Maine Department of Transportation
Highway Program

GEOTECHNICAL SERIES 100 REPORT

Route 161
Caribou, Maine

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Aroostook County

WIN 12780.00
Fed Project #: STP-1278(000)X
December 5, 2012

Soils Report 2012-137
TEDOCS # 1245278

Highway Program

Brad Foley, Program Manager

Memorandum

DATE: December 5, 2012

TO: Jon Bither **DEPT:** Region 5

FROM: Scott A. Hayden **DEPT:** Highway Program

SUBJECT: Final Soils Report # 2012-137 – Caribou, Route 161, WIN 12780.00

Project Information

A subsurface investigation has been completed for the rehabilitation of a 4.08 mile portion of Route 161 in the town of Caribou. The project begins 0.81 miles north of the Caribou/Fort Fairfield Town line (RLM 6.27) and extends north westerly 4.08 miles to the easterly abutment of the Aroostook River Bridge. The purpose of this subsurface investigation is to obtain subsurface soil, bedrock, and ground water information. The investigation included the use of a drill rig, falling weight deflectometer (FWD) and ground penetrating radar (GPR). Stationing was determined by using a distance measuring instrument (DMI).

The proposed typical roadway design template consists of two 11-foot wide travel lanes and 4-foot wide paved shoulders. Full depth reclamation with foamed asphalt is proposed throughout the project except for 5 individual reconstruction areas. The proposed pavement design within the reconstruction areas consist of 3" hot mix asphalt, 5" foamed asphalt and 6" of dense graded crushed aggregate.

As-Built Information

An archival search of past as-built information located two previous projects. A brief discussion of these past projects follows:

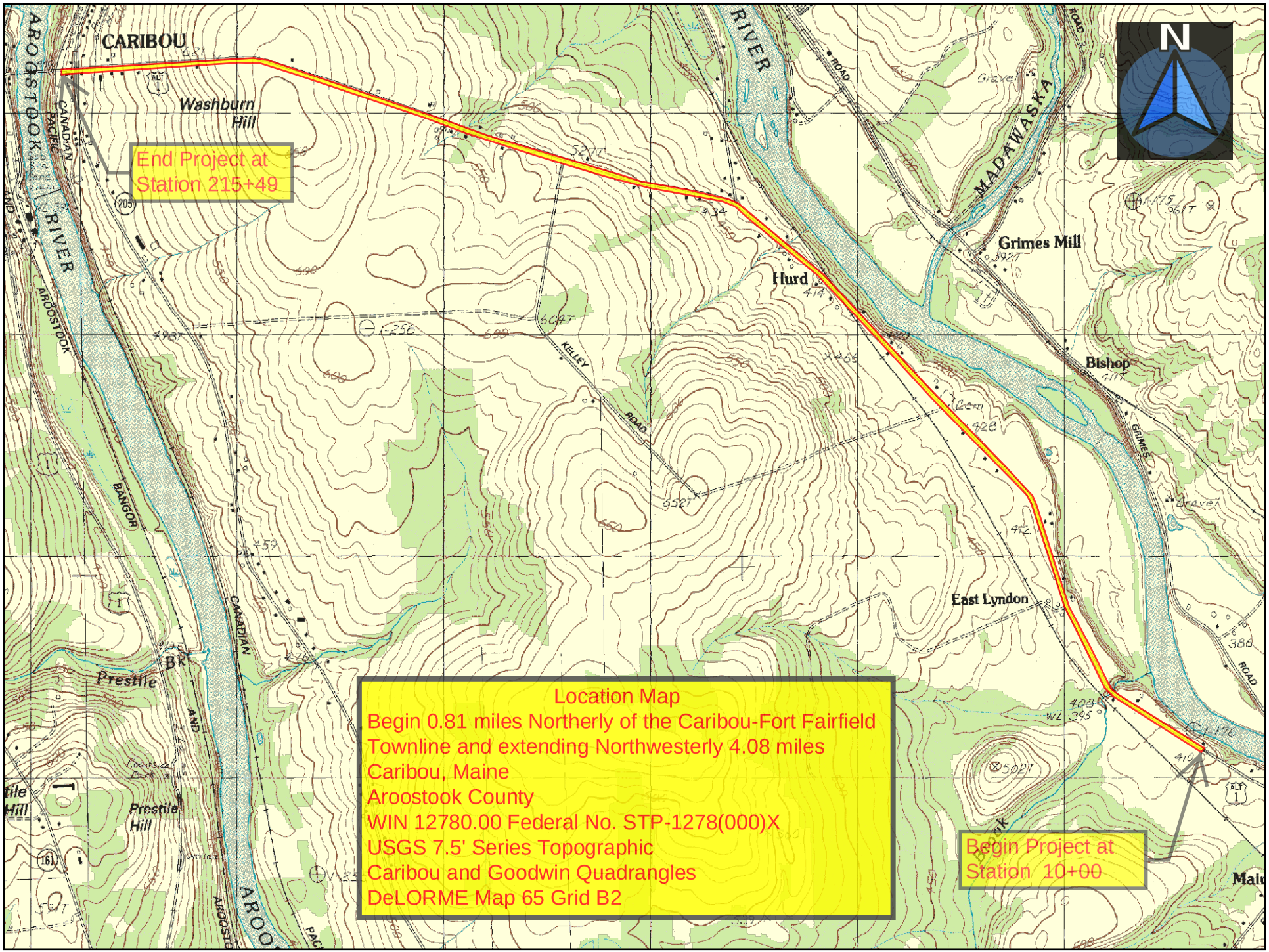
<u>Highway Project No. W.P.S.S. 174-C, 1935</u>

The typical roadway design template for this project consists of two 10-foot wide travel lanes with 4.5-foot wide shoulders. Travel lanes consisted of an 18-inch gravel base with a 2-inch granular surface. Shoulders consisted of a 6-inch granular base with a 2-inch granular surface.

There is a 14-inch difference in gravel base thickness between the travel lane and adjacent shoulder. This has created a "bath tub" affect which prevents the outward migration of ground water from beneath travel lanes to the ditches.

<u>U.S. Public Works Project No. NRS 174, 1935</u>

A typical roadway design template was not provided with these as-built plans. However, there is a note on the plans stating "12-inch gravel base – 6-inch gravel surface".



Location Map
Begin 0.81 miles Northerly of the Caribou-Fort Fairfield Townline and extending Northwesterly 4.08 miles
Caribou, Maine
Aroostook County
WIN 12780.00 Federal No. STP-1278(000)X
USGS 7.5' Series Topographic
Caribou and Goodwin Quadrangles
DeLORME Map 65 Grid B2

Map Scale 1:24000

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Existing Pavement Data

ARAN Data Summary

Pavement distress is moderate to severe with cracking (fatigue, block, transverse, longitudinal, edge) and rutting. It is anticipated that this distress is due to poor surficial and subsurface drainage, frost effects, traffic loading, and fatigue. A summary of the 2011 ARAN data is presented in Table 1.

Table 1: Summary of 2011 ARAN Pavement Data

ARAN Pavement Data	Range	Average
Pavement Condition Rating (PCR)	1.6 - 3.08	2.32
International Roughness Index (IRI)	98 - 371	205
Rut Depth (left)	0.2” – 0.3”	0.21”
Rut Depth (right)	0.3” – 0.5”	0.40”

A complete listing of the 2011 ARAN data is presented on the attached Pavement Performance Assessment Summary (PPAS). The PPAS is a performance evaluation tool utilizing FWD and ARAN data.

Existing HMA Thickness

A summary of existing pavement thickness estimates are shown in Table 2. This summary is based on power auger borings, pavement cores and ground penetrating radar (GPR) information. Power auger borings and pavement coring information indicate the presence of a treated gravel layer and/or unbound pavement layer underlying the solid pavement layer. For the purpose of providing an estimated reclaiming depth a combined thickness of the solid pavement layer and the treated gravel layer and/or unbound pavement layer has been included as part of Table 2.

Table 2: Pavement Thickness Summary/Comparison

	Travel Lanes	Unbound Pavement / Treated Gravel	Combined Thickness
Pavement Core/Auger Data			
Range of Thickness	2.4” – 7.8”	0.6” – 4.8”	3.6” – 9.0”
Average Thickness	5”	2”	6”
Ground Penetrating Radar Data			
Range of GPR Pavement Thickness	3.0” – 8.1”		
Average GPR Pavement Thickness	4.7”		

Pavement Coring / Power Auger Data:

Twenty-eight pavement cores and 39 power auger borings were used to physically measure the existing pavement thickness. Please refer to the attached boring logs and pavement core summary sheet for individual test locations and pavement depths.

Ground Penetrating Radar (GPR):

GPR data was collected at 1 foot intervals in the left and right wheel path of both the North and South bound lanes. Pavement thickness estimates were developed using Geophysical Survey Systems Inc. (GSSI) RADAN GPR Data Processing Software. Where available, pavement core thicknesses were used to ground truth the GPR data in developing the estimated GPR pavement thicknesses. This data is presented on the attached GPR Estimated Pavement Thickness summary sheets as an average pavement thickness utilizing a 100' interval. These average thickness estimates represents the thickness of the "solid" pavement layer only.

FWD Results

Deflection Data

FWD deflection data for the pavement layer are relatively high (> 10 Mils, 1st sensor) throughout the project. Pavement deflections are highest (> 20 Mils, 1st sensor) between stations 22+50 - 30+00, 51+00 – 53+00, 83+00 – 87+00, 103+00 – 128+00, 155+00 – 160+00, 175+00 – 178+00, and 190+00 – 194+00. The highest and most erratic deflections were encountered between stations 112+00 – 128+00.

FWD deflections in the lower layers are roughly uniform throughout the project area suggesting somewhat uniform subgrade conditions. Deflections are slightly higher (>10 mils, 2nd sensor) between stations 22+00 – 32+50, 47+50 – 54+00, 58+00 – 68+00, 83+00 – 130+00, 170+00, 176+00 – 178+00, 186+00 – 201+00. The highest and most erratic deflections in the lower layers were encountered between stations 112+00 – 128+00. These deflection increases may indicate moist to wet subgrade soil conditions.

The FWD deflection plots have been included at the back of this report.

Subgrade Resilient Modulus (M_r)

Subgrade resilient modulus (M_r) values range between 2338psi – 9413psi. The average value is 5,676psi. and the 75th percentile is 4660psi. Elevated (> 8000psi) M_r values were encountered at multiple locations. It is anticipated that these values may be elevated due to the presence of a relatively shallow bedrock surface.

Low subgrade resilient modulus values were encountered between stations 114+00 – 128+00. These relatively low M_r values may indicate the presence of moist to wet subgrade soil conditions. Depending on subgrade conditions at the time of construction these areas may have difficulties supporting traffic once the existing pavement surface is removed. Additional base material may be necessary to support traffic during construction.

Structural Number

The existing structural number fails to meet the future traffic structural number for 39% of this project. The primary areas failing to meet the future structural number are located between stations 22+50 – 32+50, 47+50 – 67+50, 75+00 – 85+00 – 115+00 – 135+00, and 175+00 – 200+00. See attached FWD analysis data.

Subsurface Explorations

Subsurface explorations were conducted by Maine DOT using a CME 45C truck mounted drill rig. Bore hole logging was performed by Maine DOT.

Power Auger Borings / Power Auger Probes

A total of 39 power augers borings were conducted along the project (See Boring Logs). Power auger borings were conducted using 5" solid stem augers. Boring locations were determined based on FWD deflection results and visual observations made during an on-site visit. Soils were described and sampled from the auger flights. A total of 138 power auger probes were conducted using 5" solid stem augers. These probes were generally utilized to determine "depth to bedrock" in suspected shallow bedrock areas.

Soil Sampling

A total of 28 soil samples were collected from the power auger borings and tested at the Maine DOT Materials and Testing laboratory, located in Bangor Maine. Grain size and water content testing was conducted on each sample. Based upon laboratory test results, soil samples were classified according to the Unified Classification System, AASHTO Soil Classification and Maine DOT Frost Susceptibility Rating. Testing results are summarized on the attached Laboratory Testing Summary Sheet.

Existing Roadway Base

Existing Base Material Type:	silty sandy GRAVEL,	A-1-b
	silty gravelly SAND,	A-1-a, A-1-b
	gravelly sandy SILT,	A-4

Percent Passing #200 Sieve:	15% - 44%
Range of Base Material Thickness:	8" – 22"
Quality of Drainage (AASHTO):	poor
Permeability:	0.4' – 2.5' per day

The existing base generally consists of damp silty sandy GRAVEL and silty gravelly SAND similar to samples S1 and S14 respectively. Overall, the existing base thickness and quality is marginal throughout the project site. If future performance expectations are to be met it is very important that the pavement structure be adequately drained.

It should be noted that power auger borings HB-CA-114, HB-CA-117, conducted at stations 142+50 and 180+00 respectively, encountered a gravelly sandy SILT as the existing base layer. This material was referenced as being similar to sample (S7). Grain size distribution results for sample (S7) indicate that this material has 44% passing the #200 sieve and is moderately frost susceptible.

Existing Shoulder Base Material

Several power auger borings were conducted in the existing gravel shoulders to determine the material type and thickness. This information indicates that the thickness and quality of the existing shoulder material varies considerably. Based on sample test results the existing shoulder base material ranged from silty sandy GRAVEL (A-1-b, 18% passing #200) to gravelly sandy SILT (A-4, 44% passing #200). The total thickness of the shoulder base material varied from 1.1' to 3.0'. In several instances the existing shoulder base thickness is less than the

adjacent roadway base thickness. This has created a bath tub affect as indicated on the 1935 as-builts.

Subgrade Soils

Based on power auger boring data subgrade soils are anticipated to consist primarily of moist to wet sandy SILTS (till). Gravelly silty SANDS (Glaciofluvial) may be encountered in isolated areas. Each of these soils should perform satisfactorily as a subgrade soil if they are adequately drained.

These soils are mapped (Soils Conservation Survey (SCS) Parent Material Soils Map, Surficial Geologic Map of Maine, 1985) as glacial till and glaciofluvial deposits. The SCS Parent Material Soils Map indicates that the glaciofluvial deposits are limited to the first 6000-feet of this project. The SCS Parent Material Soils Map has been included at the back of this report.

A summary of the anticipated subgrade soils is provided in Table 3 on the following page. This summary is based on limited subsurface exploration data. Actual field conditions may vary.
A detailed description of these subgrade soils is provided below.

Sandy SILT (Till):

The sandy SILT till soils along this project are generally classified (AASHTO) as an A-4 soil. Representative samples of this material include samples S2, S4, S5, S10, and S12. This material is quite silty with 36% - 65% passing the # 200 sieve. These soils are highly frost susceptible. These soils are described as moist or wet. Wet subgrade soil conditions were encountered between stations 95+50 - 97+50 and 120+00 – 122+50. The presence of wet soil conditions will increase the development of ice lenses in the winter. Differential frost heaving has been observed in each of these wet areas. It is anticipated that the depth to bedrock will be relatively shallow (<10') when these soils are encountered.

These till soils can perform adequately as a subgrade soil if they are properly compacted and drained. However, these soils will swell and lose much of their stability if they are not properly compacted and drained. Low subgrade resilient modulus values (M_r) were encountered between stations 114+00 – 128+00. These low M_r values may indicate the presence of moist to wet subgrade soil conditions. If the sandy SILT till soils are not well drained in this area additional base material may be necessary to support traffic during construction once the existing pavement surface is removed.

Gravelly Silty SAND (Glaciofluvial):

Granular river terrace deposits could be encountered in isolated areas within the first 6000 feet of the project site. These soils are exposed within an erosional scarp formed at the outlet location of a cross pipe at station 67+17. These soils were also encountered in a power auger boring (HB-CA-105) conducted at station 70+02. This material was sampled (S6) and submitted to the lab for testing. These gravelly silty SANDS are classified (AASHTO) as an A-1-b soil with 21% passing the #200 sieve. This material has a low to moderate frost susceptibility rating. This material will perform adequately as a subgrade soil.

Table 3: Anticipated Subgrade Soils

Station	Soil Description	AASHTO / Unified	Sample Reference	% Passing #200
10+00 – 53+00	GSaSi	A-4 / SM	S2	46
53+00 – 57+00	GSaSi / Bedrock	A-4 / SM	S4	47
57+00 – 77+00	GSaSi	A-4 / SM	S5	47
77+00 – 92+00	SaSi	A-4 / ML	S8	59
92+00 – 98+00	SaSi (Wet)	A-4 / ML	207-S7,8	55 - 91
98+00 – 112+00	SaSi	A-4 / ML	S8	59
112+00 – 121+00	GSaSi	A-4 / ML	S10	65
121+00 – 123+00	SiGSa (Wet) / Bedrock	A-1-b / SM	214-S12	19
123+00 – 127+00	GSiSa	A-4 / SM	219-S14	36
127+00 – 142+00	SaSi	A-4 / ML	S12	58
142+00 – 145+00	SaSi / Bedrock	A-4 / ML	S12	58
145+00 – 165+00	SaSi	A-4 / ML	S12	58
165+00 – 168+00	SaSi (Wet)	A-4 / ML	202-S3	56
195+00 – 197+00	Bedrock			
197+00 – 215+00	GSaSi	A-4 / ML	S10	65

Bedrock

Bedrock is anticipated to be relatively shallow (< 15') throughout the majority of the project area. The bedrock is a pelite which is basically a slightly metamorphosed siltstone. The bedrock is mapped (Bedrock Geologic Map of Maine, Maine Geological Survey, 1985) as an interbedded pelite and limestone belonging to the Carys Mills formation. Subsurface explorations indicate that the upper surface of this bedrock is commonly weathered. It may be possible to remove this weathered surface with an excavator. Field observations indicate that the bedrock strike is northeast, with an estimated dip of 50 degrees to 75 degrees.

It is anticipated that blasting will be required for the majority of excavation below the limits of the weathered surface. Depending on the strike/dip, weathering/fracturing, area of surface exposure and flexibility in the direction of excavation, limited bedrock removal may be possible by ripping and/or the use of an excavator.

Exact areas requiring rock excavation could not be provided in this report because detailed cross sectional plans were not available at the time of this writing. Based on subsurface explorations, FWD deflections, and elevated subgrade resilient modulus (M_r) values, bedrock could be potentially shallow (< 8') at the following locations listed in Table 4 on the following page. Please refer to the power auger boring logs and power auger probe summary sheets for specific bedrock refusal locations and depths.

Table 4: Potential Shallow Bedrock Areas

Station	Source of Information
53+00 – 57+00	FWD deflections, power auger probes, power auger
107+00 – 112+00	FWD deflections, M_r values
121+00 – 123+00	FWD deflections, power auger probes, power auger
131+00 – 133+00	Mr values
140+00 – 143+00	FWD deflections, M_r values, power auger
152+00 – 164+00	FWD deflections, M_r values
164+00 – 168+00	FWD deflections, M_r values, power auger probes
174+00 – 176+00	FWD deflections, M_r values
180+00 – 202+00	FWD deflections, M_r values, power auger probes, outcrop
202+00 – 210+00	FWD deflections, M_r values

Frost Susceptible Soils/ Frost Heaving

Frost Susceptible Soils

The sandy SILT till soils are anticipated to be moderately to highly frost susceptible. The silty SAND glaciofluvial soils are anticipated to be low to moderately frost susceptible. Frost ratings can be found on the Laboratory Testing Summary Sheet. Frost action in soils requires the presence of frost susceptible soils, ground temperatures below 32° F, and water. Proper drainage of the pavement structure and the lowering or draw down of the ground table through ditching and/or underdrain is critical in minimizing the damaging effects of frost action throughout this project.

The Maine Design Freezing Index for this project is approximately 2680. Frost penetration depth beneath a snow free pavement is anticipated to be between 52” (silt or clay) and 125” (sand or gravel) based upon the 1955 Army Corps of Engineers, “Prediction of Freezing Temperature Penetration in New England”.

Differential Frost Heaving

Differential frost heaving was observed between stations 95+00 – 98+00, 121+00 – 123+00, and 164+00 – 167+50. A description of each area is described below:

95+00 – 98+00 - Heaving in this area was observed to be substantial. Subsurface explorations indicate the presence of highly silty and frost susceptible wet soils. Wet soil conditions were encountered as shallow as 1-foot below the top of existing pavement. Bedrock was not encountered in this area. It is anticipated that ground water is the driving factor causing the differential heaving. Drainage in this area is non-existent. Underdrain is recommended on both sides of the road to promote subsurface drainage and ground water draw down. Consideration should be giving to increasing the thickness of the proposed dense graded crushed aggregate thickness from 6 inches to 12 inches due to the highly silty subgrade soils.

121+00 – 123+00 – Heaving in this area is anticipated to be due to the presence of wet silty subgrade soil conditions and shallow bedrock. A boring (HB-CAR-214) at station 121+00 encountered weathered bedrock between the depth of 4.2’ – 4.7’ and a refusal at 4.7’. A power auger probe encountered a refusal at a depth of 2.5’ at station 121+75. Winter field observations indicated that the heaving was most prevalent between stations 121+75 and 122+25. The vertical alignment is being lowered approximately 12” at station 121+00. Subgrade

soil conditions in this area provided low subgrade modulus values. Due to all of the above it is recommended that subgrade soils be undercut 24" between stations 121+00 – 122+50 and replaced with non-frost susceptible soils. A 20:1 longitudinal transition should be constructed between stations 120+60 – 121+00 and 122+50 – 122+90. (See Recommendation 4)

164+00 – 167+50 – Heaving in this area is not as abrupt or pronounced as it is in other areas. Subsurface explorations encountered moist to wet subgrade soil conditions underlain by a relatively shallow bedrock surface. The shallowest bedrock refusal was encountered at a depth of 5.3' below the top of the existing pavement. Existing ditching is marginal in this area. It is recommended that this area be reconstructed utilizing a pavement structure identical to the other reconstruction areas on this project (3" hot mix asphalt, 5" foamed asphalt and 6" of dense graded crushed aggregate). In addition it is recommended that underdrain be installed along the left shoulder and aggressive ditching be utilized along the right shoulder

Drainage

Surficial and subsurface drainage is marginal to non-existent along this project. This lack of drainage increases the damaging effects of frost action and reduces the long term performance of the pavement.

Wet subgrade soil conditions were encountered between stations 95+50 - 97+50 and 120+00 – 122+50. Differential frost heaving has been observed in each of these wet areas. Low subgrade resilient modulus values were encountered between stations 114+00 – 128+00. It is anticipated that these relatively low M_r values are due to moist to wet subgrade soil conditions.

"Depth to restrictive layer" and "depth to water table" maps from the Soils Conservation Service have been attached at the end of this report as supporting information.

<u>Ditching</u>

Ditching to remove surficial flow and/or to drawdown the water table is critical if design expectations are to be met. Ditches should be constructed with a minimum depth of 3 feet below finished grade when possible.

<u>Cross Pipes / Erosion</u>

Channel erosion and undercutting at existing cross pipe outlets is problematic along this project. This erosion and undercutting of soils has resulted in the formation of large erosional scarps at most outlet locations. The difference in elevation between the top and bottom of these scarps is generally 3' – 5' but in some areas they may exceed 10'.

These scarps can be especially problematic because the soil undercutting migrates upstream from the outlet causing the existing pipe structure and/or roadway structure to be undermined. Erosion control measures will be needed at cross pipe outlet locations to alleviate this type of erosion. Maine DOT Hydrologist, Alexander Mann, is aware of this problem and is developing specific design recommendations to address this issue. His recommendations are being presented directly to the project designer (Natasha Collins).

See cross pipe outlet photos on the next page.

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Cross Pipe Outlet Erosion/Undercutting

79+50

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Cross Pipe Outlet Erosion/Undercutting

129+00

Caribou Route 161
WIN 12780.00

Cross Pipe Outlet Erosion/Undercutting

144+65

Caribou Route 161
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Cross Pipe Outlet Erosion/Undercutting

149+10

Performance Data Summary

A Performance Data Summary (PDS) is included on the next pages. The purpose of the (PDS) is to identify potential performance differences by station based upon 4 minimal performance criteria (asphalt thickness, base thickness, subgrade resilient modulus, and existing/future structural number comparison. The PDS is color coded and should be printed in color to fully utilize the information

If an area fails to meet 2 or more of the minimal performance criteria the area will be shaded in the deficiency (DEF) column located next to the Station column. Existing performance expectations for areas with two or more deficiencies are lower and the risk of failure is potentially higher.

Based upon the Performance Data Summary (PDS) sheet, 41% of the project fails to meet 2 or more of the four minimum performance data criteria. See attached Performance Data Summary.

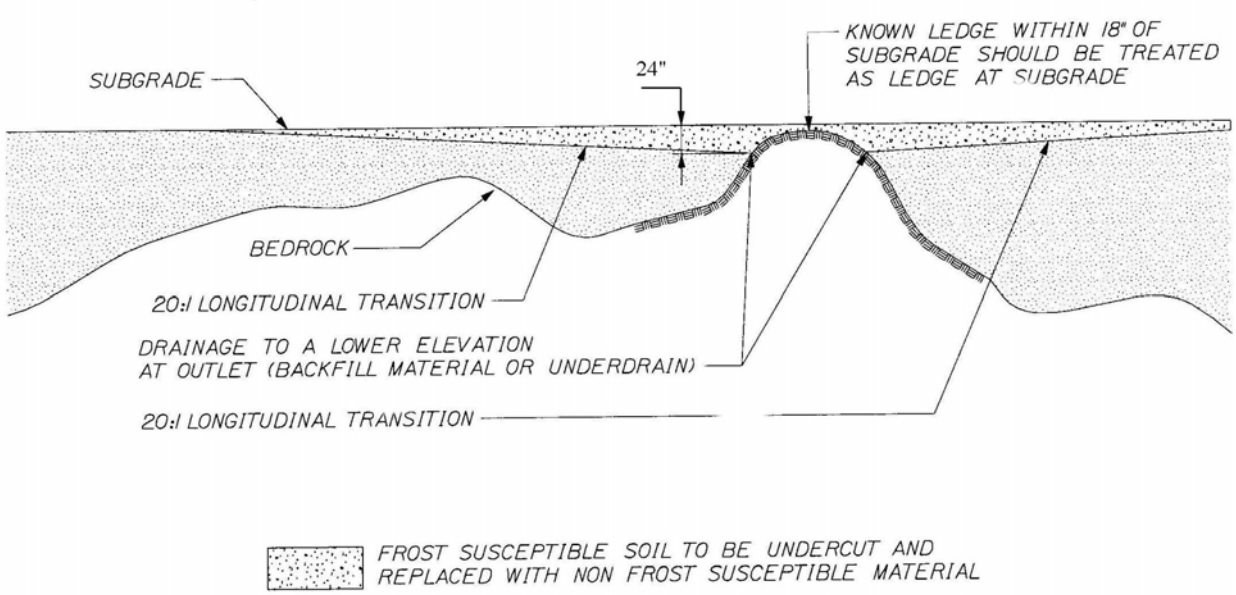
Recommendations

1. It is recommended that the entire project area be well drained. Ditching and/or underdrain should be used to lower the ground water table in cut sections. Ditches should be constructed with a minimum depth of 3 feet below finished grade when possible.

2. It is recommended that cross pipe outlet channels be protected to prevent soil under cutting. See 'drainage" section comments in this report. Specific design recommendations will be provided by Maine DOT hydrologist Alex Mann.

3. Low subgrade resilient modulus values were encountered between stations 114+00 and 128+00. It is anticipated that these low values are due to moist to wet subgrade soil conditions. Depending on subgrade conditions at the time of construction these areas may have difficulties supporting traffic once the existing pavement surface is removed. Additional base material may be necessary to support traffic during construction.

4. Due to observed differential heaving, wet subgrade soil conditions, and shallow bedrock it is recommended that subgrade soils be undercut 24" between stations 121+00 – 122+50 and replaced with non-frost susceptible soils similar to the schematic below. A 20:1 longitudinal transition should be utilized between stations 120+60 – 121+00 and 122+50 – 122+90.



5. Reconstruction is recommended between stations 164+00 and 167+50 to aid in the prevention of current differential heaving issues within this area. Reconstruction should be similar to the five proposed reconstruction areas utilizing a pavement structure consisting of 3” hot mix asphalt, 5” foamed asphalt and 6” of dense graded crushed aggregate. It is further recommended that underdrain be installed along the left shoulder and aggressive ditching be utilized along the right shoulder within this area.

Performance Data Summary

Caribou Rt. 161
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Station (FWD)	DEF	Minimum Performance Data Criteria				Boring Location (Plan View)		Base Material		Subgrade Soils	
								AASHTO Class	% #200	AASHTO Class	% #200
						KEY					
Station		Red – Fail Green - Met				Solid Pave Thick Unbound Pave - UP Base Thickness (inches)		Soil Type AASHTO Sample #	% 200 Frost Moisture	Soil Type AASHTO Sample #	% 200 Frost Moisture
						CL					
12+51	0										
15+00	0										
17+53	0						4.8 SP - 16.8	SiSaG A-1-b S1	16 I Damp	GSaSi A-4 S2	46 III Moist
20+01	0										
22+50	2										
25+00	2						4.8 SP 2.4 UP 15.6	GSiSa A-2-4 S3	26 II Damp	GSaSi A-4 S2	46 III Moist
27+50	2										
30+00	2										
32+50	2										
35+02	1										
37+51	1										
40+01	2										
42+51	1										
45+02	1						4.8 SP - 10.8	SiSaG A-1-b S1	16 I Damp	GSaSi A-4 S2	46 III Moist
47+51	2										
50+01	2										
52+50	2										
53+00 to 57+00	2					PROBES	PROBES	Shallow Bedrock Area See Power Auger Probe Sheet for Additional Bedrock Depth Information			
55+00	1						6.0 SP 1.2 UP 8.4	SiSaG A-1-b S1	16 I Damp	GSaSi A-4 S4	47 III Bedrock 4.2’
55+60	2										
57+50	2										
60+00	2										

Pavement Thickness (4 inches)
Base Thickness (18 inches)
Subgrade Modulus (3000 psi)
Structural Number

* SP = Solid Pavement Layer
* UP = Unbound Pavement Layer
SP+UP = Total Pavement Thickness
* Base Thickness = Red indicates presence of “treated base”

Performance Data Summary

Caribou Rt. 161
CHIP
12780.00

Station (FWD)	D E F	Minimum Performance Data Criteria				Boring Location (Plan View)		Base Material		Subgrade Soils	
								AASHTO Class	% #200	AASHTO Class	% #200
						KEY					
Station		Red – Fail Green - Met				Solid Pave Thick Unbound Pave - UP Base Thickness (inches)		Soil Type AASHTO Sample #	% 200 Frost Moisture	Soil Type AASHTO Sample #	% 200 Frost Moisture
						CL					
62+53	2										
65+01	2										
67+51	2										
70+03	1						4.8 SP 2.4 UP 9.6	SiSaG A-1-b S1	16 I Damp	GSaSi A-4 S5	47 III Moist
72+50	1										
75+00	2										
77+52	0										
80+03	1	Pavement Thickness (4 inches)	Base Thickness (18 inches)	Subgrade Modulus (3000 psi)			6.0 SP 2.4 UP 21.6	GSaSi A-4 S7	44 III Damp	SaSi A-4 S8	59 IV Moist
82+50	1				Structural Number						
85+27	2										
87+50	1										
90+00	1										
92+51	1										
95+01	1					6.0 SP 2.4 UP 13.2	Heave Area	SiSaG A-1-b S9	18 I Damp	GSaSi A-4 S10	65 IV Damp
96+25	1					5.0 SP - 12.9	Heave Area	SiGSa A-1-b 207-S6	20 II Damp	SaSi-ClSi A-4 207-S7,8	55-91 IV Wet 6.5’
96+50	1					5.0 SP - 6.9	Heave Area	SiGSa A-1-b 207-S6	20 II Damp	SaSi-ClSi A-4 207-S7,8	55-91 IV Wet 1.0’
96+70	0					5.0 SP - 18.9	Heave Area	SiGSa A-1-b 207-S6	20 II Damp	SaSi-ClSi A-4 207-S7,8	55-91 IV Wet 6.5’
96+90	0					5.0 SP - 18.9	Heave Area	SiGSa A-1-b 207-S6	20 II Damp	SaSi-ClSi A-4 207-S7,8	55-91 IV Wet 2.0’
97+09	0							FROST HEAVE – Wet 6.1’			

* SP = Solid Pavement Layer
* UP = Unbound Pavement Layer
SP+UP = Total Pavement Thickness
* Base Thickness = Red indicates presence of “treated base”

Performance Data Summary

Caribou Rt. 161
CHIP
12780.00

Station (FWD)	DEF	Minimum Performance Data Criteria				Boring Location (Plan View)		Base Material		Subgrade Soils	
								AASHTO Class	% #200	AASHTO Class	% #200
						KEY					
Station		Red – Fail Green - Met				Solid Pave Thick Unbound Pave - UP Base Thickness (inches)		Soil Type AASHTO Sample #	% 200 Frost Moisture	Soil Type AASHTO Sample #	% 200 Frost Moisture
						CL					
97+50	1					5.0 SP - 11.7	Heave Area	SiGSa A-1-b 207-S6	20 II Damp	SaSi-ClSi A-4 207-S7,8	55-91 IV Moist
98+00	0					5.0 SP - 18.9	Heave Area	SiGSa A-1-b 207-S6	20 II Damp	SaSi A-4 207-S7	55 IV Dry
100+01	0										
102+78	0						7.2 SP 2.4 UP 20.4	SiSaG A-1-b S9	18 I Damp	SaSi A-4 S8	59 IV Moist
105+01	0										
107+50	0										
110+02	1										
112+51	2	Pavement Thickness (4 inches)	Base Thickness (18 inches)	Subgrade Modulus (3000 psi)	Structural Number						
115+00	3						4.8 SP 3.6 UP 9.6	SiSaG A-1-b S9	18 I Damp	GSaSi A-4 S10	65 IV Damp
117+50	2										
120+01	2										
121+00	2					5.0 SP - 8.1	Heave Area	SiGSa A-1- a 214-S11	15 II Damp	SiGSa A-1- b 214-S12	19 II Bedrock 4.2’
122+08	2					5.0 SP - 5.8	Heave Area	SiGSa A-1- a 214-S11	15 II Damp	SiGSa A-1- b 214-S12	19 Wet 3.0’ Bedrock 5.8’
122+52	3										
123+00	2					5.0 SP - 11.8	Heave Area	SiGSa A-1- b 214-S13	17 II Damp	GSiSa A-4 219-S14	36 III Moist
125+01	2										
127+50	2						6.0 SP 2.4 UP 13.2	GSaSi A-4 S7	44 III Damp	GSaSi A-4 S12	58 IV Moist
130+07	2										
132+55	1										
135+00	2										

* SP = Solid Pavement Layer
* UP = Unbound Pavement Layer
SP+UP = Total Pavement Thickness
* Base Thickness = Red indicates presence of “treated base”

Performance Data Summary

Caribou Rt. 161
CHIP
12780.00

Station (FWD)	D E F	Minimum Performance Data Criteria				Boring Location (Plan View)		Base Material		Subgrade Soils	
								AASHTO Class	% #200	AASHTO Class	% #200
						KEY					
Station		Red – Fail Green - Met				Solid Pave Thick Unbound Pave - UP Base Thickness (inches)		Soil Type AASHTO Sample #	% 200 Frost Moisture	Soil Type AASHTO Sample #	% 200 Frost Moisture
						CL					
137+50	1										
140+01	1										
142+53	1						7.2 SP 2.4 UP 10.8	GSaSi A-4 S7	44 III Damp	GSaSi A-4 S12	Weathered Bedrock 3.7' Ref 6.0'
145+00	1										
147+51	1										
150+00	1										
152+51	1										
155+03	1										
157+50	1						6.0 SP 2.4 UP 15.6	GSaSi A-4 S7	44 III Damp	GSaSi A-4 S12	58 IV Moist
160+01	1										
162+50	0										
165+02	0					Heave Area	5.4 SP - 19.8	SiGSa A-1-b 203-S4	24 II Damp	SaSi A-4 202-S3	56 IV Wet 1.9'
165+95	0					5.4 SP - 18.6	Heave Area	SiGSa A-1-b 201-S1	21 II Damp	SaSi A-4 201-S2	61 Weathered 6.2' Ref 6.8'
166+50	0					Heave Area	5.4 SP - 18.6	SiGSa A-1-b 203-S4	24 II Damp	SaSi A-4 203-S5	56 IV No Ref 8.0'
167+16	0					Heave Area	5.4 SP - 18.6	SiGSa A-1-b 203-S4	24 II Damp	SaSi A-4 203-S5	56 IV No Ref 8.0'
167+43	0					Heave Area	5.4 SP - 18.6	SiGSa A-1-b 203-S4	24 II Damp	SaSi A-4 203-S5	56 IV No Ref 8.0'
168+08	0										
170+00	0										
172+50	1										
175+08	1										

