Highway Program

Brad Foley, Program Manager

Memorandum

DATE: February 25, 2010

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

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

SUBJECT: Final Soils – Van Buren Rte 1, 12668.00
Report # 2010-103

Site Description

A subsurface investigation has been completed for a 1.3 mile portion of Route 1 in the town of Van Buren. The project begins 0.70 miles north of the Martin Road and extends northwesterly 1.3 miles to the Parent Road.

The investigation included the use of a drill rig, falling weight deflectometer (FWD), hand augers, and rod sounding probes. Stationing for subsurface explorations was determined using a distance measuring instrument (DMI). A beginning station of 177+06 was provided in the field by Region 5 survey personnel.

FWD Results

The FWD results are included as a separate attachment to this memo. A summary of the results follows:

% of project found to be deficient	92 %
Range of Recommended Overlay Thickness	0.1– 4.0 inches
Average Recommended Overlay Thickness	2.0 inches

Ninety-two percent of the project was found to be deficient based upon the existing structural number being less than the future traffic structural number. The subgrade resilient modulus is very low (< 3000 psi) for approximately 43 % of the project area (See FWD Summary Sheet and Performance Data Summary Sheet). The low subgrade resilient modulus is due to the presence of moist to wet sandy silts, organic silts, and peat between stations 181+00 and 218+00. This area could be soft especially during the spring months. Depending on the conditions at the time of construction the use of additional base material and possibly a geosynthetic may be necessary to support traffic once the existing pavement surface has been removed. Construction operations should take this into consideration. See Table I for a list of low subgrade resilient modulus areas.

Table 1. Low Subgrade Resilient Modulus Areas (< 3000 psi)

Station	Subgrade Conditions
181+00 – 208+00	Moist to Wet Sandy Silt (S2, S3), 43% - 69% passing #200
208+00 – 218+00	Moist to Wet Sandy Silt (S7), 80% passing #200 Organic Silt/Peat(Probe/S5), (HA-101, S1) 81% ignition loss

Boring Information

A total of 32 power augers borings, 9 power auger probes, 2 hand augers, and 18 hand rod sounding probes were conducted along the project area (See Boring Logs, Power Auger Probe Summary Sheet, and Rod Sounding Summary Sheet). Boring locations were determined based upon FWD deflection results and visual observations during an on-site visit. Soils were described and sampled in the field. Samples of the existing base material and subgrade soils were collected and analyzed in the Bangor lab. Testing results are summarized on the attached Laboratory Testing Summary Sheet.

Pavement Conditions

Pavement conditions are fair to good. Giving the vast presence of wet silty subgrade soils and organics the existing pavement performance is surprisingly good. The best overall pavement performance is between stations 218+00 and 249+00. Power auger borings and pavement cores were conducted to determine the thickness and quality of the existing pavement. A solid pavement surface of varying thickness was generally encountered (See attached Pavement Depth Information Sheet). A summary of the pavement thickness follows:

Existing Pavement Thickness Range:	4.2” – 8.4”
Existing Average Pavement Thickness:	6.6”

Note: Pavement thickness information is based upon limited boring information. Actual pavement thickness may vary.

Existing Base Material

Existing Base Material Type:	Silty Sandy Gravel
Percent Passing #200:	22% - 33%
Range of Base Material Thickness:	13.2” – 53.4”
Quality of Drainage (AASHTO):	Poor to Very Poor
Permeability:	0.04’ - 0.6’ per day

The existing base generally consists of silty gravelly sand (granular borrow). Because of the high percentage of fines the quality of drainage is poor to very poor. An estimated permeability range of 0.04 - 0.6 feet/day has been calculated based upon sample grain size distribution data. The poor quality of the existing base must be taken into consideration when developing performance expectations related to strength and drainage. As a comparison, a base material meeting the “excellent quality of drainage” criteria (AASHTO Guide for Design of Pavement Structures) provides a minimum permeability of 1000 ft/day.

Subgrade Soils

The subgrade soils underlying this project consist primarily of moist to wet sandy silts, organic silts, and peat (See Table 2).

Table 2. Anticipated Subgrade Soil Conditions

Station	Soil Description	AASHTO / Unified	Sample	% #200	Subgrade Modulus x1000	Ave. RM x1000
177+00 – 207+00	SaSi	A-4 / CL-ML, ML	S2, S3, (HA-101, S2)	43 - 92	2.2 – 3.4	2.6
207+00 – 218+00	Organic Silt Peat	See Sample Data in the Organic Soil Section			1.6 – 2.3	1.9
218+00 – 249+00	SiSa/SaSi	A-2-4 /SM, ML	S14, S15	33 - 47	3.1 – 9.6	4.1

Sandy Silt: The sandy silts along the project are represented by samples S2, S3, and S14. This material has 43 - 69 % passing the # 200 sieve. These soils are classified (AASHTO) as an A-4 soil. These soils are not well drained and will swell and lose much of their stability unless properly compacted and drained. These soils are highly frost susceptible.

Organic Silt / Peat: The organic silts contain varying amounts of organic matter. Silts with little fibrous matter had as much as 92% passing the #200 sieve. Sieve analysis testing was not conducted on the silts containing higher organic percentages or on the peat samples. These samples were tested for ignition loss (See Table 3). One sample of the peat (HA-101, S1), produced an ignition loss value of 81.1% and a water content of 439.8. For additional information about the organic silt/peat layer refer to the "Organic Soils" section below.

Table 3: Organic Silt / Peat - Loss of Ignition and %Water Results

Station	Sample #	Soil Type	Loss of Ignition	H20, %
209+00, 8.0' Left	Probe S1	Organic Silt	16.2 %	51.7 %
209+94, 32.6' Left	HA-102, S3	Peat	77.6 %	500.1 %
212+00, 8.0' Right	Probe S2	Organic Silt	13.2 %	42.3 %
212+00, 8.0' Left	Probe S3	Organic Silt	18.4 %	71.5 %
212+24, 30.8' Right	HA-101, S1	Peat	81.1%	494.8 %
214+00, 8.0' Left	Probe S4	Organic Silt	12.2 %	49.1 %
216+00, 8.0' Left	Probe S4	Peat	35 % (soil science definition)	86.7 %

A low subgrade resilient modulus (<3000 psi) value was obtained between stations 181+00 and 218+00 due to underlying moist to wet sandy silt, organic silt, and peat soils. Additional base material and possibly a geosynthetic may be necessary to support traffic if the existing pavement surface is removed while moist to wet subgrade conditions exist. Construction operations should take this into consideration. The existing pavement surface should not be removed until absolutely necessary.

Organic Soils

The presence of an organic silt/peat layer was discovered beneath the existing roadway structure between stations 208+00 and 218+00. This is an existing fill area consisting of low wet swampy ground vegetated with cedar and spruce trees. Power auger borings and power auger probes were used in the travel lanes to determine the depth and thickness of this organic layer. Hand auger borings and hand rod sounding probes were utilized for areas outside the existing shoulder.

The organic silt/peat layer was encountered full width beneath the roadway structure extending beyond the left and right toe of slope. This organic silt/peat layer represents an undesirable subgrade soil condition with many adverse physical, chemical and mechanical properties such as: soil surface subsidence, high water-table, low pH, loose soil structure, and the presence of a high volume of organic matter. The use of these soils should be avoided, if possible, in all types of construction.

The depth and thickness of the organic silt/peat layer differs when comparing areas beneath the roadway structure with areas located beyond the toe of the existing inslopes (See Table 4). This variance is likely due to consolidation of the organic silt/peat layer beneath the roadway structure.

Travel Lanes – The depth and thickness of the organic silt/peat layer underlying the left and right travel lanes are similar. The top of the organic silt/peat layer was encountered at a depth of 3.3’ – 5.8’ below the existing pavement surface. The bottom of the organic silt/peat layer was encountered at a depth of 5.0’ – 8.6’ below the existing pavement surface. The thickness of the organic silt/peat layer varied between 0.5’ – 4.1’ with an average thickness of 2 feet (See Table 4).

Existing Toe Area – Hand augers and hand rod sounding probes were conducted outside of the existing toe of slope at offsets ranging between 26’-31’. The depth and thickness of the organic silt/peat layer was similar beyond the left and right toe of slope. The organic silt/peat layer was encountered immediately beneath the existing top soil and ranged in thickness between 1.5’ to 8.1’ with an average thickness of 4.5’.

Due to the presence of this organic silt/peat layer, the existing highway structure could be very sensitive to additional loading. Depending on the weight and displacement of any additional loading, such loading to the existing structure could result in multiple soil bearing failures. The removal of the organic layer is recommended if additional loading is to be placed on the existing roadway structure.

Table 4. Organic Soil Layer (Depth and Location)

STATION	LEFT								RIGHT							
	Left In/Back Slope Area				Left Travel Lane				Right Travel Lane				Right In/Back Slope Area			
	Boring Type	Offset	Depth	Thickness	Boring Type	Offset	Depth	Thickness	Boring Type	Offset	Depth	Thickness	Boring Type	Offset	Depth	Thickness
207+00									Power Auger	7.6’	No Organics					
208+00	Sounding Rod	30’	Push to	1.8’					Power Auger	8.0’	5.8’ – 6.3’	0.5’	Sounding Rod	28’	Push to	2.0’
209+06	Sounding Rod	30’	Push to	5.0’	Power Auger Probe	8.0’	4.0’ – 6.2’	2.2’	Power Auger	8.5’	4.0’ -6.3’	2.3’	Sounding Rod	25’	Push to	4.3’
210+06	Hand Auger	32’	0.3’ – 2.7’	2.4’	Power Auger	8.0’	4.1’ - 5.5’	1.4’	Power Auger	8.0’	3.9’ - 5.0’	1.1’	Sounding Rod	28’	Push to	2.2’
211+06	Sounding Rod	30’	Push to	6.0’	Power Auger	8.5’	*3.5’ - 5.0’	1.5’	Power Auger	9.0’	3.9’ - 6.8’	2.9’	Sounding Rod	26’	Push to	2.7’
212+06	Sounding Rod	30’	Push to	3.0’	Power Auger Probe	8.0’	4.5’ – 8.6’	4.1’	Power Auger	8.0’	3.9’ - 5.0’	1.1’	Hand Auger	31’	0.3’ – 3.8’	3.5’
213+06	Sounding Rod	30’	Push to	6.9’	Power Auger	9.5’	4.2’ - 5.5’	1.3’	Power Auger	8.0’	3.3’ - 6.3’	3.0’	Sounding Rod	28’	Push to	3.7’
214+06	Sounding Rod	30’	Push to	5.1’	Power Auger Probe	8.0’	3.6’ – 7.5’	3.9’					Sounding Rod	29’	Push to	6.0’
215+06	Sounding Rod	30’	Push to	2.8’	Power Auger	9.0’	4.0’ - 5.5’	1.5’	Power Auger	9.0’	3.4’ - 5.0’	1.6’	Sounding Rod	28’	Push to	7.5’
216+06	Sounding Rod	30’	Push to	7.0’	Power Auger Probe	8.0’	3.6’ – 6.5’	2.9’	Power Auger	7.5’	3.5’ - 6.0’	2.5’	Sounding Rod	29’	Push to	8.4’
217+06	Sounding Rod	30’	Push to	2.7’	Power Auger	9.0’	3.5’ - 5.5’	2.0’	Power Auger Probe	8.0’	3.5’ – 5.4’	1.9’	Sounding Rod	30’	Push to	7.0’
218+00					Power Auger	8.0’	No Organics		Power Auger		4.5’ – 5.4’	0.9’				
	Ave. Depth	0-4’	**Ave. Thick**	4.3’	**Ave. Depth**	4’-6’	**Ave. Thick**	2.3’	**Ave. Depth**	4’-6’	**Ave. Thick**	1.8’	**Ave. Depth**	0-5’	**Ave. Thick**	4.7

