

STATE OF MAINE
MAINE DEPARTMENT OF TRANSPORTATION
Letter of Transmittal

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att: 1 of 2012-06

MAINE DEPARTMENT OF TRANSPORTATION
HIGHWAY PROGRAM
GEOTECHNICAL GROUP
AUGUSTA, MAINE

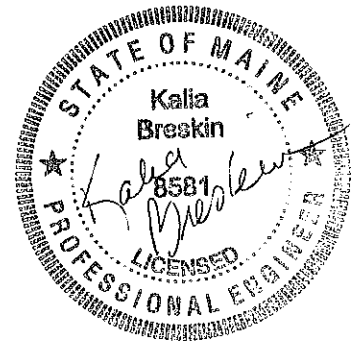
**SUBSURFACE INVESTIGATION FOR
CONSTRUCTION OF ROUTE 180
ELLSWORTH, MAINE**

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Hancock County
WIN 10063.10

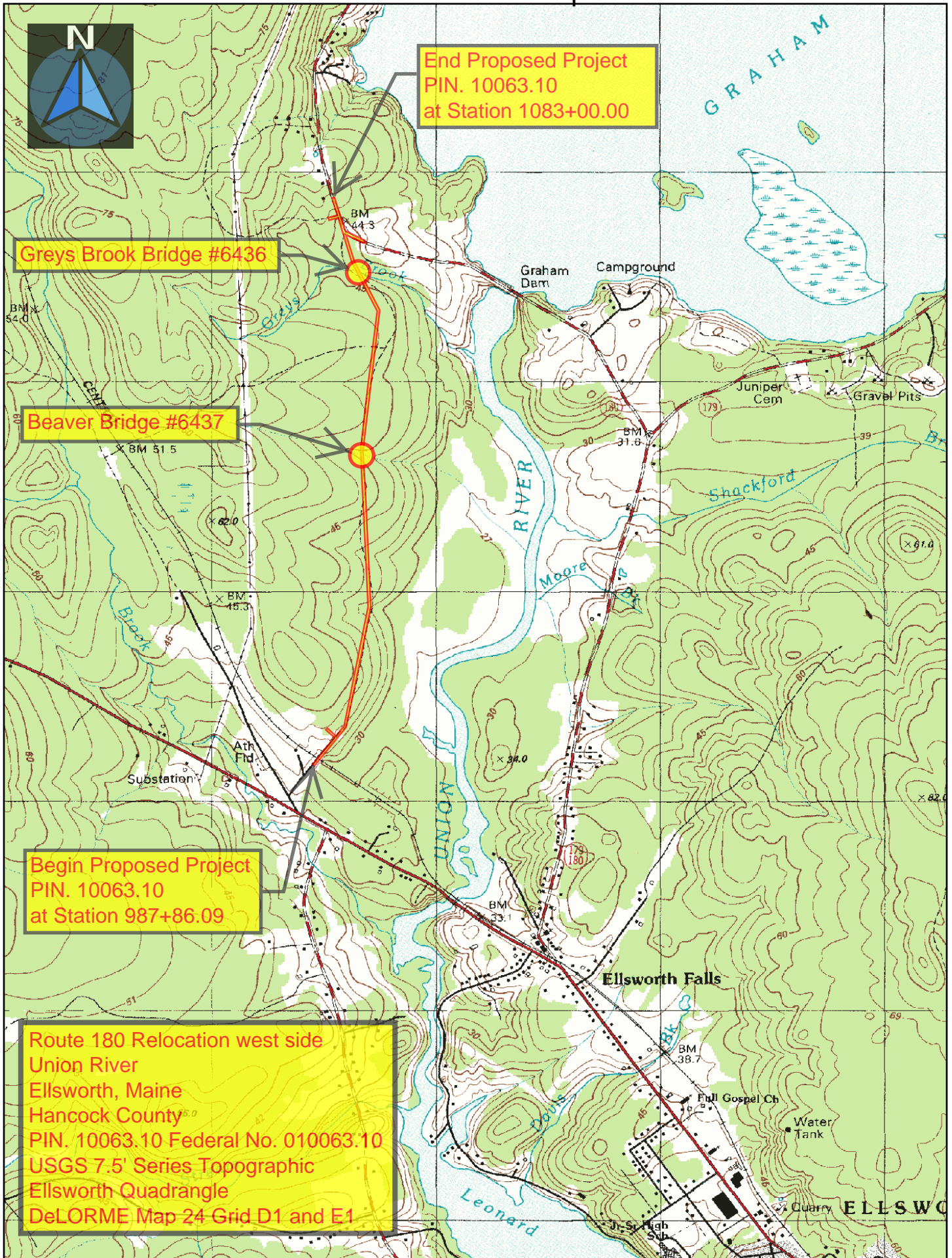
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Location Map



Map Scale 1:24000

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

1.0 Introduction

1.1 Project Overview

Maine DOT proposes to relocate a section of Route 180 in Ellsworth. The new alignment will take the highway off Graham Lake Dam. Part of the new alignment follows an existing woods road on the west side of Union River and part goes through woodlands with substantial changes in grade over existing conditions. The new highway will be approximately 1.8 miles long, and substantial soil cuts, embankment fills and bedrock excavation will be required. Reports for the bridges to be constructed at the beaver dam (Station 1042+50) and Gray's Brook (Station 1071+50) are discussed in separate reports.

1.2 Summary of Recommendations

- Where the roadway subgrade will consist of blasted rock, the subgrade should be fractured to a depth of at least two feet below the subgrade to ensure pavement structure drainage.
- The Contractor is likely to encounter groundwater seeps in cut slopes. A riprap downspout should be placed from any seep to the ditchline to allow drainage and prevent erosion of the slope. French drains should be constructed to drain water away from the pavement structure if seeps are encountered at subgrade.
- Large cobbles and boulders may be encountered in cuts at subgrade and in sideslopes. Cobbles and boulders should not be left projecting more than 6 inches from sideslopes or into the subbase soils.
- Rock cuts have been designed for a maximum slope of 1h:1.5v to allow a fairly flat slope in case this is needed, however it is recommended that the slopes be built at a 1h:4v if it appears during construction that the slopes will be stable at this angle.
- Areas of clay silt soil at subgrade may become disturbed during construction activities. Overexcavation and replacement with granular materials or use of a stabilization geotextile may be necessary in these areas.

2.0 Site and Subsurface Conditions

2.1 General Site Conditions

The project begins at Route 1A and heads north on the Vitum Road for a distance of approximately 1300 feet. Approximately 1100 feet of the Vitum Road will be completely rebuilt starting 200 feet north of the Boggy Brook Road and extending to the sharp bend in the road, with a new pavement section and underdrain or ditches. Several culverts will be removed and replaced, with complete reconstruction of the ballast in the area of the railroad tracks. Beyond this section of existing roadway an entirely new highway will be constructed through a heavily wooded area. The new roadway generally follows an existing woods road from the bend in the Vitum Road at Station 998+00 to Station 1045+00 on the other side of the beaver dam. From Station 1045+00 to Gray's Brook, the new alignment is well away from the woods road for a distance of 2600 feet, where the alignment rejoins the woods road at Gray's Brook. The new highway meets the existing Route 180 roadway at Bridgetwin Road. Substantial soil and rock cuts and embankment fills will be required in this construction.

The highway crosses railroad tracks owned by the State of Maine at Station 993+10. Bridges will be constructed to cross a small stream at Station 1042+50 and at Gray's Brook, Station 1072+00.

2.2 Mapped Data

Geologic mapping by the National Wetlands Inventory indicates there are no significant areas of wetland soils adjacent to the highway in the area covered by this project. The NWI map of this area is included in Appendix A. The NWI maps show only large areas of significant wetlands – smaller wetlands are not shown on these maps.

NRCS mapping shows silt loam soils in the area of the Vitum Road and silty soils extending northerly along the proposed route of the highway. The map unit LWC – the Lyman-Tunbridge-Schoodic complex is listed as having bedrock at depths of 19" to 23", but the other soils units do not show shallow bedrock within the depth considered by NRCS. The NRCS maps consider only the upper portion of the soil column. Shallow groundwater is indicated for much of the project, in areas designated as Lamoine-Scantic-Buxton complex. The NRCS map and soils data for the area of this project are included in Appendix A.

The Maine Geologic Survey Surficial Geology Map for the Ellsworth quadrangle shows Presumpscot Formations soils surrounding the Union River and Till soils in the area of the new highway. Shallow bedrock is indicated in the area northeast of where the highway leaves Vitum Road and at the north end of the project where the new highway joins existing Rte 180. A section of the Surficial Geology map is included in Appendix A.

2.3 Subsurface Investigation

The subsurface investigation for this project was started in the summer of 2008 with borings in the southern part of the project along a different, preliminary alignment. Borings more than 100 feet from the final alignment were not included in this report. Additional borings in the spring of 2010 included 12 borings and 12 probes south of the beaver dam at Station 1043+00 and 39 borings and 17 probes north of the beaver dam. An additional 4 borings were done in August 2010 to support design of the bridge structures.

2.4 Native soils

Table 1 below shows the boring and probe locations and depths to refusal, and describes the subsurface conditions encountered in each boring. Probes were extended to the bedrock surface, or a depth of 10' or 15' if shallow refusal was not encountered. Both fine grained and granular soils can be anticipated at pavement subgrade and in soil cut slopes along this project.

boring #	Station	offset	Depth	Refusal	soils (at pavement subgrade)
HB-ELLS-101	984+71	6 RT		29.0	soft clay silt
HB-ELLS-102	988+26	4 RT	12		stiff to soft silt
HB-ELLS-103	992+26	7.5 LT	12		sand over stiff silt, wet at 5'
HB-ELLS-104	996+26	3 LT	12		sand over very stiff silt, wet at 9'
HB-ELLS-105	1000+28	16 LT	12		stiff silt, sand at 7.6'
B212	1003+00	22 LT		8.7	loose sand, shallow rock
B211	1007+00	25 LT		6.0	sand - Till, shallow rock
P212	1007+00	25 RT		7.4	
P211	1007+50	25 RT		9.2	
P210	1007+50	25 LT		7.5	
B210	1008+00	25 RT		2.2	silt, shallow rock
P209	1008+00	25 LT		3.8	
P208	1008+50	25 RT		4.5	
B203	1008+50	CL		surface	
P207	1008+50	25 LT		1.1	
P206	1009+00	25 RT		0.5	
B209	1009+00	25 LT		0.3	silt, shallow rock
P205	1009+50	25 RT		6.7	
P204	1009+50	25 LT		7.5	
B208	1010+00	25 RT		7.5	loose sand – Till
P202	1010+00	25 LT	10		
P203	1010+50	25 RT	10		
P201	1010+50	25 LT	10		
B207	1011+50	25 LT		8.2	loose sand – Till
B206	1013+50	CL	17		wet sand over clay, dense sand at 8.5'
HB-ELLS-110	1016+27	60 RT	17		silt, sand at 14'
B202	1019+00	CL		17.8	sand/till
HB-ELLS-111	1020+24	40 RT		17.3	silt, sand at 17'
HB-ELLS-112	1024+05	28 RT		15.1	very stiff silt, sand at 10'
HB-ELLS-113	1028+25	33 RT	12		sand/till
HB-ELLS-114	1031+95	64 RT		11.5	stiff silt, sand at 5'
B205	1034+00	25 LT		4.3	soft silt, shallow rock
B204	1039+00	25 LT	17		soft clay, silt, sand at 15.5'
B201	1042+00	8 RT		12.8	clay/till
B301	1044+21	14 RT	12		medium dense sand over stiff clay
P301	1044+22	33 LT	10		
P302	1045+00	24 RT	15		
B302	1045+00	24 LT	17		loose sand over stiff Clay, Sand Till at 11.8
B303	1045+96	25 RT	14		stiff Clay and Silt, Sand - Till at 10.5
P303	1046+00	24 LT	15		
P304	1046+00	25 RT		8.2	

B306	1046+94	26 LT		8.5	med-dense Sand - Till, shallow rock
P305	1048+11	10 LT	15		
B307	1050+96	4 RT	12		soft to stiff clay, sand at 11.5'
B308	1052+70	CL	12		
P310	1055+94	29 RT		7.1	
B327	1056+05	22 LT		8.5	soft silt, sand at 4.5'
B326	1056+96	21 RT		6.9	wet soft silt, stiff clay
P309	1057+00	21 LT		4.8	
P308	1057+95	28 RT		7.7	
B325	1058+04	17 LT		11.5	soft silt over very dense sand
P307	1059+07	23 LT		7.8	
B324	1059+50	24 RT		3.4	very loose sand, shallow rock
B309	1059+57	24 LT		6.0	Sand
B323	1059+86	26 RT		6.4	very dense Sand
B322	1060+16	21 LT		2.0	sand, shallow rock
B320	1060+50	29 RT		2.4	sand, shallow rock
B321	1060+50	25 LT		0.4	shallow rock
B319	1060+97	29 RT		2.0	sand, shallow rock
B310	1061+00	21 LT		1.5	sand, shallow rock
B318	1061+47	25 RT		1.0	shallow rock
B317	1061+53	24 LT		1.0	sand, shallow rock
B316	1061+85	19 RT		1.3	sand, shallow rock
B315	1062+03	28 LT		0.5	sand, shallow rock
B312	1062+42	25 LT		0.8	sand, shallow rock
B311	1062+50	24 RT		3.8	Sand, gravel, shallow rock
B314	1063+00	22 RT		1.0	sand, shallow rock
B313	1063+00	22 LT		2.2	silt, shallow rock
B328	1063+44	23 RT		0.8	silt, shallow rock
P311	1063+50	24 LT		3.2	
B329	1063+95	24 LT		4.3	sand, shallow rock
P312	1063+95	27 RT		3.7	
B330	1064+43	25 RT		8.6	loose sand, stiff clay at 4'
P313	1064+50	21 LT	10		
P314	1064+90	21 RT	15		
B331	1064+97	26 LT	10		wet, loose sand, stiff clay at 4'
P315	1065+88	18 RT		9.5	
B332	1066+07	31 LT		5.5	soft silt, dense sand at 4.5'
B333	1066+97	21 LT		4.3	soft silt, cobbles
P316	1067+05	25 RT		2.3	
B334	1068+00	26 RT		1.5	shallow rock
P317	1068+00	25 LT		4.3	
B335	1069+50	CL		3.3	loose silty sand
B336	1071+50	CL		19.2	loose sand over stiff silt, Till at 13'
B337	1073+00	CL		18.8	med stiff clay over silt, Sand - Till at 11'
B338	1074+00	CL		7.2	loose silty sand, clay at 3'
B339	1077+00	CL		14.1	soft silt, clay, med dense Sand at 9'
B304	1078+00	26 RT		0.8	sand, shallow rock

Detailed information can be found in the boring logs and lab testing reports. Boring logs and probe data are included in Appendix C and lab test data is in Appendix D.

2.5 Subsurface Bedrock

Subsurface Bedrock was encountered in many borings, and outcrops are common along this project. Bedrock excavation will be required in many of the deep cuts along this project. In general, the bedrock surface is likely to be weathered with competent rock at varying depths below the surface; bedrock conditions will be variable. Most cores taken along this alignment are described as Schist or Granofels. Joints are moderately to steeply dipping, open with little or no infilling to close, tight to open; Rock Mass Quality (RMQ) is described as Fair to Excellent.

The bedrock core at Station 108+50 was described as a medium gray, fine-grained to aphanitic metamorphic Schist, moderately hard, slightly to moderately weathered, with joints moderately to steeply dipping, close to moderately close, open with no infilling. RMQ is described as good.

The bedrock cores at Station 162+50 were described as gray-green fine-grained to aphanitic Schist. Hard, fresh to slightly weathered, joints low angle to moderately dipping, close to moderately close, tight to open with RMQ of excellent from depth 4.1 to 9.1. The lower core from depth 9.1 to 14.1 is described as gray-green shading to purple-green, fine-grained to moderately weathered, with weathering increasing with depth. Joints were low angle to moderately dipping, very close to close, or open.

Detailed descriptions of the bedrock cores can be found in the boring logs in Appendix C.

3.0 **Design Recommendations**

3.1 Pavement Design

This project requires construction of an entirely new section of highway. FWD testing was not possible as no pavement exists for much of the new road. The new construction will involve both cuts and fills, and some of these will be substantial. For approximately 60% of this project the pavement section will be placed on fill, fractured bedrock or good natural soils. For the remainder of the project loose sands and soft clay-silts were encountered at subgrade. A geotextile should be used where the section is placed on clay-silt to prevent infiltration of fines if undercutting is not done.

The Resilient Modulus for these conditions should be based on anticipated conditions in the fill sections. The fill materials used for this project are likely to consist of primarily silty sands from excavation on other sections of the project. A modulus of 5000 psi is recommended for this project.

Transition zones will be required where the subgrade changes to and from pockets of frost susceptible soil or unfractured bedrock, with a typical 20:1 transition. A detail for this transition is included in Appendix F.

If pockets of soft or loose soils are found at subgrade, a non-woven geotextile meeting MaineDOT Standard Specification 722, Stabilization/Reinforcement geotextile may be used to help support the subbase soils and construction traffic. This geotextile should be placed as shown in Standard Detail 620.03.

3.2 Embankment fills

The alignment of this new highway will require substantial embankment fills, with heights of up to 27 feet. Surficial soils should have adequate strength to support these embankments without staged construction, if the soils are adequately prepared and embankment fills are properly constructed.

The soils used in embankment construction are anticipated to be primarily silty sand with moderate fines content, from excavations on this project or from nearby borrow pits. It may be difficult to get vegetation established on the native soils in this climate on the north side of the hills. These soils will be quite erodible, and the slopes must be stabilized during construction. Clay-silt soils used in embankment construction must be at appropriate water contents for compaction, as described in the Standard Specifications.

Embankment fills will be required at many stations along this project, but only three of these areas will require high fills. Stability analyses using Geostudio Slope/W, Version 7.0, Morganstern-Price method, were done for the taller embankments to establish that these embankments and slopes can be constructed safely with a minimum Factor of Safety in excess of 1.5 for global stability of the new construction.

An embankment between Station 1012+50 and 1020+00 reaches a maximum height of approximately 17 feet near Station 1019+00. The fill is shallow under the pavement section at Station 1016+00; soils in this area included a layer of damp, stiff to very stiff silt, with wet, dense sand at a depth of 14'. At Station 1019+00 soils included wet, very dense to loose sand with bedrock encountered at a depth of 18.8 feet. The side slopes to be constructed in the area of high embankment fill will be 2h:1v with loam and seed on the surface. The soils in this area should have adequate strength to support the proposed construction.

An embankment will be built from Station 1041+00 to 1043+50 with a height of approximately 8 feet near the bridge at Station 1042+75. Soils near the bridge include a thin surface layer of wet, soft to stiff silt or clay-silt underlain by gravel, medium dense sand, and very stiff silty clay, with bedrock at depths of 15 feet. The sideslopes in this area are designed to be no steeper than 2h:1v and the embankment should be stable on these soils.

An embankment will be built between Station 1068+50 and Station 1077+50 with height as much as 27 feet at the bridge over Gray's Brook. Soils near Gray's Brook include stratified sand and clay soils with some organics in surface layers. Shallow bedrock was encountered at Station 1069.50, although at the bridge bedrock was found at depths of approximately 21 feet. Embankment sideslopes of 2h:1v should be stable on these soils. Several inches of settlement can be expected due to

consolidation of underlying clay soils, but this will happen over a period of years.

3.3 Soil Cut Slopes

Excavation into native soils will be required for construction of this project and backslopes of 2h:1v have been designed for soil cut sections. Sections where deep excavations are not required for the highway alignment may also need excavation for ditches, and stability of these slopes may be a concern in areas of soft or sensitive soils. Ditch backslopes are also designed for a 2h:1v slope. Both backslopes and inslopes are to be treated with loam and seed.

A cut with maximum depth of 6 feet will extend from Station 135+00 to Station 1040+00. Surficial soils in this area include soft to stiff, moist to wet clay-silts. These soils will be stable at the design slopes, however the water content is close enough to the liquid limit that if the soils are disturbed and left exposed, they may start to slump. Overexcavation and placement of a layer of granular soils may be necessary to support construction traffic in this area. A geotextile should be placed between the subgrade soils and gravel to prevent pumping of fines into the pavement structure in this area. Sideslopes should be scarified before placement of loam to resist slumping, and they should not be left uncovered for extended periods of time.

A cut with a maximum depth of 10 feet will be built from Station 1044+00 to Station 1048+50. Rock excavation is anticipated in portions of the lower part of this cut, but most excavated material will be soil. Surficial soils in this area are variable and include loose sand over stiff silty clay at Station 1045, 24 left, wet silt over stiff, silty clay at Station 1046, 25 right, and dry loose sand with bedrock at a depth of 8.5 feet at Station 1047, 26 left. Groundwater was recorded at elevation 12.02 in a boring at Station 1045, 24 left and at 130.9 feet in the boring at Station 1046, 25 right. No wells were drilled to determine a more accurate depth to the water table, and the groundwater depth may vary seasonally.

A cut from Station 1056+00 to Station 1066+50 will extend through the soil into bedrock, with a maximum depth of cut into the soil of approximately 9 feet. This cut has been designed with 1h:1.5v cut slopes in rock and 2h:1v slopes in soil. A bench was allowed at the bedrock surface. It may be possible to reduce the width of this bench during construction depending on soil, rock and water conditions encountered during construction, but that decision should be made in the field. Native soils include moist to wet soft silt over sand, clay or bedrock in the area from Station 1056+00 to Station 1058+00. Water contents in these samples were close to the liquid limit of the soils, and these clay-silt soils are very likely to be sensitive, and to flow when disturbed. Care should be exercised during construction; overexcavation and replacement of subgrade soils with granular material to support construction traffic may be required. A geotextile should be placed under the roadway to limit piping of fines into the pavement section. Sideslopes should be scarified before placement of loam. Shallow

bedrock was found under this hill beginning at Station 1059+00, and soils over the bedrock were generally loose to very loose sands. These soils should be stable at the intended slopes.

3.4 Rock Excavation

Bedrock cuts will be required for this project. Rock cores were taken in borings at Station 1008+50, Station 1046+94, 1059+57, 1061+00 and 1062+50. All rock cores are described as fine grained aphanitic schist and fine grained to aphanitic granofels, with low angle to steeply dipping joints. Rock mass quality is variable. These rock types are hard and will not have well-defined fracture planes, so the maximum stable cut angle will depend on the orientation, size, aperture and infilling of fractures in the rock.

Bedrock excavation has been estimated based on widely spaced borings and cores. No geophysics was done at this site to better define the bedrock surface. Final decisions on stable rock cut angle should be made in the field when the bedrock has been exposed and more information is available than what can be seen in rock cores at widely spaced locations.

Rock cuts have been designed for a maximum slope of 1h:1.5v to allow a fairly flat slope in case this is needed, however it is recommended that the slopes be built at the normal 1h:4v if the slopes will be stable at this angle.

Controlled blasting will be required for all rock slopes where the height of the cut exceeds 8 feet and/or the overburden will have a slope greater than 1v:3h. Right-of-way has been provided to allow flat slopes in overburden soils to ensure that these soils will be stable above the rock cut.

Any section where the rock cut will be more than 8 feet tall will require an adequate rockfall zone. If the overburden slope is excessively steep above the rock cut, permanent slope stabilization should be added during construction.

A rock cut will extend into bedrock from approximately Station 107+75 to Station 109+25 with a maximum depth of approximately 7 feet. This will have as much as 5 feet of overburden soils, and a shelf has been provided to ensure that the overburden soils can be left in a stable condition.

A rock cut from Station 1059+00 to Station 1064+00 will have a maximum depth of approximately 21 feet, with shallow overburden over the cut slopes. The rock cut slope and the shelf between the top of rock and the overburden soil slope should be determined during construction. Flat slopes are shown on the plan to ensure that these slopes can be laid back as needed, but a steeper slope should be built if possible.

A knob of bedrock from Station 1067+00 to Station 1068+00 on the Left side of the highway will need to be removed, with excavation depths of approximately 10

feet. Although a flat slope has been designed in this area to ensure that the slope can be laid back as needed, a steeper slope should be built if it becomes apparent during construction that bedrock conditions allow it.

3.5 Groundwater

Groundwater seeps are difficult to detect during a subsurface investigation program. If seeps are encountered in cut slopes during construction, downspouts should be constructed as needed to carry the water to the ditch without damage to the underlying slope. If groundwater seeps or springs are encountered under the roadway or shoulders, a transverse French Drain should be built under the pavement section to prevent water from being trapped under the pavement.

3.6 Frost Action

Native soils along this roadway will be highly frost susceptible. The mean freezing index for these soils is 1000 with a design freezing index of 1400 according to standard design charts. Frost penetration was determined using ModBerg software by the US Army Cold Regions Research Engineering Laboratory using a design freezing index of 1256 F-degree days in Ellsworth. For a now-free pavement section with a total thickness of 30", frost penetration into fine-grained subgrade is calculated to be 49 inches.

The depth of penetration is sensitive to the water content of subgrade soils, with greater depths of frost penetration in wetter subgrade soils. Soils in this area include both fine-grained and granular soils at subgrade, and water trapped in the upper subgrade will freeze. Control of both groundwater and surface water runoff will be critical to protecting the pavement structure.

3.7 Construction Considerations

Soft surficial soils will be subject to rutting and may become disturbed during construction. If this happens these soils may need to be excavated and replaced with granular borrow before embankment construction.

Appendix A
Resource Maps
Surficial Geology
NRCS Soils Survey
National Wetlands Inventory

Ellsworth Quadrangle, Maine

Surficial geologic mapping by
Thomas K. Weddle

Digital cartography by:
Robert A. Johnston
Susan S. Tolman

Cartographic design and editing by:
Robert D. Tucker

Funding for the preparation of this map was provided in part by the U.S. Geological Survey
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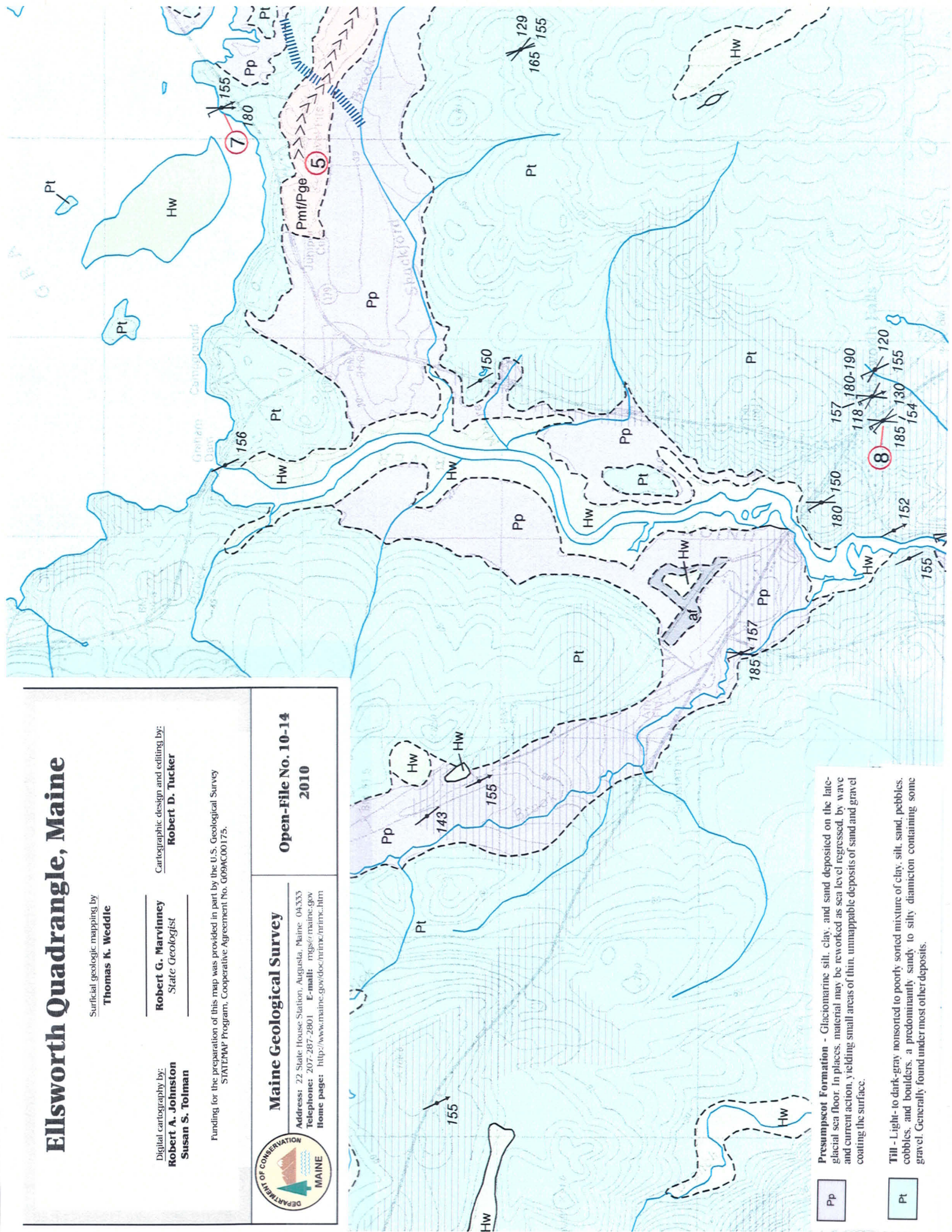


Maine Geological Survey

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Home page: <http://www.maine.gov/doc/mr/mc/mr/mc.htm>

Open-File No. 10-14

2010



Pp Presumpscot Formation - Glaciomarine silt, clay, and sand deposited on the late-glacial sea floor. In places, material may be reworked as sea level regressed, by wave and current action, yielding small areas of thin, unmappable deposits of sand and gravel coating the surface.