Pavement Thickness (4 inches)
Base Thickness (18 inches)
Subgrade Modulus (3000 psi)
Structural Number

* SP = Solid Pavement Layer
* UP = Unbound Pavement Layer
SP+UP = Total Pavement Thickness
* Base Thickness = Red indicates presence of "treated base"

Performance Data Summary

Caribou Rt. 161
CHIP
12780.00

Station (FWD)	D E F	Minimum Performance Data Criteria				Boring Location (Plan View)	Base Material		Subgrade Soils	
							AASHTO Class	% #200	AASHTO Class	% #200
						KEY				
Station		Red – Fail Green - Met				Solid Pave Thick Unbound Pave - UP Base Thickness (inches)	Soil Type AASHTO Sample #	% 200 Frost Moisture	Soil Type AASHTO Sample #	% 200 Frost Moisture
						CL				
177+50	2									
180+14	2					6.0 SP 2.4 UP 12.0	GSaSi A-4 S7	44 III Damp	GSaSi A-4 S12	58 IV Moist
182+50	2									
185+01	2									
190+03	2									
192+52	2									
195+00	2					6.6 SP - 3.0	SiGSa A-1-b S14	21 II Damp	Ref. 1.3’	
197+50	2									
200+01	2									
202+59	1									
205+00	0					5.4 SP 3.0 UP 18.0	SiGSa A-1-b S14	21 II Damp	GSaSi A-4 S10	65 IV Damp
207+50	0									
210+01	0									
212+51	0									
215+00	0									

Pavement Thickness (4 inches)
Base Thickness (18 inches)
Subgrade Modulus (3000 psi)
Structural Number

* SP = Solid Pavement Layer
* UP = Unbound Pavement Layer
SP+UP = Total Pavement Thickness
* Base Thickness = Red indicates presence of “treated base”

Falling Weight Deflectometer (FWD)
Summary Sheet

Project #: 12780.00
Town(s): Caribou
Route(s): 161
Date Tested: 07/14/2010
Requested By: S. Hayden
Direction of Testing: East to West

Of FWD tests: 81
Of Power Augers/Spoons - 15
Design Life: 12 Yrs
Future 18-kip ESALs (Design Life): 183,960
Initial Serviceability: 4.5
Terminal Serviceability: 2.5
Reliability Level: 90
Overall Standard Deviation: .45
Functional Class: Minor Arterial

Locations

Station (Feet)	Description
Project Stationing	

Comments:

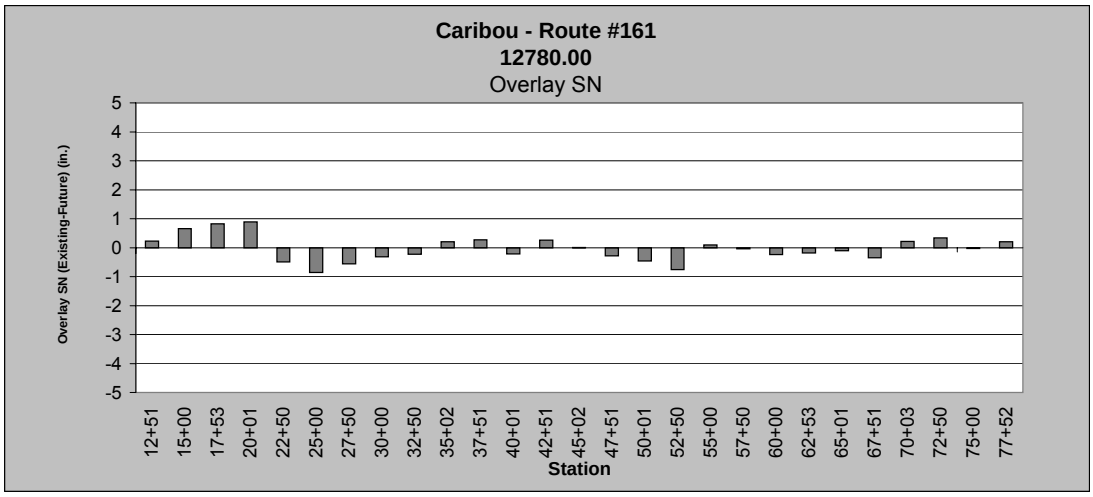
Caribou - Route #161
12780.00

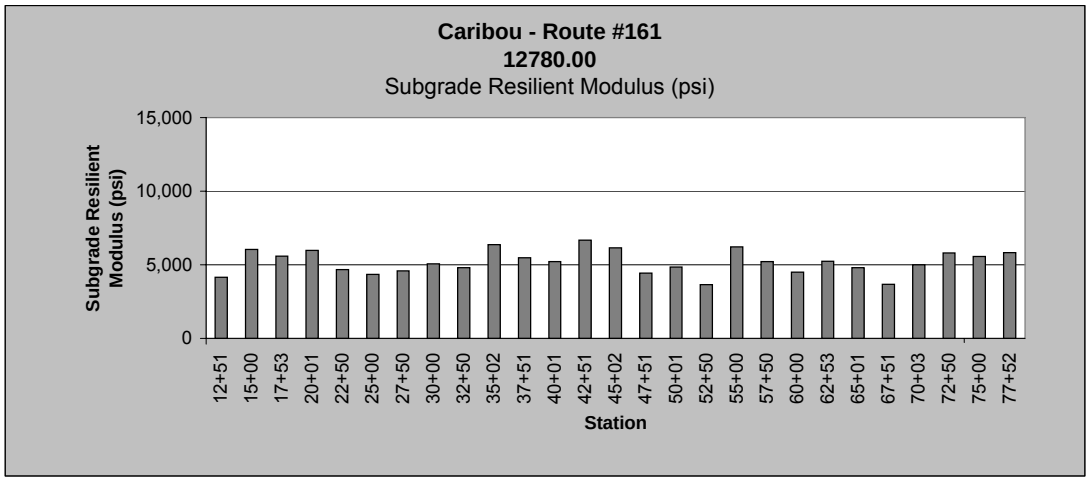
Station (Feet)	Existing Structural Number (in.)	Future Traffic Structural Number (in.)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (in.)	Pavement Modulus (psi)	Subgrade Resilient Modulus (psi)	Pavement Depth (in)	Combined Pavement/Gravel Depth Used for Calculation (in)
12+51	3.44	3.21	0.23	-	64,068	4,163	4.8	**19.1**
15+00	3.46	2.8	0.66	-	65,132	6,041	4.8	**19.1**
17+53	3.7	2.88	0.82	-	79,569	5,592	4.8	**19.1**
20+01	3.7	2.81	0.89	-	79,719	5,985	4.8	**19.1**
22+50	2.59	3.08	**-0.49**	**1.11**	56,641	4,666	4.8	**15**
25+00	2.3	3.16	**-0.86**	**1.95**	39,813	4,346	4.8	**15**
27+50	2.54	3.1	**-0.56**	**1.27**	53,538	4,580	4.8	**15**
30+00	2.67	2.99	**-0.32**	**0.73**	62,176	5,074	4.8	**15**
32+50	2.82	3.05	**-0.23**	**0.52**	72,668	4,800	4.8	**15**
35+02	2.95	2.75	0.2	-	83,651	6,369	4.8	**15**
37+51	3.17	2.9	0.27	-	103,296	5,473	4.8	**15**
40+01	2.74	2.95	**-0.21**	**0.48**	82,484	5,227	4.8	**14**
42+51	2.96	2.7	0.26	-	104,184	6,674	4.8	**14**
45+02	2.79	2.78	0.01	-	87,167	6,145	4.8	**14**
47+51	2.86	3.14	**-0.28**	**0.64**	93,783	4,427	4.8	**14**
50+01	2.57	3.03	**-0.46**	**1.05**	68,170	4,853	4.8	**14**
52+50	2.6	3.36	**-0.76**	**1.73**	70,690	3,661	4.8	**14**
55+00	2.86	2.77	0.09	-	87,375	6,221	6	**14.3**
57+50	2.92	2.96	**-0.04**	**0.09**	93,563	5,208	6	**14.3**
60+00	2.88	3.12	**-0.24**	**0.55**	89,417	4,494	6	**14.3**
62+53	2.77	2.95	**-0.18**	**0.41**	79,336	5,229	6	**14.3**
65+01	2.94	3.05	**-0.11**	**0.25**	95,568	4,806	6	**14.3**
67+51	3	3.35	**-0.35**	**0.8**	101,690	3,679	6	**14.3**
70+03	3.22	3	0.22	-	100,676	4,994	4.8	**15.4**
72+50	3.18	2.84	0.34	-	96,670	5,800	4.8	**15.4**
75+00	2.85	2.88	**-0.03**	**0.07**	69,262	5,574	4.8	**15.4**
77+52	3.04	2.84	0.2	-	84,238	5,830	4.8	**15.4**

Possible Weak Soils (<3000)

Possible Shallow Bedrock (>8000)

For actual Gravel Depths, see logdraft forms





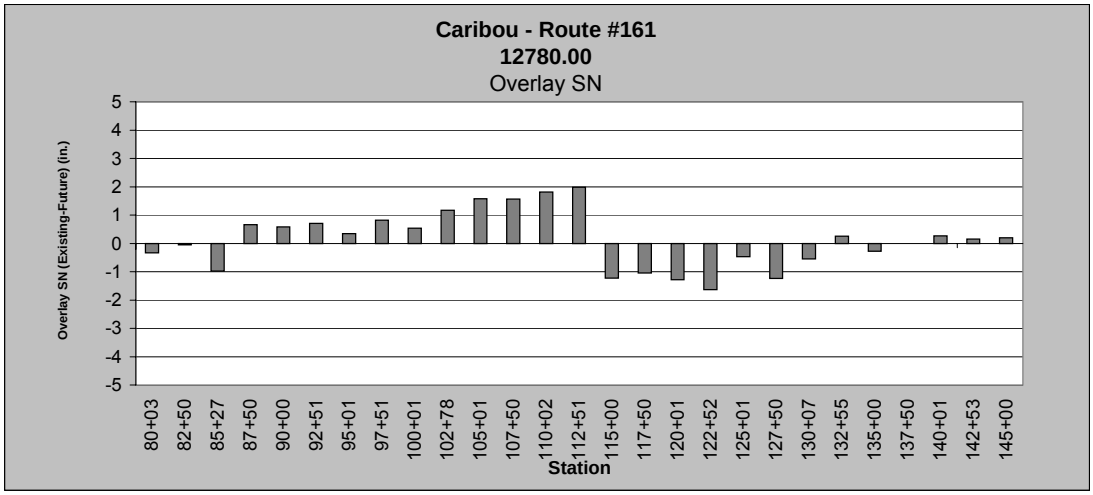
Caribou - Route #161
12780.00

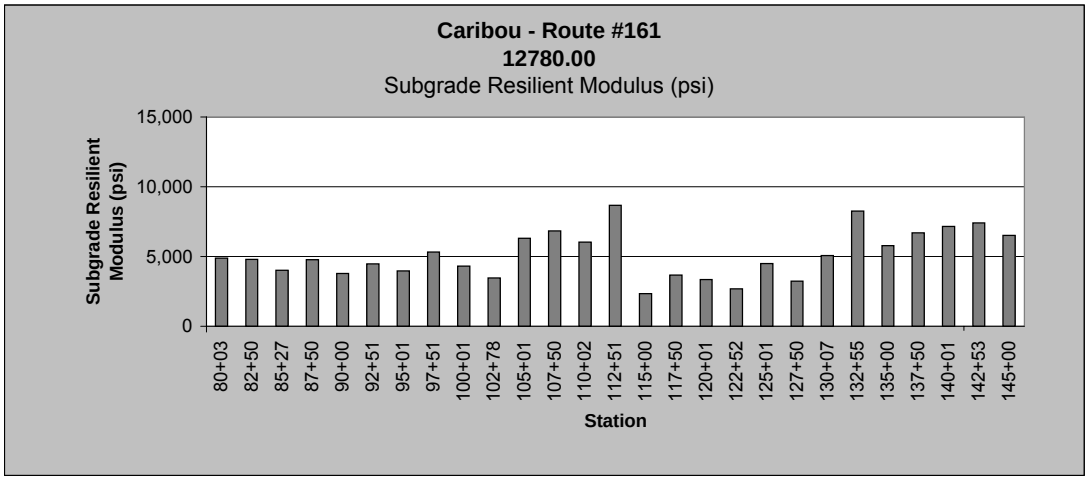
Station (Feet)	Existing Structural Number (in.)	Future Traffic Structural Number (in.)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (in.)	Pavement Modulus (psi)	Subgrade Resilient Modulus (psi)	Pavement Depth (in)	Combined Pavement/Gravel Depth Used for Calculation (in)
80+03	2.7	3.03	**-0.33**	**0.75**	82,440	4,879	6	**13.8**
82+50	3	3.05	**-0.05**	**0.11**	112,428	4,788	6	**13.8**
85+27	2.27	3.25	**-0.98**	**2.23**	48,889	4,016	6	**13.8**
87+50	3.71	3.05	0.66	-	74,604	4,780	6	**19.6**
90+00	3.9	3.32	0.58	-	86,233	3,787	6	**19.6**
92+51	3.84	3.13	0.71	-	82,510	4,467	6	**19.6**
95+01	3.6	3.26	0.34	-	67,721	3,975	6	**19.6**
97+51	3.75	2.93	0.82	-	76,833	5,326	6	**19.6**
100+01	3.71	3.17	0.54	-	74,149	4,301	6	**19.6**
102+78	4.6	3.43	1.17	-	54,837	3,465	7.2	26.9
105+01	4.34	2.76	1.58	-	46,173	6,296	7.2	26.9
107+50	4.24	2.68	1.56	-	42,908	6,837	7.2	26.9
110+02	4.61	2.8	1.81	-	55,113	6,039	7.2	26.9
112+51	4.43	2.45	1.98	-	49,012	8,666	7.2	26.9
115+00	2.71	3.94	**-1.23**	**2.8**	47,575	**2,338**	4.8	**16.6**
117+50	2.31	3.36	**-1.05**	**2.39**	29,465	3,662	4.8	**16.6**
120+01	2.19	3.47	**-1.28**	**2.91**	72,058	3,347	6	**11.7**
122+52	2.12	3.75	**-1.63**	**3.7**	65,516	**2,687**	6	**11.7**
125+01	2.65	3.12	**-0.47**	**1.07**	127,861	4,491	6	**11.7**
127+50	2.28	3.52	**-1.24**	**2.82**	80,739	3,223	6	**11.7**
130+07	2.44	2.99	**-0.55**	**1.25**	99,623	5,065	6	**11.7**
132+55	2.75	2.5	0.25	-	142,470	8,263	6	**11.7**
135+00	2.57	2.85	**-0.28**	**0.64**	100,348	5,782	7.2	**12.3**
137+50	2.7	2.7	0	-	115,547	6,702	7.2	**12.3**
140+01	2.9	2.63	0.27	-	143,630	7,153	7.2	**12.3**
142+53	2.75	2.6	0.15	-	122,097	7,413	7.2	**12.3**
145+00	2.92	2.72	0.2	-	147,331	6,520	7.2	**12.3**

Possible Weak Soils (<3000)

Possible Shallow Bedrock (>8000)

For actual Gravel Depths, see logdraft forms





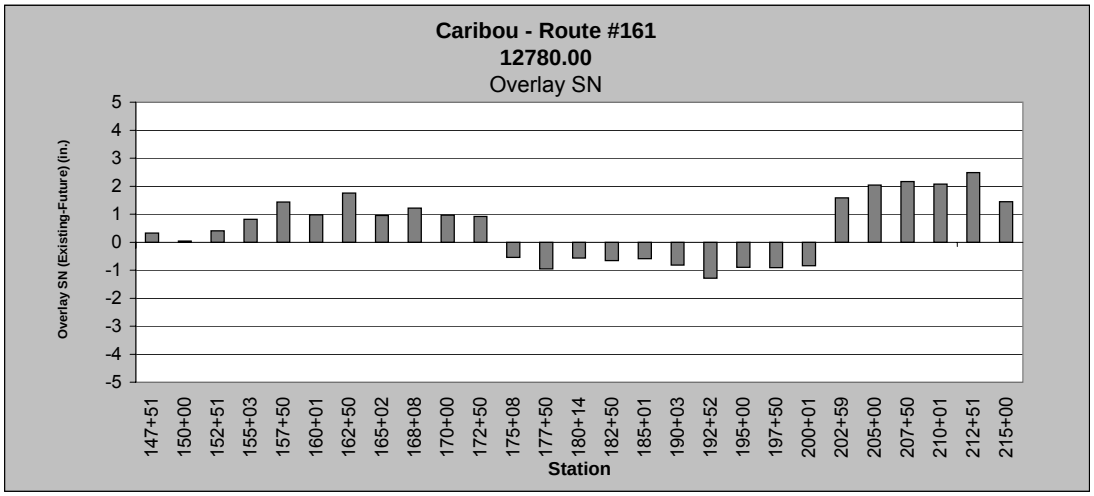
Caribou - Route #161
12780.00

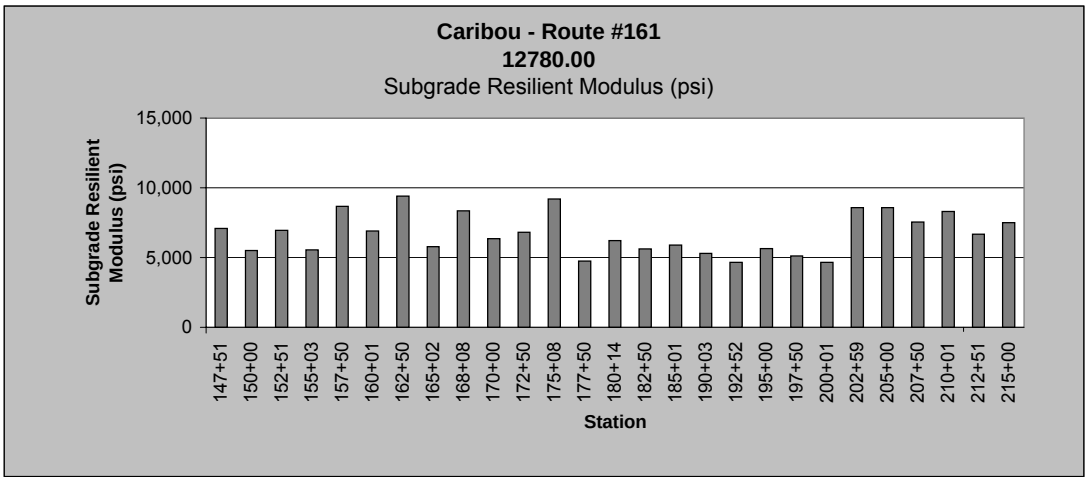
Station (Feet)	Existing Structural Number (in.)	Future Traffic Structural Number (in.)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (in.)	Pavement Modulus (psi)	Subgrade Resilient Modulus (psi)	Pavement Depth (in)	Combined Pavement/Gravel Depth Used for Calculation (in)
147+51	2.97	2.64	0.33	-	153,782	7,083	7.2	**12.3**
150+00	2.9	2.86	0.04	-	138,230	5,496	7.2	**12.3**
152+51	3.06	2.66	0.4	-	168,375	6,946	7.2	**12.3**
155+03	3.71	2.89	0.82	-	54,969	5,554	6	21.7
157+50	3.88	2.45	1.43	-	62,714	8,661	6	21.7
160+01	3.65	2.67	0.98	-	52,223	6,905	6	21.7
162+50	4.14	2.38	1.76	-	76,166	9,413	6	21.7
165+02	3.8	2.85	0.95	-	59,039	5,778	6	21.7
168+08	3.71	2.49	1.22	-	54,633	8,353	6	21.7
170+00	3.72	2.75	0.97	-	55,473	6,358	6	21.7
172+50	3.6	2.68	0.92	-	50,095	6,810	6	21.7
175+08	1.86	2.4	**-0.54**	**1.23**	47,461	9,197	6	**11.4**
177+50	2.11	3.06	**-0.95**	**2.16**	70,039	4,738	6	**11.4**
180+14	2.21	2.77	**-0.56**	**1.27**	79,538	6,223	6	**11.4**
182+50	2.22	2.88	**-0.66**	**1.5**	80,933	5,624	6	**11.4**
185+01	2.24	2.83	**-0.59**	**1.34**	82,718	5,903	6	**11.4**
190+03	2.12	2.94	**-0.82**	**1.86**	70,561	5,306	6	**11.4**
192+52	1.8	3.08	**-1.28**	**2.91**	72,900	4,654	6.6	**9.6**
195+00	1.97	2.87	**-0.9**	**2.05**	95,237	5,652	6.6	**9.6**
197+50	2.07	2.98	**-0.91**	**2.07**	109,783	5,108	6.6	**9.6**
200+01	2.24	3.08	**-0.84**	**1.91**	140,191	4,660	6.6	**9.6**
202+59	4.04	2.46	1.58	-	54,274	8,569	5.4	23.7
205+00	4.5	2.46	2.04	-	74,871	8,571	5.4	23.7
207+50	4.75	2.58	2.17	-	88,525	7,543	5.4	23.7
210+01	4.56	2.49	2.07	-	78,038	8,310	5.4	23.7
212+51	5.19	2.7	2.49	-	115,227	6,665	5.4	23.7
215+00	4.04	2.59	1.45	-	54,392	7,511	5.4	23.7

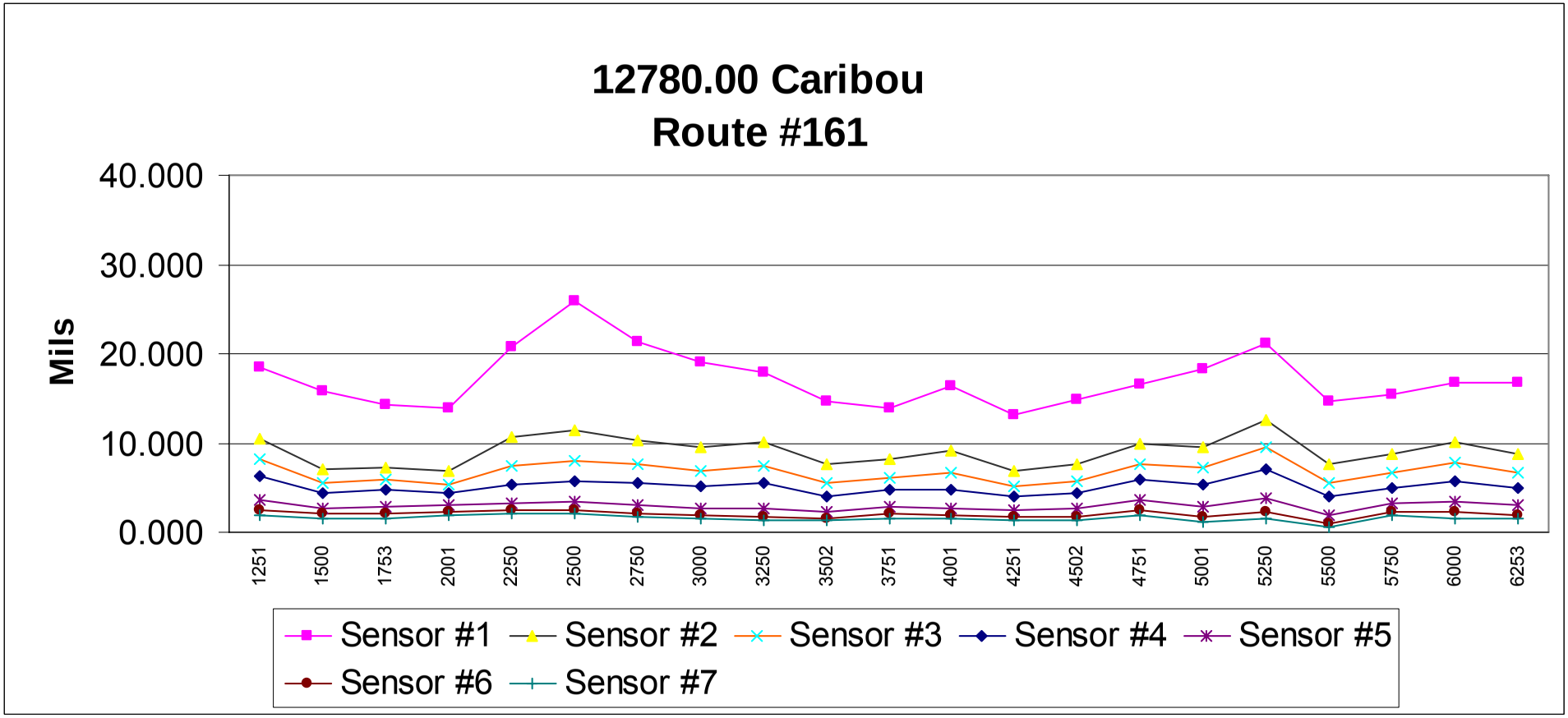
Possible Weak Soils (<3000)

Possible Shallow Bedrock (>8000)

For actual Gravel Depths, see logdraft forms






12780.00 Caribou
Route #161
Mils
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30.000
20.000
10.000
0.000
1251
1500
1753
2001
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2750
3000
3250
3502
3751
4001
4251
4502
4751
5001
5250
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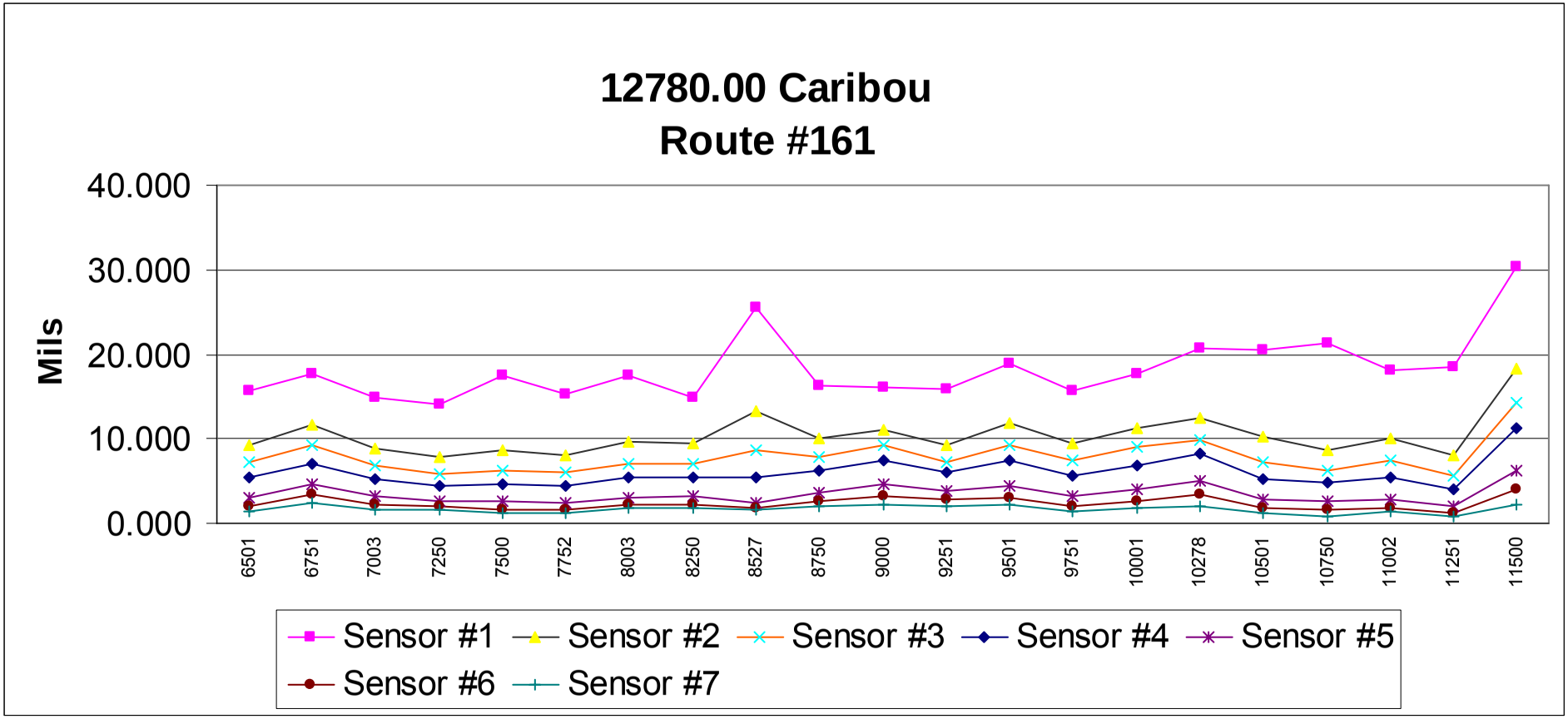
Sensor #7


12780.00 Caribou
Route #161
Mils
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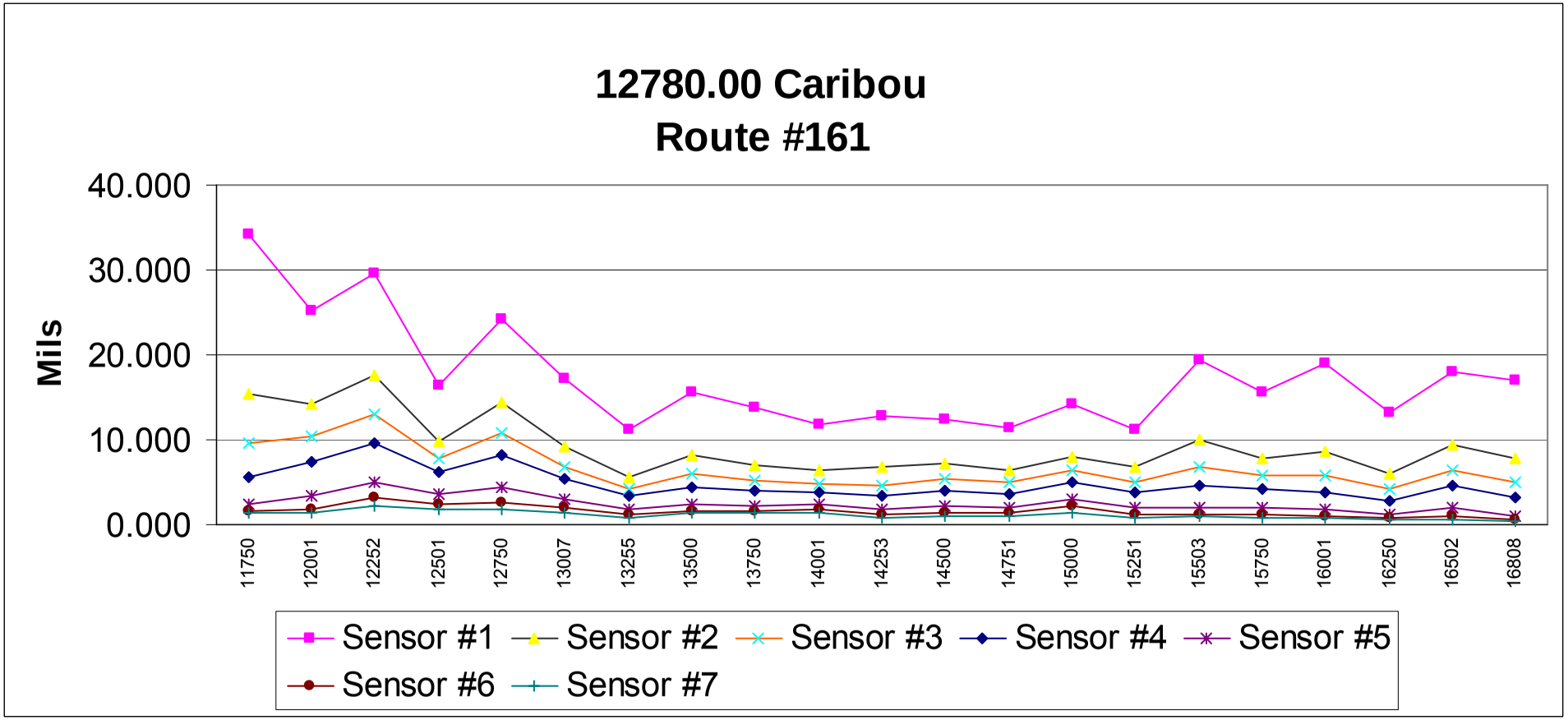
12780.00 Caribou
Route #161
Mils
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15000
15251
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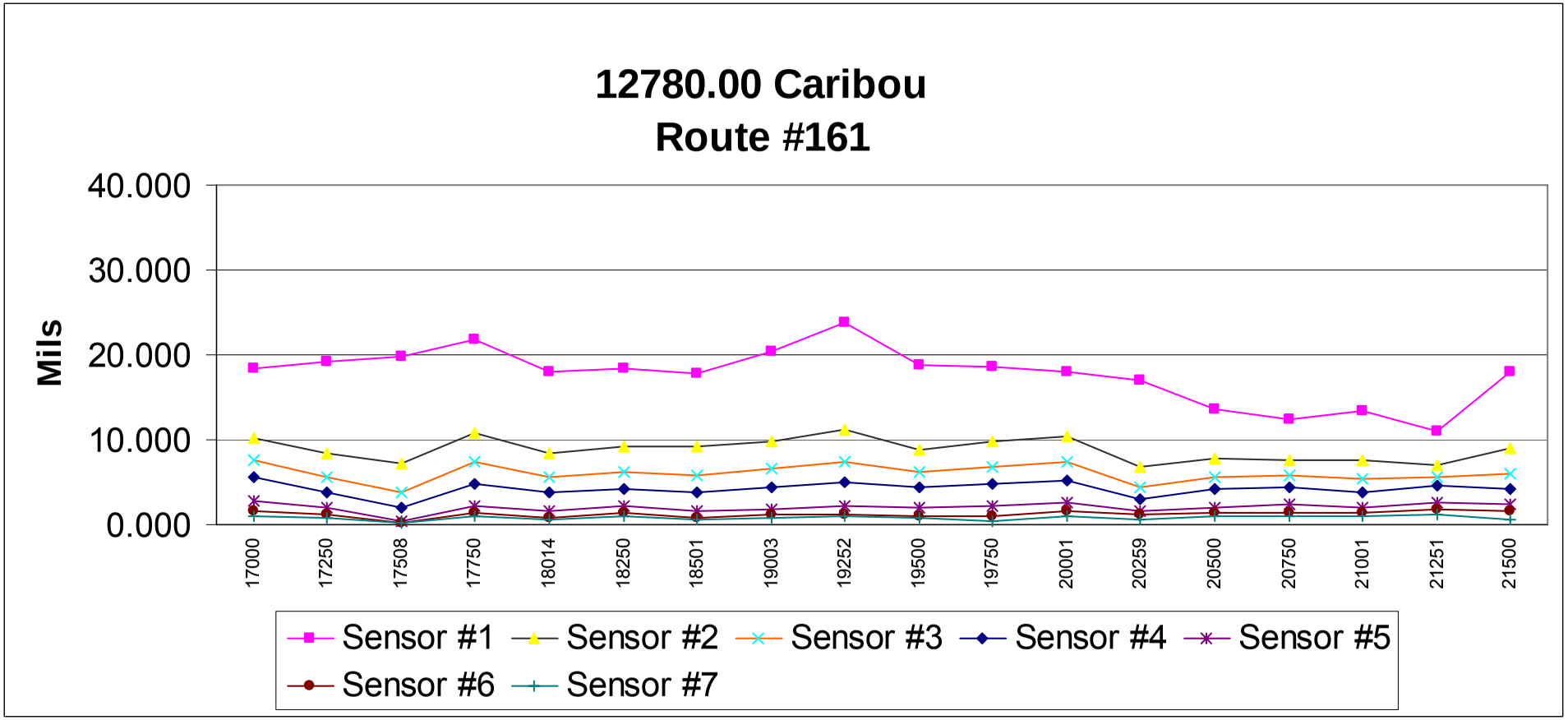
12780.00 Caribou
Route #161
Mils
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19750
20001
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20500
20750
21001
21251
21500
Sensor #1
Sensor #2
Sensor #3
Sensor #4
Sensor #5
Sensor #6
Sensor #7

STATE OF MAINE

INTERDEPARTMENTAL MEMORANDUM

FILE: SR 161

COPY:

Date of Request: **12/22/2009** Return: **05/03/2010**

Latest Date Needed By: **02/10/10**

To:	**Ed Hanscom**	Dept.:	**MDOT, Bureau of Planning**
From:	**Jon Bither**	Dept.:	**Region 5 Highway Program**
Subject:	**Request for Traffic Information**	Project Manager:	**Jon Bither**
TOWN(S):	**Caribou**	P.I.N.	**012780.00** Consultant Proj
COUNTY:	**Aroostook**	ROUTE:	**SR 161**

LOCATION/ DESCRIPTION: P. E. for future construction: Begins 0.81 mile N/O Caribou/Ft. Fairfield TL & extends northwest 4.08 mi (6.57 km) to easterly abutment of Aroostook River Bridge (#5572).

