Maine Department of Transportation
Highway Program

GEOTECHNICAL ENGINEERING REPORT FOR THE RECONSTRUCTION of ROUTE 109 in WELLS, MAINE

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York County PIN 7998.10, 7998.20 Soils Report 2010-117
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1.0 INTRODUCTION

This report presents the results of the geotechnical investigations for the proposed reconstruction/rehabilitation of 7.37 km [4.58 mi] of State Route 109 in the Town of Wells.

PIN # 7998.10 begins 0.24 km [0.15 miles] north of Wells Maine Turnpike Exit #19 (RLM 1.70) and extends northerly 3.93 km [2.44 mi] to 0.08 km [0.05 mi] north of Meetinghouse Road (RLM 4.14). PIN # 7998.20 begins 1.08 km [0.05 mi] north of Meetinghouse Road (RLM 4.14) and extends northerly 3.44 km [2.14 mi] (RLM 6.28). This remainder of this report combines both PIN numbers and considered the two projects as one project, and considers the highway only and does not include any geotechnical investigations for any of the bridges that exist within the project limits.

The scope of work for this project is to reconstruct and rehabilitate the existing roadway to improve safety, ride quality, and drainage. This work will include full reconstruction and leaving the existing core of Route 109 and widening the existing shoulder. The new vertical and horizontal alignment will closely follow the existing alignments. There are also major improvements to the surface drainage where stormwater will be collected in full depth ditches or a closed drainage system where ditches are not feasible. Drainage of the pavement structure will be accomplished by daylighting of the base/subbase to ditches or by using underdrain pipe where daylighting is not possible. Subsurface drainage (lowering the groundwater table) will also be accomplished by ditching or underdrain pipe.

2.0 PROJECT BACKGROUND

This roadway is on the National Highway System (NHS) as is classified as a principal arterial. The a current AADT (2009) is 9500 vehicles from the start of the project to the intersection with Route 9A, 8770 vehicles (2009) from Route 9A north to Meetinghouse Road, and 8010 vehicles (2009) from Meetinghouse Road north to the end of the project. The AADT for the projected 20-year performance period (2029) is 12380, 11400, and 10410 vehicles respectively, with 9% being classified as heavy trucks. The mixed traffic converts to equivalent 18-kip single axel loads (at $P_{2.5}$) values of 435, 329, and 329 respectively. The ESAL's for the 20-year performance period calculate to 3,175,500, 2,401,700, and 2,401,700 respectively.

The existing roadway structure consists of 3.75 m [12'] travel lanes and 1.0 m [3'] unpaved shoulders. Inspections were done in the summer of 2002, and in February of 2003 to evaluate the existing pavement structure for frost related problems, pavement damage due to vehicle loading, and drainage problems.

During the summer of 2002, there was evidence of minor to severe pavement distress including cracking at the centerline joint, transverse (thermal) cracking, subsidence of the right edge of both of the travel lanes, alligator cracking, and block cracking. The roadway had a Maintenance Surface Treatment (sand mix) in 2007, so many of the distresses previously observed are no longer visible. MST's do not correct deficiencies but function to improve ride quality until the roadway is rehabilitated or reconstructed.

Frost problems were evident throughout the entire length of the project in 2003 and every winter since that time. The ride quality in the winter and early spring months is extremely rough with many substantial frost heaves occurring at cross-pipe locations and possibly at shallow bedrock locations. The general rough ride appears to be from tenting at crack locations. This tenting can be caused by the accumulation of water infiltrating into the cracks in the asphalt and freezing. The shoulders along most of the length of the project are heaved approximately 100 mm [4"] above the travel lanes in the winter months, and are very soft during the spring thaw.

Drainage ditches are shallow or non-existent for the length of the project. There are several locations where wetlands/cattails are immediately adjacent to the roadway. Wetland vegetation in drainage ditches typically indicates low soil permeability as well as poor flow/drainage conditions. After a substantial rain event, water tends to stand in any ditching.

A significant amount of bedrock outcrops can be seen along the roadside. These outcrops are located from the start of the project to the intersection with Rte. 9, and from Sawyer Road to just north of Meetinghouse Road.

3.0 AS-BUILT INFORMATION

As-built plans from the 1930's indicate that the original roadway was constructed with 3.0 m [10'] travel lanes and 1.0 m [3'] shoulders. The travel way structure consisted of 450 mm [18"] of gravel base and 75 mm [3"] of macadam for a wearing surface. A typical drawing showing a 300 mm [12"] stone base layer below the gravel base is shown on the plans, however the areas where this may have been placed are not shown on the as-built plan sheets/profiles. The pavement has been overlayed with hot mix asphalt (HMA) since the original construction, with the most recent overlays being placed in 1986 and 2007.

The shoulder pavement structure was constructed with 150 mm [6"] of gravel and 75 mm [3"] of gravel surface course. This type of construction creates a "bathtub" like pavement structure that traps water within the pavement if surrounding soils have a lower permeability that that of the pavement base materials.

The as-built plans show that a significant amount of bedrock, primarily on the southern end of the project. Bedrock was excavated at many locations for the original roadway construction. Bedrock excavation lines are shown on the profile drawings, but there is no evidence if these elevations are based on actual subsurface investigations or on interpolations. There are also several areas where substantial amounts of fill were placed to bring the existing ground to the design profile grade. As-built plans are located in Appendix XXX of this report.

4.0 GEOLOGIC INFORMATION

The source of geologic information for this report includes the Maine Geological Surficial Geology map for the North Berwick Quadrangle and the Soil Conservation Survey (SCS) for York County. These maps are located in Appendix A of this report.

The Surficial Geology map indicates that the predominant subgrade types along this project consist of a marine deposits (*Pm, Pmdi, Pmdo, Pmdi,Pmrs*), glacial till (*Pt*), and bedrock. Information on this map represents the surficial soils to a depth of approximately 1.5 m to 3.0 m [5' to 10'] below the ground surface.

Marine deposits *(Pm, Pmdi, Pmdo, Pmdi,Pmrs*) primarily consist of sand, silt, and clay size particles, and were either deposited or reworked in a marine water environment. Marine Deposits are anticipated at Stations 20+850 to 22+000, 22+400 to 23+100, and 26+930 to 27+330.

Glacial Till *(Pt)* deposits consist of a heterogeneous mixture of sand, silt, clay and various sizes of stones (cobbles to boulders). Till is deposited directly by glacial ice and usually overlies bedrock, but may overlie sand and gravel. Glacial till is anticipated at Stations 23+100 to 26+930 and 27+330 to 28+139.

Surficial Geology maps indicate that bedrock is shallow and exposed at many locations, but is primarily concentrated at the eastern end of the project. According to the surficial Geology map for this area, shallow bedrock is anticipated at Stations 20+865 to 21+500, and 23+100 to 25+200, and 27+400 to 28+000.

The SSC maps indicate that there are six soil units on this project. These soil units are: Adams (AdB, AdC), Brayton and Westbury (BsB), Colton (CoB, CoC), Hermon (HmB), Lyman (LnB, LyE), Naumburg (Na), and Raynham (Ra). Table 1 lists the soil classifications and features associated with each unit. Table 2 lists the Soil Conservation Survey soils units and the approximate locations of where they are anticipated to underlie Route 109.

Table 1: Summary of SCS Soil Classifications and Features for Rt. 109, Wells

SCS Soil Unit Symbol	AASHTO Classification	USCS Classification	Depth to Bedrock	Depth to H2O	Frost Potential
AdB, AdC	A-1, A-2, A-3, A-4	SM, SP-SM, SW-SM, SP	> 1.5 m [60"]	>1.8 m [6']	low
BsB	A-1, A-2, A-4	SM, GM, ML	> 1.5 m [60"]	0 – 0.46 m [0 -1.5']	high
CoB, CoC	A-1, A-2, A-3	SM, SP, GM, GP	> 1.5 m [60"]	>1.8 m [6']	low
CrB	A-1, A-2, A-3	SM, SP-SM, SW-SM	> 1.5 m [60"]	0.46 m – 0.60 m [1.5' – 2.0']	moderate
HmB	A-1, A-2, A-4	SM, SP-SM, GP-GM, GM	> 1.5 m [60"]	>1.8 m [6']	low
LnB, LyE	A-2, A-4	SM, ML, GM	0.25 m – 0.50 m [10" – 20"]	>1.8 m [6']	moderate
Na	A-1, A-2, A-3, A-4	SM, SP-SM, SW-SM	> 1.5 m [60"]	0 – 0.46 m [0 -1.5']	moderate
Ra	A-4	ML	> 1.5 m [60"]	0.15 m – 0.60 m [0.5 – 2.0']	high

Table 2: Approximate SCS Soil Unit Locations

SCS Soil Unit Symbol	Design Station
CoC, CoB	20+850 to 22+220
HmB, BsB	22+220 to 23+100
LnB, LyE, Ra	23+100 to 24+700
CrB, Na	24+700 to 26+700
AdB	26+700 to 27+500
CrB, Na	27+500 to 28+075

5.0 SUBSURFACE CONDITIONS and EVALUATION

The subsurface investigations program consisted of 47 borings: 32 in the roadway, 15 in the shoulder, and 5 test pits. Hot mix asphalt (HMA) cores were collected at 4 locations. Fifty soil samples were collected and tested in the MaineDOT laboratory in Bangor. A Falling Weight Deflectometer (FWD) analysis was performed in the right hand wheelpath of the eastbound lane. No information was collected in side roads. All boring logs and pavement core information are located in Appendix B in this report, lab test data is located in Appendix C, and boring location plans are located in Appendix E.

The existing asphalt pavement and subbase depth, subgrade type, existing groundwater levels, and the resilient modulus for pavement design are determined from the field information. Boring locations, offsets, explorations depths, and the above information is summarized in a spreadsheet titled *Geotechnical Investigations Summary* and is also included in Appendix xx.

5.1 ROADWAY and SHOULDER BORINGS/TEST PITS

5.1.1 Surface

The existing HMA depth ranges from 90 mm (3.5") to 240 mm (9.4"). A 40 mm [1.5"] to 100 mm (4") macadam layer was found at most boring locations. There is no evidence that the macadam was ever removed, however it could have disintegrated during the drilling process at locations where it was not encountered. It should be noted that a Maintenance Surface Treatment (MST) was placed after these investigations were completed, therefore the existing HMA thicknesses are greater than what is reported at the time of the investigations.

5.1.2 Base/Subbase

The existing subbase ranges from 300 mm [12"] to 1360 mm [53"], with an average of 575 mm [23"). Laboratory results indicate that the existing subbase does not MaineDOT specifications. However, samples from test pits were collected so that a larger sample size could be tested. All test pit samples indicate that the existing subbase meets the gradation requirements of MaineDOT Standard Specification 703.06 Aggregate for Base and Subbase.

5.1.3 Subgrade

The subgrade consists predominately of sand and silt, with the proportions of each varying by location. The subgrade at several locations contains gravel size particles. Frost ratings range from 0 to IV, with 0 being non-frost susceptible and IV being highly frost

susceptible. The subgrade soils encountered in the borings is what was expected as per the information on the surficial geology and SCS maps.

Cobbles were encountered in FWD borings at stations 21+796, 22+396, 22+796, 23+196, 23+596, 23+998 and 24+405, and in boring HB-WELS-207 at station 22+500. Cobble sized particles encountered in the borings could indicate the locations of the stone base fill placed as part of the original roadway construction.

5.1.4 Shoulders

The borings indicate that there is 180 mm [7"] to 1400 mm [55"] of varying proportions of sand and silt on the existing shoulders that closely resembles the material placed as gravel base in the travel lane pavement structure. The original shoulder construction as indicated on the as-built plans was verified at most boring locations based on the subsurface information. Areas where the material is thicker than expected may be areas where fill was placed. Also, accumulation of sand on the shoulder that was placed for winter maintenance will skew the information.

5.1.5 Bedrock

Bedrock was encountered in several borings in the roadway and shoulder. Table 3 lists the locations bedrock was encountered in the subsurface investigations and the depth to refusal as measured below the existing ground surface.

Table 3: Refusal Summary from Borings

Boring No.	Station (m)	Offset (m)	Refusal Depth (bgs-m)
HB-WEL-202	20+940	2.5 L	0.91
HB-WEL-201	20+940	4.7 L	1.58
HB-WEL-204	21+180	2.5 L	0.98
HB-WEL-203	21+180	5 L	0.88
FWD 5202	22+194	4.3 L	2.35
HB-WEL-207	22+500	4.5 L	2.56
FWD 4200	23+196	2.5 L	2.35
FWD 4200A	23+196	4.4 L	1.71
HB-WEL-210	23+700	2.4 L	0.94
HB-WEL-209	23+700	4.3 L	0.82
FWD 3400	24+000	2.7 L	1.16
FWD 3000	24+405	2.4 L	0.98
FWD 3000A	24+405	4.5 L	1.04
FWD 2800	24+605	2.5 L	5.4
FWD 2200	25+216	2.7 L	0.79
HB-WEL-213	25+560	4.4 L	1.4

The highway design plans also illustrate where exposed bedrock exists as recorded during the survey. Locations as shown on the plans are Stations 20+920 to 20+960, 21+060 to 21+070, 21+145 to 21+220, 22+005, 24+230 to 24+250, 24+390 to 24+405

As-built plans located in Appendix E illustrate where bedrock was removed as part of the original construction project. Current design stations have been interpolated on to the as-

built plans for the reader's use, but may not be accurate due to landmark changes and slight shifts in the horizontal alignment since the time of the original construction.

5.1.6 Organic Soils

No organic soils were encountered in the investigations. The SCS map indicates that there are wet areas adjacent to the roadway. These wet areas are probably due to water perched over shallow bedrock.

5.1.6 Groundwater

Shallow groundwater was encountered at several roadway and shoulder boring locations. Table 4: Groundwater Data summarizes groundwater locations and depths below the ground surface at the time the investigations were completed. The groundwater table fluctuates seasonally and with yearly precipitation totals, therefore the actual groundwater levels at the time of construction may be different as stated in Table 4 and in this report.

Table 4: Groundwater Data

Boring No.	Station	Offset from Existing CL (ft)	Depth (bgs) to H2O (ft)
HB-WEL-207	22+500	4.5 L	1.22
HB-WEL-208	22+500	2.2 L	1.37
FWD 4600	22+796	2.7 L	2.14
FWD 3800	23+596	2.5 L	1.80
FWD 3402	23+998	2.7 L	1.60
FWD 2400	25+005	2.7 L	1.95
HB-WEL-215	26+500	3.8 L	1.98
FWD 601	26+814	2.8 L	2.00
FWD 100SB	27+315	2.4 L	2.53
HB-WEL-217	27+340	4.6 L	2.59

5.2 FWD ANALYSIS

Falling Weight Deflectometer (FWD) testing was completed by the MDOT field services crew. Existing HMA and base gravel depths were also collected immediately following the FWD field work. The FWD deflection and existing pavement structure information was processed and analyzed to determine pavement properties and to backcalculate the subgrade resilient modulus needed for the pavement design. The complete FWD analysis is located in Appendix D of this report

Through the FWD analysis and subsurface investigation information on past projects, MaineDOT has determined there is a correlation between the backcalculated resilient modulus values and certain soil properties and types. The resilient modulus values can indicate locations where the subgrade soils may be weak or wet (< 20,000 kPa [2900 psi]), may consist of stone base (40,000 to 55,000 kPa [5800 to 7975 psi]), or where shallow bedrock (>55,000 kPa [7975 psi]) may present. Values between 50,000 and 55,000 kPa [7250 and7975 psi] can indicate the presence of deeper bedrock or stone base. Shallow bedrock is defined as bedrock located within 3.05 meters [10'] below the ground surface. The higher the modulus value, the closer the bedrock is to the surface.

The following tables list areas where stone base and shallow bedrock may be present based on the resilient modulus values from the FWD data only. No resilient modulus values less than 20,000 kPa [2900 psi] were encountered. FWD information collected for this project can be viewed in Appendix D at the end of this report.

Table 5: Possible Stone Base Locations from FWD Analysis

Design Station	Mr Value (kPa)
21+796	42,082
21+896	43,699
22+396	53,310
22+696	41,541
22+796	42,773
22+996	45,197
23+096	45,162
23+396	47,135
23+596	45,822
23+796	50,813
23+896	52,703
23+996	43,931
24+096	48,129
25+196	50,958
25+796	51,610
26+096	46,648
26+196	47,391
26+296	54,693
26+396	51,928
26+496	49,840
26+596	53,741
26+796	40,907
27+197	40,709

Table 6: Possible Shallow Bedrock Locations from FWD Analysis

Design Station	Mr Value (kPa)
24+296	61,107
24+396	95,441
24+596	66,351
24+896	55,448
25+096	59,082
25+296	61,719
25+896	79,813

6.0 DESIGN CONSIDERATIONS

Geotechnical design considerations for this proposed alignment include pavement structure depth as it pertains to frost penetration, recycling options, the resilient modulus input value for the pavement design, subsurface drainage in relation to pavement performance, and the effects of frost action on the pavement structure.

6.1 PAVEMENT STRUCTURE

6.1.1 Frost Penetration Estimates

The Design Freezing Index for this location is 1200. Total frost penetration for a snow-free pavement is 63" [1.6 m] for a granular base and granular subgrade. The estimated frost penetration beneath a 760 mm [30"] pavement structure with a granular base and a fine-grained subgrade is 43" [1.1 m]. A 760 mm [30"] total structure thickness (including existing and new material) is recommended to limit the effects of frost action on the pavement. Frost penetration estimating sheets are located in Appendix D in this report.

6.1.2 Pavement Design Considerations

Due to the severity of the distresses in the HMA layer, removal of all existing HMA and macadam is recommended. The existing HMA and macadam can be used as a recycled layer, such as Plant Mixed Recycled Asphalt Pavement (PMRAP), in the new pavement structure.

Since the proposed design will leave the existing core of the roadway and add new material for the widened shoulders, a 760 mm [30”] pavement section is recommended for the widened areas to ensure the existing core will drain properly.

Since there are only slight modifications proposed for the vertical alignment, the subgrade resilient modulus values as backcalculated from the FWD field analysis are applicable for the pavement structure design for this project. The 75th percentile of all the backcalculated values and as per Chapter 13 of the Highway Design Guide is 34,610 kPa [5020 psi]. 75th percentile calculations are located in Appendix D in this report.

6.2 HIGHWAY SUBSURFACE DRAINAGE

Highway drainage improvements including provisions to remove both surface and subsurface water are recommended for the entire project length. Long term pavement performance is highly dependent on removal of water from the pavement section. Water can enter the pavement structure through cracks in the surface, from adjacent unpaved areas, from groundwater fluctuations, and by capillary action. Water can be removed by either daylighting the pavement base/subbase aggregate to roadside ditches or by collecting water in an underdrain system. In areas with exceptionally high groundwater table elevations, underdrain can be used to lower the groundwater level in conjunction with ditches to remove surface stormwater.

6.3 FROST

If the new subgrade will be constructed on bedrock, it is anticipated that a differential frost heave will develop at the soil/bedrock interface with the existing subgrade soil types. To reduce frost heave development, granular transition zones as shown in the Special Details section (Appendix 2F) in Chapter 2 of the MaineDOT Highway Design Guide are recommended at these locations. This detail is located in Appendix D. Due to the location of underground utilities, fracture blasting of the bedrock at subgrade is not recommended.

7.0 HIGHWAY CONSTRUCTION CONSIDERATIONS

Construction of the widened areas, ditches and underdrain system should be completed prior to the removal of the existing HMA and macadam layer. Because no drainage provisions exist now, the roadway could become unstable when construction traffic loads are applied due to water being trapped under the existing HMA/macadam layer. Allowing the existing subbase and subgrade time to drain will significantly increase these soils strength and stability.

No weak subgrade soil areas were identified along this alignment. If weak subgrade sections are encountered during construction, the subgrade can be undercut 0.30 mm (12″) and replaced with gravel borrow (Item # 203.26), and/or a non-woven reinforcement geotextile (Item #620.54) can be placed on the subgrade surface.

Cobbles that were placed as stone fill may be encountered in the proposed subgrade at any location along the alignment. From the FWD analysis, the most probable locations are in the area of Stations 21+796, 22+396, 22+500, 22+796, 23+196, 23+596, 23+998 and 24+405. Large cobbles should be removed and replaced with gravel borrow to establish the proposed subgrade elevation.

Bedrock excavation will be needed to achieve highway subgrade elevations, drainage ditch construction, or closed-system drainage construction at various locations (as mentioned in Section 5.1.5 on this project. Bedrock is considered hard and will most probably require blasting for removal. Blasting work should be done in accordance with MaineDOT Standard and Supplemental Specifications.

8.0 CLOSURE

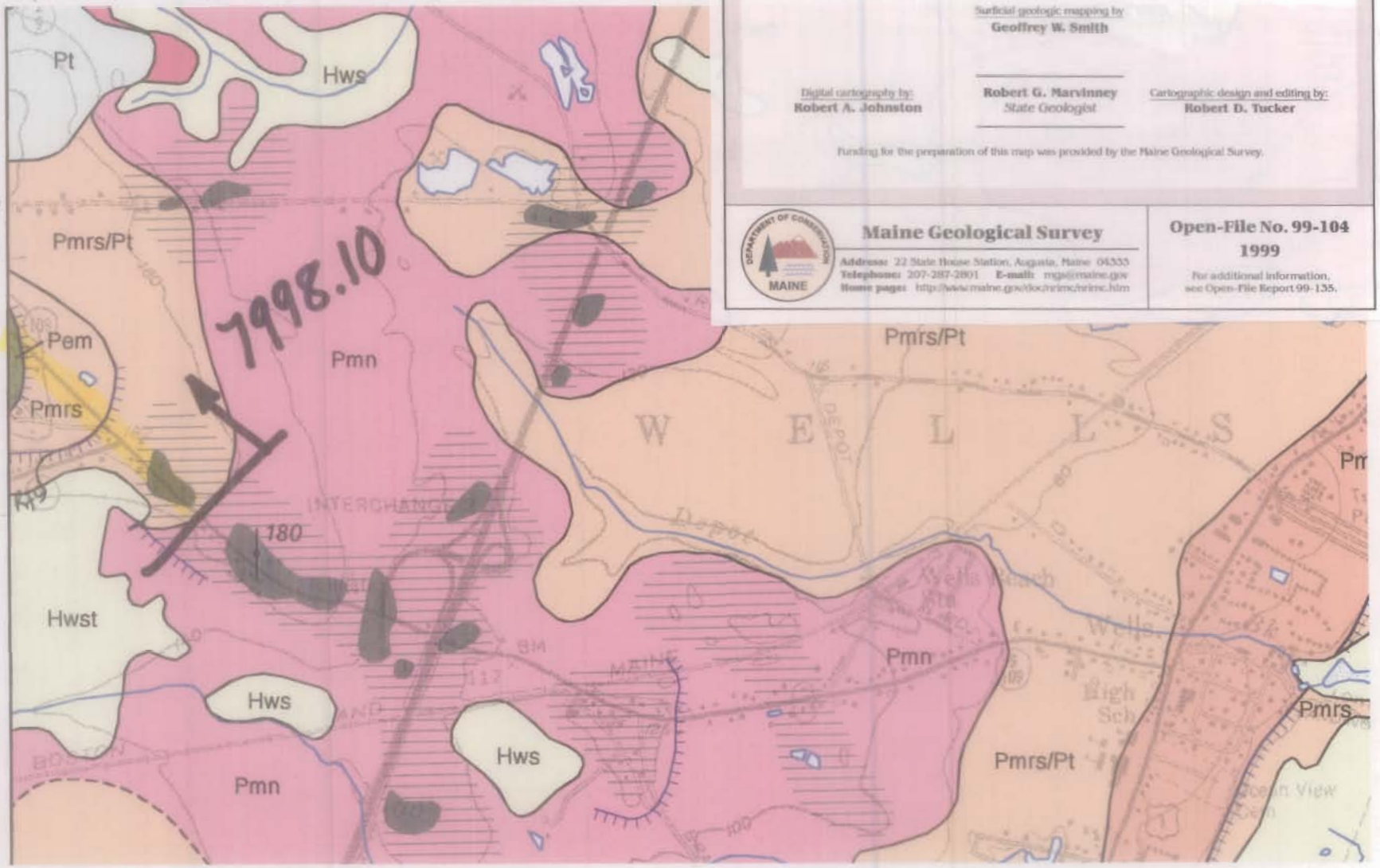
This report has been prepared for the use of the MaineDOT Highway Program solely for the Wells, Route 109 project and in accordance with generally accepted soil and foundation engineering practices.