Pt Till - Light- to dark-gray nonsorted to poorly sorted mixture of clay, silt, sand, pebbles, cobbles, and boulders, a predominantly sandy to silty diamictic containing some gravel. Generally found under most other deposits.

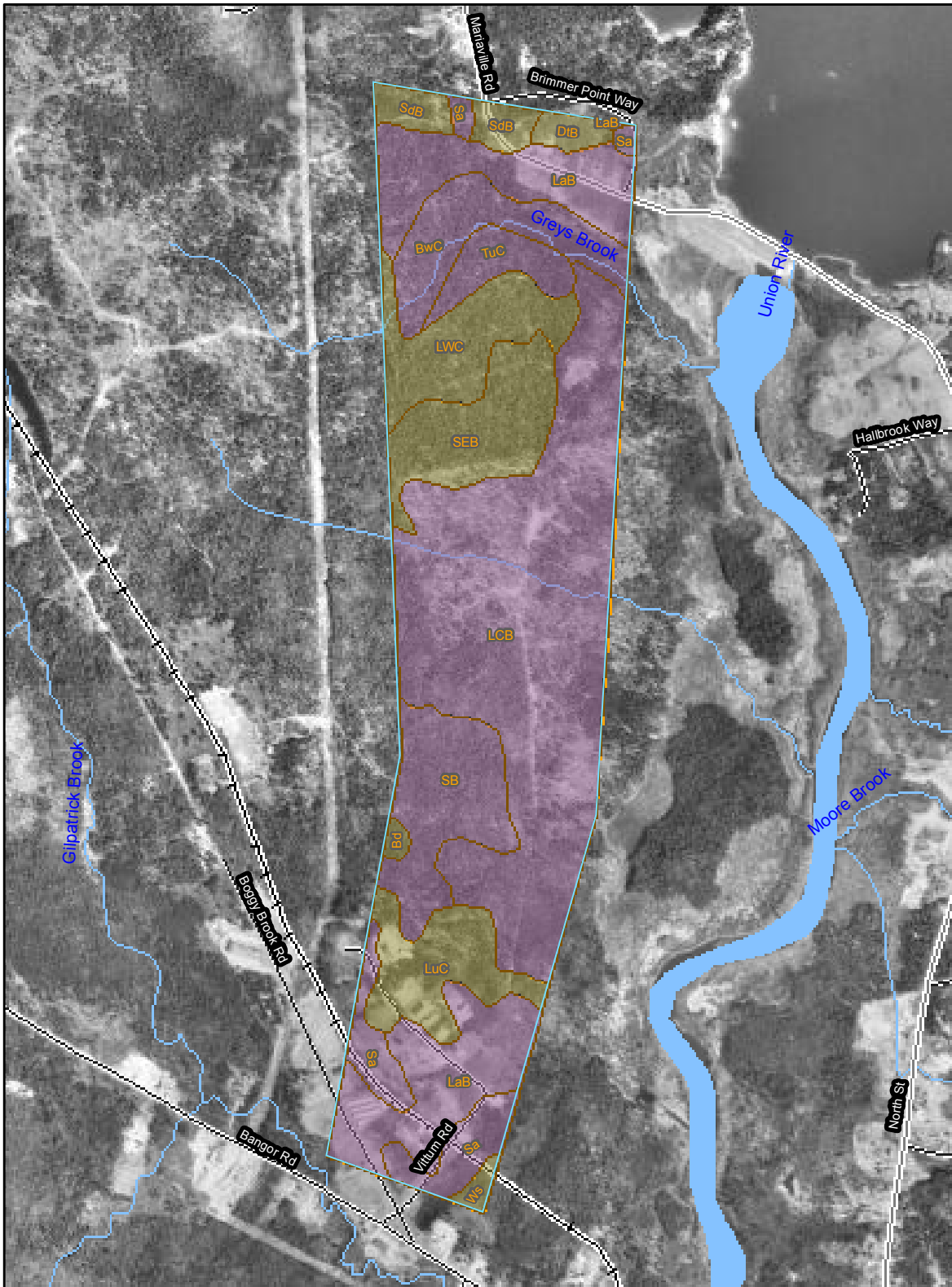
Unified Soil Classification (Surface)—Hancock County Area, Maine
(Ellsworth USCS soils)

68° 27' 56"

68° 26' 7"

44° 35' 48"

44° 35' 48"



44° 34' 3"

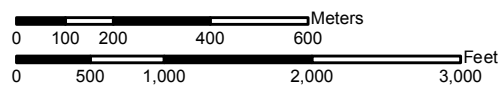
44° 34' 3"

68° 27' 57"

68° 26' 8"























































Map Scale: 1:15,500 if printed on A size (8.5" x 11") sheet.



MAP INFORMATION

Map Scale: 1:15,500 if printed on A size (8.5" x 11") sheet.
 The soil surveys that comprise your AOI were mapped at 1:20,000.
 Please rely on the bar scale on each map sheet for accurate map measurements.
 Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 19N NAD83
 This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.
 Soil Survey Area: Hancock County Area, Maine
 Survey Area Data: Version 12, Oct 2, 2009
 Date(s) aerial images were photographed: 4/27/1997
 The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

MAP LEGEND

 Area of Interest (AOI)	 ML	 Interstate Highways
 Area of Interest (AOI)	 ML-A (proposed)	 US Routes
 Soils	 ML-K (proposed)	 Major Roads
 Soil Map Units	 ML-O (proposed)	
 Soil Ratings	 ML-T (proposed)	
 CH	 OH	
 CL	 OH-T (proposed)	
 CL-A (proposed)	 OL	
 CL-K (proposed)	 PT	
 CL-ML	 SC	
 CL-O (proposed)	 SC-SM	
 CL-T (proposed)	 SM	
 GC	 SP	
 GC-GM	 SP-SC	
 GM	 SP-SM	
 GP	 SW	
 GP-GC	 SW-SC	
 GP-GM	 SW-SM	
 GW	 Not rated or not available	
 GW-GC	Political Features	
 GW-GM	 Cities	
 MH	Water Features	
 MH-A (proposed)	 Oceans	
 MH-K (proposed)	 Streams and Canals	
 MH-O (proposed)	Transportation	
 MH-T (proposed)	 Ralls	

Unified Soil Classification (Surface)

Unified Soil Classification (Surface)— Summary by Map Unit — Hancock County Area, Maine				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Bd	Biddeford muck	PT	1.3	0.3%
BwC	Buxton silt loam, 8 to 15 percent slopes	ML	22.7	6.2%
DtB	Dixfield-Colonel complex, 3 to 8 percent slopes, very stony	PT	3.7	1.0%
LaB	Lamoine silt loam, 3 to 8 percent slopes	ML	58.7	16.0%
LCB	Lamoine-Scantic-Buxton association, gently sloping	ML	138.4	37.7%
LuC	Lyman-Tunbridge complex, 0 to 15 percent slopes, very stony	PT	22.2	6.1%
LWC	Lyman-Tunbridge-Schoodic complex, rolling, very stony	PT	24.0	6.5%
Sa	Scantic silt loam	ML	19.3	5.3%
SB	Scantic-Biddeford association	ML	28.7	7.8%
SdB	Scantic-Lamoine complex, 0 to 8 percent slopes, very stony	PT	9.1	2.5%
SEB	Scantic-Lamoine-Dixfield complex, gently sloping, very stony	PT	26.6	7.3%
TuC	Tunbridge-Lyman complex, 8 to 15 percent slopes	ML	10.1	2.8%
Ws	Wonsqueak and Bucksport mucks	PT	2.0	0.6%
Totals for Area of Interest			366.9	100.0%

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options: Surface Layer



U.S. Fish and Wildlife Service

National Wetlands Inventory

Route 180
relocation area

Apr 11, 2011



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Appendix B

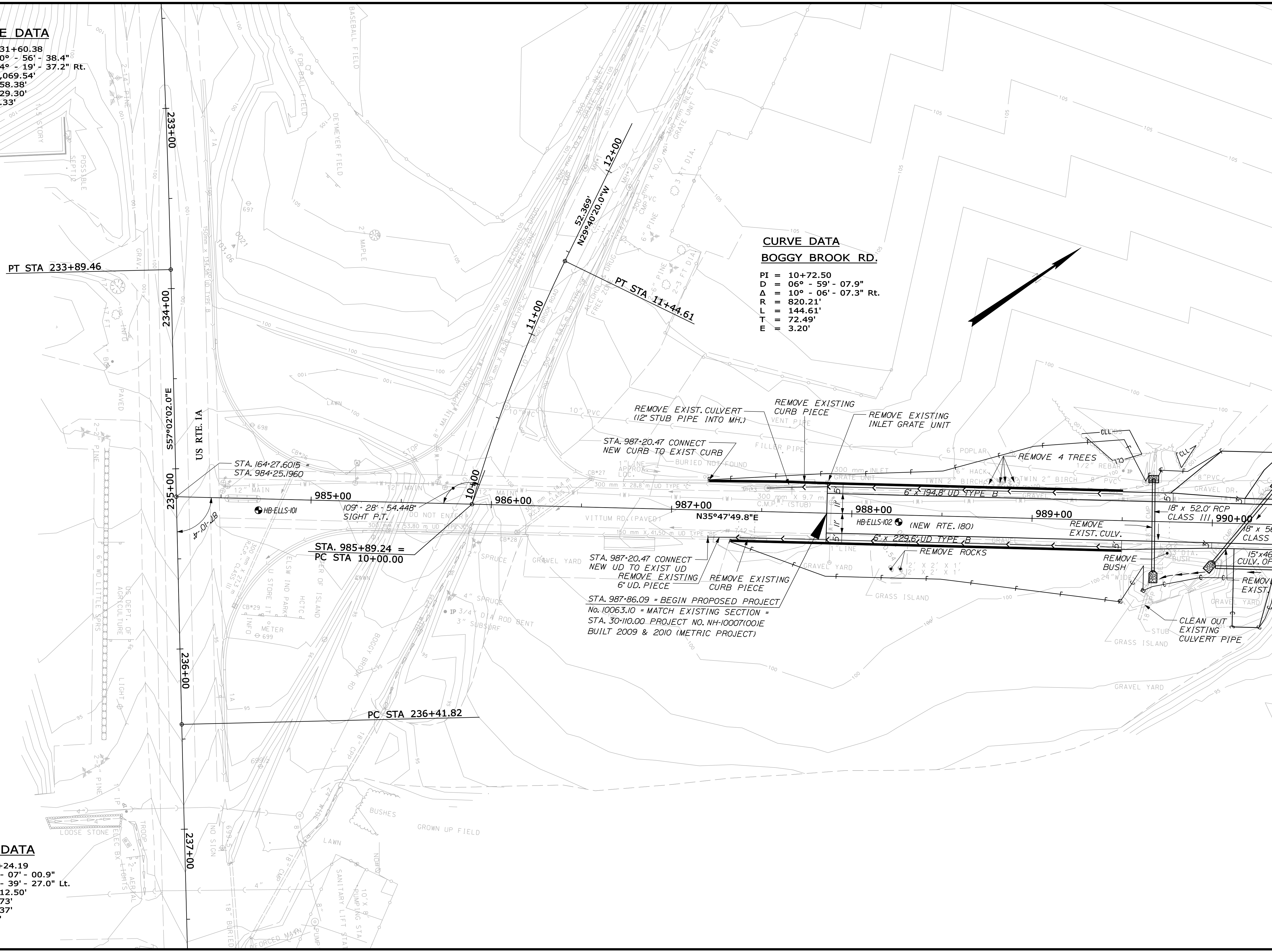
Geoplans

Filename: ... \GEO\TECH\STA\001_Ceoplom1.dgn Division: GEOTECH Username: kity.breskin Date: 2/13/2012

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 Δ = 04° - 19' - 37.2" Rt.
 R = 6,069.54'
 L = 458.38'
 T = 229.30'
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 T = 72.49'
 E = 3.20'

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 R = 49,212.50'
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 T = 282.37'
 E = 0.81'



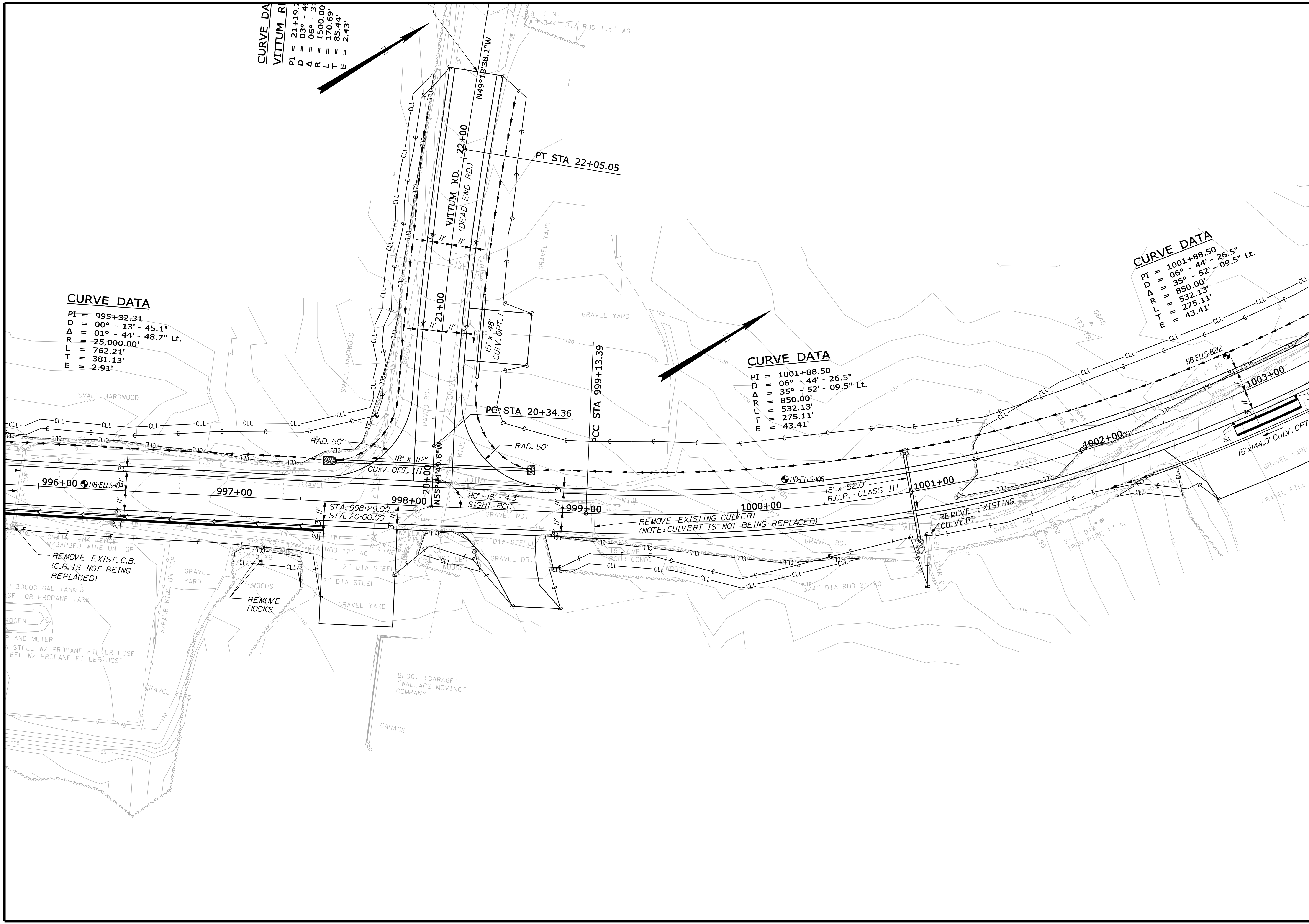
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PROJECT NO. 10063.10		PIN 10063.10	
HIGHWAY PLANS		FIELD CHANGES	
PROJ. MANAGER	BY	DATE	SIGNATURE
ERNE MARTIN	T. WHITE	JUN 2011	
DESIGN-DETAILED	CHECKED-REVIEWED	DESIGNS DET. ALOD	P.E. NUMBER
K. BRESKIN			
REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4
ELLSWORTH ROUTE 180		GEOPLANS	
SHEET NUMBER		DATE	
1			
OF 19			

Date: 2/13/2012

Username: kity.breskin

Division: GEOTECH

Filename: ... \geotech\msta\003_Geoplans3.dgn

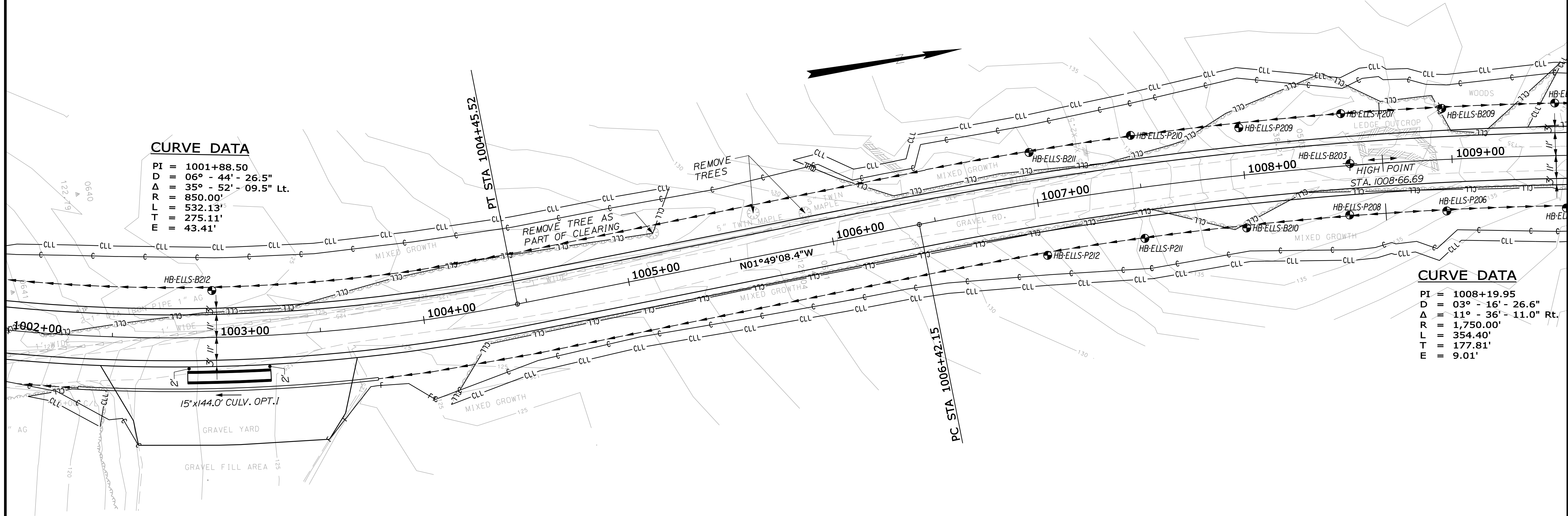


STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN
 10063.10
 HIGHWAY PLANS

PROJ. MANAGER	DATE	BY	SIGNATURE	P.E. NUMBER	DATE
ERNE MARTIN					
DESIGN-DETAILED	K. BRESKIN	T. WHITE			JUN 2011
CHECKED-REVIEWED					
DESIGNS DET AILED					
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REVISIONS 1					
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REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

ELLSWORTH
 ROUTE 180
 GEOPLANS

SHEET NUMBER
 3
 OF 19

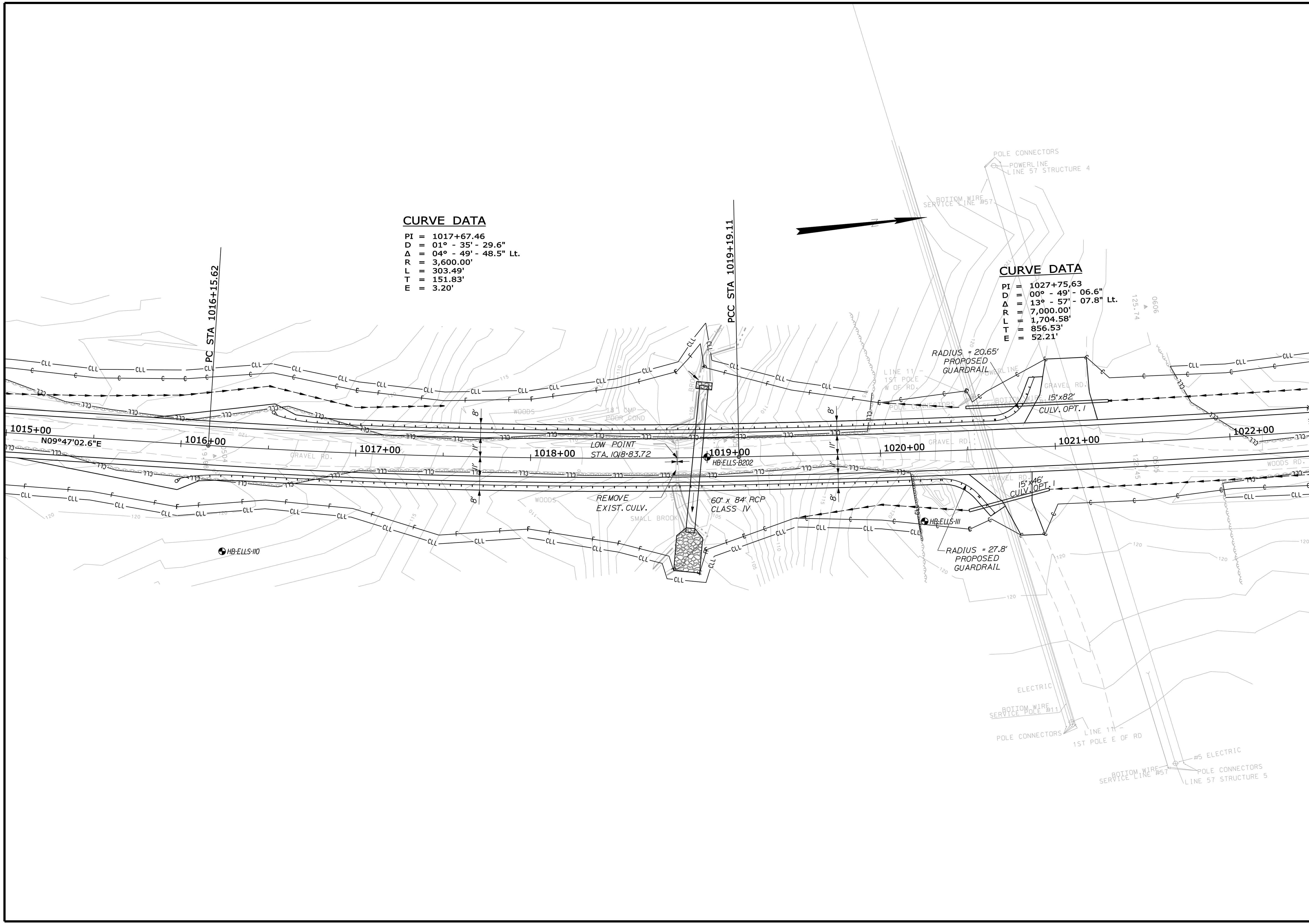


STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN
 10063.10
 HIGHWAY PLANS

DATE	BY	SIGNATURE	P.E. NUMBER	DATE
JUN 2011	T. WHITE			

ELLSWORTH
 ROUTE 180
 GEOPLANS

SHEET NUMBER
4
 OF 19



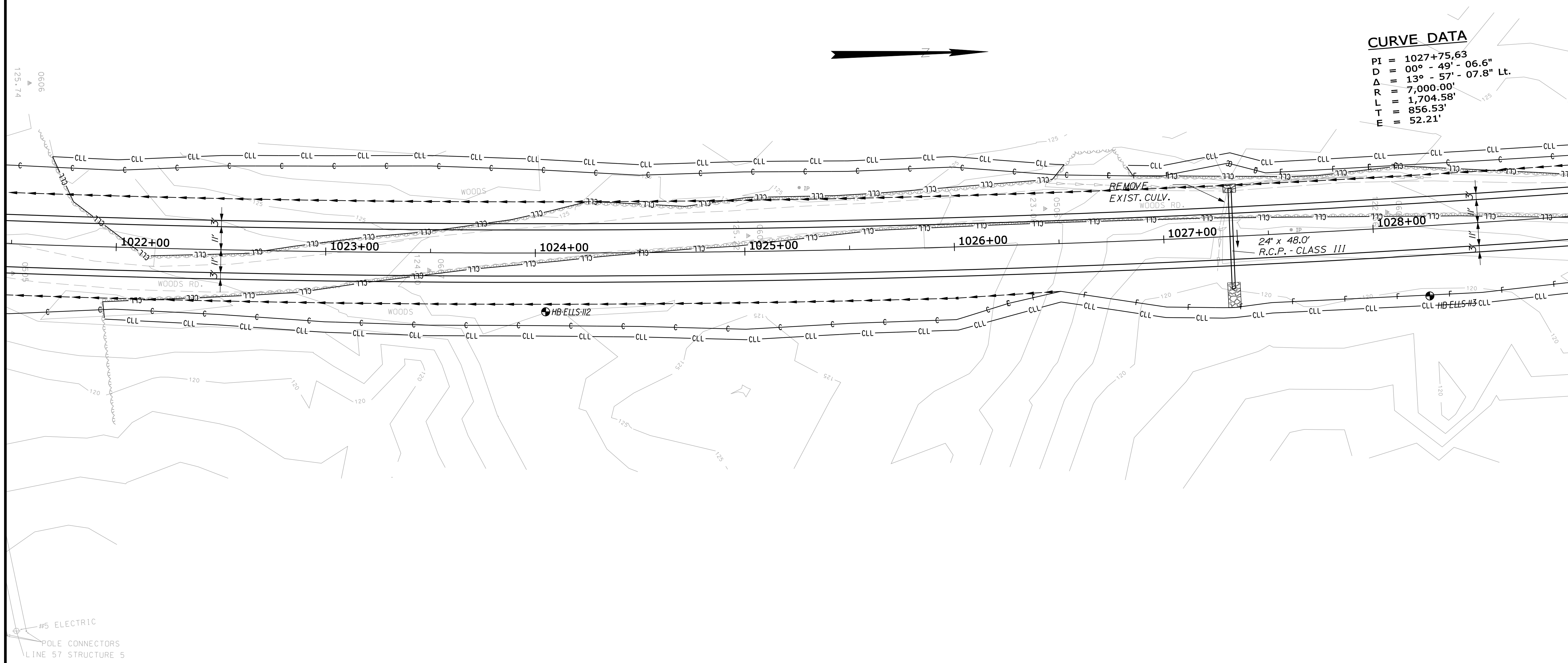
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 L = 303.49'
 T = 151.83'
 E = 3.20'

CURVE DATA

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 Δ = 13° - 57' - 07.8" Lt.
 R = 7,000.00'
 L = 1,704.58'
 T = 856.53'
 E = 52.21'

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		PROJECT NO. 10063.10	
PIN 10063.10		HIGHWAY PLANS	
PROJ. MANAGER ERNE MARTIN	BY T. WHITE	DATE JUN 2011	SIGNATURE
DESIGN-DETAILED K. BRESKIN			
DESIGN-REVIEWED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			
ELLSWORTH ROUTE 180		GEOPLANS	
SHEET NUMBER			
6			
OF 19			



CURVE DATA

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 D = 00° - 49' - 06.6"
 Δ = 13° - 57' - 07.8" Lt.
 R = 7,000.00'
 L = 1,704.58'
 T = 856.53'
 E = 52.21'

STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN
 10063.10
 HIGHWAY PLANS

PROJ. MANAGER	BY	DATE	SIGNATURE
ERNE MARTIN	T. WHITE	JUN 2011	
DESIGN-DETAILED			
CHECKED-REVIEWED			
DESIGN-DETAILED			
DESIGN-DETAILED			
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

