Maine Department of Transportation
Highway Program

GEOTECHNICAL SERIES 100 REPORT

Route 1
Whiting, Maine

Prepared by:
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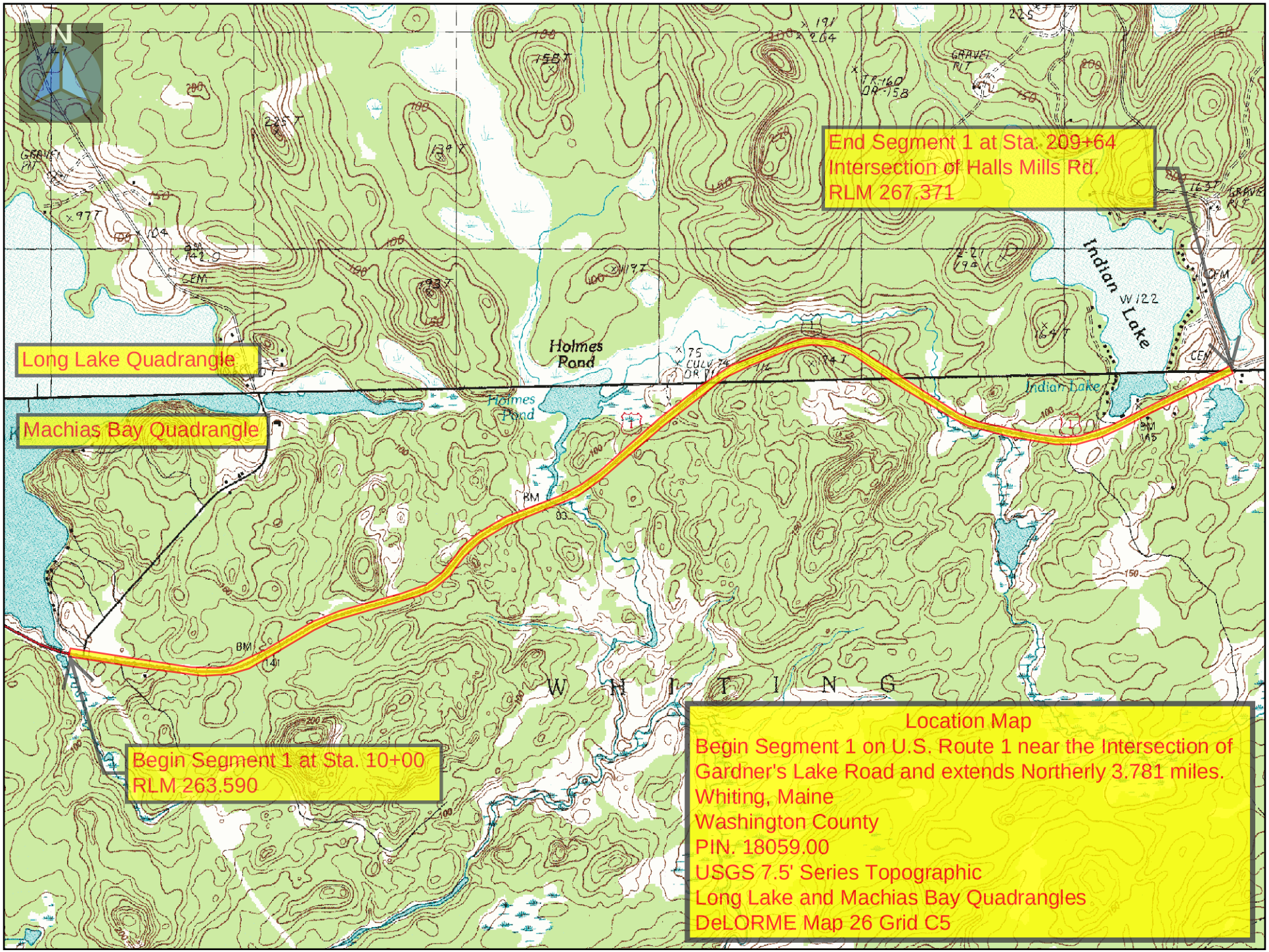
Washington County | PIN 18059.00 | Soils Report 2011-105
TEDOCS # 1108531

March 24, 2011



Map Scale 1:24000

Highway Program

Brad Foley, Program Manager

Memorandum

DATE: March 24, 2011

TO: Dennis Lovely **DEPT:** Region 4

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

SUBJECT: Final Soils – Whiting Route 1, 18059.00
Report # 2011-105

Project Description

A subsurface investigation has been completed for a 2.1 mile portion of Route 1 in the town of Whiting. The project begins at the intersection of Gardiner's Lake Drive and extends 2.1 miles northeast (Station 10+00 – Station 120+00). Subsequent to the fieldwork being conducted for this project, the project length was extended to include a total of 3.7 miles (Station 10+00 – Station 205+00). This report only covers between Station 10+00 and Station 120+00.

This investigation included the use of a drill rig and falling weight deflectometer (FWD). Stationing in the field was determined by using a distance measuring instrument (DMI). A beginning station of 10+00 was identified in the field by Region 4 personnel (Gardner's Lake Rd = Station 11+25). No plans or survey information was available.

This project is located in the downeast coastal area. The topography undulates continuously and the depth to bedrock is relatively shallow (<15') throughout the project area. Due to this, the existing highway profile consists of multiple shallow rock cuts separated by relatively shallow fill sections. Pavement performance is worse within the shallow rock cut sections.

FWD Results

The existing pavement performance and subgrade conditions are fair to poor along this project. The pavement is rough and heavily cracked. Many of these rough areas are associated with existing bedrock cut sections. The existing structural number fails to meet the future traffic structural number for 34% of this project. It is anticipated that this failure percentage would be much higher if it was not for the artificially high subgrade resilient modulus values (20,176 psi.) encountered within the shallow bedrock areas.

These high subgrade resilient modulus values (M_r) are a result of the shallow bedrock surface and are not an accurate measurement of soil stiffness within the roadway structure. When conducting Darwin calculations, these high M_r values cause the existing structural number to also be artificially high. As a result, the existing structural number erroneously exceeds the future traffic structural number in shallow bedrock areas. This should be taken into consideration during the design and construction process.

A very low (<3000psi) subgrade resilient modulus value was encountered at stations 12+50 and 25+00. It is anticipated that these low values are due to the presence of soft marine silts underlying the roadway structure. These soils could become problematic especially during spring and early summer. Areas of greatest concern are between stations: 10+50 – 14+50, 23+50 – 27+00, 38+00 – 42+00, 43+00 – 47+00, and 78+00 – 82+00. Depending on the conditions at the time of construction the use of additional base material and/or geosynthetics may be necessary to support traffic if the existing pavement surface is removed.

The FWD results provided in this memo are calculated using the existing pavement thickness, existing base thickness, and base quality as determined from boring information and sample data results. These results reflect the existing soil conditions and pavement structure. This information is used in conjunction with subsurface exploration data to identify potential performance disparities along the project area. These areas are determined and illustrated on the attached Performance Data Summary Sheet.

Boring Information

The purpose of this subsurface investigation was to obtain subsurface soil, bedrock, and ground water information. Subsurface explorations were conducted by Maine DOT using a CME 45C truck mounted drill rig. Bore hole logging was performed by Maine DOT.

A total of 18 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 upon FWD deflection results and visual observations made during an on-site visit. Soils were described and sampled from the auger flights.

A total of 13 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. Atterberg limits were conducted on multiple clay silt samples. 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.

Pavement Conditions

Pavement conditions are fair to poor. In multiple areas, borings encountered a highly friable unbound pavement layer beneath the solid pavement surface. When encountered this friable unbound pavement layer accounted for more than half of the overall pavement thickness. For a complete listing of pavement measurements refer to the boring logs and performance data summary sheet. A pavement thickness summary follows:

	Range	**Average Thickness**
Solid Pavement (SP Only)	3.6" – 4.8"	4.2"
Unbound Pavement (UP Only)	2.4"	2.4"
Total Pavement (SP+UP)	3.6" – 7.2"	4.3"

Pavement thickness estimates are based upon 18 power auger borings. The maximum sample spacing was 1000 feet with an average spacing of 585 feet. Actual pavement thickness may vary.