The analysis and recommendations in this report are based on limited soil explorations at discreet locations along the proposed alignment. If the soil/subsurface conditions vary at the time of construction from what was encountered during the investigations, it may be necessary to re-evaluate the recommendations made in this report. If any changes in the nature, design, or location of the project occur, this report should be reviewed by a geotechnical engineer to assess the conclusions and recommendations in this report to be sure they are still valid.

Appendix A: General Information

- Surficial Geology Map and Key
- Soil Conservation Survey and Key

P/N 7998.10



Wells Quadrangle, Maine

Surficial geologic mapping by
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Digital cartography by:
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State Geologist

Cartographic design and editing by:
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Funding for the preparation of this map was provided by the Maine Geological Survey.

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For additional information, see Open-File Report 99-135.

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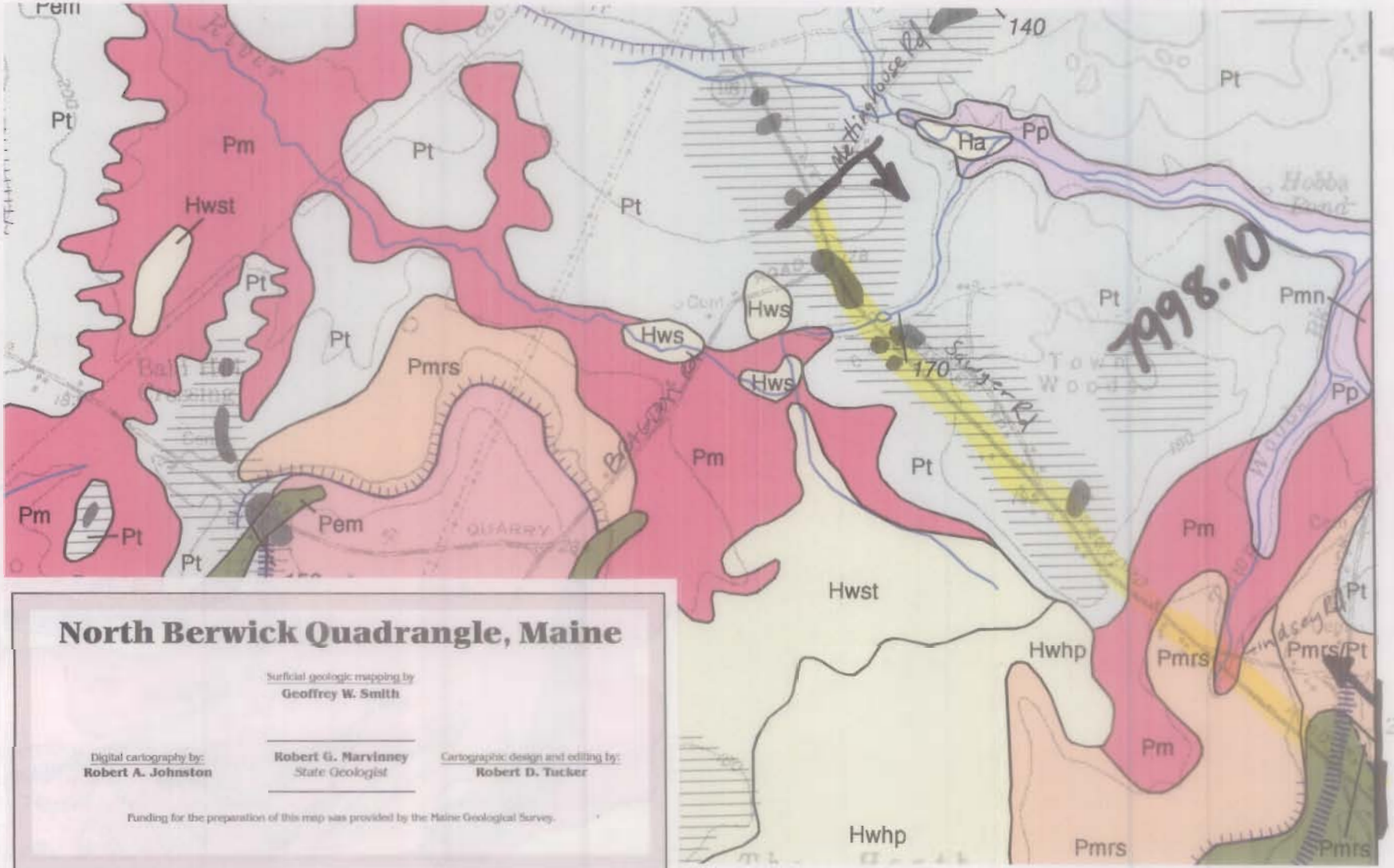

North Berwick Quadrangle, Maine

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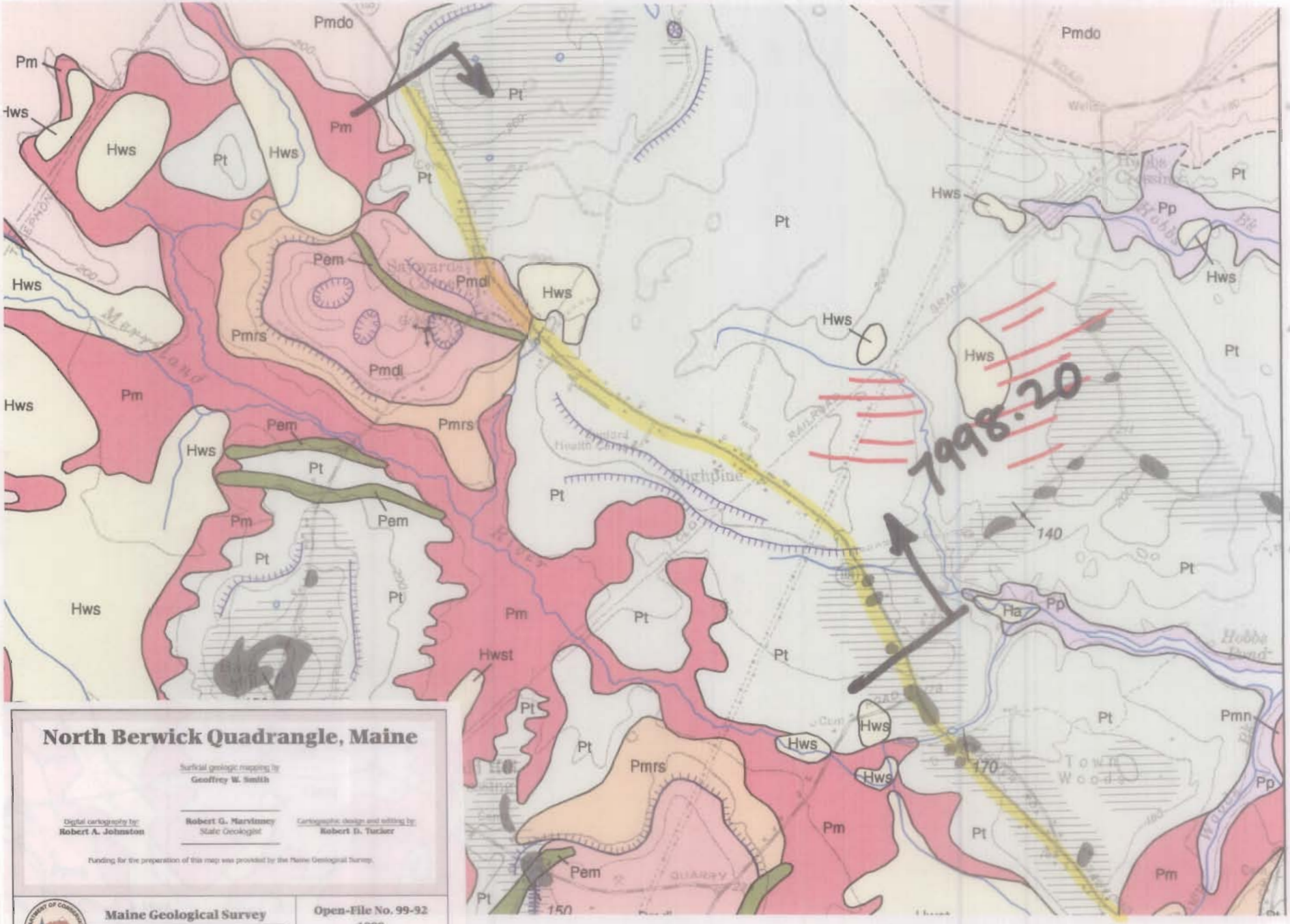

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WELLS QUADRANGLE

Ha — **Stream alluvium** - Gray to brown fine sand and silt with some gravel. Comprises flood plains along present streams and rivers. Extent of alluvium approximates areas of potential flooding.

He — **Eolian deposits** - Sand dunes resulting from wind erosion of modern beach sediments.

Hws — **Wetland, swamp*** - Muck, peat, silt, and sand. Poorly drained areas, often with standing water.

Hwsm — **Wetland, saltmarsh** - Muck, peat, silt, and sand. Coastal settings subject to tidal fluctuation.

Hms — **Marine shoreline deposit, beach** - Sand, some gravel, and minor silt. Coastal settings of active beach construction.

Pm — **Marine deposits (undifferentiated)** - Pp and/or Pmrs deposits mapped in areas of poor access or poor exposure, or where both units occur as areas too small to be mapped separately. Thickness variable within range described for Pp and Pmrs.

Pmn — **Marine nearshore deposits** - Areas of till that have been reworked by the sea during regressive phase of marine submergence. Till has had finer constituents (silt and sand) removed and redeposited as thin veneer over till. Bedrock commonly at shallow depth. Average thickness probably less than 3 m. Locally, this unit may include marine clay and sand, as well as isolated boulders.

Pmrs — **Marine regressive sand deposits** - Massive to stratified and cross-stratified, well sorted brown to gray-brown sand. Generally with gradational basal contact to Pp. Thickness between 1 and 5 m. Deposited during regressive phase of marine submergence.

Pp — **Presumpscot Formation** - Massive to laminated gray and blue-gray (weathering brown) silt and silty clay. Locally may contain boulders, sand, and gravel. Occurs as blanket deposit over bedrock and older glacial sediments. Variable thickness from less than 1 m to more than 50 m. Deposited during period of late-glacial marine submergence.

Pms — **Marine shoreline deposit** - Predominantly sand with minor gravel. Beach deposits formed during period of stillstand in regressive phase of marine submergence. Thickness generally less than 3 m in beach ridges.

Pmd — **Marine delta** - Coarse sand and gravel grading to sand and silt. Flat to gently sloping constructional surface formed by glacial streams discharging into late glacial sea. Distal deltaic sediments (Pmdo) commonly grade into glacial-marine sediments (Pp, Pmrs).

Pem — **End moraine** - Coarse gravel and sand, some till and silt. Generally occurs within glacial-marine sediments (Pp, Pmrs) and is complexly interstratified with them. Formed at or near the ice front during retreat of marine-based glacier. Sediments commonly display significant deformation. Typically 5 to 10 m thick.

Pt — **Till** - Gray to gray brown poorly sorted mixture of silt, sand, pebbles, cobbles, and boulders. Forms a blanket deposit over bedrock and is inferred to underlie younger sediments where not exposed at surface. Thin over topographic highs; thickens in topographic lows. May occur in and over end moraines (Pem). Averages 3 to 5 m in thickness.

Bedrock - Rock units not distinguished. Individual outcrops not shown in large areas of poor access. Ruled pattern indicates areas where surficial materials are thin (less than 1 to 2 m) and bedrock exposures are common. Areas of bedrock exposure (gray areas) are mapped in part from aerial photographs.

af — **Artificial fill** - Man-made landfill.

Contact - Boundary between map units (dashed where approximate).

End moraine - Ridge of sand and gravel or till deposited at margin of glacier. May be largely buried by younger sediments.

135 — **Azimuth of glacial striation.**

Scarp - Symbol indicates scarps formed by stream erosion, or by marine erosion during period of higher sea level. Ticks are on downslope side of scarp line.

Area of many large boulders.

10,150+450 — **Marine fossil locality.**

*NOTE: Wetland symbols followed by "t" indicate areas where peat deposits probably do not constitute a significant commercial resource, either because they are thin (< 1.5 m), or they have an ash content greater than 25 percent. Symbols followed by "p" indicate peat deposits that are thicker (generally > 1.5 m), with ash content less than 25 percent, and thus may be suitable for commercial applications.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Smith, G. W., 1999, Surficial geology of the Wells 7.5-minute quadrangle, York County, Maine: Maine Geological Survey, Open-File Report 99-135, 8 p.
2. Smith, G. W., 1998, Surficial materials of the Wells quadrangle, Maine: Maine Geological Survey, Open-File Map 98-164.
3. Neil, C. D., 1998, Significant sand and gravel aquifers of the Wells quadrangle, Maine: Maine Geological Survey, Open-File Map 98-130.
4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.
6. Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, *in* Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.

NORTH BERWICK QUADRANGLE

Ha — **Stream alluvium** - Gray to brown fine sand and silt with some gravel. Comprises flood plains along present streams and rivers. Extent of alluvium approximates areas of potential flooding.

Hwfm — **Freshwater marsh*** - Poorly drained freshwater grassland.

Hwh — **Wetland, heath*** - Mosses, grasses and sedges are the dominant vegetation found here. Peat thickness varies considerably. Standing water is common.

Hws — **Wetland, swamp*** - Muck, peat, silt, and sand. Poorly drained areas, often with standing water.

Pm — **Marine deposits (undifferentiated)** - Pp and/or Pmrs deposits mapped in areas of poor access or poor exposure, or where both units occur as areas too small to be mapped separately. Thickness variable within range described for Pp and Pmrs.

Pmn — **Marine nearshore deposits** - Areas of till that have been reworked by the sea during regressive phase of marine submergence. Till has had finer constituents (silt and sand) removed and redeposited as thin veneer over till. Bedrock commonly at shallow depth. Average thickness probably less than 3 m. Locally, this unit may include marine clay and sand, as well as isolated boulders.

Pmrs — **Marine regressive sand deposits** - Massive to stratified and cross-stratified, well sorted brown to gray-brown sand. Generally with gradational basal contact to Pp. Thickness between 1 and 5 m. Deposited during regressive phase of marine submergence.

Pp — **Presumpscot Formation** - Massive to laminated gray and blue-gray (weathering brown) silt and silty clay. Locally may contain boulders, sand, and gravel. Occurs as blanket deposit over bedrock and older glacial sediments. Variable thickness from less than 1 m to more than 50 m. Deposited during period of late-glacial marine submergence.

Pmd, Pmdl, Pmdo — **Marine delta** - Coarse sand and gravel grading to sand and silt. Flat to gently sloping constructional surface formed by glacial streams discharging into late glacial sea. Heads of deltas are commonly kettled (Pmdt) and mark ice frontal positions. Sediments in distal portions of deltas (Pmdo) commonly grade into glacial marine sediments (Pp, Pmrs). Variable thickness from more than 30 m at delta head to less than 1 m at delta toe.

Pgi — **Ice-contact deposits (undifferentiated)** - Coarse gravel and sand in areas not mapped as deltas or Pge. Primarily kettled glacial stream deposits in the immediate vicinity of eskers (Pge). Average thickness probably between 10 and 15 m.

Pge — **Esker** - Coarse gravel and sand comprising distinct linear ridge forms, mostly in major valleys. Generally surrounded by Pgi deposits and terminating in ice-contact deltas (Pmdi). May be more than 10 m thick.

Pem — **End moraine** - Coarse gravel and sand, some till and silt. Generally occur with glacial marine sediments (Pp, Pmrs) and are complexly interstratified with them. Formed at or near the ice front during retreat of marine-based glacier. Sediments commonly display significant deformation. Commonly 5 to 10 m thick.

Pt — **Till** - Gray to gray-brown poorly sorted mixture of silt, sand, pebbles, cobbles, and boulders. Forms a blanket deposit over bedrock, and is inferred to underlie younger sediments where not exposed at surface. Thin over topographic highs; thickens in topographic lows. May occur in and over end moraines (Pem, Pemc). Averages 3 to 5 m in thickness.

Bedrock - Rock units not distinguished. Individual outcrops not shown in large areas of poor access. Ruled pattern indicates areas where surficial materials are thin (less than 1 to 2 m) and bedrock exposures are common. Areas of bedrock exposure (gray areas) are mapped in part from aerial photographs.

Contact - boundary between map units (dashed where approximate).

End moraine - ridge of sand and gravel or till deposited at margin of glacier. May be largely buried by younger sediments.

Scarp - symbol indicates scarps formed by stream erosion, or by marine erosion during period of higher sea level, as well as constructional scarps on delta margins. Ticks are on downslope side of scarp line.

Kettlehole

Meltwater channel

Glacially streamlined hill (drumlin)

Ice-margin position - Line shows approximate position of the glacier margin during ice retreat, based on positions of meltwater channels and/or morainal deposits.

135 — **Azimuth of glacial striation**

▲350 — **Glacial marine delta** - Number is surveyed elevation (in feet) of late-glacial sea level indicated by contact between delta topset and foreset beds (from Thompson and others, 1989, and W. Thompson / C. Koteff unpublished data).

Azimuth of current gista in glacial fluvial deposits

*NOTE: Wetland symbols followed by "t" indicate areas where peat deposits probably do not constitute a significant commercial resource, either because they are thin (< 1.5 m), or they have an ash content greater than 25 percent. Symbols followed by "p" indicate peat deposits that are thicker (generally > 1.5 m), with ash content less than 25 percent, and thus may be suitable for commercial applications.

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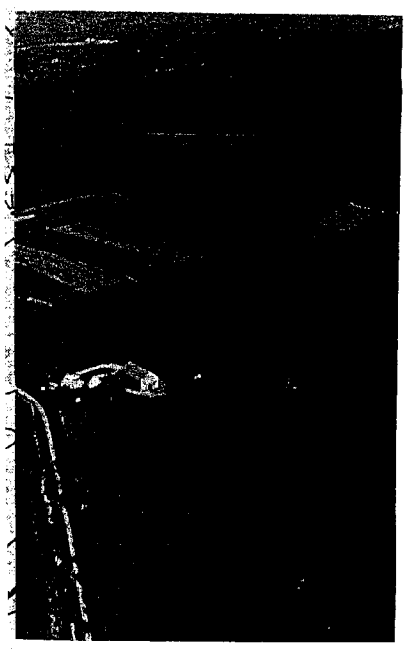
2. Smith, G. W., 1998, Surficial materials of the North Berwick quadrangle, Maine: Maine Geological Survey, Open-File Map 98-163.
3. Neil, C. D., 1998, Significant sand and gravel aquifers of the North Berwick quadrangle, Maine: Maine Geological Survey, Open-File Map 98-129.
4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.
6. Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, *in* Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.

SOIL SURVEY OF

York County Maine

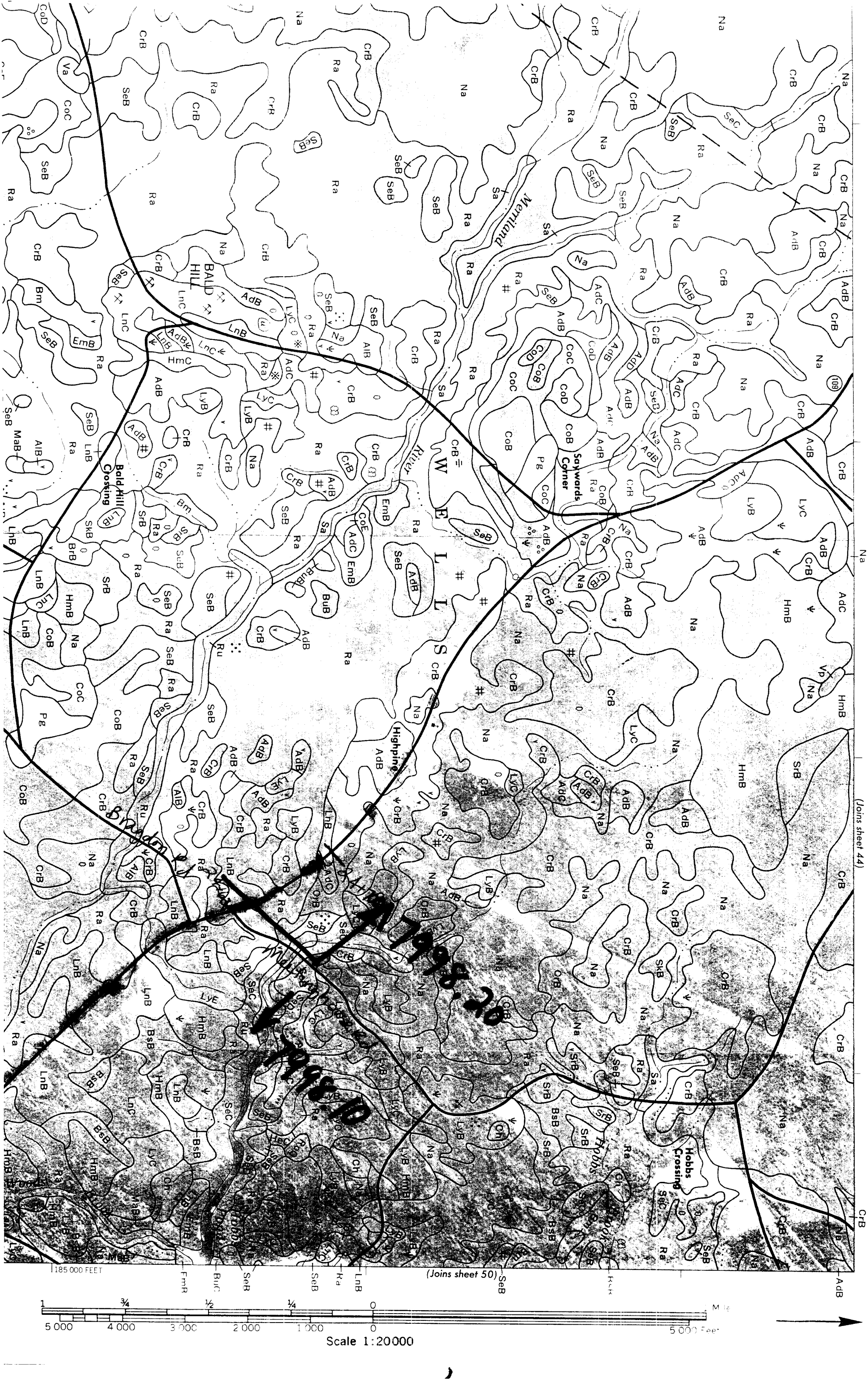
SOIL SURVEY OF



York County Maine

United States Department of Agriculture, Soil Conservation Service
in cooperation with the Maine Agricultural Experiment Station
and the Maine Soil and Water Conservation Commission

Soil Name	Depth to Bedrock
BsB	5 ft (+)
CoB	5 ft (+)
Coc	5 ft (+)
HmB	5 ft (+)
LnB	10" to 40"
LyE	10" to 40"
Ra	5 ft (+)


Bald Hill
Bald Hill Crossing
Saywards Corner
Merriland
Highpine
Hobbs Crossing
Hobbs
WELLS
River
Bridgwater
Na
Ra
CrB
SeB
LnB
LnC
AdB
AdC
CoB
CoC
CoD
LyB
LyC
HmB
HmC
BsB
SrB
Sa
Ch
(Joins sheet 44)
(Joins sheet 50)
185 000 FEET
5 000
4 000
3 000
2 000
1 000
0
Scale 1:20000
N

SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is usually a small letter but is a capital letter if the unit is broadly defined. The third letter, A, B, C, D, or E is the slope class. Most symbols without a letter for slope class are for nearly level soils but four are for units containing miscellaneous areas. The number 2 shows that the soil is eroded.