Sample Data Summary : Ignition Loss Range - 12-81% , Water Content Range - 42% - 531%

** Boring stopped before encountering bottom of organic layer*

Performance Data Summary

A Performance Data Summary (PDS) sheet has been provided as a separate attachment to this memo. Base quality, subgrade soil conditions, low subgrade resilient modulus values, and the lack of drainage are all major concerns with respect to future performance expectations. These concerns must be taken into consideration if realistic performance expectations are to be achieved.

Based upon the Performance Data Summary (PDS) sheet, 61% of the project (station 176+00 – 219+00) fails to meet 2 or 3 of the four minimum performance data criteria. Existing performance expectations for these areas are low and the risk of failure is high. The best performing (relative) section of roadway is located between stations 219+00 and 249+00.

Table 5. Performance Data Summary Sheet Areas of Concern

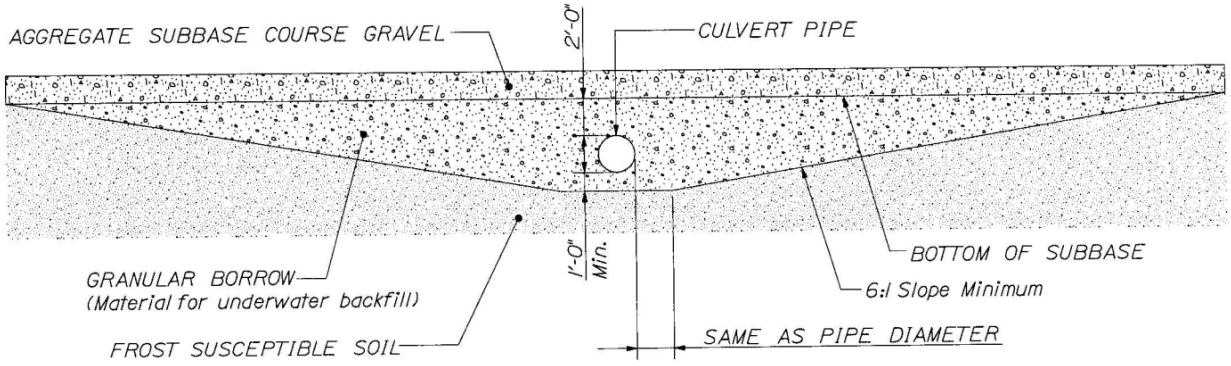
Areas of Concern	Concerns/Comments
179+00 – 204+00	Marginal base quality, low subgrade resilient modulus, low existing structural number, moist silty subgrade soils.
204+00 – 208+00	Marginal base quality, low subgrade resilient modulus, low existing structural number, moist to silty subgrade soils. Differential heaving at several locations is a problem in this area due to wet frost susceptible soils and the presence of a shallow cross pipe installation. Rebasing, aggressive deep ditching and the lowering of existing crosspipes would improve overall performance and extend service life.
208+00 – 219+00	Marginal base quality, very low subgrade resilient modulus values due to organic silt and peat, and low existing structural numbers are all performance concerns. Rebasing and the removal of the organic silt/peat layer would improve overall performance and extend service life. Additional loading of the existing roadway structure could result in bearing failures if the organic silts are not removed.

Recommendations

1. Due to less than desirable subgrade soil conditions, poor existing base quality, and varying base thickness, rebasing and/or additional gravel placement is recommended throughout the entire length of this project. A reduction in the reconstruction / rehabilitation scope could be considered between stations 218+00 and 249+00 where subgrade soil conditions improve due to the presence of underlying native granular glacial deposits.

2. It is recommended that the entire project area be well drained utilizing ditching and underdrain (if ditching is not possible). Ditches should be constructed with a minimum depth of 3 feet below finished grade when possible. Deep ditching and cross pipe lowering between stations 204+00 and 208+00 should alleviate the existing heaving problems.

3. It is recommended that all cross pipes be lowered to allow for an adequate ditching depth. Cross pipes should be installed based upon the following design schematic:



4. The moist to wet sandy silts, organic silts, and peat between stations 177+00 ad 218+00 (shown below) could become problematic during construction, especially during the spring and early summer. The existing pavement surface should not be removed until absolutely necessary. The roadway could become unstable or fail under loading if the existing pavement surface is removed during moist to wet subgrade conditions. Additional base material could be required to facilitate construction if the subgrade soils become unstable. The new pavement surface should be placed as soon as possible. The area of greatest risk is between stations 208+00and 218+00.

Station	Subgrade Soil Conditions	% #200	Subgrade Resilient Modulus Range	Ave. Subgrade Resilient Modulus
177+00 – 208+00	Moist to Wet Sandy Silts	43 - 69	2266 – 3467 psi	2636 psi
208+00 – 218+00	Moist to Wet Snady Silts Organic Silt/Peat Layer	43 – 92 81% ign loss	1661 – 2325 psi	1973 psi

5. It is recommended that the areas listed above be aggressively drained (when possible) before the existing pavement surface is removed. Ditches should be constructed as early as possible in the construction process.

6. It is recommended that the organic silt/peat layer encountered between stations 208+00 and 218+00 be removed and replaced with borrow. The undercut should extend from centerline to the toe of the proposed inslope. Due to an extremely high water table this undercut should be replaced with granular borrow. A gravel pit located at the north end of this project could be considered as a potential source for the granular borrow.

7. If the complete removal of the organic layer, from centerline to the toe of the inslope, is not possible due to project scope limitations the following is recommended:

    a. If additional loading is to be placed on the existing shoulder and inslope it is recommended as a minimum that the organic silt/peat layer be removed from edge of pavement to the intersection of a 1:1 slope drawn outward from the top of the shoulder break down to the bottom of the organic layer.
    b. If the removal of the organic silt layer is beyond the scope of this project, additional loading of the existing shoulder and inslope is not recommended.

8. Due to the acidic nature of the underlying organic soils the use of PVC pipes is recommended. If a metal pipe is required an aluminum pipe should be considered.

Falling Weight Deflectometer (FWD)
Summary Sheet

Project #: 12668.00
Town(s): Van Buren
Route(s): #1
Date Tested: 08/29/2007
Requested By: S. Hayden
Direction of Testing: North

Of FWD tests: 36
Of Power Augers/Spoons 5/0
Design Life: 12 Yrs
Future 18-kip ESALs (Design Life): 1,068,720
Initial Serviceability: 4.5
Terminal Serviceability: 2.5
Reliability Level: 95%
Overall Standard Deviation: .45

Locations

Distance (Feet)	Description

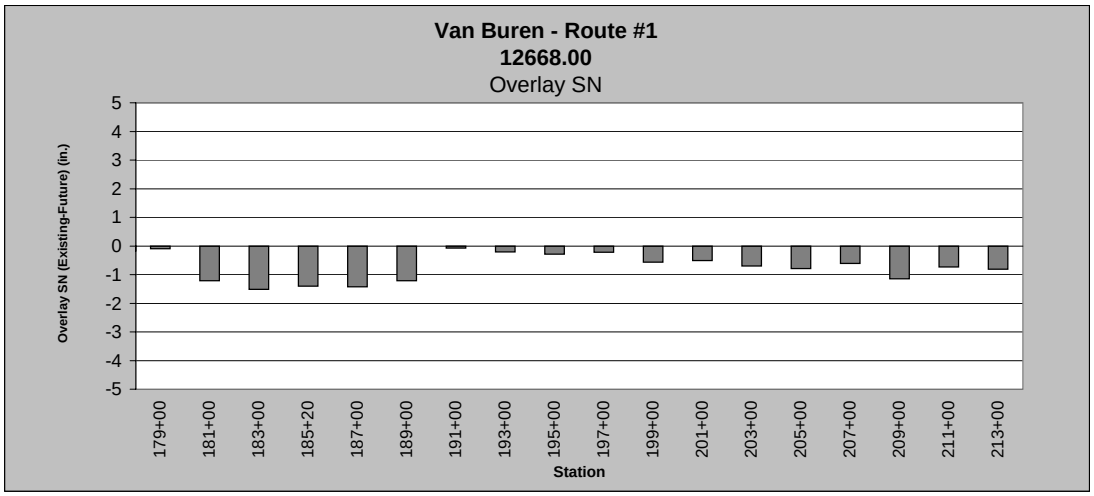
Comments:

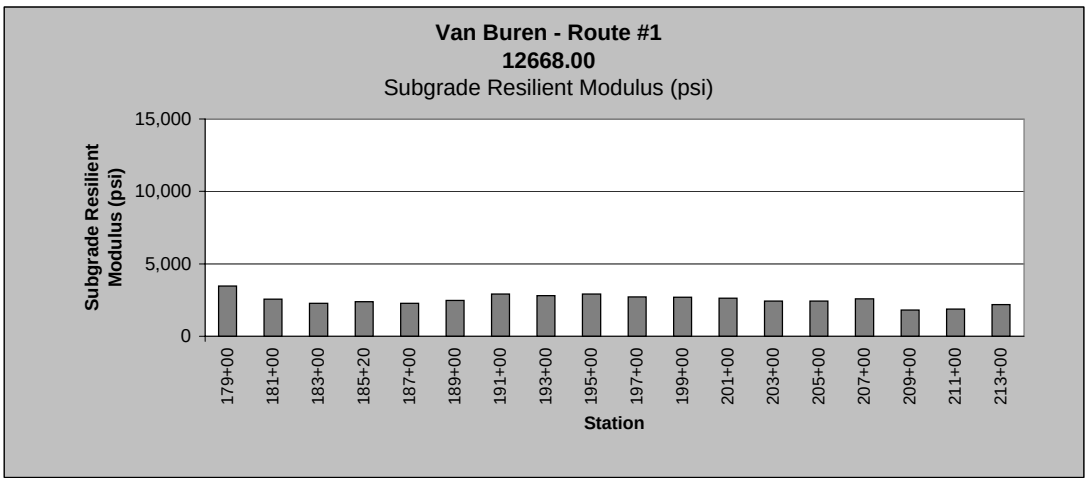
Van Buren - Route #1
12668.00

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)
179+00	4.6	4.7	**-0.1**	**0.23**	95,093	3,467	6.6	22.4
181+00	3.97	5.18	**-1.21**	**2.75**	61,069	**2,552**	6.6	22.4
183+00	3.86	5.37	**-1.51**	**3.43**	56,031	**2,276**	6.6	22.4
185+20	3.9	5.3	**-1.4**	**3.18**	57,929	**2,375**	6.6	22.4
187+00	3.96	5.38	**-1.42**	**3.23**	60,639	**2,266**	6.6	22.4
189+00	4.01	5.22	**-1.21**	**2.75**	63,093	**2,485**	6.6	22.4
191+00	4.9	4.97	**-0.07**	**0.16**	68,768	2,914	7.2	26.6
193+00	4.81	5.02	**-0.21**	**0.48**	64,694	**2,811**	7.2	26.6
195+00	4.68	4.96	**-0.28**	**0.64**	59,911	2,917	7.2	26.6
197+00	4.86	5.08	**-0.22**	**0.5**	66,752	**2,713**	7.2	26.6
199+00	4.53	5.09	**-0.56**	**1.27**	54,260	**2,693**	7.2	26.6
201+00	4.62	5.13	**-0.51**	**1.16**	57,666	**2,636**	7.2	26.6
203+00	4.57	5.27	**-0.7**	**1.59**	55,788	**2,421**	7.2	26.6
205+00	4.46	5.25	**-0.79**	**1.8**	51,557	**2,439**	7.2	26.6
207+00	4.55	5.16	**-0.61**	**1.39**	54,814	**2,582**	7.2	26.6
209+00	4.6	5.75	**-1.15**	**2.61**	70,078	**1,816**	6.6	24.8
211+00	4.96	5.69	**-0.73**	**1.66**	88,057	**1,882**	6.6	24.8
213+00	4.63	5.44	**-0.81**	**1.84**	71,472	**2,183**	6.6	24.8

Weak Subgrade

*** For actual Gravel Depths, see logdraft forms**





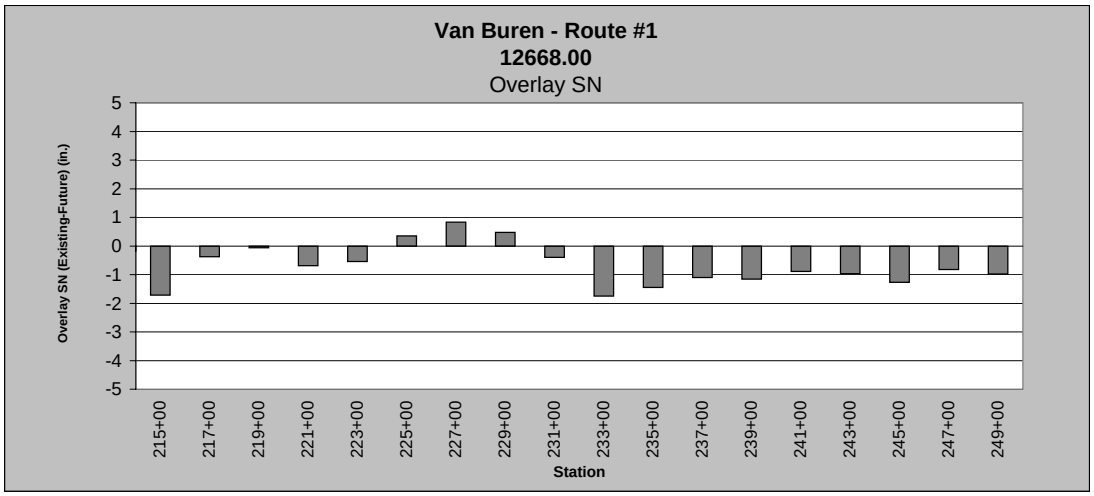
Van Buren - Route #1
12668.00

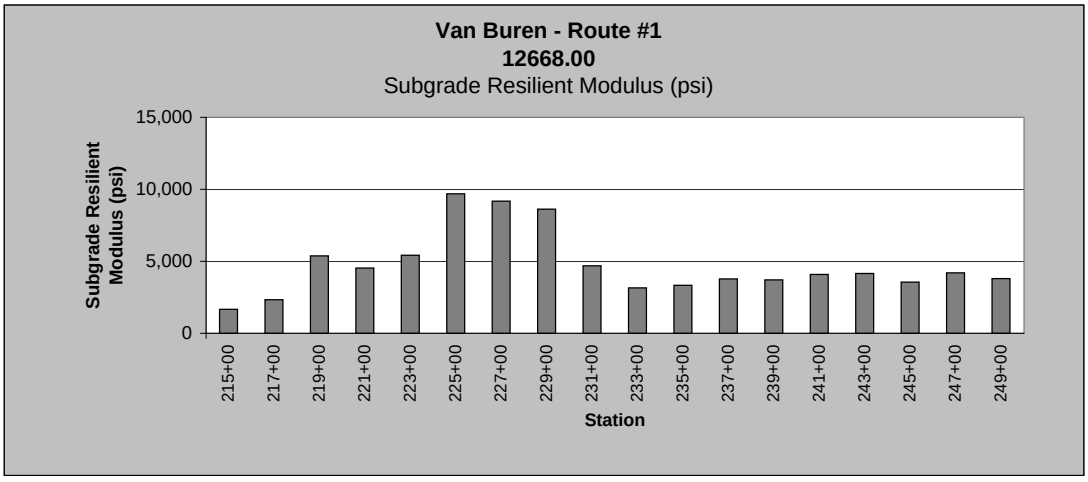
Station (Feet)	Existing Structural Number (in.)	Future Traffic Structural Number (in.)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (in.)	Pavement Modulus (psi)	Subgrade Resilient Modulus (psi)	Pavement Depth (in)	* Combined Pavement/Gravel Depth Used for Calculation (in)
215+00	4.2	5.91	**-1.71**	**3.89**	53,471	**1,661**	6.6	24.8
217+00	4.96	5.33	**-0.37**	**0.84**	87,938	**2,325**	6.6	24.8
219+00	3.99	4.05	**-0.06**	**0.14**	113,356	5,386	6.6	**18.3**
221+00	3.61	4.3	**-0.69**	**1.57**	84,431	4,529	6.6	**18.3**
223+00	3.51	4.05	**-0.54**	**1.23**	77,217	5,417	6.6	**18.3**
225+00	3.65	3.3	0.35	-	87,380	**9,681**	6.6	**18.3**
227+00	4.19	3.36	0.83	-	132,172	**9,185**	6.6	**18.3**
229+00	3.92	3.44	0.48	-	108,190	**8,612**	6.6	**18.3**
231+00	3.85	4.25	**-0.4**	**0.91**	102,429	4,678	6.6	**18.3**
233+00	3.09	4.84	**-1.75**	**3.98**	52,724	3,157	6.6	**18.3**
235+00	3.31	4.76	**-1.45**	**3.3**	65,138	3,335	6.6	**18.3**
237+00	3.47	4.57	**-1.1**	**2.5**	75,021	3,770	6.6	**18.3**
239+00	3.43	4.59	**-1.16**	**2.64**	72,291	3,711	6.6	**18.3**
241+00	3.56	4.45	**-0.89**	**2.02**	80,831	4,089	6.6	**18.3**
243+00	3.46	4.43	**-0.97**	**2.2**	74,444	4,151	6.6	**18.3**
245+00	3.39	4.66	**-1.27**	**2.89**	69,658	3,552	6.6	**18.3**
247+00	3.59	4.41	**-0.82**	**1.86**	82,941	4,195	6.6	**18.3**
249+00	3.58	4.56	**-0.98**	**2.23**	81,822	3,803	6.6	**18.3**

Weak Subgrade

Strong Subgrade - Could represent shallow Bedrock

*** For actual Gravel Depths, see logdraft forms**





Geotechnical Darwin Worksheet

Key		
A-1-a		100%
A-1-b		85%
A-2-4		50%

Town: Van Buren Rte 1

Pin: 12668.00

Boring Data		**Base and Thickness Calculations**								**FWD Base and Asphalt Calculations**		
Power Auger #	FWD Station	Soil Description	Classification	Pave + Base	Base	% Weight	Wt. Base Thickness	Unbound Thickness	Asphalt Thickness	Total Base (WtB+UP)	Asphalt (SP)	Total Thickness
HB-VB-101	18+14	SiGSa	A-1-b	25.2	18.6	0.85	15.8		**6.6 SP**	15.8	6.6	**22.4**
HB-VB-102	30+00	SiGSa	A-1-b	30	22.8	0.85	19.4		**7.2 SP**	19.4	7.2	**26.6**
HB-VB-103	42+00	SiGSa	A-1-b	30	18.6	0.85	15.8		**6.6 SP**	18.2	6.6	**24.8**
		GSiSa	A-2-4		4.8	0.5	2.4					
HB-VB-113	43+00	SiGSa	A-1-b	30	16.2	0.85	13.8		**6.6 SP**	17.4	6.6	**24**
			A-2-4		7.2	0.5	3.6					
HB-VB-112	44+00	SiGSa	A-1-b	30	17.4	0.85	14.8		**6.6 SP**	15.1	6.6	**21.7**
		GSiSa	A-2-4		6	0.5	3					
HB-VB-106	45+00	SiGSa	A-1-b	30	21.6	0.85	18.4		**7.2 SP**	19	7.2	**26.2**
		GSiSa	A-2-4		1.2	0.5	0.6					
HB-VB-107	46+00	SiGSa	A-1-b	30	21	0.85	17.9		**6.6 SP**	19.1	6.6	**25.7**
		GSiSa	A-2-4		2.4	0.5	1.2					
HB-VB-108	47+00	SiGSa	A-1-b	30	18.6	0.85	15.8		**6.6 SP**	18.2	6.6	**24.8**
		GSiSa	A-2-4		4.8	0.5	2.4					
HB-VB-115	48+00	SiGSa	A-1-b	30	13.2	0.85	11.2		**7.2 SP**	16	7.2	**23.2**
		GSiSa	A-2-4		9.6	0.5	4.8					
HB-VB-116	49+00	SiGSa	A-1-b	30	16.2	0.85	13.8		**7.8 SP**	14.1	7.8	**21.9**
		GSiSa	A-2-4		6	0.5	3					