Existing Base Material

Existing Base Material Type:	silty sandy Gravel silty gravelly Sand
Percent Passing #200:	10% - 19%
Range of Base Material Thickness:	11" – 56"
Average Thickness:	31"
Quality of Drainage (AASHTO):	Poor to Fair
Permeability:	2' – 30' per day

The existing base material generally consists of silty gravelly SAND (gravel borrow) and silty sandy GRAVEL. These base soils were found to be moist throughout the project area. Between stations 10+00 and 28+00 these base soils were found to be wet. Because of the high percentage of fines this material only provides a poor to fair quality of drainage. An estimated permeability range of 2'/day – 30'/day has been calculated based upon grain size distribution data obtained from existing base samples. The marginal quality of the existing base should be taken into consideration when developing performance expectations related to strength and drainage. Borings within existing rock cut sections indicate that the existing base thickness decreases as the depth to bedrock decreases (See Table 2).

Subgrade Soils

Due to the undulating topography, subgrade conditions vary longitudinally and transversely to include bedrock, till, marine silts, and fill material. Drainage will be critical if performance expectations are to be met. Borings encountered wet soil conditions at stations 12+50, 20+00, 25+00, 56+00, 70+00, and 107+80.

The clay silt soils (S2, S5, S8) encountered along this project are a concern. These soils have 61% - 92% fines passing the #200 sieve and are classified (AASHTO) as A-6 soils. They are plastic and are subject to high volume changes with changing water content. These soils can perform adequately if properly drained but will lose much of their stability upon absorbing water.

These soils may absorb water by capillary action. Because of capillary action, moisture can be held above the ground water table against the force of gravity (capillary fringe). The only way to affect the height of the capillary fringe is by lowering the water table (i.e. deep ditch and/or underdrain) or by providing a capillary break. Due to surface infiltration and capillary action, it is anticipated that these soils could be moist to wet well into the early summer months. Keeping these soils well drained is critical if these soils are to perform adequately as a subgrade soil.

Depending on seasonal conditions, it is anticipated that these clay silt soils could be problematic throughout the construction season, especially in the spring and early summer. Additional base material and/or geosynthetics may be necessary to support traffic during construction if the existing pavement surface is removed while moist to wet subgrade conditions exist. The areas of greatest concern are between stations: 10+50 – 14+50, 23+50 – 27+00, 38+00 – 42+00, 43+00 – 47+00, and 78+00 – 82+00. Subgrade soil conditions could become very sensitive in the vicinity of stations 12+50 and 25+00 due to these soils and a very low (<3000psi) subgrade resilient modulus.

Bedrock

The topography throughout the project area undulates slightly and the depth to bedrock is relatively shallow (<15'). In many areas the bedrock will be less than < 5' below the existing ground surface. Due to this the existing highway consists of multiple shallow rock cut sections separated by relatively shallow fill sections. A list of bedrock outcrops is presented below in Table 1. Pavement performance is worse within the shallow rock cut sections. This is likely due to inadequate base thickness and a poorly drained underlying bedrock surface.

Table 1. List of Bedrock Outcrops

Left	Right
22+19 – 22+38	
	31+39
32+29 – 33+38	32+54 – 33+44
	36+59 – 36+89
39+89 – 40+89	40+29 – 41+07
42+59 – 43+14	42+19 – 43+96
47+59 – 47+74	
48+24	
49+59 – 49+80	
50+19 – 50+29	
59+74 – 60+09	
	63+44 – 64+64
66+19 – 67+39	66+17 – 66+34
68+44 – 69+04	
69+34 – 69+94	
72+14 – 72+69	
72+94 – 73+49	
75+49 – 75+64	75+09 – 76+14
	78+00 – 78+94
	80+29 – 81+64
85+09 – 86+84	85+29 – 85+99
	86+39 – 86+59
	91+74 – 91+94
	92+44
	92+79
93+44 – 93+69	93+19 – 93+34
97+24 – 98+39	
100+84 – 101+21	
	102+04 – 102+79
110+59 – 111+74	110+09 – 111+74
112+24 – 113+04	

The bedrock in this area consists of igneous intrusive and extrusive (volcanic) rocks. Blasting will be required for the removal of this bedrock. As a result of the volcanics, soils in this region may be slightly acidic. This should be considered if metal pipes are to be used on this project.

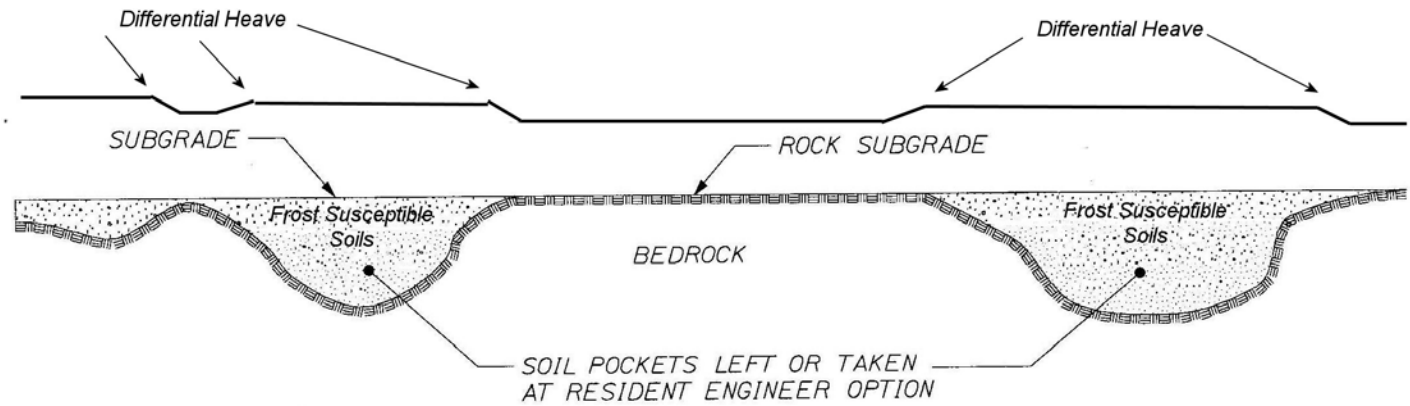
At the request of the Project Manager, no attempt was made to determine the lateral limits of shallow bedrock areas. In general, only one boring was conducted in the vicinity of each major bedrock outcrop area to gain base thickness and depth to bedrock information. Borings within the existing rock cut sections indicate that the existing base thickness decreases as the depth to bedrock decreases (See Table 2).

Table 2. Depth to Bedrock / Existing Base Thickness Comparison

Boring Location	Depth to Bedrock	Existing Base Thickness	Average Base Thickness for Entire Project
33+25	28”	24”	31”
43+00	28”	23”	31”
50+00	41”	36”	31”
62+50	25”	20”	31”
86+50	25”	21”	31”
93+50	18”	14”	31”
112+00	24”	20”	31”

Artificially high subgrade resilient modulus values (20,176 psi.) were encountered within the shallow bedrock areas. As a result, the existing structural number erroneously exceeds the future traffic structural number in these areas. However, the existing roadway is actually performing poorly in these areas due to inadequate base thickness and drainage. It is anticipated that undulations in the bedrock elevation has created multiple soil pockets. The soils in these pockets are likely to be moderately to highly frost susceptible and poorly drained. These soil pockets are likely contributing to the poor roadway performance (See Figure 1. Soil Pocket / Heave Schematic). A site visit on March 16, 2011 encountered a wavy roadway surface indicative of a non-uniform subgrade. A moderate differential frost heave was encountered in the vicinity of Station 22+70. It is anticipated that this heave is due to a shallow bedrock/soil contact.

Figure 1. Soil Pocket / Heave Schematic



Recommendations

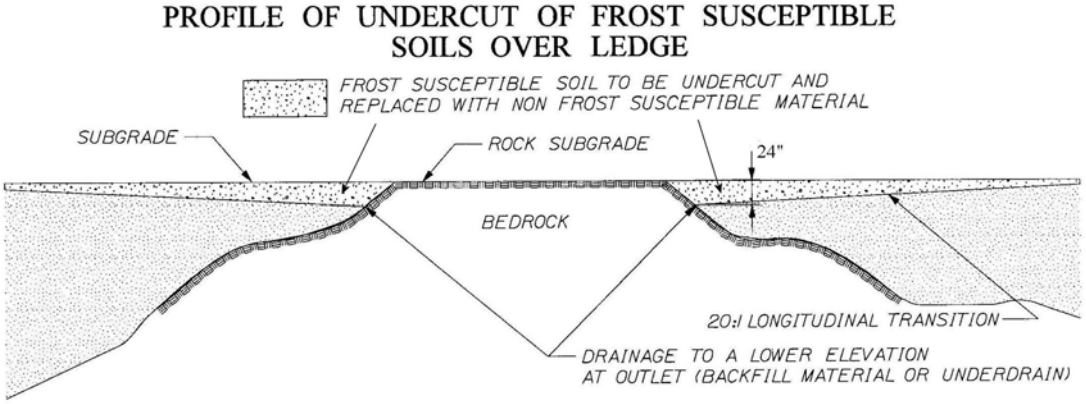
1. The existing roadway condition throughout this project is fair to poor. The deteriorated condition is likely due to a combination of age, varying base thickness and quality, moisture sensitive clay silt soils, shallow bedrock, non-uniform subgrade conditions, and the lack of drainage. The project area consists of a sinuous repetition of shallow rock cuts and fills sections both longitudinally and transversely. This has created a non-uniform subgrade consisting of bedrock, clay silt, and silty fill material. To fully restore the roadway structure, full depth reconstruction along the entire project area would ideally be recommended. However, such a recommendation is well beyond the scope of this project.