ELLSWORTH
 ROUTE 180
 GEOPLAN

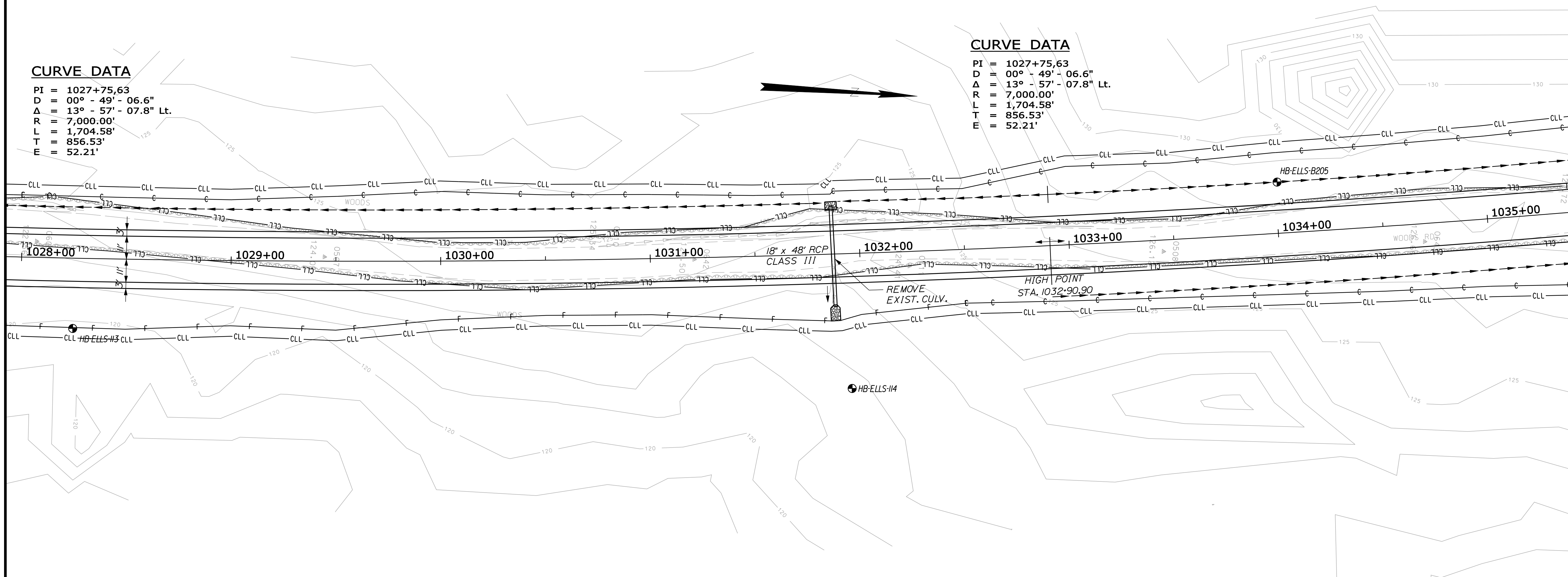
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Date: 2/13/2012

Username: kity.breskin

Division: GEOTECH

Filename: ... \geotech\msta\008_Geoplans.dgn



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 T = 856.53'
 E = 52.21'

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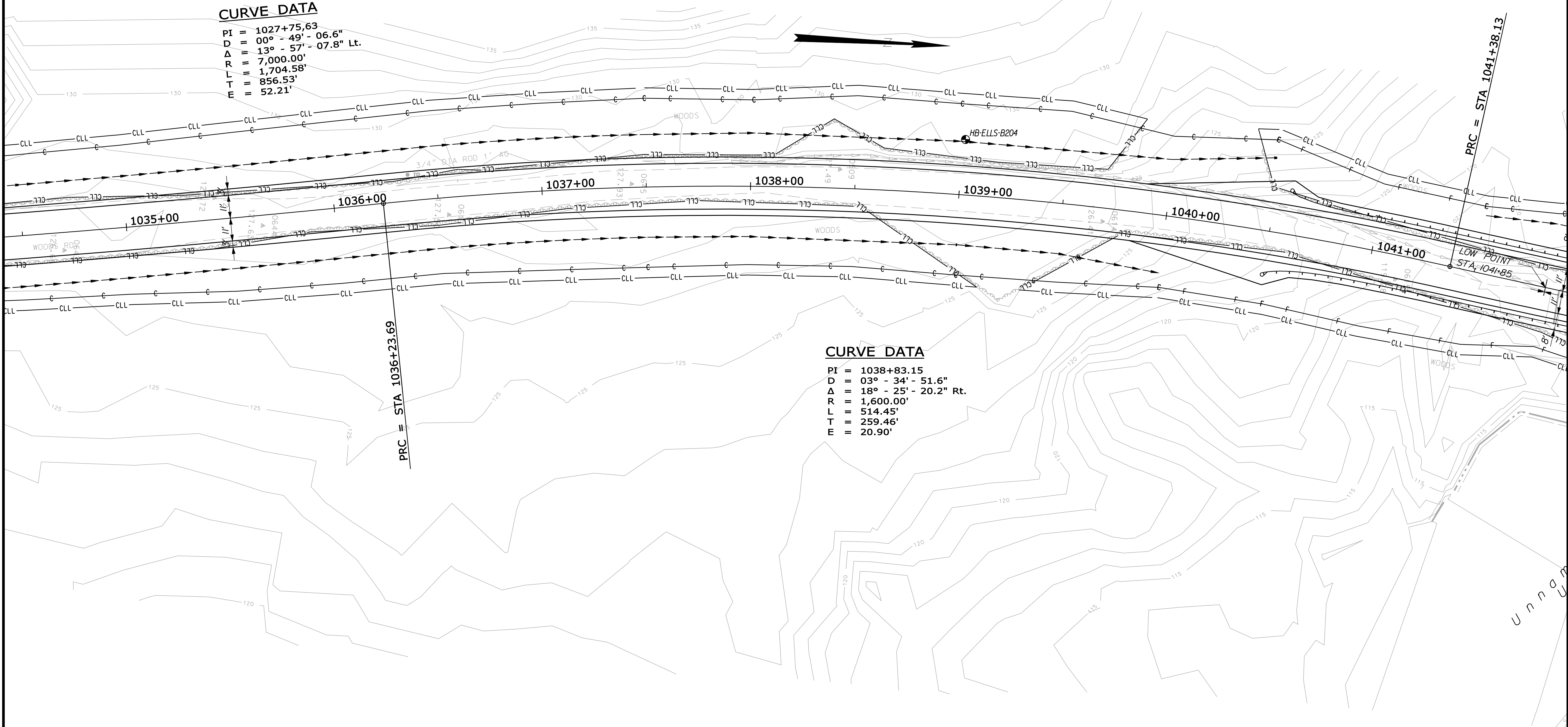
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 R = 7,000.00'
 L = 1,704.58'
 T = 856.53'
 E = 52.21'

STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN
 10063.10
 HIGHWAY PLANS

DATE	BY	SIGNATURE	P.E. NUMBER	DATE
JUN 2011	T. WHITE			

ELLSWORTH
 ROUTE 180
 GEOPLANS

SHEET NUMBER
 8
 OF 19



CURVE DATA
 PI = 1027+75.63
 D = 00° - 49' - 06.6"
 Δ = 13° - 57' - 07.8" Lt.
 R = 7,000.00'
 L = 1,704.58'
 T = 856.53'
 E = 52.21'

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 Δ = 18° - 25' - 20.2" Rt.
 R = 1,600.00'
 L = 514.45'
 T = 259.46'
 E = 20.90'



PROJ. MGR.	DATE	BY	SIGNATURE
ERNE MARTIN	JUN 2011	T. WHITE	
DESIGN-DETAILED		K. BRESKIN	
CHECKED-REVIEWED			
DESIGN-DETAILED			
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

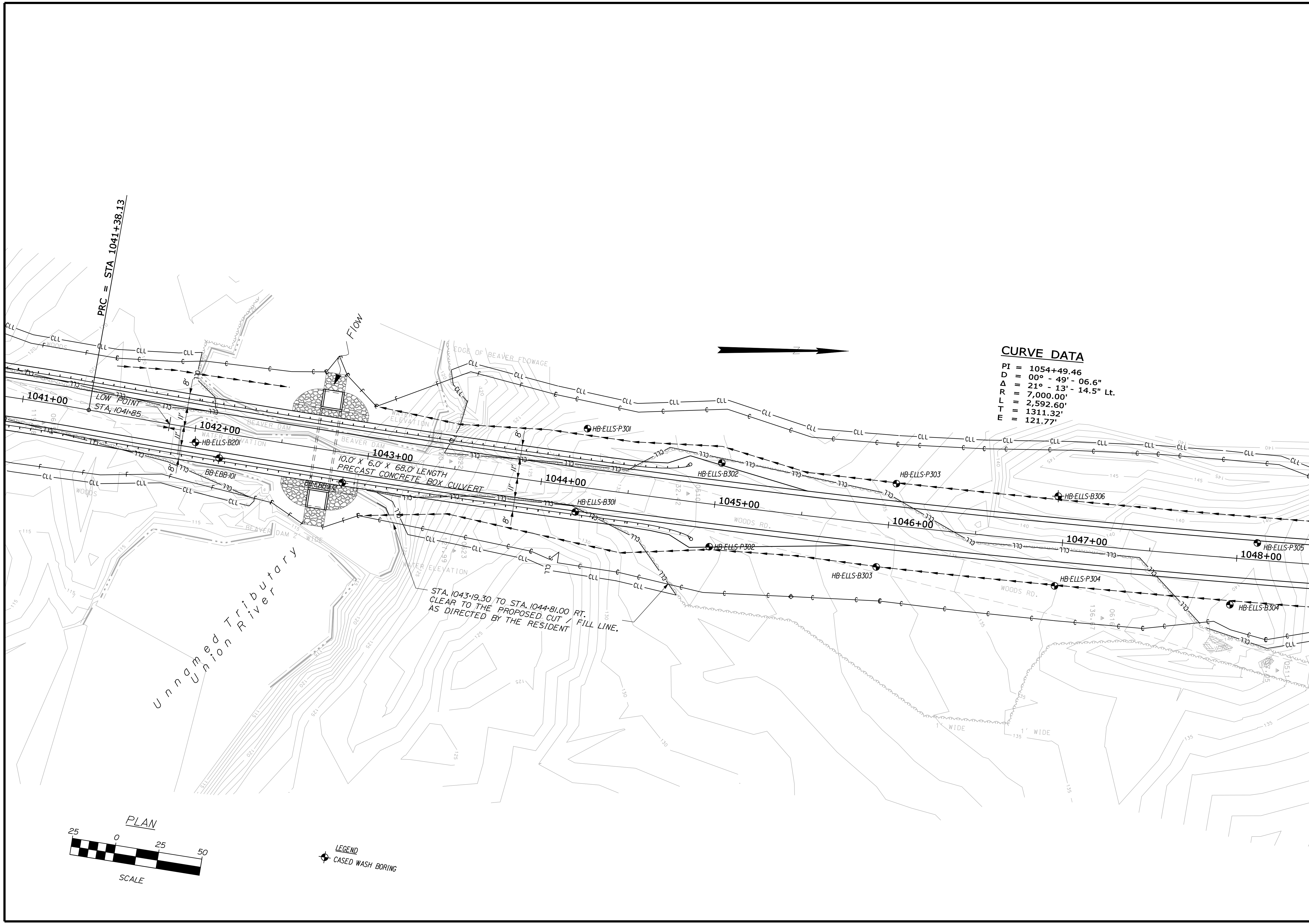
ELLSWORTH
 ROUTE 180
 GEOPLANS

Date: 2/13/2012

Username: kity.breskin

Division: GEOTECH

Filename: ... \geotech\msta\010_Geoplans.dgn



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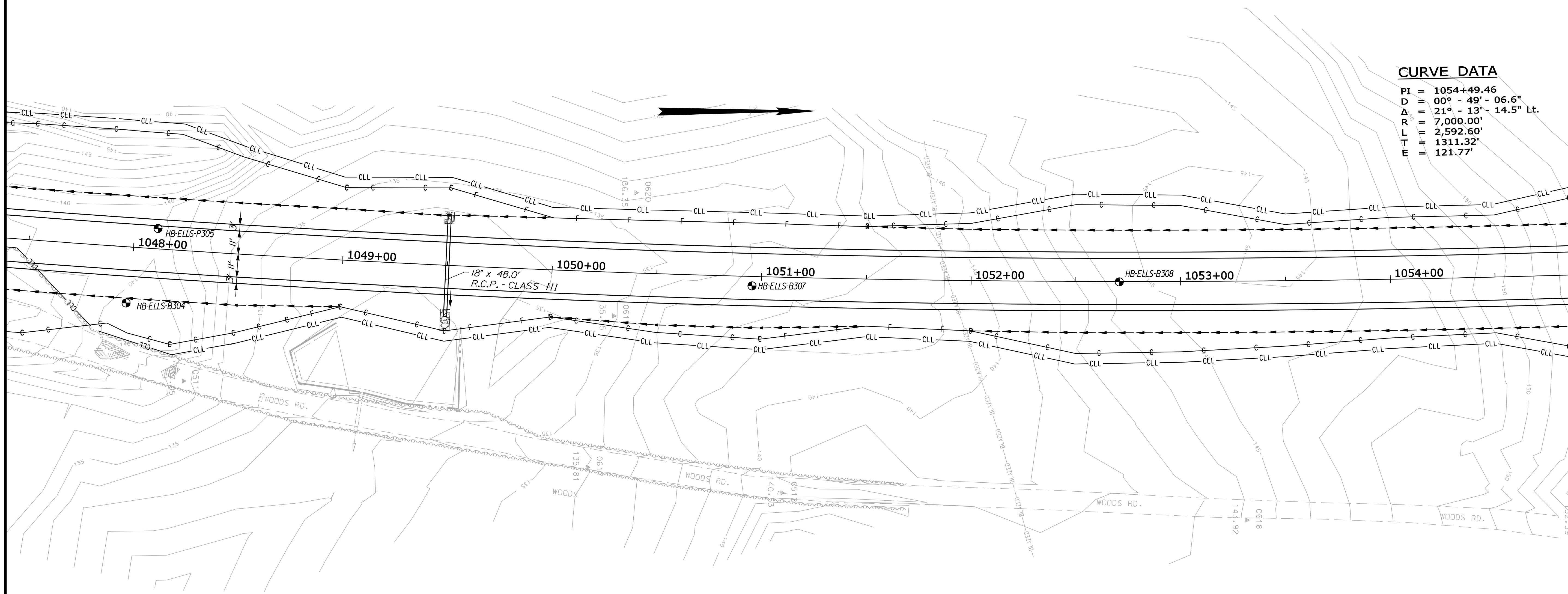
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Δ	= 21° - 13' - 14.5" Lt.
R	= 7,000.00'
L	= 2,592.60'
T	= 1311.32'
E	= 121.77'

STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN 10063.10
 HIGHWAY PLANS

PROJ. MANAGER	BY	DATE	SIGNATURE
ERNE MARTIN	T. WHITE	JUN 2011	
DESIGN-DETAILED	K. BRESKIN		
CHECKED-REVIEWED			
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DESIGNS DET ALOD'S			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

ELLSWORTH
 ROUTE 180
 GEOPLANS

SHEET NUMBER
 10
 OF 19



CURVE DATA
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 T = 1311.32'
 E = 121.77'

STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN
 10063.10
 HIGHWAY PLANS

DESIGN/REVISION	DATE	SIGNATURE	P.E. NUMBER	DATE
DESIGN DETAILED	JUN 2011			
CHECKED-REVIEWED				
DESIGN DETAILED				
REVISIONS 1				
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

ELLSWORTH
 ROUTE 180
 GEOPLANS

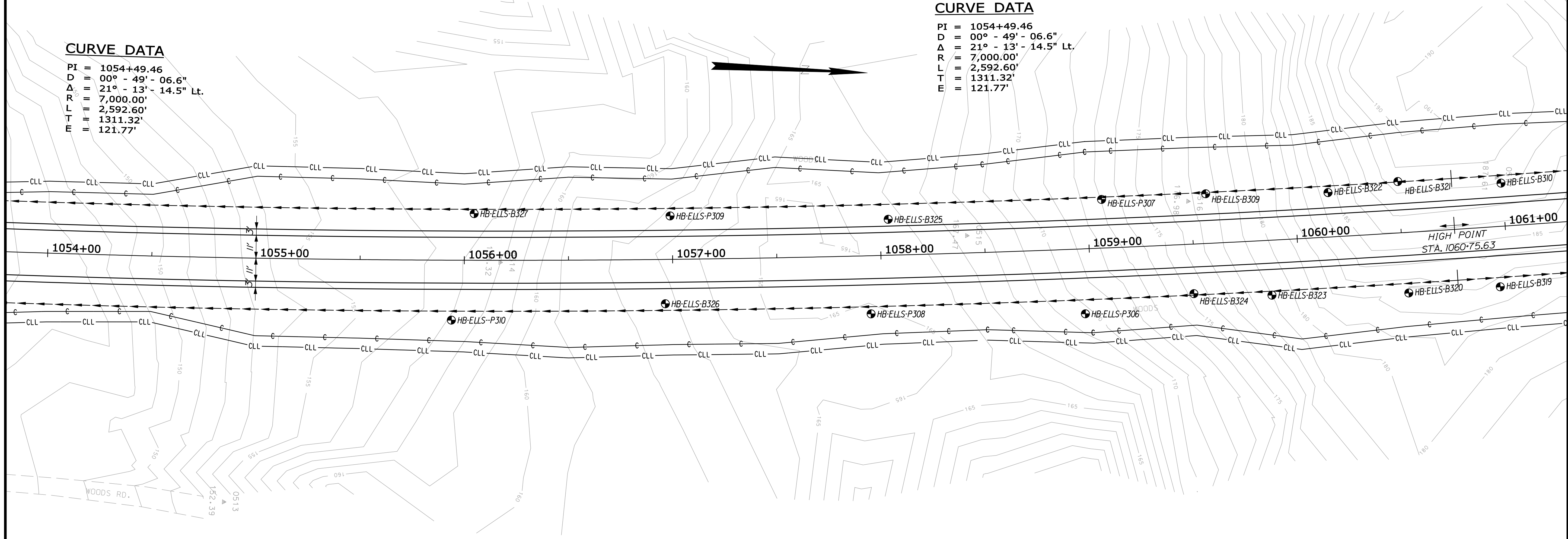
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 OF 19

Date: 2/13/2012

Username: kity.breskin

Division: GEOTECH

Filename: ... \geotech\msta\012_Geoplans12.dgn



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 T = 1311.32'
 E = 121.77'

CURVE DATA

PI = 1054+49.46
 D = 00° - 49' - 06.6"
 Δ = 21° - 13' - 14.5" Lt.
 R = 7,000.00'
 L = 2,592.60'
 T = 1311.32'
 E = 121.77'

STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN
 10063.10
 HIGHWAY PLANS

DATE	BY	SIGNATURE	P.E. NUMBER	DATE
JUN 2011	T. WHITE			

ELLSWORTH
 ROUTE 180
 GEOPLANS

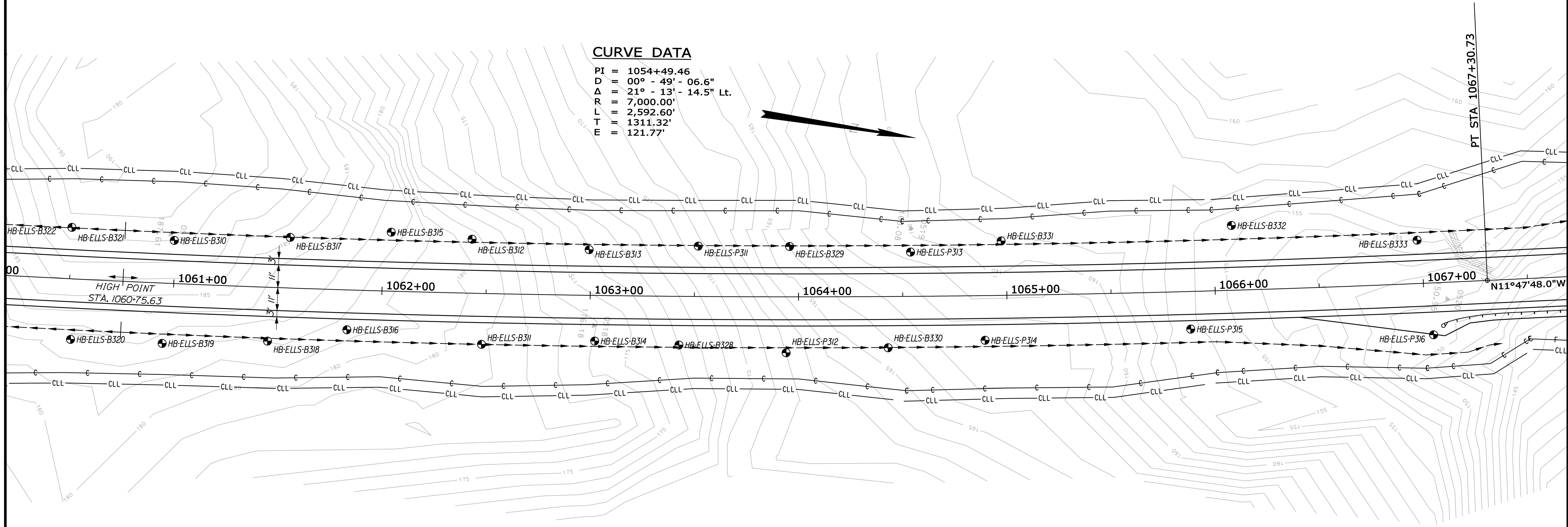
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 OF 19

Date: 2/13/2012

Username: kity.breskin

Division: GEOTECH

Filename: ... \geotech\msta\013_Geoplans.dgn



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN 10063.10
 HIGHWAY PLANS

DATE	SIGNATURE	P.E. NUMBER	DATE
JUN 2011	T. WHITE		

PROJ. MANAGER	BY	DATE
ERNE MARTIN	T. WHITE	JUN 2011
DESIGN-DETAILED	K. BRESKIN	
CHECKED-REVIEWED		
DESIGN-DETAILED		
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

ELLSWORTH
 ROUTE 180
 GEOPLANS

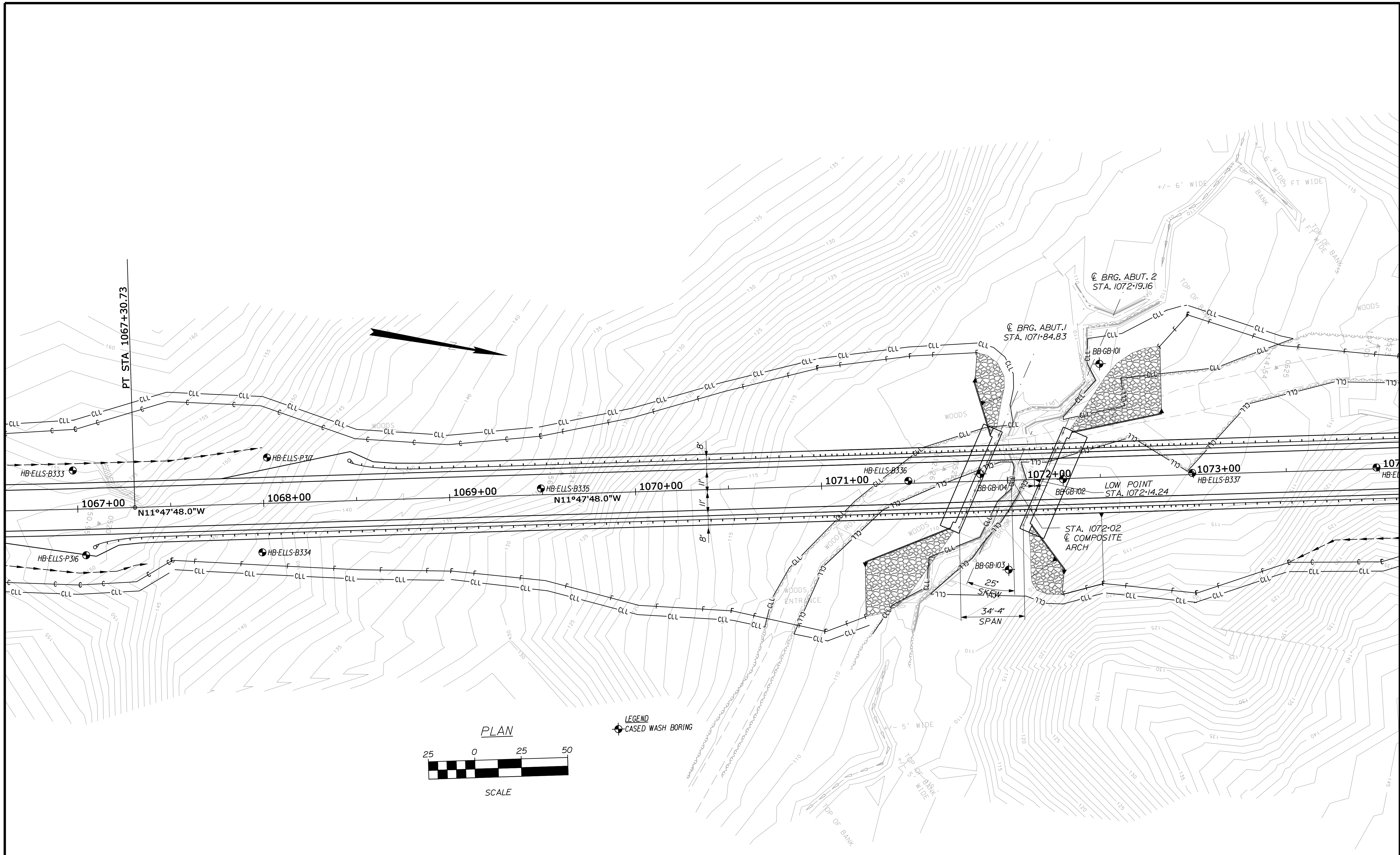
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Division: GEOTECH

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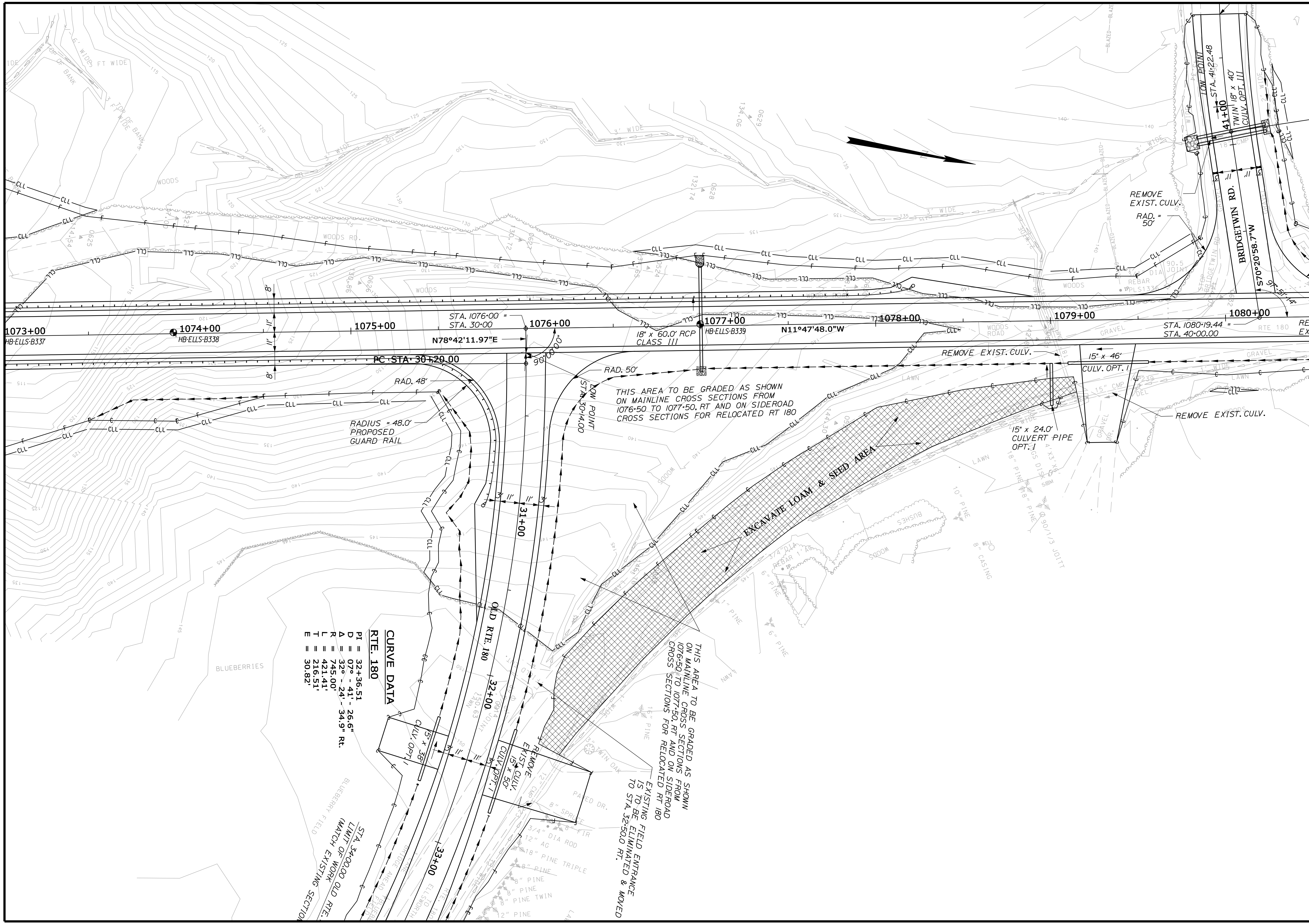


STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
PROJECT NO. 10063.10
PIN 10063.10
HIGHWAY PLANS

DATE	BY	SIGNATURE	P.E. NUMBER	DATE
JUN 2011	T. WHITE			
DESIGN DETAILED	K. BRESKIN			
CHECKED-REVIEWED				
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REVISIONS 1				
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REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

ELLSWORTH
ROUTE 180
GEOPLANS

SHEET NUMBER
14
OF 19

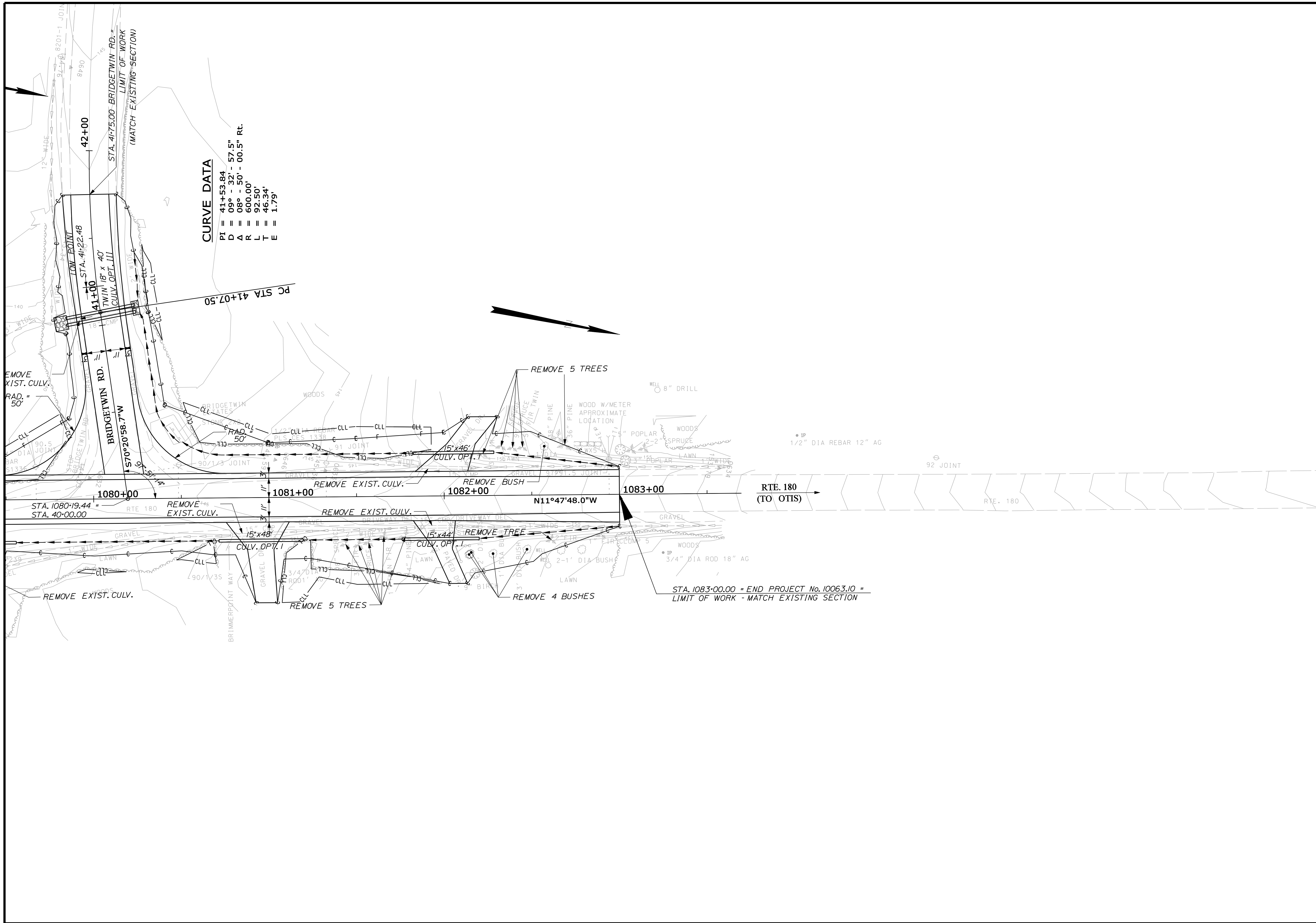


CURVE DATA
RTE. 180

PI	=	32+36.51
D	=	07° - 41' - 26.6"
A	=	329' - 24" - 34.9" Rt.
R	=	745.00'
L	=	421.41'
T	=	216.51'
E	=	30.82'

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
PROJECT NO. 10063.10		PIN 10063.10	
ELLSWORTH ROUTE 180		GEOPLANS	
SHEET NUMBER		15	
OF 19		FIELD CHANGES	

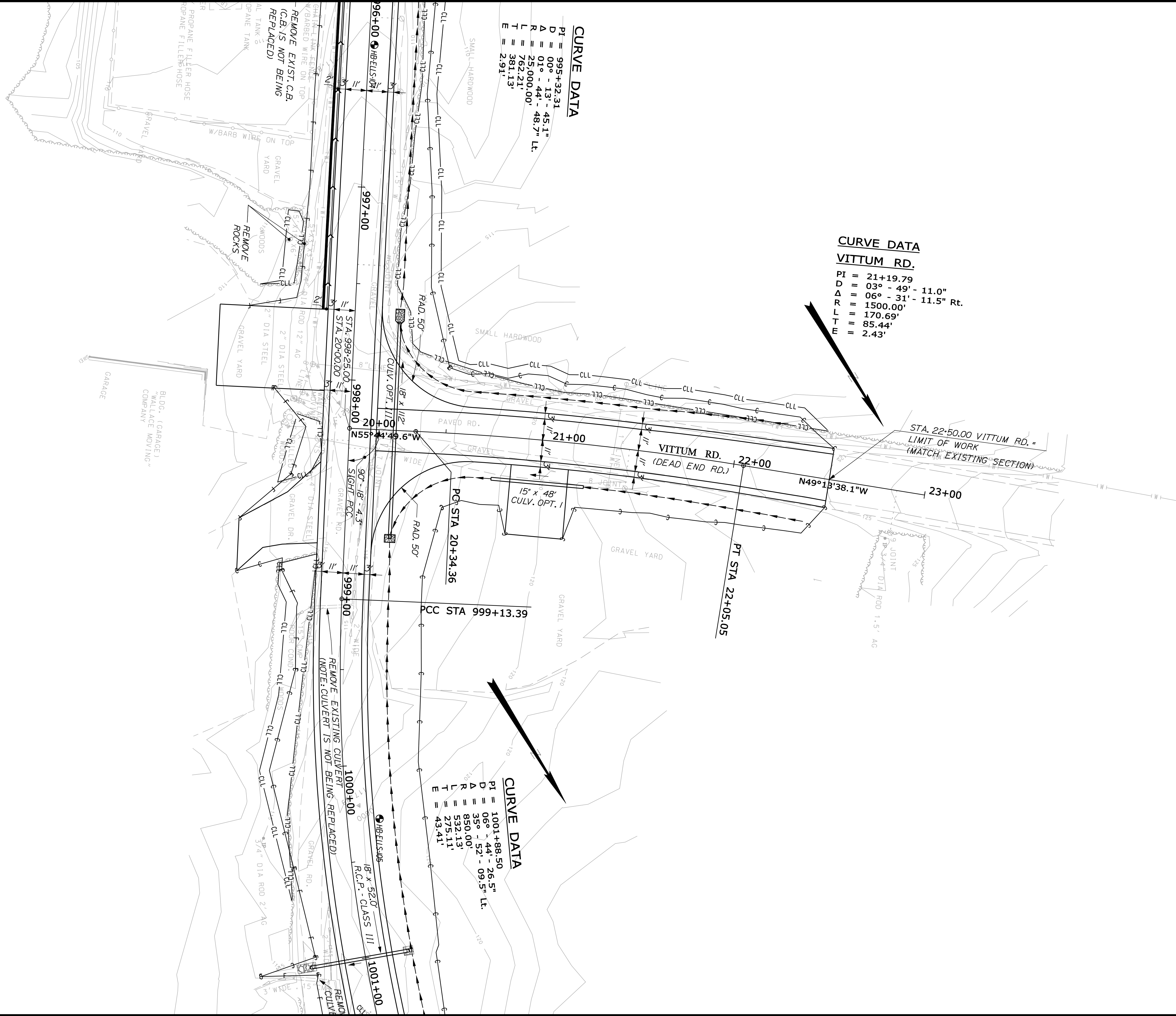
PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
ERNE MARTIN	T. WHITE	JUN 2011			
CHECKED-REVIEWED					
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REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN 10063.10
 HIGHWAY PLANS

PROJ. MANAGER	ERNE MARTIN	BY	T. WHITE	DATE	JUN 2011
DESIGN DETAILED	K. BRESKIN	CHECKED-REVIEWED	T. WHITE	SIGNATURE	
DESIGNS DETAILED		DESIGNS DETAILED		P.E. NUMBER	
REVISIONS 1		REVISIONS 1		DATE	
REVISIONS 2		REVISIONS 2			
REVISIONS 3		REVISIONS 3			
REVISIONS 4		REVISIONS 4			
FIELD CHANGES					

ELLSWORTH
 ROUTE 180
 GEOPLANS



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 T = 381.13'
 E = 2.91'

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 Δ = 06° - 31' - 11.5" Rt.
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 L = 170.69'
 T = 85.44'
 E = 2.43'

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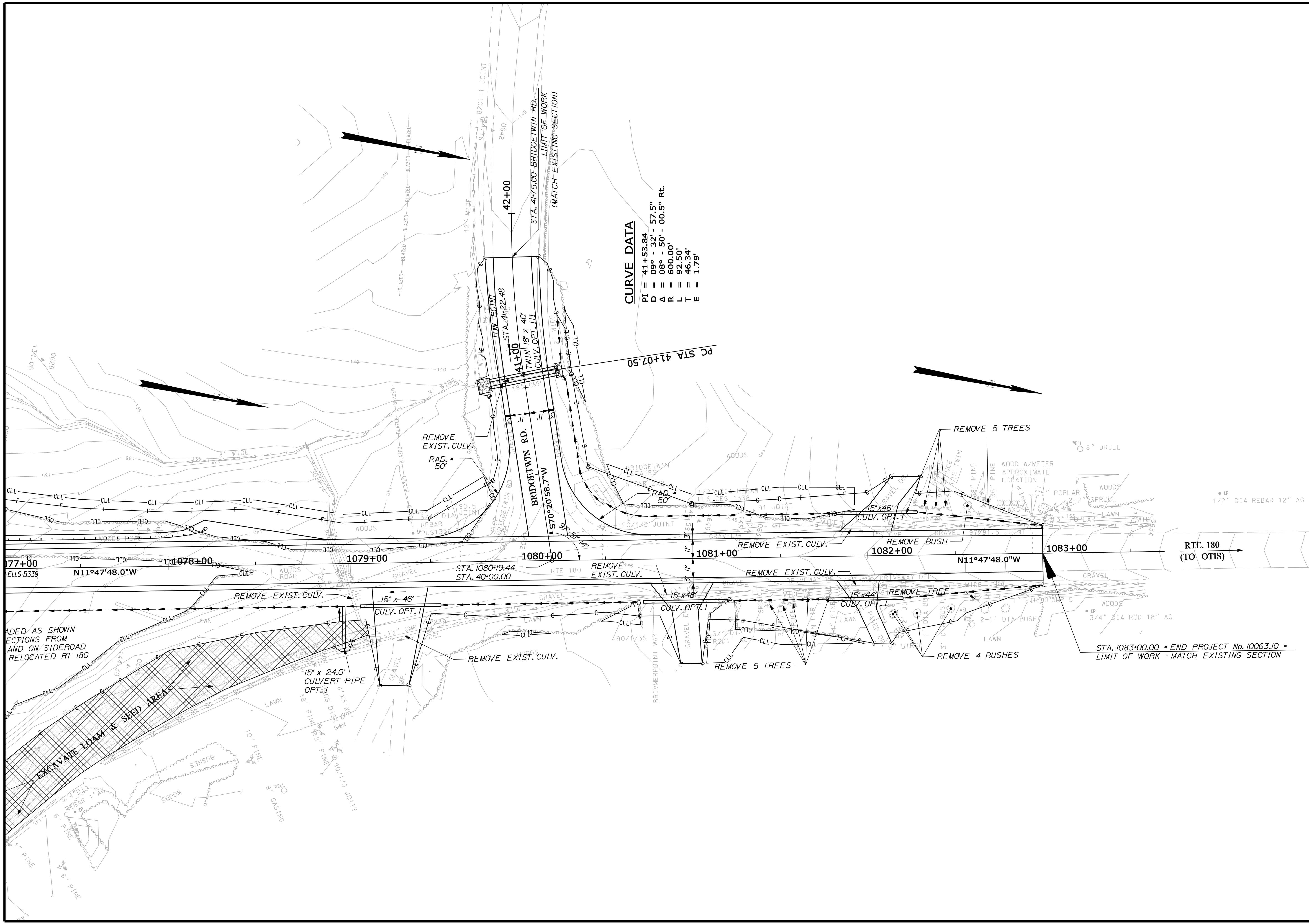
STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN
 10063.10
 HIGHWAY PLANS

DESIGN-DETAILED	CHECKED-REVIEWED	DESIGNS-DETAILED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
ERNE MARTIN	K. BRESKIN	T. WHITE					
DATE	JUN 2011	SIGNATURE					
		P.E. NUMBER					
		DATE					

PROJ. MANAGER	BY	DATE
ERNE MARTIN	T. WHITE	JUN 2011

ELLSWORTH
 ROUTE 180
 GEOPLANS

SHEET NUMBER
 17
 OF 19



STATE OF MAINE
 DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 10063.10
 PIN 10063.10
 HIGHWAY PLANS

PROJ. MANAGER	BY	DATE	SIGNATURE
ERNE MARTIN	T. WHITE	JUN. 2011	
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CHECKED-REVIEWED			
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

ELLSWORTH
 ROUTE 180
 GEOPLANS

SHEET NUMBER
 19
 OF 19

Appendix C
Field Exploration Data
Soils Descriptions
Boring Logs

UNIFIED SOIL CLASSIFICATION SYSTEM				TERMS DESCRIBING DENSITY/CONSISTENCY																													
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	<p>Coarse-grained soils (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. Consistency is rated according to standard penetration resistance.</p> <p>Modified Burmister System</p> <table border="0"> <tr> <td><u>Descriptive Term</u></td> <td><u>Portion of Total</u></td> </tr> <tr> <td>trace</td> <td>0% - 10%</td> </tr> <tr> <td>little</td> <td>11% - 20%</td> </tr> <tr> <td>some</td> <td>21% - 35%</td> </tr> <tr> <td>adjective (e.g. sandy, clayey)</td> <td>36% - 50%</td> </tr> </table> <table border="0"> <tr> <td><u>Density of Cohesionless Soils</u></td> <td><u>Standard Penetration Resistance N-Value (blows per foot)</u></td> </tr> <tr> <td>Very loose</td> <td>0 - 4</td> </tr> <tr> <td>Loose</td> <td>5 - 10</td> </tr> <tr> <td>Medium Dense</td> <td>11 - 30</td> </tr> <tr> <td>Dense</td> <td>31 - 50</td> </tr> <tr> <td>Very Dense</td> <td>> 50</td> </tr> </table>	<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%	<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>Descriptive Term</u>	<u>Portion of Total</u>																														
	trace	0% - 10%																															
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Medium Dense	11 - 30																																
Dense	31 - 50																																
Very Dense	> 50																																
	(little or no fines)	GP	Poorly-graded gravels, gravel sand mixtures, little or no fines																														
	SANDS (more than half of coarse fraction is smaller than No. 4 sieve size)	GRAVEL WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.																													
			GC	Clayey gravels, gravel-sand-clay mixtures.																													
		CLEAN SANDS (little or no fines)	SW	Well-graded sands, gravelly sands, 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.	<p>Fine-grained soils (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 shear strength as indicated.</p> <table border="0"> <tr> <td><u>Consistency of Cohesive soils</u></td> <td><u>SPT N-Value blows per foot</u></td> <td><u>Approximate Undrained Shear Strength (psf)</u></td> <td><u>Field Guidelines</u></td> </tr> <tr> <td>Very Soft</td> <td>WOH, WOR, WOP, <2</td> <td>0 - 250</td> <td>Fist easily Penetrates</td> </tr> <tr> <td>Soft</td> <td>2 - 4</td> <td>250 - 500</td> <td>Thumb easily penetrates</td> </tr> <tr> <td>Medium Stiff</td> <td>5 - 8</td> <td>500 - 1000</td> <td>Thumb penetrates with moderate effort</td> </tr> <tr> <td>Stiff</td> <td>9 - 15</td> <td>1000 - 2000</td> <td>Indented by thumb with great effort</td> </tr> <tr> <td>Very Stiff</td> <td>16 - 30</td> <td>2000 - 4000</td> <td>Indented by thumb with great effort</td> </tr> <tr> <td>Hard</td> <td>>30</td> <td>over 4000</td> <td>Indented by thumbnail with difficulty</td> </tr> </table>	<u>Consistency of Cohesive soils</u>	<u>SPT N-Value blows per foot</u>	<u>Approximate Undrained Shear Strength (psf)</u>	<u>Field Guidelines</u>	Very Soft	WOH, WOR, WOP, <2	0 - 250	Fist easily Penetrates	Soft	2 - 4	250 - 500	Thumb easily penetrates	Medium Stiff	5 - 8	500 - 1000	Thumb penetrates with moderate effort	Stiff	9 - 15	1000 - 2000	Indented by thumb with great effort	Very Stiff	16 - 30	2000 - 4000	Indented by thumb with great effort	Hard	>30	over 4000	Indented by thumbnail with difficulty
		<u>Consistency of Cohesive soils</u>	<u>SPT N-Value blows per foot</u>	<u>Approximate Undrained Shear Strength (psf)</u>		<u>Field Guidelines</u>																											
		Very Soft	WOH, WOR, WOP, <2	0 - 250		Fist easily Penetrates																											
	Soft	2 - 4	250 - 500	Thumb easily penetrates																													
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	Stiff	9 - 15	1000 - 2000	Indented by thumb with great effort																													
Very Stiff	16 - 30	2000 - 4000	Indented by thumb with great effort																														
Hard	>30	over 4000	Indented by thumbnail with difficulty																														
		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.																														
<p>Desired Soil Observations: (in this order)</p> <p>Color (Munsell color chart) Moisture (dry, damp, moist, wet, saturated) Density/Consistency (from above right hand side) Name (sand, silty sand, clay, etc., including portions - trace, little, etc.) Gradation (well-graded, poorly-graded, uniform, etc.) Plasticity (non-plastic, slightly plastic, moderately plastic, highly plastic) Structure (layering, fractures, cracks, etc.) Bonding (well, moderately, loosely, etc., if applicable) Cementation (weak, moderate, or strong, if applicable, ASTM D 2488) Geologic Origin (till, marine clay, alluvium, etc.) Unified Soil Classification Designation Groundwater level</p>				<p>Rock Quality Designation (RQD):</p> <p>RQD = $\frac{\text{sum of the lengths of intact pieces of core}^* > 100 \text{ mm}}{\text{length of core advance}}$</p> <p>*Minimum NQ rock core (1.88 in. OD of core)</p> <p>Correlation of RQD to Rock Mass Quality</p> <table border="0"> <tr> <td><u>Rock Mass Quality</u></td> <td><u>RQD</u></td> </tr> <tr> <td>Very Poor</td> <td><25%</td> </tr> <tr> <td>Poor</td> <td>26% - 50%</td> </tr> <tr> <td>Fair</td> <td>51% - 75%</td> </tr> <tr> <td>Good</td> <td>76% - 90%</td> </tr> <tr> <td>Excellent</td> <td>91% - 100%</td> </tr> </table> <p>Desired Rock Observations: (in this order)</p> <p>Color (Munsell color chart) Texture (aphanitic, fine-grained, etc.) Lithology (igneous, sedimentary, metamorphic, 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, low angle - 5-35, mod. dipping - 35-55, steep - 55-85, vertical - 85-90) -spacing (very close - <5 cm, close - 5-30 cm, mod. close 30-100 cm, wide - 1-3 m, very wide >3 m) -tightness (tight, open or healed) -infilling (grain size, color, etc.) Formation (Waterville, Ellsworth, Cape Elizabeth, etc.) RQD and correlation to rock mass quality (very poor, poor, etc.) ref: AASHTO Standard Specification for Highway Bridges 17th Ed. Table 4.4.8.1.2A Recovery</p>		<u>Rock Mass Quality</u>	<u>RQD</u>	Very Poor	<25%	Poor	26% - 50%	Fair	51% - 75%	Good	76% - 90%	Excellent	91% - 100%																
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<p>Maine Department of Transportation Geotechnical Section Key to Soil and Rock Descriptions and Terms Field Identification Information</p>				<p>Sample Container Labeling Requirements:</p> <table border="0"> <tr> <td>PIN</td> <td>Blow Counts</td> </tr> <tr> <td>Bridge Name / Town</td> <td>Sample Recovery</td> </tr> <tr> <td>Boring Number</td> <td>Date</td> </tr> <tr> <td>Sample Number</td> <td>Personnel Initials</td> </tr> <tr> <td>Sample Depth</td> <td></td> </tr> </table>		PIN	Blow Counts	Bridge Name / Town	Sample Recovery	Boring Number	Date	Sample Number	Personnel Initials	Sample Depth																			
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Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/19/08-6/19/08	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 984+71, 6.0 Rt.	Casing ID/OD: N/A	Water Level*: None Observed

Hammer Efficiency Factor: 0.633 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

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									-0.30		Grassy surface.	
	1D	24/24	1.00 - 3.00	4/1/3/5	4	4					Red brown, damp, soft, SILT with clay, trace coarse gravel in first 2", plasticity, bonding, (Desiccated Glaciomarine Silt).	G#210707 A-4, CL-ML WC=21.0%
5											Grey and orange brown streaked, moist, stiff, SILT with clay, trace sand. (Desiccated Glaciomarine Silt).	G#210708 A-4, CL-ML WC=16.8% LL=23 PL=18 PI=5
	2D	24/24	5.00 - 7.00	5/6/6/6	12	13						
10									-10.20		(3D/A) 10.0-10.2' bgs. Similar to 2D (Desiccated Claciomarine Silt.)	G#210684 A-6, CL WC=24.7% LL=26 PL=18 PI=8
	3D/AB	24/24	10.00 - 12.00	3/2/3/3	5	5					(3D/B) 10.2-12.0' bgs. Grey, wet, medium stiff, CLAYEY-SILT, trace sand, (Undesecated Glaciomarine Silt).	
15											Dark grey, wet, soft, clayey SILT, trace sand, (Undesecated Glaciomarine Silt).	G#210709 A-6, CL WC=28.8% LL=31 PL=19 PI=12
	4D	24/24	15.00 - 17.00	2/1/2/2	3	3						
20											Silty CLAY, trace sand.	G#210710 A-6, CL WC=32.5% LL=34 PL=23 PI=11
	5D	24/24	20.00 - 22.00	1/2/2/2	4	4						
25												

Remarks:

Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/19/08-6/19/08	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 984+71, 6.0 Rt.	Casing ID/OD: N/A	Water Level*: None Observed
Hammer Efficiency Factor: 0.633	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 = Insitu Vane Shear Test MV = Unsuccessful Insitu 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 = weight of rods WO1P = Weight of one person	S _u = Insitu Field Vane Shear Strength (psf) T _y = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw field SPT N-value Hammer Efficiency Factor = Annual Calibration Value N ₆₀ = SPT N-uncorrected corrected for hammer efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
		S _{u(lab)} = Lab Vane 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					
25	6D	24/24	25.00 - 27.00	2/2/2/1	4	4				Similar to 5D.		
	7D	24/24	27.00 - 29.00					-27.00		Failed 7D spoon refusal at 29.0' bgs., but sampled soil from above 29.0' bgs. : Grey, wet, soft,SAND, some silt, little clay, little gravel (Till) .	G#210711 A-4, CL-ML WC=16.7%	
								-29.00		Bottom of Exploration at 29.00 feet below ground surface. SPOON REFUSAL		
30												
35												
40												
45												
50												

Remarks:

Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/19/08-6/19/08	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 988+26, 4.0 Rt.	Casing ID/OD: N/A	Water Level*: None Observed

Hammer Efficiency Factor: 0.633 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0								HSA	-0.40		PAVEMENT. ————— -0.40	
	1D	24/24	1.00 - 3.00	4/6/6/9	12	13					Yellow-brown and grey, damp, stiff, mottled SILT, trace sand, (Desecated Presumscot).	
5											Orange brown and grey, damp, stiff, silty CLAY, trace sand (Desecated Presumscot).	G#210712 A-6, CL WC=22.6% LL=33 PL=22 PI=11
											Change to softer material at 9.0' bgs.	
10											Grey-brown, moist, medium stiff, silty CLAY, trace sand, (Undesecated Presumscot).	G#210713 A-6, CL WC=29.4% LL=33 PL=22 PI=11
									-12.00		Bottom of Exploration at 12.00 feet below ground surface. NO REFUSAL	
15												
20												
25												

Remarks:

Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/19/08-6/19/08	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 992+26, 7.5 Lt.	Casing ID/OD: N/A	Water Level*: None Observed

Hammer Efficiency Factor: 0.633 **Hammer Type:** Automatic Hydraulic Rope & Cathead
 Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
 MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf)
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value
 MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value
 V = Insitu Vane Shear Test WOR = weight of rods N₆₀ = SPT N-uncorrected corrected for hammer efficiency
 MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
 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								HSA	-0.40	PAVEMENT.		
	1D	24/10	1.00 - 3.00	21/18/15/10	33	35				Grey brown, damp, very dense, well graded sandy fine to medium GRAVEL, trace silt (Fill).	G#210714 A-1-a, GW-GM WC=3.0%	
									-3.60			
5	2D	24/2	5.00 - 7.00	5/7/9/12	16	17				Brown and grey, wet, SILT, little clay, trace fine to coarse sand, (Glaciomarine Clay).		
	3D	24/8	7.00 - 9.00	15/17/18/17	35	37				Clayey SILT, trace sand.	G#210715 A-6, CL WC=21.9%	
10	4D/AB	24/24	10.00 - 12.00	4/5/8/11	13	14				(4D/A) 10.0-10.3' bgs. Grey, wet, stiff, SILT with clay, (Desecated Presumscot). (4D/B) 10.3-12.0' bgs. Brown and grey, mottled, damp, stiff, silty CLAY, trace sand, (Desecated Presumscot).	G#210716 A-6, CL WC=26.8% LL=36 PL=24 PI=12	
									-12.00	Bottom of Exploration at 12.00 feet below ground surface. NO REFUSAL		
15												
20												
25												

Remarks:

Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/19/08-6/19/08	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 996+26, 3.0 Lt.	Casing ID/OD: N/A	Water Level*: None Observed

Hammer Efficiency Factor: 0.633 **Hammer Type:** Automatic Hydraulic Rope & Cathead
 Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
 MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value PI = Plasticity Index
 V = Insitu Vane Shear Test WOR = weight of rods N₆₀ = SPT N-uncorrected corrected for hammer efficiency G = Grain Size Analysis
 MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected C = Consolidation Test

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0									-0.20	PAVEMENT.		
	1D	24/13	1.00 - 3.00	8/14/25/19	39	41				Brown, damp, dense, gravelly fine to very coarse SAND, trace silt, (Fill).	G#210717 A-1-a, SW-SM WC=3.1%	
									-4.00	Change to silt at 4.0' bgs.		
5	2MD	24/0	5.00 - 7.00	6/7/10/11	17	18				Failed spoon attempt, spoon empty, hung up on cobble.		
	3D	24/24	7.00 - 9.00	11/11/18/21	29	31				Grey-brown, damp, very stiff, SILT with clay, some gravel, some sand, similar fragments in seam from 8.7-8.9'. (Fine Till and Marine Sediments).	G#210718 A-6, CL WC=18.1% LL=31 PL=19 PI=12	
									-9.00			
10	4D	24/12	10.00 - 12.00	16/16/30/26	46	49				GRAVEL, some silt, some sand (Medium Gravel Till).	G#210719 A-1-b, SM WC=11.7%	
									-12.00	Bottom of Exploration at 12.00 feet below ground surface. NO REFUSAL		
15												
20												
25												

Remarks:

Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/19/08-6/19/08	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 1000+28, 16.0 Lt.	Casing ID/OD: N/A	Water Level*: None Observed

Hammer Efficiency Factor: 0.633 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0							HSA					
	1D	24/24	1.00 - 3.00	3/6/7/10	13	14					Yellow brown and red brown, damp, stiff, SILT with clay, some gravel, trace sand (Desecated Glaciomarine).	G#210720 A-6, CL WC=22.3% LL=36 PL=22 PI=14
5											silty CLAY, trace sand.	G#210721 A-6, CL WC=24.0% LL=30 PL=20 PI=10
									-7.60			
10	3D	24/16	10.00 - 12.00	20/22/14/15	36	38					Brown, moist, dense, silty SAND, some fine to medium gravel, some silt.	G#210722 A-2-4, SM WC=7.4%
									-12.00		Bottom of Exploration at 12.00 feet below ground surface. NO REFUSAL	
15												
20												
25												

Remarks:

Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/18/08; 11:00-	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 1024+05, 28.0 Rt.	Casing ID/OD: N/A	Water Level*: 3.3' bgs.