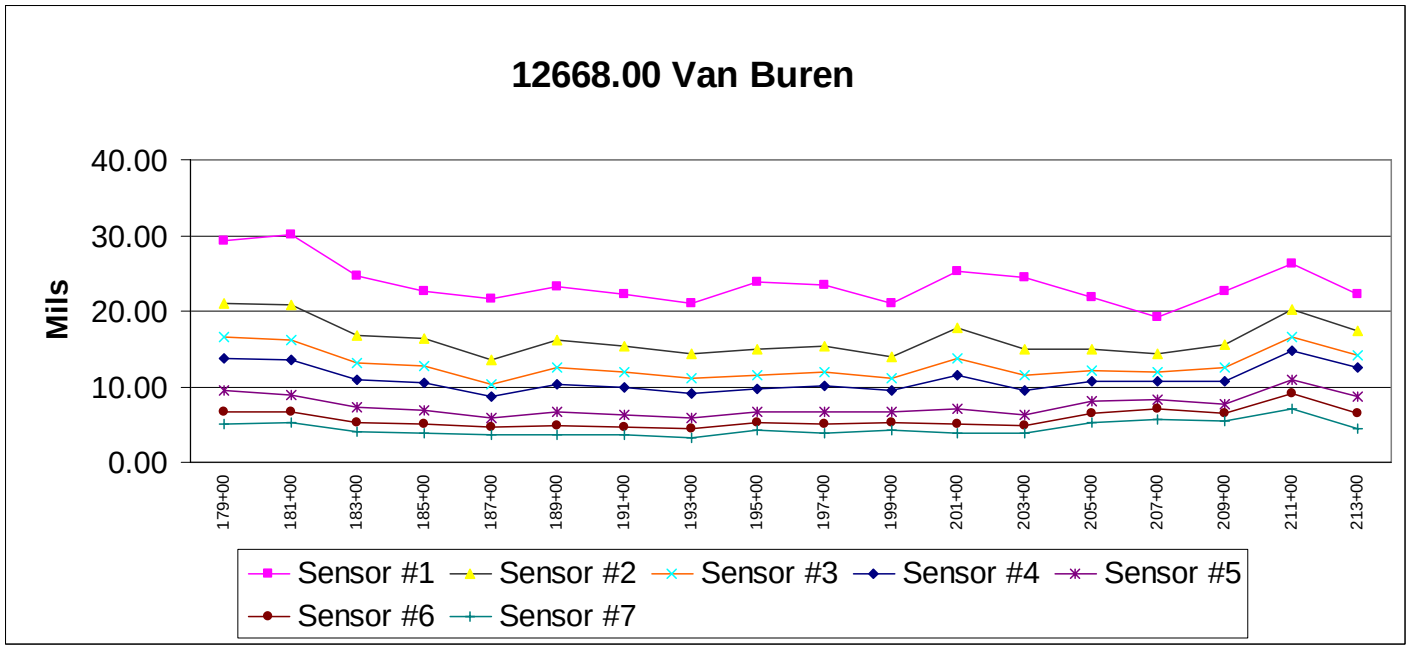
Geotechnical Darwin Worksheet

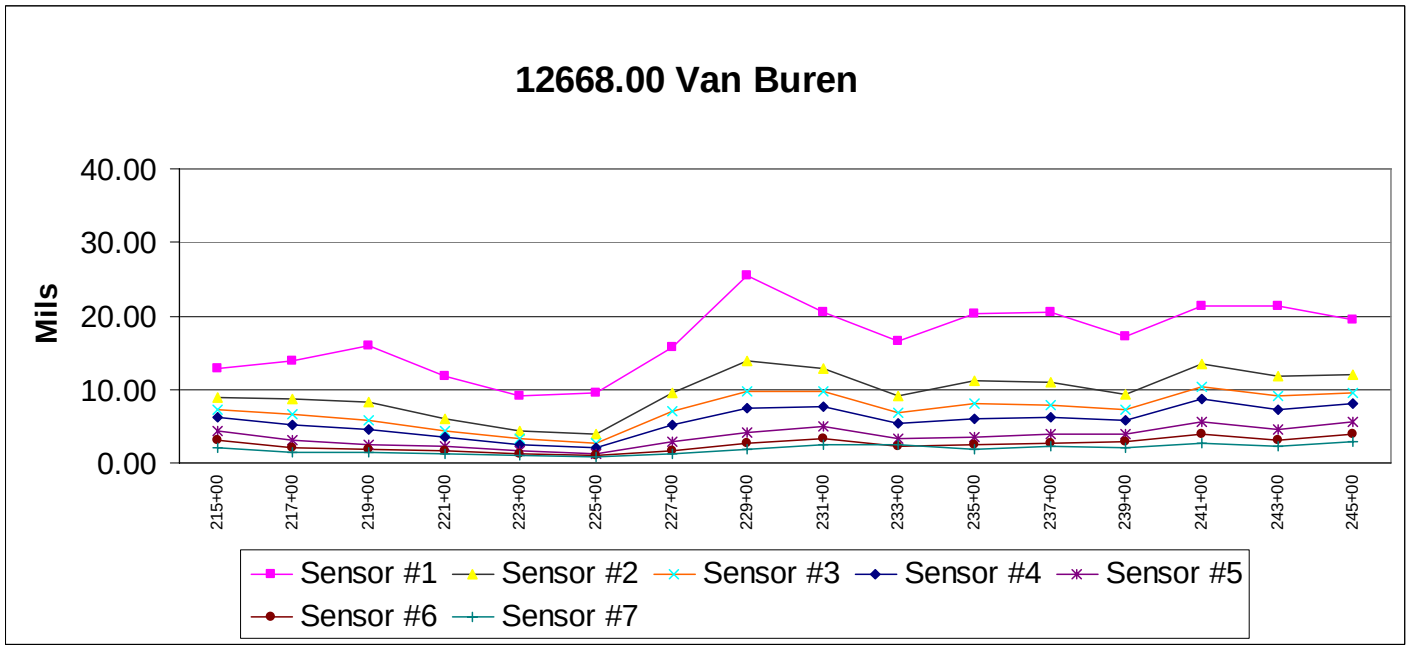
Key		
A-1-a		100%
A-1-b		85%
A-2-4		50%

Town: Van Buren Rte 1

Pin: 12668.00

Boring Data		**Base and Thickness Calculations**								**FWD Base and Asphalt Calculations**		
Power Auger #	FWD Station	Soil Description	Classification	Pave + Base	Base	% Weight	Wt. Base Thickness	Unbound Thickness	Asphalt Thickness	Total Base (WtB+UP)	Asphalt (SP)	Total Thickness
HB-VB-118	50+00	SiGSa	A-1-b	30	17.4	0.85	14.8		**6.6 SP**	15.1	6.6	**21.7**
		GSiSa	A-2-4		6	0.5	3					
HB-VB-121	62+00	GSiSa	A-2-4	30	23.4	0.5	11.7		6.6 SP	11.7	6.6	**18.3**
HB-VB-122	74+00	GSiSa	A-2-4	30	23.4	0.5	11.7		6.6 SP	11.7	6.6	**18.3**


12668.00 Van Buren
Mils
40.00
30.00
20.00
10.00
0.00
179+00
181+00
183+00
185+00
187+00
189+00
191+00
193+00
195+00
197+00
199+00
201+00
203+00
205+00
207+00
209+00
211+00
213+00
Sensor #1
Sensor #2
Sensor #3
Sensor #4
Sensor #5
Sensor #6
Sensor #7


12668.00 Van Buren
Mils
40.00
30.00
20.00
10.00
0.00
215+00
217+00
219+00
221+00
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225+00
227+00
229+00
231+00
233+00
235+00
237+00
239+00
241+00
243+00
245+00
Sensor #1
Sensor #2
Sensor #3
Sensor #4
Sensor #5
Sensor #6
Sensor #7

Performance Data Summary Sheet

Van Buren Route 1
12668.00

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				
179+00	2									
181+00	3									
183+00	3									
185+20	3					6.6 SP - 18.6	SiGSa A-1-b S1	24 II Damp	SaSi A-4 S2	69 IV Moist
187+00	3									
189+00	3									
191+00	3									
193+00	3									
195+00	3									
197+00	3					7.2 SP - 22.8	SiGSa A-1-b S1	24 II Damp	GSaSi A-4 S3	43 III Damp
199+00	3									
201+00	3									
203+00	2									
205+00	2					4.2SP - 24.6	SiGSa A-1-b S1	24 II Moist	SaSi A-4 S2	69 IV Wet @ 2.4’
207+00	2									
209+00	3					6.6 SP - 18.6	SiGSa A-1-b S4	22 II Damp	SiSa and Organics See Organic Section In the Report	
211+00	3					7.2 SP - 21.6	SiGSa A-1-b S4	22 II Damp	SiSa and Organics See Organic Section In the Report	
213+00	3					6.6 SP - 21.0	SiGSa A-1-b S4	22 II Damp	SiSa and Organics See Organic Section In the Report	
215+00	3					7.2 SP - 13.2	SiGSa A-1-b S4	22 II Damp	SiSa and Organics See Organic Section In the Report	
217+00	3					7.2 SP - 16.8	SiGSa A-1-b S4	22 II Damp	SiSa and Organics See Organic Section In the Report	
219+00	1									
221+00	1									