2. Roadway performance is poorest within the shallow bedrock cut sections. This is likely due to inadequate base thickness and poor drainage. To improve performance ditching has recently been improved in these areas.

   Currently, the Project Manager has mentioned there may be some limited resources available to conduct various improvements within the roadway structure such as base thickness/drainage. Borings within these existing rock cut sections indicate that the existing base has been placed directly on the shallow bedrock surface. In addition, the existing base thickness is directly proportional to the depth of bedrock. As the depth to bedrock decreases so does the existing base thickness. Based upon a limited number of borings in the bedrock outcrop areas, the existing gravel thickness is less than 24 inches at boring locations 43+00, 62+50, 86+50, 93+50, and 112+00. These areas could be considered as potential candidates for variable depth reconstruction. Through discussions with the Project Manager, potential areas of limited gravel thickness could further be defined by determining the depth to bedrock as indentified visually from recent rock excavation in the ditches. If undercutting of the bedrock is necessary for additional base material placement, the new bedrock surface should be free draining and transition zones should be constructed.

3. Between stations 59+00 and 78+50 there is a concentration of alternating rock cuts/fill section. Pavement performance and ride quality is poor throughout this area. It is recommended that variable depth reconstruction be considered throughout this area to provide a uniform subgrade and additional base thickness.

4. At station 22+70 it is recommended that a 24” undercut of subgrade and a 20:1 transition zone be constructed similar to the schematic below to aid in the prevention of differential heaving.



5. It is recommended that the entire project area be well drained due to moisture sensitive clay silt soils and shallow bedrock. These clay silt soils poise a risk of existing and future pavement failure. They could become problematic throughout the construction season, especially in the spring and early summer. Additional base material may be necessary to support traffic during construction if the existing pavement surface is removed while moist to wet subgrade conditions exist. The areas of greatest concern are between stations: 10+50 – 14+50, 23+50 – 27+00, 38+00 – 42+00, 43+00 – 47+00, and 78+00 – 82+00. Subgrade soil conditions could become very sensitive in the vicinity of stations 12+50 and 25+00 due to these soils and a very low (<3000psi) subgrade resilient modulus. It is recommended that these areas be aggressively drained prior to removing the existing pavement structure.

6. If new base material is to be placed directly upon the marine clay/silt, a 6 once, non-woven, needle punched separation geotextile should utilized to prevent the intermixing of the new base layer with the underlying marine clay/silt.

7. The right and left soil backslope between stations 19+60 and 22+50 consist of silty sand and is classified (AASSHTO) as an A-3 soil. This fine sand lacks any type of soil binder and is highly erodible. It is recommended that these slopes be well vegetated to prevent substantial erosion. The erosion of this material can result in the filling of drainage structures causing a reduction in drainage capacity.

Performance Data Summary

Whiting, Route 1
18059.00

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, 32% of the project fails to meet 2 or more of the four minimum performance data criteria. Unbound pavement, base quality, moisture sensitive subgrade soil conditions, shallow bedrock and the lack of drainage are all concerns with respect to future performance expectations. It is anticipated

The presence of shallow bedrock throughout much of this project has resulted in artificially high subgrade resilient modulus values (20,176 psi.) within shallow bedrock areas. As a result, the existing structural number erroneously exceeds the future traffic structural number in these areas. Because of this, the number in the deficiency column (DEF) on the Performance Data Summary Sheet (PDS) is likely under estimated in the shallow bedrock areas. In many instances the value in the deficiency column should be increased by one.

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

Performance Data Summary

Whiting, Route 1
18059.00

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
		Pavement Thickness (4 inches)	Base Thickness (18 inches)	Subgrade Modulus (3000 psi)	Structural Number	**CL**				
10+00	2									
12+50	2					4.8 SP 2.4 UP 18	SiGSa A-1-a S1	10 0 Wet 0.6’	ClSi A-6 S2	92 III Wet
15+00	1									
17+50	2									
20+00	2					4.8 SP - 11	SiGSa A-1-a S1	10 0 Wet 0.4’	SiSa A-3 S3	10 0 Moist
22+50	2									
25+00	3					2.4 SP 2.4 UP 19	SiSaG A-1-b S4	18 I Wet 0.4’	SaSi A-6 S5	61 IV Wet
27+50	2									
30+00	1					2.4 SP 2.4 UP 55	SiSaG A-1-b S6	17 II Moist	SiSaG A-1-b S6	17 II Moist
32+50	1					3.6 SP - 24	SiSaG A-1-a S7	11 0 Moist	SiSaG A-1-a S7	11 0 Ref 2.3’
35+00	1									
37+50	1									
40+00	3					3.6 SP - 38	SiSaG A-1-a S7	11 0 Moist	SaSi A-6 S8	70 III Moist
42+50	0					4.8 SP - 23	SiSaG A-1-a S7	11 0 Moist	SiSaG A-1-a S7	11 0 Ref 2.3’
45+00	1									
47+50	0									
50+00	0					4.8 SP - 36	SiGSa A-1-b S9	14 II Moist	SiGSa A-1-b S9	14 II Ref 3.4’?
52+50	0									
55+00	0					4.2 SP - 37	SiGSa A-1-b S9	14 II Wet 3.4’	SaSi A-6 S5	61 IV Wet

* SP = Solid Pavement Layer
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SP+UP = Total Pavement Thickness
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Performance Data Summary

Whiting, Route 1
18059.00

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
		Pavement Thickness (4 inches)	Base Thickness (18 inches)	Subgrade Modulus (3000 psi)	Structural Number	**CL**				
55+00	0					4.2 SP - 37	SiGSa A-1-b S9	14 II Wet 3.4’	SaSi A-6 S5	61 IV Wet
57+50	1									
60+00	0									
62+50	2					2.4 SP 2.4 UP 20	SiGSa A-1-b S9	14 II Moist	SiGSa A-1-b S9	14 II Ref 2.1’
65+00	1									
67+50	1									
70+00	1					3.6 SP - 26	SiGSa A-1-b S9	14 II Moist	GSiSa A-4 S10	36 III Wet 3.8’
72+50	1									
75+00	1									
77+50	1						Chamberlain Lane 78+29			
80+00	3					3.6 SP - 50	SiGSa A-1-b S11	13 II Moist	SiGSa A-1-b S11	13 II Ref 4.5’
82+50	1									
87+50	0					4.2 SP - 21	SiGSa A-1-b S11	13 II Moist	SiGSa A-1-b S11	13 II Ref 2.1’
90+00	1									
92+50	3					3.6 SP - 14	SiGSa A-1-b S11	13 II Moist	SiGSa A-1-b S11	13 II Ref 1.5’
95+00	3									
97+50	3									
100+00	2					3.6 SP - 56	SiGSa A-1-b S12	19 II Moist	SiGSa A-1-b S12	19 II Moist
102+50	1									
105+00	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

Whiting, Route 1
18059.00

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				
107+50	1					3.6 SP - 32	SiGSa A-1-b S12	19 II Moist	GSiSa A-4 S10	36 III Wet 3.0’
110+00	1									
112+50	1					3.6 SP - 20	SiGSa A-1-b S12	19 II Moist	SiGSa A-1-b S12	19 II Ref 2.0’
116+00	0					4.2 SP - 56	SiSaG A-1-a S13	9 0 Moist	SiSaG A-1-a S13	9 0 Moist
117+50	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”

March 14, 2011

Falling Weight Deflectometer (FWD)
Summary Sheet

Project #: 18059.00
Town(s): Whiting
Route(s): 1
Date Tested: 5/11/2010
Requested By: S. Hayden
Direction of Testing: South to North

Of FWD tests: 41 # Of Power Augers/Spoons - 18
Design Life: 12 Yrs Future 18-kip ESALs (Design Life): 819,060
Initial Serviceability: 4.5 Terminal Serviceability: 2.5
Reliability Level: 90 Overall Standard Deviation: .45
Functional Class: Minor Arterial