SYMBOL	NAME
AdB	Adams loamy sand, 0 to 8 percent slopes
AdC	Adams loamy sand, 8 to 15 percent slopes
AdD	Adams loamy sand, 15 to 40 percent slopes
AgB	Adams-Urban land complex, 0 to 8 percent slopes
AlB	Allagash very fine sandy loam, 3 to 8 percent slopes
AlC	Allagash very fine sandy loam, 8 to 15 percent slopes
Ba	Beaches
BcB	Becket fine sandy loam, 3 to 8 percent slopes
BcC	Becket fine sandy loam, 8 to 15 percent slopes
BcD	Becket fine sandy loam, 15 to 25 percent slopes
BeB	Becket very stony fine sandy loam, 3 to 8 percent slopes
BeC	Becket very stony fine sandy loam, 8 to 15 percent slopes
BeD	Becket very stony fine sandy loam, 15 to 25 percent slopes
Bm	Biddeford mucky peat
BrB	Brayton and Westbury fine sandy loams, 0 to 8 percent slopes
[illegible]	Brayton and Westbury very stony fine sandy loams, 0 to 8 percent slopes
BuB	Buxton silt loam, 3 to 8 percent slopes
BuC	Buxton silt loam, 8 to 15 percent slopes
BuD	Buxton silt loam, 15 to 25 percent slopes
Ch	Chocorua peat
[illegible]	Colton gravelly loamy coarse sand, 0 to 8 percent slopes
[illegible]	Colton gravelly loamy coarse sand, 8 to 15 percent slopes
CoD	Colton gravelly loamy coarse sand, 15 to 25 percent slopes
CoE	Colton gravelly loamy coarse sand, 25 to 45 percent slopes
CrB	Croghan loamy sand, 0 to 8 percent slopes
CuB	Crogham-Urban land complex, 0 to 8 percent slopes
Dm	Dumps
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes
EmC	Elmwood fine sandy loam, 8 to 15 percent slopes
HeB	Hermon fine sandy loam, 3 to 8 percent slopes
HeC	Hermon fine sandy loam, 8 to 15 percent slopes
HeD	Hermon fine sandy loam, 15 to 25 percent slopes
[illegible]	Hermon very stony fine sandy loam, 3 to 8 percent slopes
HmC	Hermon very stony fine sandy loam, 8 to 15 percent slopes
HmD	Hermon very stony fine sandy loam, 15 to 25 percent slopes
HnC	Hermon extremely stony fine sandy loam, 3 to 15 percent slopes
HnE	Hermon extremely stony fine sandy loam, 15 to 60 percent slopes
[illegible]	Lyman fine sandy loam, 3 to 8 percent slopes
LnC	Lyman fine sandy loam, 8 to 15 percent slopes
LnD	Lyman fine sandy loam, 15 to 25 percent slopes
LyB	Lyman-Rock outcrop complex, 3 to 8 percent slopes
LyC	Lyman-Rock outcrop complex, 8 to 15 percent slopes
[illegible]	Lyman-Rock outcrop complex, 15 to 80 percent slopes
MaB	Madawaska fine sandy loam, 0 to 8 percent slopes
MrB	Marlow fine sandy loam, 3 to 8 percent slopes
MrC2	Marlow fine sandy loam, 8 to 15 percent slopes, eroded
MrD2	Marlow fine sandy loam, 15 to 25 percent slopes, eroded
MvB	Marlow very stony fine sandy loam, 3 to 8 percent slopes
MvC	Marlow very stony fine sandy loam, 8 to 15 percent slopes
MvD	Marlow very stony fine sandy loam, 15 to 25 percent slopes
Na	Naumburg sand
On	Ondawa fine sandy loam
PeB	Peru fine sandy loam, 0 to 8 percent slopes
Pg	Pits, gravel
Po	Podunk and Winooski soils
[illegible]	Raynham silt loam
RoC	Rock outcrop-Lyman complex, 8 to 15 percent slopes
RoE	Rock outcrop-Lyman complex, 15 to 80 percent slopes
Ru	Rumney loam
Sa	Saco mucky silt loam
Sc	Scantic silt loam
SeB	Scio silt loam, 3 to 8 percent slopes
SeC	Scio silt loam, 8 to 15 percent slopes
SeD	Scio silt loam, 15 to 25 percent slopes
Sg	Sebago peat
SkB	Skerry fine sandy loam, 0 to 8 percent slopes
SkC	Skerry fine sandy loam, 8 to 15 percent slopes
SrB	Skerry very stony fine sandy loam, 0 to 8 percent slopes
SrC	Skerry very stony fine sandy loam, 8 to 15 percent slopes
SU	Sulfihemists, frequently flooded
UD	Udipsamments-Dune land complex
Ur	Urban land
UsA	Urban land-Scantic complex, 0 to 3 percent slopes
Va	Vassalboro peat
Vp	Vassalboro peat, ponded
Wa	Waskish peat

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oil field, cemetery, or flood pool (Davis Airstrip; FLOOD POOL LINE)

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEMS & DESIGNATIONS

- Interstate (79)
- Federal (410)
- State (52)
- County, farm or ranch (378)

RAILROAD

ABANDONED

POWER TRANSMISSION LINE (normally not shown)

PIPELINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small (water)

PITS

[illegible]

- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) (Indian Mound)
- Located object (label) (Tower)
- Tank (label) (WATER)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) (CANAL)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial (water)
- Intermittent (int)

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well irrigation

[illegible]

SPECIAL SYMBOLS FOR SOIL SURVEY

(CeA, FoB2)

SOIL DELINEATIONS AND SYMBOLS

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown)

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak

[illegible] (includes sandstone and shale)

- Saline spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot
- Glacial till spot

TABLE 14.--ENGINEERING INDEX PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BeB, BeC, BeD------ Becket	0-2	Very stony fine sandy loam.	SM	A-2, A-4	10-20	85-95	80-90	55-75	30-50	---	---
	2-23	Fine sandy loam, sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	70-90	60-85	50-75	25-40	---	---
	23-60	Gravelly loamy sand, gravelly loamy fine sand, gravelly sandy loam.	SM, SP-SM, GM, GP-GM	A-2	5-15	60-85	55-75	25-70	10-30	---	---
Bm-----------------	14-0	Mucky peat------	Pt	A-8	---	---	---	---	---	---	---
Biddeford	0-5	Silt loam, silty clay loam, silty clay.	ML, MH, OL	A-4, A-6, A-7	0	100	100	90-100	85-100	30-62	5-25
	5-36	Silty clay, silty clay loam, clay.	CL, CL-ML MH, ML	A-6, A-7 A-4, A-5	0	100	100	95-100	90-100	25-54	5-20
	36-60	Silty clay loam, silty clay, clay.	CL, CL-ML MH, ML	A-6, A-4	0	100	100	95-100	90-100	25-40	5-15
BrB*: Brayton-----------	0-5	Fine sandy loam	SM, ML, OL	A-1, A-2, A-4	0-15	80-90	75-90	45-90	20-80	<15	NP-4
	5-11	Gravelly fine sandy loam, gravelly sandy loam, silt loam.	GM, ML, SM	A-2, A-4, A-1	0-15	55-95	50-90	30-90	15-80	<15	NP-4
	11-60	Gravelly fine sandy loam, very gravelly sandy loam, loam.	GM, SM, GM-GC, ML	A-2, A-4, A-1	0-15	45-75	40-90	25-85	10-70	<15	NP-4
Westbury----------	0-4	Fine sandy loam	SM, OL, ML	A-2, A-4, A-1	0-5	80-95	75-90	45-75	20-60	<15	NP-4
	4-23	Gravelly loam, silt loam, gravelly sandy loam.	SM, GM, ML	A-2, A-4, A-1	0-5	55-95	50-90	30-90	15-80	<15	NP-4
	23-36	Gravelly sandy loam, very gravelly fine sandy loam, loam.	SM, GM, GW-GM, ML	A-1, A-2, A-4	0-5	40-90	35-85	20-80	10-65	<15	NP-4
	36-60	Gravelly sandy loam, very gravelly fine sandy loam, loam.	GM, GW-GM, SM, ML	A-1, A-2, A-4	0-5	40-90	35-85	20-80	10-65	<15	NP-4
BsB*: Brayton-----------	0-5	Very stony fine sandy loam.	GM, SM, ML, OL	A-4, A-1, A-2	5-20	55-80	50-75	30-75	15-70	<15	NP-4
	5-11	Gravelly fine sandy loam, gravelly sandy loam, silt loam.	GM, ML, SM	A-2, A-4, A-1	0-15	55-95	50-90	30-90	15-80	<15	NP-4
	11-60	Gravelly fine sandy loam, very gravelly sandy loam, loam.	GM, SM, ML, GW-GM	A-2, A-4, A-1	0-15	45-95	40-90	25-85	10-70	<15	NP-4

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
**B*:											
Westbury----------	0-4	Very stony fine sandy loam.	SM, ML, GM	A-2, A-4, A-1	5-10	55-80	50-75	30-75	15-70	<15	NP-4
	4-23	Gravelly loam, silt loam, gravelly sandy loam.	SM, GM, ML	A-2, A-4, A-1	0-5	55-95	50-90	30-90	15-80	<15	NP-4
	23-36	Gravelly sandy loam, very gravelly fine sandy loam, loam.	SM, GM, GW-GM, ML	A-1, A-2, A-4	0-5	40-90	35-85	20-80	10-65	<15	NP-4
	36-60	Gravelly sandy loam, very gravelly fine sandy loam, loam.	GM, GW-GM, SM, ML	A-1, A-2, A-4	0-5	40-90	35-85	20-80	10-65	<15	NP-4
BuB, BuC, BuD------ Buxton	0-7	Silt loam-------	ML, MH	A-4, A-6, A-7, A-5	0	98-100	95-100	95-100	85-100	36-55	5-20
	7-19	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6, A-7, A-5	0	98-100	95-100	95-100	85-100	25-55	5-20
	19-60	Silty clay, silty clay loam, clay.	CL, CL-ML ML	A-6, A-4	0	98-100	95-100	95-100	90-100	25-40	5-15
Ch----------	0-32	Peat----------	Pt	A-8	0	---	---	---	---	---	---
Chocorua	32-60	Gravelly sand, loamy sand, loamy fine sand.	SP, SM	A-1, A-3	0	100	60-100	30-80	0-30	---	NP
CoB, CoC, CoD, CoE- Colton	0-10	Gravelly loamy coarse sand.	SM, SP, GW, GM	A-1, A-2, A-3	5-20	30-80	25-75	25-60	2-25	---	NP
	10-18	Gravelly loamy sand, very gravelly sand, cobbly sand.	SM, GM, SP, GP	A-1, A-2, A-3	5-20	30-80	25-75	20-50	2-20	---	NP
	18-60	Very gravelly sand, very cobbly sand.	GP, SP, GW, SW	A-1	10-45	20-55	15-50	10-30	0-5	---	NP
CrB---------- Croghan	0-7	Loamy sand------	SM, SP-SM, SW-SM	A-1, A-3, A-4, A-2	0	95-100	95-100	45-80	5-40	---	NP
	7-28	Sand, loamy sand, loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2, A-3, A-4	0	90-100	85-100	45-80	5-40	---	NP
	28-60	Sand, loamy sand	SM, SP-SM, SW-SM	A-1, A-2, A-3	0	90-100	85-100	45-75	5-30	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CuB*:											
Croghan----------	0-7	Loamy sand------	SM, SP-SM, SW-SM	A-1, A-3, A-4, A-2	0	95-100	95-100	45-80	5-40	---	NP
	7-28	Sand, loamy sand, loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2, A-3, A-4	0	90-100	85-100	45-80	5-40	---	NP
	28-60	Sand, loamy sand	SM, SP-SM, SW-SM	A-1, A-2, A-3	0	90-100	85-100	45-75	5-30	---	NP
Urban land.											
Dm*.											
Dumps											
EmB, EmC----------	0-14	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	55-85	30-55	<30	NP
Elmwood	14-20	Sandy loam, fine sandy loam, silt loam.	SM, ML	A-2, A-4	0	100	95-100	55-95	30-75	<30	NP
	20-60	Silty clay loam, clay loam, clay.	CL, CH	A-7, A-6	0	100	100	90-100	90-100	35-55	15-30
HeB, HeC, HeD------	0-6	Fine sandy loam	SM	A-2, A-4	0-5	85-95	75-90	55-80	25-45	<40	NP-10
Hermon	6-19	Gravelly coarse sandy loam, gravelly fine sandy loam, very gravelly sandy loam.	SM	A-1, A-2 A-4	20-35	70-90	50-75	30-60	15-40	<40	NP-10
	19-60	Gravelly loamy coarse sand, very gravelly loamy sand.	SP-SM, SM GP-GM GM	A-1, A-2 A-3	20-40	45-80	40-70	20-55	5-25	---	NP
HmB, HmC, HmD------	0-4	Very stony fine sandy loam.	SM	A-1, A-2 A-4	5-35	70-95	50-90	30-80	15-45	<40	NP-10
Hermon	4-19	Gravelly coarse sandy loam, gravelly fine sandy loam, very gravelly sandy loam.	SM	A-1, A-2 A-4	20-35	70-90	50-75	30-60	15-40	<40	NP-10
	19-60	Gravelly loamy coarse sand, very gravelly loamy sand.	SP-SM, SM GP-GM, GM	A-1, A-2 A-3	20-40	45-80	40-70	20-55	5-25	---	NP
HnC, HnE----------	0-4	Extremely stony fine sandy loam.	SM	A-1, A-2 A-4	20-50	70-95	50-90	30-80	15-45	<40	NP-10
Hermon	4-19	Gravelly coarse sandy loam, gravelly fine sandy loam, very gravelly sandy loam.	SM	A-1, A-2 A-4	20-35	70-90	50-75	30-60	15-40	<40	NP-10
	19-60	Gravelly loamy coarse sand, very gravelly loamy sand.	SP-SM, SM GP-GM, GM	A-1, A-2 A-3	20-40	45-80	40-70	20-55	5-25	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. NP = nonplastic]

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AdB, AdC, AdD----- Adams	0-3	Loamy sand------	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	95-100	45-85	5-40	---	NP
	3-18	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	95-100	35-95	5-40	---	NP
	18-60	Sand, coarse sand.	SP-SM, SW-SM, SP	A-1, A-2, A-3	0-1	90-100	70-100	20-90	0-10	---	NP
AgB*: Adams-----------	0-3	Loamy sand------	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	95-100	45-85	5-40	---	NP
	3-18	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	95-100	35-95	5-40	---	NP
	18-60	Sand, coarse sand.	SP-SM, SW-SM, SP	A-1, A-2, A-3	0-1	90-100	70-100	20-90	0-10	---	NP
[illegible]n land.											
AlB, AlC----------- Allagash	0-7	Very fine sandy loam.	SM, ML	A-4, A-5	0	95-100	95-100	65-100	40-90	<44	NP-9
	7-20	Fine sandy loam, loam.	SM, ML	A-2, A-4	0	95-100	75-100	50-95	30-75	---	NP
	20-38	Fine sand, loamy fine sand, sand.	SM, SP-SM	A-2, A-1, A-3	0	85-100	75-100	35-80	5-35	---	NP
	38-60	Stratified loamy fine sand to very gravelly sand.	SP, SM, SW	A-1, A-2, A-3	0-10	70-100	25-100	10-75	0-30	---	NP
Ba*. Beaches											
BcB, BcC, BcD------ Becket	0-6	Fine sandy loam	SM	A-2, A-4	0-15	85-95	55-90	35-75	20-50	---	---
	6-23	Fine sandy loam, sandy loam, gravelly sandy loam.	SM	A-2, A-4	5-15	70-90	60-85	50-75	25-40	---	---
	23-60	Gravelly loamy sand, gravelly loamy fine sand, gravelly sandy loam.	SM, SP-SM, GM, GP-GM	A-2	5-15	60-85	55-75	25-70	10-30	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
LnB, LnC, LnD------	0-4	Fine sandy loam	SM, ML	A-2, A-4	0-15	80-95	70-90	45-85	25-70	<30	NP-6
Lyman	4-18	Loam, gravelly sandy loam, very fine sandy loam.	SM, ML, GM	A-2, A-4	0-15	65-95	60-85	45-80	25-70	<30	NP-4
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
LyB*, LyC*, LyE*:											
Lyman------------	0-4	Fine sandy loam	SM, ML	A-2, A-4	0-15	80-95	70-90	45-85	25-70	<30	NP-6
	4-18	Loam, gravelly sandy loam, very fine sandy loam.	SM, ML, GM	A-2, A-4	0-15	65-95	60-85	45-80	25-70	<30	NP-4
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
MaB----------------	0-10	Fine sandy loam	SM, ML	A-4	0	100	85-100	65-95	35-75	---	NP
Madawaska	10-23	Fine sandy loam, sandy loam.	SM, ML	A-4	0	100	85-100	65-95	35-75	---	NP
	23-60	Fine sand, sand, very fine sand.	SM, SP-SM	A-2, A-3 A-4	0	100	85-100	50-80	5-45	---	NP
MrB, MrC2, MrD2----	0-9	Fine sandy loam	CL-ML, SM, ML	A-2, A-4	0-5	80-95	70-90	55-85	30-60	<30	NP-8
Marlow	9-29	Fine sandy loam, loam, gravelly sandy loam.	ML, CL-ML, SM, ML	A-2, A-4	0-15	70-95	60-90	50-85	30-60	<30	NP-8
	29-60	Fine sandy loam, loam, gravelly sandy loam.	CL-ML, SM ML	A-2, A-4	0-15	70-90	60-85	50-80	25-55	<30	NP-8
MvB, MvC, MvD------	0-2	Very stony fine sandy loam.	CL-ML, SM ML	A-2, A-4	5-15	80-95	70-90	55-85	30-60	<30	NP-8
Marlow	2-29	Fine sandy loam, loam, gravelly sandy loam.	CL-ML, SM ML	A-2, A-4	5-15	70-95	60-90	50-85	30-60	<30	NP-8
	29-60	Fine sandy loam, loam, gravelly sandy loam.	CL-ML, SM ML	A-2, A-4	5-15	70-90	60-85	50-80	25-55	<30	NP-8
Na-----------------	0-5	Sand----------	SM, SW-SM, SP-SM	A-2, A-4	0	95-100	95-100	50-85	5-45	---	NP
Naumburg	5-28	Loamy fine sand, fine sand, sand.	SM, SW-SM, SP-SM	A-1, A-2, A-3	0	90-100	90-100	45-85	5-35	---	NP
	28-60	Sand, fine sand, loamy fine sand.	SM, SW-SM, SP-SM	A-1, A-2, A-3	0	90-100	90-100	45-80	5-35	---	NP
On-----------------	0-9	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	60-100	30-60	<40	NP
Ondawa	9-30	Fine sandy loam, sandy loam, loam.	SM. ML	A-2, A-4	0	100	95-100	80-95	20-70	<40	NP
	30-60	Loamy fine sand, fine sand, sand.	SP, SM	A-2, A-3	0	90-100	80-100	70-90	0-35	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
PeB---------- Peru	0-9	Fine sandy loam	SM, ML, CL-ML	A-2, A-4	0-10	80-95	70-90	50-85	25-60	<30	NP-8
	9-20	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	0-15	75-95	65-95	60-85	30-65	<30	NP-8
	20-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	0-15	70-90	60-90	55-85	20-60	<30	NP-8
Pg*. Pits											
Po*: Podunk----------	0-8	Silt loam-------	SM, ML	A-2, A-4	0	100	95-100	60-100	30-90	---	NP
	8-25	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	95-100	60-95	30-75	---	NP
	25-60	Loamy fine sand, loamy sand, gravelly coarse sand.	SP-SM, SM	A-2, A-1, A-3	0	65-100	55-100	35-85	5-25	---	NP
Winooski----------	0-11	Very fine sandy loam.	ML, SM	A-4	0	100	95-100	90-100	40-90	<30	NP
	11-60	Silt loam, very fine sandy loam, loamy very fine sand.	ML, SM	A-4	0	100	95-100	90-100	40-90	<30	NP
Ra---------- Raynham	0-6	Silt loam-------	ML	A-4	0	100	95-100	80-100	55-95	20-35	NP-10
	6-36	Silt loam, silt, very fine sandy loam.	ML	A-4	0	100	95-100	80-100	55-95	20-35	NP-10
	36-60	Silt loam, silt, very fine sandy loam, silty clay loam.	ML	A-4	0	100	95-100	80-100	55-95	20-35	NP-10
RoC*, RoE*: Rock outcrop.											
Lyman----------	0-2	Fine sandy loam	SM, ML	A-2, A-4	0-15	80-95	70-90	45-85	25-70	<30	NP-6
	2-18	Loam, gravelly sandy loam, very fine sandy loam.	SM, ML, GM	A-2, A-4	0-15	65-95	60-85	45-80	25-70	<30	NP-4
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ru---------- Rumney	0-9	Loam----------	ML, SM	A-4	0	100	85-100	70-100	40-85	<40	NP
	9-25	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	85-100	50-95	25-75	<40	NP
	25-60	Stratified loamy fine sand to gravelly sand.	SP-SM, SM	A-1, A-2, A-3	0	80-100	55-95	25-70	5-30	<40	NP
Sa---------- Saco	0-13	Mucky silt loam	ML, OL	A-4	0	100	100	95-100	70-95	<40	NP-10
	13-24	Silt loam, very fine sandy loam.	ML	A-4	0	100	90-100	80-100	55-95	<40	NP-10
	24-44	Silt loam, very fine sandy loam.	ML	A-4	0	100	90-100	80-100	50-95	<25	NP-5
	44-60	Coarse sand, gravelly sand.	SP, SM	A-1, A-2, A-3	0	80-100	50-85	35-70	0-15	---	NP