	Roadway Changes or Relocation (Attach Sketch)	Turning Movement needed (Provide Locations under Comments)	Other Please Describe Under Comments
Please Check Box if Applicable:			

Prep By: JG

Description of Sections	Sec. 1 SR 161 (Ft. Fairfield Rd.) SE/O IR 561 (Main Siding Rd) Caribou	Sec. 2 SR 161 (Ft. Fairfield Rd.) E/O River Road Caribou	Sec. 3 SR 161 (Ft. Fairfield Rd.) E/O U.S. Rte 1 @ BR #5572 Caribou	Sec. 4	Sec. 5
1 Latest AADT (Year)	1250 (2009)	1510 (2009)	3180 (2009)		
2 Current **2010** AADT	1260	1530	3200		
3 Future **2022** AADT	1410	1710	3580		
4 Future AADT					
5 DHV - % of AADT	9%	10%	10%	%	%
6 Design Hourly Volume	127	171	358		
7 % Heavy Trucks (AADT)	7%	6%	5%	%	%
8 % Heavy Trucks (DHV)	3%	2%	2%	%	%
9 Direct.Dist. (DHV)	52%	52%	52%	%	%
10 18-KIP Equivalent P 2.0	44	44	80		
11 18-KIP Equivalent P 2.5	42	42	76		

Notes or Remarks: 18-Kip ESALs based on 12 year life

PLEASE PROVIDE: (1) PIN NUMBER, (2) THE CURRENT & FUTURE YEARS FOR WHICH YOU WANT AADT CALCULATED, AND SEND TO MIKE MORGAN. (A LOCATION MAP IS NO LONGER NEEDED.)
TRAFFIC REQUESTS WILL BE FILLED ON A FIRST COME / SERVE BASIS. PLEASE SEND WHEN PROJECT KICKS OFF!!!

Need Only Data Items Numbered **ALL**

Comments: Highway Improvements CHIP

Pavement Performance Assessment Summary

(PPAS)

Caribou Route 161

12780.00

			PERFORMANCE MEASURESUREMENTS						GEN. PAVEMENT INFORMATION					
				FWD Data	ARAN Data				ARAN Supplied Data					
Station	RLM	Inv Yr	Def (≥ 3)	Existing SN < Future SN	PCR < 3.0	IRI > 170	Rut Depth > 0.5"		Shoulder Type and Width				Yr. Built	Yr. Resurf.
							Left	Right	Left		Right			
							(in.)	(in.)		ft		ft		
5+67	6.27	2011	2		1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
6+20	6.28	2011	2		1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
6+73	6.29	2011	2		1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
7+25	6.30	2011	2		1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
9+89	6.35	2011	2		1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
12+01	6.39	2011	2		1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
18+34	6.51	2011	3	X	1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
22+50	6.59	2011	3	X	1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
27+85	6.69	2011	3	X	1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
31+01	6.75	2011	3	X	1.93	171	0.2	0.4	Gravel	4	Gravel	4	0	1992
33+65	6.80	2011	4	X	1.6	210	0.2	0.5	Gravel	4	Gravel	4	0	1992
42+10	6.96	2011	4	X	1.6	210	0.2	0.5	Gravel	4	Gravel	4	0	1992
55+30	7.21	2011	4	X	1.6	210	0.2	0.5	Gravel	4	Gravel	4	0	1992
65+33	7.40	2011	3	X	2.55	178	0.2	0.4	Gravel	4	Gravel	4	0	1992
80+12	7.68	2011	3	X	2.55	178	0.2	0.4	Gravel	4	Gravel	4	0	1992
86+00	7.79	2011	3	X	2.55	178	0.2	0.4	Gravel	4	Gravel	4	0	1992
97+01	8.00	2011	2		2.36	196	0.2	0.4	Gravel	4	Gravel	4	0	1992
99+65	8.05	2011	2		2.36	196	0.2	0.4	Gravel	4	Gravel	4	0	1992
106+52	8.18	2011	2		2.36	196	0.2	0.4	Gravel	4	Gravel	4	0	1992
112+33	8.29	2011	2		2.36	196	0.2	0.4	Gravel	4	Gravel	4	0	1992
115+00	8.34	2011	3	X	2.36	196	0.2	0.4	Gravel	4	Gravel	4	0	1992
120+77	8.45	2011	3	X	2.36	196	0.2	0.4	Gravel	4	Gravel	4	0	1992
121+83	8.47	2011	3	X	2.36	196	0.2	0.4	Gravel	4	Gravel	4	0	1992
125+53	8.54	2011	1	X	3.06	98	0.2	0.3	Gravel	4	Gravel	4	0	1992
128+17	8.59	2011	1	X	3.06	98	0.2	0.3	Gravel	4	Gravel	4	0	1992
129+75	8.62	2011	1	X	3.06	98	0.2	0.3	Gravel	6	Gravel	6	0	1992
133+97	8.70	2011	1	X	3.06	98	0.2	0.3	Gravel	6	Gravel	6	0	1992
136+09	8.74	2011	1	X	3.06	98	0.2	0.3	Gravel	6	Gravel	6	0	1992
139+78	8.81	2011	1		3.06	98	0.2	0.3	Gravel	4	Gravel	4	0	1992
140+31	8.82	2011	2		2.27	207	0.2	0.4	Gravel	4	Gravel	4	0	1992
151+40	9.03	2011	2		2.27	207	0.2	0.4	Gravel	4	Gravel	4	0	1992
169+88	9.38	2011	2		2.27	207	0.2	0.4	Gravel	4	Gravel	4	0	1992
171+46	9.41	2011	2		2.27	207	0.2	0.4	Gravel	6	Gravel	6	0	1992
171+99	9.42	2011	2		2.27	207	0.2	0.4	Gravel	6	Gravel	6	0	1992
174+10	9.46	2011	3	X	2.07	226	0.2	0.4	Gravel	6	Gravel	6	0	1992
185+72	9.68	2011	3	X	2.07	226	0.2	0.4	Gravel	6	Gravel	6	0	1992
186+77	9.70	2011	3	X	2.07	226	0.2	0.4	Gravel	6	Gravel	8	0	1992
187+30	9.71	2011	3	X	2.07	226	0.2	0.4	Gravel	6	Gravel	8	0	1992
196+81	9.89	2011	3	X	2.07	226	0.2	0.4	Gravel	8	Gravel	8	0	1992
197+33	9.90	2011	3	X	2.07	226	0.2	0.4	Gravel	8	Gravel	8	0	1992
202+09	9.99	2011	3	X	2.07	226	0.2	0.4	Gravel	8	Gravel	8	0	1992

Caribou Route 161														
12780.00														
			PERFORMANCE MEASURESUREMENTS						**GEN. PAVEMENT INFORMATION**					
				FWD Data	**ARAN Data**				**ARAN Supplied Data**					
Station	RLM	Inv Yr	Def (≥ 3)	Existing SN < Future SN	PCR < 3.0	IRI > 170	Rut Depth > 0.5"		Shoulder Type and Width				Yr. Built	Yr. Resurf.
202+61	10.00	2011	2		2.07	226	0.2	0.4	Gravel	8	Gravel	8	0	1992
203+14	10.01	2011	2		2.07	226	0.2	0.4	Gravel	6	Gravel	6	0	1992
203+67	10.02	2011	2		2.07	226	0.2	0.4	Gravel	6	Gravel	6	0	0
204+20	10.03	2011	2		2.07	226	0.2	0.4	Gravel	6	Gravel	6	0	0
204+73	10.04	2011	2		2.07	226	0.2	0.4	Gravel	6	Gravel	6	0	0
207+89	10.10	2011	2		2.07	226	0.2	0.4	Paved	2	Curb	2	0	0
208+95	10.12	2011	2		3.08	266	0.3	0.5	Paved	2	Curb	2	0	0
210+53	10.15	2011	2		3.08	266	0.3	0.5	Paved	2	Curb	2	0	0
211+06	10.16	2011	2		3.08	266	0.3	0.5	Paved	2	Curb	2	0	0
211+59	10.17	2011	2		3.08	266	0.3	0.5	Paved	2	Curb	2	0	0
212+12	10.18	2011	2		3.08	266	0.3	0.5	Curb	3	Curb	3	0	0
212+65	10.19	2011	2		2.41	371	0.3	0.4	Curb	3	Curb	3	0	0
214+23	10.22	2011	2		2.41	371	0.3	0.4	Curb	3	Curb	3	0	0
215+81	10.25	2011	2		2.41	371	0.3	0.4	Curb	3	Curb	3	0	0
AVERAGE					**2.32**	**205**	**0.21**	**0.40**						
Note: Dates in Year the Built and Year Resurface columns are from the ARAN data and have not been verified.														

State of Maine - Department of Transportation

Pavement Core Summary Sheet

Town(Caribou Project Number: 12780.00

Station (Feet)	Offset (Feet)	Pavement Depth (in)	Unbound Pavement / Treated Gravel (Feet)	Unbound Pavement / Treated Gravel (in)	Combined Pavement + Treated Gravel (in)	PC #	Comments / Date 10/4,9,10/07
25+00	5.0 Rt.	4.80			4.80	1	Route 161
25+00	CL	4.80	0.40-0.50	1.2	6.00	2	
25+00	5.0 Lt.	4.80			4.80	3	
25+00	10.0 Lt.	3.00	0.25-0.35	1.2	4.20	4	
55+00	5.0 Rt.	3.60	0.30-0.43	1.6	5.20	5	
55+00	CL	5.40	0.45-0.58	1.6	7.00	6	
55+00	5.0 Lt.	3.60	0.30-0.50	1.2	4.80	7	
55+00	10.0 Lt.	4.20	0.35-0.45	1.2	5.40	8	
80+03	5.0 Rt.	6.00	0.50-0.55	0.6	6.60	9	
80+03	CL	6.00	0.50-0.65	1.8	7.80	10	
80+03	5.0 Lt.	5.40	0.45-0.60	1.8	7.20	11	
80+03	10.0 Lt.	3.60	0.30-0.40	1.2	4.80	12	
102+50	CL	6.00			6.00	13	
102+50	5.0 Rt.	6.00			6.00	14	
102+50	5.0 Lt.	6.00			6.00	15	
102+50	10.0 Lt.	3.60	0.30-0.50	2.4	6.00	16	
127+50	5.0 Rt.	6.00			6.00	17	
127+50	CL	6.00			6.00	18	
127+50	5.0 Lt.	3.00	0.25-0.45	2.4	5.40	19	
127+50	10.0 Lt.	2.40	0.20-0.30	1.2	3.60	20	
157+55	5.0 Rt.	6.00			6.00	21	
157+55	CL	7.80			7.80	22	
157+55	5.0 Lt.	2.40	0.20-0.55	4.2	6.60	23	
157+55	10.0 Lt.	2.40	0.20-0.60	4.8	7.20	24	
195+27	10.0 Lt.	7.20	0.60-0.75	1.8	9.00	25	
195+27	5.0 Lt.	4.80	0.40-0.50	1.2	6.00	26	
195+27	CL	7.20			7.20	27	
195+27	5.0 Rt.	4.20	0.35-0.50	1.8	6.00	28	

Logged By: G. Lidstone

2" Thinwall Core

12780.00 Caribou - Route #161
Estimated Pavement Thickness
Ground Penetrating Radar (GPR)

Explanation of Ground Penetrating Radar (GPR) Data Collection and Analysis:
For Project 12780.00 (Caribou), GPR data was collected in the left and right wheel path of both the North and South bound lanes. Data was collected at 1 foot intervals along the entire section. Pavement thickness estimates were developed using Geophysical Survey Systems Inc. (GSSI) RADAN GPR Data Processing Software. Where available, pavement thicknesses from pavement cores and geotechnical borings collected by MaineDOT personnel were used in developing the estimated GPR pavement thicknesses.

GPR pavement thickness averages are to be considered for estimating purposes only.
Actual pavement thickness may vary.

Analysis Distance (ft) -	100	Overall Average Thickness (in.)	4.7	Overall Minimum Thickness (in.)	3.0	Overall Maximum Thickness (in.)	8.1

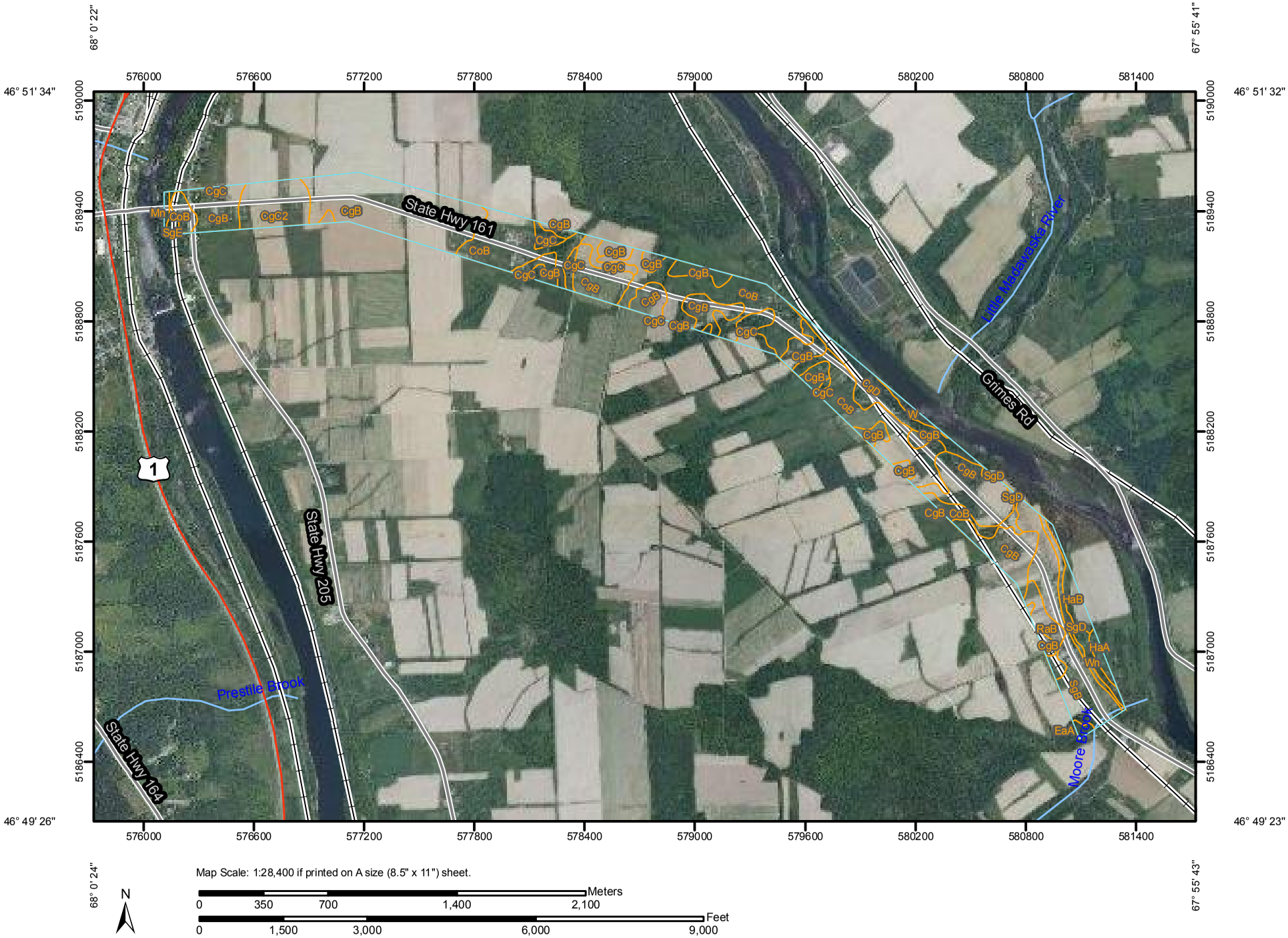
12780.00 Caribou - Route #161

Station Limits		Average Depth (in)	Station Limits		Average Depth (in)	Station Limits		Average Depth (in)	Station Limits		Average Depth (in)
10+00	11+00	4.7	25+00	26+00	4.4	40+00	41+00	3.6	55+00	56+00	4.0
11+00	12+00	3.2	26+00	27+00	5.1	41+00	42+00	4.0	56+00	57+00	4.3
12+00	13+00	3.0	27+00	28+00	5.0	42+00	43+00	3.6	57+00	58+00	4.2
13+00	14+00	3.1	28+00	29+00	4.3	43+00	44+00	3.5	58+00	59+00	4.1
14+00	15+00	3.2	29+00	30+00	3.8	44+00	45+00	3.5	59+00	60+00	3.9
15+00	16+00	3.3	30+00	31+00	3.6	45+00	46+00	3.5	60+00	61+00	4.0
16+00	17+00	3.0	31+00	32+00	3.7	46+00	47+00	3.3	61+00	62+00	3.7
17+00	18+00	3.1	32+00	33+00	3.5	47+00	48+00	3.5	62+00	63+00	3.6
18+00	19+00	3.3	33+00	34+00	3.4	48+00	49+00	4.0	63+00	64+00	3.3
19+00	20+00	3.3	34+00	35+00	3.3	49+00	50+00	3.8	64+00	65+00	3.0
20+00	21+00	3.5	35+00	36+00	4.1	50+00	51+00	4.0	65+00	66+00	3.2
21+00	22+00	3.5	36+00	37+00	4.1	51+00	52+00	4.2	66+00	67+00	3.3
22+00	23+00	3.4	37+00	38+00	4.2	52+00	53+00	4.2	67+00	68+00	3.7
23+00	24+00	3.8	38+00	39+00	4.4	53+00	54+00	3.9	68+00	69+00	4.1
24+00	25+00	4.1	39+00	40+00	4.3	54+00	55+00	4.2	69+00	70+00	4.1

Station Limits		Average Depth (in)	Station Limits		Average Depth (in)	Station Limits		Average Depth (in)	Station Limits		Average Depth (in)
70+00	71+00	3.8	105+00	106+00	5.0	140+00	141+00	5.2	175+00	176+00	4.0
71+00	72+00	4.0	106+00	107+00	5.1	141+00	142+00	5.8	176+00	177+00	4.5
72+00	73+00	4.2	107+00	108+00	5.2	142+00	143+00	5.4	177+00	178+00	4.7
73+00	74+00	4.7	108+00	109+00	5.0	143+00	144+00	4.6	178+00	179+00	4.7
74+00	75+00	4.5	109+00	110+00	5.1	144+00	145+00	4.6	179+00	180+00	5.4
75+00	76+00	4.9	110+00	111+00	6.2	145+00	146+00	5.0	180+00	181+00	5.9
76+00	77+00	4.9	111+00	112+00	5.6	146+00	147+00	6.1	181+00	182+00	6.7
77+00	78+00	4.7	112+00	113+00	5.7	147+00	148+00	5.9	182+00	183+00	6.3
78+00	79+00	5.0	113+00	114+00	5.8	148+00	149+00	5.2	183+00	184+00	6.0
79+00	80+00	5.1	114+00	115+00	5.9	149+00	150+00	5.1	184+00	185+00	5.8
80+00	81+00	5.0	115+00	116+00	5.1	150+00	151+00	4.8	185+00	186+00	6.0
81+00	82+00	5.0	116+00	117+00	4.4	151+00	152+00	4.5	186+00	187+00	6.2
82+00	83+00	4.6	117+00	118+00	4.3	152+00	153+00	4.5	187+00	188+00	5.6
83+00	84+00	4.5	118+00	119+00	4.5	153+00	154+00	4.5	188+00	189+00	5.7
84+00	85+00	4.9	119+00	120+00	4.0	154+00	155+00	4.4	189+00	190+00	5.4
85+00	86+00	5.1	120+00	121+00	4.3	155+00	156+00	4.4	190+00	191+00	5.3
86+00	87+00	5.5	121+00	122+00	4.4	156+00	157+00	4.2	191+00	192+00	5.3
87+00	88+00	5.2	122+00	123+00	4.6	157+00	158+00	4.6	192+00	193+00	5.5
88+00	89+00	5.4	123+00	124+00	5.0	158+00	159+00	4.3	193+00	194+00	5.1
89+00	90+00	5.7	124+00	125+00	4.6	159+00	160+00	4.1	194+00	195+00	5.3
90+00	91+00	5.1	125+00	126+00	4.6	160+00	161+00	3.7	195+00	196+00	5.7
91+00	92+00	6.3	126+00	127+00	4.0	161+00	162+00	4.1	196+00	197+00	5.9
92+00	93+00	6.3	127+00	128+00	4.4	162+00	163+00	4.0	197+00	198+00	5.6
93+00	94+00	6.3	128+00	129+00	4.4	163+00	164+00	3.9	198+00	199+00	5.8
94+00	95+00	6.2	129+00	130+00	4.1	164+00	165+00	4.0	199+00	200+00	5.5
95+00	96+00	5.8	130+00	131+00	3.9	165+00	166+00	3.9	200+00	201+00	5.3
96+00	97+00	5.5	131+00	132+00	5.0	166+00	167+00	4.7	201+00	202+00	5.6
97+00	98+00	5.1	132+00	133+00	5.7	167+00	168+00	4.8	202+00	203+00	6.0
98+00	99+00	5.2	133+00	134+00	5.4	168+00	169+00	4.6	203+00	204+00	5.7
99+00	100+00	5.4	134+00	135+00	5.6	169+00	170+00	4.6	204+00	205+00	5.1
100+00	101+00	4.6	135+00	136+00	5.1	170+00	171+00	4.5	205+00	206+00	5.1
101+00	102+00	4.3	136+00	137+00	5.0	171+00	172+00	3.9	206+00	207+00	5.2
102+00	103+00	5.4	137+00	138+00	5.1	172+00	173+00	4.0	207+00	208+00	5.2
103+00	104+00	4.8	138+00	139+00	5.3	173+00	174+00	4.0	208+00	209+00	5.6
104+00	105+00	4.4	139+00	140+00	5.1	174+00	175+00	3.7	209+00	210+00	5.6

Station Limits		Average Depth (in)	Station Limits		Average Depth (in)	Station Limits		Average Depth (in)	Station Limits		Average Depth (in)
210+00	211+00	5.5									
211+00	212+00	5.4									
212+00	213+00	4.9									
213+00	214+00	5.3									
214+00	215+00	7.3									
215+00	215+84	8.1									

(12780.00 Caribou Rte 161)



Map Scale: 1:28,400 if printed on A size (8.5" x 11") sheet.

N

Meters: 0, 350, 700, 1,400, 2,100

Feet: 0, 1,500, 3,000, 6,000, 9,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Gully

Short Steep Slope

Other

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:28,400 if printed on A size (8.5" × 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: Aroostook County, Maine, Northeastern Part
Survey Area Data: Version 14, Feb 15, 2012

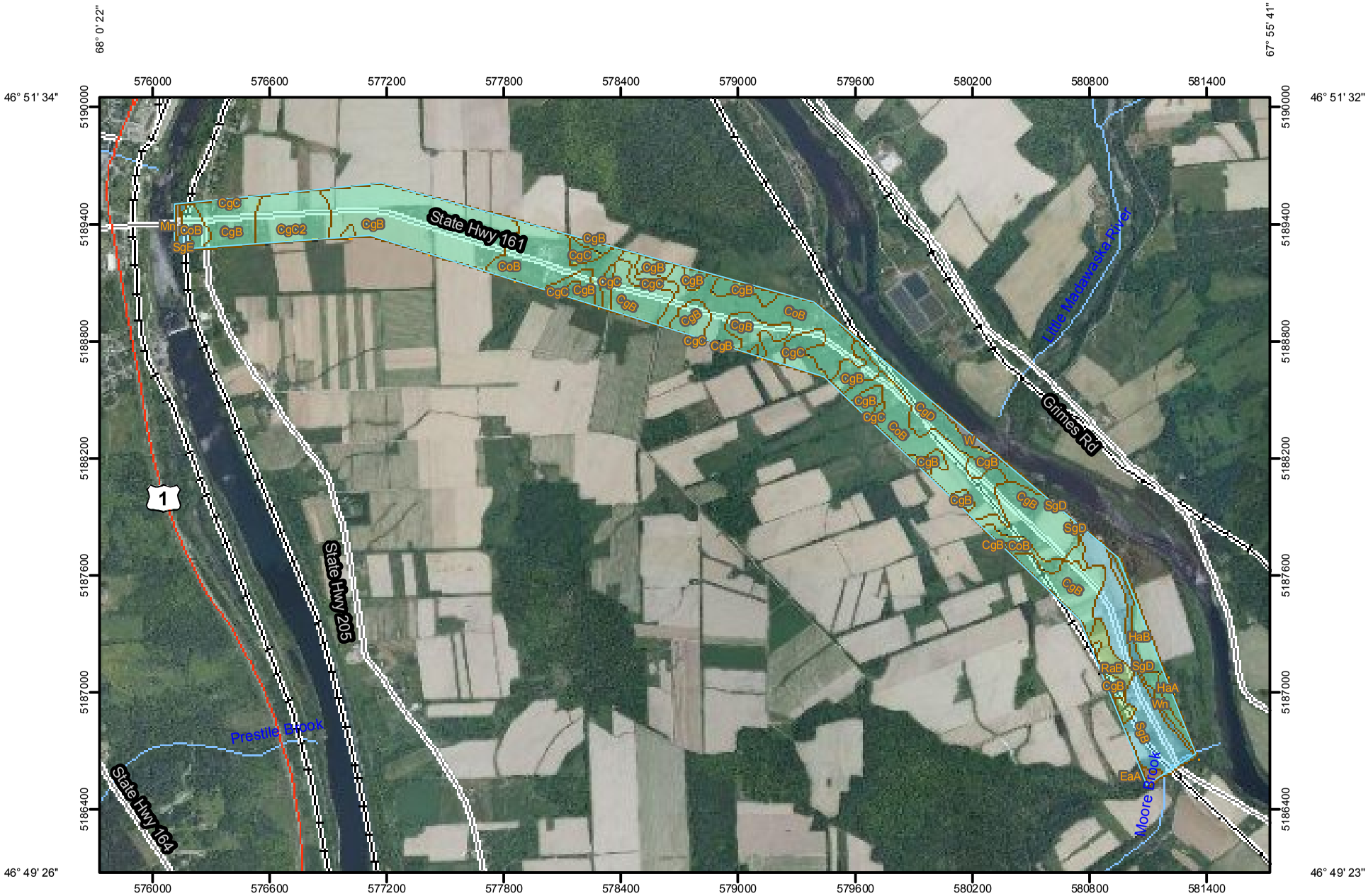
Date(s) aerial images were photographed: Data not available.

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 Unit Legend

Aroostook County, Maine, Northeastern Part (ME607)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CgB	Caribou gravelly loam, 2 to 8 percent slopes	192.7	41.1%
CgC	Caribou gravelly loam, 8 to 15 percent slopes	21.3	4.5%
CgC2	Caribou gravelly loam, 8 to 15 percent slopes, eroded	23.8	5.1%
CgD	Caribou gravelly loam, 15 to 25 percent slopes	20.6	4.4%
CoB	Conant silt loam, 2 to 8 percent slopes	127.6	27.2%
EaA	Easton and Washburn silt loams, 0 to 2 percent slopes	1.5	0.3%
HaA	Hadley silt loam, level	3.3	0.7%
HaB	Hadley silt loam, undulating	8.7	1.9%
Mn	Mixed alluvial land	1.4	0.3%
RaB	Red Hook and Atherton silt loams, 2 to 8 percent slopes	9.9	2.1%
SgB	Stetson gravelly loam, 2 to 8 percent slopes	40.3	8.6%
SgD	Stetson gravelly loam, 15 to 25 percent slopes	8.4	1.8%
SgE	Stetson gravelly loam, 25 to 45 percent slopes	2.0	0.4%
W	Water bodies	2.8	0.6%
Wn	Winooski silt loam	4.8	1.0%
Totals for Area of Interest		**469.2**	**100.0%**

AASHTO Group Classification (Surface)—Aroostook County, Maine, Northeastern Part
(12780.00 Caribou Rte 161)



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N

Meters: 0, 350, 700, 1,400, 2,100

Feet: 0, 1,500, 3,000, 6,000, 9,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

A-1

A-1-a

A-1-b

A-2

A-2-4

A-2-5

A-2-6

A-2-7

A-3

A-4

A-5

A-6

A-7

A-7-5

A-7-6

A-8

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:28,400 if printed on A size (8.5" × 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: Aroostook County, Maine, Northeastern Part
Survey Area Data: Version 14, Feb 15, 2012

Date(s) aerial images were photographed: Data not available.

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.

AASHTO Group Classification (Surface)

AASHTO Group Classification (Surface)— Summary by Map Unit — Aroostook County, Maine, Northeastern Part (ME607)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
CgB	Caribou gravelly loam, 2 to 8 percent slopes	A-4	192.7	41.1%
CgC	Caribou gravelly loam, 8 to 15 percent slopes	A-4	21.3	4.5%
CgC2	Caribou gravelly loam, 8 to 15 percent slopes, eroded	A-4	23.8	5.1%
CgD	Caribou gravelly loam, 15 to 25 percent slopes	A-4	20.6	4.4%
CoB	Conant silt loam, 2 to 8 percent slopes	A-4	127.6	27.2%
EaA	Easton and Washburn silt loams, 0 to 2 percent slopes	A-5	1.5	0.3%
HaA	Hadley silt loam, level	A-4	3.3	0.7%
HaB	Hadley silt loam, undulating	A-4	8.7	1.9%
Mn	Mixed alluvial land		1.4	0.3%
RaB	Red Hook and Atherton silt loams, 2 to 8 percent slopes	A-8	9.9	2.1%
SgB	Stetson gravelly loam, 2 to 8 percent slopes	A-2	40.3	8.6%
SgD	Stetson gravelly loam, 15 to 25 percent slopes	A-2	8.4	1.8%
SgE	Stetson gravelly loam, 25 to 45 percent slopes	A-2	2.0	0.4%
W	Water bodies		2.8	0.6%
Wn	Winooski silt loam	A-4	4.8	1.0%
Totals for Area of Interest			**469.2**	**100.0%**

Rating Options

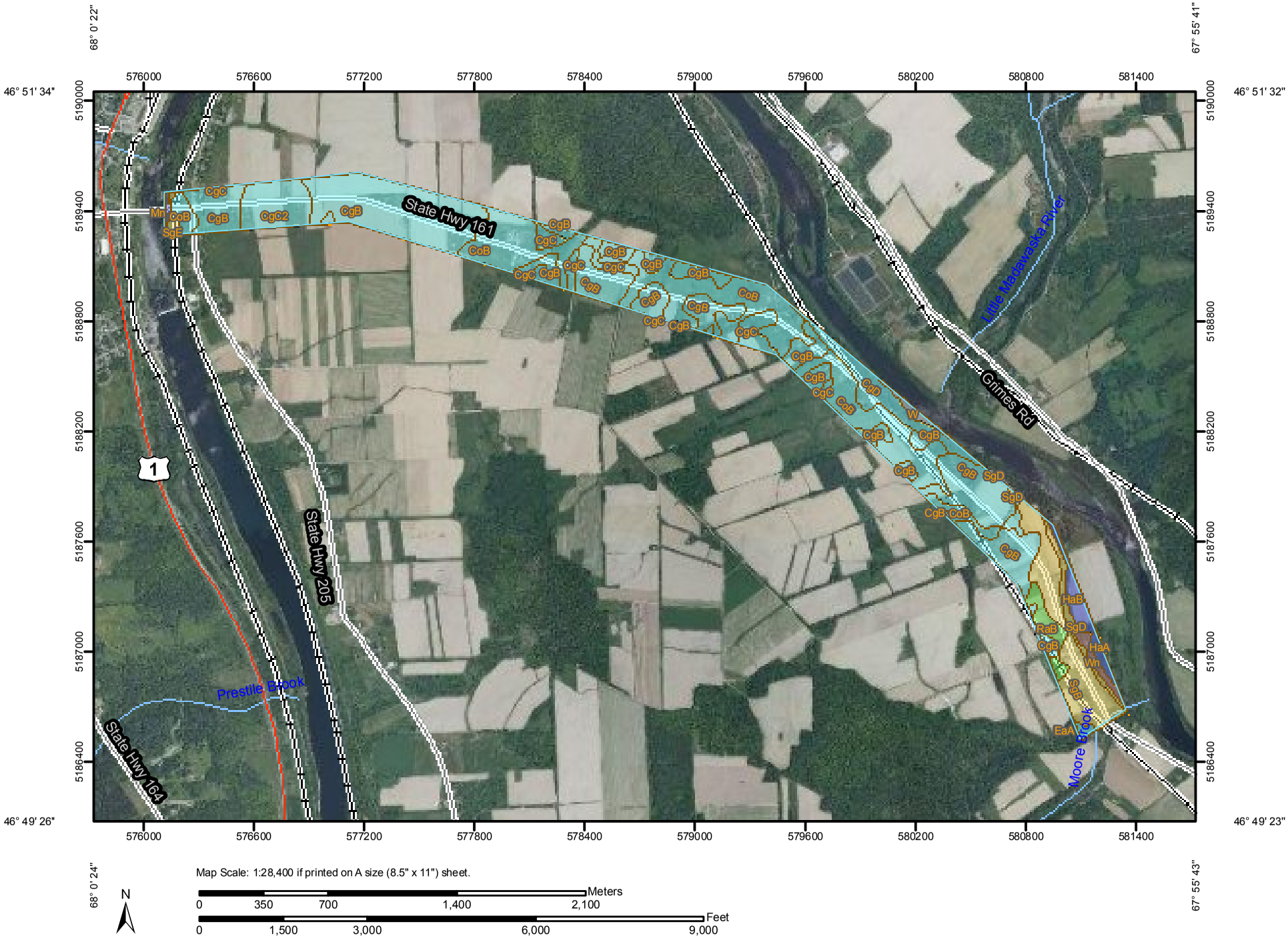
Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Layer Options: Surface Layer

Parent Material Name—Aroostook County, Maine, Northeastern Part
(12780.00 Caribou Rte 161)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

coarse-loamy alluvium derived from mica schist

coarse-loamy glaciofluvial deposits derived from slate

coarse-silty alluvium derived from slate

fine-loamy supraglacial meltout till derived from shale and siltstone

sandy and gravelly glaciofluvial deposits derived from slate

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:28,400 if printed on A size (8.5" × 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: Aroostook County, Maine, Northeastern Part
Survey Area Data: Version 14, Feb 15, 2012

Date(s) aerial images were photographed: Data not available.

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.