Locations

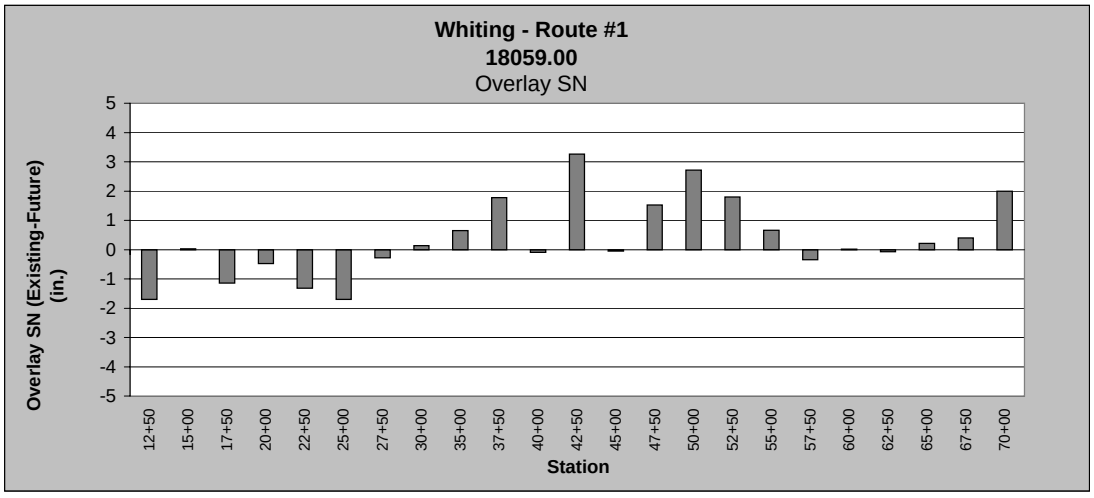
Station (Feet)	Description
Project Stationing	

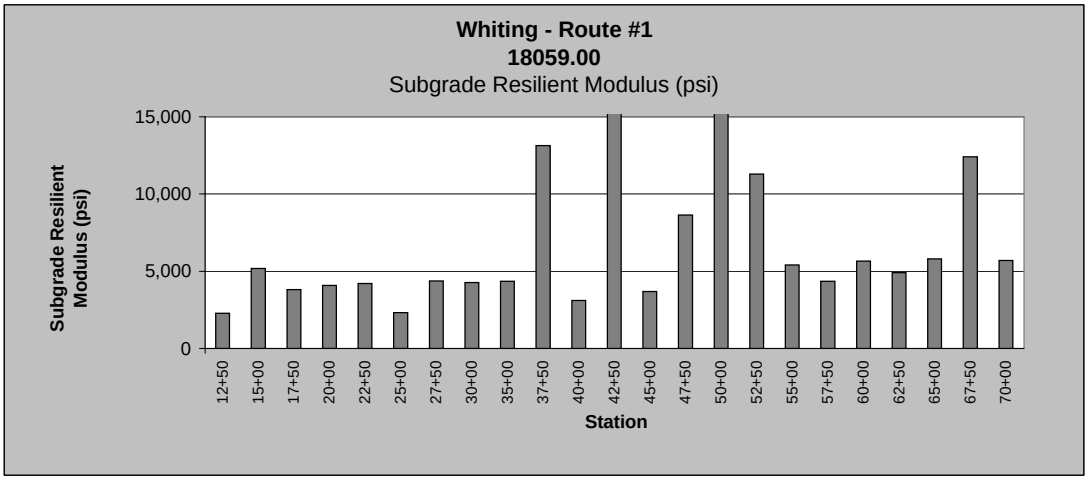
Comments:

Whiting - Route #1
18059.00

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+50	3.22	4.92	**-1.7**	**3.86**	22,940	**2,270**	4.8	25.2
15+00	3.76	3.73	0.03	-	36,410	5,177	4.8	25.2
17+50	3.01	4.15	**-1.14**	**2.59**	78,645	3,816	4.8	**15.6**
20+00	3.57	4.05	**-0.48**	**1.09**	131,189	4,081	4.8	**15.6**
22+50	2.69	4.01	**-1.32**	**3**	56,443	4,204	4.8	**15.6**
25+00	3.19	4.89	**-1.7**	**3.86**	32,990	**2,322**	2.4	22.1
27+50	3.68	3.96	**-0.28**	**0.64**	50,763	4,364	2.4	22.1
30+00	4.13	3.99	0.14	-	37,064	4,265	2.4	27.5
35+00	4.62	3.97	0.65	-	51,906	4,342	2.4	27.5
37+50	4.45	2.67	1.78	-	46,473	13,129	2.4	27.5
40+00	4.36	4.45	**-0.09**	**0.2**	33,786	3,101	3.6	30
42+50	5.53	2.27	3.26	-	68,877	20,176	3.6	30
45+00	4.15	4.2	**-0.05**	**0.11**	37,244	3,682	4.8	27.6
47+50	4.64	3.11	1.53	-	52,278	8,647	4.8	27.6
50+00	5.02	2.3	2.72	-	66,919	19,602	4.8	27.5
52+50	4.68	2.88	1.8	-	54,130	11,295	4.8	27.5
55+00	4.34	3.68	0.66	-	43,554	5,398	4.2	27.4
57+50	3.63	3.97	**-0.34**	**0.77**	42,021	4,347	2.4	23.2
60+00	3.64	3.62	0.02	-	42,264	5,648	2.4	23.2
62+50	3.73	3.8	**-0.07**	**0.16**	45,517	4,920	2.4	23.2
65+00	3.8	3.59	0.21	-	48,413	5,793	2.4	23.2
67+50	3.99	3.59	0.4	-	55,722	12,401	2.4	23.2
70+00	5.6	3.61	1.99	-	93,914	5,690	3.6	27.4

Possible Weak Soils (<3000)
Possible Shallow Bedrock (>8000)
For actual Gravel Depths, see logdraft forms