Pavement Thickness (4 inches)
Base Thickness (24 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 Sheet

Van Buren Route 1
12668.00

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				
223+00	1	Pavement Thickness (4 inches)	Base Thickness (24 inches)	Subgrade Modulus (3000 psi)	Structural Number					
225+00	0									
227+00	0									
229+00	0					6.6 SP - 53.4	SiGSa A-2-4 S14	33 II Dry	SiGSa A-2-4 S14	33 II Dry
231+00	1									
233+00	1									
235+00	1									
237+00	1									
239+00	1									
241+00	1					6.6 SP - 53.4	SiGSa A-2-4 S14	33 II Damp	GSaSi A-4 S15	47 III Moist
243+00	1									
245+00	1									
247+00	1									
249+00	1									

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

PAVEMENT DEPTH INFORMATION
Van Buren
Route 1
12668.00

STATION	LEFT			CL	RIGHT		
	15’	**10’**	**5’**		**5’**	**10’**	**15’**
185+00		(10’) 7.2”	(5’) 7.2”	CL 7.8”	(5’) 6.6”	(9’) 6.6”	
197+00						(9’) 7.2”	
204+50						(11.8’) 4.2”	
205+00						(10.7’) 4.2”	
206+45						(8.6’) 4.2”	
207+23						(7.6’) 4.8”	
208+00						(8.0’) 6.0”	
209+00		(8.5’) 6.6”				(8.5’) 6.6”	
210+00		(8.0’) 6.6”				(8.0’) 6.6”	
211+00		(8.5’) 6.6”				(9’) 7.2”	
212+00		(9.0’) 6.6”				(8’) 7.2”	
213+00		(9.5’) 6.0”				(8.0’) 6.6”	
214+00		(9.5’) 6.6”				(7.5’) 6.6”	
215+00		(9’) 7.2”	(5.0’) 6.6”	CL 7.8”	(5’) 8.4”	(9’) 7.2”	
216+00		(9’) 7.2”				(7.5’) 7.8”	
217+00		(9’) 6.6”				(7.0’) 7.2”	
218+00	(8.0’) 6.0”						
229+00						(9’) 6.6”	
241+00		(10.0’) 6.6”	(5.0’) 7.8”	CL 7.8”	(5.0’) 7.2”	(9’) 6.6”	

(7.7’) = actual offset
Non shaded data obtained from power auger borings, shaded data obtained from coring

State of Maine - Department of Transportation

Pavement Core Summary Sheet

Town(s): Van Buren Project Number: 12668.00

Station (Feet)	Offset (Feet)	Pavement Depth (Feet)	Unbound Pavement	PC-Number	Saved Core	Comments / Date 10/2/2007
185+20	5.0 Rt.	0.55				
185+20	CL	0.65				
185+20	5.0 Lt.	0.60				
185+20	10.0 Lt.	0.60				
215+00	5.0 RT.	0.70				
215+00	CL	0.65				
215+00	5.0 Lt.	0.55				
241+00	5.0 Rt.	0.60				
241+00	CL	0.65				
241+00	5.0 Lt.	0.65				
241+00	10.0 Lt.	0.55				

Logged By: B. Wilder

2" Thinwall Core

State of Maine - Department of Transportation

Power Auger Probe Summary Sheet

Town(s): Van Buren

Project Number: 12668.00

Station (Feet)	Offset (Feet)	Sample Number	PEAT Depth (Feet)	Comments / Date 7/24/2008
209+00	8.0 Lt.	S1	4.0-6.2	PEAT, organic silt.
210+00	8.0 Rt.		4.5-5.0	Organic SILT, trace peat.
212+00	8.0 Rt.	S2	7.4-8.0	PEAT, organic silt.
212+00	8.0 Lt.	S3 (2 cups)	4.5-8.6	PEAT, organic silt.
214+00	8.0 Lt.	S4	3.6-7.5	PEAT, organic silt.
215+00	8.0 Rt.		4.0-4.5	Organic SILT, trace peat.
216+00	8.0 Lt.	S5	5.6-6.5	PEAT, organic silt.
217+00	8.0 Rt.		3.5-5.4	PEAT, organic silt.
218+00	8.0 Rt.		4.5-5.4	Organic SILT, trace peat.

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

5" Solid Stem Auger

State of Maine - Department of Transportation

Rod Sounding Summary Sheet

Town(s): Van Buren Project Number: 12668.00

Boring	Station (Feet)	Offset (Feet)	Refusal (Feet)	No Refusal (Feet)	Water (X) = Yes	Comments 9/9/2009
						Pushed 5/8" Dia. Rod with wieght
						on one man.
208+00	30.0 Lt.		1.8			
208+00	28.0 Rt.		2.0			
209+00	30.0 Lt.		5.0			
209+00	25.0 Rt.		4.3			
210+00	28.0 Rt.		2.2			
211+00	30.0 Lt.		6.0			
211+00	26.0 Rt.		2.7			
212+00	30.0 Lt.		3.0			
213+00	30.0 Lt.		6.9			
213+00	28.0 Rt.		3.7			
214+00	30.0 Lt.		5.1			
214+00	29.0 Rt.		6.0			
215+00	30.0 Lt.		2.8			
215+00	28.0 Rt.		7.5			
216+00	30.0 Lt.		7.0			
216+00	29.0 Rt.		8.4			
217+00	30.0 Lt.		2.7			
217+00	30.0 Rt.		7.0			

State of Maine - Department of Transportation

Laboratory Testing Summary Sheet

Town(s): Van Buren Project Number: 12668.00

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-VB-101, S1	185+20	9.0 Rt.	0.55-2.1	210140	1	4.1	23.5	SM	A-1-b	II
HB-VB-101, S2	185+20	9.0 Rt.	2.1-5.0	210141	1	22.8	68.5	CL-ML	A-4	IV
HB-VB-102, S3	197+00	9.0 Rt.	2.5-5.0	210142	1	10.9	43.3	ML	A-4	III
HB-VB-103, S4	209+00	8.5 Rt.	0.55-2.1	210143	2	3.0	22.4	SM	A-1-b	II
HB-VB-103, S5	209+00	8.5 Rt.	2.1-4.0	210144	2	8.9	31.0	SM	A-2-4	II
HB-VB-103, S6	209+00	8.5 Rt.	4.0-6.3	210145	2	56.2	41.1	SM	A-4	III
HB-VB-103, S7	209+00	8.5 Rt.	6.3-10.0	210146	2	34.5	80.6	ML	A-4	IV
HB-VB-105, S8	211+00	9.0 Rt.	3.9-6.8	210147	2	75.4	30.4	SM	A-2-4	II
HB-VB-107, S9	213+00	8.0 Rt.	2.3-3.3	210148	2	7.5	31.7	SM	A-2-4	II
HB-VB-120, S10	215+00	9.0 Lt.	0.60-1.8	210149	3	2.7	16.7	GM	A-1-b	I
HB-VB-120, S11	215+00	9.0 Lt.	1.8-4.0	210150	3	5.4	31.1	SM	A-2-4	II
HB-VB-120, S12	215+00	9.0 Lt.	4.0-5.5	210151	3	97.2	49.0	ML	A-4	III
HB-VB-120, S13	215+00	9.0 Lt.	5.5-10.0	210152	3	35.7	81.3	ML	A-4	IV
HB-VB-122, S14	241+00	9.0 Rt.	0.55-3.5	210153	3	5.9	33.2	SM	A-2-4	II
HB-VB-122, S15	241+00	9.0 Rt.	3.5-5.0	210154	3	12.4	47.3	ML	A-4	III
						Loss on Ignition (T 267)				
							Loss, %		H2O, %	
PROBE/S1	209+00	8.0 Lt.	4.0-6.2	208767	---		16.2		51.7	
PROBE/S2	212+00	8.0 Rt.	7.4-8.0	208768	---		13.2		42.3	
PROBE/S3	212+00	8.0 Lt.	4.5-8.6	208769	---		18.4		71.5	
PROBE/S4	214+00	8.0 Lt.	3.6-7.5	208770	---		12.2		49.1	
PROBE/S5	216+00	8.0 Lt.	5.6-6.5	208771	---		34.6		86.7	
HA-101, S1	212+24.3	30.8 Rt.	0.30-3.8	246360	4		81.1		494.8	
HA-102, S3	209+94	32.6 Lt.	0.30-2.7	246361	4		77.6		500.1	
HA-101, S1	212+24.3	30.8 Rt.	0.30-3.8	246360	4	439.8	4.6	SW	A-1-a	0
HA-101, S2	212+24.3	30.8 Rt.	3.8-4.4	246362	4	41.8	91.8	ML	A-4	IV
HA-102, S3	209+94	32.6 Lt.	0.30-2.7	246361	4	530.9	1.1	GP	A-1-a	0

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.

