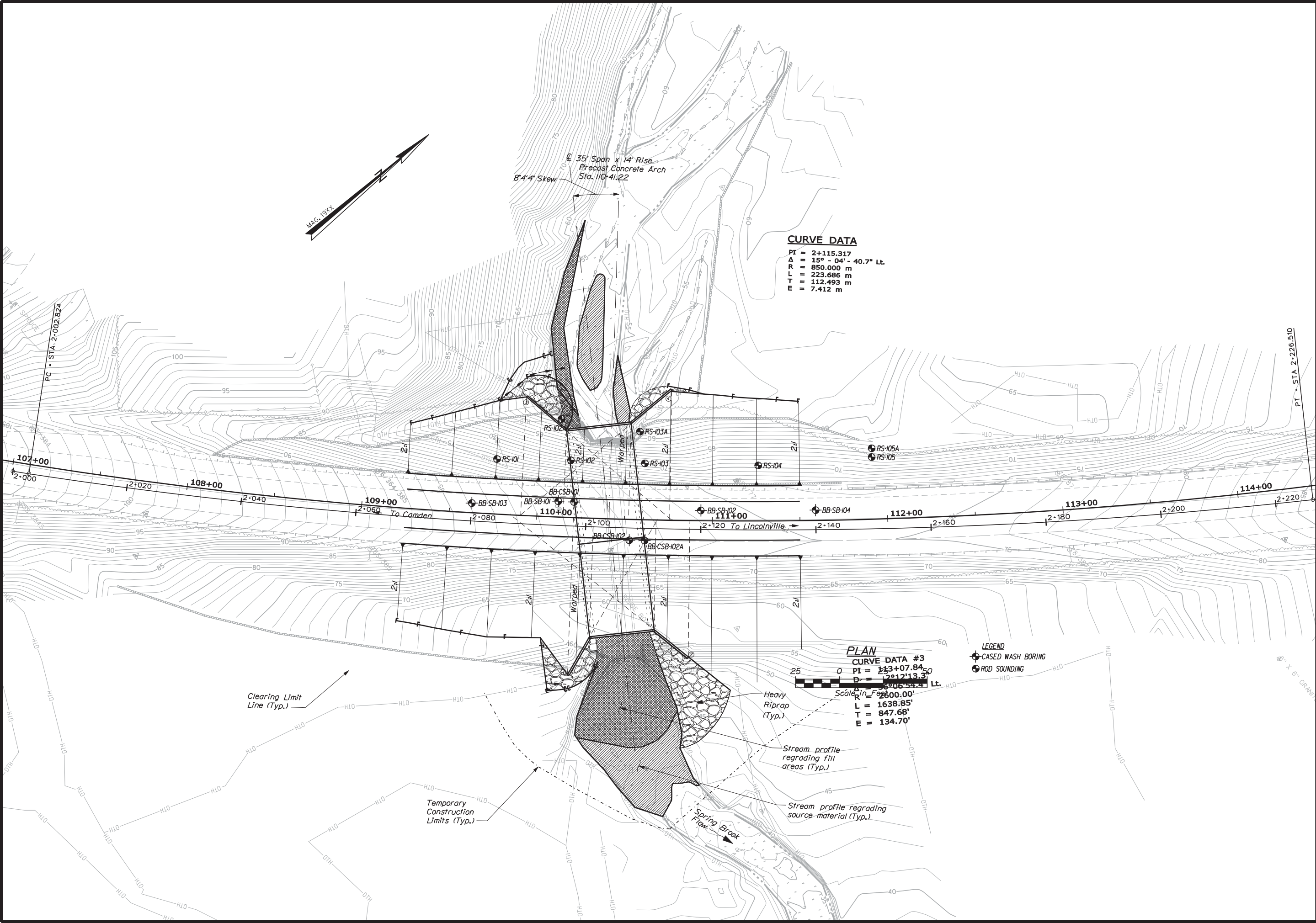


Name: Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 34 °


Name: Riprap
Model: Mohr-Coulomb
Unit Weight: 140 pcf
Cohesion': 0 psf
Phi': 45 °

Name: Bedrock
Model: Bedrock (Impenetrable)





STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		NHP-2260(800)		BRIDGE NO. 2794		WIN 22608.00		BRIDGE PLANS	
SPRING BROOK BRIDGE		KNOX COUNTY		BORING LOCATION PLAN		SHEET NUMBER		2		OF 4	
SPRING BROOK		DESIGN-REVIEWED		SIGNATURE		P.E. NUMBER		DATE			
CAMDEN		DESIGNED BY		T. WHITE		JAN 2016					
		DESIGNED BY		N. SHERWOOD							
		REVISIONS 1									
		REVISIONS 2									
		REVISIONS 3									
		REVISIONS 4									
		FIELD CHANGES									