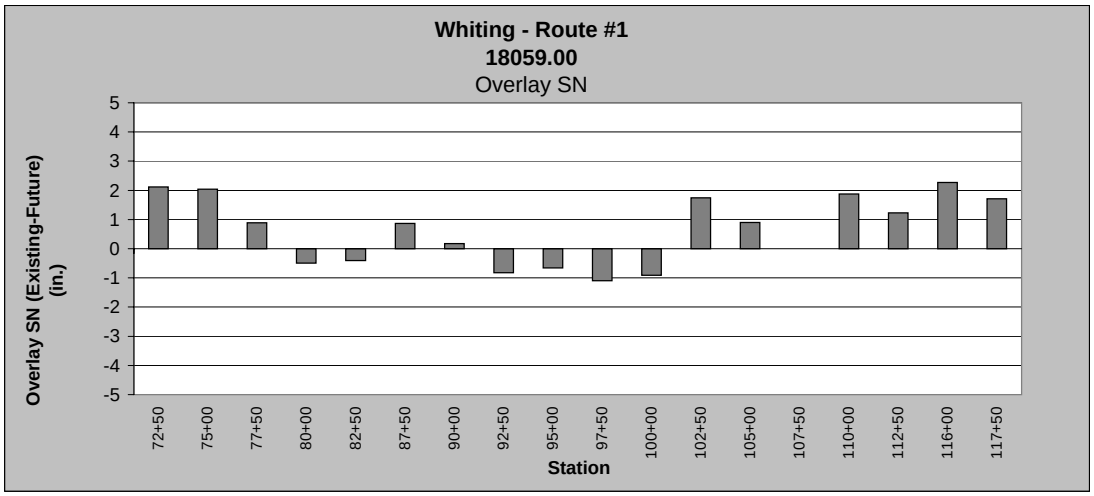


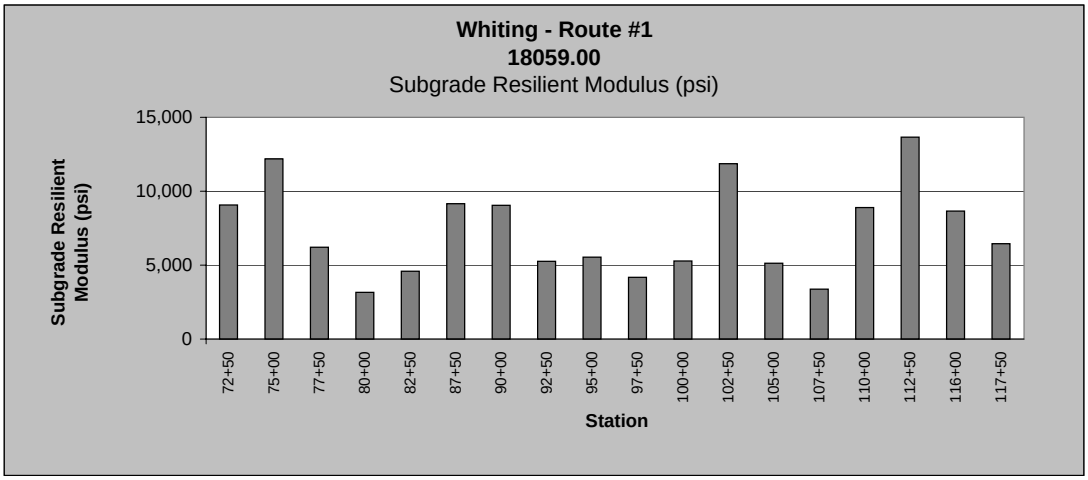


Whiting - Route #1
18059.00

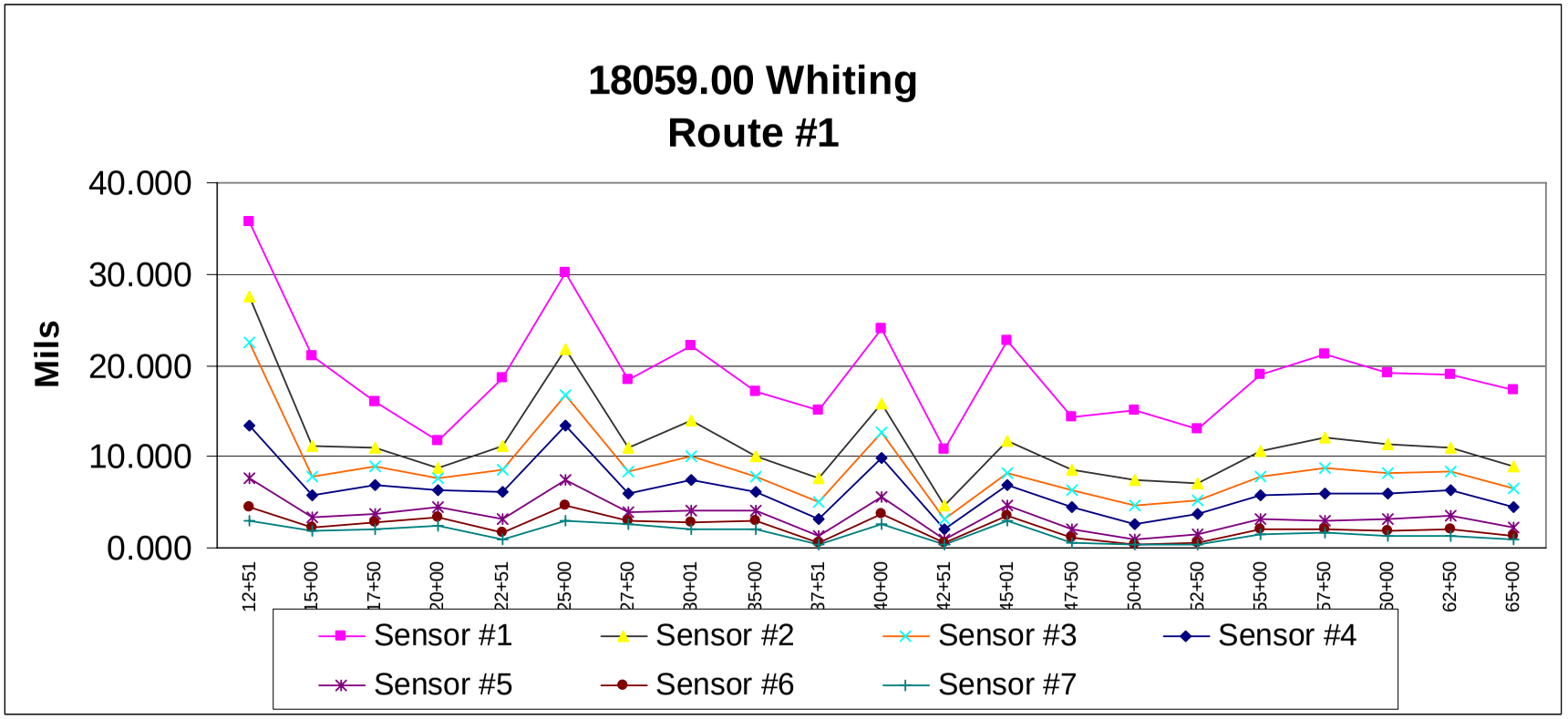
Station (Feet)	Existing Structural Number (in.)	Future Traffic Structural Number (in.)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (in.)	Pavement Modulus (psi)	Subgrade Resilient Modulus (psi)	Pavement Depth (in)	Combined Pavement/Gravel Depth Used for Calculation (in)
72+50	5.17	3.05	2.12	-	73,904	9,069	3.6	27.4
75+00	4.78	2.74	2.04	-	58,297	12,191	3.6	27.4
77+50	4.39	3.5	0.89	-	45,042	6,211	3.6	27.4
80+00	3.93	4.42	**-0.49**	**1.11**	32,429	3,161	3.6	27.4
82+50	3.48	3.89	**-0.41**	**0.93**	37,544	4,589	4.2	23.1
87+50	3.92	3.05	0.87	-	53,826	9,146	4.2	23.1
90+00	3.23	3.06	0.17	-	81,094	9,057	3.6	**16.6**
92+50	2.89	3.71	**-0.82**	**1.86**	58,028	5,264	3.6	**16.6**
95+00	2.99	3.65	**-0.66**	**1.5**	64,393	5,542	3.6	**16.6**
97+50	2.92	4.02	**-1.1**	**2.5**	59,530	4,173	3.6	**16.6**
100+00	2.8	3.71	**-0.91**	**2.07**	52,509	5,281	3.6	**16.6**
102+50	4.51	2.77	1.74	-	49,099	11,865	3.6	27.4
105+00	4.65	3.75	0.9	-	53,681	5,128	3.6	27.4
107+50	4.32	4.32	0	-	43,091	3,375	3.6	27.4
110+00	4.95	3.08	1.87	-	64,582	8,891	3.6	27.4
112+50	3.86	2.63	1.23	-	59,063	13,668	3.6	22
116+00	5.38	3.11	2.27	-	63,298	8,659	4.2	30
117+50	5.16	3.45	1.71	-	55,867	6,446	4.2	30

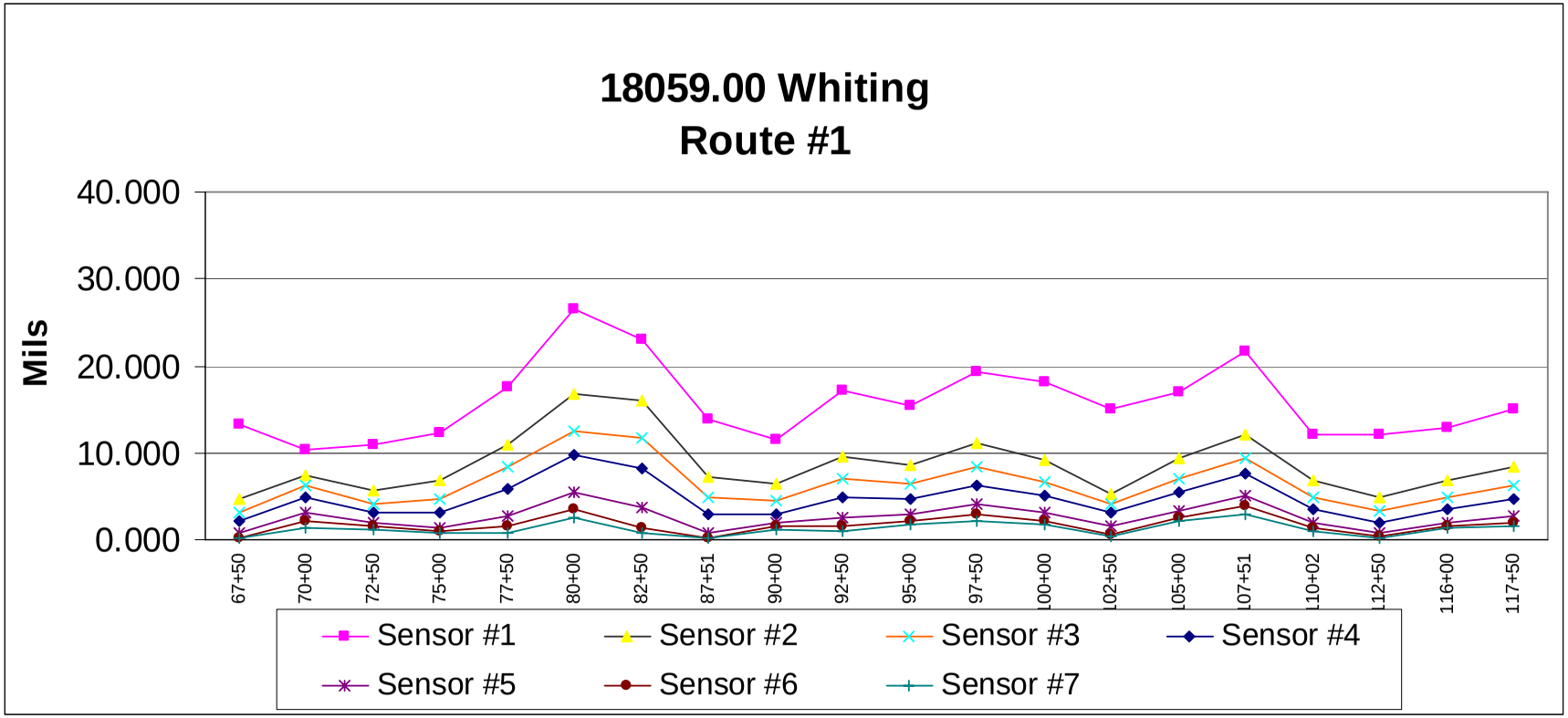
Possible Weak Soils (<3000)
Possible Shallow Bedrock (>8000)
For actual Gravel Depths, see logdraft forms