Hammer Efficiency Factor: 0.633 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0												
	1D	24/24	1.00 - 3.00	8/10/12/12	22	23					Brown, damp, very stiff, mottled, grey and red-brown spots, clayey SILT, trace sand, (Desacated Presumscot).	G#210691 A-6, CL WC=20.1% LL=29 PL=19 PI=10
5												
	2D	24/21	5.00 - 7.00	7/10/12/13	22	23					Brown, spotted with red-brown, moist, very stiff SILT, some sand, little fine to medium angular gravel, trace clay (Fine Till).	G#210692 A-4, ML WC=11.1% Non-Plastic
10												
	3D	24/16	10.00 - 12.00	6/9/11/7	20	21					Brown, wet, medium dense, fine SAND, some silt, some medium rounded gravel, (Sandy Till).	G#210693 A-2-4, SM WC=10.1%
15												
	4MD	1.2/0	15.00 - 15.10	50(1.2")	---						Cobbles at 14.0' bgs. Failed spoon attempt.	
											Bottom of Exploration at 15.10 feet below ground surface. SPOON REFUSAL	
20												
25												

Remarks:

Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/18/08; 12:30-	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 1028+25, 33.0 Rt.	Casing ID/OD: N/A	Water Level*: None Observed

Hammer Efficiency Factor: 0.633 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0												
	1D	24/13	1.00 - 3.00	6/10/25/25	35	37					Red-brown, grey and yellow brown, moist, mottled, fine SAND, some silt, some fine to medium rounded gravel, one lense of broken slate, (Till).	G#210694 A-2-4, SM WC=11.8%
5												
	2D/AB	24/24	5.00 - 7.00	6/5/7/16	12	13			-5.00 -5.70	(2D/A) 5.0-5.7' bgs. Damp, loose, very coarse quartz SAND with one large wood fragment (lense). (2D/B) 5.7-7.0' bgs. Brown, wet, loose, sandy SILT, little gravel, (Till). Cobbles from 8.0-9.0' bgs.	G#210695 A-4, SM WC=12.7%	
10												
	3D	24/24	10.00 - 12.00	17/22/41/36	63	66			-12.00		Grey brown, moist, hard, well graded sandy SILT, some sand, trace gravel, (Till).	G#210696 A-4, ML WC=9.0% LL=19 PL=16 PI=3
											Bottom of Exploration at 12.00 feet below ground surface. NO REFUSAL	
15												
20												
25												

Remarks:
Several cobbles at surface area.

Driller: Northern Test Boring	Elevation (ft.):	Auger ID/OD: 2.25/5.5"
Operator: Mike/Nick	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: C. Beebe	Rig Type: Diedrich D-50 #283	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 6/18/08; 13:30-	Drilling Method: Hollow Stem Auger	Core Barrel: N/A
Boring Location: 1031+95, 64.0 Rt.	Casing ID/OD: N/A	Water Level*: 6.2' bgs.

Hammer Efficiency Factor: 0.633 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								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							HSA					
	1D	24/21	1.00 - 3.00	5/9/27/15	36	38					Grey and orange brown, mottled, sandy SILT, trace fine rounded gravel, broken rock fragments in bottom of spoon.	G#210697 A-4, ML WC=12.1%
5												
	2D/AB	24/13	5.00 - 7.00	7/16/23/22	39	41			-5.10		(2D/A) 5.0-5.1' bgs. Brown and grey streaked, damp, hard, SILT, some well graded sand. (2D/B) 5.1-7.0' bgs. Brown with red and grey, moist, hard, well graded SAND, some gravel, some silt.	G#210698 A-1-b, SM WC=7.4%
10												
	3D	18/10	10.00 - 11.50	21/25/50(6")	---				-11.50		Brown, wet, very coarse SAND, some gravel, some silt (Till).	G#210699 A-1-b, SM WC=10.4%
											Bottom of Exploration at 11.50 feet below ground surface. SPOON REFUSAL	
15												
20												
25												

Remarks:

Driller: Maine Test Borings	Elevation (ft.): 115.7	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30, HW-300/30
Date Start/Finish: 03/02/2010 - 3/02/2010	Drilling Method: HW Drive 12.4 ft	Core Barrel: --
Boring Location: 1042+00, 8.0 Rt.	Casing ID/OD: HW 4.0 in.	Water Level*: 0.0 ft

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/10	0.00 - 2.00	4/7/6/6	13	13	HW Push			Gray-brown, damp, stiff, silty CLAY, trace fine sand with occasional mottling and blocky texture -MARINE DEPOSIT-(CL)	A-6, CL WC=23.1% LL=33, PL=23 PI=10	
	MU	0/0	3.00 - 3.00							Note: Could not push tube, likely too much sand/gravel.		
5	2D MV	24/21	5.00 - 7.00 5.60 - 6.02	WOH/1/2/3	3	3			111.20	Gray-brown, wet, soft, silty CLAY, trace gravel, trace sand -MARINE DEPOSIT-(CL) Note: Could not push vane.	A-6, CL WC=28.5% LL=32, PL=21 PI=11	
									109.20	Note: Gravel observed in wash water at 6.5 ft. -GLACIAL TILL-		
									106.70			
10	3D	24/13	10.00 - 12.00	8/8/11/22	19	19	21		103.10	Brown-gray, wet, medium dense, silty, medium to fine SAND, little gravel, trace coarse sand -GLACIAL TILL-		
							23		102.90			
							118(5")			Note: Probable top of bedrock based on drill action and drill cuttings in wash water. Advanced roller cone to 12.8 ft to confirm probable bedrock.		
										Bottom of Exploration at 12.80 feet below ground surface.		

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 108.7	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30, HW-300/30
Date Start/Finish: 03/02/2010 - 03/02/2010	Drilling Method: HW Push 17.5 ft	Core Barrel: --
Boring Location: 1019+00, CL	Casing ID/OD: HW 4.0 in.	Water Level*: 1.4 ft

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/17	0.00 - 2.00	10/37/39/17	76	76	HW Push			Grayish-brown, wet, very dense, coarse to fine SAND, little gravel, little silt -FILL-(SW-SM)	G#237028 A-1-b, SW-SM WC=10.9%	
5	2D	24/12	5.00 - 7.00	16/11/12/10	23	23	Open Hole	103.70		Grayish-brown, wet, medium dense, medium to fine SAND, some silt, little gravel, trace coarse sand -MARINE DEPOSIT-		
								100.70		Note: Wash water turned gray at approximately 8.0 ft.		
10	3D	24/10	10.00 - 12.00	6/5/4/6	9	9				Gray, wet, loose, silty, medium to fine SAND, little gravel, trace coarse sand -GLACIAL TILL-		
15	4D	24/10	15.00 - 17.00	8/17/17/35	34	34				Gray, wet, dense, silty, coarse to fine SAND, little gravel -GLACIAL TILL-		
								90.90		Note: Probable top of bedrock based on drill action at 17.8 ft. Advanced roller cone to 18.1 ft to confirm probable bedrock.		
								90.60		Bottom of Exploration at 18.10 feet below ground surface.		
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 129.1	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/03/2010 - 03/03/2010	Drilling Method: HSA to 17.0 ft	Core Barrel: --
Boring Location: 1039+00, 25.0 Lt.	Casing ID/OD: HSA 2.5 in.	Water Level*: 16.5 ft

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information							Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows				
0	1D	24/15	0.00 - 2.00	1/1/2/7	3	3	HW Push	128.70		Gray-brown, moist, soft SILT, with organics and wood pieces -TOPSOIL- Light brown, moist, soft, clayey SILT, little fine sand, with rootlets -MARINE DEPOSITS-(ML)	G#237029 A-4, ML WC=21.6%
5	2D	24/24	5.00 - 7.00	10/15/19/21	34	34		124.10			
10	3D	24/24	10.00 - 12.00	7/7/8/8	15	15		117.30		Grayish-brown, moist, stiff, silty CLAY, trace fine sand, with blocky texture and mottling -MARINE DEPOSIT-(CL) Gray, wet, stiff, silty CLAY, with occasional fine sandy silt seams -MARINE DEPOSIT-	A-6, CL WC=25.6% LL=35, PL=22 PI=13
15	4D	24/24	15.00 - 17.00	2/21/28/32	49	49		113.60			
17.00								112.10	Bottom of Exploration at 17.00 feet below ground surface.		

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 128.9	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/03/2010 - 03/03/2010	Drilling Method: HSA to 5.9 ft	Core Barrel: --
Boring Location: 1034+00, 25.0 Lt.	Casing ID/OD: HSA 2.5 in.	Water Level*: 2.5 ft

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/15	0.00 - 2.00	1/1/1/3	2	2	HSA	128.70		-TOPSOIL- Light brown, moist, very soft, clayey SILT, trace medium to fine sand, with rootlets -MARINE DEPOSIT-	WC=36.8%	
5								124.60 124.10 123.00		Note: Possible glacial till or weathered rock based on drill action. Note: Augered through probable weathered rock from 4.8 to 5.9 ft. Auger refusal at 5.9 ft.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 122.0	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/03/2010 - 03/03/2010	Drilling Method: HSA to 17.0 ft	Core Barrel: --
Boring Location: 1013+50, CL	Casing ID/OD: HSA 2.5 in.	Water Level*: 4.5 ft

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = In situ Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf)
U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value
MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value
V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency
MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
PL = Plastic Limit 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	1D	24/20	0.00 - 2.00	9/34/14/9	48	48	HSA	121.40		Brown, wet, dense, coarse to fine SAND, little gravel	G#237033 A-4, SM/SC WC=34.3%
								120.00		Brown, wet, dense, silty, medium to fine SAND, trace coarse sand -MARINE DEPOSIT-(SM/SC)	
5	2D	24/18	5.00 - 7.00	4/11/15/18	26	26		116.00		Gray-brown, wet, stiff, silty CLAY, trace fine sand, with mottling and blocky texture -MARINE DEPOSIT-(CL)	A-6, CL WC=23.6% LL=33, PL=18 PI=15 G#237035 A-4, SM/SC WC=11.1%
								113.50		Grayish-brown, wet, dense, silty, medium to fine SAND, trace coarse sand and gravel -GLACIAL TILL-(SM/SC)	
10	3D	24/24	10.00 - 12.00	5/14/30/23	44	44				Brown, wet, dense, coarse to fine SAND, little gravel and silt -GLACIAL TILL-	
15	4D	24/20	15.00 - 17.00	18/32/29/30	61	61				Brown, wet, very dense, coarse to fine SAND, little gravel and silt -GLACIAL TILL-	
								105.00			
										Bottom of Exploration at 17.00 feet below ground surface.	

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 131.4	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/03/2010 - 03/03/2010	Drilling Method: HSA to 8.2 ft	Core Barrel: --
Boring Location: 1011+50, 25.0 Lt.	Casing ID/OD: HSA 2.5 in.	Water Level*: 1.1 ft

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/18	0.00 - 2.00	WOH/1/1/14	2	2	HSA	130.90		Gray-brown, wet, soft, SILT, with rootlets -TOPSOIL- Brown, wet, very loose, silty, medium to fine SAND, little gravel, trace coarse sand -GLACIAL TILL-(SM/SC)	G#237036 A-4, SM/SC WC=18.6%	
5	2D	10/10	5.00 - 5.83	27/50(6")				125.90		Brown, wet, dense, coarse to fine SAND, some silt, little gravel -GLACIAL TILL-(SM) Note: Probable weathered rock at 5.5 ft.	G#237037 A-2-4, SM WC=13.1%	
								123.20		Note: Augered through probable weathered bedrock from 5.5 to 8.2 ft.		
								122.90		Note: Probable top of competent bedrock at 8.2 ft.		
										Bottom of Exploration at 8.50 feet below ground surface.		

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 145.5	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/03/2010 - 03/03/2010	Drilling Method: HSA to 7.5 ft	Core Barrel: --
Boring Location: 1010+00, 25.0 Rt.	Casing ID/OD: HSA 2.5 in.	Water Level*: 1.7 ft

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	20/18	0.00 - 1.67	1/1/1/5	2	2	HSA	145.10		Dark brown, moist, soft, SILT, with rootlets and organics -TOPSOIL-	G#237038 A-2-4, SM WC=23.8%	
								144.00		Dark brown, damp to wet, very loose, coarse to fine SAND, some silt, little gravel		
										Brown to rusty-brown, wet, loose, coarse to fine SAND, some silt, little gravel -GLACIAL TILL-(SM)		
5	2D	24/18	5.00 - 7.00	8/17/23/24	40	40				Grayish-brown, wet, dense, silty, medium to fine SAND, little gravel, trace coarse sand -GLACIAL TILL-(SM/SC)	G#237039 A-4, SM/SC WC=12.5%	
								138.00		Note: Probable top of bedrock at 7.5 ft based on drill action. Augered through probable bedrock from 7.5 to 8.0 ft.		
								137.50		Bottom of Exploration at 8.00 feet below ground surface.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 136.5	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/03/2010 - 03/03/2010	Drilling Method: HSA to 1.0 ft	Core Barrel: --
Boring Location: 1009+00, 25.0 Lt.	Casing ID/OD: HSA 2.5 in.	Water Level*: NA

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)			
0	1D	12/7	0.00 - 1.00	5/6/50(0")			HSA	136.20 135.50	Dark brown, wet, stiff, SILT, with organics and rootlets -TOPSOIL- -----0.30 Light brown, wet, stiff, sandy SILT Note: Split spoon refusal on probable bedrock at 1.0 ft. -----1.00 Bottom of Exploration at 1.00 feet below ground surface.		
5											
10											
15											
20											
25											

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 136.5	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/04/2010 - 03/04/2010	Drilling Method: HSA to 2.4 ft	Core Barrel: --
Boring Location: 1008+00, 25.0 Rt.	Casing ID/OD: HSA 2.5 in.	Water Level*: NA

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	12/12	0.00 - 1.00	1/1/1/4	2	2	HSA	136.20		Brown, moist, soft, SILT, with organic leaves and rootlets -TOPSOIL- Yellow-brown, moist, very loose, silty medium to fine SAND, trace coarse sand (SM/SC) Note: Probable top of bedrock at 2.2 ft based on drill action. Augered through probable bedrock from 2.2 to 2.4 ft. Bottom of Exploration at 2.40 feet below ground surface.	G#237040 A-4, SM/SC WC=49.3%	
								134.30				
								134.10				
5												
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 138.2	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/04/2010 - 03/04/2010	Drilling Method: HSA to 6.0 ft	Core Barrel: --
Boring Location: 1007+00, 25.0 Lt.	Casing ID/OD: HSA 2.5 in.	Water Level*: 1.3 ft

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample attempt V = Insitu Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Insitu 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 = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw field SPT N-value Hammer Efficiency Factor = Annual Calibration Value N ₆₀ = SPT N-uncorrected corrected for hammer efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
		S _{u(lab)} = Lab Vane 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	1D	24/19	0.00 - 2.00	WOH/1/1/3	2	2	HSA	137.90		Dark brown, wet, soft, SILT, with organics, leaves and rootlets -TOPSOIL-	G#237041 A-4, SM/SC WC=30.7%	
										Light grayish-brown, wet, loose, silty, medium to fine SAND, trace gravel and coarse sand -GLACIAL TILL-(SM/SC)		
5	2D	12/14	5.00 - 6.00	19/22/50(0")				132.20		Grayish-brown, wet, dense, silty, medium to fine SAND, little gravel, trace coarse sand -GLACIAL TILL-(SM/SC) Note: Split spoon refusal on probable bedrock at 6.0 ft.	G#237042 A-4, SM/SC WC=12.4%	
										Bottom of Exploration at 6.00 feet below ground surface.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 124.8	Auger ID/OD: --
Operator: R. Leonard	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/04/2010 - 03/04/2010	Drilling Method: HSA to 9.6 ft	Core Barrel: --
Boring Location: 1003+00, 22.0 Lt.	Casing ID/OD: HSA 2.5 in.	Water Level*: 3.4 ft

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/12	0.00 - 2.00	1/1/1/2	2	2	HSA	124.60		-TOPSOIL- Gray-brown, wet, very loose, coarse to fine sandy SILT, trace gravel -GLACIAL TILL-(ML)	G#237043 A-4, ML WC=31.7%	
5	2D	24/19	5.00 - 7.00	18/18/41/83	59	59		119.80			Grayish-brown, wet, dense to very dense, gravelly coarse to fine SAND, some silt -WEATHERED BEDROCK-(SM)	G#237044 A-2-4, SM WC=10.7%
10								116.10 115.20		Note: Competent bedrock encountered at 8.7 ft based on drill action. Augered through bedrock from 8.7 to 9.6 ft.		
										Bottom of Exploration at 9.60 feet below ground surface.		

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 129.8	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/13/2010 - 05/13/2010	Drilling Method: HSA to 12.0 ft	Core Barrel: --
Boring Location: 1044+21, 14.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/14	0.00 - 2.00	1/1/2/3	3	3	HSA		127.80	Yellow-brown, moist, soft, SILT, little medium to fine sand, contains rootlets and wood fragments -MARINE DEPOSIT-(ML)	G#237001 A-4, ML WC=36%	
										Note: Gravel indicated by drill action.		
5	2D	24/*	5.00 - 7.00	7/9/12/16	21	21			124.30	Yellow-brown, moist, medium dense, poorly graded SAND, contains wood fragments -MARINE DEPOSIT-	A-4, CL WC=20.8% LL=30, PL=22 PI=8	
										Olive, damp, very stiff, silty CLAY, trace sand, mottled -MARINE DEPOSIT-(CL)		
10	3D	24/24	10.00 - 12.00	3/4/5/5	9	9			117.80	Olive, damp, stiff, silty CLAY, trace sand, mottled, contains organics -MARINE DEPOSIT-		
										Bottom of Exploration at 12.00 feet below ground surface.		
15												
20												
25												

Remarks:

- Hammer consisted of rope and cathead and safety hammer.
- *Sample recovery not recorded.

Driller: Maine Test Borings	Elevation (ft.): 133.9	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/13/2010 - 05/13/2010	Drilling Method: HSA to 13.6 ft	Core Barrel: --
Boring Location: 1045+96, 25.0 Rt.	Casing ID/OD: --	Water Level*: 3.0 ft

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/22	0.00 - 2.00	1/2/2/6	4	4	HSA	133.40		Dark brown, damp, loose, well graded SAND with rootlets -TOPSOIL-	G#237004 A-4, ML WC=20.4%	
										Light brown grading to olive, moist to wet, SILT, little gravel, trace coarse to fine sand, mottled, contains organic matter -MARINE DEPOSIT-(ML)		
5	2D	24/22	5.00 - 7.00	5/7/7/12	14	14		128.90		Brown, damp, stiff, silty CLAY, mottled, contains organics -MARINE DEPOSIT-(CL)	A-6, CL WC=23.7% LL=38, PL=20 PI=18	
10	3D	24/21	10.00 - 12.00	21/30/20/30	50	50		123.40		Brown, damp, stiff, silty CLAY with sand seams, mottled, contains organics -MARINE DEPOSIT-		
								120.30		Brown, wet, very dense, well graded GRAVEL, little medium to fine sand, trace silt -GLACIAL TILL- Note: Gravel in spoon tip.		
										Bottom of Exploration at 13.60 feet below ground surface.		


Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 140.2	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/14/2010 - 05/14/2010	Drilling Method: HSA to 1.3 ft	Core Barrel: --
Boring Location: 1078+00, 26.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)			
0	1D	9/3	0.00 - 0.75	2/50(0.25")			HSA	140.00 139.45 138.90	 <p>-TOPSOIL-</p> <p>Brown, moist, very dense, poorly graded SAND, contains rootlets</p> <p>Top of Bedrock Note: Augered to 1.3 ft.</p> <p>Bottom of Exploration at 1.30 feet below ground surface.</p>		
5											
10											
15											
20											
25											

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 140.7	Auger ID/OD: --
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/17/2010 - 03/17/2010	Drilling Method: NW to 8.5	Core Barrel: NQ - 2.0 in. ID
Boring Location: 1046+94, 26.0 Lt.	Casing ID/OD: NW - 3.0 in. ID	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information							Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows				
0	1D	24/3	0.00 - 2.00	1/2/2/5	4	4	NW*	140.50		-TOPSOIL- Brown, dry, loose, poorly graded SAND -ALLUVIAL DEPOSIT- Note: Gravel in tip.	
5	2D	24/19	5.00 - 7.00	9/10/16/21	26	26		137.20		Brown, damp, medium dense, fine SAND, some silt, little medium sand, trace gravel -GLACIAL TILL-(SM)	
	R1	60/57	8.50 - 13.50	RQD = 87%				132.20		Note: Probable top of rock based on drill action. Top of Bedrock at El. 132.2 R1: Dark gray, fine-grained to aphanitic SCHIST. Hard, slightly weathered, joints horizontal to low angle, close to moderately close, open. High angle foliation, quartz veins parallel to foliation. Rock Mass Quality=Good Recovery 97% R1 Core Times (min:sec): 8.5-9.5'(6:00), 9.5-10.5'(4:00), 10.5-11.5'(4:00), 11.5-12.5'(3:00), 12.5-13.5'(3:00) R2: Gray, fine-grained to aphanitic SCHIST. Hard, slightly to moderately weathered, joints horizontal to low angle, close, open. Secondary continuous vertical joint. Frequent quartz veins parallel to high angle foliation. Rock Mass Quality=Good Recovery=100% R2 Core Times (min:sec): 13.5-14.5'(4:00), 14.5-15.5'(5:00), 15.5-16.5'(5:00), 16.5-17.5'(5:00), 17.5-18.5'(4:00)	
10											
15	R2	60/60	13.50 - 18.50	RQD = 83%							
20								122.20			Bottom of Exploration at 18.50 feet below ground surface.
25											

Remarks:

- Hammer consisted of rope and cathead and safety hammer.
- *Casing blows not recorded

Driller: Maine Test Borings	Elevation (ft.): 137.7	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/14/2010 - 05/14/2010	Drilling Method: HSA to 12.0 ft	Core Barrel: --
Boring Location: 1050+96, 4.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

Definitions: R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
D = Split Spoon Sample SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
MD = Unsuccessful Split Spoon Sample attempt HSA = Hollow Stem Auger q_p = Unconfined Compressive Strength (ksf)
U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw field SPT N-value
MU = Unsuccessful Thin Wall Tube Sample attempt WOH = weight of 140lb. hammer Hammer Efficiency Factor = Annual Calibration Value
V = Insitu Vane Shear Test, PP = Pocket Penetrometer WOR/C = weight of rods or casing N₆₀ = SPT N-uncorrected corrected for hammer efficiency
MV = Unsuccessful Insitu Vane Shear Test attempt WO1P = Weight of one person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
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	1D	24/14	0.00 - 2.00	1/1/2/6	3	3	HSA	137.40		-TOPSOIL- Brown, grading to gray-brown, damp, soft, silty CLAY, little sand -MARINE DEPOSIT-(CL)	A-4, CL WC=31.6% LL=30, PL=20 PI=10	
5	2D	24/24	5.00 - 7.00	4/6/7/9	13	13				Brown, moist, stiff, silty CLAY, trace sand -MARINE DEPOSIT-		
10	3D	24/24	10.00 - 12.00	2/4/15/30	19	19		126.20 125.70		Brown, wet, very stiff, silty CLAY, trace gravel -MARINE DEPOSIT- Brown, damp, medium dense, well graded SAND, some gravel -GLACIAL TILL-		
15										Bottom of Exploration at 12.00 feet below ground surface.		
20												
25												

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 145.0	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/14/2010 - 05/14/2010	Drilling Method: HSA to 12.0 ft	Core Barrel: --
Boring Location: 1052+70, CL	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/16	0.00 - 2.00	1/1/1/2	2	2	HSA			Light brown, moist, loose, poorly graded SAND (SP), trace silt, contains rootlets -MARINE DEPOSIT-		
								142.00				
5	2D	24/24	5.00 - 7.00	5/7/10/13	17	17				Gray-brown, damp, stiff, silty CLAY, mottled, contains organics -MARINE DEPOSIT-		
								136.50				
10	3D	24/15	10.00 - 12.00	7/15/14/13	29	29				Brown, moist, medium dense, well graded SAND, some gravel -GLACIAL TILL-		
								133.00				
										Bottom of Exploration at 12.00 feet below ground surface.		
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 177.4	Auger ID/OD: --
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/17/2010 - 03/17/2010	Drilling Method: NW to 6.6 ft	Core Barrel: NQ - 2.0 in. ID
Boring Location: 1059+57, 24.0 Lt.	Casing ID/OD: NW - 3.0 in. ID	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/12	0.00 - 2.00	1/5/1/8	6	6	NW*	176.90		-TOPSOIL- Brown, damp, loose, poorly graded SAND, trace gravel, trace silt -GLACIAL TILL-		
5	2D	18/12	5.00 - 6.50	52/62/37	99	99		172.40		Brown, dry, hard, silty GRAVEL, trace fine to coarse sand -GLACIAL TILL-(GM)	G#237009 A-4, GM WC=10.1%	
	R1	60/50	6.90 - 11.90	RQD = 37%				171.40		Top of Bedrock at El. 171.4 R1: Gray-green, fine-grained aphanitic GRANOFELS. Hard to very hard, slightly to moderately weathered. Joints low angle to moderately dipping, close, open. Highly fractured, moderately weathered zones from approximately 6.9 to 8.0 ft and 9.4 to 12.0 ft.		
10								167.70		R1: Dark gray, fine-grained aphanitic SCHIST. Moderately hard, moderately to severely weathered. Joints low angle and steeply dipping, close, open, silt infilling on some joint surfaces. Rock Mass Quality=Poor Recovery 83% R1 Core Times (min:sec): 6.9-7.9'(4:00), 7.9-8.9'(3:00), 8.9-9.9'(3:00), 9.9-10.9'(3:00), 10.9-11.9'(3:00), 11.9-12.9'(3:00) R2: Dark gray, fine-grained aphanitic SCHIST. Moderately hard, moderate to moderately severely weathered. Joints low angle to moderately dipping, one steep secondary joint. Frequent high angle quartz veins parallel to foliation. Rock Mass Quality=Fair Recovery=100% R2 Core Times (min:sec): 11.9-12.9'(3:00), 12.9-13.9'(3:00), 13.9-14.9'(3:00)		
15	R2	36/36	11.90 - 14.90	RQD = 75%				162.50				
20												
25												

Remarks:

- Hammer consisted of rope and cathead and safety hammer.
- *Casing blows not recorded.

Driller: Maine Test Borings	Elevation (ft.): 187.3	Auger ID/OD: --
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/18/2010 - 03/18/2010	Drilling Method: NW to 1.5	Core Barrel: NQ - 2.0 in. ID
Boring Location: 1061+00, 21.0 Lt.	Casing ID/OD: NW - 3.0 in. ID	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	18/3	0.00 - 1.50	1/3/50(4")			NW*	187.00		-TOPSOIL- Brown, moist, very dense, poorly graded SAND, some gravel		
	R1	54/41	1.50 - 6.00	RQD = 52%				185.80		Top of Bedrock at El. 185.8 R1: Gray-green, fine-grained to aphanitic SCHIST grading to GRANOFELS. Very hard, slightly to moderately weathered. Joints moderate to steeply dipping, close, tight to open. Rock Mass Quality=Fair, Recovery=76% R1 Core Times (min:sec): 1.5-2.5'(3:00), 2.5- 3.5'(3:00), 3.5-4.5'(3:00), 4.5-5.5'(5:00), 5.5-6.0'(3:00)		
5											Note: Likely recovered 5 in. of core from R1 in R2. R2: Gray-green, fine-grained to aphanitic GRANOFELS. Very hard, slightly weathered. Joints moderately to steeply dipping, close to moderately close, tight to open. Rock Mass Quality=Good, Recovery=100% R2 Core Times (min:sec): 6.0-7.0'(5:00), 7.0-8.0'(3:00), 8.0-9.0'(3:00), 9.0-10.0'(3:00)	
	R2	48/53	6.00 - 10.00	RQD = 83%								
10											R3: Gray-green, fine-grained to aphanitic GRANOFELS. Very hard, slightly weathered, joints moderately to steeply dipping, close to moderately close, tight to open. Rock Mass Quality=Good, Recovery=100% 10.0-11.0'(3:00), 11.0-12.0'(3:00), 12.0-13.0'(3:00), 13.0-14.0'(3:00), 14.0-14.8'(2:00)	
	R3	58/58	10.00 - 14.83	RQD = 88%								
15										R4: Green-gray, fine-grained to aphanitic SCHIST. Moderately hard to hard, fresh to slightly weathered. Joints low angle and steeply dipping, close to moderately close, tight to open. Slight silt coating on some joint surfaces. Moderate to steeply dipping foliation. Rock Mass Quality=Good, Recovery=98% R4 Core Times (min:sec): 14.8-15.8'(2:00), 15.8-16.8'(2:00), 16.8-17.8'(2:00), 17.8-18.8'(2:00), 18.8-19.8'(2:00)		
	R4	60/59	14.80 - 19.80	RQD = 88%								
20										R5: Green-gray grading to green (chlorite hydrothermal alteration), fine-grained to aphanitic SCHIST. Hard, fresh to slightly weathered. Joints moderate to steeply dipping, close to moderately close, tight to open. Rock Mass Quality=Good, Recovery=100% R5 Core Times (min:sec): 19.8-20.8'(3:00), 20.8-21.8'(3:00), 21.8-22.8'(5:00), 22.8-23.8'(5:00), 23.8-24.8'(5:00)		
	R5	60/60	19.80 - 24.80	RQD = 77%								
25								162.50				

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.
3. *Casing blows not recorded.