Parent Material Name

Parent Material Name— Summary by Map Unit — Aroostook County, Maine, Northeastern Part (ME607)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
CgB	Caribou gravelly loam, 2 to 8 percent slopes	fine-loamy supraglacial meltout till derived from shale and siltstone	192.7	41.1%
CgC	Caribou gravelly loam, 8 to 15 percent slopes	fine-loamy supraglacial meltout till derived from shale and siltstone	21.3	4.5%
CgC2	Caribou gravelly loam, 8 to 15 percent slopes, eroded	fine-loamy supraglacial meltout till derived from shale and siltstone	23.8	5.1%
CgD	Caribou gravelly loam, 15 to 25 percent slopes	fine-loamy supraglacial meltout till derived from shale and siltstone	20.6	4.4%
CoB	Conant silt loam, 2 to 8 percent slopes	fine-loamy supraglacial meltout till derived from shale and siltstone	127.6	27.2%
EaA	Easton and Washburn silt loams, 0 to 2 percent slopes	fine-loamy supraglacial meltout till derived from shale and siltstone	1.5	0.3%
HaA	Hadley silt loam, level	coarse-silty alluvium derived from slate	3.3	0.7%
HaB	Hadley silt loam, undulating	coarse-silty alluvium derived from slate	8.7	1.9%
Mn	Mixed alluvial land	coarse-silty alluvium derived from slate	1.4	0.3%
RaB	Red Hook and Atherton silt loams, 2 to 8 percent slopes	coarse-loamy glaciofluvial deposits derived from slate	9.9	2.1%
SgB	Stetson gravelly loam, 2 to 8 percent slopes	sandy and gravelly glaciofluvial deposits derived from slate	40.3	8.6%
SgD	Stetson gravelly loam, 15 to 25 percent slopes	sandy and gravelly glaciofluvial deposits derived from slate	8.4	1.8%
SgE	Stetson gravelly loam, 25 to 45 percent slopes	sandy and gravelly glaciofluvial deposits derived from slate	2.0	0.4%
W	Water bodies		2.8	0.6%
Wn	Winooski silt loam	coarse-loamy alluvium derived from mica schist	4.8	1.0%
Totals for Area of Interest			**469.2**	**100.0%**

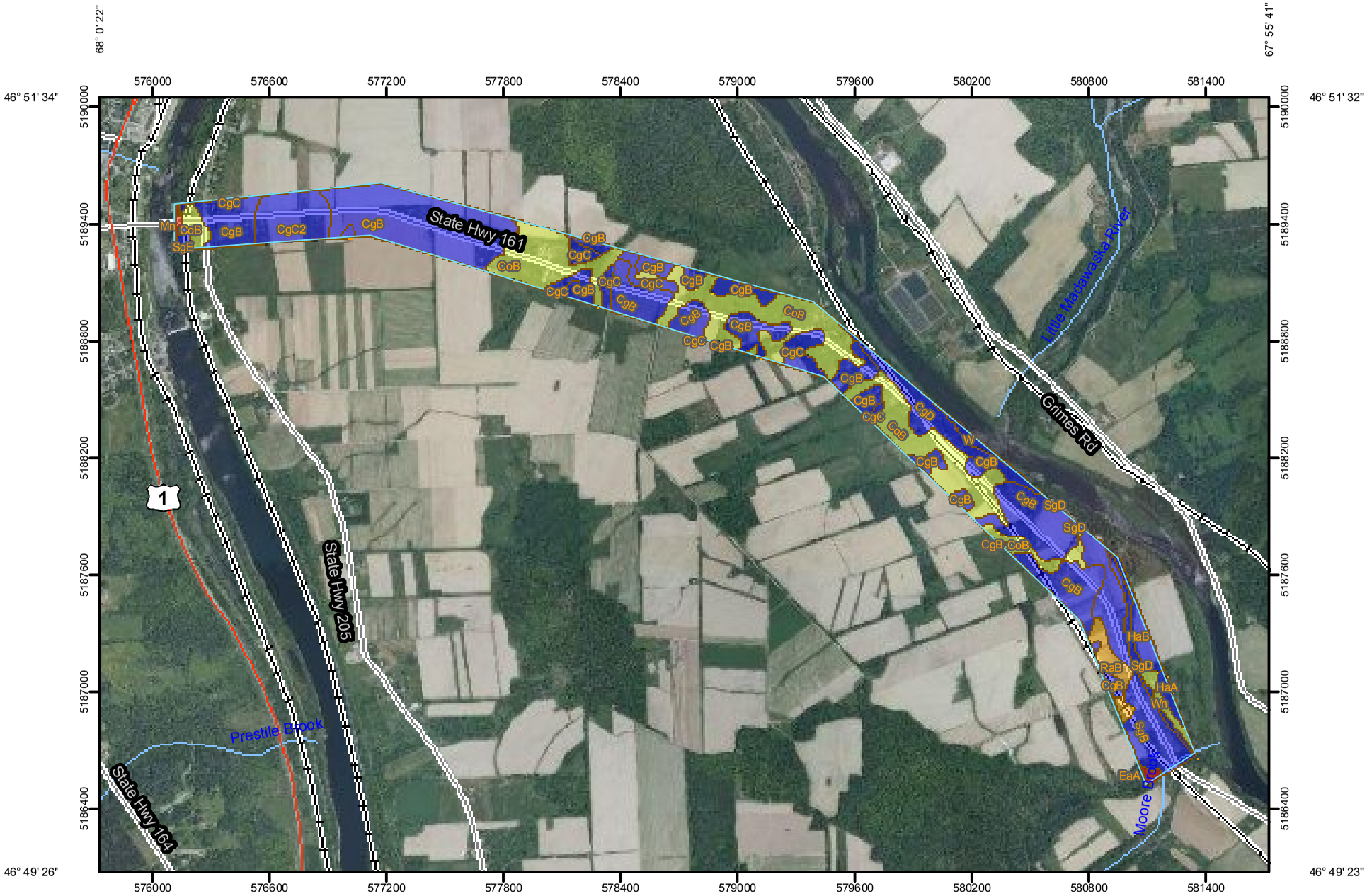
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Depth to Water Table—Aroostook County, Maine, Northeastern Part
(12780.00 Caribou Rte 161)



Map Scale: 1:28,400 if printed on A size (8.5" x 11") sheet.

N

Meters: 0, 350, 700, 1,400, 2,100

Feet: 0, 1,500, 3,000, 6,000, 9,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:28,400 if printed on A size (8.5" × 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: Aroostook County, Maine, Northeastern Part
Survey Area Data: Version 14, Feb 15, 2012

Date(s) aerial images were photographed: Data not available.

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.

Depth to Water Table

Depth to Water Table— Summary by Map Unit — Aroostook County, Maine, Northeastern Part (ME607)				
Map unit symbol	**Map unit name**	**Rating (centimeters)**	**Acres in AOI**	**Percent of AOI**
CgB	Caribou gravelly loam, 2 to 8 percent slopes	>200	192.7	41.1%
CgC	Caribou gravelly loam, 8 to 15 percent slopes	>200	21.3	4.5%
CgC2	Caribou gravelly loam, 8 to 15 percent slopes, eroded	>200	23.8	5.1%
CgD	Caribou gravelly loam, 15 to 25 percent slopes	>200	20.6	4.4%
CoB	Conant silt loam, 2 to 8 percent slopes	61	127.6	27.2%
EaA	Easton and Washburn silt loams, 0 to 2 percent slopes	15	1.5	0.3%
HaA	Hadley silt loam, level	>200	3.3	0.7%
HaB	Hadley silt loam, undulating	>200	8.7	1.9%
Mn	Mixed alluvial land	15	1.4	0.3%
RaB	Red Hook and Atherton silt loams, 2 to 8 percent slopes	31	9.9	2.1%
SgB	Stetson gravelly loam, 2 to 8 percent slopes	>200	40.3	8.6%
SgD	Stetson gravelly loam, 15 to 25 percent slopes	>200	8.4	1.8%
SgE	Stetson gravelly loam, 25 to 45 percent slopes	>200	2.0	0.4%
W	Water bodies	>200	2.8	0.6%
Wn	Winooski silt loam	69	4.8	1.0%
Totals for Area of Interest			**469.2**	**100.0%**

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: *None Specified*

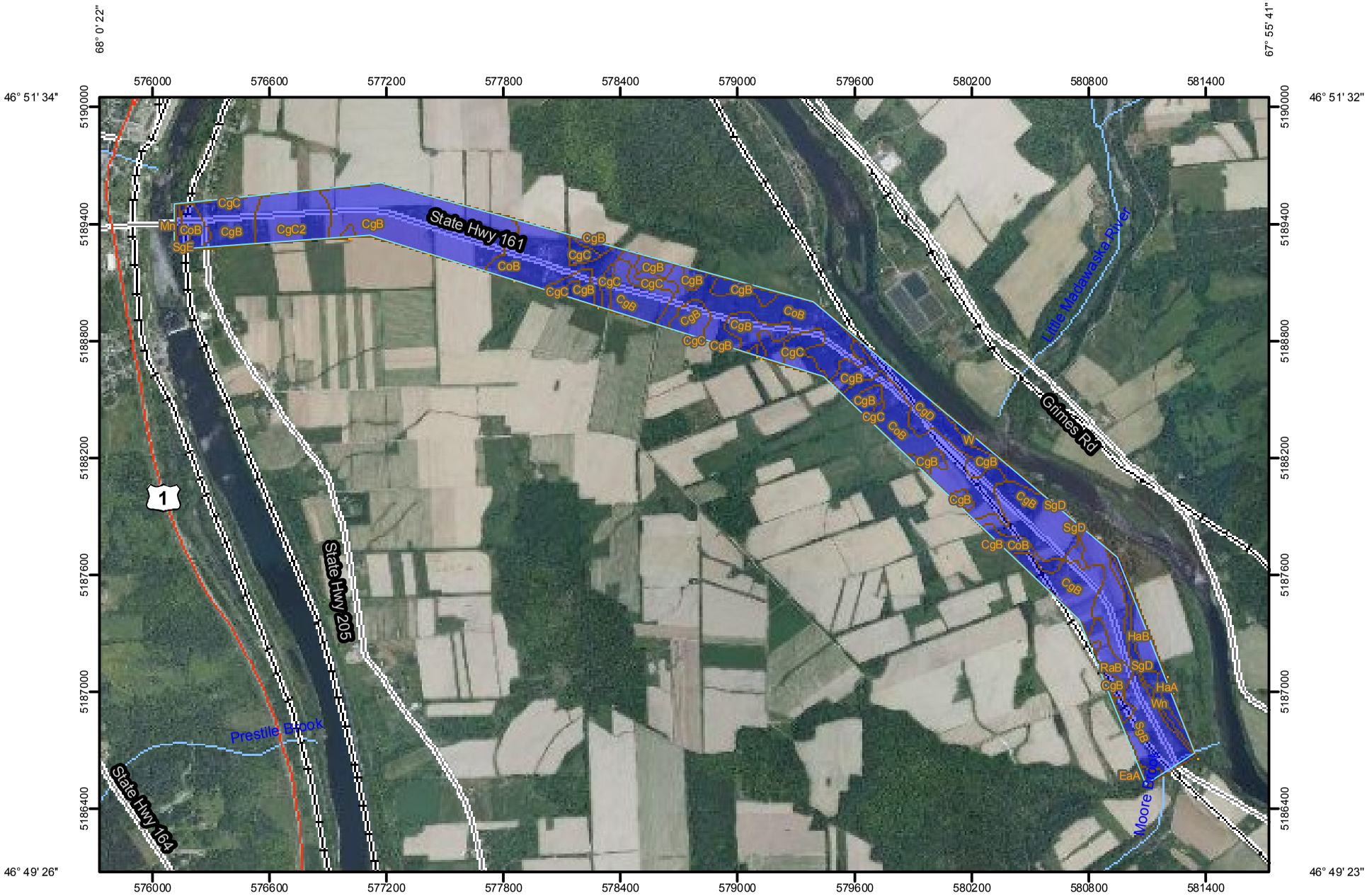
Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Depth to Any Soil Restrictive Layer—Aroostook County, Maine, Northeastern Part
(12780.00 Caribou Rte 161)



Map Scale: 1:28,400 if printed on A size (8.5" x 11") sheet.

N

Meters: 0 350 700 1,400 2,100

Feet: 0 1,500 3,000 6,000 9,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:28,400 if printed on A size (8.5" × 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: Aroostook County, Maine, Northeastern Part
Survey Area Data: Version 14, Feb 15, 2012

Date(s) aerial images were photographed: Data not available.

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.

Depth to Any Soil Restrictive Layer

Depth to Any Soil Restrictive Layer— Summary by Map Unit — Aroostook County, Maine, Northeastern Part (ME607)				
Map unit symbol	**Map unit name**	**Rating (centimeters)**	**Acres in AOI**	**Percent of AOI**
CgB	Caribou gravelly loam, 2 to 8 percent slopes	>200	192.7	41.1%
CgC	Caribou gravelly loam, 8 to 15 percent slopes	>200	21.3	4.5%
CgC2	Caribou gravelly loam, 8 to 15 percent slopes, eroded	>200	23.8	5.1%
CgD	Caribou gravelly loam, 15 to 25 percent slopes	>200	20.6	4.4%
CoB	Conant silt loam, 2 to 8 percent slopes	>200	127.6	27.2%
EaA	Easton and Washburn silt loams, 0 to 2 percent slopes	>200	1.5	0.3%
HaA	Hadley silt loam, level	>200	3.3	0.7%
HaB	Hadley silt loam, undulating	>200	8.7	1.9%
Mn	Mixed alluvial land	>200	1.4	0.3%
RaB	Red Hook and Atherton silt loams, 2 to 8 percent slopes	>200	9.9	2.1%
SgB	Stetson gravelly loam, 2 to 8 percent slopes	>200	40.3	8.6%
SgD	Stetson gravelly loam, 15 to 25 percent slopes	>200	8.4	1.8%
SgE	Stetson gravelly loam, 25 to 45 percent slopes	>200	2.0	0.4%
W	Water bodies	>200	2.8	0.6%
Wn	Winooski silt loam	>200	4.8	1.0%
Totals for Area of Interest			**469.2**	**100.0%**

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Interpret Nulls as Zero: No

State of Maine - Department of Transportation

Laboratory Testing Summary Sheet

Town(s): Caribou Project Number: 12780.00

Boring & Sample Identification Number	Station (Feet)	Offset (Feet)	Depth (Feet)	Reference Number	G.S.D.C. Sheet	W.C.	% Passing 200 Sieve	Classification		
								Unified	AASHTO	Frost
HB-CA-101, S1	17+53	7.2 Rt.	0.40-1.8	210126	1	2.3	16.1	GM	A-1-b	I
HB-CA-101, S2	17+53	7.2 Rt.	1.8-5.0	210127	1	19.7	45.8	SM	A-4	III
HB-CA-102, S3	25+00	7.5 Rt.	0.60-1.6	210128	1	5.5	26.3	SM	A-2-4	II
HB-CA-104, S4	55+00	8.5 Rt.	1.3-4.2	210129	1	7.0	46.7	SM	A-4	III
HB-CA-105, S5	70+02	8.0 Rt.	1.4-2.7	210130	1	24.4	47.3	SM	A-4	III
HB-CA-105, S6	70+02	8.0 Rt.	2.7-5.0	210131	1	9.0	21.6	SM	A-1-b	II
HB-CA-106, S7	80+03	8.3 Rt.	0.70-2.8	210132	2	9.6	44.4	SM	A-4	III
HB-CA-106, S8	80+03	8.3 Rt.	3.8-5.0	210133	2	30.9	59.0	ML	A-4	IV
HB-CA-108, S9	96+00	9.0 Lt.	0.70-1.8	210134	2	4.9	18.0	GM	A-1-b	I
HB-CA-108, S10	96+00	9.0 Lt.	1.8-7.5	210135	2	14.6	64.5	ML	A-4	IV
HB-CA-108, S11	96+00	9.0 Lt.	7.5-10.0	210136	2	14.8	53.7	CL-ML	A-4	IV
HB-CA-112, S12	127+50	9.4 Rt.	4.0-5.0	210137	3	12.8	57.7	ML	A-4	IV
HB-CA-115, S13	157+55	9.2 Rt.	0.70-2.0	210138	3	3.8	15.7	GM	A-1-b	I
HB-CA-119, S14	205+00	8.5 Rt.	0.70-2.2	210139	3	4.9	20.5	SM	A-1-b	II
HB-CAR-201, S1	165+95	6.5 Lt.	0.45-2.0	240165	4	2.9	20.6	SM	A-1-b	II
HB-CAR-201, S2	165+95	6.5 Lt.	2.0-6.2	240166	4	13.0	61.3	ML	A-4	IV
HB-CAR-202, S3	165+00	6.5 Lt.	1.9-8.0	240167	4	25.6	55.7	ML	A-4	IV
HB-CAR-203, S4	165+50	6.0 Rt.	0.45-2.1	240168	4	3.2	24.4	SM	A-1-b	II
HB-CAR-203, S5	165+50	6.0 Rt.	2.1-8.0	240169	4	18.8	56.4	ML	A-4	IV
HB-CAR-207, S6	96+25	8.5 Lt.	0.42-1.5	240170	5	5.6	20.0	SM	A-1-b	II
HB-CAR-207, S7	96+25	8.5 Lt.	1.5-6.5	240171	5	12.5	54.9	ML	A-4	IV
HB-CAR-207, S8	96+25	8.5 Lt.	6.5-10.0	240172	5	21.9	91.3	ML	A-4	IV
HB-CAR-212, S9	97+50	8.5 Lt.	0.42-1.4	240173	5	4.2	18.5	SM	A-1-b	II
HB-CAR-212, S10	97+50	8.5 Lt.	1.4-10.0	240174	5	13.8	40.5	SM	A-4	III
HB-CAR-214, S11	121+00	8.0 Lt.	0.42-1.1	240175	6	3.4	15.0	SM	A-1-a	II
HB-CAR-214, S12	121+00	8.0 Lt.	1.1-4.2	240076	6	4.7	19.3	SM	A-1-b	II
HB-CAR-218, S13	122+50	8.0 Lt.	0.42-1.4	240077	6	3.1	16.7	SM	A-1-b	II
HB-CAR-219, S14	123+00	9.0 Lt.	1.4-8.0	240078	6	10.9	36.0	SM	A-4	III

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 MDOT and Corps of Engineers Classification Systems.

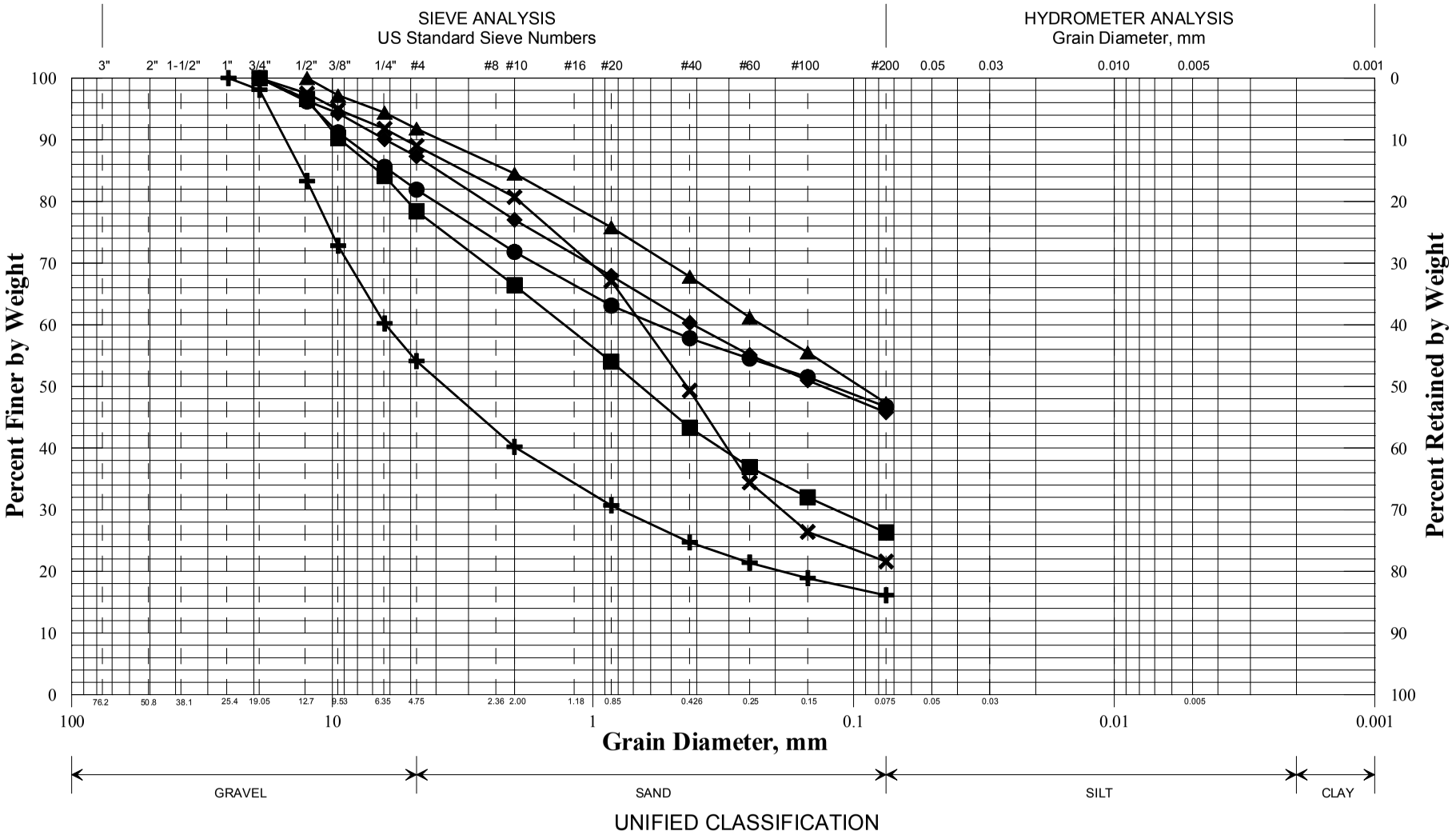
GSDC = Grain Size Distribution Curve as determined by AASHTO T 88-93 (1996) and/or ASTM D 422-63 (Reapproved 1998)

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

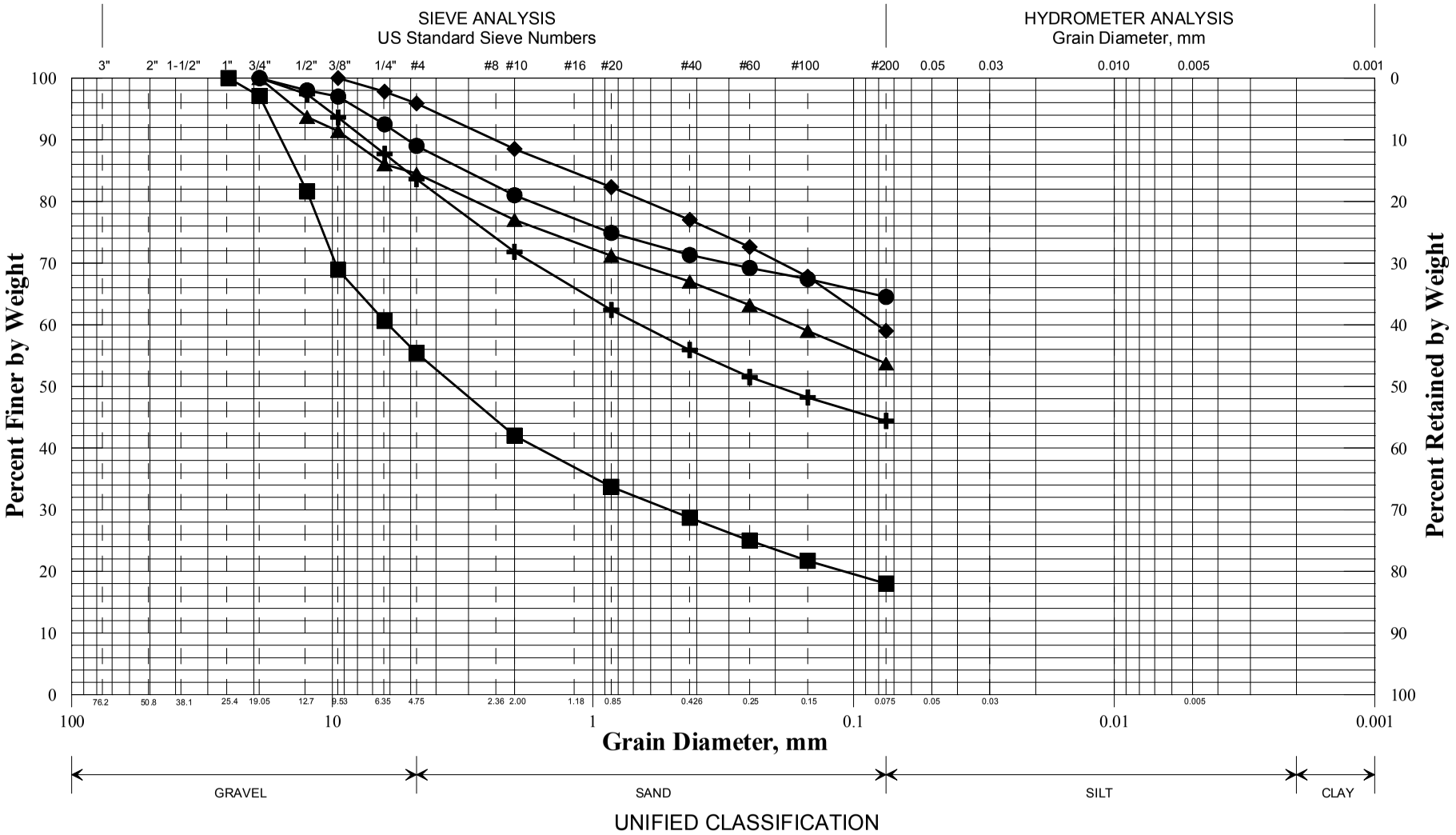


	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-CA-101/S1	17+53	7.2 RT	0.4-1.8	Sandy GRAVEL, little silt.	2.3			
◆	HB-CA-101/S2	17+53	7.2 RT	1.8-5.0	Sandy SILT, little gravel.	19.7			
■	HB-CA-102/S3	25+00	7.5 RT	0.6-1.6	SAND, some silt, some gravel.	5.5			
●	HB-CA-104/S4	55+00	8.5 RT	1.3-4.2	SILT, some sand, little gravel.	7.0			
▲	HB-CA-105/S5	70+02	8.0 RT	1.4-2.7	Sandy SILT, trace gravel.	24.4			
✕	HB-CA-105/S6	70+02	8.0 RT	2.7-5.0	SAND, some silt, little gravel.	9.0			

PIN
012780.00
Town
Caribou
Reported by/Date
WHITE, TERRY A 12/26/2007

SHEET 1

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

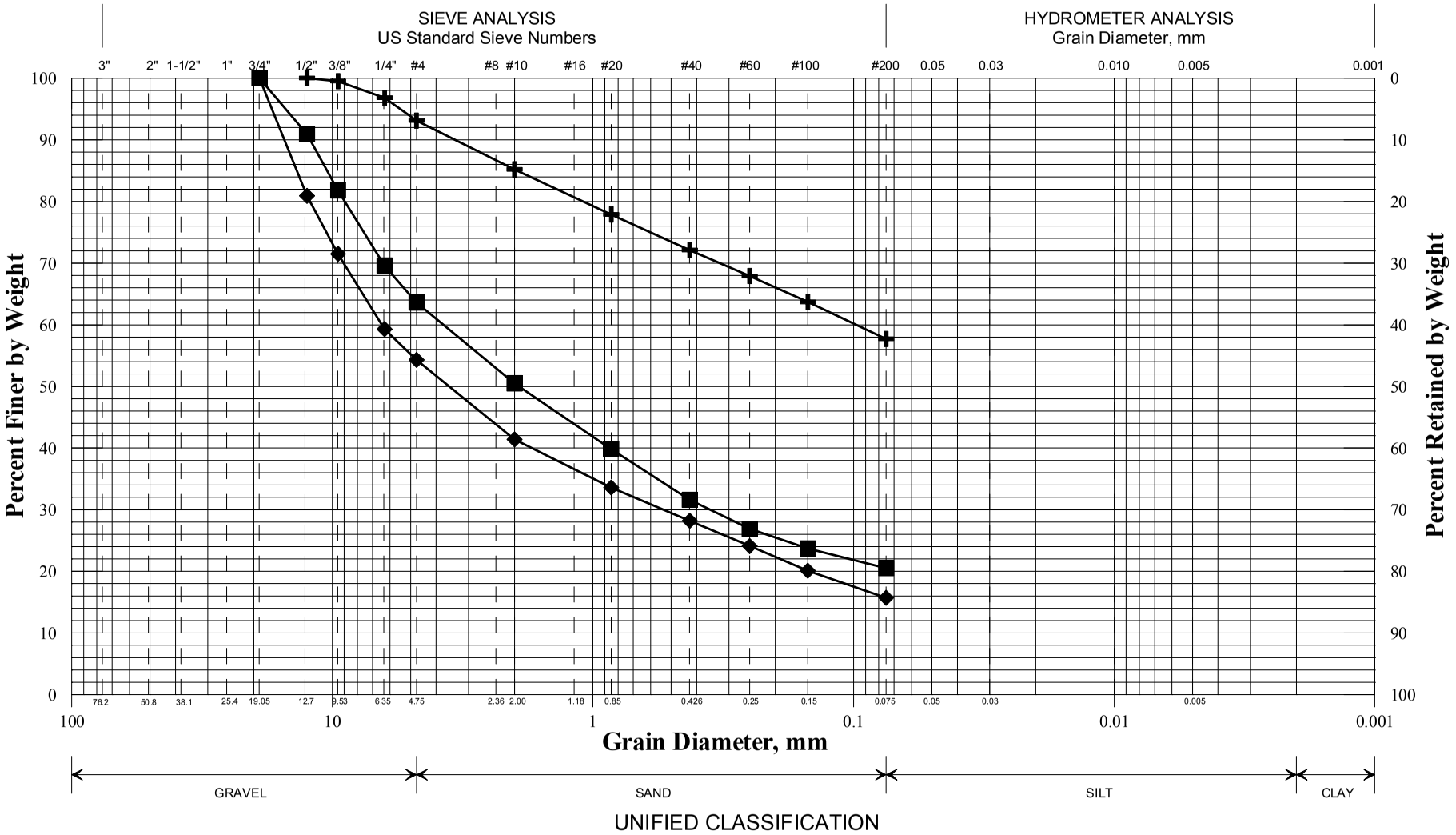


	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-CA-106/S7	80+03	8.3 RT	0.7-2.8	Sandy SILT, little gravel.	9.6			
◆	HB-CA-106/S8	80+03	8.3 RT	3.8-5.0	Sandy SILT, trace gravel.	30.9			
■	HB-CA-108/S9	96+0	9.0 LT	0.7-1.8	Sandy GRAVEL, little silt.	4.9			
●	HB-CA-108/S10	96+0	9.0 LT	1.8-7.5	SILT, some sand, little gravel.	14.6			
▲	HB-CA-108/S11	96+00	9.0 LT	7.5-10.0	SILT with clay, some sand, little gravel.	14.8			
✕									

PIN
012780.00
Town
Caribou
Reported by/Date
WHITE, TERRY A 12/26/2007

SHEET 2

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

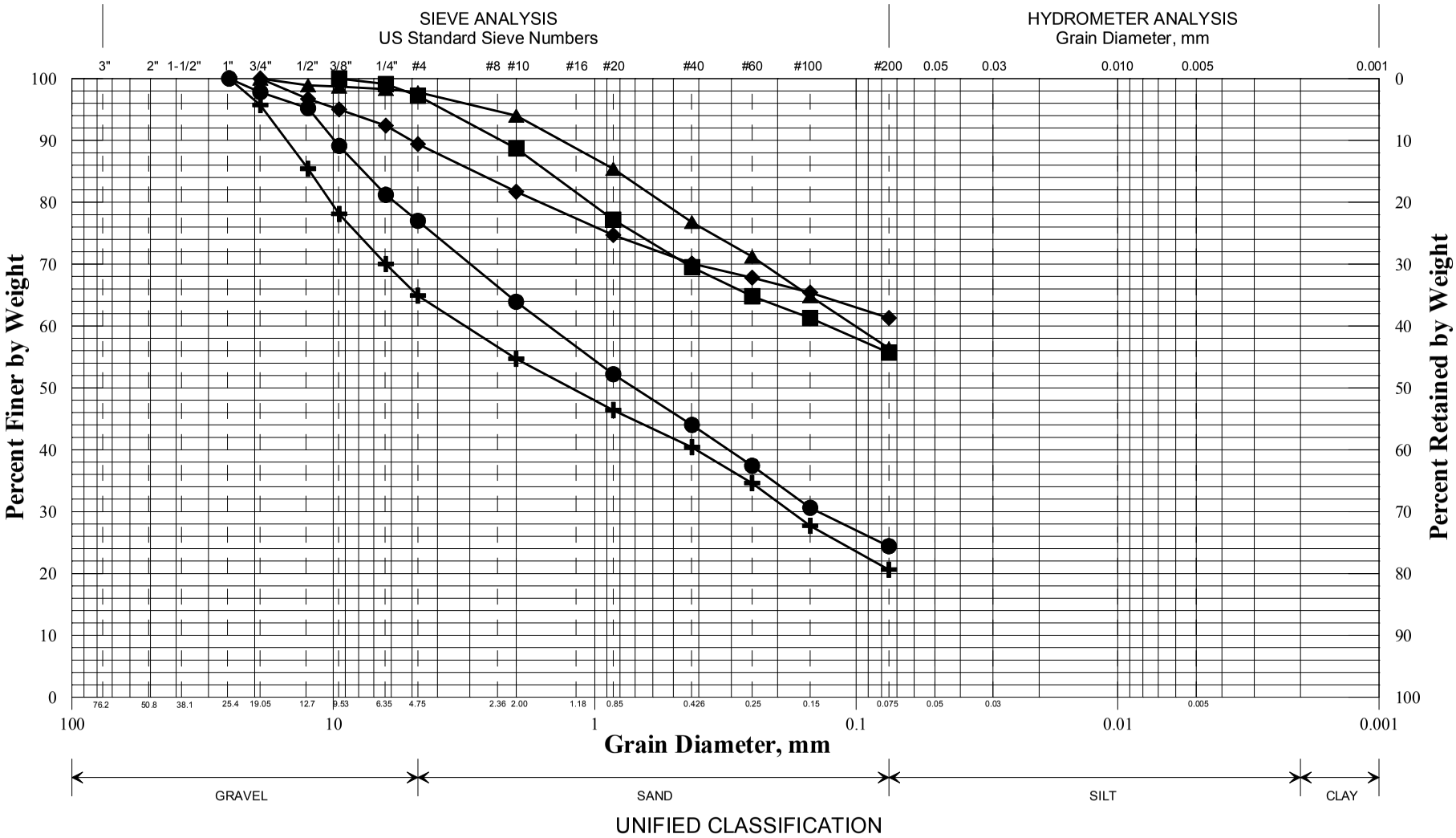


UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-CA-112/S12	127+50	9.4 RT	4.0-5.0	SILT, some sand, trace gravel.	12.8			
◆	HB-CA-115/S13	157+55	9.2 RT	0.7-2.0	Sandy GRAVEL, little silt.	3.8			
■	HB-CA-119/S14	205+00	8.5 RT	0.7-2.2	Gravelly SAND, some silt.	4.9			
●									
▲									
✕									

PIN
012780.00
Town
Caribou
Reported by/Date
WHITE, TERRY A 12/26/2007

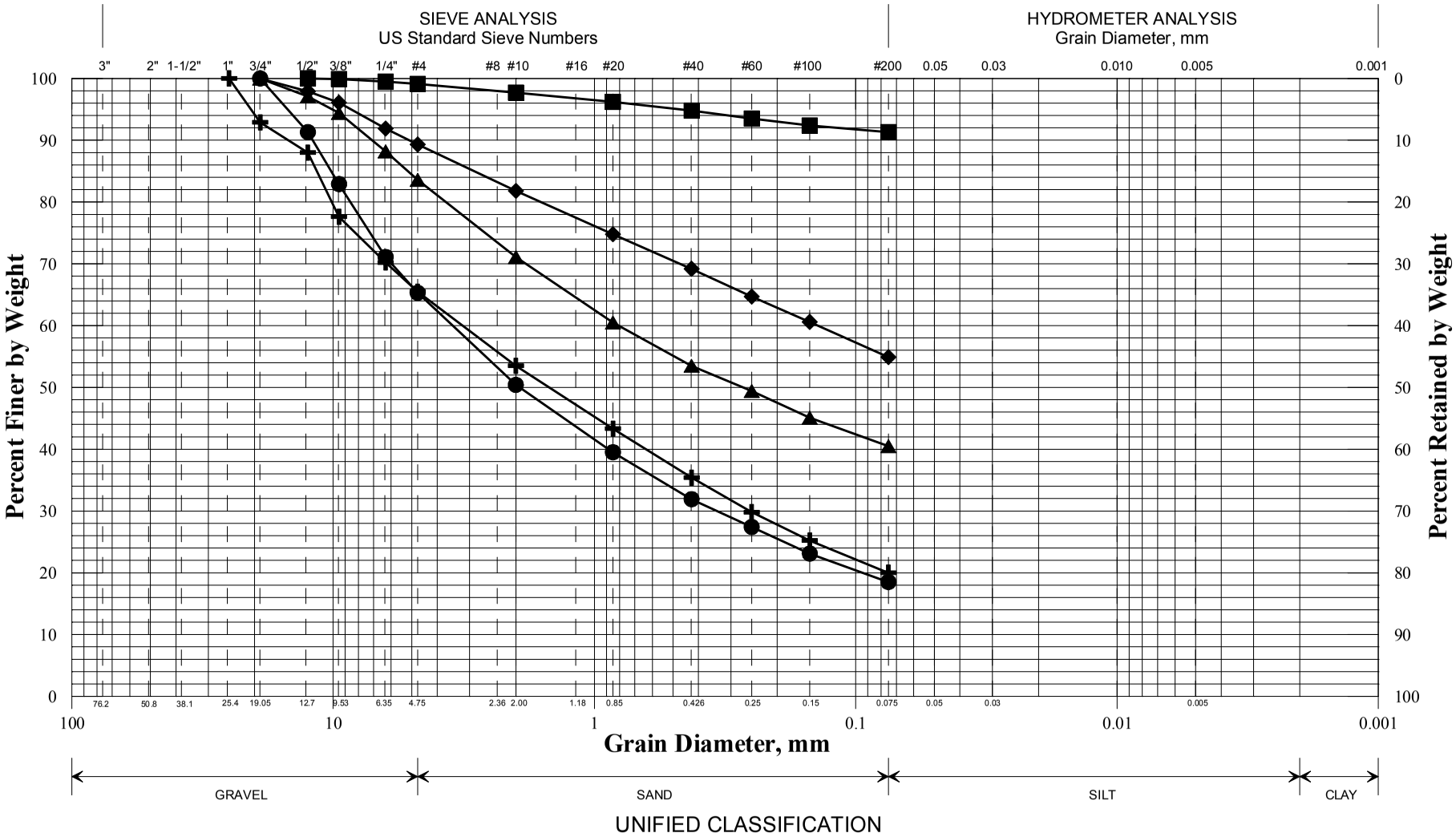
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-CAR-201/S1	165+95	6.5 LT	0.45-2.0	SAND, some gravel, some silt.	2.9			
◆	HB-CAR-201/S2	165+95	6.5 LT	2.0-6.2	SILT, some sand, little gravel.	13.0			
■	HB-CAR-202/S3	165+00	6.5 LT	1.9-8.0	Sandy SILT, trace gravel.	25.6			
●	HB-CAR-203/S4	165+50	6.0 RT	0.45-2.1	SAND, some silt, some gravel.	3.2			
▲	HB-CAR-203/S5	165+50	6.0 RT	2.1-8.0	Sandy SILT, trace gravel.	18.8			
✕									