18059.00 Whiting FWD Plots




18059.00 Whiting
Route #1
Mils
40.000
30.000
20.000
10.000
0.000
67+50
70+00
72+50
75+00
77+50
80+00
82+50
87+51
90+00
92+50
95+00
97+50
100+00
102+50
105+00
107+51
110+02
112+50
116+00
117+50
Sensor #1
Sensor #2
Sensor #3
Sensor #4
Sensor #5
Sensor #6
Sensor #7

State of Maine - Department of Transportation

Laboratory Testing Summary Sheet

Town(s): Whiting Project Number: 18059.00

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-WHIT-101, S1	12+50	8.0 Rt.	0.6-2.1	237528	1	6.1	10.4		SW-SM	A-1-a	0
HB-WHIT-101, S2	12+50	8.0 Rt.	2.1-5.0	237529	1	22.9	91.7		CL	A-6	III
HB-WHIT-102, S3	20+00	8.0 Rt.	1.3-5.0	237530	1	4.7	10.2		SP-SM	A-3	0
HB-WHIT-103, S4	25+00	7.0 Rt.	0.4-2.0	237531	1	8.8	17.5		GM	A-1-b	I
HB-WHIT-103, S5	25+00	7.0 Rt.	2.0-5.0	237532	1	20.9	60.7		CL	A-6	IV
HB-WHIT-104, S6	30+00	8.0 Rt.	0.4-5.0	237533	2	5.3	16.6		SM	A-1-b	II
HB-WHIT-105, S7	33+25	8.0 Rt.	0.0-2.3	237534	2	4.6	11.1		SW-SM	A-1-a	0
HB-WHIT-106, S8	40+00	8.5 Rt.	3.5-5.0	237535	2	15.9	70.2		CL	A-6	III
HB-WHIT-108, S9	50+00	8.0 Rt.	0.4-3.4	237536	2	6.9	13.7		SM	A-1-b	II
HB-WHIT-111, S10	70+00	9.0 Rt.	3.8-5.0	237537	2	28.6	36.1		SM	A-4	III
HB-WHIT-112, S11	80+00	9.0 Rt.	0.3-4.5	237538	3	5.4	12.6		SM	A-1-b	II
HB-WHIT-115, S12	100+00	8.5 Rt.	0.3-5.0	237539	3	7.0	18.7		SM	A-1-b	II
HB-WHIT-118, S13	116+00	8.5 Rt.	0.35-5.0	237540	3	2.5	8.8		GW-GM	A-1-a	0
							LL	**PI**			
HB-WHIT-101, S2	12+50	8.0 Rt.	2.1-5.0	237529	1	22.9	34	16	CL	A-6	III
HB-WHIT-103, S5	25+00	7.0 Rt.	2.0-5.0	237532	1	20.9	24	8	CL	A-6	IV
HB-WHIT-106, S8	40+00	8.5 Rt.	3.5-5.0	237535	2	15.9	32	16	CL	A-6	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

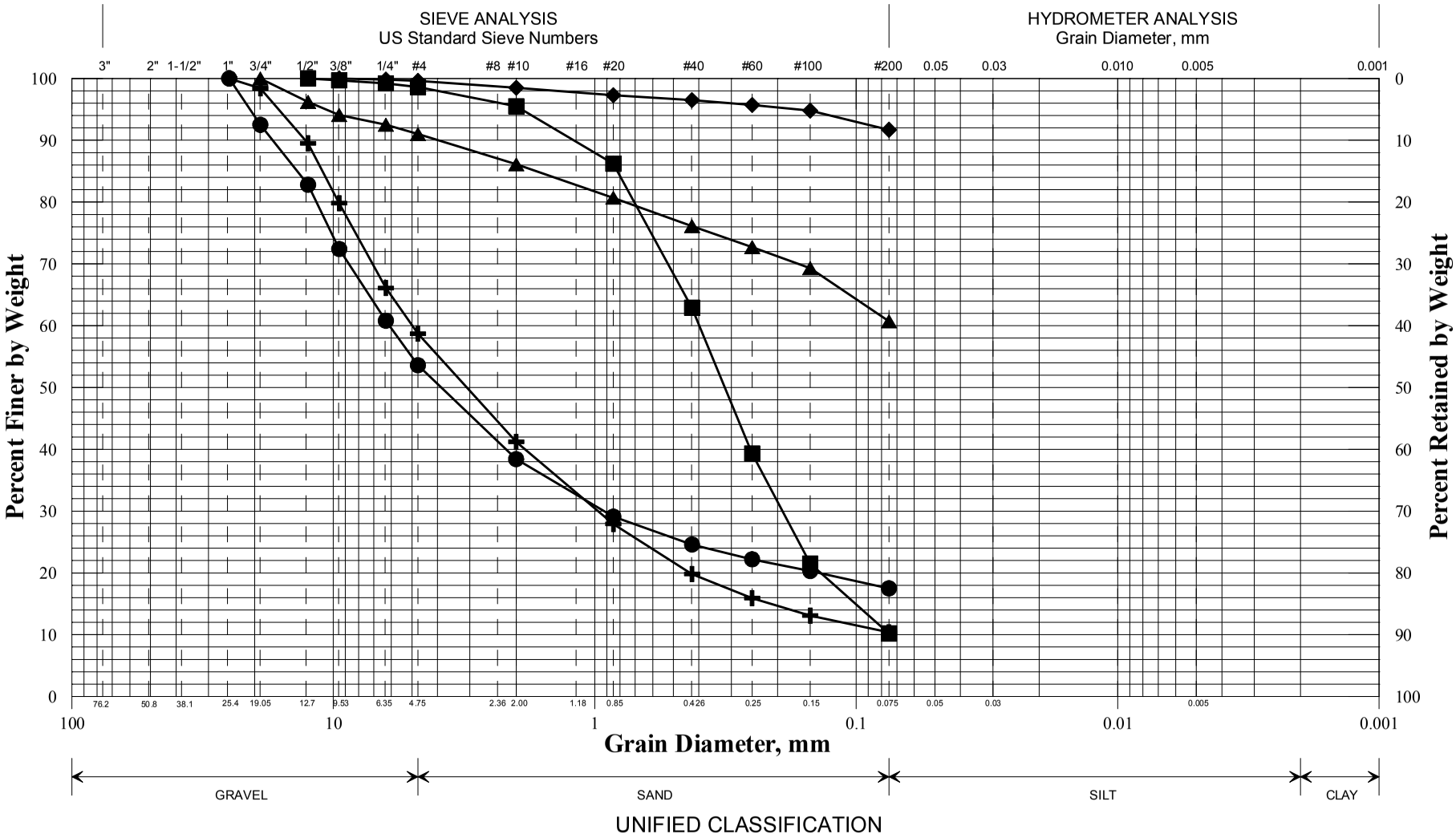
State of Maine - Department of Transportation

Pavement Core Summary Sheet

Town(s): Whiting Project Number: 18059.00

Station (Feet)	Offset (Feet)	Pavement Depth (Feet)	Unbound Pavement	PC-Number	Saved Core	Comments / Date 5/15/2010
33+25	CL	0.60		1		
33+25	8.0 Lt.	0.30		2		
56+00	CL	0.30		3		
56+00	8.0 Lt.	0.30		4		
86+50	CL	0.35		5		
86+50	8.5 Lt.	0.25		6		