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: US RT. 1 SPRING BROOK SLOPE REHABILITATIONS Location: RT. 1, CAMDEN, MAINE				Boring No.: BB-SB-102 WIN: 22608.00							
Driller: MAINE TEST BORING, INC.				Elevation (ft.) 75.13				Auger ID/OD:							
Operator: DARREL MCKEEN				Datum:				Sampler: SS							
Logged By: TAMMY GRENIER				Rig Type: TRAILER MOUNT				Hammer Wt./Fall: 140#/30'							
Date Start/Finish: 3-28-03				Drilling Method: CASING				Core Barrel:							
Boring Location: 110+93.5, 5.8 ft LEFT				Casing ID/OD: NW				Water Level*: CAVED TO 8.5 ft, DRY							
Hammer Efficiency Factor:				Hammer Type: Automatic <input type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>											
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt				R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person				S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected				T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit 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							N	74.9		BITUMINOUS PAVEMENT					
										0.3'					
5	1D	24/9	5.00 - 7.00	9-10-8-6	18	0	12			BROWN SILT, SOME GRAVEL, SOME SAND (FILL)					
							11			- MEDIUM DENSE -					
							37								
							53								
							29								
10	2D	24/8	10.00 - 12.00	18-29-17-28	46	0	20			- DENSE -					
							12								
							26								
							20								
							22								
15	3D	11/6	15.00 - 15.92	61-165/5"			66			- VERY DENSE -					
							195			COBBLES					
							38								
							36								
							29								
20	4D	19/4	20.10 - 21.68	6-9-3-110/1"	12	0	21			BROWN SILT, SOME SAND, LITTLE GRAVEL (FILL)					
							17			- MEDIUM DENSE -					
							700			COBBLES					
							106								
25							61								
Remarks:															
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 2					
* 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.										Boring No.: BB-SB-102					

[illegible]

<div>Maine Department of Transportation</div> <div>Soil/Rock Exploration Log</div> <div>US CUSTOMARY UNITS</div>				<div>Project: US RT. 1 SPRING BROOK SLOPE REHABILITATIONS</div> <div>Location: RT. 1, CAMDEN, MAINE</div>		<div>Boring No.: BB-SB-104</div> <div>WIN: 22608.00</div>																																																																																																																																																																																																																																																			
Driller: MAINE TEST BORING, INC.		Elevation (ft.): 74.15		Auger ID/OD:																																																																																																																																																																																																																																																					
Operator: MEL COFFIN		Datum:		Sampler: SS																																																																																																																																																																																																																																																					
Logged By: TAMMY GRENIER		Rig Type: TRAILER MOUNT/MOBILE		Hammer Wt./Fall: 140#/30"																																																																																																																																																																																																																																																					
Date Start/Finish: 04-01-03		Drilling Method: CASING		Core Barrel: N																																																																																																																																																																																																																																																					
Boring Location: 111+59, 5.9 ft LEFT		Casing ID/OD: NW		Water Level*: 27.0 ft, CAVED TO 22.6 ft																																																																																																																																																																																																																																																					
Hammer Efficiency Factor:		Hammer Type: Automatic <input type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>																																																																																																																																																																																																																																																							
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<table><tr><th colspan="8">Sample Information</th><th rowspan="2">Elevation (ft.)</th><th rowspan="2">Graphic Log</th><th rowspan="2">Visual Description and Remarks</th><th rowspan="2">Laboratory Testing Results/ AASHTO and Unified Class.</th></tr><tr><th>Depth (ft.)</th><th>Sample No.</th><th>Pen./Rec. (in.)</th><th>Sample Depth (ft.)</th><th>Blows (/6 in.) Shear Strength (psf) or RQD (%)</th><th>N-uncorrected</th><th>N60</th><th>Casing Blows</th></tr><tr><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>73.8</td><td rowspan="20"></td><td rowspan="20">BITUMINOUS PAVEMENT</td><td rowspan="20">w=15.5%</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td>32</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>11</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>7</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>6</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>18</td></tr><tr><td>10</td><td>1D</td><td>24/7</td><td>10.00 - 12.00</td><td>15-14-10-32</td><td>24</td><td>0</td><td>14</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>22</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>47</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>62</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>31</td></tr><tr><td>15</td><td>2D</td><td>24/2</td><td>15.00 - 17.00</td><td>19-10-13-8</td><td>23</td><td>0</td><td>8</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>9</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>19</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>30</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>14</td></tr><tr><td>20</td><td>3D</td><td>24/1</td><td>20.00 - 22.00</td><td>5-8-9-8</td><td>17</td><td>0</td><td>7</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>9</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>25</td></tr><tr><td></td><td>1R</td><td>60/60</td><td>23.20 - 28.20</td><td>78%</td><td></td><td></td><td></td><td>51.0</td><td>23.2</td><td>GREY SULFIDIC SCHIST MODERATELY HARD, SLIGHTLY WEATHERED, RUSTY STAINS ON FRACTURE SURFACES</td><td></td></tr><tr><td>25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>										Sample Information								Elevation (ft.)	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	N60	Casing Blows	0								73.8		BITUMINOUS PAVEMENT	w=15.5%																																									5							32								11								7								6								18	10	1D	24/7	10.00 - 12.00	15-14-10-32	24	0	14								22								47								62								31	15	2D	24/2	15.00 - 17.00	19-10-13-8	23	0	8								9								19								30								14	20	3D	24/1	20.00 - 22.00	5-8-9-8	17	0	7								9								25		1R	60/60	23.20 - 28.20	78%				51.0	23.2	GREY SULFIDIC SCHIST MODERATELY HARD, SLIGHTLY WEATHERED, RUSTY STAINS ON FRACTURE SURFACES		25											
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