PIN
012780.00
Town
Caribou
Reported by/Date
WHITE, TERRY A 10/18/2010

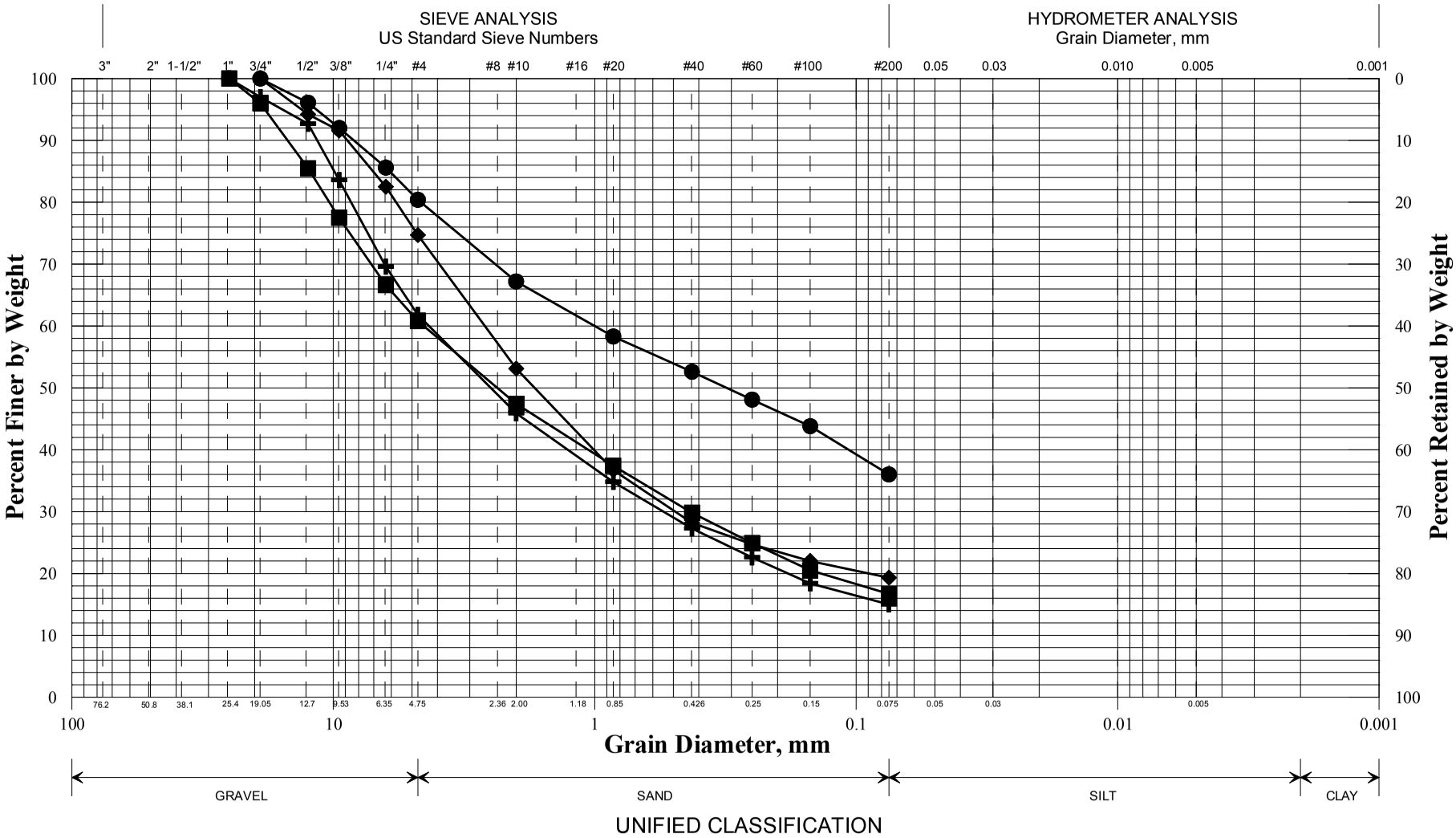
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-CAR-207/S6	96+25	8.5 LT	0.42-1.5	SAND, some gravel, little silt.	5.6			
◆	HB-CAR-207/S7	96+25	8.5 LT	1.5-6.5	SILT, some sand, little gravel.	12.5			
■	HB-CAR-207/S8	96+25	8.5 LT	6.5-10.0	SILT, trace sand, trace gravel.	21.9			
●	HB-CAR-212/S9	97+50	8.5 LT	0.42-1.4	SAND, some gravel, little silt.	4.2			
▲	HB-CAR-212/S10	87+50	8.5 LT	1.4-10.0	Silty SAND, little gravel.	13.8			
✕									

PIN
012780.00
Town
Caribou
Reported by/Date
WHITE, TERRY A 10/18/2010

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-CAR-214/S11	121+00	8.0 LT	0.42-1.1	Gravelly SAND, little silt.	3.4			
◆	HB-CAR-214/S12	121+00	8.0 LT	1.1-4.2	SAND, some gravel, little silt.	4.7			
■	HB-CAR-218/S13	122+50	8.0 LT	0.42-1.4	Gravelly SAND, little silt.	3.1			
●	HB-CAR-219/S14	123+00	9.0 LT	1.4-8.0	Silty SAND, little gravel.	10.9			
▲									
✕									

PIN
012780.00
Town
Caribou
Reported by/Date
WHITE, TERRY A 10/18/2010

SHEET 6

State of Maine - Department of Transportation

Power Auger Probe Summary Sheet

Town(s): Caribou Project Number: 12780.00

Station (Feet)	Offset (Feet)	Weathered Rock (Feet)	Refusal (Feet)	No Refusal (Feet)	Water Depth (Ft.)	Comments / Date 10/4,9,10/07
53+00	9.4 Lt.			5.0		Offsets are from Existing
54+00	12.0 Rt.			5.0		Roadway CL.
54+00	11.0 Lt.	3.7	3.9			
54+50	11.8 Lt.	4.1	4.3			
55+50	11.5 Lt.	1.6	1.8			
56+00	12.0 Rt.	2.0	2.3			
56+00	10.5 Lt.	2.1	2.5			
56+50	12.0 Lt.	2.7	3.5			
57+00	12.0 Rt.			5.0		
57+00	11.5 Lt.			5.0		
140+50	13.0 Rt.			5.0		
140+50	15.0 Lt.			5.0		
141+00	13.8 Lt.			5.0		
141+95	13.0 Lt.			5.0		
143+00	13.0 Lt.			5.0		
143+50	16.0 Rt.			5.0		
194+25	13.5 Rt.			5.0		
194+25	11.7 Lt.			5.0		
194+75	11.5 Lt.	3.1	4.0			
195+75	12.5 Lt.			5.0		
196+25	13.2 Rt.	1.9	2.6			
196+75	11.7 Rt.	3.2	4.5			
197+25	12.0 Rt.	3.3	3.7			
197+75	13.3 Rt.	3.7	4.0			
198+25	14.0 Rt.			5.0		
						Ledge exposed in ditch
						197+00, 18.0' Rt.
						Ledge exposed in ditch
						197+80, 20.0' Rt.

MaineDOT Drill Crew
Logged By: G. Lidstone
Drill Rig: CME 45C

5" Solid Stem Auger

State of Maine - Department of Transportation

Power Auger Probe Summary Sheet

Town(s): Caribou Project Number: 12780.00

Station (Feet)	Offset (Feet)	Weathered Rock (Feet)	Refusal (Feet)	No Refusal (Feet)	Water Depth (Ft.)	Comments / Date 9/17,21,24/09
87+00	8.0 Lt.			10.0		
87+50	8.0 Lt.			10.0		
87+50	8.0 Rt.			10.0		Cobbles and Boulders
88+00	6.5 Lt.			10.0		
88+50	7.0 Lt.			10.0		
88+50	8.0 Rt.			10.0		Cobbles and Boulders
89+00	7.0 Lt.			10.0		
89+50	7.0 Lt.			10.0		
89+50	8.5 Rt.			10.0		Cobbles and Boulders
94+00	7.0 Rt.			10.0		
94+50	7.0 Lt.			10.0		
95+00	8.0 Rt.			10.0		
95+50	7.0 Lt.			10.0		
96+00	8.0 Rt.			10.0		
96+25	8.5 Rt.			8.0		Cobble layer 1.0-1.6' bgs
96+50	8.5 Rt.			8.0		Cobble layer 1.0-1.6' bgs
96+70	8.5 Rt.			8.0		Cobble layer 1.0-1.6' bgs
96+90	8.5 Rt.			8.0		Cobble layer 1.0-1.6' bgs
97+09	8.5 Rt.			8.0		Cobble layer 1.0-1.6' bgs
97+30	8.5 Rt.			8.0		Cobble layer 1.0-1.6' bgs
98+00	8.5 Rt.			8.0		Cobble layer 1.0-1.6' bgs
121+00	8.0 Rt.		9.3			
121+60	8.0 Rt.	6.3	6.6			
121+75	8.0 Rt.		2.5			
122+08	8.0 Rt.		4.6			
122+50	8.0 Rt.		4.5			
123+00	8.0 Rt.		6.2			
164+50	7.0 Lt.			8.0		Cobble layer 1.0-1.4' bgs.
164+50	6.0 Rt.			8.0		Cobble layer 1.0-1.4' bgs.
164+75	7.0 Lt.			8.0		Cobble layer 1.0-1.4' bgs.
165+00	6.5 Rt.			8.0		Cobble layer 1.0-1.4' bgs.
165+50	6.5 Lt.			8.0		Cobble layer 1.0-1.4' bgs.
166+00	6.5 Lt.		1.0			Boulder ?
166+50	5.5 Lt.			8.0		Cobble layer 1.0-1.4' bgs.
166+82	6.0 Lt.	7.0	7.5			Cobble layer 1.0-1.4' bgs.
166+82	6.0 Rt.	6.9	7.3			Cobble layer 1.0-1.4' bgs.
167+00	7.0 Lt.			8.0		Cobble layer 1.0-1.4' bgs.
167+16	7.0 Lt.			8.0		Cobble layer 1.0-1.4' bgs.
167+43	7.0 Lt.		5.5			Cobble layer 1.0-1.4' bgs.
167+72	7.0 Lt.			8.0		Cobble layer 1.0-1.4' bgs.
168+00	8.0 Lt.			8.0		Cobble layer 1.0-1.4' bgs.
168+27	8.0 Lt.	5.8	7.2			Cobble layer 1.0-1.4' bgs.
168+27	6.0 Rt.	5.0	5.3			Cobble layer 1.0-1.4' bgs.

MaineDOT Drill Crew
Logged By: B. Wilder
Drill Rig: CME 45C

5" Solid Stem Auger

State of Maine - Department of Transportation

Power Auger Probe Summary Sheet

Town(s): Caribou Project Number: 12780.00

Station (Feet)	Offset (Feet)	Weathered Rock (Feet)	Refusal (Feet)	No Refusal (Feet)	Water Depth (Ft.)	Comments / Date 6/28-29/2011
183+00	9.0 Lt.			4.0		
183+00	9.0 Rt.			4.0		
184+00	9.0 Lt.		2.7			
184+00	9.0 Rt.			6.0		
185+00	9.0 Lt.		4.0			
185+00	9.0 Rt.	5.7	6.0			
186+00	9.0 Lt.		1.1			
186+00	9.0 Rt.		5.9			
187+00	9.0 Lt.		7.2			
187+00	9.0 Rt.		1.4			
188+00	9.0 Lt.		6.0			
188+00	9.0 Rt.		6.2			
189+00	9.0 Lt.		5.1			
189+00	8.0 Rt.		3.4			
190+00	9.0 Lt.		7.0			
190+00	8.0 Rt.		7.3			
191+00	9.0 Lt.		6.3			
191+00						?
192+00	9.0 Lt.		6.7			
192+00						?
193+00	9.0 Lt.		7.5			
193+00	7.5 Rt.		7.2			
194+00	9.0 Lt.		3.5			
194+00	7.5 Rt.		2.8			
195+00	9.0 Lt.		6.0			
195+00	7.5 Rt.		2.4			
196+00	9.0 Lt.		3.7			
196+00	7.0 Rt.		5.0			
197+00	9.0 Lt.		2.3			
197+00	7.5 Rt.		1.9			
198+00	9.0 Lt.		4.2			
198+00	7.5 Rt.		2.5			
199+00	9.0 Lt.		5.9			
199+00	7.5 Rt.		4.5			
200+00	9.0 Lt.		6.3			
200+00	7.5 Rt.		1.5			
201+00	9.0 Lt.		6.0			
201+00	7.5 Rt.		1.7			
202+00	9.0 Lt.		4.3			
202+00	7.5 Rt.		4.4			
203+30	9.0 Lt.			7.0		overhead wires @ 194+00
203+05	7.5 Rt.			7.0		
204+00	9.0 Lt.			4.0		
204+00	7.5 Rt.			4.0		

MaineDOT Drill Crew
Logged By: B. Wilder
Drill Rig: CME 45C

5" Solid Stem Auger

State of Maine - Department of Transportation

Power Auger Probe Summary Sheet

Town(s): Caribou Project Number: 12780.00

Station (Feet)	Offset (Feet)	Weathered Rock (Feet)	Refusal (Feet)	No Refusal (Feet)	Water Depth (Ft.)	Comments / Date 6/14/2012
27+00	15.0 Lt.			8.0		
27+00	15.0 Rt.			8.0		
57+65	12.0 Lt.			8.0		
57+65	12.0 Rt.			8.0		
67+20	12.0 Lt.			8.0		
67+20	12.0 Rt.			8.0		
79+50	13.0 Lt.	19.1	20.5			
84+80	14.0 Lt.			8.0		
84+80	12.0 Rt.			8.0		
94+10	13.0 Lt.			8.0		
94+10	10.0 Rt.			8.0		
101+10						
101+10	11.0 Rt.			8.0		
129+10	13.0 Lt.			12.0		
129+10	13.0 Rt.			12.0		
144+65	13.0 Lt.			12.0		drilled thru pipe
144+65	13.0 Rt.			12.0		
149+00	13.0 Lt.		4.8			
149+00	13.0 Rt.		4.9			
210+00	13.0 Lt.			10.0		
210+50	13.0 Lt.			10.0		
211+00	13.0 Lt.			10.0		
211+38	17.0 Lt.			10.0		
212+64	16.0 Lt.			10.0		
213+00	15.0 Lt.			10.0		
213+50	17.0 Lt.			10.0		
214+50	13.0 Lt.			10.0		
215+00	16.0 Lt.			10.0		

MaineDOT Drill Crew
Logged By: B. Wilder
Drill Rig: CME 45C

5" Solid Stem Auger

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-101
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/4/07-10/4/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	17+53, 7.2' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S1		0.40 - 1.80			SSA	-0.40		PAVEMENT. 0.40	G#210126 A-1-b, GM WC=2.3%
	S2		1.80 - 5.00				-1.80		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). 1.80	G#210127 A-4, SM WC=19.7%
									Brown, moist, SILT, little fine to medium sand, trace gravel.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-102
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/4/07-10/4/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	25+00, 7.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S3		0.60 - 1.60			SSA	-0.40		PAVEMENT.	
							-0.60		Treated GRAVEL. (0.40)	G#210128 A-2-4, SM WC=5.5%
							-1.90		Brown, damp, silty fine to coarse SAND, some gravel, (Fill). Cobble from 1.6-1.9' bgs. (0.60)	
									Brown, moist, SILT, little fine to medium sand, trace gravel. ≅S2 (1.90)	
5							-5.00		(5.00)	
10										
15										
20										
25										
30										

Bottom of Exploration at 5.00 feet below ground surface.
NO REFUSAL

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-103
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/4/07-10/4/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	45+03, 7.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.40		PAVEMENT. 0.40	
							-1.30		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). ≅S1 Cobble from 0.8-1.3' bgs. 1.30	
									Brown, moist, SILT, little fine to medium sand, trace gravel. ≅S2	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-104
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/4/07-10/4/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	55+00, 8.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.50		PAVEMENT. 0.50	
							-0.60		Treated GRAVEL. 0.60	
	S4		1.30 - 4.20				-1.30		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). ≅S1 Cobble from 0.9-1.3' bgs. 1.30	G#210129 A-4, SM WC=7.0%
									Brown, damp, dense, sandy SILT, little gravel, (Till). 4.20	
							-4.20		Weathered ROCK. 5.00	
5							-5.00		**Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL, STOPPED IN ROCK.	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-105
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	70+02, 8.0' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.40		PAVEMENT. 0.40	
							-0.60		Treated GRAVEL. 0.60	
	S5		1.40 - 2.70				-1.40		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). ≅S1 Cobble from 0.8-1.4' bgs. 1.40	G#210130 A-4, SM WC=24.4%
	S6		2.70 - 5.00				-2.70		Brown, moist, sandy SILT, trace gravel. 2.70	G#210131 A-1-b, SM WC=9.0%
5							-5.00		Brown, damp, silty fine to medium SAND, little coarse sand, little gravel. 5.00	
10										
15										
20										
25										
30										

Bottom of Exploration at 5.00 feet below ground surface.
NO REFUSAL

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-106
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	80+03, 8.3' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S7		0.70 - 2.80			SSA	-0.50		PAVEMENT. 0.50	
							-0.70		Treated GRAVEL. 0.70	G#210132 A-4, SM WC=9.6%
									Brown, damp, silty fine to medium SAND, some gravel, trace coarse sand, (Fill). Cobbles from 2.8-3.8' bgs.	
	S8		3.80 - 5.00				-3.80		3.80	
									Brown, moist, SILT, little fine sand, trace clay.	G#210133 A-4, ML WC=30.9%
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-107
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	80+03, 13.0' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0									Brown, damp, silty fine to medium SAND, some gravel, trace coarse sand, (Fill). ≅S7	
							-3.00		3.00	
									Brown, moist, SILT, little fine sand, trace clay. ≅S8	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-108
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	96+00, 9.0' Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S9		0.70 - 1.80			SSA	-0.50		PAVEMENT. 0.50	
	S10		1.80 - 7.50				-0.70		Treated GRAVEL. 0.70	G#210134 A-1-b, GM WC=4.9%
							-1.80		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). 1.80	G#210135 A-4, ML WC=14.6%
									Brown, damp, dense, sandy SILT, trace gravel.	
5										
	S11		7.50 - 10.00				-7.50		Brown, moist, sandy SILT, trace gravel, trace clay. 7.50	G#210136 A-4, CL-ML WC=14.8%
10							-10.00		**Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL 10.00	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-109
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	102+50, 7.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.60		PAVEMENT. 0.60	
							-0.80		Treated GRAVEL. 0.80	
							-2.50		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). ≅S9 2.50	
							-3.70		Brown, moist, SILT, little fine sand, trace clay. ≅S8 3.70	
5							-5.00		Brown, moist, sandy SILT, trace gravel, trace clay. ≅S11 5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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Boring No.: HB-CA-109

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-110
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	102+50, 12.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0									GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). ≅S9	
									Cobble from 2.3-2.8' bgs.	
							-2.80		2.80	
									Brown, moist, SILT, little fine sand, trace clay. ≅S8	
							-4.00		4.00	
									Brown, moist, sandy SILT, trace gravel, trace clay. ≅S11	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-111
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	115+00, 9.8' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.40		PAVEMENT. 0.40	
							-0.50		Unbound PAVEMENT. 0.50	
							-0.70		Treated GRAVEL. 0.70	
							-1.50		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). ≅S9 1.50	
							-2.70		Brown, damp, dense, sandy SILT, trace gravel. ≅S10 2.70	
5							-5.00		Brown, moist, sandy SILT, trace gravel, trace clay. ≅S11 5.00	
10									**Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Boring No.: HB-CA-111

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-112
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	127+50, 9.4' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.50	PAVEMENT. 0.50	
							-0.70	Treated GRAVEL. 0.70	
							-1.80	Brown, damp, silty fine to medium SAND, some gravel, trace coarse sand, (Fill)(STRONG ODOR). ≅S7 1.80	
							-4.00	Brown, moist, sandy SILT, trace gravel, trace clay. ≅S11 4.00	
	S12		4.00 - 5.00				-5.00	Brown, damp, dense, sandy SILT, trace gravel, (Till). 5.00	G#210137 A-4, ML WC=12.8%
5								**Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL	
10									
15									
20									
25									
30									

Remarks:

Offsets are from existing Roadway CL.

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

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

Boring No.: HB-CA-112

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-113
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	127+50, 13.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0									Brown, damp, silty fine to medium SAND, some gravel, trace coarse sand, (Fill). ≅S7	
							-1.10		1.10 Brown, moist, sandy SILT, trace gravel, trace clay. ≅S11	
							-3.60		3.60 Brown, damp, dense, sandy SILT, trace gravel, (Till). ≅S12	
5							-5.00		5.00 **Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-114
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/9/07-10/9/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	142+50, 9.0' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.60		PAVEMENT. 0.60	
							-0.80		Treated GRAVEL. 0.80	
							-1.70		Brown, damp, silty fine to medium SAND, some gravel, trace coarse sand, (Fill)(STRONG ODOR). ≅S7 1.70	
							-3.70		Brown, damp, dense, sandy SILT, trace gravel, (Till). ≅S12 3.70	
5									Weathered ROCK.	
							-6.00		6.00	
									Bottom of Exploration at 6.00 feet below ground surface. REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-115
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/10/07-10/10/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	157+55, 9.2' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S13		0.70 - 2.00			SSA	-0.50		PAVEMENT. 0.50	
							-0.70		Treated GRAVEL. 0.70	G#210138 A-1-b, GM WC=3.8%
							-2.00		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). 2.00	
							-3.80		Brown, damp, silty fine to medium SAND, some gravel, trace coarse sand, (Fill). ≅S7 3.80	
5							-5.00		Brown, damp, dense, sandy SILT, trace gravel, (Till). ≅S12 5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Boring No.: HB-CA-115

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-116
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/10/07-10/10/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	157+55, 14.0' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							-0.70		GRAVEL, some brown, damp, silty fine to coarse sand, (Fill). ≅S13 — 0.70	
							-2.10		Brown, damp, silty fine to medium SAND, some gravel, trace coarse sand, (Fill). ≅S7 — 2.10	
									Brown, damp, dense, sandy SILT, trace gravel, (Till). ≅S12	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-117
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/10/07-10/10/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	180+00, 8.6' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.50		PAVEMENT. 0.50	
							-0.70		Treated GRAVEL. 0.70	
							-1.70		Brown, damp, silty fine to medium SAND, some gravel, trace coarse sand, (Fill)(STRONG ODOR). ≅S7 1.70	
							-2.50		Brown, damp, dense, sandy SILT, trace gravel, (Till). ≅S12 2.50	
5							-5.00		Brown, damp, dense, sandy SILT, trace gravel, with cobbles, (Till). ≅S12 5.00	
10									**Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Boring No.: HB-CA-117

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-118
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/10/07-10/10/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	195+27, 9.3' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.55		PAVEMENT. 0.55	
							-0.80		Treated GRAVEL. 0.80	
							-1.30		Augered into Rock. 1.30	
									Bottom of Exploration at 1.30 feet below ground surface. REFUSAL	
5										
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CA-119
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	G. Lidstone	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/10/07-10/10/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	205+00, 8.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S14		0.70 - 2.20			SSA	-0.45		PAVEMENT. 0.45	
							-0.70		Unbound PAVEMENT. 0.70	G#210139 A-1-b, SM WC=4.9%
							-2.20		Brown, damp, silty fine to coarse SAND, some gravel, (Fill). 2.20	
							-3.80		Brown, damp, dense, sandy SILT, trace gravel. ≅S10 3.80	
5							-5.00		Brown, moist, sandy SILT, trace gravel, trace clay. ≅S11 5.00	
10									**Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Boring No.: HB-CA-119

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-201
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/17/09-9/17/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	165+95, 6.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S1		0.45 - 2.00			SSA	-0.45	PAVEMENT. 0.45	G#240165 A-1-b, SM WC=2.9%
							-2.00	Brown, damp, gravelly, fine to coarse SAND, some silt. Cobble layer at 1.0' bgs. 2.00	
	S2		2.00 - 6.20					Brown, moist, silty fine to medium SAND, little gravel, (Till).	G#240166 A-4, ML WC=13.0%
5							-6.20	6.20	
							-6.80	Weathered ROCK. 6.80	
10								**Bottom of Exploration at 6.80 feet below ground surface.** REFUSAL	
15									
20									
25									
30									

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-202
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/17/09-9/17/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	165+00, 6.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.45		PAVEMENT. 0.45	
	S3		1.90 - 8.00				-1.90		Brown, damp, gravelly, fine to coarse SAND, some silt, cobble layer at 1.0' bgs. ≅S1 1.90	G#240167 A-4, ML WC=25.6%
									Brown, wet, silty fine to medium SAND, little gravel, (Till).	
5										
							-8.00		8.00	
									Bottom of Exploration at 8.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-203
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/17/09-9/17/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	165+50, 6.0 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S4		0.45 - 2.10			SSA	-0.45	PAVEMENT. 0.45	G#240168 A-1-b, SM WC=3.2%
								Brown, damp, gravelly, fine to coarse SAND, some silt.	
	S5		2.10 - 8.00				-2.10	2.10 Brown, moist, silty fine to medium SAND, trace gravel, dryer with depth, (Till).	G#240169 A-4, ML WC=18.8%
5									
							-8.00	8.00	
								Bottom of Exploration at 8.00 feet below ground surface. NO REFUSAL	
10									
15									
20									
25									
30									

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-204
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/17/09-9/17/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	166+50, 5.0 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.45		PAVEMENT. 0.45	
							-2.00		Brown, damp, gravelly, fine to coarse SAND, some silt. ≅S4 Cobble layer from 1.0-1.4' bgs. 2.00	
5									Brown, moist, silty fine to medium SAND, trace gravel, dryer with depth, (Till). ≅S5	
							-8.00		8.00	
10									**Bottom of Exploration at 8.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Boring No.: HB-CAR-204

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-205
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/17/09-9/17/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	167+16, 6.0 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.45		PAVEMENT. 0.45	
									Brown, damp, gravelly, fine to coarse SAND, some silt. ≅S4	
							-2.00		2.00 Brown, moist, silty fine to medium SAND, trace gravel, (Till). ≅S5	
5										
							-8.00		8.00	
									Bottom of Exploration at 8.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-206
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/17/09-9/17/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	167+43, 5.5 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.45		PAVEMENT. 0.45	
									Brown, damp, gravelly, fine to coarse SAND, some silt. ≅S4	
							-2.20		2.20	
									Brown, moist, silty fine to medium SAND, trace gravel, (Till). ≅S5	
5										
							-8.00		8.00	
									Bottom of Exploration at 8.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-207
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/24/09-9/24/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	96+25, 8.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S6		0.42 - 1.50			SSA	-0.42	PAVEMENT. 0.42	G#240170 A-1-b, SM WC=5.6%
	S7		1.50 - 6.50				-1.50	Brown, damp, gravelly, fine to medium SAND, some silt. 1.50	G#240171 A-4, ML WC=12.5%
								Brown, moist, silty fine to medium SAND, some gravel, (Till).	
5									
	S8		6.50 - 10.00				-6.50	6.50	G#240172 A-4, ML WC=21.9%
								Light brown, wet, fine sandy-SILT.	
10							-10.00	10.00	
								Bottom of Exploration at 10.00 feet below ground surface. NO REFUSAL	
15									
20									
25									
30									

Remarks:

Offsets are from existing Roadway CL.

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

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

Boring No.: HB-CAR-207

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-208
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/24/09-9/24/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	96+50, 8.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT.	
							-1.00		0.42 — Brown, damp, gravelly, fine to medium SAND, some silt. ≅S6	
									1.00 — Brown, wet, silty fine to medium SAND, some gravel, (Till). ≅S7	
5										
							-6.30		6.30 — Light brown, wet, fine sandy-SILT. ≅S8	
10							-10.00		10.00 — **Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-209
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/24/09-9/24/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	96+70, 8.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT. 0.42	
									Brown, damp, gravelly, fine to medium SAND, some silt. ≅S6	
							-2.00		2.00 Brown, moist, silty fine to medium SAND, some gravel, (Till). ≅S7	
5										
							-6.50		6.50 Light brown, wet, fine sandy-SILT. ≅S8	
10							-10.00		10.00 **Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-210
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/24/09-9/24/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	96+90, 8.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT. 0.42	
									Brown, damp, gravelly, fine to medium SAND, some silt. ≅S6	
							-2.00		2.00 Brown, wet, silty fine to medium SAND, some gravel, (Till). ≅S7	
5										
							-6.00		6.00 Light brown, wet, fine sandy-SILT. ≅S8	
10							-10.00		10.00 **Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-211
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/24/09-9/24/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	97+09, 8.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT. 0.42	
							-1.90		Brown, damp, gravelly, fine to medium SAND, some silt. ≅S6 1.90	
									Brown, moist, silty fine to medium SAND, some gravel, (Till). ≅S7	
5							-6.10		6.10	
									Light brown, wet, fine sandy-SILT. ≅S8	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface. NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Boring No.: HB-CAR-211

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-212
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/24/09-9/24/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	97+50, 8.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S9		0.42 - 1.40			SSA	-0.42		PAVEMENT. 0.42	
	S10		1.40 - 10.00				-1.40		Brown, damp, gravelly, fine to medium SAND, some silt. ≅S6 1.40	G#240173 A-1-b, SM WC=4.2%
									Brown, moist, silty fine to medium SAND, some gravel, (Till). ≅S7	G#240174 A-4, SM WC=13.8%
5										
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface. NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-213
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/24/09-9/24/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	98+00, 8.5 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT. 0.42	
									Brown, damp, gravelly, fine to medium SAND, some silt. ≅S6	
							-2.00		2.00 Brown, dry, silty fine to medium SAND, some gravel, drier with depth (Till). ≅S7	
5										
10							-10.00		10.00 **Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-214
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/25/09-9/25/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	121+00, 8.0 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S11		0.42 - 1.10			SSA	-0.42		PAVEMENT. 0.42	G#240175 A-1-a, SM WC=3.4%
	S12		1.10 - 4.20				-1.10		Brown, damp, gravelly, fine to medium SAND, some silt. 1.10	G#240076 A-1-b, SM WC=4.7%
									Brown, moist, silty fine to medium SAND, little gravel, (Till).	
							-4.20		4.20	
5							-4.70		Weathered ROCK. 4.70	
									Bottom of Exploration at 4.70 feet below ground surface. REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-215
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/25/09-9/25/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	121+60, 8.0 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT. 0.42	
							-0.90		Brown, damp, gravelly, fine to medium SAND, some silt. ≅S11 0.90	
									Brown, moist, silty fine to medium SAND, little gravel, (Till). ≅S12	
5										
							-6.80		6.80	
							-7.20		Weathered ROCK. 7.20	
									Bottom of Exploration at 7.20 feet below ground surface. REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-216
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/25/09-9/25/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	121+75, 8.0 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT.	
							-1.10		Brown, damp, gravelly, fine to medium SAND, some silt. ≅S11 (0.42)	
									Brown, moist, silty fine to medium SAND, little gravel, (Till). ≅S12 (1.10)	
							-4.00		Weathered ROCK. (4.00)	
5							-5.50		**Bottom of Exploration at 5.50 feet below ground surface.** REFUSAL (5.50)	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-217
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/25/09-9/25/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	122+08, 8.0 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT.	
							-0.90		0.42	
									Brown, damp, gravelly, fine to medium SAND, some silt. ≅S11	
									0.90	
									Brown, moist, silty fine to medium SAND, little gravel, (Till). ≅S12	
									Wet layer from 3.0-4.0' bgs.	
5							-5.80		5.80	
							-6.20		Weathered ROCK.	
									6.20	
									Bottom of Exploration at 6.20 feet below ground surface.	
									REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-218
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/25/09-9/25/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	122+50, 8.0 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S13		0.42 - 1.40			SSA	-0.42		PAVEMENT. 0.42	
							-1.40		Brown, damp, gravelly, fine to medium SAND, some silt. 1.40	G#240077 A-1-b, SM WC=3.1%
									Brown, moist, silty fine to medium SAND, little gravel, (Till). ≅S12	
5										
							-8.00		8.00	
									Bottom of Exploration at 8.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CAR-219
PIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere/C. Giles	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	9/25/09-9/25/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	123+00, 9.0 Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	-0.42		PAVEMENT. 0.42	
	S14		1.40 - 8.00				-1.40		Brown, damp, gravelly, fine to medium SAND, some silt. ≅S13 1.40	G#240078 A-4, SM WC=10.9%
									Brown, moist, silty fine to medium SAND, little gravel, drier with depth, (Till).	
5										
							-8.00		8.00	
									Bottom of Exploration at 8.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from existing Roadway CL.

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 161
Location: Caribou, Maine

Boring No.: HB-CARI-301
WIN: 12780.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	2.25/6.25"
Operator:	Giguere/Giles/Daggett	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	6/12/12; 08:30-09:30	**Drilling Method:**	Hollow Stem Auger	**Core Barrel:**	N/A
Boring Location:	79+50, 13.0 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	18.0 ft bgs.