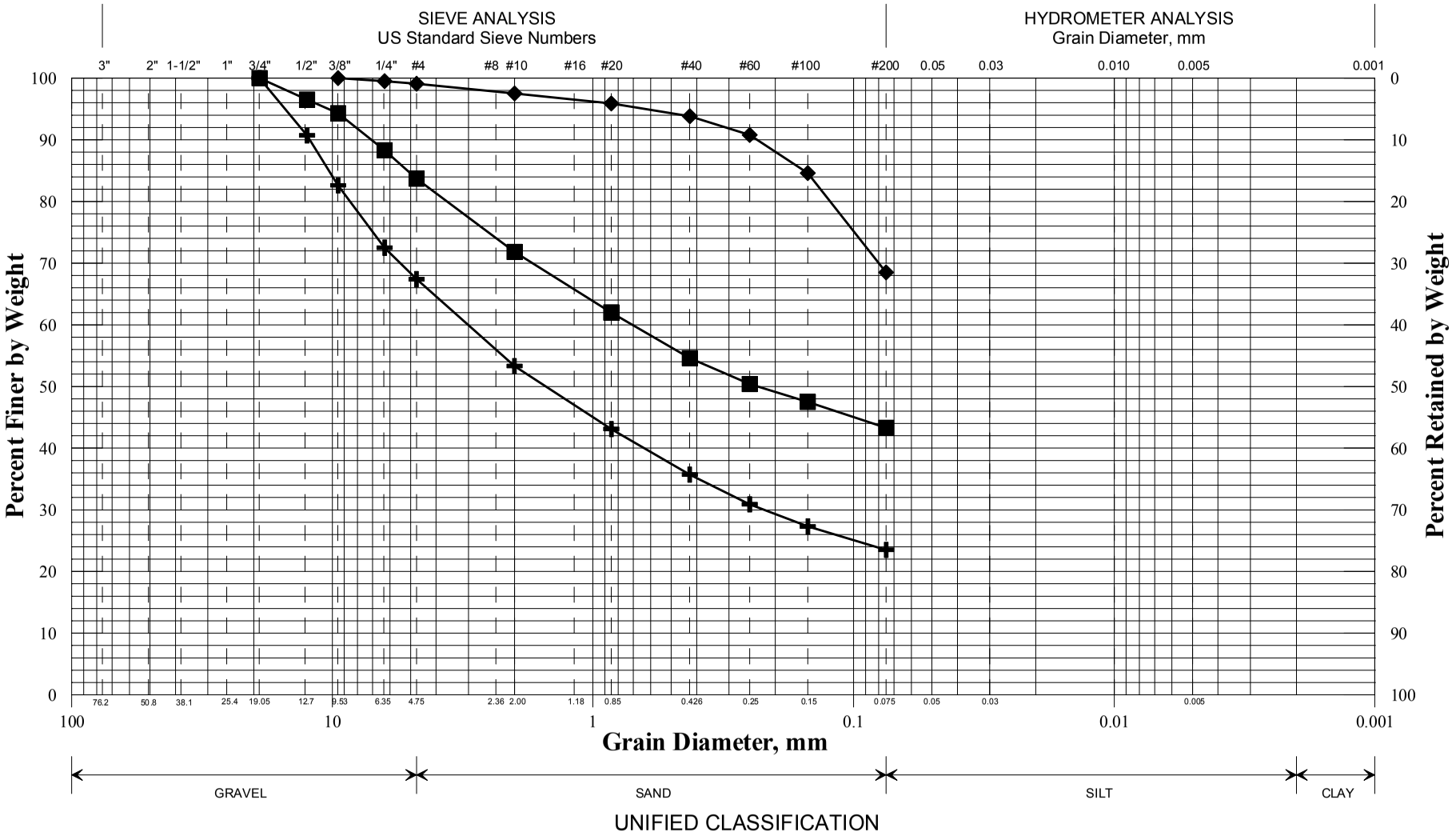
GSDC = Grain Size Distribution Curve as determined by AASHTO T 88-93 (1996) and/or ASTM D 422-63 (Reapproved 1998)

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

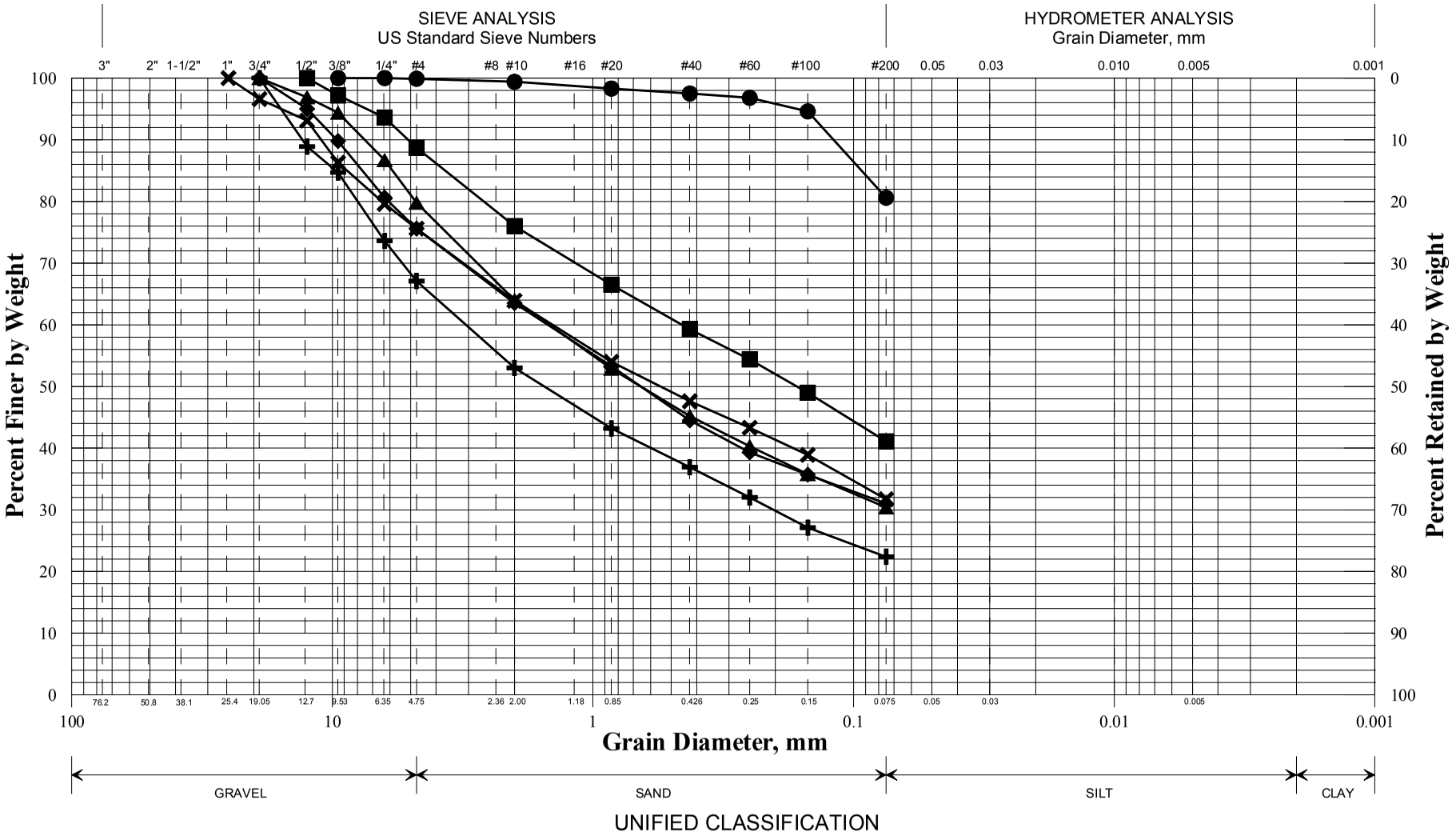
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-VB-101/S1	185+20	9.0 RT	0.55-2.1	SAND, some gravel, some silt.	4.1			
◆	HB-VB-101/S2	185+20	9.0 RT	2.1-5.0	SILT with clay, some sand, trace gravel.	22.8			
■	HB-VB-102/S3	197+00	9.0 RT	2.5-5.0	Sandy SILT, little gravel.	10.9			
●									
▲									
✕									

PIN
012668.00
Town
Van Buren
Reported by/Date
WHITE, TERRY A 12/21/2007

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-VB-103/S4	209+00	8.5 RT	0.55-2.1	SAND, some gravel, some silt.	3.0			
◆	HB-VB-103/S5	209+00	8.5 RT	2.1-4.0	SAND, some silt, some gravel.	8.9			
■	HB-VB-103/S6	209+00	8.5 RT	4.0-6.3	Silty SAND, little gravel.	56.2			
●	HB-VB-103/S7	209+00	8.5 RT	6.3-10.0	SILT, little sand, trace gravel.	34.5			
▲	HB-VB-105/S8	211+00	9.0 RT	3.9-6.8	SAND, some silt, some gravel.	75.4			
✖	HB-VB-107/S9	213+00	8.0 RT	2.3-3.3	SAND, some silt, some gravel.	7.5			

PIN
012668.00
Town
Van Buren
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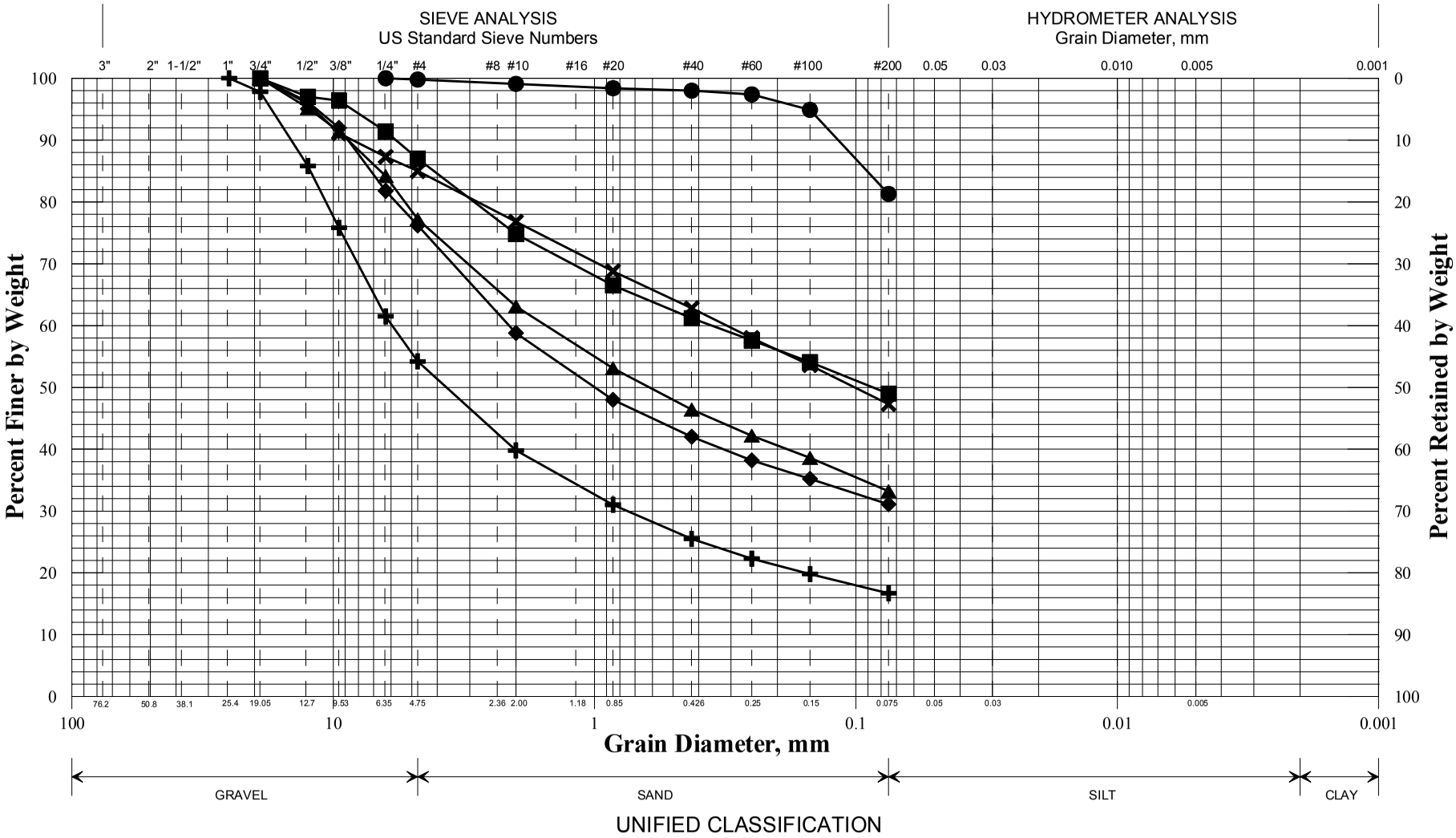
WHITE, TERRY A 12/21/2007