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
dB, AdC, AdD----	0-3	0-5	1.10-1.40	6.0-20	0.05-0.10	4.5-5.5	Low----------	0.17	5	1-4
Adams	3-18	0-5	1.25-1.55	6.0-20	0.04-0.08	4.5-5.5	Low----------	0.17		
	18-60	0-5	1.45-1.65	>20	0.03-0.04	4.5-6.0	Low----------	0.17		
gB*:										
Adams----------	0-3	0-5	1.10-1.40	6.0-20	0.05-0.10	4.5-5.5	Low----------	0.17	5	1-4
	3-18	0-5	1.25-1.55	6.0-20	0.04-0.08	4.5-5.5	Low----------	0.17		
	18-60	0-5	1.45-1.65	>20	0.03-0.04	4.5-6.0	Low----------	0.17		
Urban land.										
lB, AlC---------	0-7	3-13	0.95-1.25	2.0-6.0	0.16-0.22	4.5-6.5	Low----------	0.28	3	2-8
Allagash	7-20	2-12	1.20-1.50	2.0-6.0	0.08-0.24	4.5-6.5	Low----------	0.28		
	20-38	2-5	1.35-1.65	6.0-20	0.06-0.18	4.5-6.5	Low----------	0.28		
	38-60	1-4	1.40-1.70	6.0-20	0.01-0.10	4.5-6.5	Low----------	0.28		
a*.										
Beaches										
cB, BcC, BcD----	0-6	3-8	0.90-1.20	0.6-2.0	0.10-0.23	4.5-6.5	Low----------	0.20	3	3-7
Becket	6-23	3-8	1.20-1.50	0.6-2.0	0.05-0.16	5.1-6.5	Low----------	0.28		
	23-60	1-4	1.65-1.80	0.06-0.6	0.03-0.09	5.1-6.5	Low----------	0.17		
BeB, BeC, BeD----	0-2	3-8	0.90-1.20	0.6-2.0	0.10-0.23	4.5-6.5	Low----------	0.20	3	---
Be	2-23	3-8	1.20-1.50	0.6-2.0	0.05-0.16	5.0-6.5	Low----------	0.28		
	23-60	1-4	1.65-1.80	0.06-0.6	0.03-0.09	5.0-6.5	Low----------	0.17		
Bm----------	14-0	---	0.10-0.30	2.0-6.0	0.20-0.43	5.1-6.5	----------	----	---	---
Biddeford	0-5	20-50	0.90-1.20	0.2-0.6	0.24-0.34	5.1-7.3	Low----------	----		
	5-36	35-55	1.60-1.80	<0.2	0.13-0.23	5.6-7.8	Moderate-----	----		
	36-60	35-55	1.70-1.95	<0.2	0.06-0.16	6.1-7.8	Moderate-----	----		
BrB*:										
Brayton----------	0-5	6-12	0.90-1.20	0.6-6.0	0.10-0.20	4.5-6.5	Low----------	0.28	3	2-8
	5-11	6-12	1.40-1.70	0.6-6.0	0.08-0.17	4.5-6.5	Low----------	0.24		
	11-60	6-12	1.70-2.00	<0.2	0.01-0.05	5.6-7.3	Low----------	0.24		
Westbury--------	0-4	3-12	0.90-1.20	0.6-2.0	0.08-0.16	3.6-6.0	Low----------	0.24	3	2-8
	4-23	3-12	1.40-1.70	0.6-2.0	0.07-0.15	3.6-6.0	Low----------	0.24		
	23-36	3-12	1.70-2.00	0.06-0.2	0.02-0.06	4.5-6.0	Low----------	0.24		
	36-60	3-12	1.70-2.00	0.06-0.2	0.02-0.06	5.1-7.3	Low----------	0.24		
BsB*:										
Brayton----------	0-5	6-12	0.90-1.20	0.6-6.0	0.08-0.17	4.5-6.5	Low----------	0.24	3	---
	5-11	6-12	1.40-1.70	0.6-6.0	0.08-0.17	4.5-6.5	Low----------	0.24		
	11-60	6-12	1.70-2.00	<0.2	0.01-0.05	5.6-7.3	Low----------	0.24		
Westbury--------	0-4	3-12	0.90-1.20	0.6-2.0	0.08-0.16	3.6-6.0	Low----------	0.24	3	2-8
	4-23	3-12	1.40-1.70	0.6-2.0	0.07-0.15	3.6-6.0	Low----------	0.24		
	23-36	3-12	1.70-2.00	0.06-0.2	0.02-0.06	4.5-6.0	Low----------	0.24		
	36-60	3-12	1.70-2.00	0.06-0.2	0.02-0.06	5.1-7.3	Low----------	0.24		
BuB, BuC, BuD----	0-7	15-30	0.90-1.20	0.2-2.0	0.18-0.28	4.5-6.5	Low----------	0.28	3	4-7
Buxton	7-19	20-40	1.20-1.55	0.2-0.6	0.13-0.23	4.5-6.5	Low----------	0.49		
	19-60	35-55	1.75-1.95	<0.2	0.06-0.16	5.6-7.3	Moderate-----	0.49		
Ch----------	0-32	---	<0.30	0.6-6.0	0.20-0.25	3.6-4.5	----------	----	---	---
Chocorua	32-60	---	<0.30	>6.0	0.01-0.11	4.5-6.0	----------	----		

*See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
CoB, CoC, CoD, CoE----------	0-10	1-5	1.10-1.40	>6.0	0.03-0.07	3.6-5.0	Low----------	0.17	3	3-7
Colton	10-18	1-5	1.25-1.55	>6.0	0.02-0.05	4.5-5.5	Low----------	0.17		
	18-60	0-3	1.45-1.65	>20	0.01-0.02	4.5-6.0	Low----------	0.17		
CrB----------	0-7	0-5	1.20-1.50	6.0-20	0.05-0.09	4.5-6.0	Low----------	0.17	5	2-9
Croghan	7-28	0-5	1.20-1.50	>20	0.03-0.07	4.5-6.0	Low----------	0.17		
	28-60	0-5	1.20-1.50	>20	0.03-0.06	4.5-6.0	Low----------	0.17		
CuB*:										
Croghan---------	0-7	0-5	1.20-1.50	6.0-20	0.05-0.09	4.5-6.0	Low----------	0.17	5	---
	7-28	0-5	1.20-1.50	>20	0.03-0.07	4.5-6.0	Low----------	0.17		
	28-60	0-5	1.20-1.50	>20	0.03-0.06	4.5-6.0	Low----------	0.17		
Urban land.										
Dm*. Dumps										
EmB, EmC----------	0-14	5-10	1.00-1.30	2.0-6.0	0.13-0.20	4.5-6.0	Low----------	0.32	3	3-7
Elmwood	14-20	5-12	1.15-1.45	2.0-6.0	0.13-0.22	5.6-6.5	Low----------	0.32		
	20-60	35-55	1.50-1.80	<0.2	0.12-0.18	6.1-7.3	Moderate------	0.49		
HeB, HeC, HeD----	0-6	2-6	0.95-1.20	6.0-20	0.10-0.20	3.6-5.5	Low----------	0.17	3	3-7
Hermon	6-19	2-7	1.00-1.30	6.0-20	0.07-0.14	3.6-6.0	Low----------	0.17		
	19-60	1-4	1.50-1.80	6.0-20	0.01-0.10	5.1-6.0	Low----------	0.17		
HmB, HmC, HmD----	0-4	2-6	0.95-1.20	6.0-20	0.10-0.20	3.6-5.5	Low----------	0.17	3	---
rmon HmB	4-19	2-7	1.00-1.30	6.0-20	0.07-0.14	3.6-6.0	Low----------	0.17		
	19-60	1-4	1.50-1.80	6.0-20	0.01-0.10	5.1-6.0	Low----------	0.17		
HnC, HnE----------	0-4	2-6	0.95-1.20	6.0-20	0.08-0.18	3.6-5.5	Low----------	0.17	3	---
Hermon	4-19	2-7	1.00-1.30	6.0-20	0.07-0.14	3.6-6.0	Low----------	0.17		
	19-60	1-4	1.50-1.80	6.0-20	0.01-0.10	5.1-6.0	Low----------	0.17		
LnB, LnC, LnD----	0-4	2-10	0.90-1.20	2.0-6.0	0.11-0.20	3.6-6.0	Low----------	0.20	2	1-4
Lyman	4-18	2-10	1.20-1.40	2.0-6.0	0.07-0.16	3.6-6.0	Low----------	0.20		
	18	---	---	---	---	---	----------	----		
LyB*, LyC*, LyE*:										
Lyman----------	0-4	2-10	0.90-1.20	2.0-6.0	0.11-0.20	3.6-6.0	Low----------	0.20	2	1-4
	4-18	2-10	1.20-1.40	2.0-6.0	0.07-0.16	3.6-6.0	Low----------	0.20		
	18	---	---	---	---	---	----------	----		
Rock outcrop.										
MaB----------	0-10	3-13	0.95-1.25	2.0-6.0	0.11-0.25	4.5-6.0	Low----------	0.28	3	3-9
Madawaska	10-23	2-12	1.20-1.50	2.0-6.0	0.09-0.18	4.5-6.0	Low----------	0.28		
	23-60	0-5	1.35-1.65	6.0-20	0.02-0.08	4.5-6.0	Low----------	0.28		
MrB, MrC2, MrD2--	0-9	5-12	0.90-1.20	0.6-6.0	0.10-0.23	4.5-6.0	Low----------	0.24	3	3-8
Marlow	9-29	5-12	1.20-1.50	0.6-6.0	0.06-0.20	4.5-6.0	Low----------	0.43		
	29-60	5-12	1.70-2.00	0.06-0.6	0.05-0.12	4.5-6.0	Low----------	0.17		
MvB, MvC, MvD----	0-2	5-12	0.90-1.20	0.6-6.0	0.10-0.23	4.5-6.0	Low----------	0.24	3	---
Marlow	2-29	5-12	1.20-1.50	0.6-6.0	0.06-0.20	4.5-6.0	Low----------	0.43		
	29-60	5-12	1.70-2.00	0.06-6.0	0.05-0.12	4.5-6.0	Low----------	0.17		
Na----------	0-5	0-5	1.10-1.40	2.0-6.0	0.05-0.09	3.6-5.5	Low----------	0.17	5	2-7
Naumburg	5-28	0-5	1.25-1.55	6.0-20	0.06-0.08	3.6-5.5	Low----------	0.17		
	28-60	0-5	1.45-1.65	6.0-20	0.04-0.06	4.5-6.5	Low----------	0.17		
On----------	0-9	0-10	1.10-1.40	2.0-6.0	0.12-0.26	4.5-6.5	Low----------	----	---	3-7
Ondawa	9-30	0-10	1.20-1.50	2.0-6.0	0.12-0.22	4.5-6.5	Low----------	----		
	30-60	0-5	1.20-1.50	2.0-20	0.01-0.13	4.5-6.5	Low----------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
PeB----------	0-9	5-12	0.90-1.20	0.6-2.0	0.10-0.23	4.5-5.5	Low----------	0.24	3	3-8
Peru	9-20	5-12	1.20-1.50	0.6-2.0	0.06-0.20	4.5-6.0	Low----------	0.43		
	20-60	5-12	1.70-2.00	0.06-0.6	0.05-0.12	4.5-6.0	Low----------	0.17		
Pg*.										
Pits										
Po*:										
Podunk----------	0-8	0-10	1.10-1.40	0.6-6.0	0.11-0.24	4.5-6.5	Low----------	----	---	3-9
	8-18	0-10	1.20-1.50	2.0-6.0	0.09-0.18	4.5-6.5	Low----------	----		
	18-25	0-5	1.20-1.50	2.0-20	0.01-0.13	4.5-6.5	Low----------	----		
Winooski--------	0-11	1-10	1.10-1.40	0.6-6.0	0.15-0.30	4.5-7.3	Low----------	0.49	3	3-9
	11-60	1-10	1.20-1.50	0.6-6.0	0.13-0.26	4.5-7.3	Low----------	0.49		
Ra----------	0-6	2-15	1.10-1.40	0.6-2.0	0.20-0.25	5.1-7.3	Low----------	0.49	3	3-9
Raynham	6-36	2-15	1.20-1.50	0.2-2.0	0.18-0.22	5.1-7.3	Low----------	0.64		
	36-60	5-30	1.30-1.60	0.06-0.2	0.18-0.22	5.6-7.8	Low----------	0.64		
RoC*, RoE*:										
Rock outcrop.										
Lyman----------	0-2	2-10	0.90-1.20	2.0-6.0	0.11-0.20	3.6-6.0	Low----------	0.20	2	---
	2-18	2-10	1.20-1.40	2.0-6.0	0.07-0.16	3.6-6.0	Low----------	0.20		
	18	---	---	---	---	---	----------	----		
Ru----------	0-9	0-10	1.10-1.40	2.0-6.0	0.15-0.27	4.5-6.5	Low----------	----	---	4-9
Rumney	9-25	0-10	1.20-1.50	2.0-6.0	0.11-0.19	4.5-6.5	Low----------	----		
	25-60	0-5	1.20-1.50	>6.0	0.01-0.13	4.5-6.5	Low----------	----		
Sa----------	0-13	1-10	<0.90	0.6-2.0	0.20-0.30	5.1-6.5	Low----------	----	---	---
Saco	13-24	1-10	1.00-1.30	0.6-2.0	0.15-0.26	5.1-6.5	Low----------	0.64		
	24-44	1-10	1.20-1.50	0.6-2.0	0.10-0.26	5.6-7.3	Low----------	0.64		
	44-60	0-5	1.20-1.50	>6.0	0.01-0.13	5.6-7.3	Low----------	0.17		
Sc----------	0-14	10-40	1.05-1.22	0.2-2.0	0.24-0.34	5.1-7.3	Low----------	0.28	3	4-7
Scantic	14-36	20-60	1.15-1.75	<0.2	0.13-0.23	5.1-7.3	Moderate-----	0.49		
	36-60	35-60	1.50-1.75	<0.2	0.06-0.16	5.6-7.3	Moderate-----	0.49		
SeB, SeC, SeD----	0-7	2-15	1.20-1.50	0.6-2.0	0.18-0.21	4.5-6.0	Low----------	0.49	3	2-8
Scio	7-26	2-15	1.20-1.50	0.6-2.0	0.17-0.20	4.5-6.0	Low----------	0.64		
	26-60	0-5	1.45-1.65	2.0-20.0	0.02-0.19	5.1-7.8	Low----------	0.17		
Sg----------	0-66	---	0.10-0.30	2.0-6.0	0.20-0.40	3.5-4.5	----------	----	---	---
Sebago										
SkB, SkC----------	0-5	3-8	0.90-1.20	0.6-2.0	0.10-0.23	4.5-6.0	Low----------	0.24	3	3-7
Skerry	5-33	3-8	1.20-1.50	0.6-2.0	0.06-0.16	4.5-6.0	Low----------	0.28		
	33-60	1-4	1.65-1.80	0.06-0.6	0.03-0.09	4.5-6.0	Low----------	0.17		
SrB, SrC----------	0-2	3-8	0.90-1.20	0.6-2.0	0.10-0.23	4.5-6.0	Low----------	0.24	3	---
Skerry	2-33	3-8	1.20-1.50	0.6-2.0	0.06-0.16	4.5-6.0	Low----------	0.28		
	33-60	1-4	1.65-1.80	0.06-0.6	0.03-0.09	4.5-6.0	Low----------	0.17		
SU*.										
Sulfihemists										
UD*:										
Udipsamments.										
Dune land.										
Ur*.										
Urban land										
UsA*:										
Pan land.										

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth		Uncoated steel	Concrete
					Ft			In			
AdB, AdC, AdD----- Adams	A	None--------	---	---	>6.0	---	---	>60	Low---------	Low------	High.
AgB*: Adams----------	A	None--------	---	---	>6.0	---	---	>60	Low---------	Low------	High.
Urban land.											
AlB, AlC---------- Allagash	B	None--------	---	---	>6.0	---	---	>60	Low---------	Low------	High.
Ba*. Beaches											
BcB, BcC, BcD----- Becket	C	None--------	---	---	2.0-3.0	Perched	Nov-Mar	>60	Moderate----	Low------	Moderate.
BeB, BeC, BeD----- Becket	C	None--------	---	---	2.0-3.0	Perched	Nov-Mar	>60	Moderate----	Low------	Moderate.
Bm---------- Biddeford	D	None--------	---	---	+1-0.5	Perched	Nov-Aug	>60	High--------	High-----	Moderate.
BrB*: Brayton----------	C	None--------	---	---	0.0-1.5	Perched	Nov-May	>60	High--------	High-----	Moderate.
Westbury---------	C	None--------	---	---	0.5-1.5	Perched	Nov-May	>60	High--------	Moderate	High.
BsB*: Brayton----------	C	None--------	---	---	0.0-1.5	Perched	Nov-May	>60	High--------	High-----	Moderate.
Westbury---------	C	None--------	---	---	0.5-1.5	Perched	Nov-May	>60	High--------	Moderate	High.
BuB, BuC, BuD----- Buxton	C	None--------	---	---	1.0-3.0	Perched	Nov-May	>60	High--------	High-----	Moderate.
Ch---------- Chocorua	D	Common------	Very long	Nov-May	0-0.5	Apparent	Jan-Dec	>60	High--------	Moderate	High.
CoB, CoC, CoD, CoE---------- Colton	A	None--------	---	---	>6.0	---	---	>60	Low---------	Low------	High.
CrB---------- Croghan	B	None--------	---	---	1.5-2.0	Apparent	Nov-May	>60	Moderate----	Low------	High.
CuB*: Croghan----------	B	None--------	---	---	1.5-2.0	Apparent	Nov-May	>60	Moderate----	Low------	High.
Urban land.											

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock	Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth		Uncoated steel	Concrete
					Ft			In			
Dm*. Dumps											
EmB, EmC---------- Elmwood	C	None--------	---	---	1.0-3.0	Perched	Nov-May	>60	High--------	Moderate	Moderate.
HeB, HeC, HeD, HmB, HmC, HmD, HnC, HnE--------- Hermon	A	None--------	---	---	>6.0	---	---	>60	Low---------	Low------	High.
LnB, LnC, LnD----- Lyman	C	None--------	---	---	>6.0	---	---	10-20	Moderate----	Low------	High.
LyB*, LyC*, LyE*: Lyman----------	C	None--------	---	---	>6.0	---	---	10-20	Moderate----	Low------	High.
Rock outcrop.											
MaB---------- Madawaska	B	None--------	---	---	1.0-3.0	Apparent	Nov-May	>60	Moderate----	Moderate	High.
MrB, MrC2, MrD2, MvB, MvC, MvD---- Marlow	C	None--------	---	---	2.0-3.0	Perched	Nov-Mar	>60	Moderate----	Low------	Moderate.
Na---------- Naumburg	C	None--------	---	---	0-1.5	Apparent	Nov-May	>60	Moderate----	High-----	High.
On---------- Ondawa	B	Common------	Brief-----	Nov-Apr	3.0-6.0	Apparent	Nov-May	>60	Moderate----	Low------	Moderate.
PeB---------- Peru	C	None--------	---	---	1.5-3 0	Perched	Nov-Mar	>60	High--------	Moderate	Moderate.
Pg*. Pits											
Po*: Podunk----------	B	Occasional	Brief-----	Oct-Apr	1.5-3.0	Apparent	Oct-Apr	>60	Moderate----	Moderate	Moderate.
Winooski---------	B	Occasional	Brief-----	Nov-May	1.0-3.0	Apparent	Oct-Apr	>60	High--------	Moderate	Moderate.
Ra---------- Raynham	C	None--------	---	---	0.5-2.0	Apparent	Nov-Jun	>60	High--------	High-----	Moderate.
RoC*, RoE*: Rock outcrop.											
Lyman----------	C	None--------	---	---	>6.0	---	---	10-20	Moderate----	Low------	High.
Ru---------- Rumney	C	Frequent----	Brief-----	Nov-May	0-1.5	Apparent	Nov-Jun	>60	High--------	High-----	High.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BsB*: Brayton	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, large stones.	Moderate: wetness.
Westbury	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Moderate: wetness, large stones.
BuB Buxton	Severe: too clayey, wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: frost action, low strength.	Moderate: wetness.
BuC Buxton	Severe: too clayey, wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: slope, wetness.	Severe: frost action, low strength.	Moderate: slope, wetness.
BuD Buxton	Severe: slope, too clayey, wetness.	Severe: slope, wetness, frost action.	Severe: wetness, slope.	Severe: slope, wetness.	Severe: slope, frost action, low strength.	Severe: slope.
Ch Chocorua	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, floods.
CoB Colton	Severe: small stones.	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones, droughty.
CoC Colton	Severe: small stones.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, slope.
CoD, CoE Colton	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CrB Croghan	Severe: wetness, cutbanks cave.	Moderate: wetness, frost action.	Severe: wetness.	Moderate: slope, wetness, frost action.	Moderate: frost action.	Severe: too sandy.
CuB*: Croghan	Severe: wetness, cutbanks cave.	Moderate: wetness, frost action.	Severe: wetness.	Moderate: slope, wetness, frost action.	Moderate: frost action.	Severe: too sandy.
Urban land.						
Dm*. Dumps						
EmB Elmwood	Severe: wetness, too clayey.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action, low strength.	Slight.
EmC Elmwood	Severe: wetness, too clayey.	Severe: frost action.	Severe: wetness.	Severe: slope, frost action.	Severe: frost action, low strength.	Moderate: slope.
HeB Hermon	Moderate: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
HeC Hermon	Moderate: slope, cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HeD---------- Hermon	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HmB---------- Hermon	Moderate: large stones, cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones, slope.	Slight---------	Moderate: large stones.
HmC---------- Hermon	Moderate: large stones, slope.	Moderate: large stones, slope.	Moderate: large stones, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, large stones.
HmD---------- Hermon	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HnC---------- Hermon	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Moderate: slope, large stones.	Severe: large stones.
HnE---------- Hermon	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.
LnB---------- Lyman	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
LnC---------- Lyman	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
L---------- Lyman	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
LyB*: Lyman----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop.						
LyC*: Lyman----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop.						
LyE*: Lyman----------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Rock outcrop.						
MaB---------- Madawaska	Severe: wetness, cutbanks cave.	Moderate: wetness, frost action.	Severe: wetness.	Moderate: slope, wetness, frost action.	Moderate: frost action.	Slight.
MrB---------- Marlow	Moderate: wetness.	Moderate: frost action.	Moderate: wetness.	Moderate: frost action, slope.	Moderate: frost action.	Slight.
MrC2---------- Marlow	Moderate: wetness, slope.	Moderate: frost action, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: frost action, slope.	Moderate: slope.
M---------- low	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MvB---------- Marlow	Moderate: large stones, wetness.	Moderate: frost action.	Moderate: large stones, wetness.	Moderate: frost action, slope.	Moderate: frost action.	Moderate: large stones.
MvC---------- Marlow	Moderate: slope, wetness.	Moderate: frost action, slope.	Moderate: slope, wetness.	Severe: slope.	Moderate: frost action, slope.	Moderate: large stones, slope.
MvD---------- Marlow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Na---------- Naumburg	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
On---------- Ondawa	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.
PeB---------- Peru	Severe: wetness.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action.	Slight.
Pg*. Pits						
Po*: Podunk----------	Severe: floods, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods.	Severe: floods.
Winooski---------	Severe: floods, wetness.	Severe: floods, frost action.	Severe: floods, wetness.	Severe: floods, frost action.	Moderate: floods.	Moderate: floods.
Ra---------- Raynham	Severe: wetness.	Severe: frost action, wetness.	Severe: wetness.	Severe: frost action, wetness.	Severe: frost action, wetness.	Moderate: wetness.
RoC*: Rock outcrop.						
Lyman----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
RoE*: Rock outcrop.						
Lyman----------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Ru---------- Rumney	Severe: floods, wetness, cutbanks cave.	Severe: floods, wetness, frost action.	Severe: floods, wetness.	Severe: floods, wetness, frost action.	Severe: floods, wetness, frost action.	Severe: floods, wetness.
Sa---------- Saco	Severe: floods, wetness, cutbanks cave.	Severe: floods, wetness, frost action.	Severe: floods, wetness.	Severe: floods, wetness, frost action.	Severe: floods, wetness, frost action.	Severe: floods, wetness.
Sc---------- Scantic	Severe: wetness, too clayey.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, low strength, frost action.	Severe: wetness.
ScB---------- Scio	Severe: wetness.	Severe: frost action.	Severe: wetness.	Severe: frost action.	Severe: frost action.	Slight.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AdB, AdC---------- Adams	Good----------	Good----------	Unsuited: excess fines.	Poor: too sandy.
AdD---------- Adams	Fair: slope.	Good----------	Unsuited: excess fines.	Poor: slope, too sandy.
AgB*: Adams----------	Good----------	Good----------	Unsuited: excess fines.	Poor: too sandy.
Urban land.				
AlB---------- Allagash	Good----------	Good----------	Unsuited: excess fines.	Good.
AlC---------- Allagash	Good----------	Good----------	Unsuited: excess fines.	Fair: slope.
Ba*. Beaches				
BcB, BcC---------- Becket	Fair: frost action.	Poor: excess fines.	Poor: excess fines.	Poor: small stones.
BcD---------- Becket	Fair: frost action, slope.	Poor: excess fines.	Poor: excess fines.	Poor: slope, small stones.
BeB, BeC---------- Becket	Fair: frost action.	Poor: excess fines.	Poor: excess fines.	Poor: large stones.
BeD---------- Becket	Fair: slope, frost action.	Poor: excess fines.	Poor: excess fines.	Poor: large stones, slope.
Bm---------- Biddeford	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, thin layer, too clayey.
BrB*: Brayton----------	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, wetness.
Westbury----------	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
BsB*: Brayton----------	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones, wetness.
Westbury----------	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
BuB---------- Buxton	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
BuC---------- Buxton	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, too clayey.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BuD---- Buxton	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Ch---- Chocorua	Poor: wetness, excess humus.	Unsuited: excess humus.	Unsuited: excess humus.	Poor: wetness, excess humus.
CoB, CoC---- Colton	Good----	Good----	Good----	Poor: small stones.
CoD---- Colton	Fair: slope.	Good----	Good----	Poor: slope, small stones.
CoE---- Colton	Poor: slope.	Good----	Good----	Poor: slope, small stones.
CrB---- Croghan	Good----	Good----	Unsuited: excess fines.	Poor: too sandy.
CuB*: Croghan----	Good----	Good----	Unsuited: excess fines.	Poor: too sandy.
Urban land.				
Dm*. Dumps				
EmB---- Elmwood	Poor: frost action, low strength.	Poor: excess fines, thin layer.	Unsuited: excess fines.	Good.
EmC---- Elmwood	Poor: frost action, low strength.	Poor: excess fines, thin layer.	Unsuited: excess fines.	Fair: slope.
HeB---- Hermon	Good----	Poor: excess fines.	Poor: excess fines.	Fair: small stones.
HeC---- Hermon	Good----	Poor: excess fines.	Poor: excess fines.	Fair: slope, small stones.
HeD---- Hermon	Fair: slope.	Poor: excess fines.	Poor: excess fines.	Poor: slope.
HmB, HmC---- Hermon	Good----	Poor: excess fines, large stones.	Poor: excess fines, large stones.	Poor: large stones, small stones.
HmD---- Hermon	Fair: slope.	Poor: excess fines, large stones.	Poor: excess fines, large stones.	Poor: slope.
HnC---- Hermon	Fair: large stones.	Poor: excess fines, large stones.	Poor: excess fines, large stones.	Poor: large stones, small stones.
HnE---- Hermon	Poor: slope.	Poor: excess fines, large stones.	Poor: excess fines, large stones.	Poor: slope.
LnB, LnC---- Lyman	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: thin layer, area reclaim.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
LnD---- Lyman	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer, area reclaim.
LyB*, LyC*: Lyman----	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: thin layer, area reclaim.
Rock outcrop.				
LyE*: Lyman----	Poor: slope, thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer, area reclaim.
Rock outcrop.				
MaB---- Madawaska	Good----	Fair: excess fines.	Unsuited: excess fines.	Good.
MrB, MrC2---- Marlow	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
MrD2---- Marlow	Fair: frost action, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
MvB, MvC---- Marlow	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones.
MvD---- Marlow	Fair: slope, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: large stones, slope.
Na---- Naumburg	Poor: wetness, area reclaim.	Fair: excess fines.	Unsuited: excess fines.	Poor: wetness, too sandy.
On---- Ondawa	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
PeB---- Peru	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones.
Pg*. Pits				
Po*: Podunk----	Fair: frost action.	Fair: excess fines.	Unsuited: excess fines.	Good.
Winooski----	Poor: frost action.	Poor: excess fines.	Unsuited: excess fines.	Good.
Ra---- Raynham	Poor: frost action, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
RoC*: Rock outcrop.				
Lyman----	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: thin layer, area reclaim.