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
$S_{u(lab)}$ = Lab Vane Shear Strength (psf)
WOH = weight of 140lb. hammer
WOR = weight of rods WOC = weight of casing

Definitions:
WC = water content, percent
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S1		0.00 - 1.50			HSA		Brown, moist, gravelly, fine to coarse SAND, some silt.	
							-1.60	1.60	
5	1D	24/17	5.00 - 7.00	4/5/5/5	10			Brown, moist, loose, fine to coarse SAND, some silt, some gravel, little organics.	
10	2D	24/20	10.00 - 12.00	4/6/11/10	17		-10.00	10.00 Olive-brown, moist, medium dense, silty, fine to medium SAND, little gravel, occasional cobbles, (Till).	
15	3D	24/18	15.00 - 17.00	10/12/21/15	33			Similar to above, except dense.	
							-18.00	18.00	
20	4D	24/19	20.00 - 22.00	3/5/15/19	20			Brown, wet, medium dense, fine to medium SAND, some silt, some gravel.	
							-24.10	24.10	
25								**Bottom of Exploration at 24.10 feet below ground surface.** REFUSAL	
30									

Remarks:

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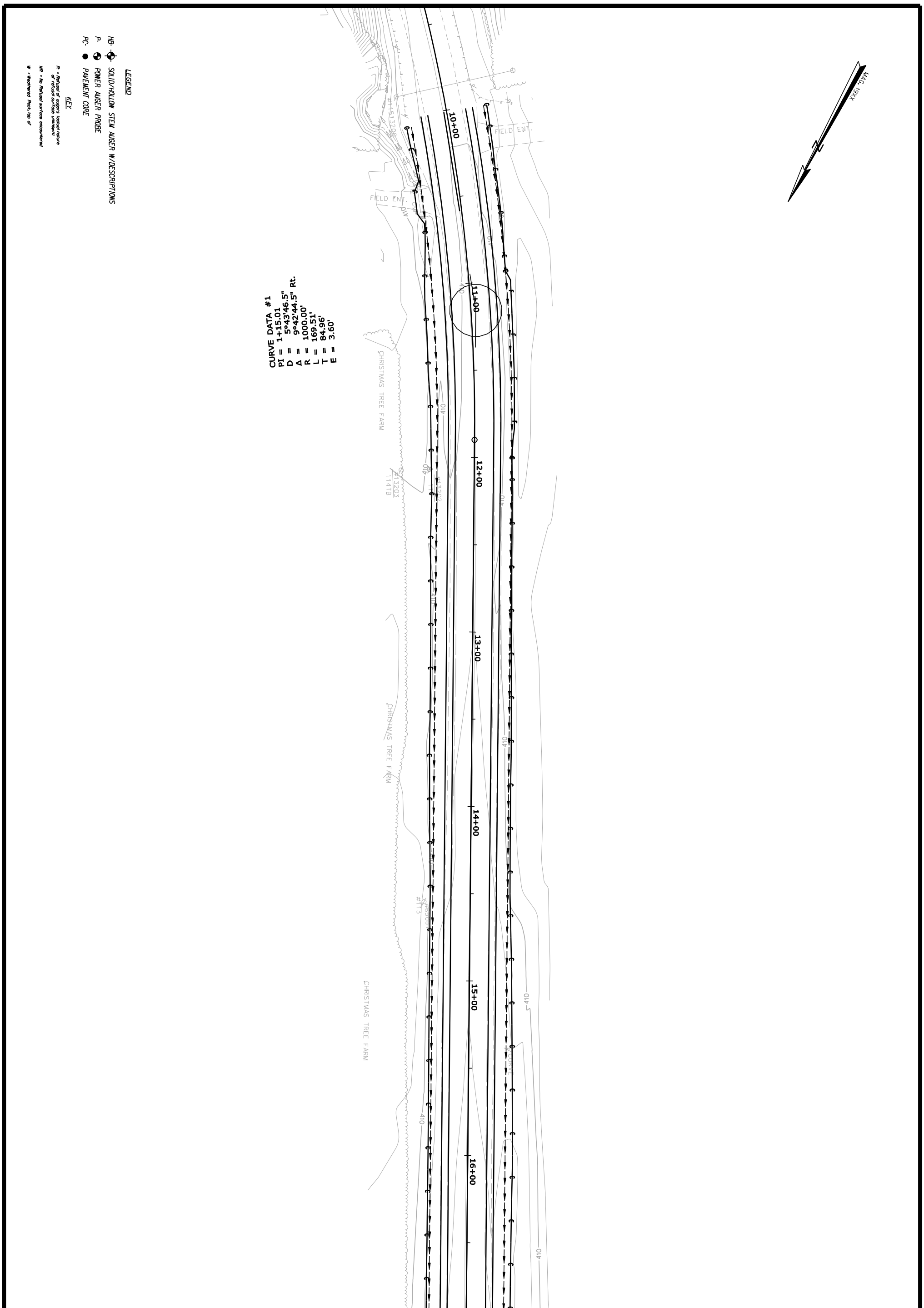

PROJ. MANAGER	JON BITHER	BY	DATE
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DESIGN3-DETAILED3	------	------	------
REVISIONS 1	------		------
REVISIONS 2	------		------
REVISIONS 3	------		------
REVISIONS 4	------		------
FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

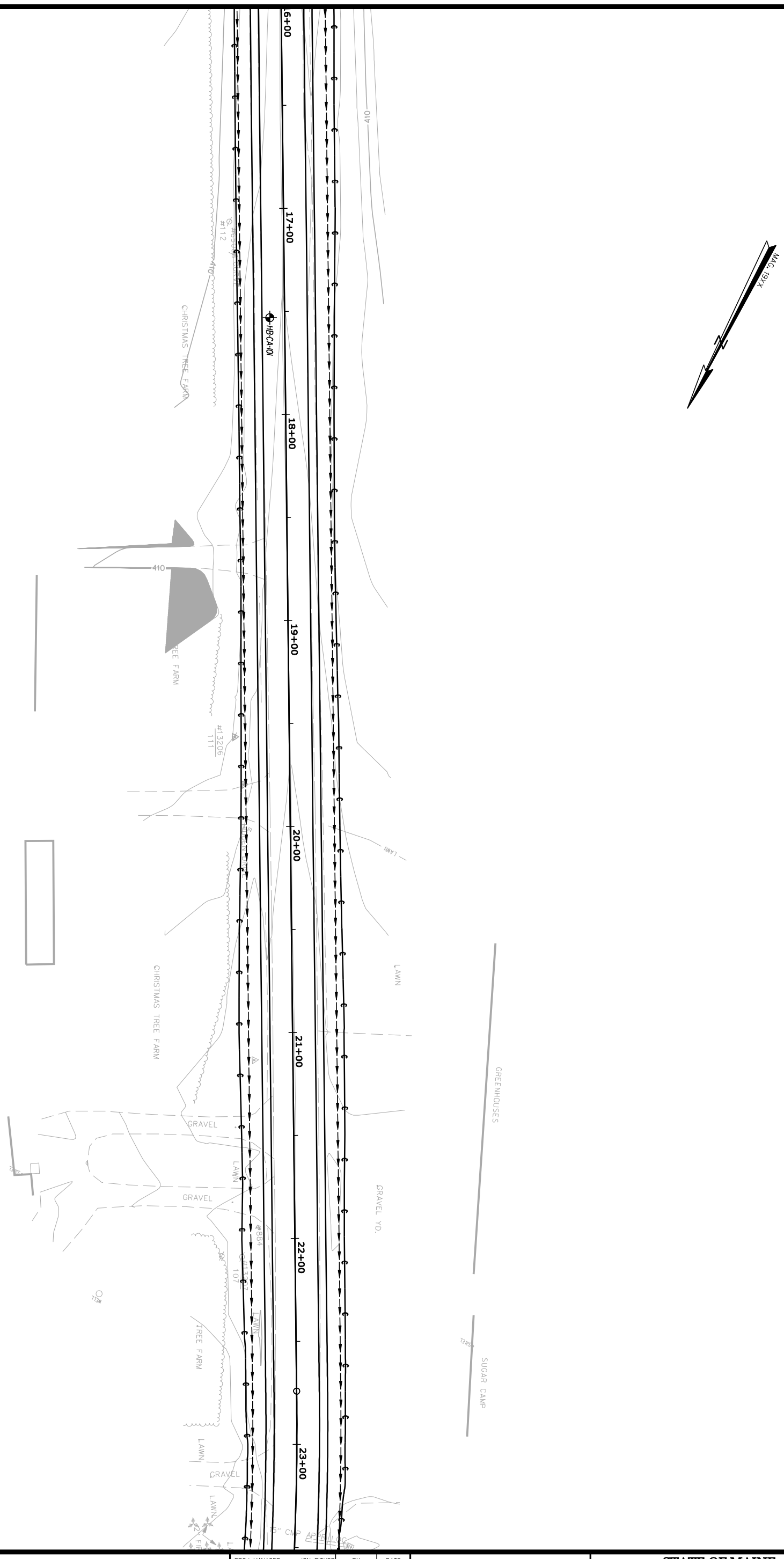
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS

SHEET NUMBER
1
OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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REVISIONS 4	------		------
FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

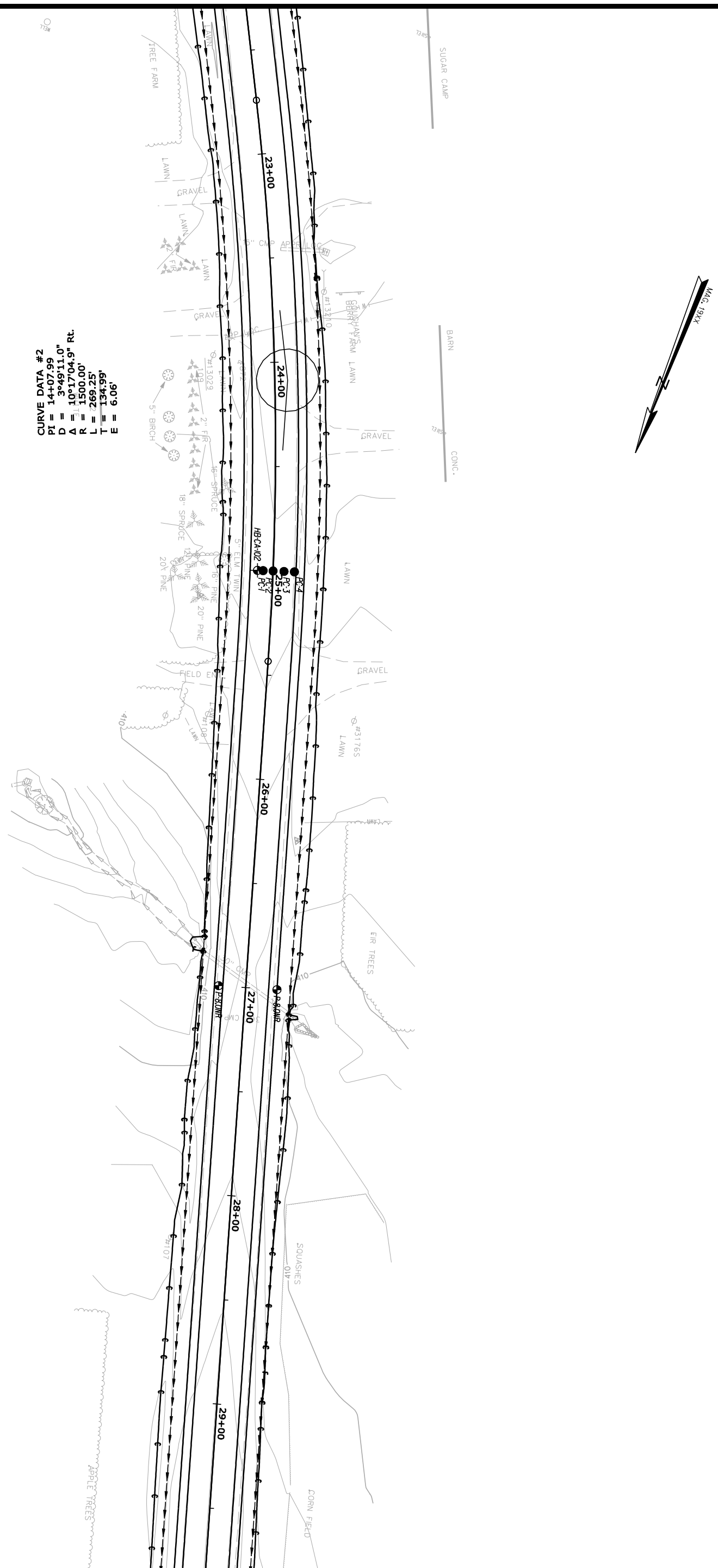
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS

SHEET NUMBER 2 OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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DESIGN3-DETAILED3	------	------	------
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REVISIONS 2	------		------
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REVISIONS 4	------		------
FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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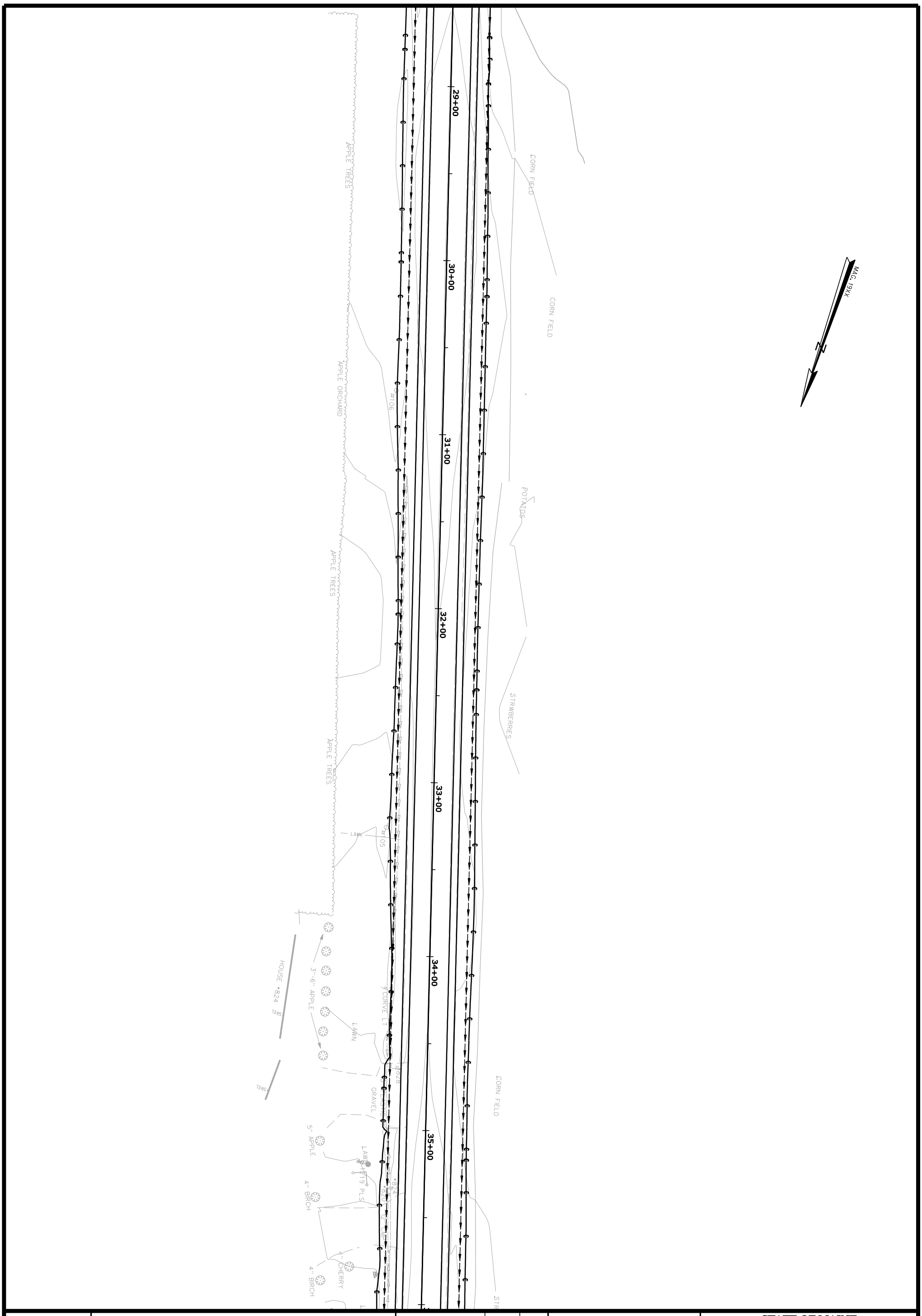
012780.00

HIGHWAY PLANS

SHEET NUMBER 3 OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

SHEET NUMBER 4 OF 31

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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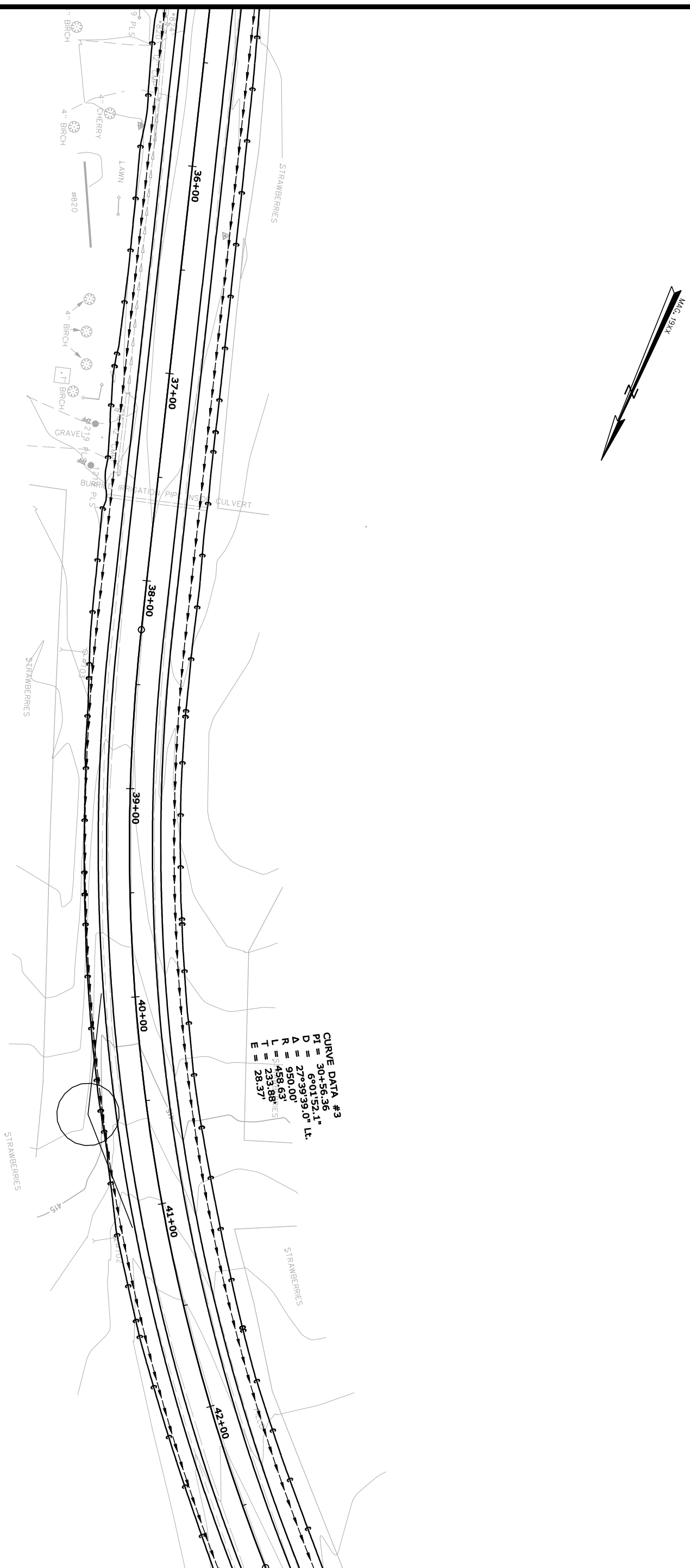
HIGHWAY PLANS



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DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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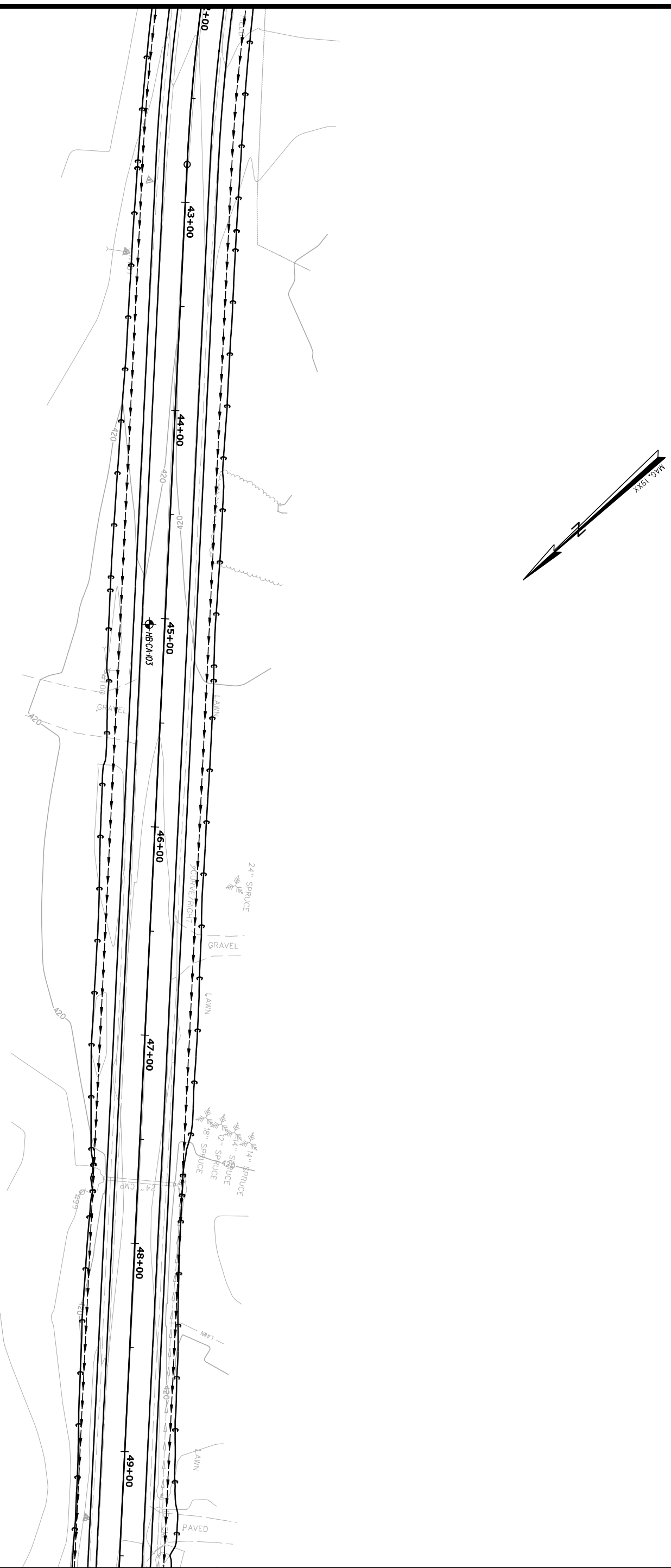
012780.00

HIGHWAY PLANS

SHEET NUMBER 5 OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

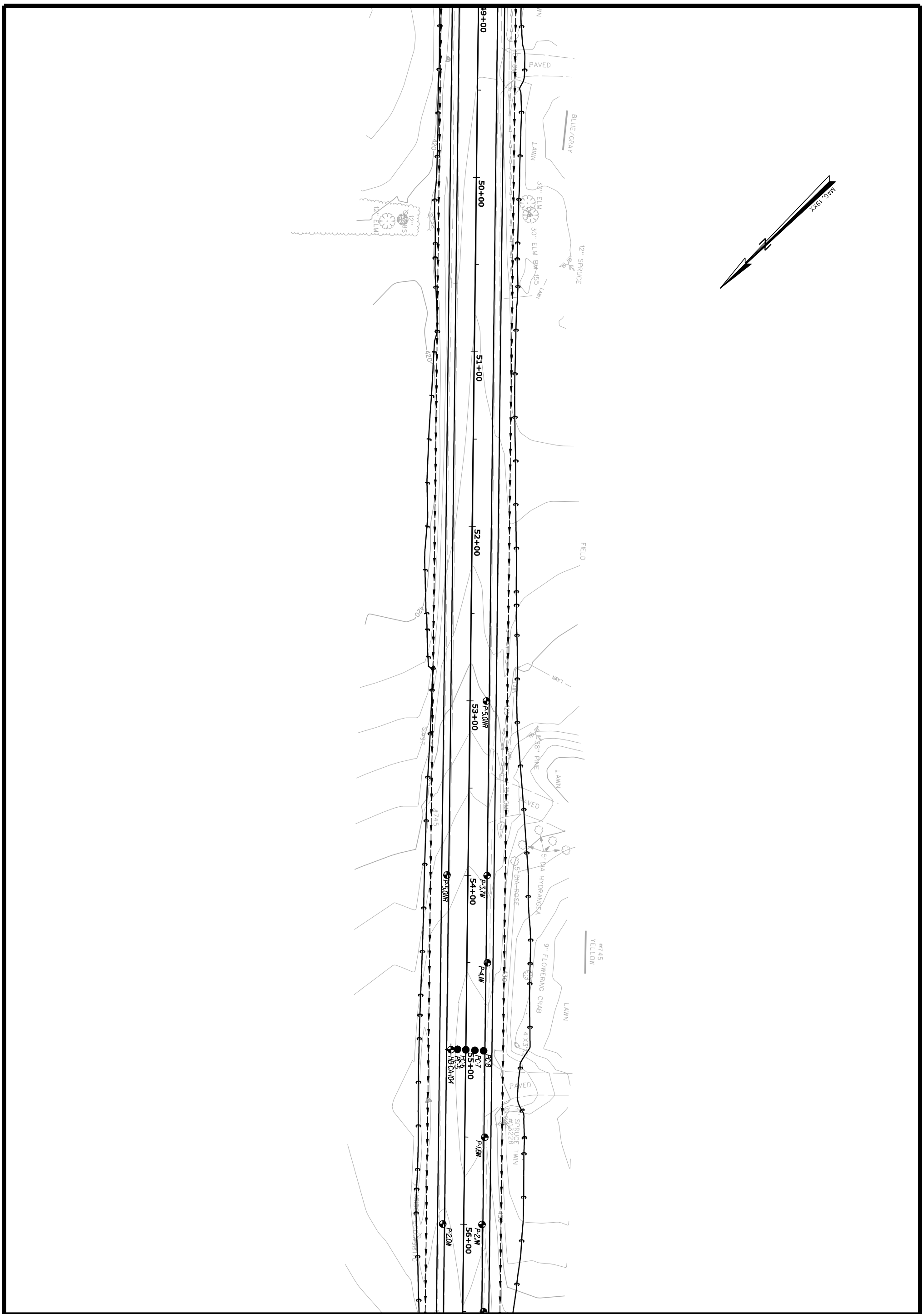
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS

SHEET NUMBER 6 OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
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REVISIONS 4	------		------
FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

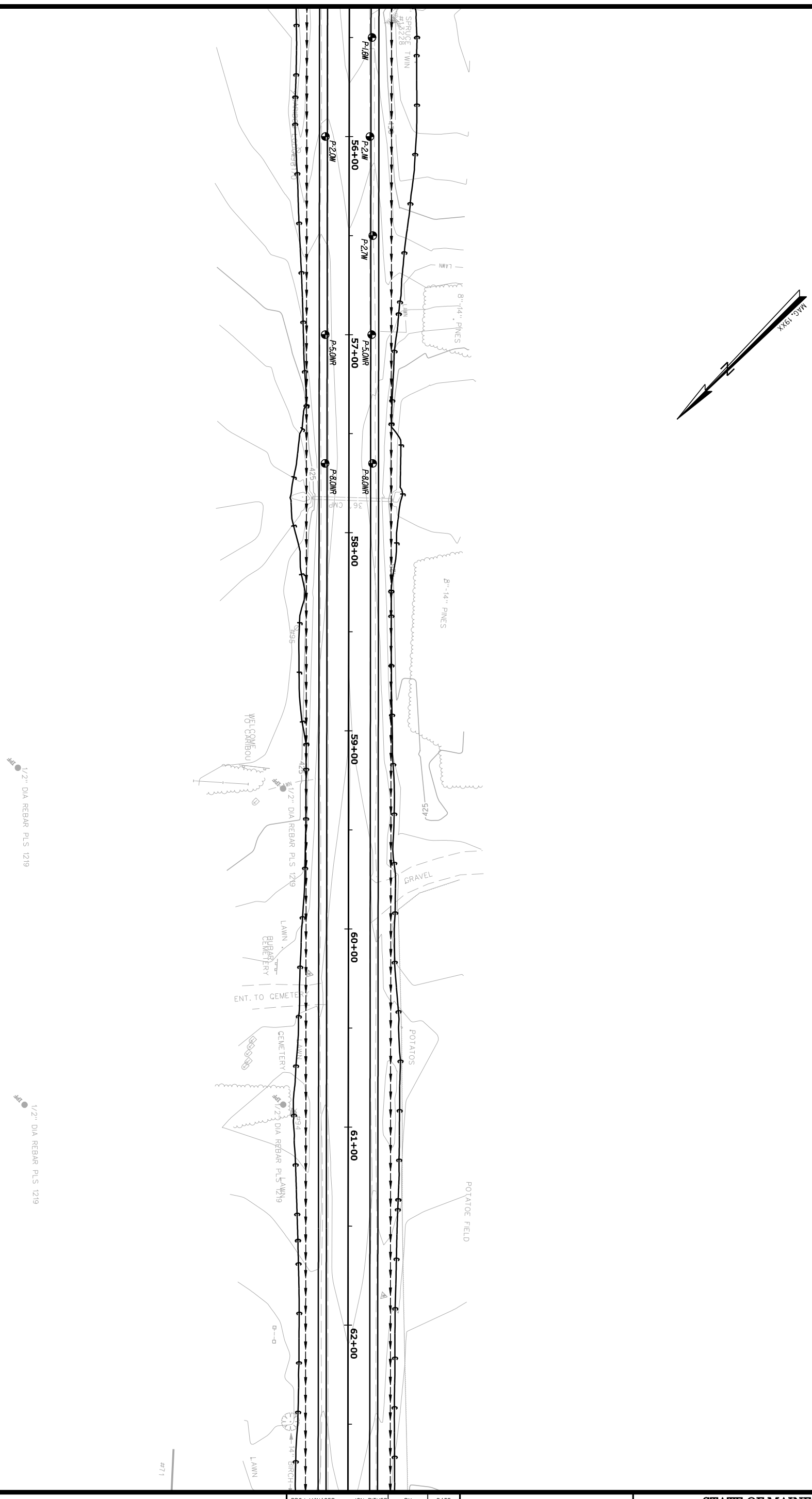
SHEET NUMBER 7 OF 31

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN 012780.00

HIGHWAY PLANS



PROJ. MANAGER	JON BITHER	BY	DATE
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FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

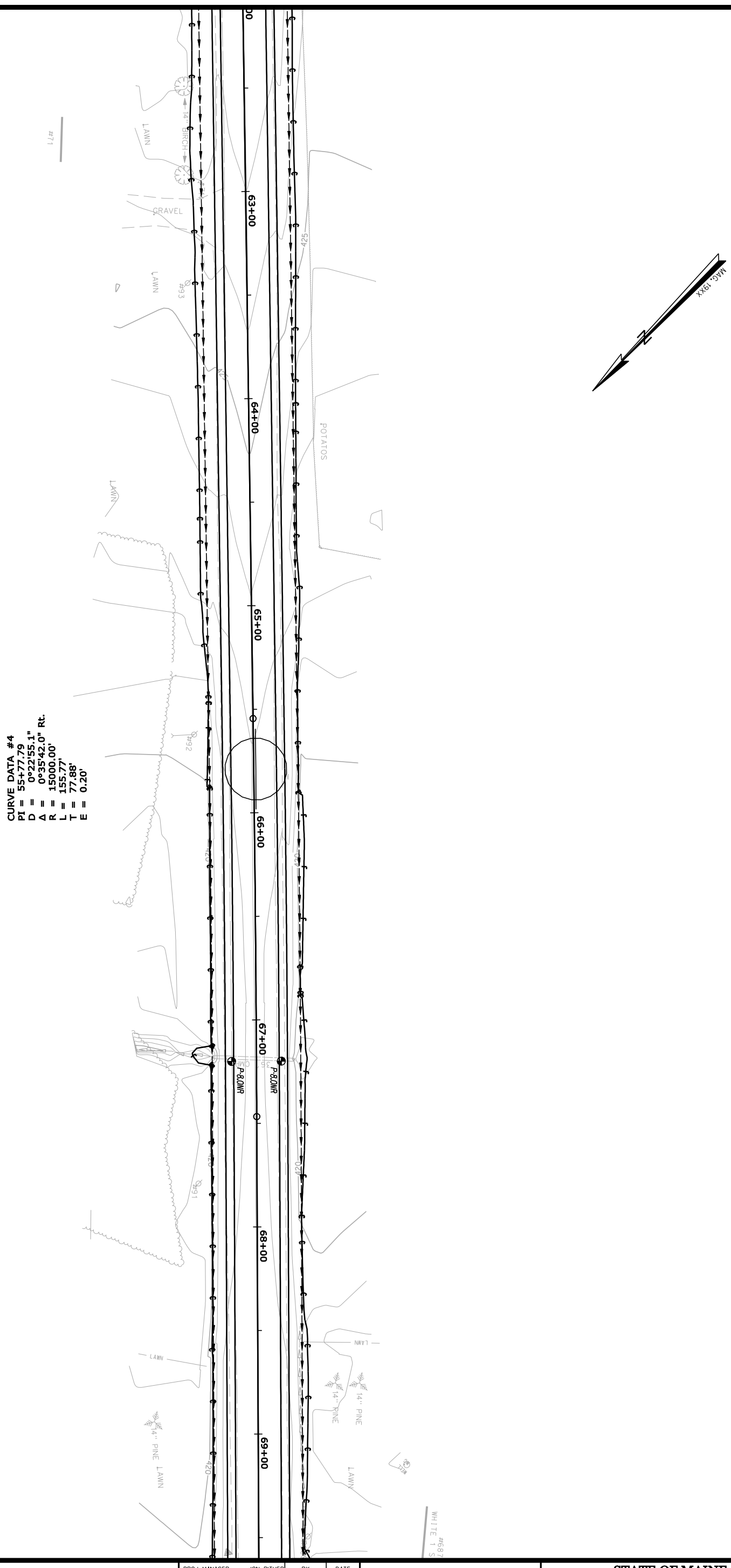
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS

SHEET NUMBER 8 OF 31



CURVE DATA #4
PI = 55+77.79
D = 0°22'55.1"
Δ = 0°35'42.0" Rt.
R = 15000.00'
L = 155.77'
T = 77.88'
E = 0.20'

SHEET NUMBER 9 OF 31

CARIBOU
STATE ROUTE 161

GEOPLANS

PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
CHECKED-REVIEWED	-----	-----	-----
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REVISIONS 4	-----		-----
FIELD CHANGES	-----		-----

SIGNATURE

P.E. NUMBER

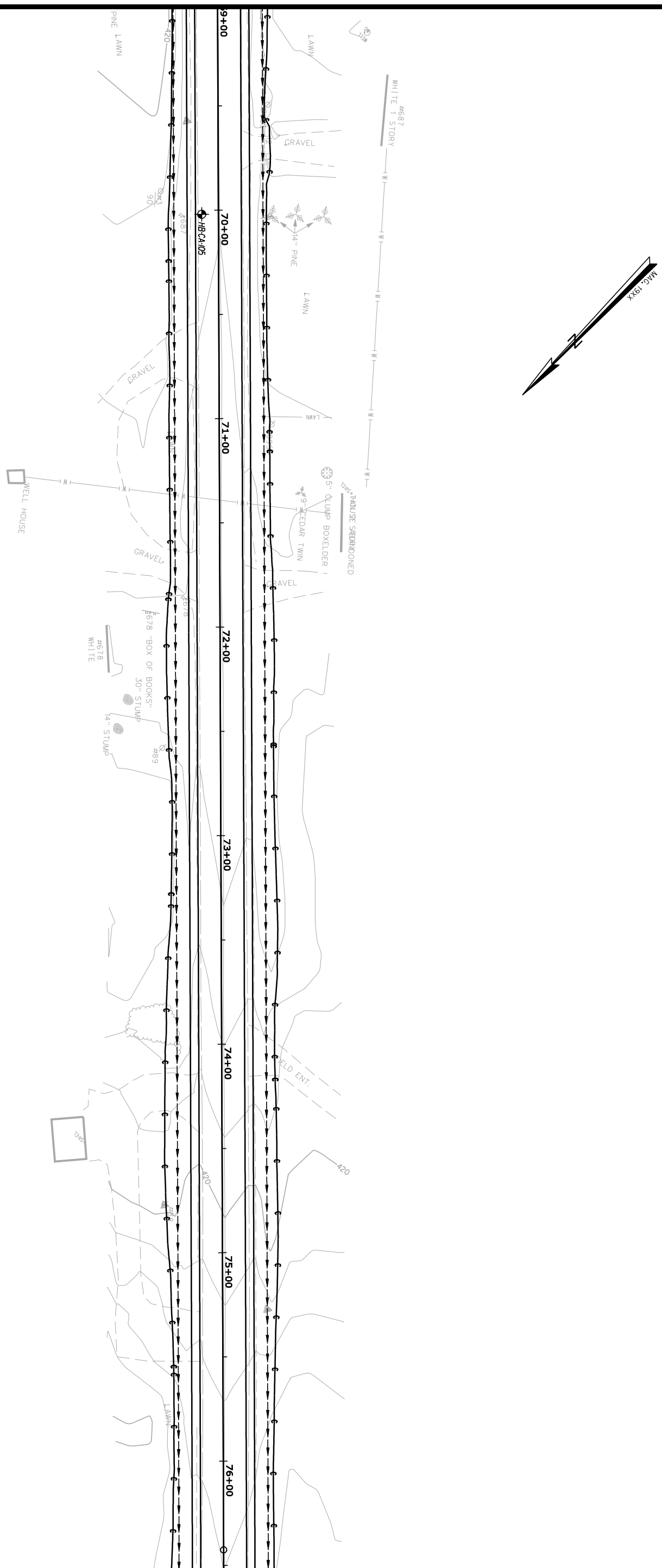
DATE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