Driller: Maine Test Borings	Elevation (ft.): 179.8	Auger ID/OD: --
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 03/18/2010 - 03/19/2010	Drilling Method: NW to 3.8 ft	Core Barrel: NQ - 2.0 in. ID
Boring Location: 1062+50, 24.0 Rt.	Casing ID/OD: NW - 3.0 in. ID	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/8	0.00 - 2.00	1/2/3/9	5	5	NW*	179.30		-TOPSOIL-		
								178.30		Gray, damp, loose, poorly graded SAND, contains rootlets		
								176.00		Gray, dry, loose, GRAVEL, some sand		
5	R1	60/60	4.10 - 9.10	RQD = 93%						Top of Bedrock at El. 176.0		
										R1: Gray-green, fine-grained to aphanitic SCHIST. Hard, fresh to slightly weathered. Joints low angle to moderately dipping, close to moderately close, tight to open. Rock Mass Quality=Excellent Recovery=100% R1 Core Times (min:sec): 4.1-5.1'(5:00), 5.1-6.1'(3:00), 6.1-7.1'(3:00), 7.1-8.1'(4:00), 8.1-9.1'(3:00)		
10	R2	60/59	9.10 - 14.10	RQD = 73%						R2: Gray-green grading to purple-green, fine-grained to aphanitic SCHIST. Hard, slightly to moderately weathered, weathering increasing with depth. Joints low angle to moderately dipping, very close to close, open. Secondary steeply dipping joints. Rock Mass Quality=Fair Recovery=98% R2 Core Times (min:sec): 9.1-10.1'(4:00), 10.1-11.1'(3:00), 11.1-12.1'(4:00), 12.1-13.1'(4:00), 13.1-14.1'(3:00)		
								165.70				
15										Bottom of Exploration at 14.10 feet below ground surface.		
20												
25												

Remarks:

- Hammer consisted of rope and cathead and safety hammer.
- *Casing blows not recorded.

Driller: Maine Test Borings	Elevation (ft.): 177.9	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: HSA to 0.8 ft	Core Barrel: --
Boring Location: 1062+42, 25.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	10/7	0.00 - 0.83	4/50(4")			HSA	177.60 177.10		-TOPSOIL- Gray, damp, dense, well graded SAND, some gravel Note: Auger refusal at 0.8 ft.		
5												
10												
15												
20												
25												

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 173.4	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: HSA to 2.4 ft	Core Barrel: --
Boring Location: 1063+00, 22.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/12	0.00 - 2.00	1/1/2/6	3	3	HSA	173.10		-TOPSOIL- Yellow-brown, moist, soft, SILT, trace sand, little gravel -MARINE DEPOSIT- Probable bedrock at 2.2 ft based on drill action. Note: Auger refusal at 2.4 ft. Bottom of Exploration at 2.40 feet below ground surface.		
								171.20				
								171.00				
5												
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 174.8	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: SSA to 1.0 ft	Core Barrel: --
Boring Location: 1063+00, 22.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	12/5	0.00 - 1.00	1/50(6")			SSA	174.40 173.80		-TOPSOIL- Brown, damp, very dense, poorly graded SAND, little silt Note: Auger refusal on probable bedrock at 1.0 ft. Bottom of Exploration at 1.00 feet below ground surface.		
5												
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 182.3	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: SSA to 0.5 ft	Core Barrel: --
Boring Location: 1062+03, 28.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)			
0	1D	4/2	0.00 - 0.33	25(4")			SSA	182.10 181.80	TOPSOIL- Brown, damp, medium dense, poorly graded SAND, trace silt Note: Auger refusal on probable bedrock at 0.5 ft. Bottom of Exploration at 0.50 feet below ground surface.		
5											
10											
15											
20											
25											

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 181.9	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: SSA to 1.3 ft	Core Barrel: --
Boring Location: 1061+85, 19.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	16/7	0.00 - 1.33	2/19/25(4")			SSA	181.40		-TOPSOIL-		
								180.60		Gray, damp, dense, well graded SAND		
										Note: Auger refusal on probable bedrock at 1.3 ft.		
										Bottom of Exploration at 1.30 feet below ground surface.		
5												
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 184.9	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: SSA to 1.0 ft	Core Barrel: --
Boring Location: 1061+53, 24.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0				No spoon driven			SSA	184.60				
								183.90				
5												
10												
15												
20												
25												

Remarks:

- Hammer consisted of rope and cathead and safety hammer.
- Samle description based on soil sample collected from auger cuttings. Actual soil types may vary from those shown.

Driller: Maine Test Borings	Elevation (ft.): 180.5	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: SSA to 1.0 ft	Core Barrel: --
Boring Location: 1061+47, 25.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	10/2	0.00 - 0.83	1/25(4")			SSA	179.50		-TOPSOIL- Note: Auger refusal on probable bedrock at 1.0 ft. Bottom of Exploration at 1.00 feet below ground surface.		
5												
10												
15												
20												
25												

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 182.0	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: SSA to 2.1 ft	Core Barrel: --
Boring Location: 1060+97, 29.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample attempt V = Insitu Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Insitu 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 = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw field SPT N-value Hammer Efficiency Factor = Annual Calibration Value N ₆₀ = SPT N-uncorrected corrected for hammer efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected
		S _{u(lab)} = Lab Vane 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	1D	24/3	0.00 - 2.00	1/2/3/7	5	5	SSA	181.00		-TOPSOIL-		
								180.00		Brown, damp to moist, loose, gravelly SAND		
								179.90		Probable bedrock at 2.0 ft based on drill action.		
										Note: Auger refusal at 2.1 ft.		
5										Bottom of Exploration at 2.10 feet below ground surface.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 182.4	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/19/2010 - 05/19/2010	Drilling Method: SSA to 2.8 ft	Core Barrel: --
Boring Location: 1060+50, 29.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/7	0.00 - 2.00	1/2/5/26	7	7	SSA	181.90		-TOPSOIL- Light brown, damp, loose, poorly graded, silty SAND, some gravel		
								180.00				
								179.60			Probable bedrock at 2.4 ft based on drill action. Note: Auger refusal at 2.8 ft.	
											Bottom of Exploration at 2.80 feet below ground surface.	
5												
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 188.6	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/20/2010 - 05/20/2010	Drilling Method: HSA to 2.4 ft	Core Barrel: --
Boring Location: 1060+50, 25.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information									Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)					
0								HSA	188.20		-TOPSOIL- Note: Auger refusal on probable bedrock at 0.4 ft. Encountered schist rock fragments during augering.		
5											-0.40-	Bottom of Exploration at 0.40 feet below ground surface.	
10													
15													
20													
25													


Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 183.9	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/20/2010 - 05/20/2010	Drilling Method: SSA to 2.8 ft	Core Barrel: --
Boring Location: 1060+16, 21.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/9	0.00 - 2.00	1/1/2/11	3	3	SSA	183.60		-TOPSOIL- Orange-brown, damp, very loose, well graded SAND		
								181.90		Probable bedrock at 2.0 ft based on drill action		
								181.10		Note: Auger refusal at 2.8 ft.		
5										Bottom of Exploration at 2.80 feet below ground surface.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 178.8	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/20/2010 - 05/20/2010	Drilling Method: SSA to 8.6 ft	Core Barrel: --
Boring Location: 1059+86, 26.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/7	0.00 - 2.00	1/1/2/3	3	3	SSA	178.50		-TOPSOIL- Light orange-brown, damp, very loose, well graded SAND		
5	2D	24/22	5.00 - 7.00	57/52/49/31	101	101		170.80		Light brown, damp, very dense, well graded SAND, some silt, little gravel (SM)		G#237010 A-2-4, SM WC=7.6%
								170.20		Probable top of weathered rock at 8.0 ft based on drill action. Note: Auger refusal at 8.6 ft		
										Bottom of Exploration at 8.60 feet below ground surface.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 175.0	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/20/2010 - 05/20/2010	Drilling Method: SSA to 4.1 ft	Core Barrel: --
Boring Location: 1059+50, 24.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/4	0.00 - 2.00	1/1/2/2	3	3	SSA	174.70		-TOPSOIL- Light brown, damp, very loose, well graded SAND, trace gravel	-0.30	
								171.60		Probable top of bedrock at 3.4 ft based on drill action. Note: Auger refusal at 4.1 ft.	-3.40	
5								170.90		Bottom of Exploration at 4.10 feet below ground surface.	-4.10	
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 165.3	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/20/2010 - 05/20/2010	Drilling Method: SSA to 11.5 ft	Core Barrel: --
Boring Location: 1058+04, 17.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/14	0.00 - 2.00	1/1/1/9	2	2	SSA	165.00		-TOPSOIL- Light brown, damp, soft, SILT, little medium sand, trace coarse and fine sand, trace gravel -GLACIAL TILL-(ML)	G#237011 A-4, ML WC=22.3% LL=32, PL=28 PI=4	
5	2D	6/6	5.00 - 5.50	50(6")						Dark brown, dry, very dense, well graded SAND, some gravel -GLACIAL TILL-		
10								156.00		Probable top of weathered bedrock at 9.3 ft. based on drill action. Note: Auger refusal at 11.5 ft.		
15								153.80		Bottom of Exploration at 11.50 feet below ground surface.		
20												
25												

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 162.6	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/20/2010 - 05/20/2010	Drilling Method: SSA to 6.9 ft	Core Barrel: --
Boring Location: 1056+96, 21.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/7	0.00 - 2.00	1/1/2/3	3	3	SSA			Brown, wet, soft, SILT, little coarse to medium sand and gravel -MARINE DEPOSIT-(ML)	G#237012 A-4, ML WC=34.8%	
5	2D	14/13	5.00 - 6.17	5/57/50(2")				156.20		Brown, moist, hard, silty CLAY, some sand (CL) Note: Gravel / weathered rock in spoon tip.	A-4/A-6, CL WC=20.9% LL=35, PL=24 PI=11	
								155.70		Probable top of weathered bedrock at 6.4 ft. based on drill action. Note: Auger refusal at 6.9 ft.		
										Bottom of Exploration at 6.90 feet below ground surface.		
10												
15												
20												
25												

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 156.4	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/20/2010 - 05/20/2010	Drilling Method: SSA to 8.7 ft	Core Barrel: --
Boring Location: 1056+05, 22.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/14	0.00 - 2.00	1/1/2/12	3	3	SSA	156.10		-TOPSOIL- Light brown, soft, SILT, trace medium to fine sand, contains organics and rootlets -MARINE DEPOSIT-(ML)	G#237014 A-4, ML WC=32.7% LL=30, PL=25 PI=5	
5	2D	6/4	5.00 - 5.50	50(6")				151.90		Light brown, damp, very dense, poorly graded SAND, some gravel, little silt -GLACIAL TILL-		
10								147.90 147.70		Probable bedrock at 8.5 ft based on drill action. Note: Auger refusal at 8.7 ft.		
										Bottom of Exploration at 8.70 feet below ground surface.		


Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 173.4	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/21/2010 - 05/21/2010	Drilling Method: HSA to 0.8 ft	Core Barrel: --
Boring Location: 1063+44, 23.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	10/3	0.00 - 0.83	20/50(4")			HSA	173.10 172.60		-TOPSOIL- Brown, damp, hard, SILT, little medium to fine sand, trace gravel, rootlets Note: Auger refusal on probable bedrock at 0.8 ft. Bottom of Exploration at 0.80 feet below ground surface.		
5												
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 163.9	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/21/2010 - 05/21/2010	Drilling Method: HSA to 4.4 ft	Core Barrel: --
Boring Location: 1063+95, 24.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/12	0.00 - 2.00	1/1/1/2	2	2	HSA	163.60		-TOPSOIL- Brown, moist, loose, silty, coarse to fine SAND, little gravel, contains rootlets (SM)	G#237015 A-4, SM WC=51.1%	
5								159.60 159.50		Probable bedrock at 4.3 ft based on drill action. Note: Auger refusal at 4.4 ft.		
										Bottom of Exploration at 4.40 feet below ground surface.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 163.6	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/21/2010 - 05/21/2010	Drilling Method: SSA to 8.6 ft	Core Barrel: --
Boring Location: 1064+43, 25.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/12	0.00 - 2.00	1/1/3/9	4	4	SSA	163.30	TOPSOIL-	-TOPSOIL-		
										Brown, dry, loose, poorly graded SAND, little gravel, little silt		
5	2D	24/24	4.00 - 6.00	6/7/8/10	15	15		159.60	MARINE DEPOSIT-(CL)	-MARINE DEPOSIT-(CL)	A-6, CL WC=20.9% LL=28, PL=18, PI=10	
										Gray-brown, moist, stiff, silty CLAY, little sand		
								155.60		Probable glacial till based on drill action.		
								155.00		Note: Auger refusal on probable bedrock at 8.6 ft.		
10										Bottom of Exploration at 8.60 feet below ground surface.		
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 155.6	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/21/2010 - 05/21/2010	Drilling Method: SSA to 5.5 ft	Core Barrel: --
Boring Location: 1066+07, 31.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/14	0.00 - 2.00	1/1/1/2	2	2	SSA	155.30		-TOPSOIL- Light brown, moist, soft, SILT, trace coarse to fine sand, trace gravel -MARINE DEPOSIT-(ML)	G#237018 A-4, ML WC=42.3%	
5	2D	12/7	4.50 - 5.50	10/50(5")				151.10 150.10		Brown, wet, dense, well graded SAND, some gravel -GLACIAL TILL- Note: Auger refusal on probable bedrock at 5.5 ft. Bottom of Exploration at 5.50 feet below ground surface.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 154.9	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/21/2010 - 05/21/2010	Drilling Method: SSA to 4.3 ft	Core Barrel: --
Boring Location: 1066+97, 21.0 Lt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/7	0.00 - 2.00	1/2/2/8	4	4	SSA	154.60		-TOPSOIL- Brown, damp, soft, SILT, some medium to fine sand -GLACIAL TILL-(ML) Note: Advanced auger from approximately 2.0 to 4.3 ft through cobbles.	G#237019 A-4, ML WC=34.5%	
5								150.60		Note: Auger refusal at 4.3 ft on probable bedrock. Bottom of Exploration at 4.30 feet below ground surface.		
10												
15												
20												
25												


Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 140.1	Auger ID/OD: SSA 3.0 in. OD
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/24/2010 - 05/24/2010	Drilling Method: SSA to 1.5 ft	Core Barrel: --
Boring Location: 1068+00, 26.0 Rt.	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0								SSA ↓	138.60		-TOPSOIL- Note: Auger refusal on probable top of bedrock at 1.5 ft	
5												
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 134.2	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/24/2010 - 05/24/2010	Drilling Method: HSA to 3.3 ft	Core Barrel: --
Boring Location: 1069+50, CL	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/14	0.00 - 2.00	1/1/1/3	2	2	HSA	133.90		-TOPSOIL- Brown, moist, very loose, silty SAND, contains wood fragments and organics -MARINE DEPOSIT- Probable glacial till based on drill action. Note: Auger refusal on probable bedrock at 3.3 ft. Bottom of Exploration at 3.30 feet below ground surface.		
								132.00				
								130.90				
5												
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 112.3	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/24/2010 - 05/24/2010	Drilling Method: HSA to 19.2 ft	Core Barrel: --
Boring Location: 1071+50, CL	Casing ID/OD: --	Water Level*: 2.5

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/18	0.00 - 2.00	1/2/2/2	4	4	HSA	112.10		TOPSOIL- Brown, damp, loose, poorly graded SAND, little silt	G#237020 A-4, SM/SC WC=9.3% LL=22, PL=16 PI=6	
5	2D	24/24	5.00 - 7.00	7/5/4/5	9	9		109.30		Gray, damp, stiff, silty fine to coarse SAND, little fine gravel, trace coarse gravel, trace organics -MARINE DEPOSIT-(SM/SC)		
10	3D	24/24	10.00 - 12.00	6/6/6/6	12	12		99.30		Gray, damp, stiff, silty CLAY, little sand		
15	4D	24/24	15.00 - 17.00	3/5/12/12	17	17		96.30		Brown, wet, medium dense, poorly graded SAND -GLACIAL TILL- Brown, wet, very stiff, SILT, some sand and gravel -GLACIAL TILL- Note: Weathered rock / gravel in spoon tip. Note: Split spoon and auger refusal on probable bedrock at 19.2 ft.		
20								93.10		Bottom of Exploration at 19.20 feet below ground surface.		

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 111.9	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/24/2010 - 05/24/2010	Drilling Method: HSA to 18.8 ft	Core Barrel: --
Boring Location: 1073+00, CL	Casing ID/OD: --	Water Level*: 3.4

Hammer Efficiency Factor: 0.6 **Hammer Type:** Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information							Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows				
0	1D	24/16	0.00 - 2.00	WOH/2/5/5	7	7	HSA	111.80	TOPSOIL-		
										Brown, moist, medium stiff, silty CLAY, trace sand (CL)	G#237021 A-6, CL WC=18.8% LL=28, PL=17 PI=11
5	2D	24/24	5.00 - 7.00	3/3/5/5	8	8		108.90		Gray-brown, damp, stiff, clayey SILT, little sand, contains sand seams, organics, mottled -MARINE DEPOSIT-(ML)	A-4, ML WC=22.4% LL=31, PL=32 PI=NP
10	3D	24/24	10.00 - 12.00	1/6/11/13	17	17		100.90		Brown, moist, very stiff, silty CLAY, little sand, mottled, contains sand seams	
										Brown, wet, medium dense, well graded SAND -GLACIAL TILL-	
										Note: Gravel / weathered rock in spoon tip.	
15	4D	24/22	15.00 - 17.00	8/25/25/21	50	50		93.10		Brown, wet, dense, fine to coarse SAND, some silt, little gravel, grading to poorly graded SAND, trace gravel -GLACIAL TILL-(SM)	G#237023 A-2-4, SM WC=11.3%
										Note: Probable top of bedrock at 18.8 ft based on drill action.	
20										Bottom of Exploration at 18.80 feet below ground surface.	

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 121.2	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/24/2010 - 05/24/2010	Drilling Method: HSA to 7.2 ft	Core Barrel: --
Boring Location: 1074+00, CL	Casing ID/OD: --	Water Level*: Dry

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/16	0.00 - 2.00	1/1/2/5	3	3	HSA	120.90	[Pattern]	-TOPSOIL- Brown, damp to moist, very loose, silty SAND, mottled, with rootlets and organics		
								118.20	[Pattern]			
5	2D	24/15	5.00 - 7.00	4/14/20/20	34	34		115.70	[Pattern]	-MARINE DEPOSIT- Brown, damp, medium stiff, silty CLAY, little sand, contains sand seams		
								114.00	[Pattern]	Brown, moist, medium dense, well graded SAND, some gravel Note: Weathered rock / gravel in tip. Auger refusal on probable bedrock at 7.2 ft		
										Bottom of Exploration at 7.20 feet below ground surface.		
10												
15												
20												
25												

Remarks:

2. Hammer consisted of rope and cathead and safety hammer.

Driller: Maine Test Borings	Elevation (ft.): 136.8	Auger ID/OD: HSA 2.5 in. ID
Operator: B. Enos	Datum: NAD83	Sampler: Split Spoon - 1.375 in. ID
Logged By: M. Foley	Rig Type: Mobile Drill B53 Bombardier	Hammer Wt./Fall: SS-140/30
Date Start/Finish: 05/24/2010 - 05/24/2010	Drilling Method: HSA to 14.1 ft	Core Barrel: --
Boring Location: 1077+00, CL	Casing ID/OD: --	Water Level*: 2.5

Hammer Efficiency Factor: 0.6 Hammer Type: Automatic Hydraulic Rope & Cathead

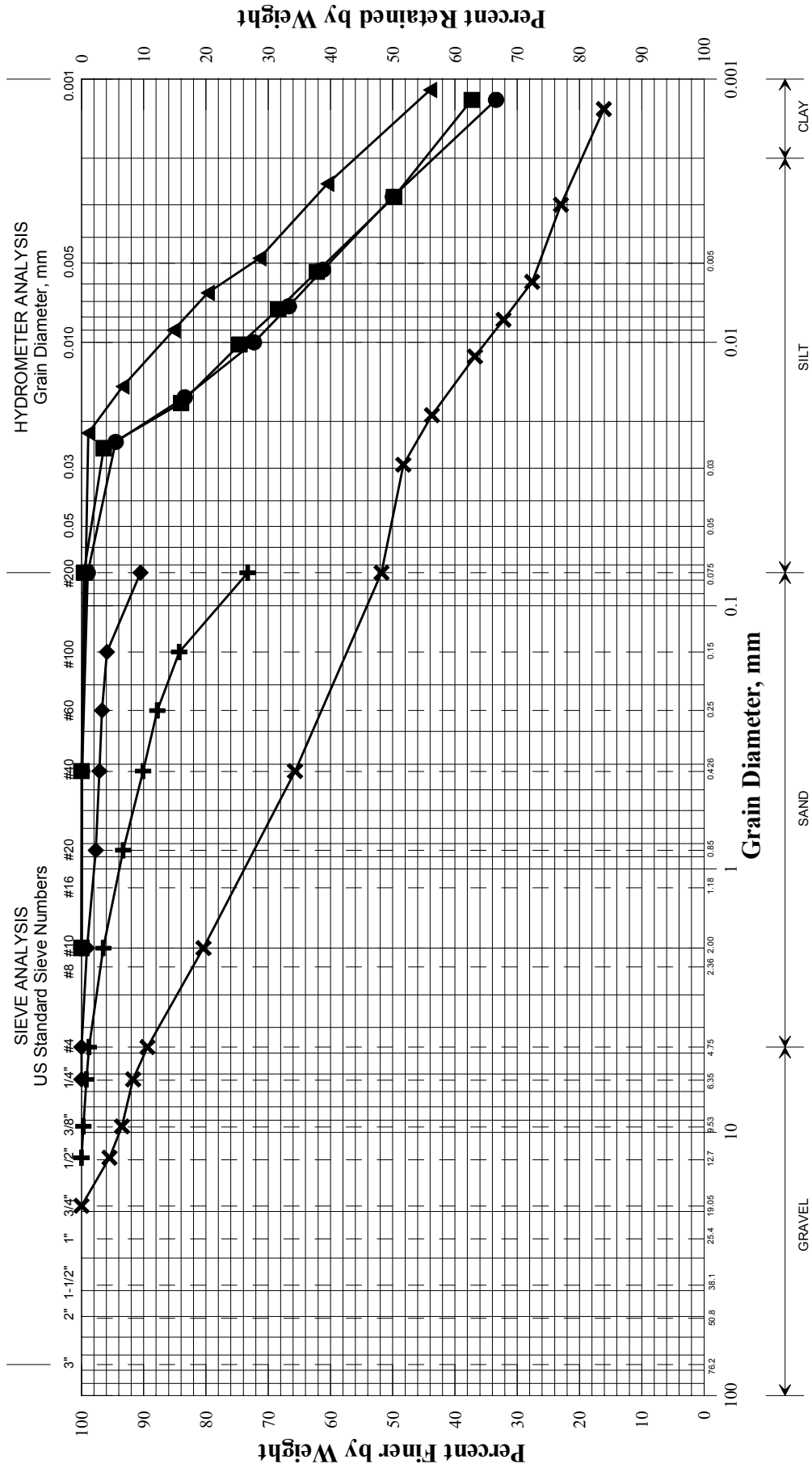
Definitions:
D = Split Spoon Sample R = Rock Core Sample S_u = Insitu Field Vane Shear Strength (psf) S_{u(lab)} = Lab Vane Shear Strength (psf)
MD = Unsuccessful Split Spoon Sample attempt SSA = Solid Stem Auger T_v = Pocket Torvane Shear Strength (psf) WC = water content, percent
U = Thin Wall Tube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

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/13	0.00 - 2.00	1/2/1/2	3	3	HSA	136.60	TOPSOIL	-TOPSOIL- Brown, moist, soft, SILT, trace medium to fine sand, contains rootlets and organics, mottled -MARINE DEPOSIT-(ML)	G#237024 A-4, ML WC=38.7%	
5	2D	24/24	5.00 - 7.00	4/4/6/6	10	10		131.80	CLAY	Brown, damp to dry, stiff, silty CLAY, little sand, mottled, contains organics -MARINE DEPOSIT-(CL)	A-6, CL WC=22.2% LL=30, PL=18 PI=12	
10	3D	24/15	10.00 - 12.00	10/12/16/27	28	28		127.80	SAND	Brown, wet, medium dense, fine to coarse SAND, some silt, trace fine to coarse gravel -GLACIAL TILL-(SM)	G#236938 A-2-4, SM WC=9.2%	
15								123.00 122.70	BEDROCK	Note: Advanced auger into probable bedrock from 13.8 to 14.1 ft. Auger refusal at 14.1 ft. Bottom of Exploration at 14.10 feet below ground surface.		

Remarks:
2. Hammer consisted of rope and cathead and safety hammer.