See footnote at end of table.

Appendix B: Subsurface Explorations

- Geotechnical Investigations Summary
- Boring Logs
- Test Pit Logs
- FWD Logs

PRELIMINARY GEOTECHNICAL INVESTIGATIONS SUMMARY WELLS: RTE.109

NOTE: HB-WEL-206 has 2 pavement layers---2nd layer begins at depth of 0.88 m

Boring No.	Station (m)	As-Built Station (ft)	Offset (m)	Exploration Depth (m)	Depth to water (m)	Pavement Thickness				Subgrade Type	Refusal Depth (m)
						HMA (mm)	Macadam (mm)	Subbase (mm)	Total (mm)		
HB-WEL-202	20+940	92+53	2.5 L	0.91		90	50	610	750	BEDROCK	0.91
TP-WEL-101	20+940	92+53	3.5 L	0.60		110	80	410	600		
HB-WEL-204	21+180	100+40	2.5 L	0.98		100	40	840	980	BEDROCK	0.98
HB-WEL-206	21+420	108+28	2.5 L	1.52		150	50	680	880	SAND/GRAVEL/SILT	
HB-WEL-206	21+420	108+28	2.5 L			30		390	420		
FWD 5600	21+796	120+61	2.4 L	2.90		150		600	750	SAND/GRAVEL/SILT	
FWD 5000	22+396	140+30	2.5 L	2.90		110		660	770	SAND/GRAVEL/SILT	
HB-WEL-208	22+500	143+71	2.2 L	1.52	1.37	100	50	520	670	SAND/GRAVEL/SILT	
TP-WEL-102	22+500	143+71	2.7 L	0.57		220	60	290	570		
FWD 4600	22+796	153+42	2.7 L	2.90	2.14	130		630	760	SAND/GRAVEL/SILT	
FWD 4200	23+196	166+54	2.5 L	2.35		90		670	760	SAND/SILT	2.35
FWD 3800	23+596	179+67	2.5 L	2.90	1.80	160		600	760	SAND/GRAVEL/SILT	
HB-WEL-210	23+700	183+08	2.4 L	0.94		140	40	400	580	SAND/GRAVEL/SILT	0.94
FWD 3402	23+998	192+86	2.7 L	2.90	1.60	210		560	770	SAND/GRAVEL/SILT	
FWD 3400	24+000	192+92	2.7 L	1.16		200		570	770	SAND/GRAVEL/SILT	1.16
FWD 3000	24+405	206+21	2.4 L	0.98		200		570	770	SAND/GRAVEL/SILT	0.98
HB-WEL-212	24+500	209+33	2.5 L	1.52		140	50	720	910	SAND/GRAVEL/SILT	
TP-WEL-103	24+500	209+33	3.4 L	0.55		150	100	300	550		
FWD 2800	24+605	212+77	2.5 L	5.40		220		540	760	SAND/GRAVEL/SILT	5.4
FWD 2600	24+805	219+33	2.6 L	2.90		240		530	770	SAND/GRAVEL/SILT	
FWD 2400	25+005	225+89	2.7 L	2.90	1.95	130		630	760	SAND/GRAVEL/SILT	
FWD 2200	25+216	232+82	2.7 L	0.79		170		630	800	BEDROCK	0.79
FWD 2002	25+425	239+67	2.6 L	2.90		180		580	760	SAND/GRAVEL/SILT	
HB-WEL-214	25+560	244+10	2.4 L	1.52		100	60	1360	1520	SAND/GRAVEL/SILT	
FWD 1601	25+814	252+44	2.3 L	2.90		210		560	770	SAND/GRAVEL/SILT	
FWD 1400	26+015	259+03	2.2 L	2.90		200		560	760	SAND/GRAVEL/SILT	
FWD 1200	26+215	265+59	1.9 L	2.90		180		580	760	SAND/GRAVEL/SILT	
FWD 1000	26+415	272+15	2.5 L	2.90		240		520	760	SAND/GRAVEL/SILT	
HB-WEL-216	26+500	274+94	2.4 L	1.52		110	60	740	910	SAND/GRAVEL/SILT	
TP-WEL-104	26+500	274+94	3.0 L			110	90	330	530		
FWD 800	26+615	278+71	2.9 L	2.90		90		670	760	SAND/GRAVEL/SILT	
FWD 601	26+814	285+24	2.8 L	2.90	2.00	90		870	960	SILT/SAND	
FWD 400	27+015	291+84	2.6 L	2.90		220		260	480	SILT/SAND	
FWD 200	27+215	298+40	2.7 L	2.90		100		660	760	SAND/SILT	
FWD 100SB	27+315	301+68	2.4 L	2.90	2.53	90		520	610	SAND/GRAVEL/SILT	
HB-WEL-218	27+340	302+50	2.3 L	1.52		130	40	500	670	SAND/GRAVEL/SILT	
TP-WEL-105	27+340	302+50	3.1 L	0.76		100	100	560	760		

Shoulders

Boring No.	Station (m)	As-Built Station (ft)	Offset (m)	Exploration Depth (m)	Depth to water (m)	Pavement Thickness				Subgrade Type	Refusal Depth (m)
						HMA (mm)	Macadam (mm)	Subbase/Fill (mm)	Total (mm)		
HB-WEL-201	20+940	92+53	4.7 L	1.58				0.58			1.58
HB-WEL-203	21+180	100+40	5 L	0.88		50.00		0.83			0.88
HB-WEL-205	21+420	108+28	5.6 L	3.05				0.94			
FWD 5202	22+194	133+67	4.3 L	2.35		70.00					2.35
FWD 5000A	22+396	140+30	4.1 L	2.90							
HB-WEL-207	22+500	143+71	4.5 L	2.56	1.22			0.27			2.56
FWD 4200A	23+196	166+54	4.4 L	1.71							1.71
HB-WEL-209	23+700	183+08	4.3 L	0.82				0.18			0.82
FWD 3000A	24+405	206+21	4.5 L	1.04		90.00					1.04
HB-WEL-211	24+500	209+33	5.4 L	3.05				0.73			
FWD 2002A	25+425	239+67	4.2 L	2.90							
HB-WEL-213	25+560	244+10	4.4 L	1.40				1.40			1.4
HB-WEL-213A	25+562	244+17	5.6 L	3.05				1.37			
HB-WEL-215	26+500	274+94	3.8 L	3.05	1.98			0.55			
HB-WEL-217	27+340	302+50	4.6 L	3.05	2.59			0.24			

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-201
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	50.20	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/17/02-12/17/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	20+940, 4.7 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S1					SSA			Brown, dry, silty fine to coarse SAND, some gravel, liittle silt (Fill).	G#128034 A-1-b, SM WC=6.1%
	S2						49.62		0.58	
1.2									Light brown, dry, fine to coarse SAND, some gravel and silt.	G#128035A-1-b, SM WC=3.8%
							48.61		1.58	
2.4									**Bottom of Exploration at 1.58 m below ground surface.** REFUSAL	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-202
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	50.20	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/17/02-12/17/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	20+940, 2.5 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	50.10		PAVEMENT. 0.09	
	1D	61.0/30.5	0.30 - 0.91	24/11/17/50	28		50.06		MACADAM. 0.14	G#128036 A-1-b, SP-SM WC=4.3%
							49.89		Brown, dry, medium dense, sandy GRAVEL, trace silt, (Fill). 0.30	
1.2							49.28		Brown, dry, medium dense, fine to coarse SAND, little gravel, trace silt. 0.91	
									Bottom of Exploration at 0.91 m below ground surface. REFUSAL	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-202

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-203
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	52.60	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/18/02-12/18/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	21+180, 5.0 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S3					SSA	52.55		PAVEMENT. 0.05	G#128037 A-1-a, SW-SM WC=6.4%
									Brown, dry, gravelly SAND, little silt (Fill).	
							51.72		0.88	
1.2									**Bottom of Exploration at 0.88 m below ground surface.** REFUSAL	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-203

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-204
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	52.80	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/17/02-12/17/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	21+180, 2.5 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	PC					SSA	52.70		PAVEMENT. Pavement core taken.	
							52.66		0.10	
	1D	61.0/35.6	0.30 - 0.91	27/35/34/17	+50		52.50		MACADAM.	G#128038
									0.14	A-1-b, SW-SM
									Brown, dry, very dense, SAND, some gravel, trace silt, (Fill).	WC=4.6%
									0.30	
	2D	7.0/5.1	0.91 - 0.98	50(75)	---		51.83		0.98	
1.2									**Bottom of Exploration at 0.98 m below ground surface.** REFUSAL	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-204

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-205
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	55.20	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/17/02-12/17/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	21+420, 5.6 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S4					SSA			Brown, dry, silty fine to coarse SAND, some gravel, little silt. (Fill).	G#128039 A-1-b, SW-SM WC=9.4%
							54.25		0.94	
1.2									Brown, damp, silty fine to coarse SAND, trace gravel.	
							53.22		1.98	
2.4									Light brown, dry, fine to medium SAND, trace coarse sand, gravel and silt.	
							52.15		3.05	
3.6									**Bottom of Exploration at 3.05 m below ground surface.** NO REFUSAL	
4.8										
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-206
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	55.40	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/17/02-12/17/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	21+420, 2.5 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	55.25		PAVEMENT. 0.15	
	1D/AB	61.0/22.9	0.30 - 0.91	27/29/38/47	+50		55.20		MACADAM. 0.20	G#128040 A-1-b, SW-SM WC=4.0%
									Brown, dry, very dense, SAND, some gravel, little silt. (Fill). (1D/A) 0.30-0.88 m bgs.	
	2D/AB	61.0/33.0	0.91 - 1.52	26/22/20/19	42		54.52		0.88	
1.2							54.49		(1D/B) 0.88-0.91 m bgs. Old Pavement.	G#12804 A-2-4, SM WC=7.9%
							54.27		0.91	
							53.88		(2D/A) 0.91-1.19 m bgs. Light brown, dry, dense, silty fine to coarse SAND, some gravel, (Fill?).	
2.4									1.13	
									(2D/B) 1.19-1.52 m bgs. Brown, dry, dense, fine to coarse SAND, some silt, little gravel.	
									1.52	
3.6									**Bottom of Exploration at 1.52 m below ground surface.** NO REFUSAL	
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-206

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-207
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	58.90	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/18/02-12/18/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	22+500, 4.5 LT.	**Casing ID/OD:**	N/A	**Water Level*:**	1.22 m 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S5					SSA	58.63		Brown, dry, SAND, little gravel, trace silt. (Fill).	G#128042
	S6								0.27	A-1-b, SW-SM
									Brown, damp, fine to coarse SAND, some silt, little gravel.	WC=9.0%
										G#128043
										A-2-4, SM
1.2	S7						57.68		1.22	WC=13.0%
									Similar to above, but wet.	
							56.92		1.98	
2.4									Similar to above, with cobbles.	
							56.34		2.56	
									Bottom of Exploration at 2.56 m below ground surface.	
3.6									REFUSAL	
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-207

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-208
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	59.00	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/17/02-12/17/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	22+500, 2.2 LT.	**Casing ID/OD:**	N/A	**Water Level*:**	1.37 m 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	PC					SSA	58.90		PAVEMENT. Pavement core taken.	
							58.85		0.10	
	1D/AB	61.0/27.9	0.30 - 0.91	11/10/7/6	17				MACADAM.	G#128044
							58.33		0.15	A-1-b, SW-SM
									Brown, dry, dense, SAND, some gravel, little silt. (Fill).	WC=5.5%
	2D/AC	61.0/30.5	0.91 - 1.52	8/23/43/23	+50				(1D/A) 0.30-0.67 m bgs.	G#128045
1.2							57.93		0.67	A-1-b, SW-SM
									(1D/B) 0.67-0.91 m bgs.	WC=10.1%
							57.63		Brown, damp, dense, gravelly SAND, little silt.	G#128046
							57.48		(2D/A) 0.91-1.07 m bgs.	A-1-a, SW-SM
									1.07	WC=6.3%
									(2D/B) 1.07-1.37 m bgs.	
									Brown, dry, very dense, gravelly SAND, trace silt.	
									1.37	
2.4									(2D/C) 1.37-1.52 m bgs.	
									Grey, wet, very dense, sandy GRAVEL, trace silt.	
									1.52	
3.6									**Bottom of Exploration at 1.52 m below ground surface.**	
									NO REFUSAL	
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-208

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-209
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	57.50	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/17/02-12/17/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	23+700, 4.3 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	57.32		Brown, dry, sandy GRAVEL, trace silt , (Fill).	
									0.18	
									Brown, dry, silty fine to coarse SAND, little gravel.	
							56.68		0.82	
1.2									**Bottom of Exploration at 0.82 m below ground surface.** REFUSAL	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-210
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	57.50	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/17/02-12/17/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	23+700, 2.4 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	57.36		PAVEMENT. 0.14	
	1D/AB	61.0/20.3	0.30 - 0.91	16/19/16/16	35		57.32		MACADAM. 0.18	G#128047 A-1-b, SM WC=2.6%
							56.92		Brown, dry, dense, sandy GRAVEL, trace silt, (Fill). (1D/A) 0.30-0.58 m bgs.	G#128048 A-1-b, SW-SM WC=10.8%
	MD	2.5/0.0	0.91 - 0.94	25(25)	---		56.56		0.58 (1D/B) 0.58-0.91 m bgs. Brown, dry, dense, fine to coarse SAND, little gravel, trace silt. 0.94	
1.2									**Bottom of Exploration at 0.94 m below ground surface.** REFUSAL	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-210

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-211
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	54.70	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/18/02-12/18/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	24+500, 5.4 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S8					SSA			Brown, damp, gravelly SAND, trace silt, (Fill).	G#128049 A-1-b, SW-SM WC=6.3%
							53.97		0.73	
	S9								Brown, damp, fine to coarse SAND, some silt, trace gravel.	G#128891 A-2-4, SM WC=12.9%
1.2										
	S10						53.02		1.68	
									Light brown, damp, fine sandy SILT.	G#128892 A-4, CL-ML WC=16.5%
2.4										
							51.65		3.05	
3.6									**Bottom of Exploration at 3.05 m below ground surface.** NO REFUSAL	
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-211

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-212
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	54.90	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/18/02-12/18/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	24+500, 2.5 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	PC					SSA	54.76		PAVEMENT. Pavement core taken. 0.14	
	1D	61.0/35.6	0.30 - 0.91	18/25/30/20	+50		54.71		MACADAM. 0.19	G#128893 A-1-b, SW-SM WC=4.0%
									Brown, dry, very dense, gravelly SAND, trace silt, (Fill).	
	2D	61.0/7.6	0.91 - 1.52	10/9/8/7	17		53.99		0.91 Brown, dry, medium dense, silty fine to coarse SAND, little gravel.	
1.2							53.38		1.52 **Bottom of Exploration at 1.52 m below ground surface.** NO REFUSAL	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-212

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-213
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	65.70	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/19/02-12/19/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	25+560, 4.4 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S11					SSA	64.30		Brown, dry, SAND, some gravel, trace silt. (Fill).	G#128894 A-1-b, SW-SM WC=5.0%
1.2									1.40 **Bottom of Exploration at 1.40 m below ground surface.** REFUSAL	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Station 25+566, 4.0 LT. exposed top of old concrete wall.

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

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

Boring No.: HB-WEL-213

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-213A
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	65.60	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/19/02-12/19/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	25+562, 5.6 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA			Brown, dry, sandy GRAVEL, trace silt, (Fill). (Similar to HB-WEL-213).	
1.2	S12						64.23		1.37	
									Brown, dry, silty fine to medium SAND, trace coarse sand, trace gravel.	
2.4										
3.6							62.55		3.05	
4.8									**Bottom of Exploration at 3.05 m below ground surface.** NO REFUSAL	
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-214
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	65.70	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/19/02-12/19/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	25+560, 2.4 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	65.60		PAVEMENT. 0.10	
	1D	61.0/33.0	0.30 - 0.91	13/9/11/13	20		65.54		MACADAM. 0.16	G#128895 A-1-b, SW-SM WC=5.4%
									Brown, dry, medium dense, gravelly SAND, trace silt, (Fill).	
	2D	61.0/20.3	0.91 - 1.52	17/16/10/5	26					
1.2							64.18		1.52	
									Bottom of Exploration at 1.52 m below ground surface. NO REFUSAL	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-214

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-215
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	64.10	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/18/02-12/18/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	26+500, 3.8 LT.	**Casing ID/OD:**	N/A	**Water Level*:**	1.98 m 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0	S13					SSA			Brown, damp, SAND, some gravel, trace silt. (Fill).	G#128896 A-1-b, SW-SM WC=8.7%
	S14						63.55		0.55	G#128897 A-2-4, SM WC=8.3%
1.2									Brown, damp, fine to coarse SAND, some silt, little gravel.	
							62.12		1.98	
2.4									Similar to above, but wet.	
							61.05		3.05	
3.6									**Bottom of Exploration at 3.05 m below ground surface.** NO REFUSAL	
4.8										
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-216
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	64.10	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/18/02-12/18/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	26+500, 2.4 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	63.99		PAVEMENT.	
							63.93		0.11	
	1D	61.0/33.0	0.30 - 0.91	17/23/25/26	48				MACADAM.	G#128898
									0.17	A-1-b, SW-SM
									Brown, dry, dense, SAND, some gravel, trace silt. (Fill).	WC=3.7%
	2D/AB	61.0/35.6	0.91 - 1.52	20/25/24/26	49		63.19		0.91	G#128899
1.2									(2D/A) 0.91-1.28 m bgs.	A-1-b, SW-SM
							62.82		Brown, dry, dense, fine to coarse SAND, little gravel, trace silt.	WC=4.0%
									1.28	
							62.58		(2D/B) 1.28-1.52 m bgs.	
									Brown, damp, dense, silty fine to medium SAND, trace coarse sand.	
									1.52	
2.4									**Bottom of Exploration at 1.52 m below ground surface.**	
									NO REFUSAL	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

Pavement core taken at 26+508, 2.4 LT.