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

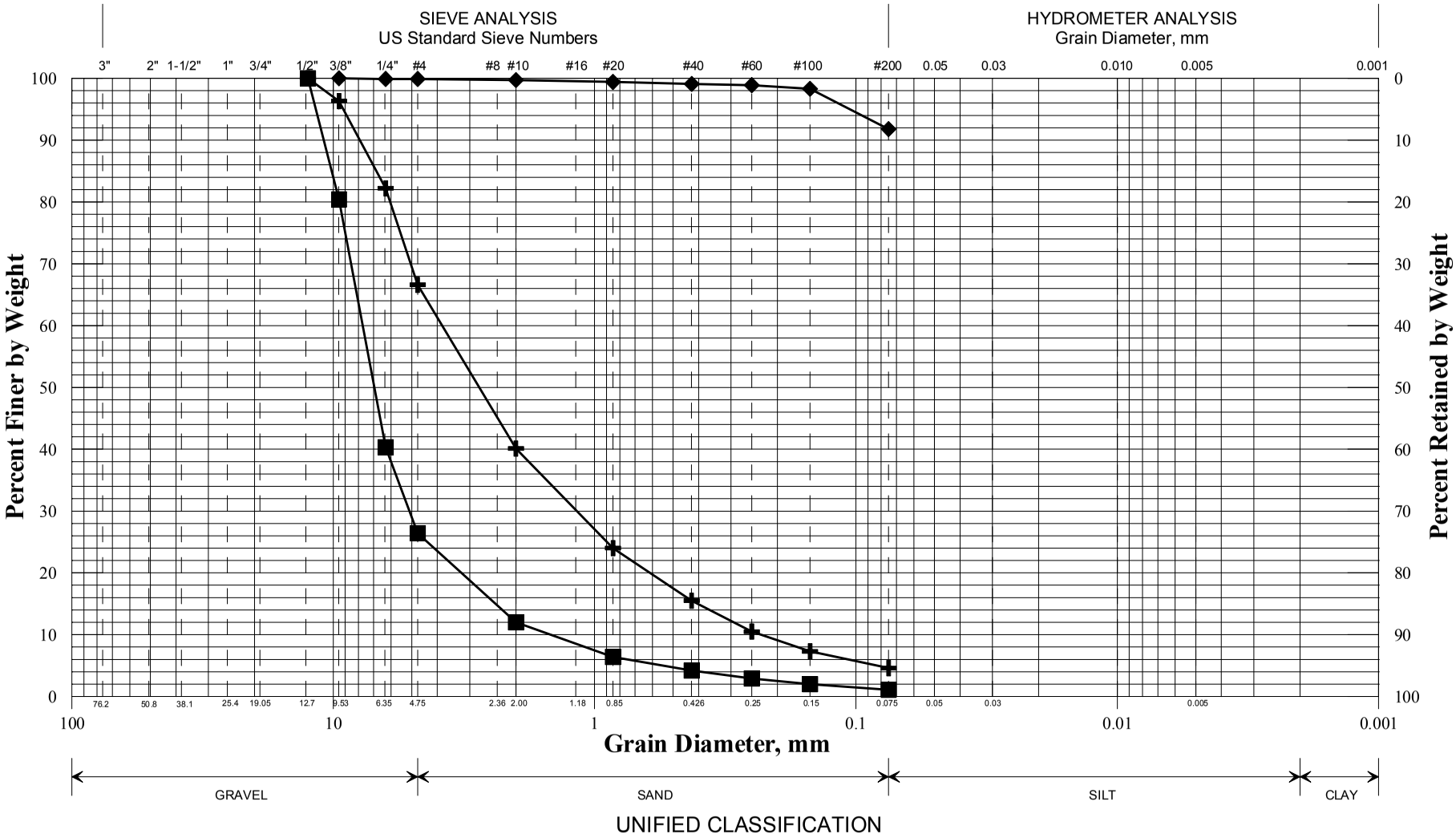


	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HB-VB-120/S10	215+00	9.0 LT	0.6-1.8	Sandy GRAVEL, little silt.	2.7			
◆	HB-VB-120/S11	215+00	9.0 LT	1.8-4.0	SAND, some silt, some gravel.	5.4			
■	HB-VB-120/S12	215+00	9.0 LT	4.0-5.5	Sandy SILT, little gravel.	97.2			
●	HB-BV-120/S13	215+00	9.0 LT	5.5-10.0	SILT, little sand.	35.7			
▲	HB-VB-122/S14	241+00	9.0 RT	0.55-3.5	SAND, some silt, some gravel.	5.9			
✖	HB-VB-122/S15	241+00	9.0 RT	3.5-5.0	Sandy SILT, little gravel.	12.4			

PIN
012668.00
Town
Van Buren
Reported by/Date
WHITE, TERRY A 12/21/2007

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
✚	HA-101/S1	212+24.3	30.8 RT	0.3-3.8	SAND, some gravel, trace silt.	439.8			
◆	HA-101/S2	212+24.3	30.8 RT	3.8-4.4	SILT, trace sand, trace gravel.	41.8			
■	HA-102/S3	209+94	32.6 LT	0.3-2.7	GRAVEL, some sand, trace silt.	530.9			
●									
▲									
✕									

PIN
012668.00
Town
Van Buren
Reported by/Date
WHITE, TERRY A 12/3/2009

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-101
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	185+20, 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	S1		0.55 - 2.10			SSA	-0.55		PAVEMENT.	
									0.55	G#210140 A-1-b, SM WC=4.1%
									Brown, damp, fine to coarse SAND, some gravel, some silt.	
	S2		2.10 - 5.00				-2.10		2.10	
									Grey, moist, SILT, little fine sand, trace clay.	G#210141 A-4, CL-ML WC=22.8%
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-102
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	197+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	-0.60		PAVEMENT.	
									0.60 — Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S1	
	S3		2.50 - 5.00				-2.50		2.50 — Grey, damp, fine to medium sandy SILT, little gravel.	G#210142 A-4, ML WC=10.8%
5							-5.00		5.00 — **Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-103
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	209+00, 8.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	6.5' 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

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	S4		0.55 - 2.10			SSA	-0.55		PAVEMENT.	
									0.55 — Brown, damp, fine to coarse SAND, some gravel, some silt.	G#210143 A-1-b, SM WC=3.0%
	S5		2.10 - 4.00				-2.10		2.10 — Grey, damp, silty fine to coarse SAND, some gravel.	G#210144 A-2-4, SM WC=8.9%
	S6		4.00 - 6.30				-4.00		4.00 — PEAT.	G#210145 A-4, SM WC=56.2%
5	S7		6.30 - 10.00				-6.30		6.30 — Grey, wet, fine sandy SILT, trace organics.	G#210146 A-4, ML WC=34.5%
10							-10.00		10.00 — **Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-104
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	210+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	-0.55		PAVEMENT.	
									0.55	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.50		2.50	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S5	
							-3.90		3.90	
5							-5.00		PEAT.	
									5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-105
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	211+00, 9.0' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	6.5' 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

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	-0.60		PAVEMENT.	
									0.60 Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.40		2.40 Grey, damp, silty fine to coarse SAND, some gravel. ≅S5	
	S8		3.90 - 6.80				-3.90		3.90 PEAT.	G#210147 A-2-4, SM WC=75.4%
5										
							-6.80		6.80 Grey, wet, fine sandy SILT, trace organics. ≅S7	
10							-10.00		10.00 **Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-106
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	212+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	-0.60		PAVEMENT.	
									0.60	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.40		2.40	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S5	
							-3.90		3.90	
5							-5.00		PEAT.	
									5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-107
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	213+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	-0.55		PAVEMENT.	
							0.55		Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
	S9		2.30 - 3.30				-2.30		2.30	G#210148
							-3.30		Grey, damp, silty fine to coarse SAND, some gravel.	A-2-4, SM
									3.30	WC=7.5%
5									PEAT.	
							-6.30		6.30	
									Grey, wet, fine sandy SILT, trace organics. ≅S7	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-108
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	214+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 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	-0.55		PAVEMENT.	
									0.55	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.10		2.10	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.00		3.00	
							-3.60		COBBLE.	
							-3.70		3.60	
5									BOULDER.	
									3.70	
									Bottom of Exploration at 3.70 feet below ground surface.	
									REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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: Van Buren, Maine

Boring No.: HB-VB-109
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	214+00, 9.5' 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 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	-0.55		PAVEMENT.	
									0.55	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.10		2.10	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.50		3.50	
									PEAT.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-110
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	213+00, 9.5' 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 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	-0.50		PAVEMENT.	
									0.50	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.00		2.00	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-4.20		4.20	
5									PEAT.	
							-5.50		5.50	
									Grey, wet, fine sandy SILT, trace organics. ≅S7	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-111
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	212+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

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	-0.55		PAVEMENT.	
									0.55	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-1.90		1.90	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.70		3.70	
5							-5.00		PEAT.	
									5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-112
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	211+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 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	-0.55		PAVEMENT.	
									0.55	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.00		2.00	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.50		3.50	
									PEAT.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-113
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	210+00, 8.0' Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	6.0' 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