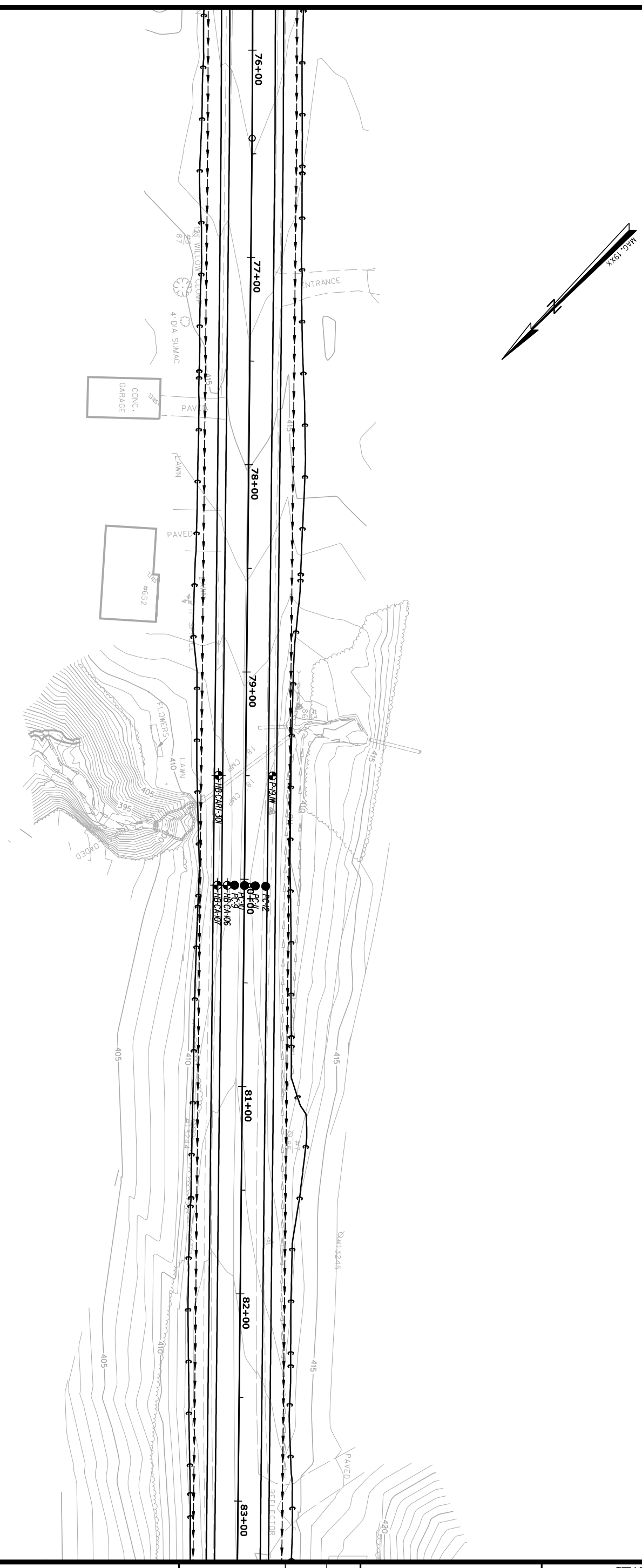
SHEET NUMBER 10 OF 31

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN 012780.00

HIGHWAY PLANS



PROJ. MANAGER	JON BITHER	BY	DATE
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REVISIONS 3	-----		-----
REVISIONS 4	-----		-----
FIELD CHANGES	-----		-----

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

SHEET NUMBER 11 OF 31

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN 012780.00

HIGHWAY PLANS

PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
CHECKED-REVIEWED	-----	-----	-----
DESIGN2-DETAILED2	-----	-----	-----
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REVISIONS 2	-----		-----
REVISIONS 3	-----		-----
REVISIONS 4	-----		-----
FIELD CHANGES	-----		-----

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

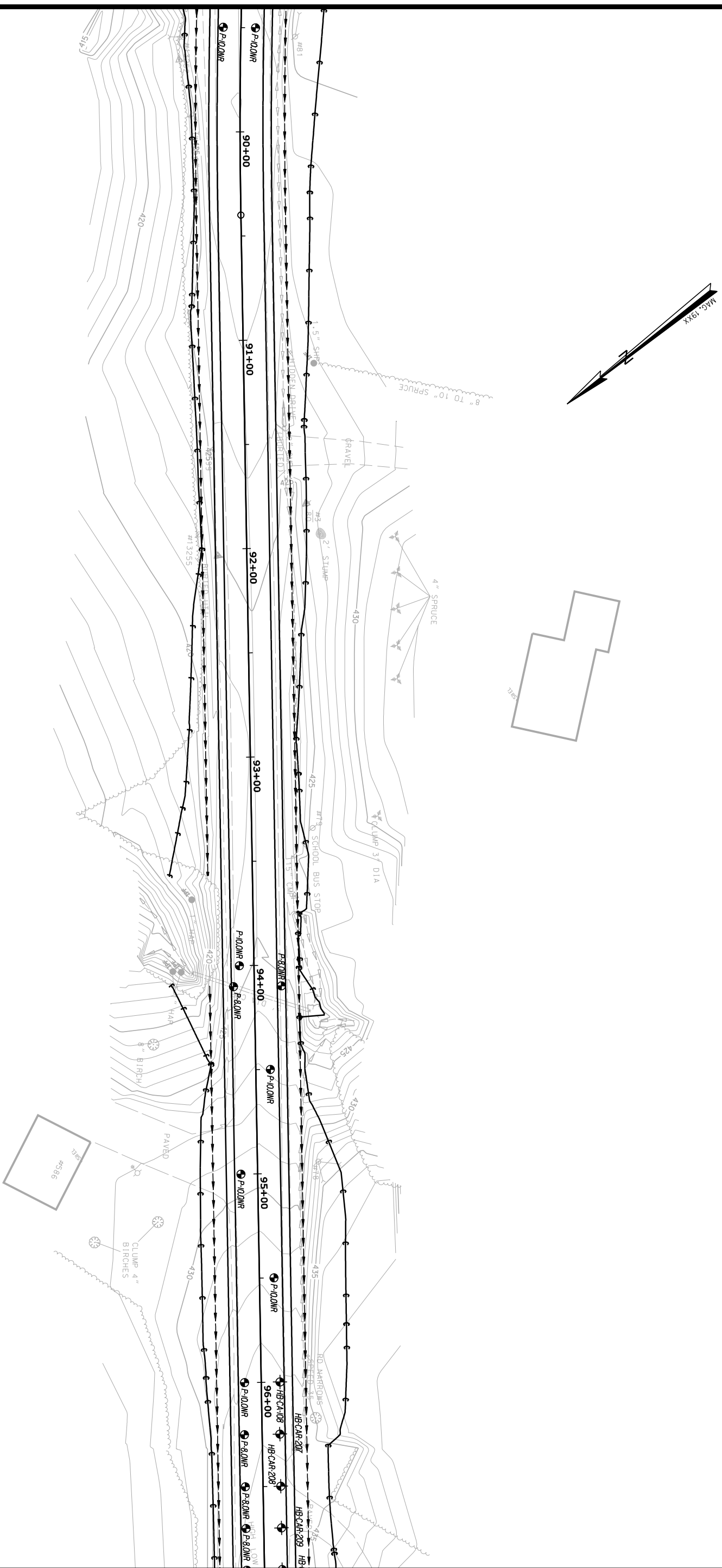
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS

SHEET NUMBER
12
OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

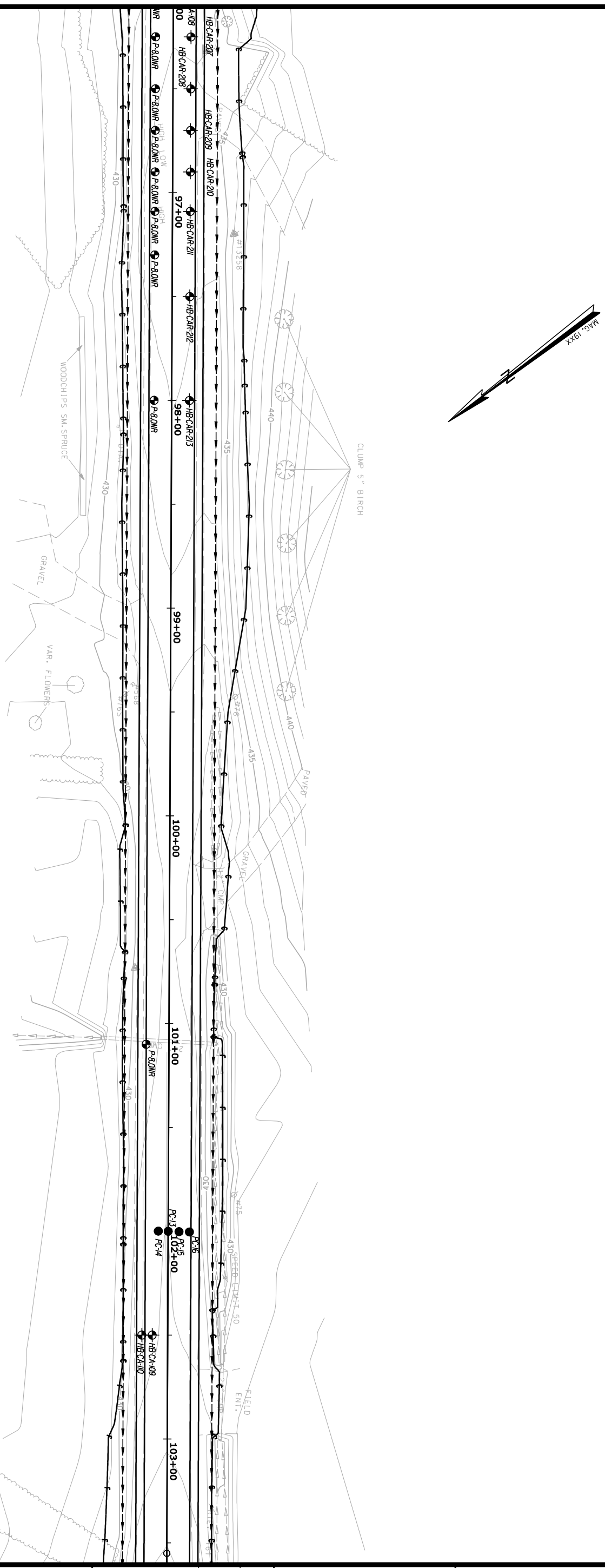
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS

SHEET NUMBER
13
OF 31



PROJ. MANAGER	JON BITHER	BY	DATE	
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012	
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DESIGN2-DETAILED2	-----	-----	-----	
DESIGN3-DETAILED3	-----	-----	-----	
REVISIONS 1	-----		-----	P.E. NUMBER
REVISIONS 2	-----		-----	
REVISIONS 3	-----		-----	
REVISIONS 4	-----		-----	DATE
FIELD CHANGES	-----		-----	

CARIBOU
STATE ROUTE 161

GEOPLANS

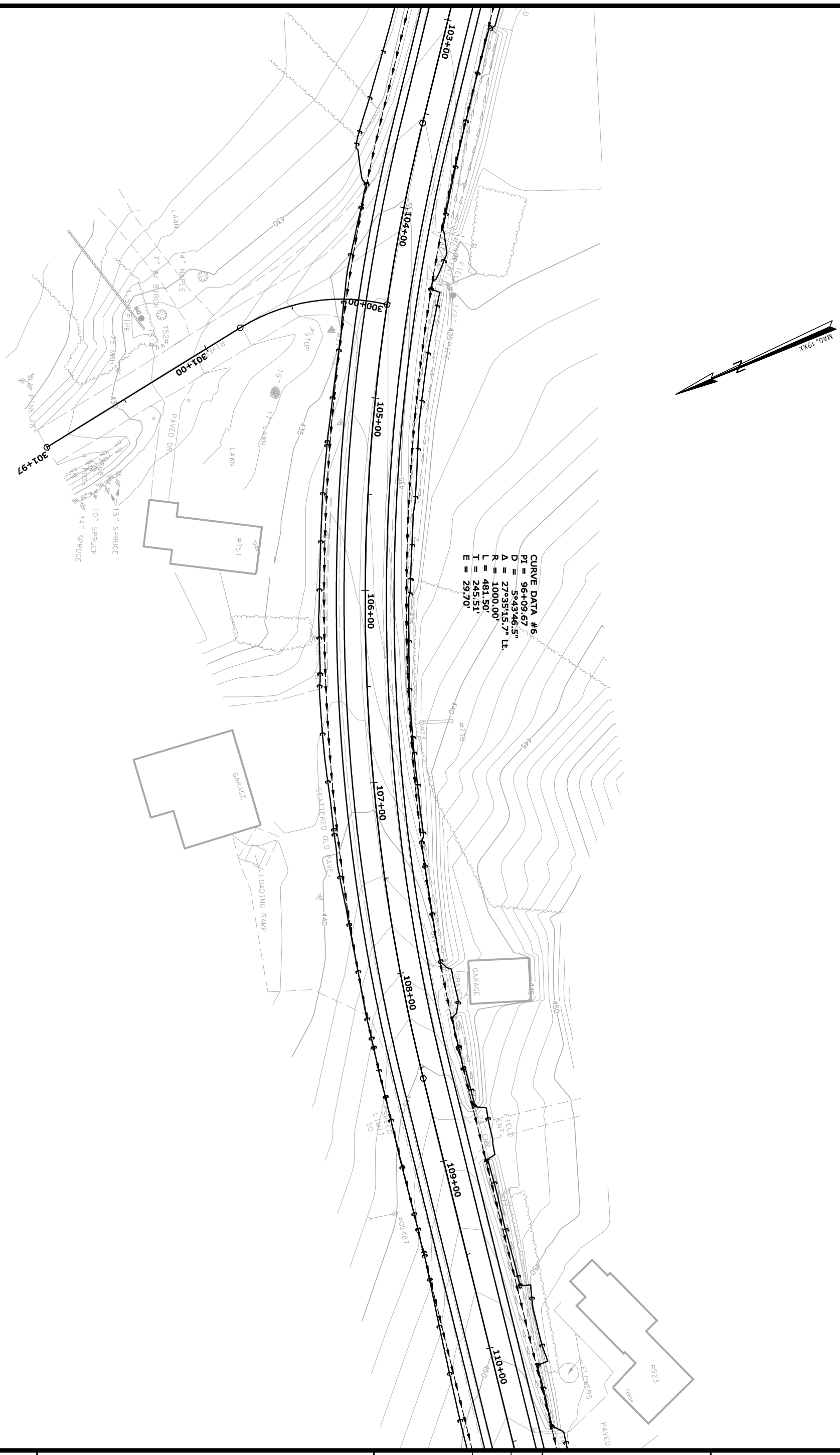
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS

SHEET NUMBER
14
OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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DESIGN3-DETAILED3	------	------	------
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FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

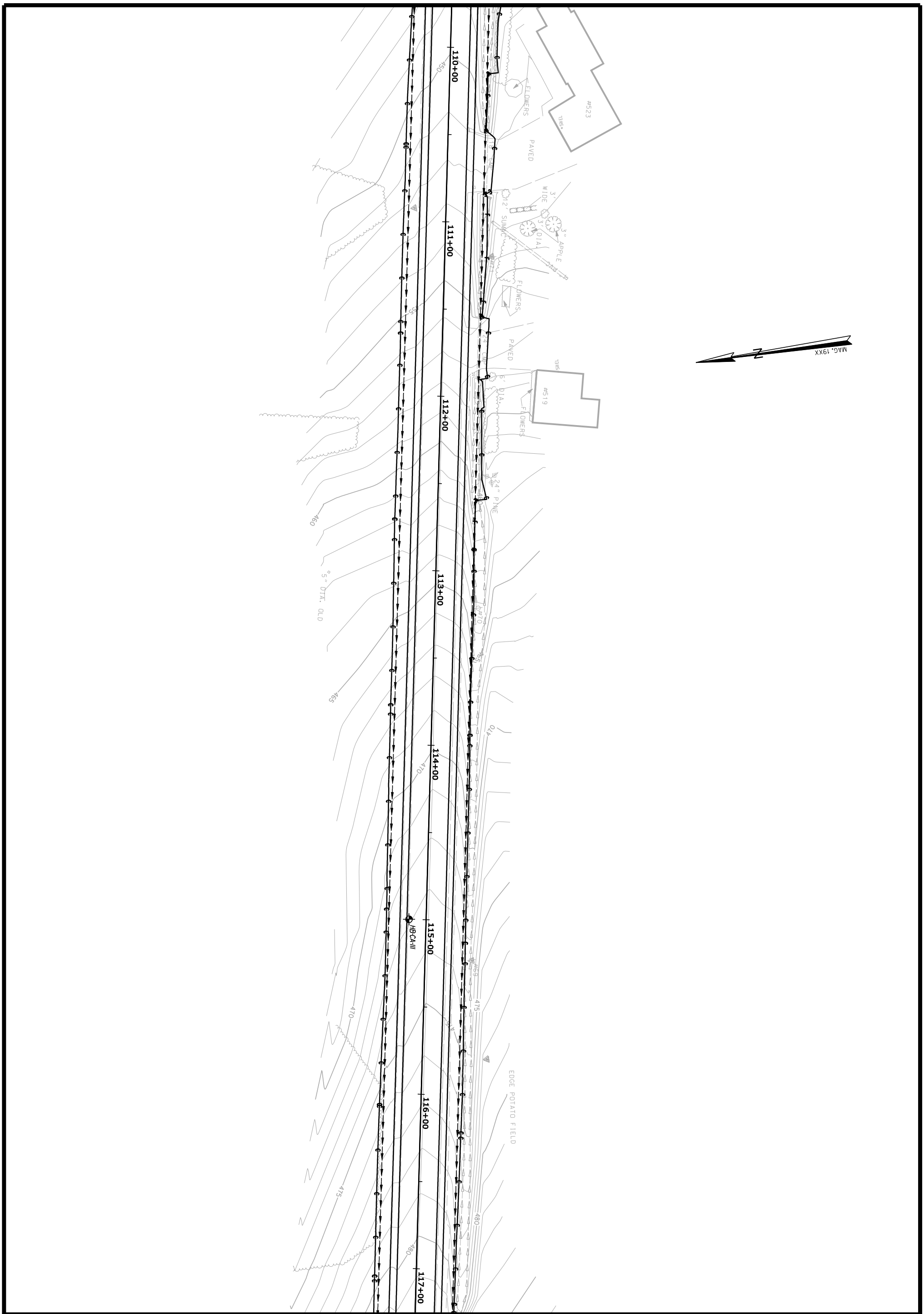
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN
012780.00

HIGHWAY PLANS

SHEET NUMBER
15
OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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DESIGN3-DETAILED3	-----	-----	-----
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FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

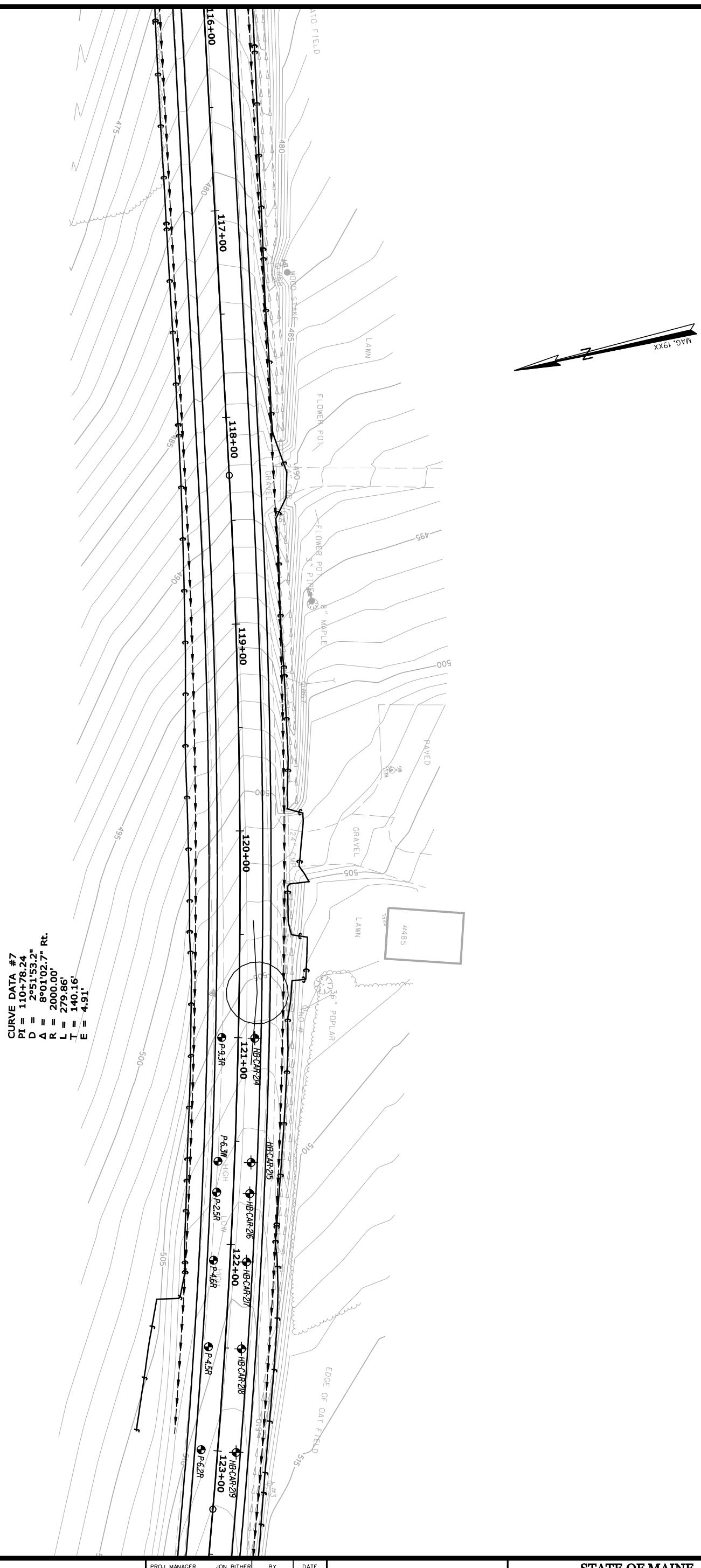
SHEET NUMBER 16 OF 31

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

WIN 012780.00

HIGHWAY PLANS



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DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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CARIBOU
STATE ROUTE 161

GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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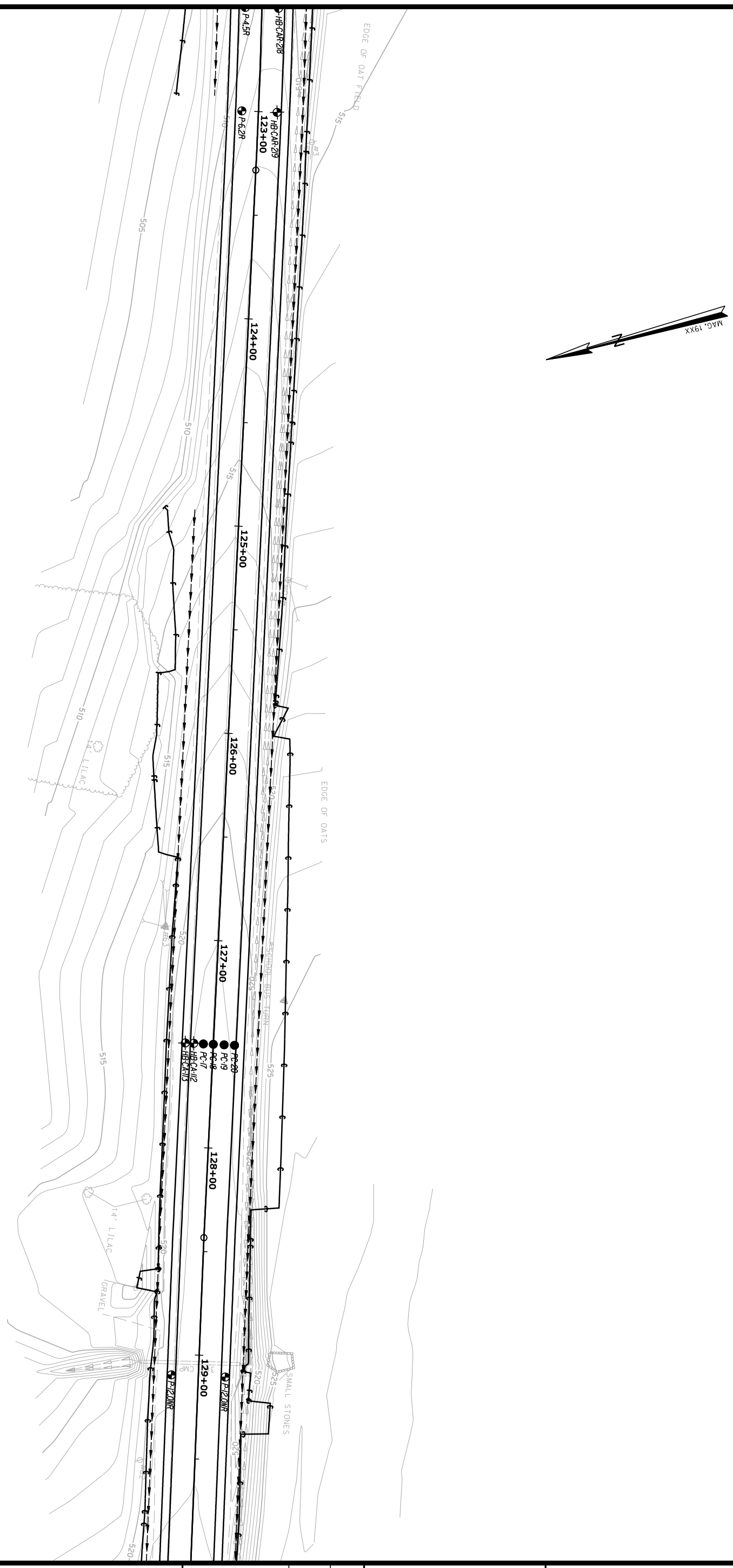
HIGHWAY PLANS

SHEET NUMBER
17
OF 31



SHEET NUMBER 18 OF 31

CARIBOU
STATE ROUTE 161

GEOPLANS

PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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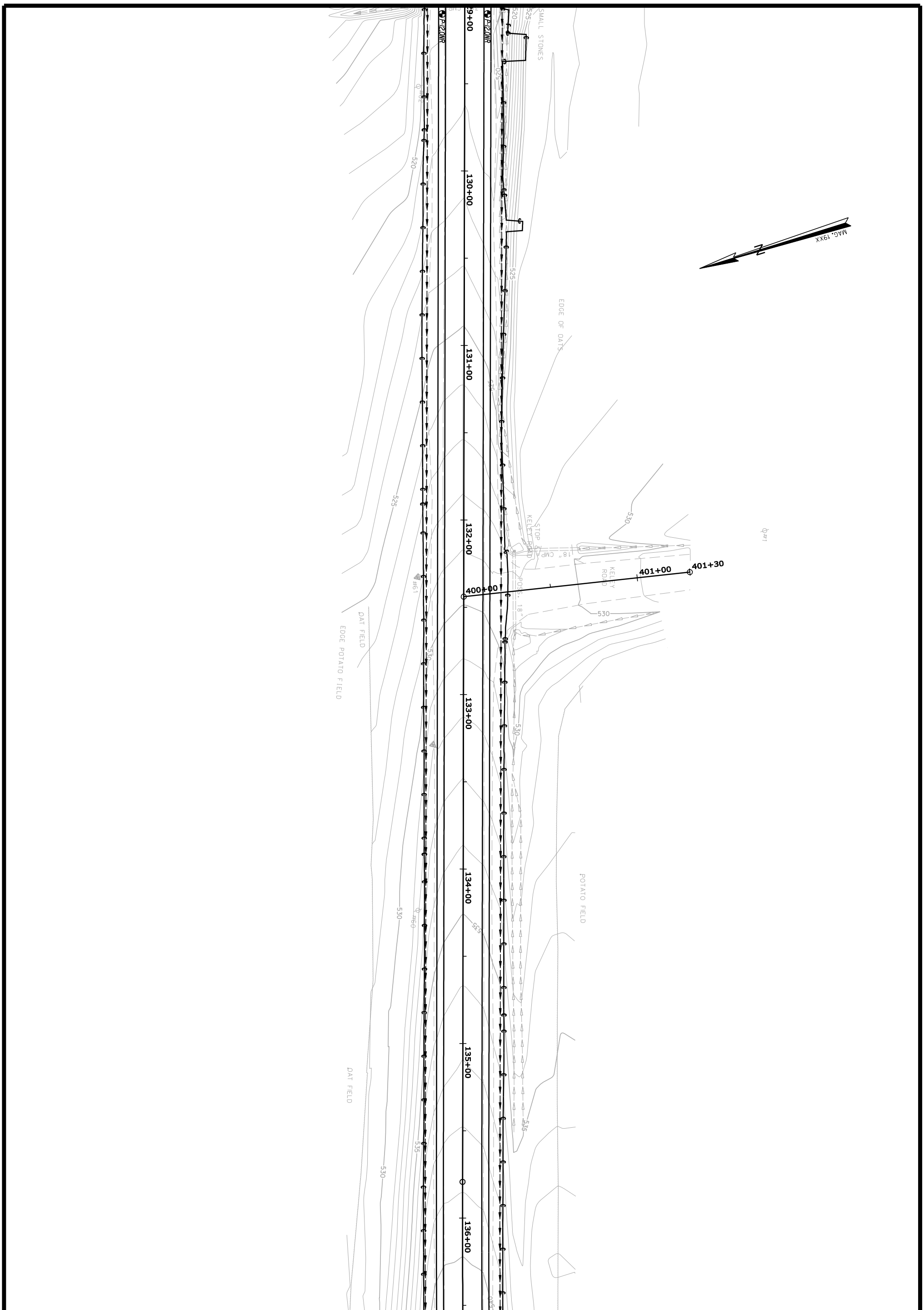
HIGHWAY PLANS



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GEOPLANS

SHEET NUMBER 19 OF 31

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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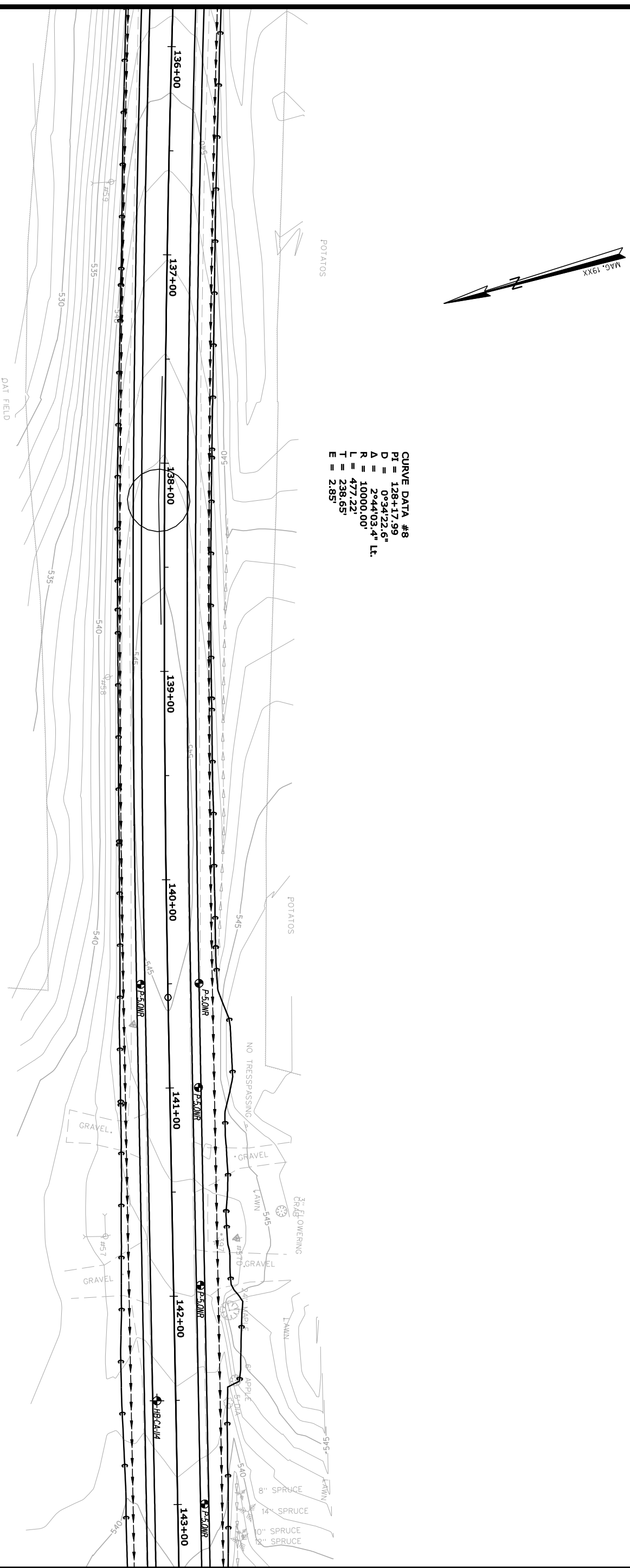
HIGHWAY PLANS



PROJ. MANAGER	JON BITHER	BY	DATE
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CARIBOU
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GEOPLANS

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DEPARTMENT OF TRANSPORTATION

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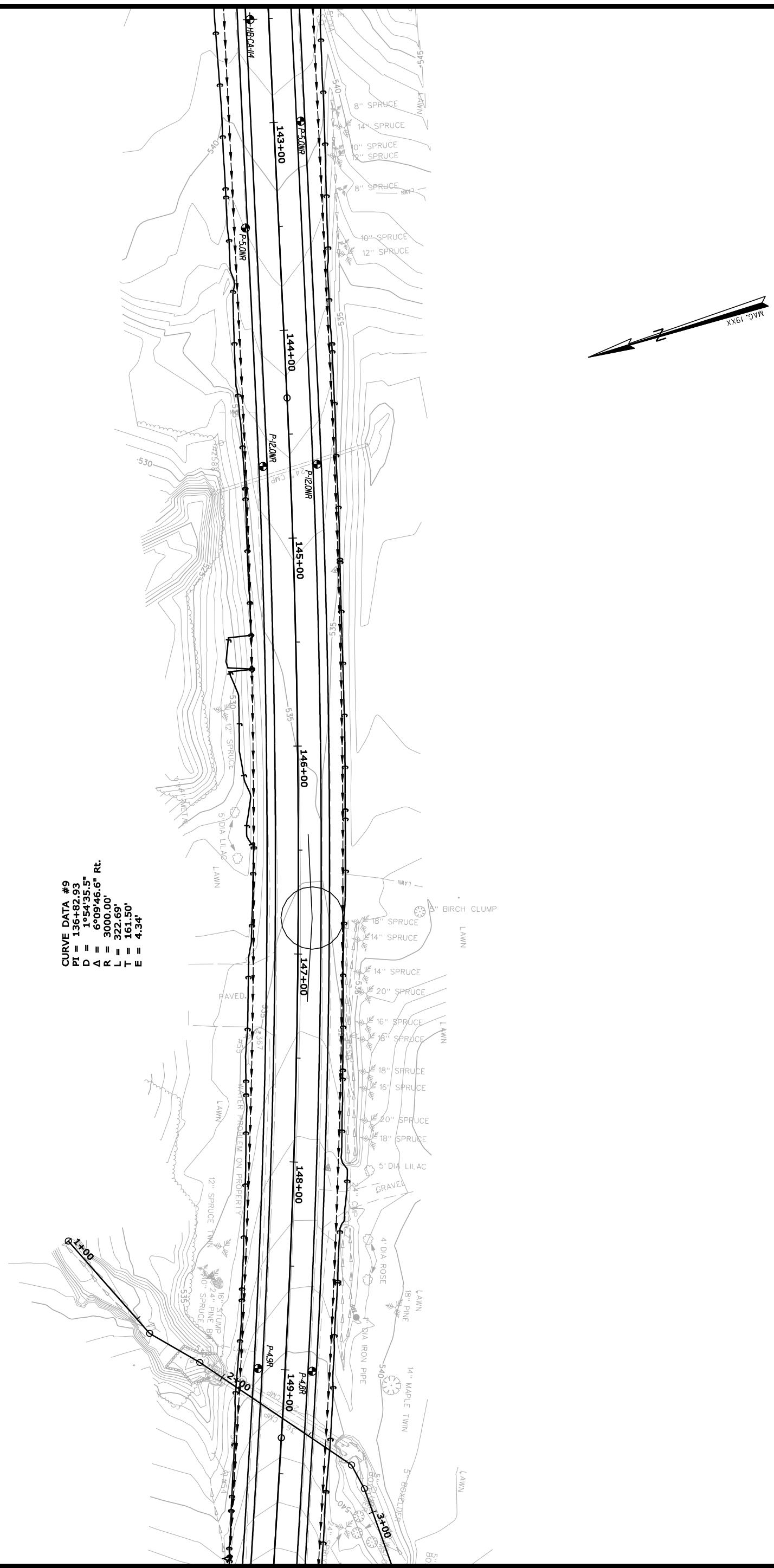
HIGHWAY PLANS