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

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

Boring No.: HB-WEL-216

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-217
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	65.90	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	OFF FLIGHTS
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/19/02-12/19/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	27+340, 4.6 LT.	**Casing ID/OD:**	N/A	**Water Level*:**	2.59 m 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA				
	S15						65.66		Brown, dry, sandy GRAVEL, trace silt, (Fill), (Frost). 0.24	
									Brown, dry, SAND, trace silt and gravel.	G#133046 A-3, SP-SM WC=5.1%
	S16						65.05		0.85	
1.2									Brown, dry, SAND, little silt, trace gravel.	G#133047 A-2-4, SM WC=7.4%
	S17						64.07		1.83	
2.4									Brown, moist, silty fine SAND.	
							63.31		2.59	
									Similar to above, but wet.	
3.6							62.85		3.05	
									Bottom of Exploration at 3.05 m below ground surface. NO REFUSAL	
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-217

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: HB-WEL-218
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	66.00	**Auger ID/OD:**	125 mm
Operator:	C.MANN	**Datum:**	NGVD	**Sampler:**	STANDARD SPLIT SPOON
Logged By:	G.LIDSTONE	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	63.5kg/760 mm
Date Start/Finish:	12/19/02-12/19/02	**Drilling Method:**	SOLID STEM AUGER	**Core Barrel:**	N/A
Boring Location:	27+340, 2.3 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA	65.87		PAVEMENT.	
							65.83		0.13	
	1D/AB	61.0/38.1	0.30 - 0.91	12/18/14/13	32				MACADAM.	G#128500
							65.33		0.17	A-1-a, GW-GM
									Brown, dry, dense, sandy GRAVEL, trace silt, (Fill).	WC=4.2%
									(1D/A) 0.30-0.67 m bgs.	G#133048
	2D	61.0/38.1	0.91 - 1.52	10/9/13/12	22		65.06		0.67	A-3, SP
1.2									(1D/B) 0.67-0.91 m bgs.	WC=4.4%
									Brown, dry, medium dense, SAND, trace silt and gravel.	G#133049
							64.48		0.94	A-3, SP-SM
									Brown, dry, medium dense, SAND, trace silt and gravel.	WC=7.6%
2.4									1.52	
									Bottom of Exploration at 1.52 m below ground surface.	
									NO REFUSAL	
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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.

Boring No.: HB-WEL-218

Maine Department of Transportation

Soil/Rock Exploration Log
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: TP-WEL-101
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	50.20	**Auger ID/OD:**	N/A
Operator:	N/A	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. GROSS	**Rig Type:**	N/A	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/3/03-12/3/03	**Drilling Method:**	BACKHOE	**Core Barrel:**	N/A
Boring Location:	20+940, 3.5 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						TP	50.09		ASPHALT PAVEMENT. 0.11	
							50.01		MACADAM. 0.19	G#176180 A-1-b, SW WC=4.2%
							49.60		Brown, damp, sandy GRAVEL, trace silt. 0.60	
1.2									**Bottom of Exploration at 0.60 m below ground surface.**	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: TP-WEL-102
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	56.70	**Auger ID/OD:**	N/A
Operator:	N/A	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. GROSS	**Rig Type:**	N/A	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/3/03-12/3/03	**Drilling Method:**	BACKHOE	**Core Barrel:**	N/A
Boring Location:	22+500, 2.7 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						TP	56.48		ASPHALT PAVEMENT. 0.22	
							56.42		MACADAM. 0.28	G#176179 A-1-b, SW WC=3.3%
							56.13		Brown, damp, sandy GRAVEL, trace silt. 0.57	
									Bottom of Exploration at 0.57 m below ground surface.	
1.2										
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: TP-WEL-103
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	54.89	**Auger ID/OD:**	N/A
Operator:	N/A	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. GROSS	**Rig Type:**	N/A	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/3/03-12/3/03	**Drilling Method:**	BACKHOE	**Core Barrel:**	N/A
Boring Location:	24+500, 3.4 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						TP	54.74		ASPHALT PAVEMENT. 0.15	
							54.64		MACADAM. 0.25	G#176178 A-1-b, SW-SM WC=3.2%
							54.35		Brown, damp, sandy GRAVEL, trace silt. 0.55	
									Bottom of Exploration at 0.55 m below ground surface.	
1.2										
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: TP-WEL-104
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	64.10	**Auger ID/OD:**	N/A
Operator:	N/A	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. GROSS	**Rig Type:**	N/A	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/3/03-12/3/03	**Drilling Method:**	BACKHOE	**Core Barrel:**	N/A
Boring Location:	26+500, 3.0 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						TP	63.99		ASPHALT PAVEMENT. 0.11	
							63.90		MACADAM. 0.20	G#176177 A-1-b, SW-SM WC=4.1%
							63.57		Brown, damp, sandy GRAVEL, trace silt. 0.53	
1.2									**Bottom of Exploration at 0.53 m below ground surface.**	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

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
METRIC UNITS

Project: ROUTE 109
Location: WELLS, MAINE

Boring No.: TP-WEL-105
PIN: 7998.10

Driller:	MDOT	**Elevation (m):**	66.00	**Auger ID/OD:**	N/A
Operator:	N/A	**Datum:**	NGVD	**Sampler:**	N/A
Logged By:	K. GROSS	**Rig Type:**	N/A	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	12/3/03-12/3/03	**Drilling Method:**	BACKHOE	**Core Barrel:**	N/A
Boring Location:	27+340, 3.1 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 (kPa)
T_v = Pocket Torvane Shear Strength (kPa)
q_p = Unconfined Compressive Strength (Pa)
$S_{u(lab)}$ = Lab Vane Shear Strength (kPa)
WOH = weight of 64 kg 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 (m)	Sample Information: Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows	Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						TP	65.90		ASPHALT PAVEMENT. 0.10	
							65.80		MACADAM. 0.20	G#176176 A-1-b, SW-SM WC=4.8%
							65.24		Brown, damp, sandy GRAVEL, trace silt. 0.76	
1.2									**Bottom of Exploration at 0.76 m below ground surface.**	
2.4										
3.6										
4.8										
6										
7.2										
8.4										
9.6										

Remarks:

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

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WELLS PIN 7998.10 SHEET NO. 1

Station (meters)	Offset (meters)	Depth (meters)	Sample Number	Description and Remarks
FWD		Power Auger		8/29/00
100 SB		0.00 - 92 mm		Pavement
		92 mm - 0.61	1	Brown silty sandy gravel (fill)
27+315, 2.4 Lt.		0.61 - 1.52	2	Brown fine to coarse sand with some fine gravel, some silt
		1.52 - 2.74	3	Brown fine sand
El. 65.5 m		2.74 - 2.90	4	Brown mottled clayey silt
		2.53		Water
		2.90		No refusal
FWD		Power Auger		8/29/00
200		0.00 - 97 mm		Pavement
		97 mm - 0.61		Brown silty sandy gravel (fill)
27+215, 2.7 Lt.		0.61 - 1.83		Brown silty fine to coarse sand
		1.83 - 2.13		Gray clayey silt with some fine sand
El. 63.3 m		2.13 - 2.90		Brown mottled clayey silt
		2.90		No refusal / No water
FWD		Power Auger		8/29/00
400		0.00 - 220 mm		Pavement
		220 mm - 0.48		Brown silty sandy gravel (fill)
27+015, 2.6 Lt.		0.48 - 1.07		Brown fine sandy silt with some clay
		1.07 - 1.83		Brown silty fine sand
El. 60.9 m		1.83 - 2.90		Brown fine sand
		2.90		No refusal / No water
FWD		Power Auger		8/29/00
601		0.00 - 85 mm		Pavement
		85 mm - 0.95		Brown silty sandy gravel (fill)
26+814, 2.8 Lt.		0.95 - 1.52		Brown sandy silt with some clay
		1.52 - 2.90		Gray silty fine sand
El. 60.1 m		2.0		Water
		2.90		No refusal
FWD		Power Auger		8/29/00
800		0.00 - 90 mm		Pavement
		90 mm - 0.58		Brown silty sandy gravel (fill)
26+615, 2.9 Lt.		0.58 - 2.90		Brown silty fine to medium sand with some coarse sand and fine gravel
		2.90		No refusal / No water
El. 63.3 m				
FWD		Power Auger		8/29/00
1000		0.00 - 243 mm		Pavement
		243 mm - 0.76	5	Brown silty sandy gravel (fill)
26+415, 2.5 Lt.		0.76 - 1.83	6	Brown fine to medium sand with some coarse sand, some silt
		1.83 - 2.90		Brown silty fine sand
El. 64.6 m		2.90		No refusal / No water
FWD		Power Auger		8/30/00
1200		0.00 - 178 mm		Pavement
		178 mm - 0.52		Brown silty sandy gravel (fill)
26+215, 1.9 Lt.		0.52 - 0.76		Brown silty fine sand
		0.76 - 2.43		Brown silty fine to medium sand with some coarse sand, some fine gravel
El. 65.3 m		2.43 - 2.90		Brown silty fine sand
		2.90		No refusal / No water

Station (meters)	Offset (meters)	Depth (meters)	Sample Number	Description and Remarks
FWD		Power Auger		8/30/00
1400		0.00 - 198 mm		Pavement
		198 mm - 0.55		Brown silty sandy gravel (fill)
26+015, 2.2 Lt.		0.55 - 1.83		Brown silty fine to medium sand with some coarse sand, some fine gravel
		1.83 - 2.59		Brown silty fine sand
El. 64.3 m		2.59 - 2.90		Brown fine to coarse sand with gravel
		1.82		Water
		2.90		No refusal
FWD		Power Auger		8/30/00
1601		0.00 - 205 mm		Pavement
		205 mm - 0.52		Brown silty sandy gravel (fill)
25+814, 2.3 Lt.		0.52 - 1.83		Brown silty fine to medium sand with some coarse sand, some fine gravel
		1.83 - 2.90		Brown silty fine to medium sand with gravel, occasional cobbles (till)
El. 65.4 m		2.90		No refusal / No water
Skipped 1800 m at RR Overpass				
FWD		Power Auger		8/30/00
2002		0.00 - 178 mm		Pavement
		178 mm - 0.46		Brown silty sandy gravel (fill)
25+425, 2.6 Lt.		0.46 - 0.98		Brown silty fine to medium sand with some coarse sand, some fine gravel
		0.98 - 1.37		Dark brown silty fine sand
El. 64.1 m		1.37 - 2.90		Brown silty fine sand with trace fine gravel
		2.90		No refusal / No water
FWD		Power Auger		8/30/00
2002 A		0.00 - 0.37		Brown silty sandy gravel (fill) - shoulder
		0.37 - 0.98		Brown silty fine to medium sand with some coarse sand, some fine gravel
25+425, 4.2 Lt.		0.98 - 1.37		Dark brown silty fine sand
		1.37 - 2.90		Brown silty fine sand with trace fine gravel
El. 64.0 m		2.90		No refusal / No water
FWD		Power Auger		8/30/00
2200		0.00 - 165 mm		Pavement
		165 mm - 0.55		Brown silty sandy gravel (fill)
25+216, 2.7 Lt.		0.55 - 0.79		Brown silty fine to medium sand
		0.79		Refusal / No water
El. 62.0 m				
FWD		Power Auger		8/30/00
2400		0.00 - 125 mm		Pavement
		125 mm - 260 mm		Penetrated gravel
25+005, 2.7 Lt.		260 mm - 0.61		Brown silty sandy gravel (fill)
		0.61 - 1.37		Brown silty fine to medium sand with some fine gravel
El. 55.9 m		1.37 - 1.68		Brown silty fine to medium sand
		1.68 - 1.98	7	Brown organic silt with some sand (peat)
		1.98 - 2.90	8	Brown silty fine to coarse sand with some clay
		1.95		Water
		2.90		No refusal

Station (meters)	Offset (meters)	Depth (meters)	Sample Number	Description and Remarks
FWD		Power Auger		8/30/00
2600		0.00 - 235 mm		Pavement
		235 mm - 0.76		Brown silty sandy gravel (fill)
24+805, 2.6 Lt.		0.76 - 2.13		Brown silty fine to medium sand with some coarse sand, some fine gravel
		2.13 - 2.90		Brown silty fine sand with some clay
El. 56.3 m		2.90		No refusal / No water
FWD		Power Auger		8/30/00
2800		0.00 - 220 mm		Pavement
		220 mm - 1.6		Brown silty sandy gravel with cobbles (fill)
24+605, 2.5 Lt.		1.6 - 5.4		Brown silty fine to medium sand with some coarse sand, some fine gravel
		5.4		Refusal / No water
El. 56.0 m				
FWD		Power Auger		8/30/00
3000		0.00 - 195 mm		Pavement
		195 mm - 0.58	9	Brown silty sandy gravel (fill)
24+405, 2.4 Lt.		0.58 - 0.98	10	Brown silty fine to medium sand with cobbles, some fine gravel
El. 54.7 m		0.98		Refusal / No water
FWD		Power Auger		8/30/00
3000 A		0.00 - 85 mm		Pavement - shoulder
		85 mm - 0.52		Brown silty sandy gravel (fill)
24+405, 4.5 Lt.		0.52 - 1.04		Brown silty fine to medium sand with cobbles, some fine gravel
		1.04		Refusal / No water
El. 54.6 m				
FWD		Power Auger		8/30/00
3400		0.00 - 195 mm		Pavement
		195 mm - 1.16		Brown silty sandy gravel (fill)
24+000, 2.7 Lt.		1.16		Refusal (boulder?) / No water
El. 53.6 m				
FWD		Power Auger		8/30/00
3402		0.00 - 205 mm		Pavement
		205 mm - 1.13		Brown silty sandy gravel (fill)
23+998, 2.7 Lt.		1.13 - 1.52		Brown silty fine to medium sand with cobbles, some fine gravel
		1.52 - 2.90	11	Brown/gray mottled clayey silt
El. 53.6 m		1.6		Water
		2.90		No refusal
FWD		Power Auger		8/30/00
3800		0.00 - 160 mm		Pavement
		160 mm - 0.91		Brown silty sandy gravel (fill)
23+596, 2.5 Lt.		0.91 - 1.68		Brown silty sandy gravel with cobbles
		1.68 - 2.53		Brown silty fine to medium sand
El. 57.7 m		2.53 - 2.90		Brown/gray mottled clayey silt
		1.8		Water
		2.90		No refusal
FWD		Power Auger		8/30/00
4200		0.00 - 90 mm		Pavement
		90 mm - 170 mm		Penetrated gravel
23+196, 2.5 Lt.		170 mm - 0.91	13	Brown silty fine to coarse sand with gravel (fill)
		0.91 - 1.58	14	Brown silty fine sand
El. 55.8 m		1.58 - 2.35		Brown sandy silt with gravel, cobbles (till)
		2.35		Refusal / No water

Station (meters)	Offset (meters)	Depth (meters)	Sample Number	Description and Remarks
FWD		Power Auger		8/30/00
4200 A		0.00 - 0.91		Brown silty fine to coarse sand with gravel, cobbles (fill) - shoulder
		0.91 - 1.46		Brown silty fine sand
23+196, 4.4 Lt.		1.46 - 1.55		Brown sandy silt with gravel, cobbles (till)
		1.55 - 1.71		Grind into rock
El. 55.8 m		1.71		Refusal / No water
FWD		Power Auger		8/30/00
4600		0.00 - 125 mm		Pavement
		125 mm - 195 mm		Penetrated gravel
22+796, 2.7 Lt.		195 mm - 1.04		Brown silty fine to coarse sand with gravel (fill)
		1.04 - 1.43		Dark brown sandy silt with trace clay
El. 55.9 m		1.43 - 2.14		Brown sandy silt with gravel, cobbles
		2.14 - 2.90		Brown silty fine to coarse sand with gravel
				Water
		2.90		No refusal
FWD		Power Auger		8/30/00
5000		0.00 - 105 mm		Pavement
		105 mm - 205 mm		Penetrated gravel
22+396, 2.5 Lt.		205 mm - 0.55	15	Brown silty fine to coarse sand with gravel (fill)
		0.55 - 2.44	16	Brown sandy silt with gravel, cobbles
El. 63.6 m		2.44 - 2.90	17	Brown silty fine to coarse sand
		2.90		No refusal / No water
FWD		Power Auger		8/30/00
5000 A		0.00 - 0.46		Brown silty fine to coarse sand with gravel (fill) - shoulder
		0.46 - 2.44		Brown sandy silt with gravel, cobbles
22+396, 4.1 Lt.		2.44 - 2.90		Brown silty fine to coarse sand
		2.90		No refusal / No water
El. 61.3 m				
FWD		Power Auger		8/30/00
5202		0.00 - 65 mm		Pavement
		65 mm - 0.75		Brown silty sandy gravel (fill)
22+194, 4.3 Lt.		0.75 - 2.35		Brown silty fine to coarse sand with gravel
		2.35		Refusal / No water
El. 65.3 m				
FWD		Power Auger		8/30/00
5600		0.00 - 152 mm		Pavement
		152 mm - 255 mm		Penetrated gravel
21+796, 2.4 Lt.		255 mm - 2.60		Brown sandy silt with gravel, cobbles
		2.60 - 2.90		Brown silty fine to coarse sand
El. 60.2 m		2.90		No refusal / No water

Appendix C: Laboratory Test Results

- Laboratory Testing Summary Sheet
- Grain Size Analysis
- Geology Test Reports

State of Maine - Department of Transportation

Laboratory Testing Summary Sheet

Town(s): Wells Project Number: 7998.10

Boring & Sample Identification Number	Station (Meter)	Offset (Meter)	Depth (Meter)	Reference Number	G.S.D.C. Sheet	W.C.	L.L.	P.I.	Classification		
									Unified	AASHTO	Frost
HB-WEL-201, S1	20+940	4.7 LT.	0.0-0.58	128034	1	6.1			SM	A-1-b	II
HB-WEL-201, S2	20+940	4.7 LT.	0.58-1.58	128035	1	3.8			SM	A-1-b	II
HB-WEL-202, 1D	20+940	2.5 LT.	0.30-0.91	128036	1	4.3			SP-SM	A-1-b	0
HB-WEL-203, S3	21+180	5.0 LT.	0.05-0.88	128037	1	6.4			SW-SM	A-1-a	0
HB-WEL-204, 1D	21+180	2.5 LT.	0.30-0.91	128038	1	4.6			SW-SM	A-1-b	0
HB-WEL-205, S4	21+420	5.6 LT.	0.0-0.94	128039	1	9.4			SW-SM	A-1-b	0
HB-WEL-206, 1D/A	21+420	2.5 LT.	0.30-0.88	128040	2	4.0			SW-SM	A-1-b	0
HB-WEL-206, 2D/B	21+420	2.5 LT.	1.19-1.52	128041	2	7.9			SM	A-2-4	II
HB-WEL-207, S5	22+500	4.5 LT.	0.0-0.27	128042	2	9.0			SW-SM	A-1-b	0
HB-WEL-207, S6	22+500	4.5 LT.	0.27-1.22	128043	2	13.0			SM	A-2-4	II
HB-WEL-208, 1D/A	22+500	2.2 LT.	0.30-0.67	128044	3	5.5			SW-SM	A-1-b	0
HB-WEL-208, 1D/B	22+500	2.2 LT.	0.67-0.91	128045	3	10.1			SW-SM	A-1-b	0
HB-WEL-208, 2D/B	22+500	2.2 LT.	1.07-1.37	128046	3	6.3			SW-SM	A-1-a	0
HB-WEL-210, 1D/A	23+700	2.4 LT.	0.30-0.58	128047	3	2.6			SM	A-1-b	II
HB-WEL-210, 1D/B	23+700	2.4 LT.	0.58-0.91	128048	3	10.8			SW-SM	A-1-b	0
HB-WEL-211, S8	24+500	5.4 LT.	0.0-0.73	128049	4	6.3			SW-SM	A-1-b	0
HB-WEL-211, S9	24+500	5.4 LT.	0.73-1.68	128891	4	12.9			SM	A-2-4	II
HB-WEL-211, S10	24+500	5.4 LT.	1.68-3.05	128892	4	16.5			CL-ML	A-4	IV
HB-WEL-212, 1D	24+500	2.5 LT.	0.30-0.91	128893	4	4.0			SW-SM	A-1-b	0
HB-WEL-213, S11	25+560	4.4 LT.	0.0-1.40	128894	4	5.0			SW-SM	A-1-b	0
HB-WEL-214, 1D	25+560	2.4 LT.	0.30-0.91	128895	4	5.4			SW-SM	A-1-b	0
HB-WEL-215, S13	26+500	3.8 LT.	0.0-0.55	128896	5	8.7			SW-SM	A-1-b	0
HB-WEL-215, S14	26+500	3.8 LT.	0.55-1.98	128897	5	8.3			SM	A-2-4	II
HB-WEL-216, 1D	26+500	2.4 LT.	0.30-0.91	128898	5	3.7			SW-SM	A-1-b	0
HB-WEL-216, 2D/A	26+500	2.4 LT.	0.91-1.28	128899	5	4.0			SW-SM	A-1-b	0
HB-WEL-217, S15	27+340	4.6 LT.	0.24-0.85	133046	6	5.1			SP-SM	A-3	0
HB-WEL-217, S16	27+340	4.6 LT.	0.85-1.83	133047	6	7.4			SM	A-2-4	II
HB-WEL-218, 1D/A	27+340	2.3 LT.	0.30-0.67	128500	6	4.2			GW-GM	A-1-a	0
HB-WEL-218, 1D/B	27+340	2.3 LT.	0.67-0.91	133048	6	4.4			SP	A-3	0
HB-WEL-218, 2D	27+340	2.3 LT.	0.91-1.52	133049	6	7.6			SP-SM	A-3	0
TP-WEL-101	20+940	3.5 Lt.	0.19-0.60	176180	7	4.2			SW	A-1-b	0
TP-WEL-102	22+500	2.7 Lt.	0.28-0.57	176179	7	3.3			SW	A-1-b	0
TP-WEL-103	24+500	3.4 Lt.	0.25-0.55	176178	7	3.2			SW-SM	A-1-b	0
TP-WEL-104	26+500	3.0 Lt.	0.20-0.53	176177	7	4.1			SW-SM	A-1-b	0
TP-WEL-105	27+340	3.1 Lt.	0.20-0.76	176176	7	4.8			SW-SM	A-1-b	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

Laboratory Testing Summary Sheet

Town(s): Wells Project Number: 7998.10

Boring & Sample Identification Number	Station FWD(Meter)	Offset (Meter)	Depth (Meter)	Reference Number	G.S.D.C. Sheet	W.C.	L.L.	P.I.	Classification		
									Unified	AASHTO	Frost
FWD-100SB, 1	27+315	2.4 Lt.	92 mm-0.61	98593	8	1			SW-SM	A-1-b	II
FWD-100SB, 2	27+315	2.4 Lt.	0.61-1.52	98594	8	3			GM	A-1-b	I
FWD-100SB, 3	27+315	2.4 Lt.	1.52-2.74	98595	8	3			SM	A-2-4	II
FWD-100SB, 4	27+315	2.4 Lt.	2.74-2.9	98596	8	21			CL-ML	A-4	IV
FWD-1000, 5	26+415	2.5 Lt.	243 mm-.76	98597	8	---			SW-SM	A-1-b	II
FWD-1000, 6	26+415	2.5 Lt.	0.76-1.83	98598	8	9			SP-SM	A-3	0
FWD-2400, 7	25+005	2.7 Lt.	1.68-1.98	98599	9	60			SM	A-2-4	II
FWD-2400, 8	25+005	2.7 Lt.	1.98-2.9	98600	9	25			SM	A-1-b	II
FWD-3000, 9	24+405	2.4 Lt.	195 mm-.58	105032	9	2			GM	A-1-a	I
FWD-3000, 10	24+405	2.4 Lt.	0.58-0.98	105033	9	5			SM	A-2-4	II
FWD-3402, 11	23+998	2.7 Lt.	1.52-2.9	105034	9	23			CL-ML	A-4	IV
FWD-4200, 13	23+196	2.5 Lt.	170 mm-.91	105035	10	2			SW-SM	A-1-b	0
FWD-4200, 14	23+196	2.5 Lt.	0.91-1.58	105036	10	21			SM	A-4	IV
FWD-5000, 15	22+396	2.5 Lt.	205 mm-.55	105037	10	3			SW-SM	A-1-a	0
FWD-5000, 16	22+396	2.5 Lt.	0.55-2.44	105038	10	1			SM	A-1-b	II
FWD-5000, 17	22+396	2.5 Lt.	2.44-2.9	105039	10	4			SM	A-1-b	II