Appendix D
Lab Test Data
Lab Testing Summary Sheets
Grain Size Curves

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

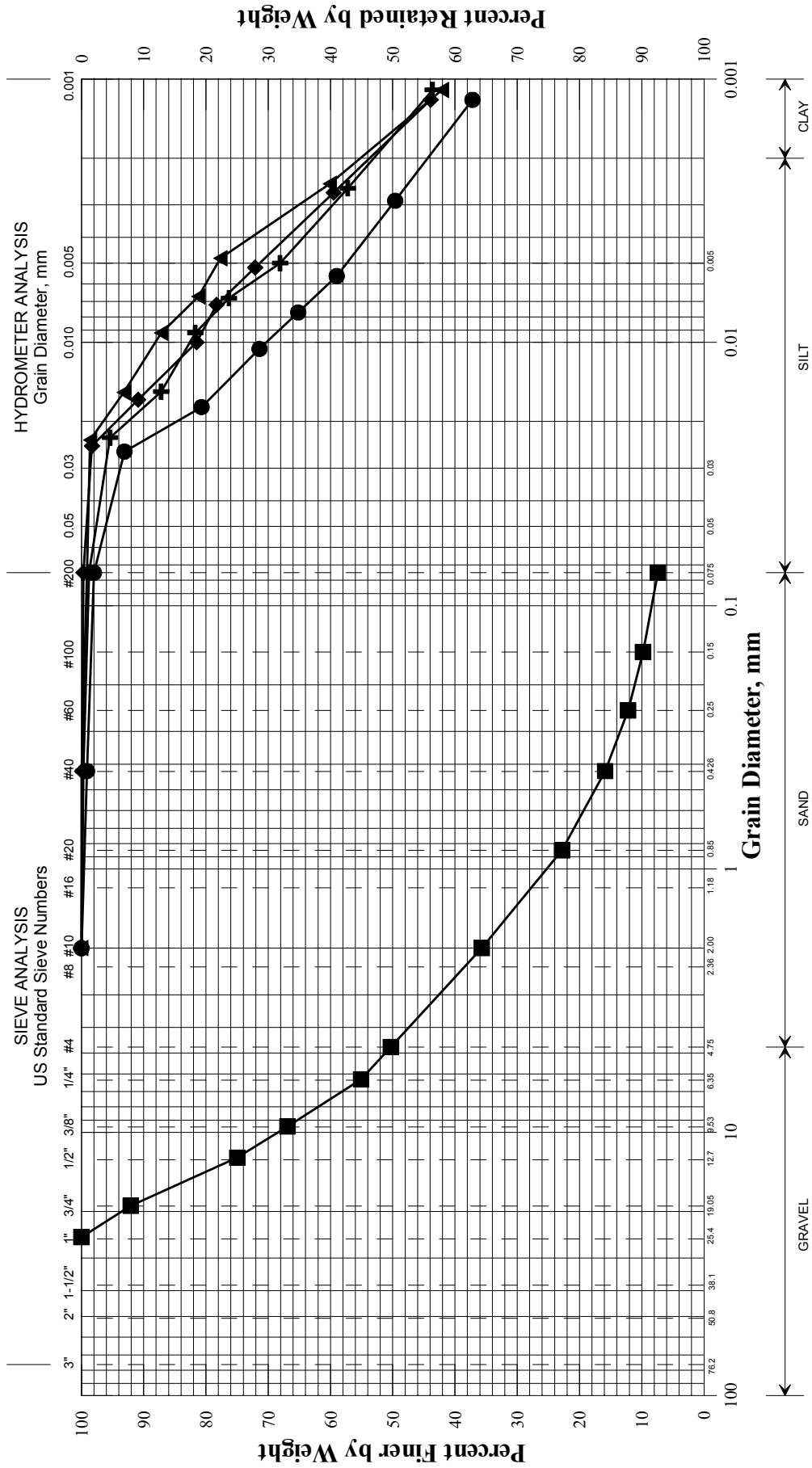


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	984+71	6.0 RT	1.0-3.0	SILT with clay, some sand, trace gravel.	21.0			
◆	984+71	6.0 RT	5.0-7.0	SILT with clay, trace sand.	16.8	23	18	5
■	984+71	6.0 RT	10.2-12.0	Clayey SILT, trace sand.	24.7			
●	984+71	6.0 RT	15.0-17.0	Clayey SILT, trace sand.	28.8			
▲	984+71	6.0 RT	20.0-22.0	Silty CLAY, trace sand.	32.5	34	23	11
×	984+71	6.0 RT	27.0-29.0	SAND, some silt, little clay, little gravel.	16.7			

PIN	010063.10
Town	Ellsworth
Reported by/Date	WHITE, TERRY A 8/13/2008

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

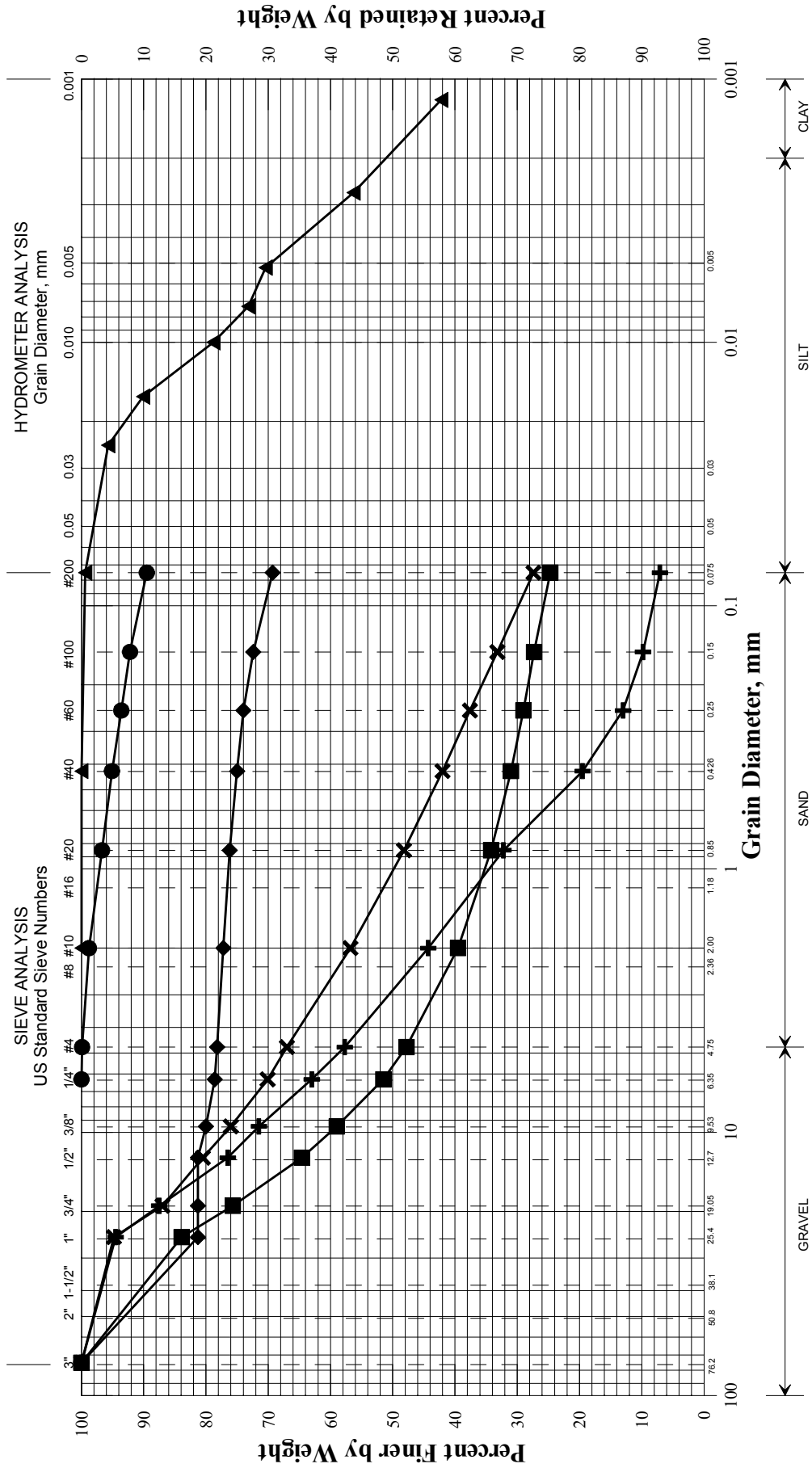


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	988+26	4.0 RT	5.0-7.0	Silty CLAY, trace sand.	22.6	33	22	11
◆	988+26	4.0 RT	10.0-12.0	Silty CLAY, trace sand.	29.4	33	22	11
■	992+26	7.5 LT	1.0-3.0	Sandy GRAVEL, trace silt.	3.0			
●	992+26	7.5 LT	7.0-9.0	Clayey SILT, trace sand.	21.9			
▲	992+26	7.5 LT	10.3-12.0	Silty CLAY, trace sand.	26.8	36	24	12
×								

PIN	010063.10
Town	Ellsworth
Reported by/Date	WHITE, TERRY A 8/13/2008

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

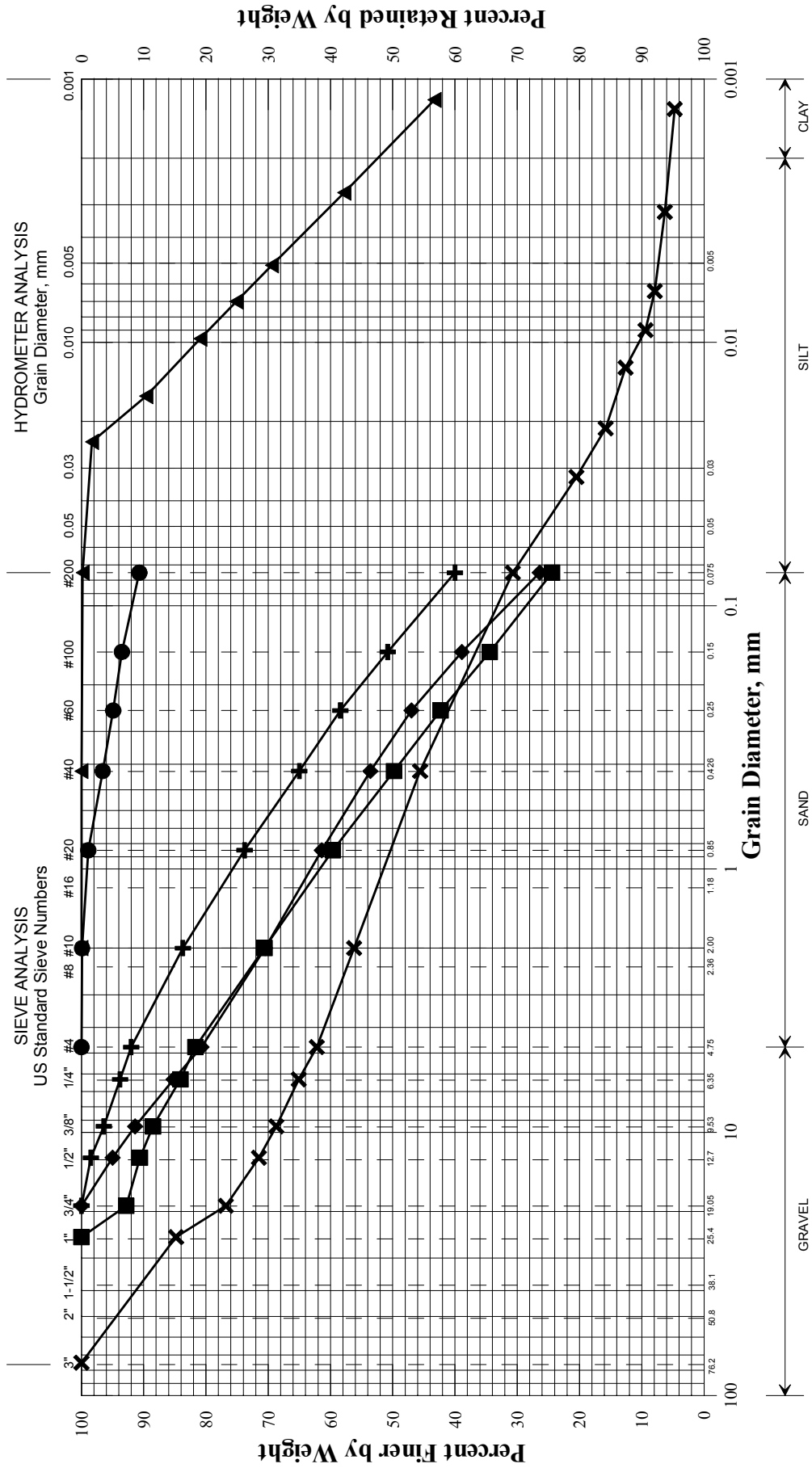


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	996+26	3.0 LT	1.0-3.0	Gravelly SAND, trace silt.	3.1			
◆	996+26	3.0 LT	7.0-9.0	SILT with clay, some gravel, trace sand.	18.1	31	19	12
■	996+26	3.0 LT	10.0-12.0	GRAVEL, some silt, some sand.	11.7			
●	1000+28	16.0 LT	1.0-3.0	SILT with clay, little sand, trace gravel.	22.3	36	22	14
▲	1000+28	16.0 LT	5.0-7.0	Silty CLAY, trace sand.	24.0	30	20	10
×	1000+28	16.0 LT	10.0-12.0	SAND, some gravel, some silt.	7.4			

PIN	010063.10
Town	Ellsworth
Reported by/Date	WHITE, TERRY A. 8/13/2008

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

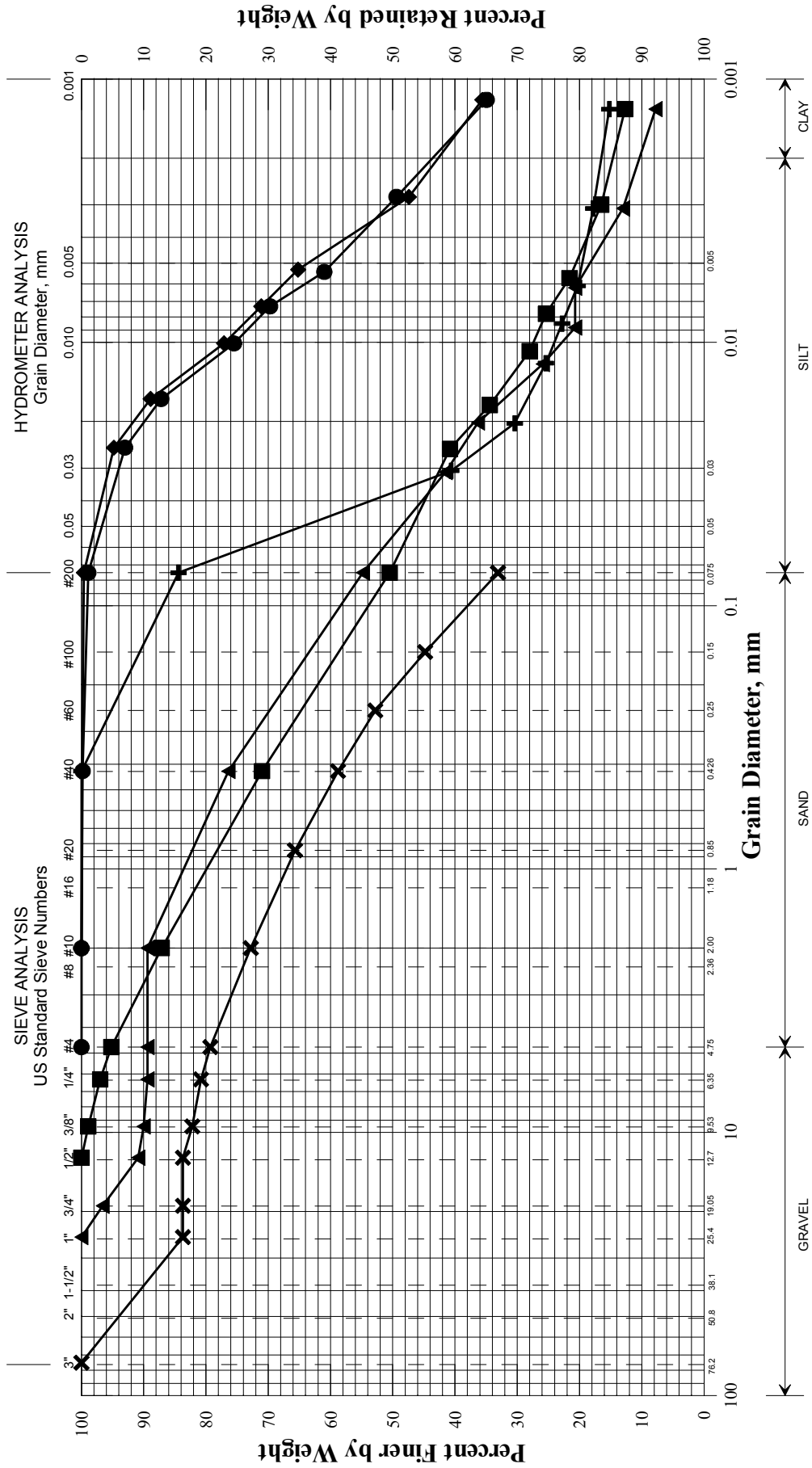


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	1016+27	60.0 RT	1.0-3.0	SILT with clay, trace sand.	21.6	31	20	11
◆	1016+27	60.0 RT	10.0-12.0	Silty CLAY, trace sand.	29.3	32	19	13
●	1016+27	60.0 RT	15.0-17.0	GRAVEL, some sand, some clay, trace clay.	10.0			
▲								
×								

PIN	010063.10
Town	Ellsworth
Reported by/Date	WHITE, TERRY A 8/7/2008

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

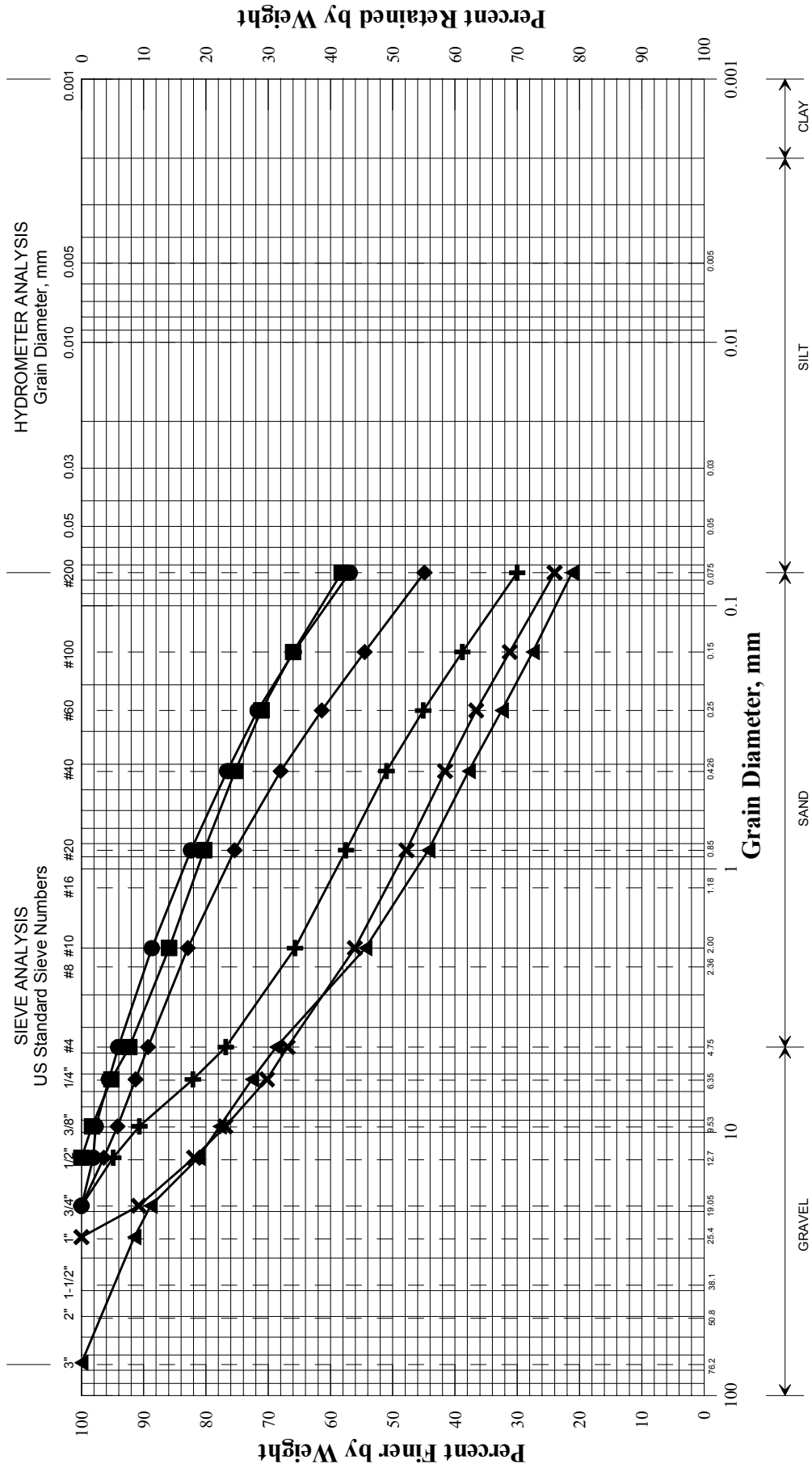


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	1020+24	40.0 RT	1.0-3.0	SILT, little clay, little sand.	29.0	36	22	14
◆	1020+24	40.0 RT	10.0-12.0	Clayey SILT, trace sand.	15.5	29	21	8
■	1020+24	40.0 RT	17.0-17.3	Silty SAND, little clay, trace gravel.	20.1	29	19	NP
●	1024+05	28.0 RT	1.0-3.0	Clayey SILT, trace sand.	11.1	11.1		NP
▲	1024+05	28.0 RT	5.0-7.0	SILT, some sand, little gravel, trace clay.	10.1			NP
×	1024+05	28.0 RT	10.0-12.0	SAND, some silt, some gravel.				

PIN	010063.10
Town	Ellsworth
Reported by/Date	WHITE, TERRY A 8/13/2008

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	1028+25	33.0 RT	1.0-3.0	SAND, some silt, some gravel.	11.8			
◆	1028+25	33.0 RT	5.7-7.0	Sandy SILT, little gravel.	12.7			
●	1028+25	33.0 RT	10.0-12.0	SILT, some sand, trace gravel.	9.0	19	16	3
▲	1031+95	64.0 RT	1.0-3.0	Sandy SILT, trace gravel.	12.1			
×	1031+95	64.0 RT	5.1-7.0	SAND, some gravel, some silt.	7.4			
×	1031+95	64.0 RT	10.0-11.5	SAND, some gravel, some silt.	10.4			

PIN	010063.10
Town	Ellsworth
Reported by/Date	WHITE, TERRY A 7/31/2008

**State of Maine - Department of Transportation
Laboratory Testing Summary Sheet**

Town(s): Ellsworth

Project Number: 10063.10

Boring & Sample Identification Number	Station (Feet)	Offset (Feet)	Depth (Feet)	Reference Number	G.S.D.C. Sheet	W.C. %	L.L.	P.I.	Classification		
									Unified	AASHTO	Frost
HB-ELLS-B201, 1D	1042+00	8.0 Rt.	0.0-2.0	237026	---	23.1	33	10	CL	A-6	IV
HB-ELLS-B201, 2D	1042+00	8.0 Rt.	5.0-7.0	237027	---	28.5	32	11	CL	A-6	IV
HB-ELLS-B202, 1D	1019+00	CL	0.0-2.0	237028	1	10.9			SW-SM	A-1-b	II
HB-ELLS-B204, 1D	1039+00	25.0 Lt.	0.4-2.0	237029	1	21.6			ML	A-4	IV
HB-ELLS-B204, 2D	1039+00	25.0 Lt.	5.0-7.0	237030	---	23.4	34	11	CL	A-6	IV
HB-ELLS-B204, 3DA	1039+00	25.0 Lt.	10.0-11.8	237031	---	25.6	35	13	CL	A-6	III
HB-ELLS-B205, 1D	1034+00	25.0 Lt.	0.0-2.0	237032	---	36.8	-N	P-	---	---	---
HB-ELLS-B206, 1DB	1013+50	CL	0.6-2.0	237033	1	34.3			SM/SC	A-4	IV
HB-ELLS-B206, 2DA	1013+50	CL	5.0-6.0	237034	---	23.6	33	15	CL	A-6	III
HB-ELLS-B206, 2DB	1013+50	CL	6.0-7.0	237035	1	11.1			SM/SC	A-4	IV
HB-ELLS-B207, 1DB	1011+50	25.0 Lt.	0.5-2.0	237036	1	18.6			SM/SC	A-4	IV
HB-ELLS-B207, 2D	1011+50	25.0 Lt.	5.0-5.8	237037	1	13.1			SM	A-2-4	II
HB-ELLS-B208, 1DB	1010+00	25.0 Rt.	0.4-1.5	237038	2	23.8			SM	A-2-4	II
HB-ELLS-B208, 2D	1010+00	25.0 Rt.	5.0-7.0	237039	2	12.5			SM/SC	A-4	IV
HB-ELLS-B210, 1D	1008+00	25.0 Rt.	0.0-1.0	237040	2	49.3			SM/SC	A-4	IV
HB-ELLS-B211, 1D	1007+00	25.0 Lt.	0.0-2.0	237041	2	30.7			SM/SC	A-4	IV
HB-ELLS-B211, 2D	1007+00	25.0 Lt.	5.0-6.0	237042	2	12.4			SM/SC	A-4	IV
HB-ELLS-B212, 1D	1003+00	22.0 Lt.	0.0-2.0	237043	3	31.7			ML	A-4	IV
HB-ELLS-B212, 2D	1003+00	22.0 Lt.	5.0-7.0	237044	3	10.7			SM	A-2-4	II
HB-ELLS-B301, 1D	1044+21	14.0 Rt.	0.0-2.0	237001	3	36.0			ML	A-4	IV
HB-ELLS-B301, 2D	1044+21	14.0 Rt.	5.0-7.0	237002	---	20.8	30	8	CL	A-4	IV
HB-ELLS-B302, 2D	1045+00	24.0 Lt.	5.0-7.0	237003	---	23.5	37	16	CL	A-6	III
HB-ELLS-B303, 1D	1045+96	25.0 Rt.	0.0-2.0	237004	4	20.4			ML	A-4	IV
HB-ELLS-B303, 2D	1045+96	25.0 Rt.	5.0-7.0	237005	---	23.7	38	18	CL	A-6	III
HB-ELLS-B306, 2D	1046+94	26.0 Lt.	5.0-7.0	237006	4	10.9			SM	A-2-4	II
HB-ELLS-B307, 1D	1050+96	4.0 Rt.	0.0-2.0	237007	---	31.6	30	10	CL	A-6	IV
HB-ELLS-B308, 2D	1052+70	CL	5.0-7.0	237008	---	20.7	33	15	CL	A-6	III
HB-ELLS-B309, 2D	1059+57	24.0 Lt.	5.0-6.5	237009	4	10.1			GM	A-4	IV
HB-ELLS-B323, 2D	1059+86	26.0 Rt.	5.0-7.0	237010	4	7.6			SM	A-2-4	II
HB-ELLS-B325, 1D	1058+04	17.0 Lt.	0.0-2.0	237011	4	22.3	32	4	ML	A-4	IV
HB-ELLS-B326, 1D	1056+96	21.0 Rt.	0.0-2.0	237012	5	34.8			ML	A-4	IV
HB-ELLS-B326, 2D	1056+96	21.0 Rt.	5.0-6.2	237013	---	20.9	35	11	CL	A-6	IV
HB-ELLS-B327, 1D	1056+05	22.0 Lt.	0.0-2.0	237014	5	32.7	30	5	ML	A-4	IV
HB-ELLS-B329, 1D	1063+95	24.0 Lt.	0.0-2.0	237015	5	51.1			SM	A-4	IV
HB-ELLS-B330, 2D	1064+43	25.0 Rt.	4.0-6.0	237016	---	20.9	28	10	CL	A-6	IV
HB-ELLS-B331, 2D	1064+97	26.0 Lt.	4.5-6.5	237017	---	22.1	31	9	CL	A-4	IV
HB-ELLS-B332, 1D	1066+07	31.0 Lt.	0.0-2.0	237018	5	42.3			ML	A-4	IV
HB-ELLS-B333, 1D	1066+97	21.0 Lt.	0.0-2.0	237019	5	34.5			ML	A-4	IV
HB-ELLS-B336, 2D	1071+50	CL	5.0-7.0	237020	6	9.3	22	6	CL-ML	A-4	IV
HB-ELLS-B337, 1D	1073+00	CL	0.0-2.0	237021	6	18.8	28	11	CL	A-6	IV
HB-ELLS-B337, 2D	1073+00	CL	5.0-7.0	237022	---	22.4	-N	P-	---	---	---

**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.**

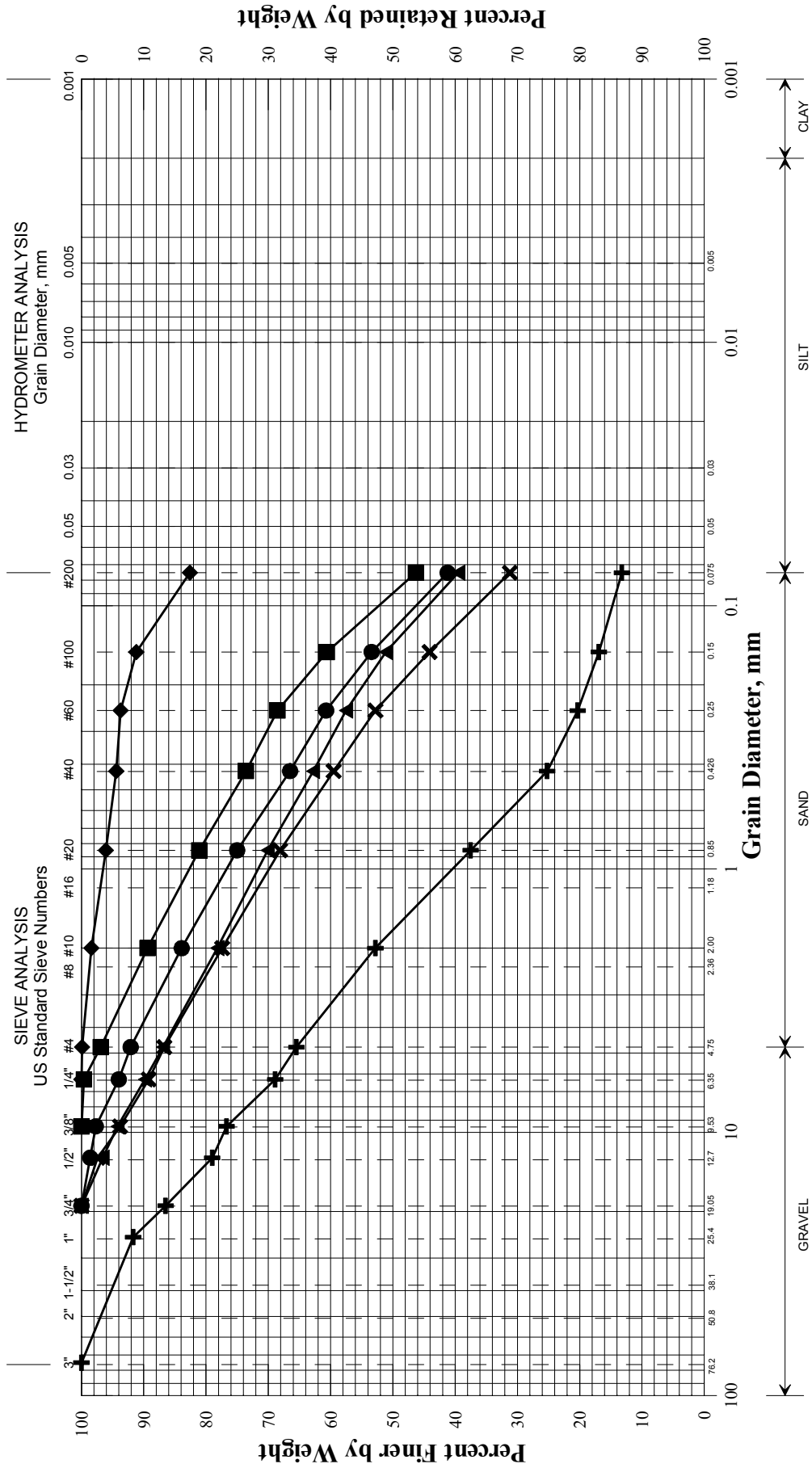
GSDC = Grain Size Distribution Curve as determined by AASHTO T 88-93 (1996) and/or ASTM D 422-63 (Reapproved 1998)