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-WHIT-101/S1	12+50	8.0 RT	0.6-1.2	Gravelly SAND, trace silt.	6.1			
◆	HB-WHIT-101/S2	12+50	8.0 RT	2.1-5.0	SILT with clay, trace sand, trace gravel.	22.9	34	18	16
■	HB-WHIT-102/S3	20+00	8.0 RT	1.3-5.0	SAND, trace silt, trace gravel.	4.7			
●	HB-WHIT-103/S4	25+00	7.0 RT	0.4-2.0	Sandy GRAVEL, little silt.	8.8			
▲	HB-WHIT-103/S5	25+00	7.0 RT	2.0-5.0	SILT with clay, some sand, trace gravel.	20.9	24	16	8
✖									

PIN
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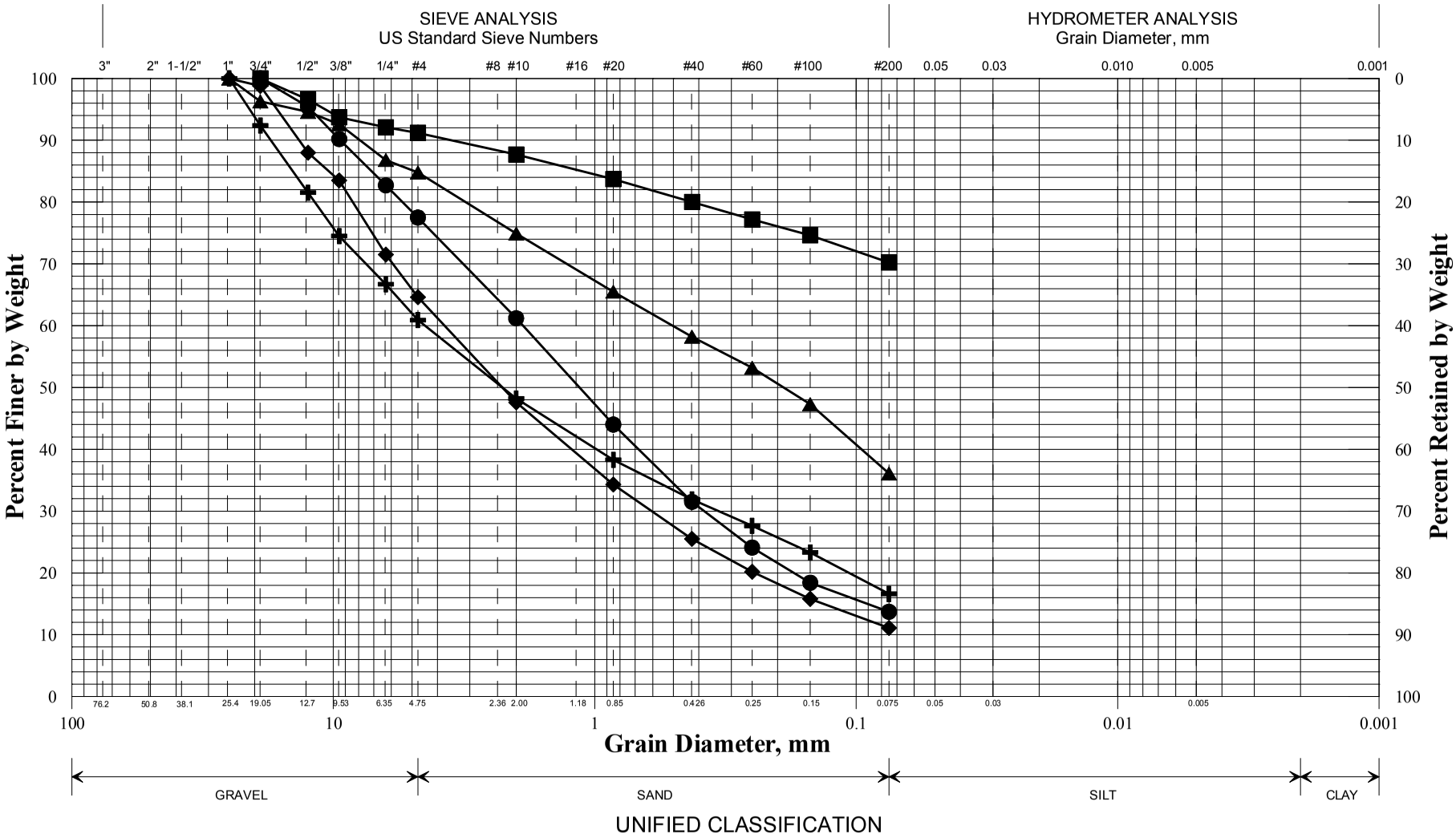
Town
Whiting
Reported by/Date
WHITE, TERRY A 3/22/2011

State of Maine Department of Transportation

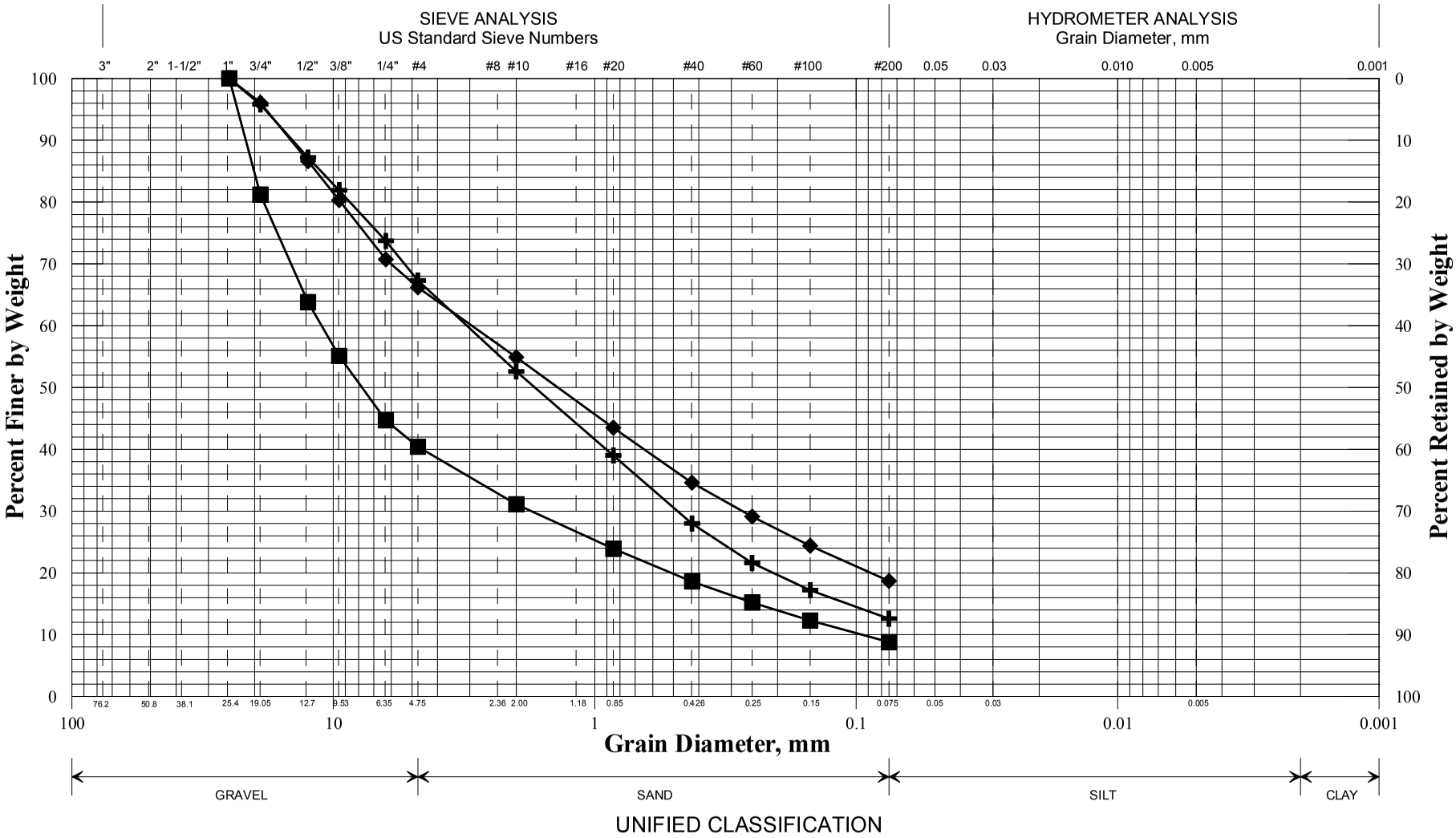
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-WHIT-104/S6	30+00	8.0 RT	0.4-5.0	Gravelly SAND, little silt.	5.3			
◆	HB-WHIT-105/S7	33+25	8.0 RT	0.0-2.3	SAND, some gravel, little silt.	4.6			
■	HB-WHIT-106/S8	40+00	8.5 RT	3.5-5.0	SILT with clay, some sand, trace gravel.	15.9	32	16	16
●	HB-WHIT-108/S9	50+00	8.0 RT	0.4-3.4	SAND, some gravel, little silt.	6.9			
▲	HB-WHIT-111/S10	70+00	9.0 RT	3.8-5.0	Silty SAND, little gravel.	28.6			
✕									