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)

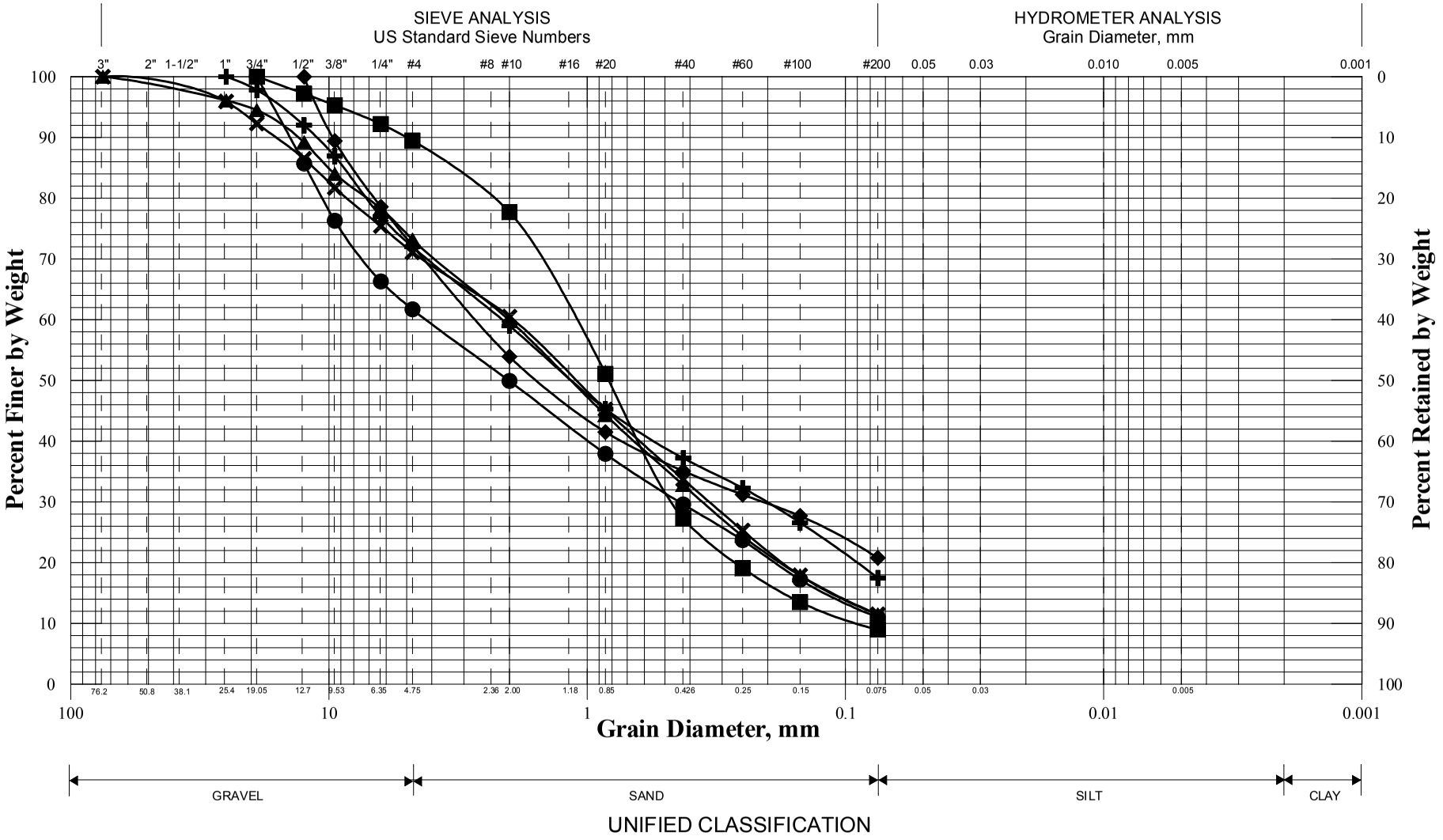
WC = water content as determined by AASHTO T 265-93 and/or ASTM D 2216-98

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



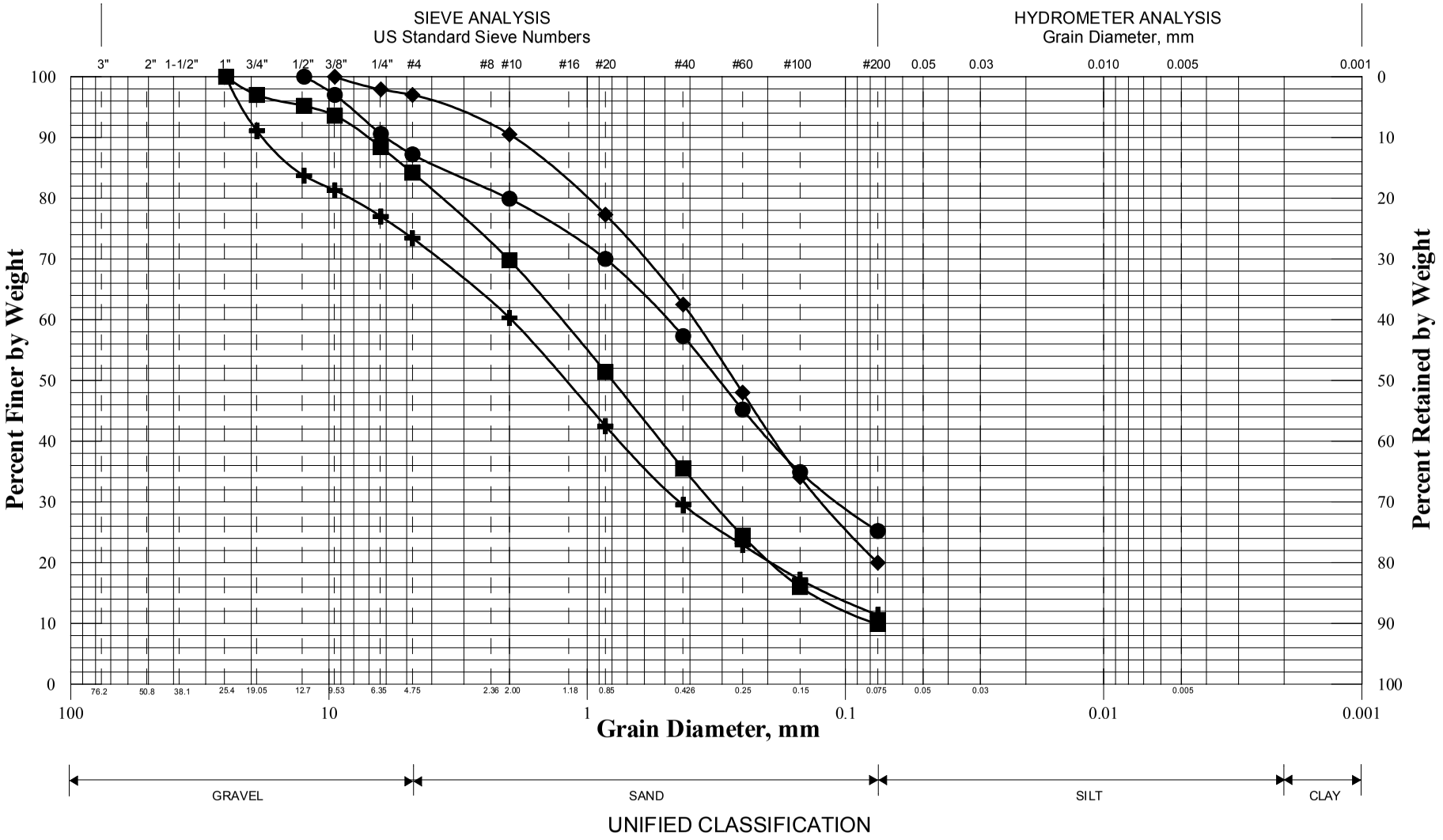
	Boring No.	Sample No.	Depth (m)	Description	w%	LL	PL	PI
+	HB-WEL-201	S1	0.0-0.58	SAND, some gravel, little silt.	6.1			
◆	HB-WEL-201	S2	0.58-1.58	SAND, some gravel, some silt.	3.8			
■	HB-WEL-202	1D	0.30-0.91	SAND, little gravel, trace silt.	4.3			
●	HB-WEL-203	S3	0.05-0.88	Gravelly SAND, little silt.	6.4			
▲	HB-WEL-204	1D	0.30-0.91	SAND, some gravel, little silt.	4.6			
×	HB-WEL-205	S4	0.0-0.94	SAND, some gravel, little silt.	9.4			

PIN: 7998.10
Town: Wells
Reported by: T. White
Date: 1/10/03

SHEET NO. 1

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



UNIFIED CLASSIFICATION

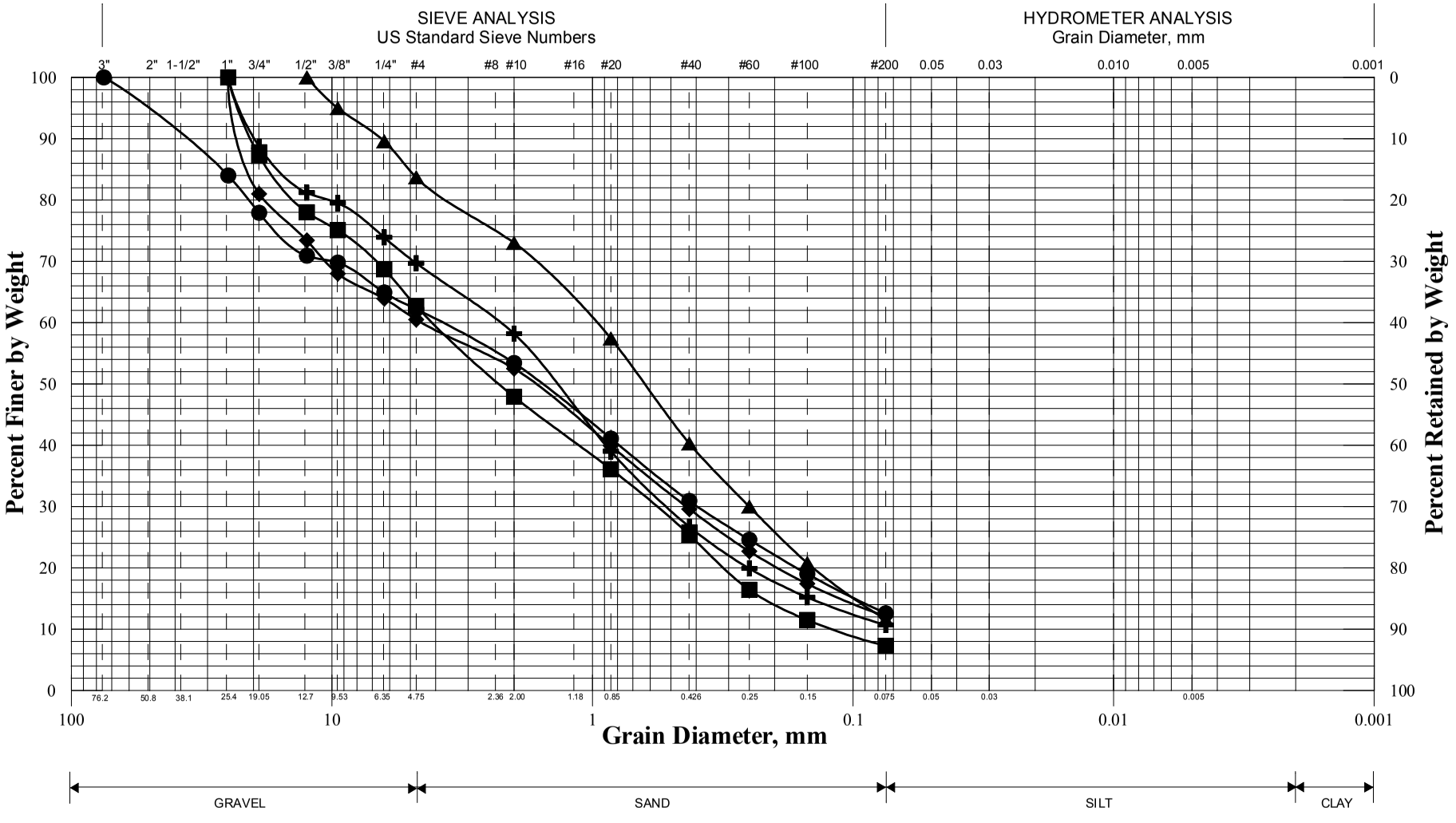
	Boring No.	Sample No.	Depth (m)	Description	w%	LL	PL	PI
+	HB-WEL-206	1D/A	0.30-0.88	SAND, some gravel, little silt.	4.0			
◆	HB-WEL-206	2D/B	1.19-1.52	SAND, some silt, trace gravel.	7.9			
■	HB-WEL-207	S5	0.0-0.27	SAND, little gravel, trace silt.	9.0			
●	HB-WEL-207	S6	0.27-1.22	SAND, some silt, little gravel.	13.0			
▲	----							
×	----							

PIN: 7998.10
Town: Wells
Reported by: T. White
Date: 1/10/03

SHEET NO. 2

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



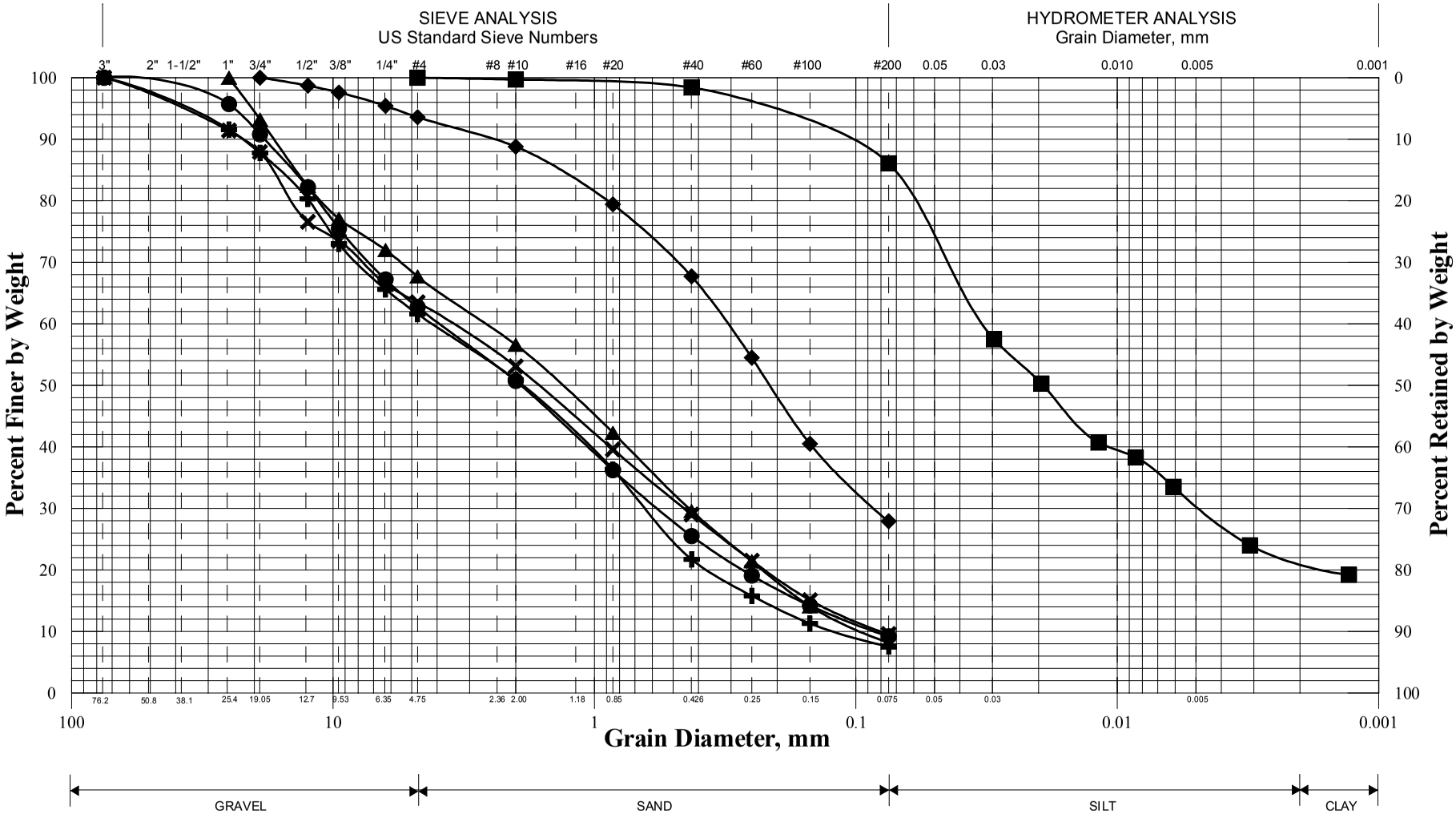
	Boring No.	Sample No.	Depth (m)	Description	w%	LL	PL	PI
+	HB-WEL-208	1D/A	0.30-0.67	SAND, some gravel, little silt.	5.5			
◆	HB-WEL-208	1D/B	0.67-0.91	Gravelly SAND, little silt.	10.1			
■	HB-WEL-208	2D/B	1.07-1.37	Gravelly SAND, trace silt.	6.3			
●	HB-WEL-210	1D/A	0.30-0.58	Gravelly SAND, little silt.	2.6			
▲	HB-WEL-210	1D/B	0.58-0.91	SAND, little gravel, little silt.	10.8			
×	----							

PIN: 7998.10
Town: Wells
Reported by: T. White
Date: 1/13/03

SHEET NO. 3

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE

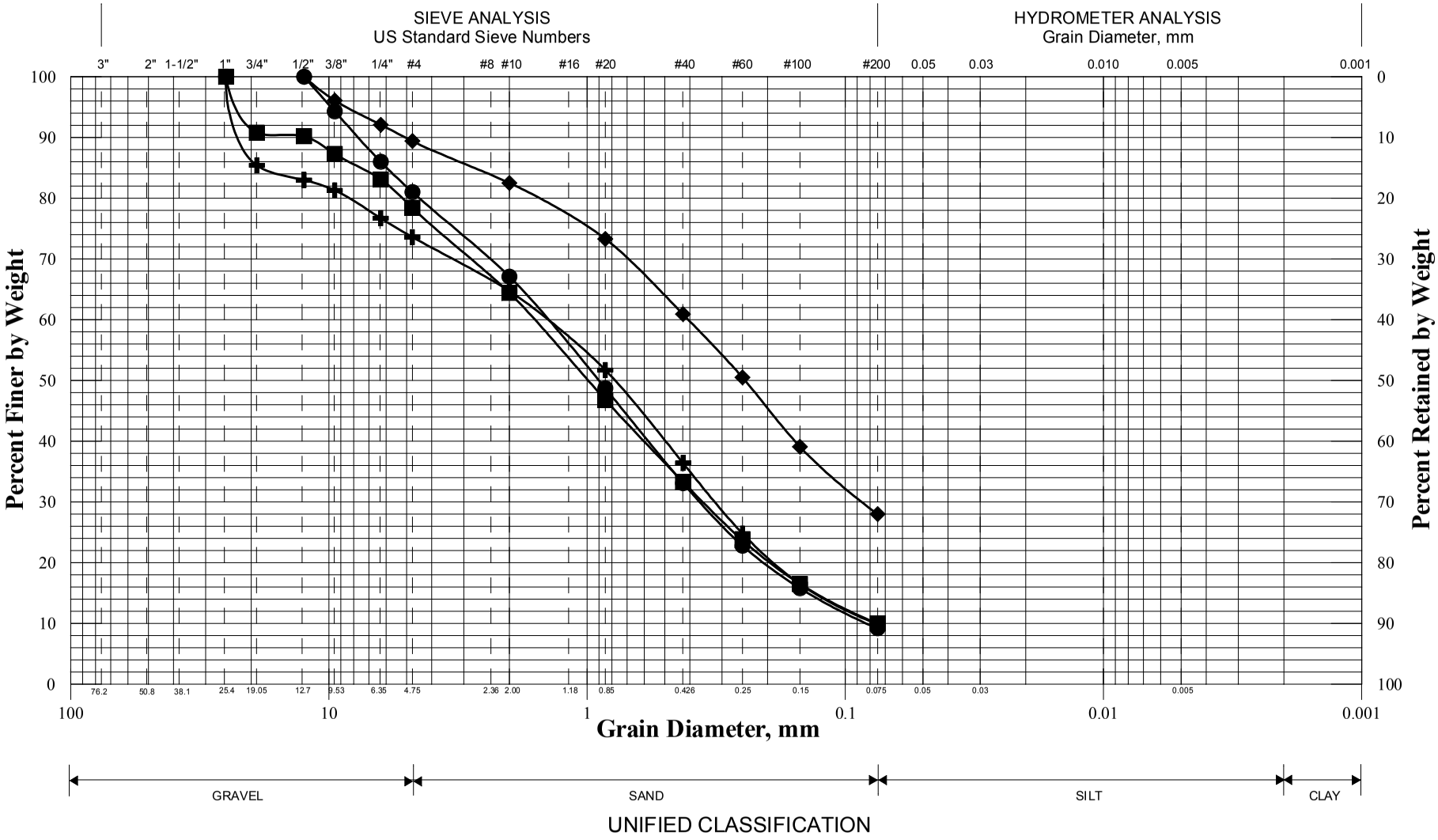


	Boring No.	Sample No.	Depth (m)	Description	w%	LL	PL	PI
+	HB-WEL-211	S8	0.0-0.73	Gravelly SAND, trace silt.	6.3			
◆	HB-WEL-211	S9	0.73-1.68	SAND, some silt, trace gravel.	12.9			
■	HB-WEL-211	S10	1.68-3.05	SILT, some clay, little sand.	16.5			
●	HB-WEL-212	1D	0.30-0.91	Gravelly SAND, trace silt.	4.0			
▲	HB-WEL-213	S11	0.0-1.40	SAND, some gravel, trace silt.	5.0			
×	HB-WEL-214	1D	0.30-0.91	Gravelly SAND, trace silt.	5.4			