WC = water content as determined by AASHTO T 265-93 and/or ASTM D 2216-98

LL = Liquid limit as determined by AASHTO T 89-96 and/or ASTM D 4318-98

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

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

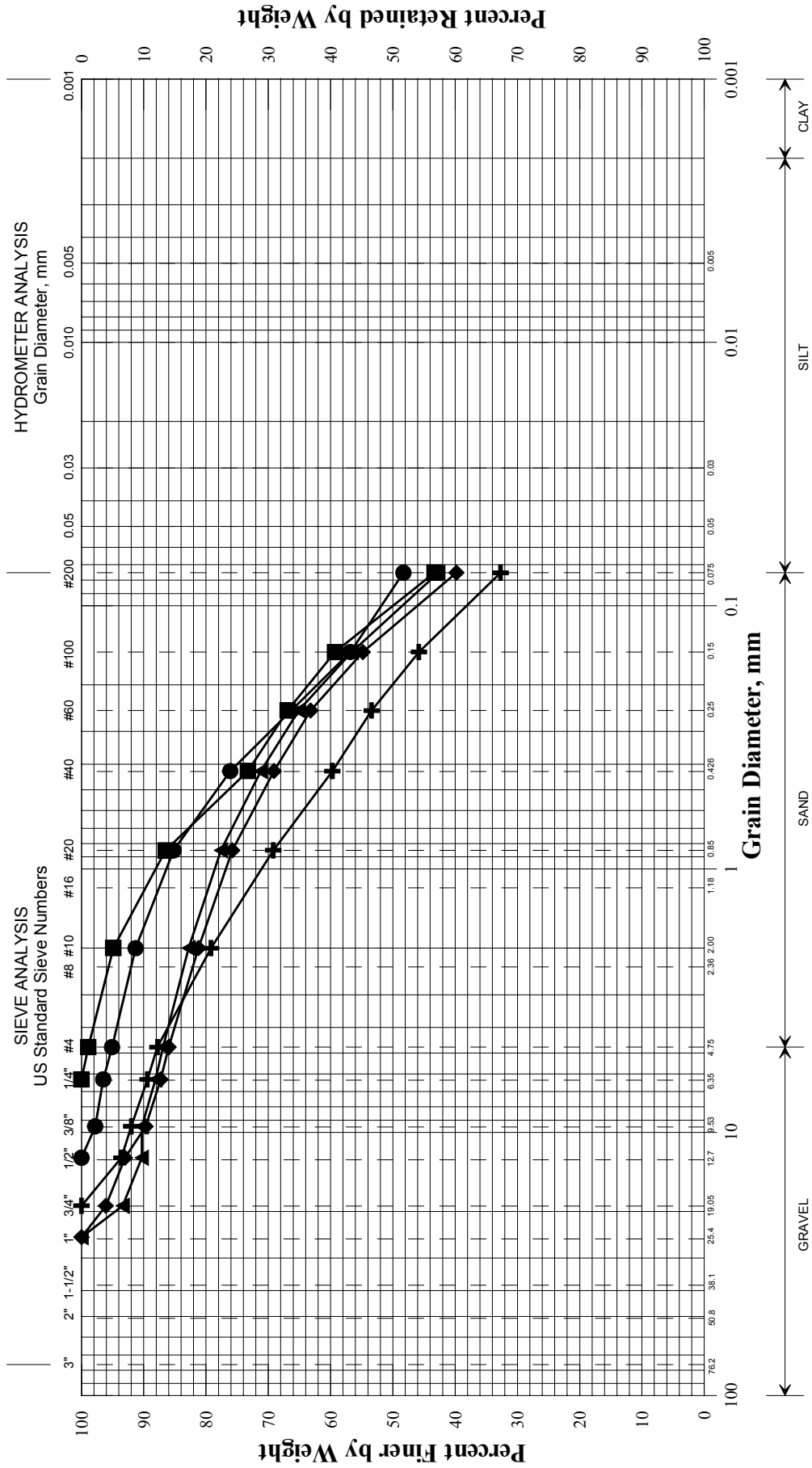


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	1019+00	CL	0.0-2.0	SAND, some gravel, little silt.	10.9			
◆	1039+00	25.0 LT	0.4-2.0	SILT, little sand, trace gravel.	21.6			
■	1013+50	CL	0.6-2.0	Silty SAND, trace gravel.	34.3			
●	1013+50	CL	6.0-7.0	Silty SAND, trace gravel.	11.1			
▲	1011+50	25.0 LT	0.5-2.0	Silty SAND, little gravel.	18.6			
×	1011+50	25.0 LT	5.0-5.8	SAND, some silt, little gravel.	13.1			

010063.10	PIN
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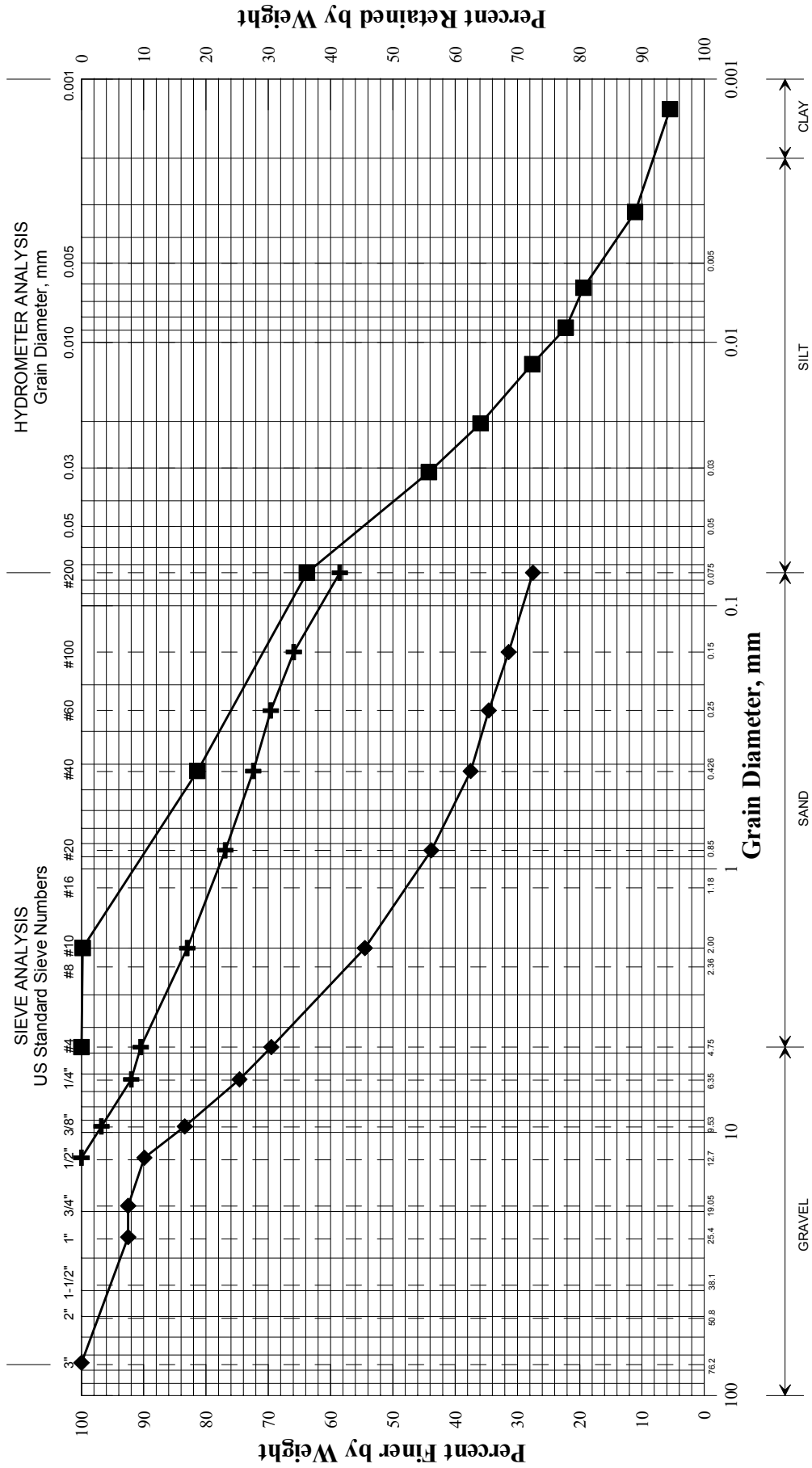


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	1011+00	25.0 RT	0.4-1.5	SAND, some silt, little gravel.	23.8			
◆	1010+00	25.0 RT	5.0-7.0	Silty SAND, little gravel.	12.5			
■	1008+00	25.0 RT	0.0-1.0	Silty SAND, trace gravel.	49.3			
●	1007+00	25.0 LT	0.0-2.0	Sandy SILT, trace gravel.	30.7			
▲	1007+00	25.0 LT	5.0-6.0	Silty SAND, little gravel.	12.4			
×								

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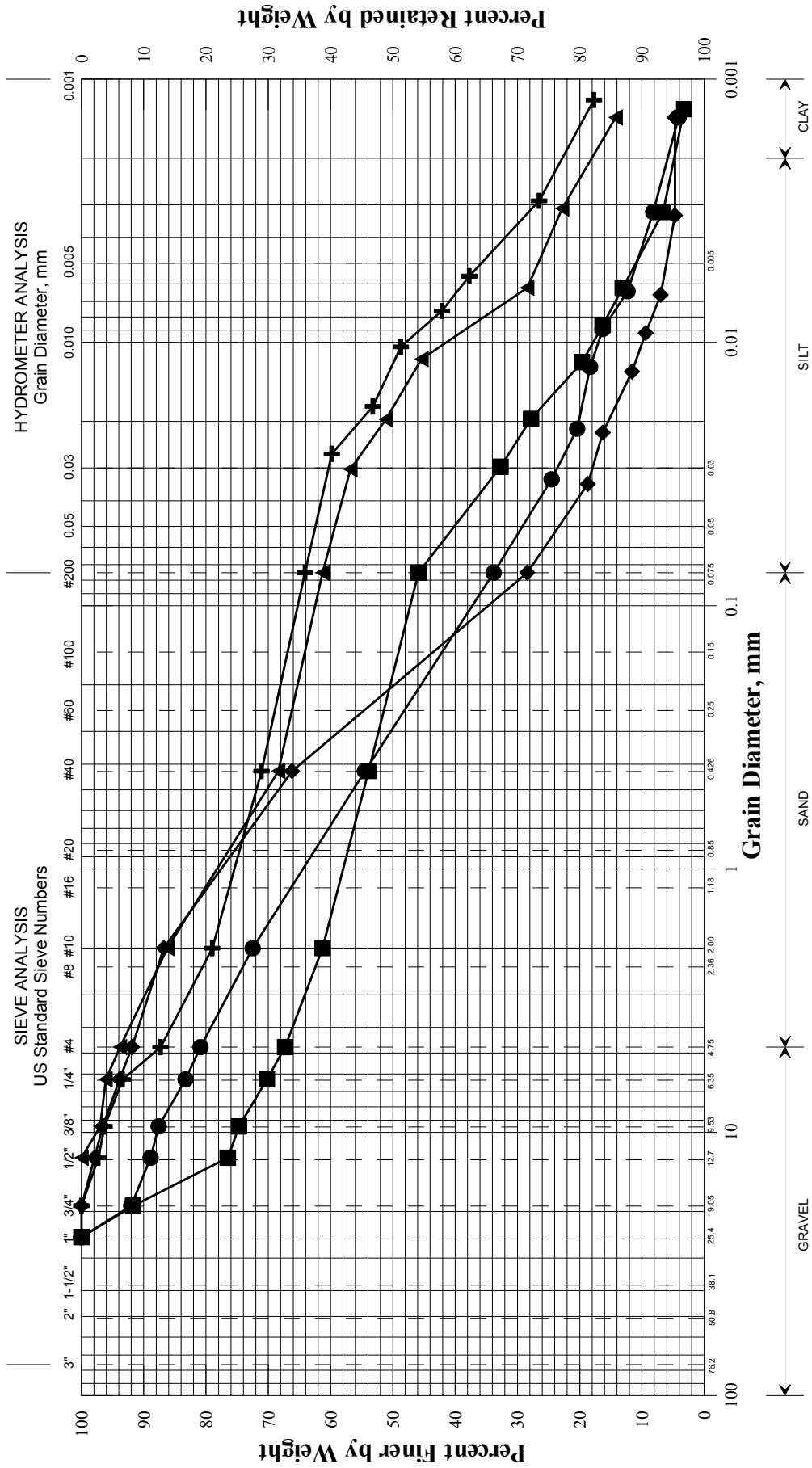


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	1003+00	22.0 LT	0.0-2.0	SILT, some sand, trace gravel.	31.7			
◆	1003+00	22.0 LT	5.0-7.0	SAND, some gravel, some silt.	10.7			
■	1044+00	25.0 RT	0.0-2.0	SILT, some sand, trace clay, trace gravel.	36.0			
●								
▲								
×								

PIN	010063.10
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GRAIN SIZE DISTRIBUTION CURVE

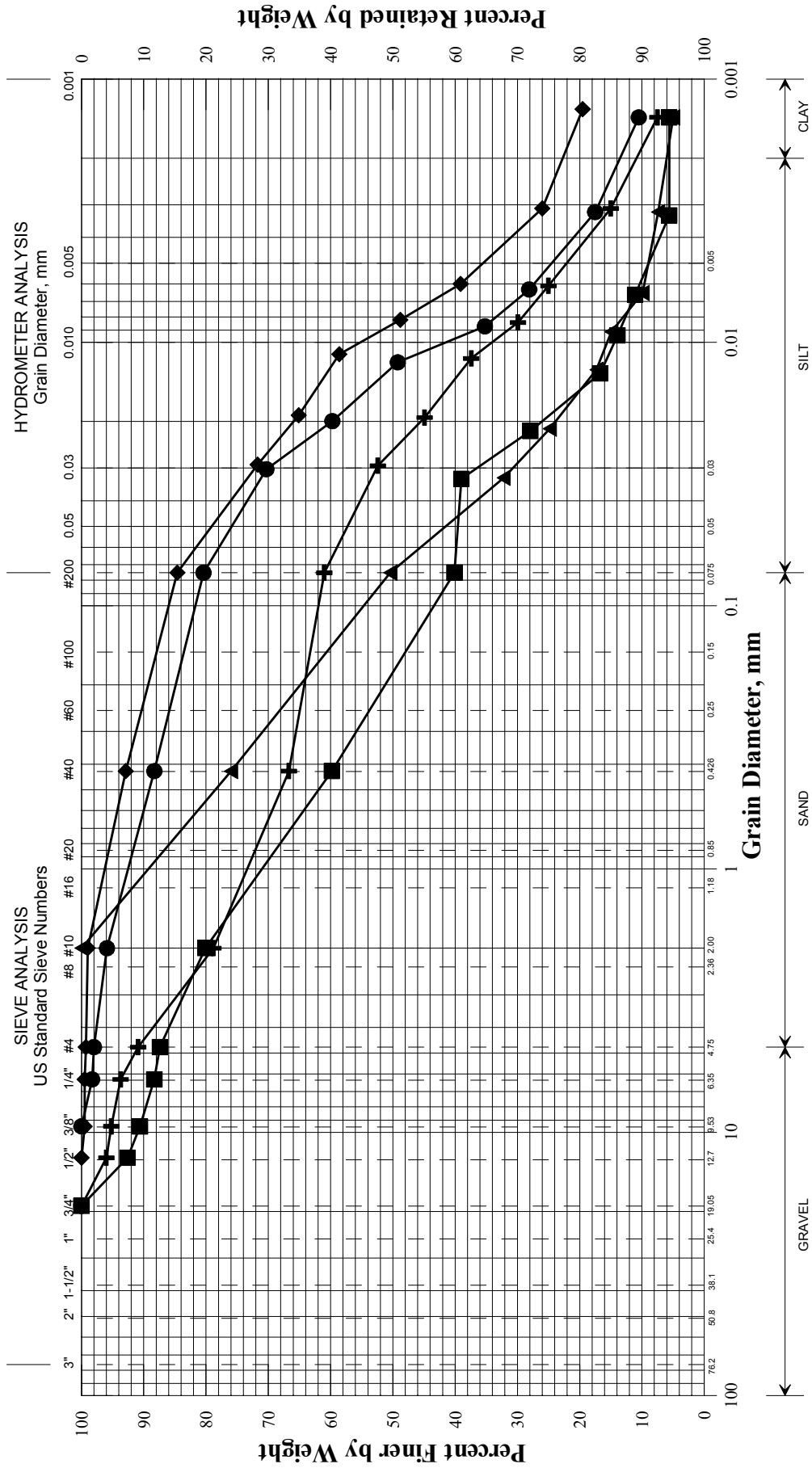


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	1045+96	25.0 RT	0.0-2.0	SILT, some sand, some clay, little gravel.	20.4			
◆	1046+94	26.0 LT	5.0-7.0	SAND, some silt, trace gravel, trace clay.	10.9			
■	1059+57	24.0 LT	5.0-6.5	SILT, some gravel, some sand, trace clay.	10.1			
●	1059+86	26.0 RT	5.0-7.0	SAND, some silt, little gravel, trace clay.	7.6			
▲	1058+04	17.0 LT	0.0-2.0	SILT, some sand, little clay, trace gravel.	22.3	32	28	4
×								

PIN	010063.10
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GRAIN SIZE DISTRIBUTION CURVE

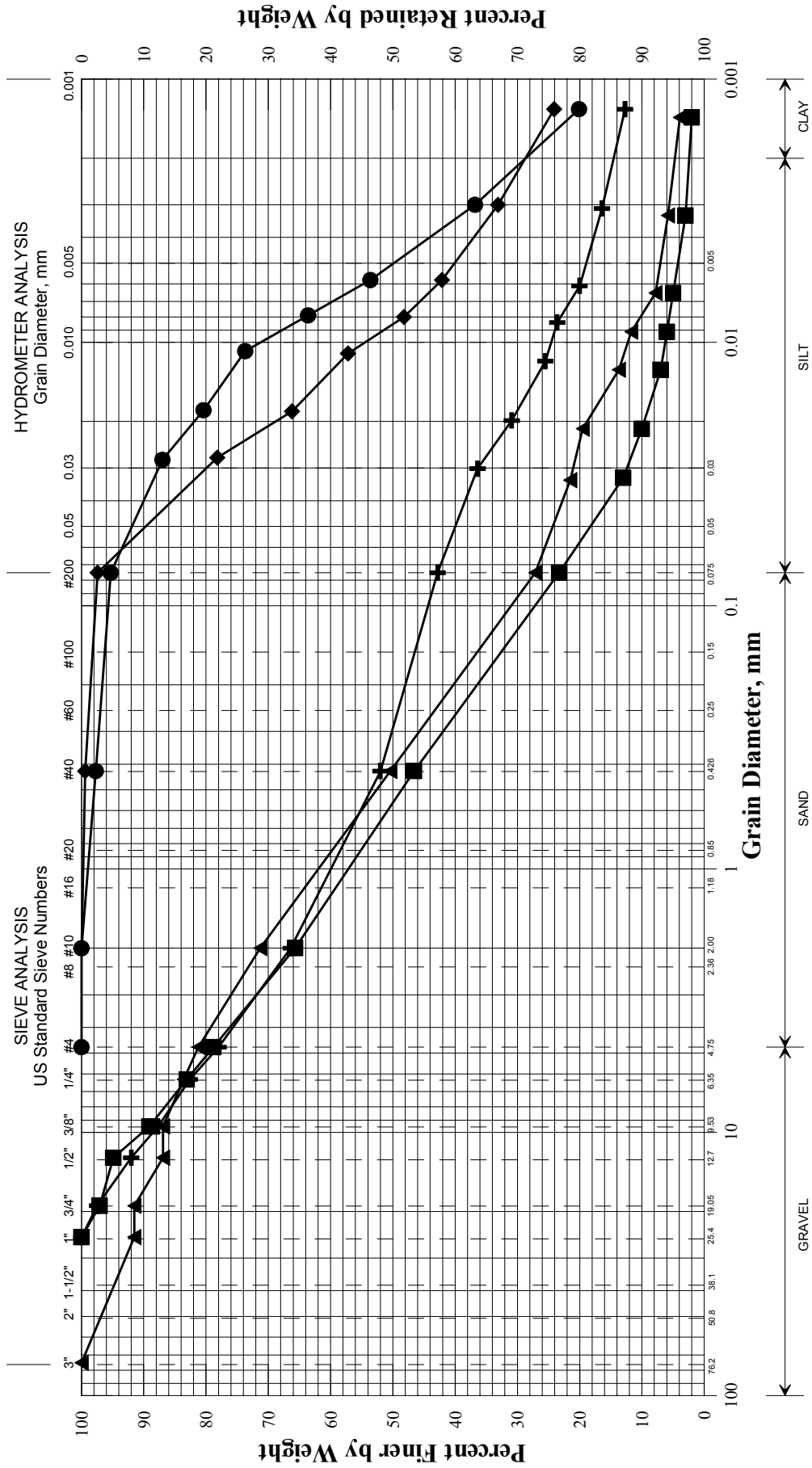


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	1056+96	21.0 RT	0.0-2.0	SILT, some sand, little clay, trace gravel.	34.8	30	25	5
◆	1056+05	22.0 LT	0.0-2.0	SILT, some clay, little sand, trace gravel.	32.7	30	25	5
■	1063+95	24.0 LT	0.0-2.0	SAND, some silt, little gravel, trace clay.	51.1			
●	1066+07	31.0 LT	0.0-2.0	SILT, little sand, little clay, trace gravel.	42.3			
▲	1066+97	21.0 LT	0.0-2.0	Silty SAND, trace clay, trace gravel.	34.5			

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GRAIN SIZE DISTRIBUTION CURVE



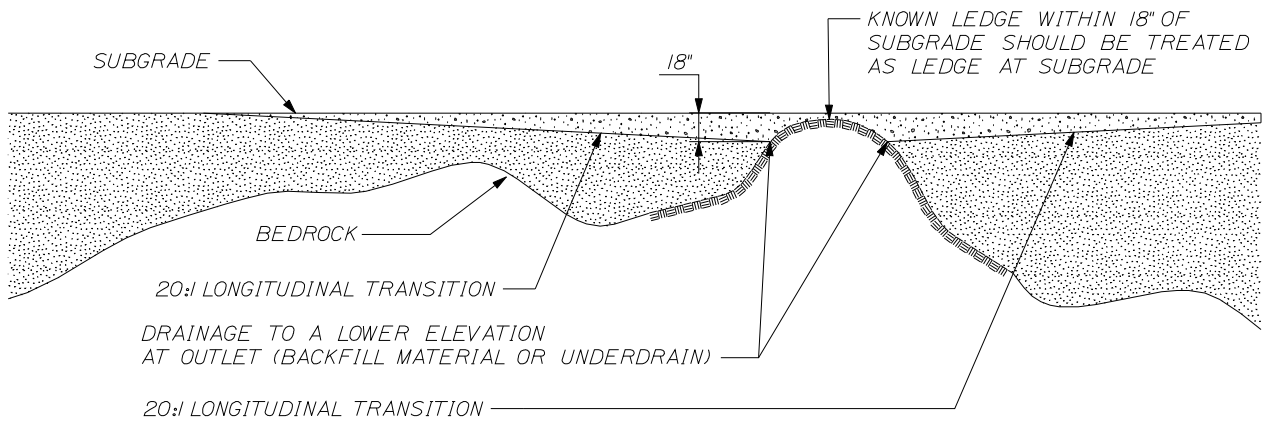
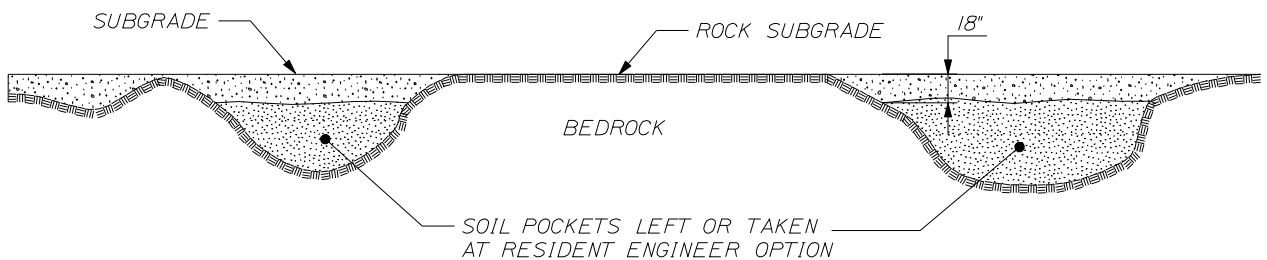
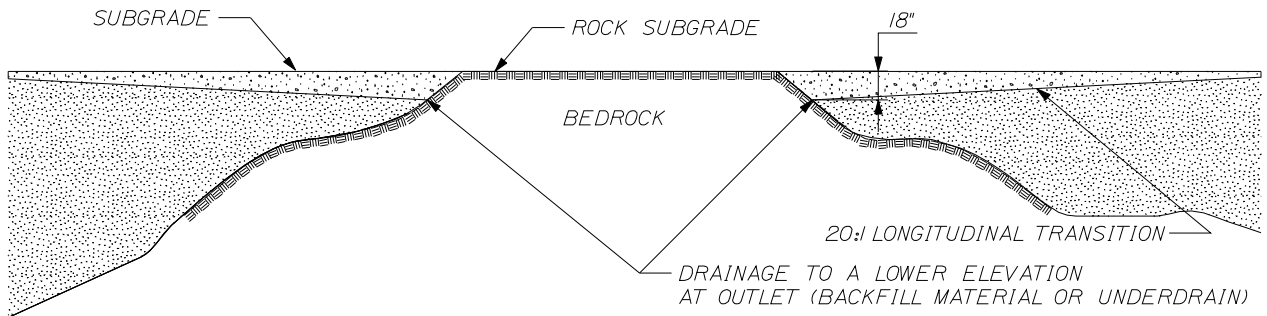
UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+ HB-ELLS-B336/2D	1071+50	CL	5.0-7.0	SAND, some silt, little gravel, little clay.	9.3	22	16	6
◆ HB-ELLS-B337/1D	1073+00	CL	0.0-2.0	SILT, some clay, trace sand.	18.8	28	17	11
■ HB-ELLS-B337/4D	1073+00	CL	15.0-17.0	SAND, some silt, little gravel, trace clay.	11.3			
● HB-ELLS-B339/1D	1077+00	CL	0.0-2.0	SILT, some clay, trace sand.	38.7			
▲ HB-ELLS-B339/3D	1077+00	CL	10.0-12.0	SAND, some silt, little gravel, trace clay.	9.2			
×								

PIN	010063.10
Town	Ellsworth
Reported by/Date	WHITE, TERRY A 8/9/2010

Appendix E
Special Details

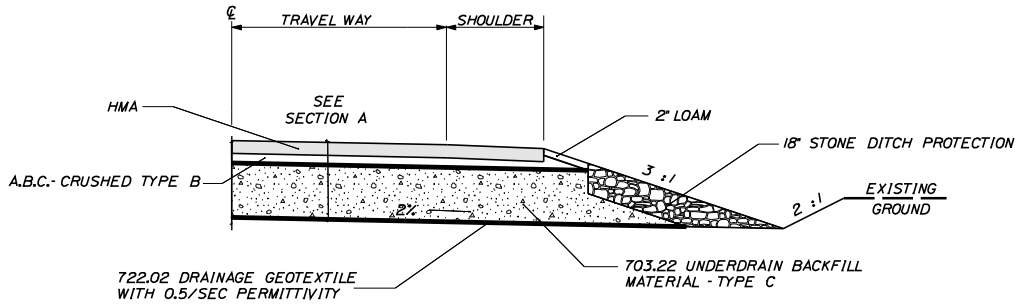
PROFILE OF UNDERCUT OF FROST SUSCEPTIBLE SOILS OVER LEDGE



FROST SUSCEPTIBLE SOIL TO BE UNDERCUT AND
 REPLACED WITH NON FROST SUSCEPTIBLE MATERIAL

IF A SOIL SECTION BETWEEN LEDGE SUBGRADE IS OF SUCH
 LENGTH THAT THE TRANSITION FROM EACH EDGE WOULD
 MEET, IT SHOULD BE TREATED AS AN EARTH POCKET

TRANSVERSE FRENCH DRAIN DETAIL



SECTION A