PROJ. MANAGER	JON BITHER	BY	DATE
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CARIBOU
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GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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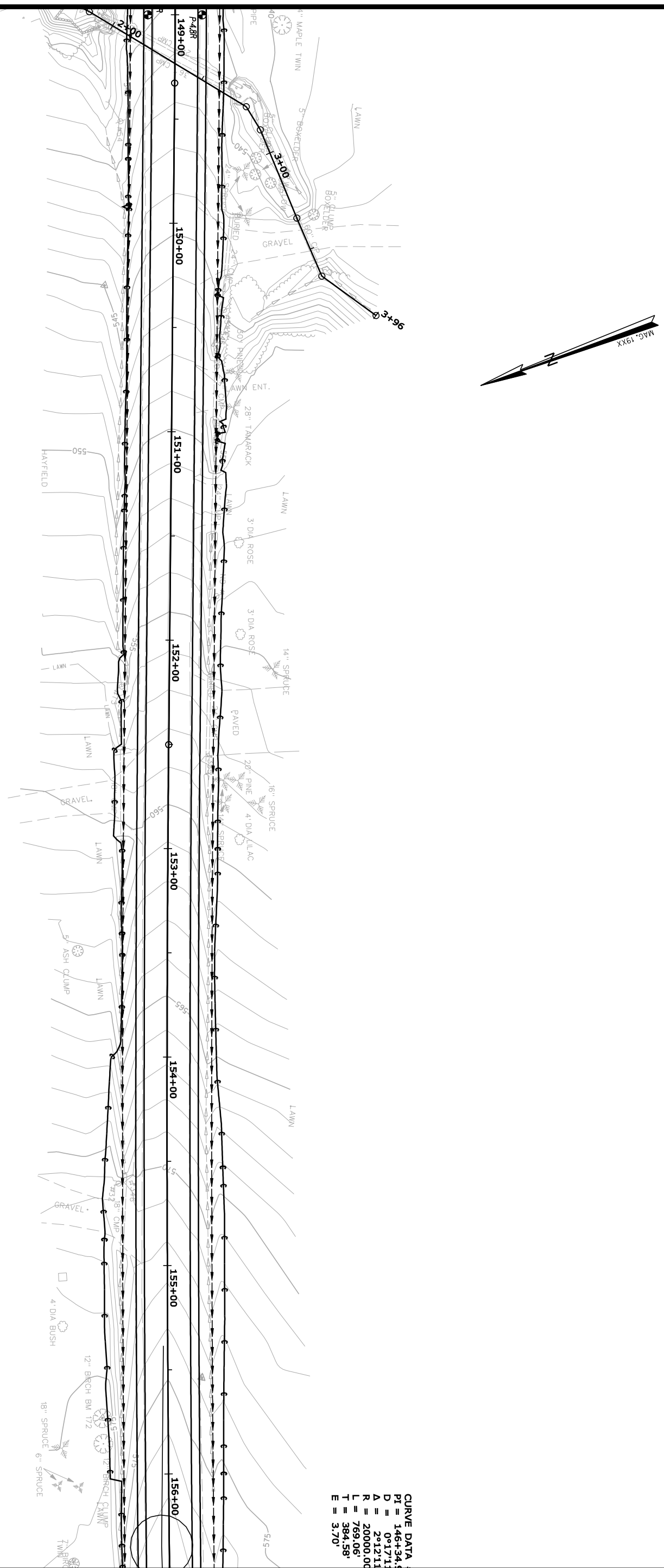
HIGHWAY PLANS

SHEET NUMBER
21
OF 31



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DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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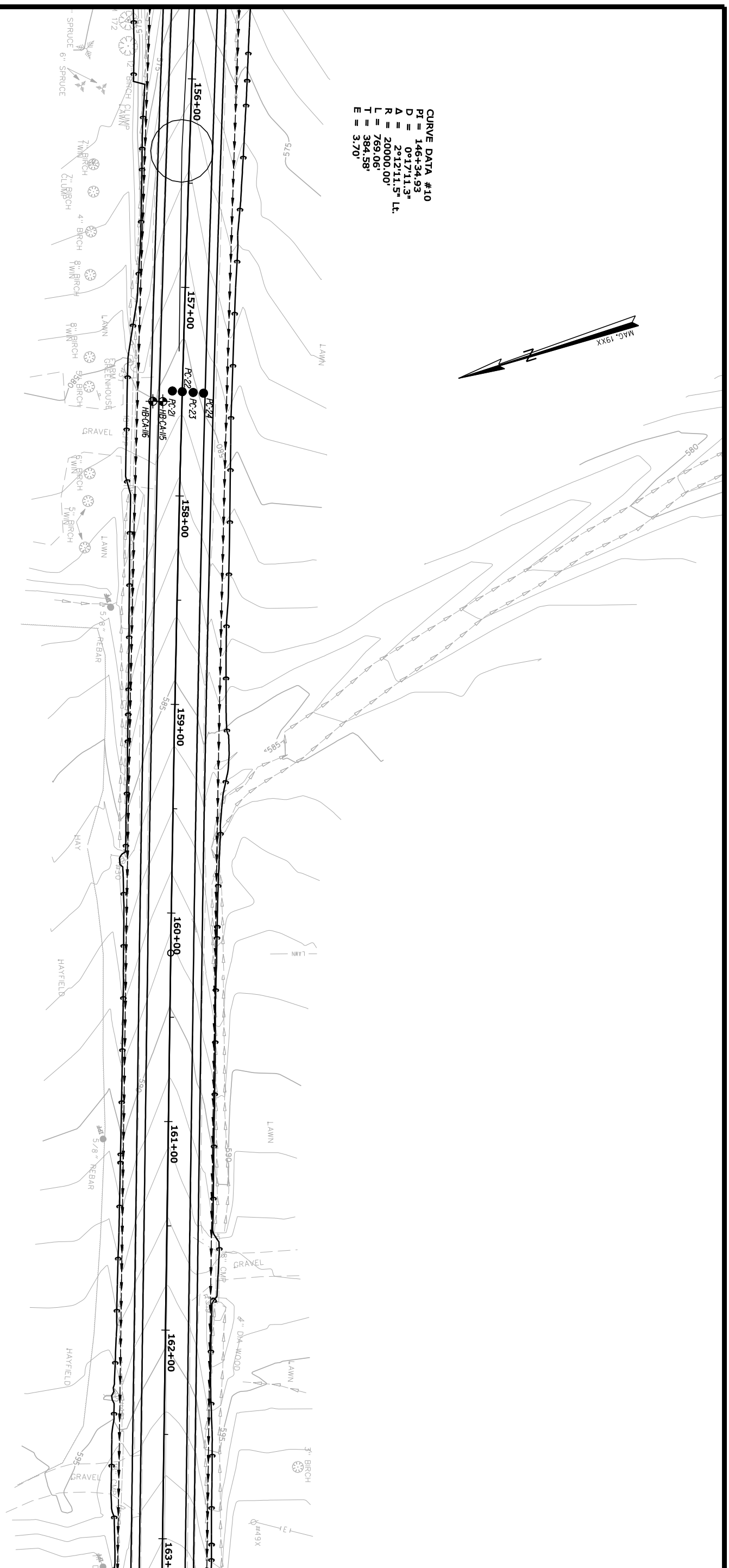
HIGHWAY PLANS

SHEET NUMBER
22
OF 31



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GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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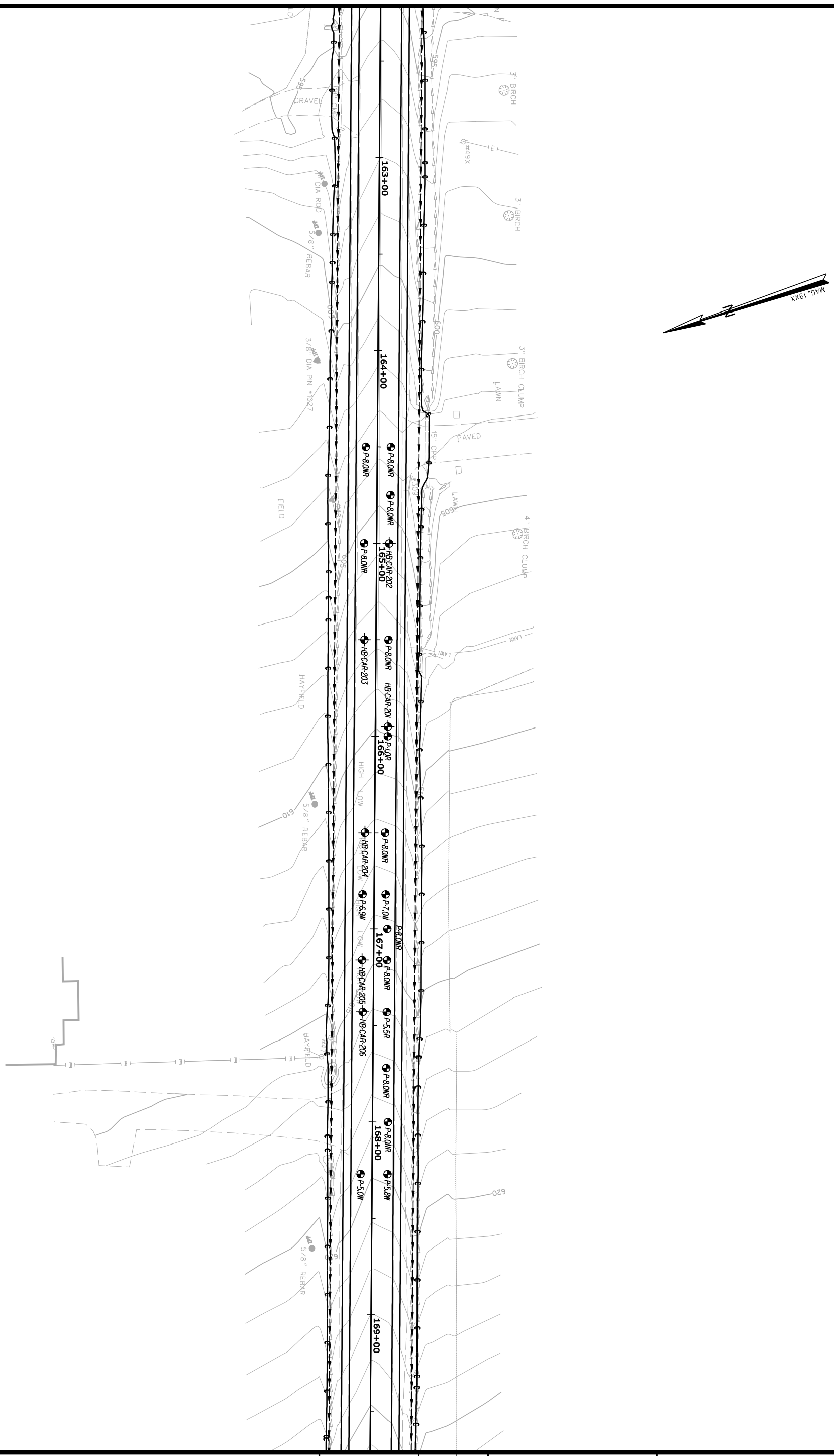
HIGHWAY PLANS



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DATE

CARIBOU
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GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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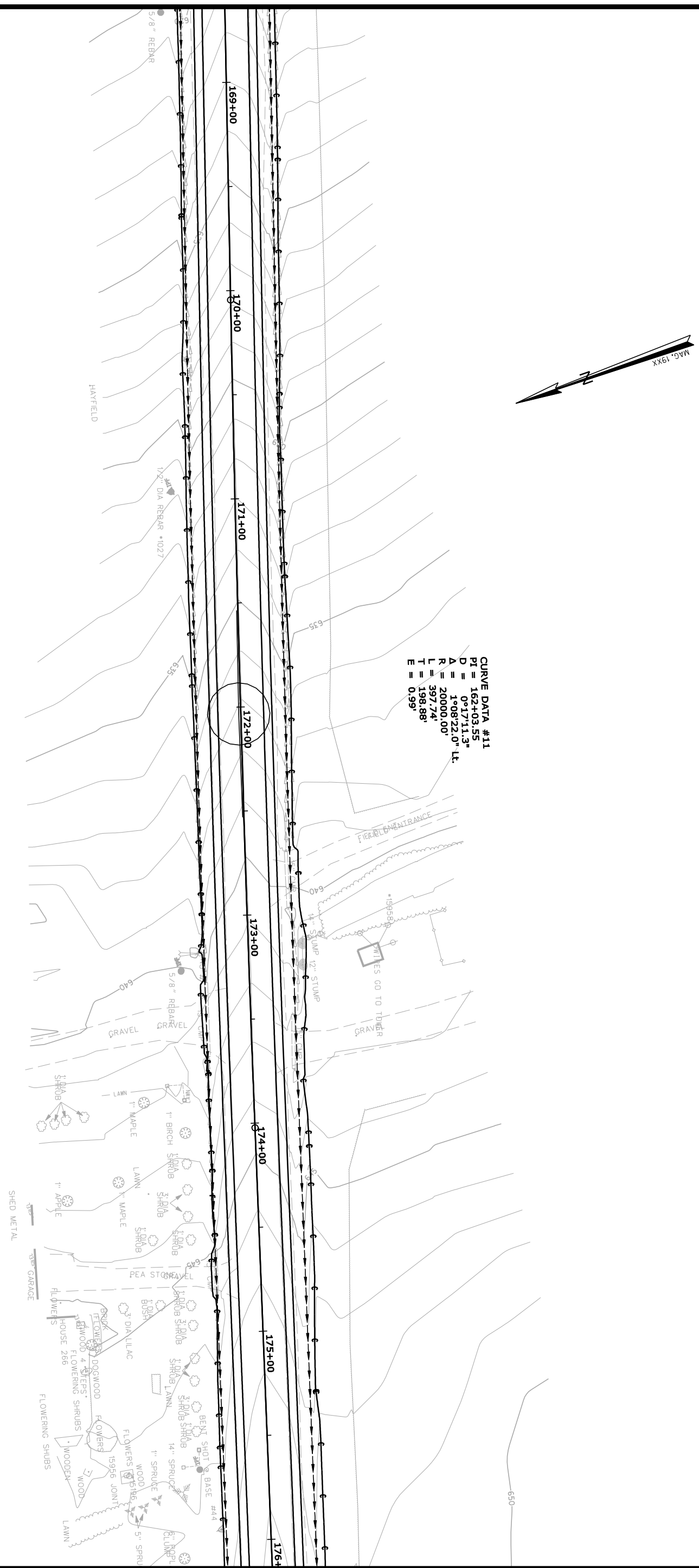
HIGHWAY PLANS

SHEET NUMBER
24
OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
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P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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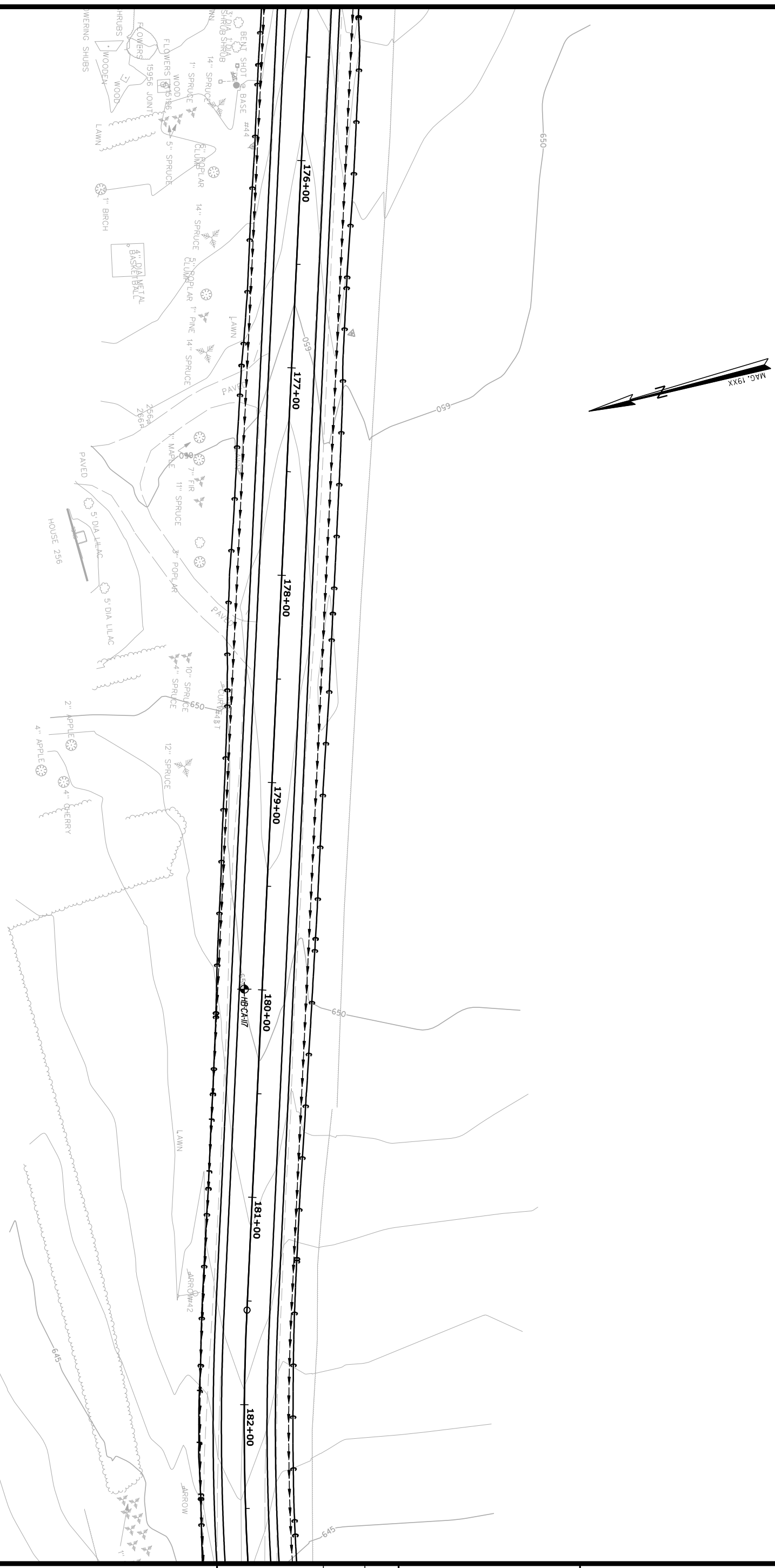
HIGHWAY PLANS



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SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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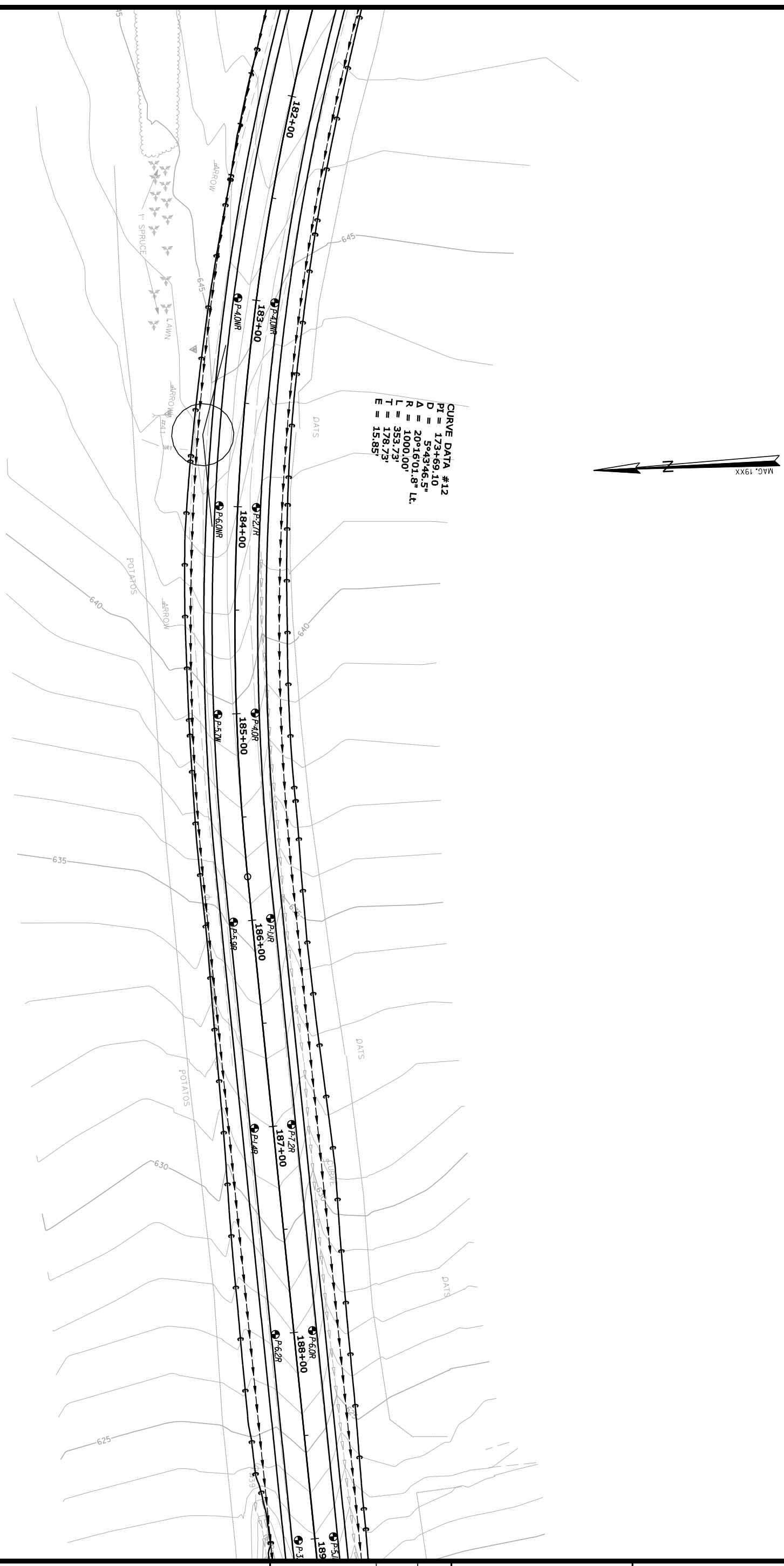
HIGHWAY PLANS

SHEET NUMBER
26
OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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REVISIONS 1	------		------
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FIELD CHANGES	------		------

SIGNATURE

P.E. NUMBER

DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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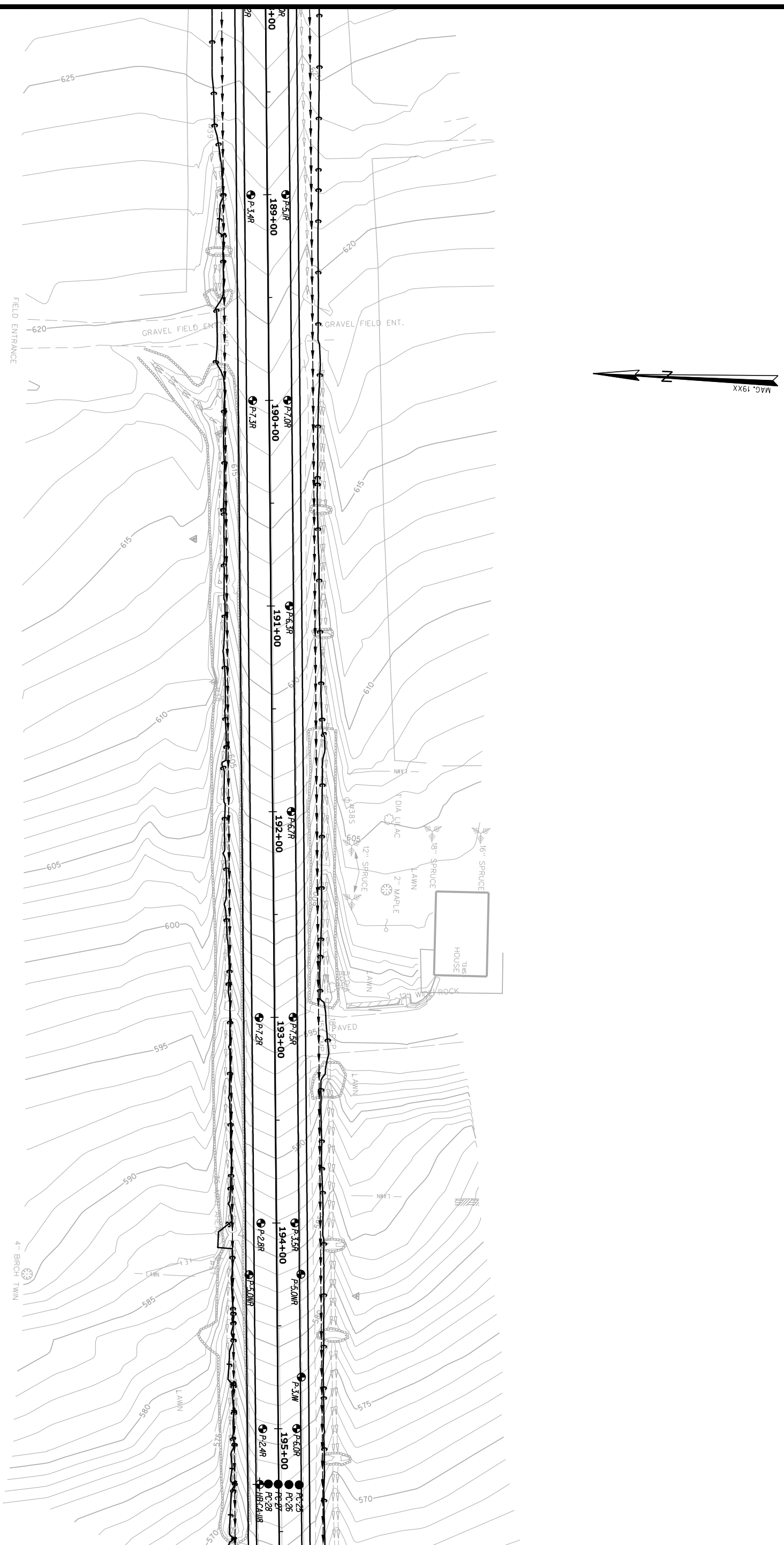
HIGHWAY PLANS

SHEET NUMBER
27
OF 31



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DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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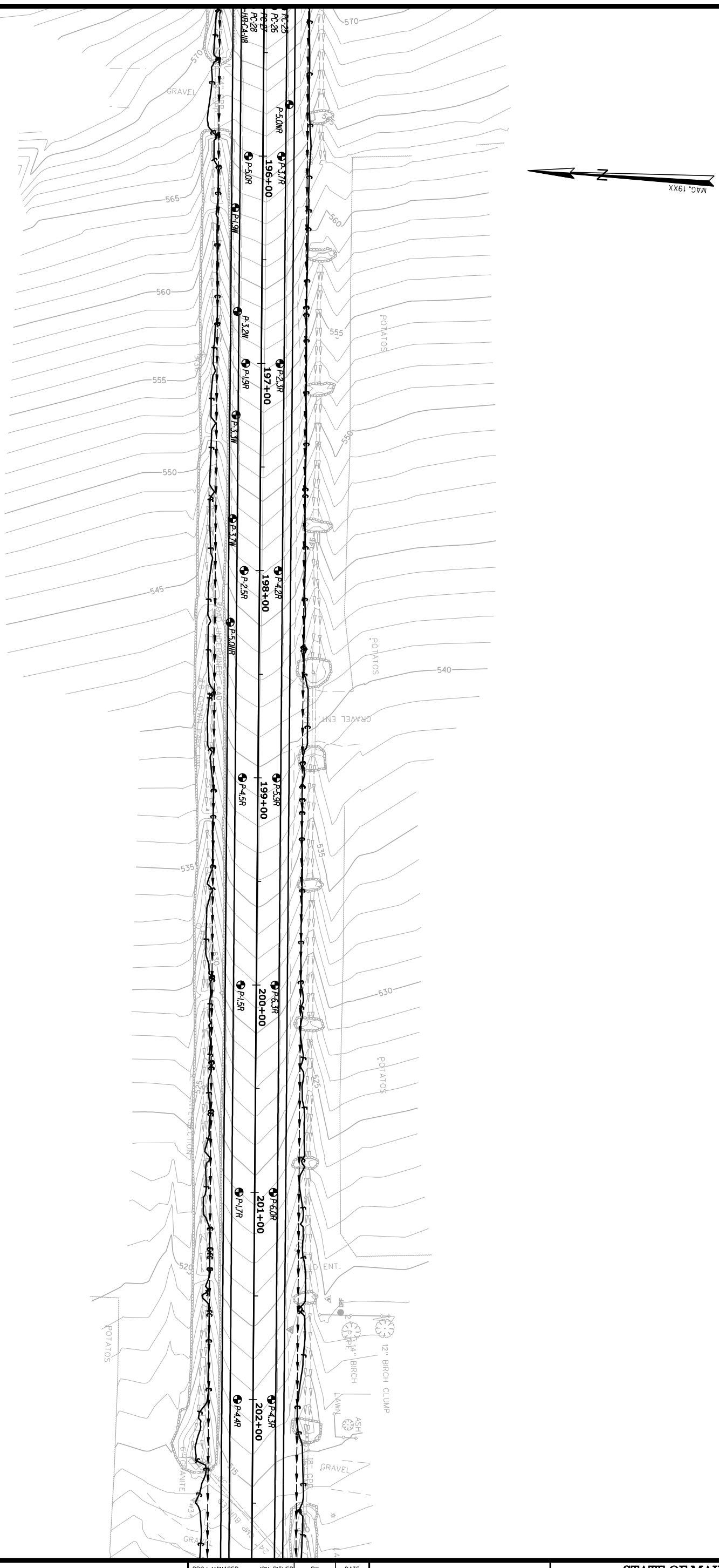
HIGHWAY PLANS

SHEET NUMBER
28
OF 31



PROJ. MANAGER	JON BITHER	BY	DATE
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DATE

CARIBOU
STATE ROUTE 161

GEOPLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1278(000)X

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HIGHWAY PLANS

SHEET NUMBER
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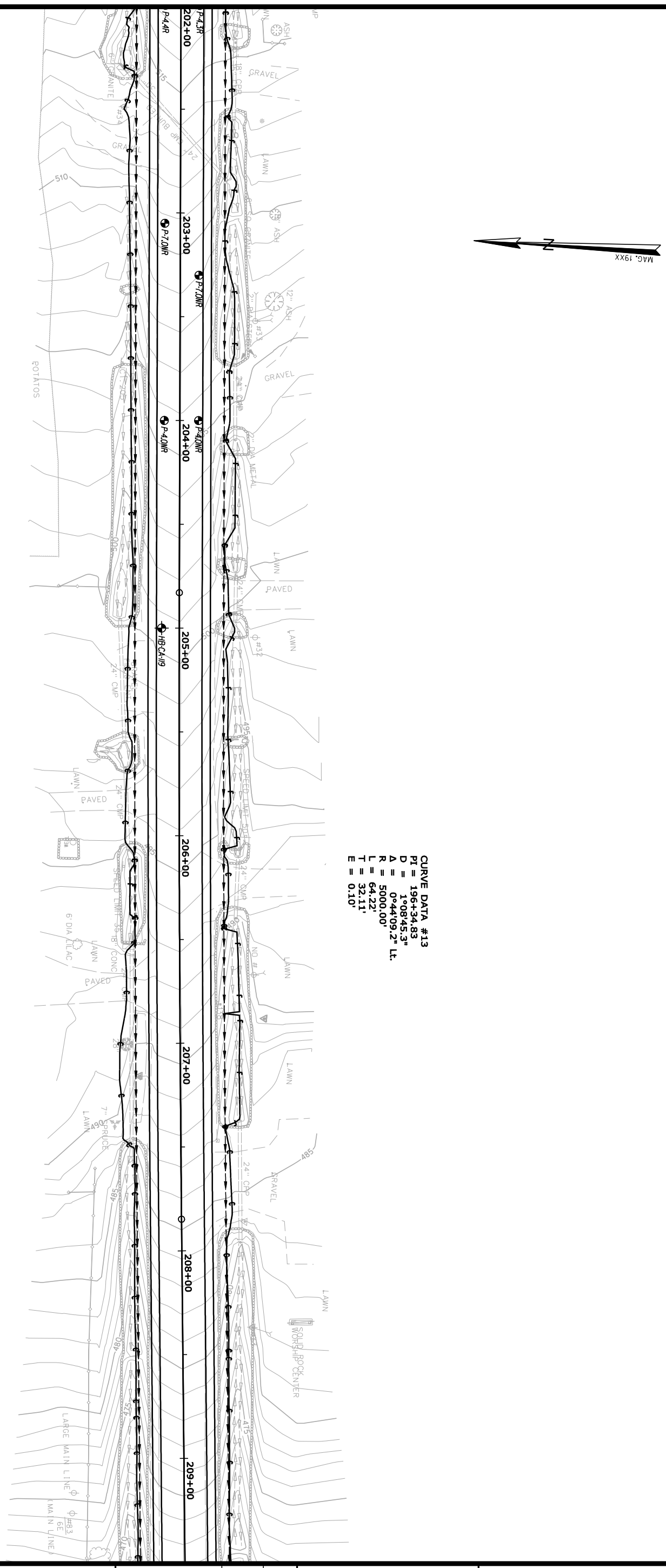
OF 31



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SHEET NUMBER 30 OF 31

CARIBOU
STATE ROUTE 161

GEOPLANS

PROJ. MANAGER	JON BITHER	BY	DATE
DESIGN-DETAILED	S.HAYDEN	T.WHITE	JUN 2012
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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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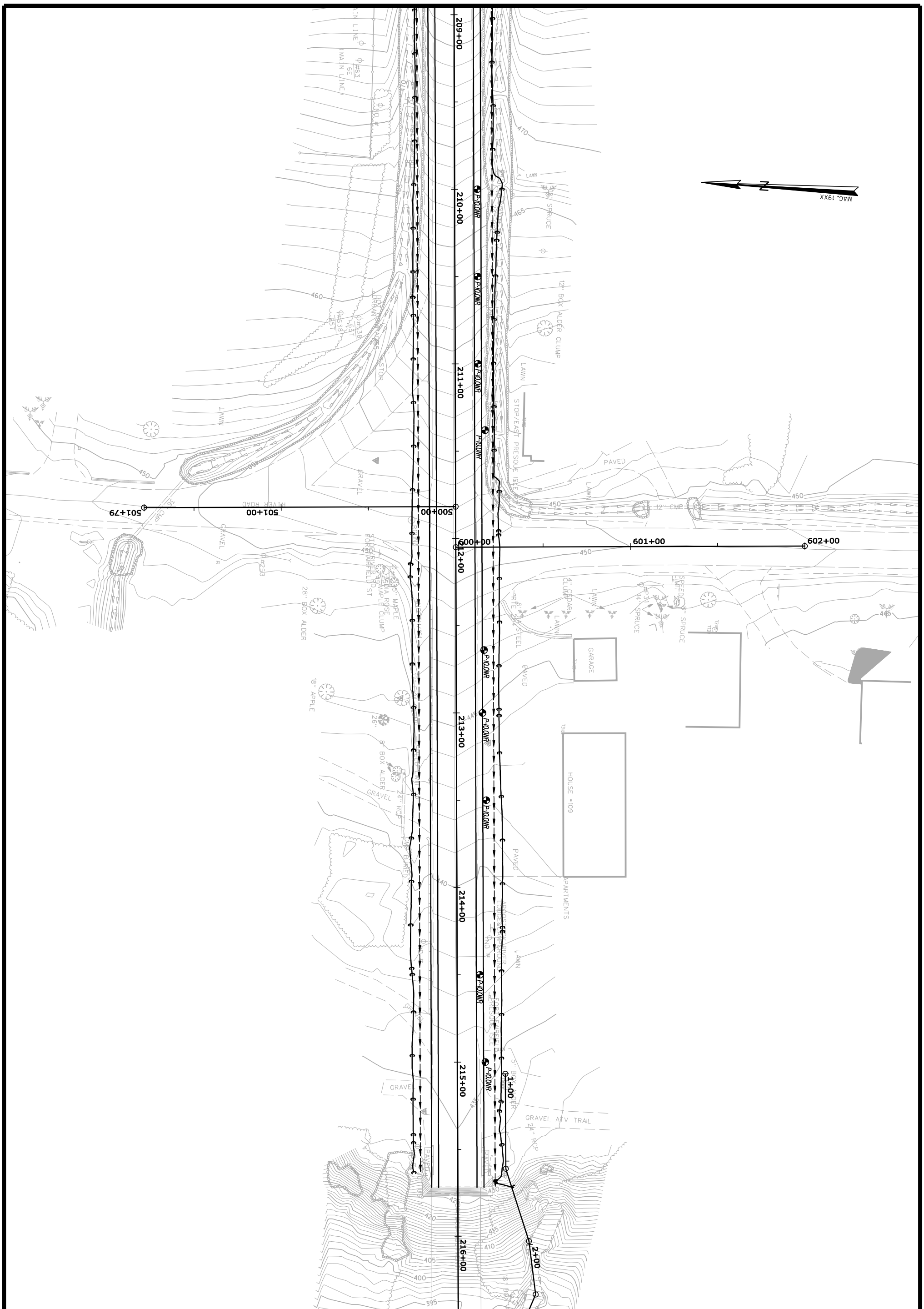
HIGHWAY PLANS



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HIGHWAY PLANS

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OF 31