PIN
018059.00
Town
Whiting
Reported by/Date
WHITE, TERRY A 3/22/2011

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-WHIT-112/S11	80+00	9.0 RT	0.3-4.5	SAND, some gravel, little silt.	5.4			
◆	HB-WHIT-115/S12	100+00	8.5 RT	0.3-5.0	SAND, some gravel, little silt.	7.0			
■	HB-WHIT-118/S13	116+00	8.5 RT	0.35-5.0	GRAVEL, some sand, trace silt.	2.5			
●									
▲									
✕									

PIN
018059.00
Town
Whiting
Reported by/Date
WHITE, TERRY A 3/22/2011

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Whiting, Maine

Boring No.: HB-WHIT-101
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	12+50, 8.0 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	3.0' 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.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S1		0.60 - 2.10			SSA	-0.40		PAVEMENT.	
							-0.60		0.40	G#237528
									Unbound PAVEMENT.	A-1-a, SW-SM
									0.60	WC=6.1%
	S2		2.10 - 5.00				-2.10		Brown, wet, gravelly fine to coarse SAND, little silt.	G#237529
									2.10	A-6, CL
									Light brown, wet, clayey-SILT, trace fine sand.	WC=22.9%
5							-5.00		5.00	LL=34
									Bottom of Exploration at 5.00 feet below ground surface.	PL=18
									NO REFUSAL	PI=16
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-102
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	20+00, 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

Depth (ft.)	Sample Information: 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	
	S3		1.30 - 5.00				-1.30		Brown, wet, gravelly fine to coarse SAND, little silt, occasional cobbles. ≅S1 1.30	G#237530 A-3, SP-SM WC=4.7%
									Light brown, moist, fine to medium SAND, trace silt.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-103
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	25+00, 7.0 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	3.0' 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.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S4		0.40 - 2.00			SSA	-0.20		PAVEMENT.	
							-0.40		0.20	G#237531 A-1-b, GM WC=8.8%
									Unbound PAVEMENT.	
									0.40	
	S5		2.00 - 5.00				-2.00		Brown, wet, gravelly fine to coarse SAND, little silt.	
									2.00	G#237532 A-6, CL WC=20.9% LL=24 PL=16 PI=8
5							-5.00		Grey, wet, clayey-SILT, little fine sand, little organics.	
									5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-104
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	30+00, 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

Depth (ft.)	Sample Information: 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	S6		0.40 - 5.00			SSA	-0.20		PAVEMENT.	
							-0.40		0.20	G#237533
									Unbound PAVEMENT.	A-1-b, SM
									0.40	WC=5.3%
									Brown, moist, gravelly fine to coarse SAND, little silt.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-105
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	33+25, 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

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		0.00 - 2.30			SSA			Brown, moist, gravelly fine to coarse SAND, little silt.	G#237534 A010a, SW-SM WC=4.6%
							-2.30		2.30
									Bottom of Exploration at 2.30 feet below ground surface. REFUSAL	
5										
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-106
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	40+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						SSA	-0.30		PAVEMENT.	
									0.30 — Brown, moist, gravelly fine to coarse SAND, little silt. ≅S7	
	S8		3.50 - 5.00				-3.50		3.50 — Olive-brown, moist, SILT, some clay, little fine sand.	G#237535 A-6, CL WC=15.9% LL=32 PL=16 PI=16
5							-5.00		5.00 — **Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL	
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-107
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	43+00, 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

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	
									Brown, moist, gravelly fine to coarse SAND, little silt. ≅S7	
							-2.30		2.30	
									Bottom of Exploration at 2.30 feet below ground surface.	
									REFUSAL	
5										
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-108
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	50+00, 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

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		0.40 - 3.40			SSA	-0.40		PAVEMENT. 0.40	G#237536 A-1-b, SM WC=6.9%
									Brown, moist, gravelly fine to coarse SAND, little silt.	
							-3.40		3.40	
									Bottom of Exploration at 3.40 feet below ground surface. NO REFUSAL ???	
5										
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-109
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	56+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 Information: 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	-0.35		PAVEMENT.	
									0.35	
									Brown, wet, gravelly fine to coarse SAND, little silt. ≅S9	
							-3.40		3.40	
									Grey, wet, clayey-SILT, little fine sand, little organics. ≅S5	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-110
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	62+50, 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 Information: 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	-0.20		PAVEMENT.	
							-0.40		0.20	
									Unbound PAVEMENT.	
									0.40	
							-2.10		Brown, moist, gravelly fine to coarse SAND, little silt .≅S9	
									2.10	
									Bottom of Exploration at 2.10 feet below ground surface.	
									REFUSAL	
5										
10										
15										
20										
25										

Remarks:

All Offsets are from Existing Roadway CL.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Whiting, Maine

Boring No.: HB-WHIT-111
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	70+00, 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	-0.30		PAVEMENT.	
									0.30	
									Brown, moist, gravelly fine to coarse SAND, little silt, occasional cobbles. ≅S9	
	S10		3.80 - 5.00				-3.80		3.80	G#237537 A-4, SM WC=28.6%
5							-5.00		Brown, wet, silty fine to medium SAND.	
									5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										

Remarks:

All Offsets are from Existing Roadway CL.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Whiting, Maine

Boring No.: HB-WHIT-112
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	80+00, 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	S11		0.30 - 4.50			SSA	-0.30		PAVEMENT.	G#237538 A-1-b, SM WC=5.4%
									0.30 — Brown, damp, gravelly fine to coarse SAND, little silt.	
							-4.50		4.50 — **Bottom of Exploration at 4.50 feet below ground surface.** REFUSAL	
5										
10										
15										
20										
25										

Remarks:

All Offsets are from Existing Roadway CL.

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

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Whiting, Maine

Boring No.: HB-WHIT-113
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	86+50, 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 Information: 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	-0.35		PAVEMENT. 0.35	
									Brown, damp, gravelly fine to coarse SAND, little silt. ≅S11	
							-2.10		2.10	
									Bottom of Exploration at 2.10 feet below ground surface. REFUSAL	
5										
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-114
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	93+50, 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

Depth (ft.)	Sample Information: 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	-0.30		PAVEMENT. 0.30	
							-1.50		Brown, damp, gravelly fine to coarse SAND, little silt. ≅S11 1.50	
									Bottom of Exploration at 1.50 feet below ground surface. REFUSAL	
5										
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-115
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	100+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	S12		0.30 - 5.00			SSA	-0.30		PAVEMENT. 0.30	G#237539 A-1-b, SM WC=7.0%
									Brown, moist, gravelly fine to coarse SAND, little silt.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-116
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	107+80, 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

Depth (ft.)	Sample Information: 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	-0.30		PAVEMENT.	
									0.30	
									Brown, moist, gravelly fine to coarse SAND, little silt. ≅S12	
							-3.00		3.00	
									Brown, wet, silty fine to medium SAND. ≅S10	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										

Remarks:

All 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 1
Location: Whiting, Maine

Boring No.: HB-WHIT-117
PIN: 18059.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	112+00, 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

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	-0.30		PAVEMENT. 0.30	
									Brown, moist, gravelly fine to coarse SAND, little silt. ≅S12	
							-2.00		2.00	
									Bottom of Exploration at 2.00 feet below ground surface. REFUSAL	
5										
10										
15										
20										
25										

Remarks:

All 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

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Location: Whiting, Maine

Boring No.: HB-WHIT-118
PIN: 18059.00

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Operator:	Giguere/Giles	**Datum:**	NAVD88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	5/18/10-5/18/10	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	116+00, 8.5 Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
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Depth (ft.)	Sample Information: 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		0.35 - 5.00			SSA	-0.35		PAVEMENT. 0.35	G#237540 A-1-a, GW-GM WC=2.5%
									Brown, moist, gravelly fine to coarse SAND, little silt.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										

Remarks:

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* 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.