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	-0.55		PAVEMENT.	
									0.55	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-1.90		1.90	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-4.10		4.10	
5									PEAT.	
							-5.50		5.50	
									Grey, wet, fine sandy SILT, trace organics. ≅S7	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-114
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	209+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 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	-0.55		PAVEMENT.	
									0.55	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.00		2.00	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-4.20		4.20	
5							-5.00		PEAT.	
									5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-115
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	215+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 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	-0.60		PAVEMENT.	
									0.60	
							-1.70		Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
									1.70	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.40		3.40	
									PEAT.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-116
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	216+00, 7.5' Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	6.5' 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

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	-0.65		PAVEMENT.	
									0.65	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.00		2.00	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.50		3.50	
									PEAT.	
5										
							-6.00		6.00	
									Grey, wet, fine sandy SILT, trace organics. ≅S7	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-117
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	217+00, 7.0' 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	-0.60		PAVEMENT.	
									0.60	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.00		2.00	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.50		3.50	
									PEAT.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-118
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	217+00, 9.0' Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	6.5' 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

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	-0.55		PAVEMENT.	
									0.55	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.00		2.00	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.50		3.50	
									PEAT.	
5							-5.50		5.50	
									Grey, wet, fine sandy SILT, trace organics. ≅S7	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-119
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	216+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

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	-0.60		PAVEMENT.	
									0.60	
									Brown, damp, fine to coarse SAND, some gravel, some silt. ≅S4	
							-2.00		2.00	
									Grey, damp, silty fine to coarse SAND, some gravel. ≅S9	
							-3.60		3.60	
									PEAT.	
5							-5.00		5.00	
									Bottom of Exploration at 5.00 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-120
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	215+00, 9.0' Lt.	**Casing ID/OD:**	N/A	**Water Level*:**	6.5' 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

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	S10		0.60 - 1.80			SSA	-0.60		PAVEMENT. 0.60	G#210149 A-1-b, GM WC=2.7%
	S11		1.80 - 4.00				-1.80		Brown, damp, gravelly fine to coarse SAND, some silt. 1.80	G#210150 A-2-4, SM WC=5.4%
									Grey-brown, damp, silty fine to coarse SAND, some gravel.	
							-4.00		4.00	G#210151
5	S12		4.00 - 5.50						PEAT.	A-4, ML WC=97.2%
	S13		5.50 - 10.00				-5.50		5.50	G#210152
									Grey, wet, silty fine SAND, trace organics.	A-4, ML WC=35.7%
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface. NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-121
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	229+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 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	-0.55		PAVEMENT. 0.55	
									Brown, dry, 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										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-122
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	10/2/07-10/2/07	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	241+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 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	S14		0.55 - 3.50			SSA	-0.55		PAVEMENT.	
									0.55 — Brown, damp, gravelly fine to coarse SAND, some silt.	G#210153 A-2-4, SM WC=5.9%
	S15		3.50 - 5.00				-3.50		3.50 — Brown, moist, silty fine to coarse SAND, some gravel, (Till).	G#210154 A-4, ML WC=12.4%
5							-5.00		5.00 — **Bottom of Exploration at 5.00 feet below ground surface.** NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-201
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	7/24/08-7/24/08	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	208+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	-0.50		PAVEMENT.	
									0.50 — Brown, damp, gravelly fine to coarse SAND, little silt.	
							-3.00		3.00 — Grey, moist, fine to medium SAND, some silt, some gravel, (Till).	
5							-5.80		5.80	
							-6.30		Organic SILT.	
									6.30 — Grey, wet, SILT, trace fine sand.	
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 CL of Roadway.

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: Van Buren, Maine

Boring No.: HB-VB-202
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**		**Auger ID/OD:**	5" Dia.
Operator:	E. Giguere	**Datum:**	NAVD 88	**Sampler:**	Off Flights
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	7/24/08-7/24/08	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	218+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

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	-0.50		PAVEMENT.	
									0.50	
									Brown, damp, gravelly fine to coarse SAND, little silt.	
							-3.10		3.10	
5									Grey, damp, fine to medium SAND, some silt, trace gravel, (Till).	
							-5.50		5.50	
									Bottom of Exploration at 5.50 feet below ground surface.	
									NO REFUSAL	
10										
15										
20										
25										
30										

Remarks:

Offsets are from Existing CL of Roadway.

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: Van Buren, Maine

Boring No.: HB-VB-301
PIN: 12668.00

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:	9/9/09-9/9/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	204+50, 11.8 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

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		0.35 - 1.90			SSA	-0.35		PAVEMENT.	
									0.35	
	S2		1.90 - 7.60						Brown, moist, gravelly, fine to coarse SAND, some silt.	
							-1.90		1.90	
									Light brown, wet, silty, fine SAND.	
5										
	S3		7.60 - 10.00				-7.60		7.60	
									Grey, wet, fine to medium SAND, some silt.	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-302
PIN: 12668.00

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:	9/9/09-9/9/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	204+79, 10.7 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, moist, gravelly, fine to coarse SAND, some silt. ≅S1	
							-2.40		2.40	
									Light brown, wet, silty, fine SAND. ≅S2	
5										
							-7.20		7.20	
									Grey, moist, fine to medium SAND, some silt. ≅S3	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-303
PIN: 12668.00

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:	9/9/09-9/9/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	205+00, 10.7 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, moist, gravelly, fine to coarse SAND, some silt. ≅S1	
							-2.00		2.00	
							-2.30		Cobble and Gravel layer.	
									2.30	
									Light brown, wet, silty, fine SAND. ≅S2	
5										
							-7.50		7.50	
									Grey, very wet, fine to medium SAND, some silt. ≅S3	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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: Van Buren, Maine

Boring No.: HB-VB-304
PIN: 12668.00

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:	9/9/09-9/9/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	205+30, 10.1 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, moist, gravelly, fine to coarse SAND, some silt. ≅S1	
							-2.00		2.00	
							-2.30		Cobble and Gravel layer.	
									2.30	
									Light brown, wet, silty, fine SAND. ≅S2	
5										
							-7.50		7.50	
									Grey, wet, fine to medium SAND, some silt, trace organics. ≅S3	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-305
PIN: 12668.00

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:	9/9/09-9/9/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	205+50, 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

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	-0.35		PAVEMENT.	
									0.35	
									Brown, moist, gravelly, fine to coarse SAND, some silt. ≅S1	
							-2.00		2.00	
	S4		2.30 - 5.00				-2.30		Cobble and Gravel layer.	
									2.30	
									Grey, moist, fine sandy SILT.	
5							-5.00		5.00	
	S5		5.00 - 6.50						Dark brown, wet, organic SILT, trace roots.	
							-6.50		6.50	
									Grey, very wet, fine to medium SAND, some silt. ≅S3	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-306
PIN: 12668.00

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:	9/9/09-9/9/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	206+00, 10.0 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	-0.35		PAVEMENT.	
									0.35 — Brown, moist, gravelly, fine to coarse SAND, some silt. ≅S1	
							-2.60		2.60	
							-3.00		Cobble and Gravel layer.	
									3.00 — Grey, moist, fine sandy SILT. ≅S4	
5	S6		5.50 - 6.70				-5.50		5.50 — PEAT.	
							-6.70		6.70 — Grey, wet, fine to medium SAND, some silt. ≅S3	
10							-10.00		10.00 — **Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-307
PIN: 12668.00

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:	9/9/09-9/9/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	206+45, 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 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, moist, gravelly, fine to coarse SAND, some silt. ≅S1	
							-2.30		2.30	
							-2.60		Cobble and Gravel layer.	
									2.60	
									Grey, moist, fine sandy SILT. ≅S4	
5										
							-6.50		6.50	
									Grey, wet, fine to medium SAND, some silt. ≅S3	
10							-10.00		10.00	
									Bottom of Exploration at 10.00 feet below ground surface.	
									NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HB-VB-308
PIN: 12668.00

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:	9/9/09-9/9/09	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	207+23, 7.6 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 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 — Grey, moist, fine sandy SILT. ≅S4	
5							-6.50		6.50 — Grey, very wet, fine to medium SAND, some silt. ≅S3	
10							-10.00		10.00 — **Bottom of Exploration at 10.00 feet below ground surface.** NO REFUSAL	
15										
20										
25										
30										

Remarks:

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

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

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: Route 1
Location: Van Buren, Maine

Boring No.: HA-101
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**	456.0	**Auger ID/OD:**	3" Dia.
Operator:	C. Giles	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	B. Wilder	**Rig Type:**	N/A	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	8/21/09-8/21/09	**Drilling Method:**	Hand Auger	**Core Barrel:**	N/A
Boring Location:	212+24.3, 30.8 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

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	S1		0.30 - 3.80			HA	455.70		TOPSOIL, Sod and Roots.	G#246360
									0.30	A-1-a, SW
									PEAT.	WC=439.8%
										Ignition (T267)
	S2		3.80 - 4.40							Loss=81.1%
							452.20		3.80	H2O=494.8%
							451.60		Grey, wet, fine sandy-SILT, trace rock.	G#246362
5									4.40	A-4, ML
									Bottom of Exploration at 4.40 feet below ground surface.	WC=41.8%
10										
15										
20										
25										
30										

Remarks:

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: Van Buren, Maine

Boring No.: HA-102
PIN: 12668.00

Driller:	MaineDOT	**Elevation (ft.)**	456.0	**Auger ID/OD:**	3" Dia.
Operator:	C. Giles	**Datum:**	NAVD 88	**Sampler:**	N/A
Logged By:	B. Wilder	**Rig Type:**	N/A	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	8/21/09-8/21/09	**Drilling Method:**	Hand Auger	**Core Barrel:**	N/A
Boring Location:	209+94.2, 32.6 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 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	S3		0.30 - 2.70			HA	455.70		TOPSOIL, Sod and Roots.	G#246361 A-1-a, GP WC=530.9% Ignition (T267) Loss=77.6% H2O=500.1%
									0.30 PEAT.	
							453.30		2.70 Grey, wet, fine sandy-SILT, trace rock. ≅S2	
							452.00		4.00 **Bottom of Exploration at 4.00 feet below ground surface.**	
5										
10										
15										
20										
25										
30										

Remarks:

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

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