PIN: 7998.10
Town: Wells
Reported by: T. White
Date: 1/13/03

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE

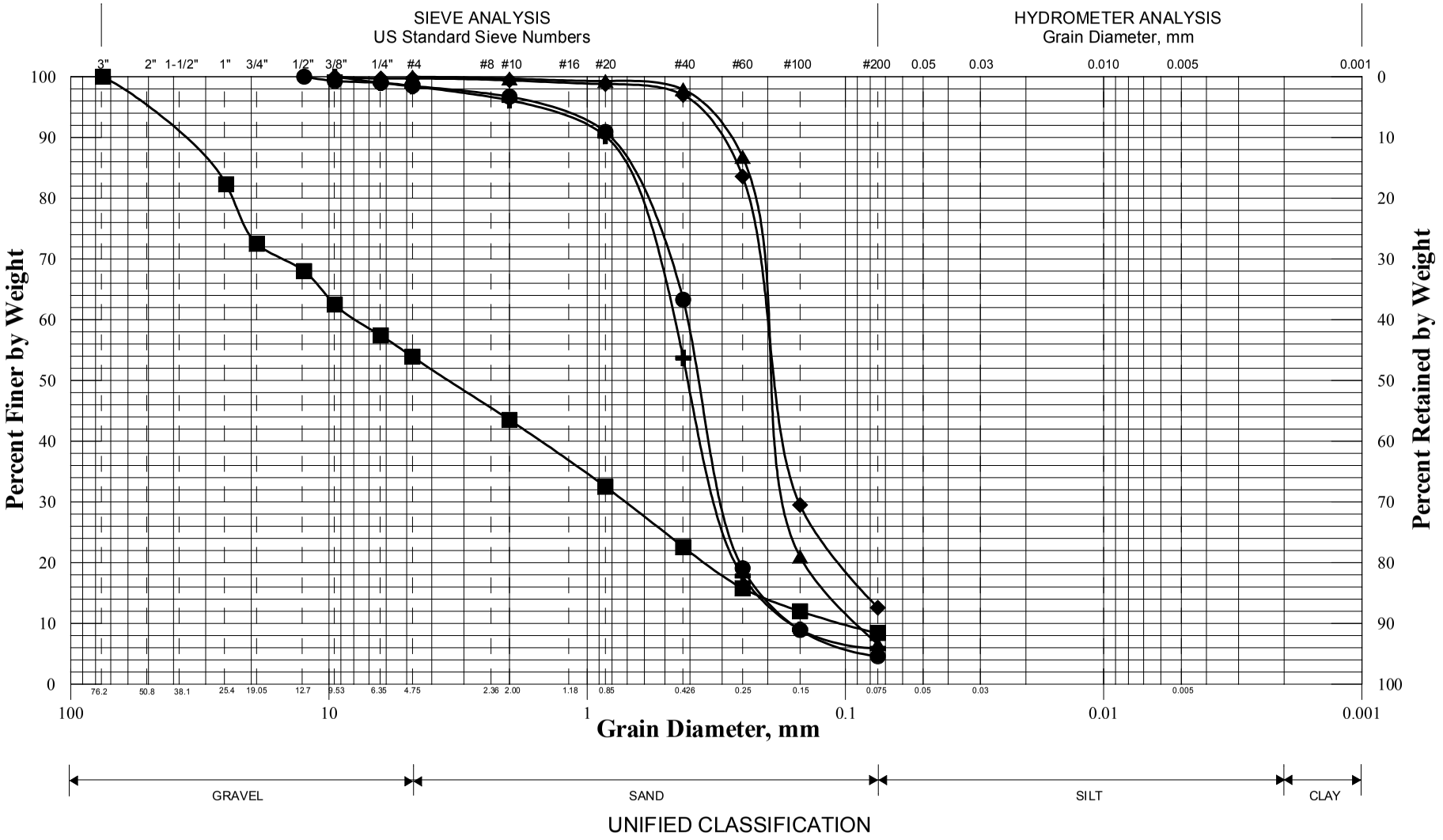


	Boring No.	Sample No.	Depth (m)	Description	w%	LL	PL	PI
+	HB-WEL-215	S13	0.0-0.55	SAND, some gravel, trace silt.	8.7			
◆	HB-WEL-215	S14	0.55-1.98	SAND, some silt, little gravel.	8.3			
■	HB-WEL-216	1D	0.30-0.91	SAND, some gravel, trace silt.	3.7			
●	HB-WEL-216	2D/A	0.91-1.28	SAND, little gravel, trace silt.	4.0			
▲	----							
×	----							

PIN: 7998.10
Town: Wells
Reported by: T. White
Date: 1/13/03

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



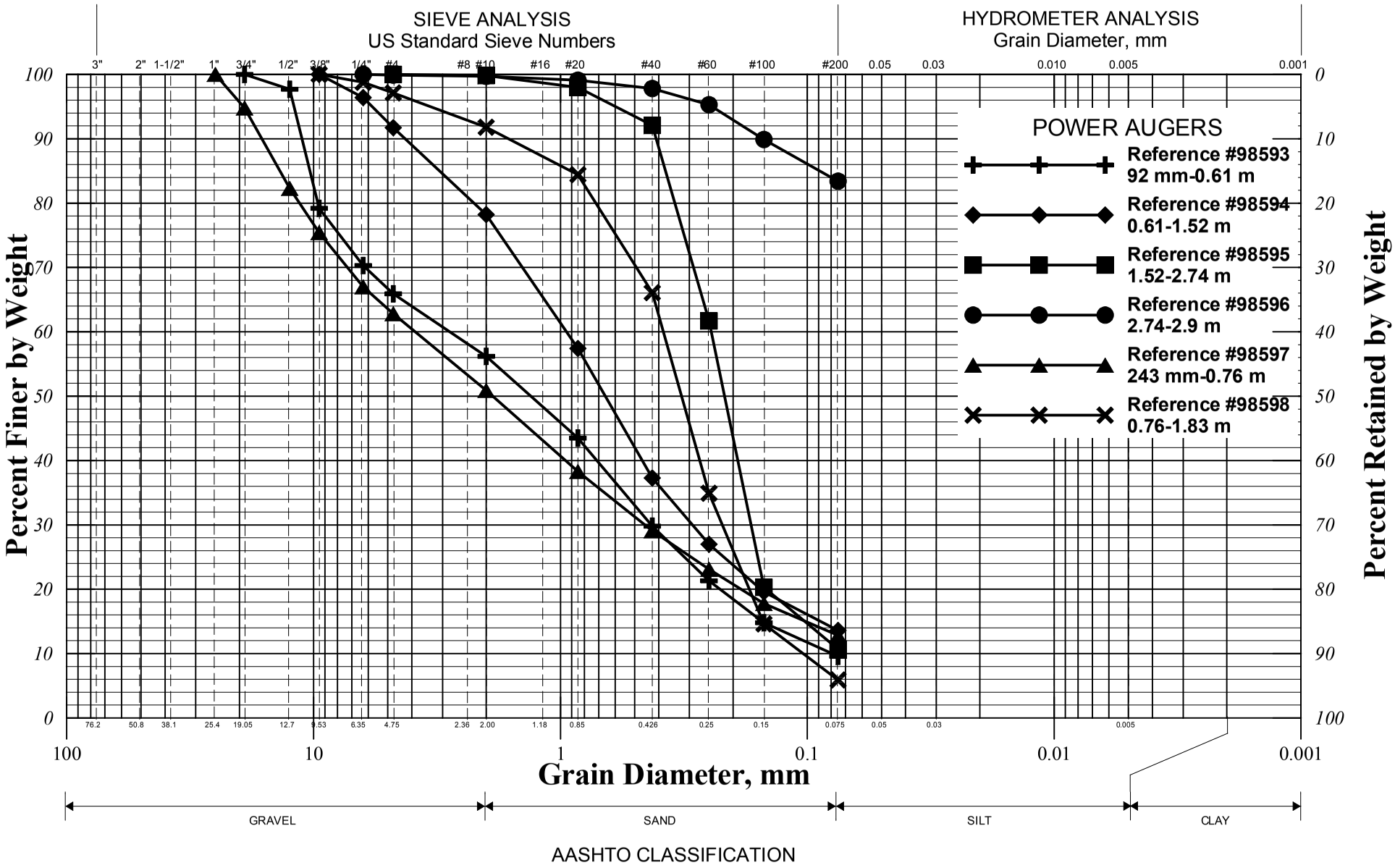
	Boring No.	Sample No.	Depth (m)	Description	w%	LL	PL	PI
✚	HB-WEL-217	S15	0.24-0.85	SAND, trace silt, trace gravel.	5.1			
◆	HB-WEL-217	S16	0.85-1.83	SAND, little silt, trace gravel.	7.4			
■	HB-WEL-218	1D/A	0.30-0.67	Sandy GRAVEL, trace silt.	4.2			
●	HB-WEL-218	1D/B	0.67-0.91	SAND, trace silt, trace gravel.	4.4			
▲	HB-WEL-218	2D	0.91-1.52	SAND, trace silt, trace gravel.	7.6			
✕	----							

PIN: 7998.10
Town: Wells
Reported by: T. White
Date: 1/13/03

SHEET NO. 6

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



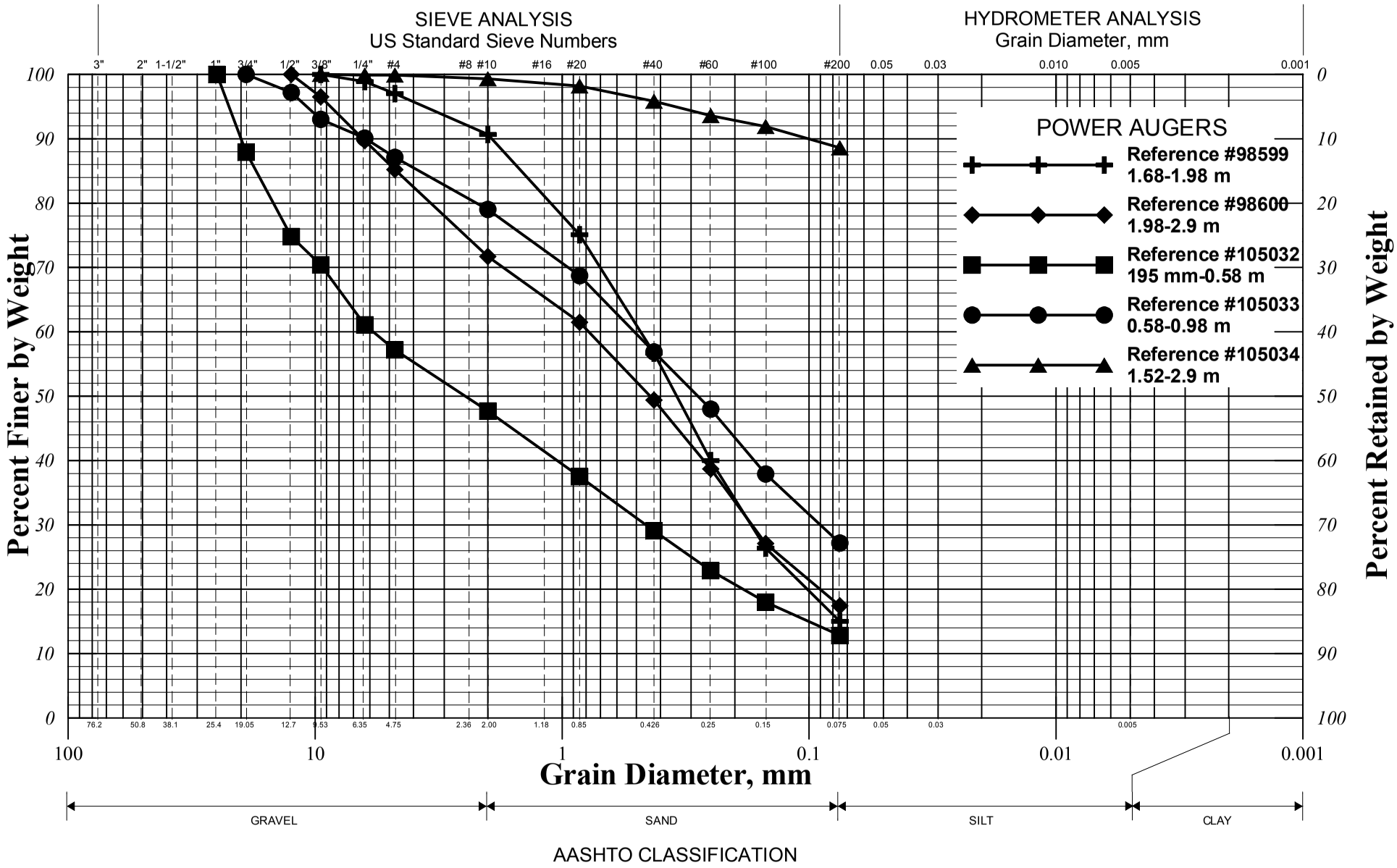
PIN: 7998.10
Town: Wells

Reported by: T.White
Date: 7/9/01

SHEET NO. 8

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



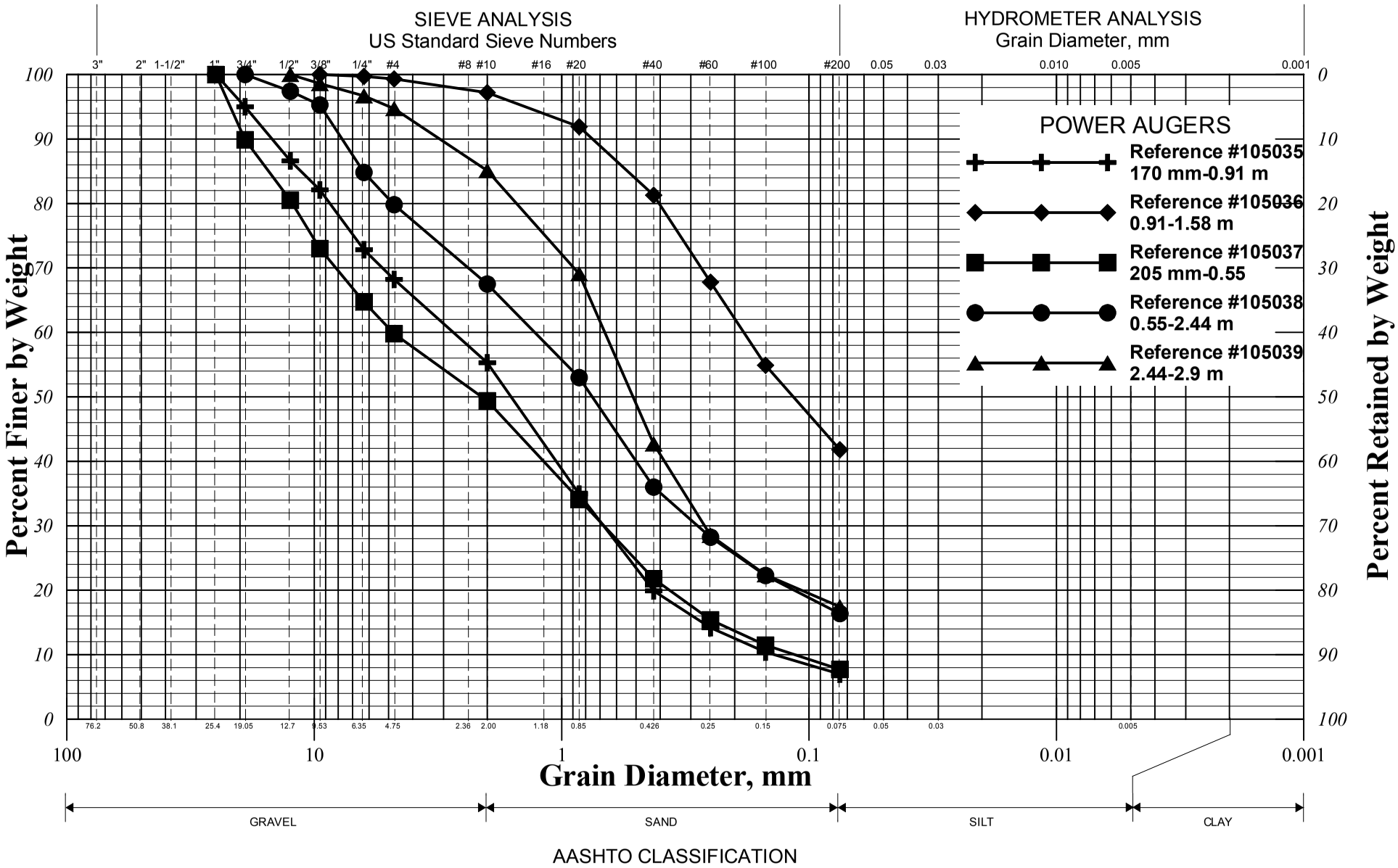
PIN: 7998.10
Town: Wells

Reported by: T.White
Date:7/10/01

SHEET NO. 9

State of Maine Department of Transportation

GRAIN SIZE DISTRIBUTION CURVE



PIN: 7998.10
Town: Wells

Reported by: T.White
Date: 7/10/01

SHEET NO. 10

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128034	**HB-WEL-201/S1**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **20+940** Offset, m: **4.7** **LT** Dbfg, m: **0.0-0.58**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**97.8**
½ in. [12.5 mm]	**92.0**
⅜ in. [9.5 mm]	**86.9**
¼ in. [6.3 mm]	**77.0**
No. 4 [4.75 mm]	**72.0**
No. 10 [2.00 mm]	**59.0**
No. 20 [0.850 mm]	**45.3**
No. 40 [0.425 mm]	**37.2**
No. 60 [0.250 mm]	**32.3**
No. 100 [0.150 mm]	**26.6**
No. 200 [0.075 mm]	**17.5**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

6.1

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128035	**HB-WEL-201/S2**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **20+940** Offset, m: **4.7** **LT** Dbfg, m: **0.58-1.58**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	**100.0**
⅜ in. [9.5 mm]	**89.4**
¼ in. [6.3 mm]	**78.6**
No. 4 [4.75 mm]	**72.2**
No. 10 [2.00 mm]	**53.9**
No. 20 [0.850 mm]	**41.5**
No. 40 [0.425 mm]	**35.1**
No. 60 [0.250 mm]	**31.2**
No. 100 [0.150 mm]	**27.7**
No. 200 [0.075 mm]	**20.8**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
3.8

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

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Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128036	**HB-WEL-202/1D**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **20+940** Offset, m: **2.5** **LT** Dbfg, m: **0.30-0.91**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	**100.0**
½ in. [12.5 mm]	**97.2**
⅜ in. [9.5 mm]	**95.3**
¼ in. [6.3 mm]	**92.2**
No. 4 [4.75 mm]	**89.5**
No. 10 [2.00 mm]	**77.7**
No. 20 [0.850 mm]	**51.1**
No. 40 [0.425 mm]	**27.3**
No. 60 [0.250 mm]	**19.1**
No. 100 [0.150 mm]	**13.5**
No. 200 [0.075 mm]	**9.0**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

4.3

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/14/2003**

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Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128037	**HB-WEL-203/S3**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **21+180** Offset, m: **5.0** **LT** Dbfg, m: **0.05-0.88**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	**100.0**
½ in. [12.5 mm]	**85.7**
⅜ in. [9.5 mm]	**76.3**
¼ in. [6.3 mm]	**66.3**
No. 4 [4.75 mm]	**61.7**
No. 10 [2.00 mm]	**49.9**
No. 20 [0.850 mm]	**37.9**
No. 40 [0.425 mm]	**29.6**
No. 60 [0.250 mm]	**23.7**
No. 100 [0.150 mm]	**17.2**
No. 200 [0.075 mm]	**11.0**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

6.4

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128038	**HB-WEL-204/1D**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **21+180** Offset, m: **2.5** **LT** Dbfg, m: **0.30-0.91**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**96.1**
¾ in. [19.0 mm]	**94.5**
½ in. [12.5 mm]	**89.2**
⅜ in. [9.5 mm]	**84.0**
¼ in. [6.3 mm]	**78.3**
No. 4 [4.75 mm]	**73.2**
No. 10 [2.00 mm]	**59.9**
No. 20 [0.850 mm]	**44.3**
No. 40 [0.425 mm]	**32.8**
No. 60 [0.250 mm]	**24.4**
No. 100 [0.150 mm]	**17.9**
No. 200 [0.075 mm]	**11.5**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
4.6

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/17/2003**

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Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128039	**HB-WEL-205/S4**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **21+420** Offset, m: **5.6** **LT** Dbfg, m: **0.0-0.94**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**95.9**
¾ in. [19.0 mm]	**92.3**
½ in. [12.5 mm]	**86.5**
⅜ in. [9.5 mm]	**81.7**
¼ in. [6.3 mm]	**75.4**
No. 4 [4.75 mm]	**71.1**
No. 10 [2.00 mm]	**60.5**
No. 20 [0.850 mm]	**45.2**
No. 40 [0.425 mm]	**33.7**
No. 60 [0.250 mm]	**25.3**
No. 100 [0.150 mm]	**17.9**
No. 200 [0.075 mm]	**11.5**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

9.4

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

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Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128040	**HB-WEL-206/1D(A)**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **21+420** Offset, m: **2.5** **LT** Dbfg, m: **0.30-0.88**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**91.1**
½ in. [12.5 mm]	**83.7**
⅜ in. [9.5 mm]	**81.3**
¼ in. [6.3 mm]	**77.0**
No. 4 [4.75 mm]	**73.4**
No. 10 [2.00 mm]	**60.3**
No. 20 [0.850 mm]	**42.5**
No. 40 [0.425 mm]	**29.5**
No. 60 [0.250 mm]	**22.9**
No. 100 [0.150 mm]	**17.2**
No. 200 [0.075 mm]	**11.4**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)
Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
4.0

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/8/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128041	**HB-WEL-206/2D(B)**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **21+420** Offset, m: **2.5** **LT** Dbfg, m: **1.19-1.52**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	
⅜ in. [9.5 mm]	**100.0**
¼ in. [6.3 mm]	**97.9**
No. 4 [4.75 mm]	**97.0**
No. 10 [2.00 mm]	**90.5**
No. 20 [0.850 mm]	**77.3**
No. 40 [0.425 mm]	**62.5**
No. 60 [0.250 mm]	**48.0**
No. 100 [0.150 mm]	**34.1**
No. 200 [0.075 mm]	**20.0**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

7.9

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

Paper Copy: Lab File; Project File; Geotech File

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128042	**HB-WEL-207/S5**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **22+500** Offset, m: **4.5** **LT** Dbfg, m: **0.0-0.27**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**97.0**
½ in. [12.5 mm]	**95.2**
⅜ in. [9.5 mm]	**93.6**
¼ in. [6.3 mm]	**88.4**
No. 4 [4.75 mm]	**84.2**
No. 10 [2.00 mm]	**69.8**
No. 20 [0.850 mm]	**51.4**
No. 40 [0.425 mm]	**35.5**
No. 60 [0.250 mm]	**24.4**
No. 100 [0.150 mm]	**16.0**
No. 200 [0.075 mm]	**9.9**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)
Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
9.0

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

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Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128043	**HB-WEL-207/S6**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **22+500** Offset, m: **4.5** **LT** Dbfg, m: **0.27-1.22**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	**100.0**
½ in. [12.5 mm]	**100.0**
⅜ in. [9.5 mm]	**97.0**
¼ in. [6.3 mm]	**90.6**
No. 4 [4.75 mm]	**87.2**
No. 10 [2.00 mm]	**79.9**
No. 20 [0.850 mm]	**70.0**
No. 40 [0.425 mm]	**57.3**
No. 60 [0.250 mm]	**45.2**
No. 100 [0.150 mm]	**34.9**
No. 200 [0.075 mm]	**25.2**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

13.0

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128044	**HB-WEL-208/1D(A)**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **22+500** Offset, m: **2.2** **LT** Dbfg, m: **0.30-0.67**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**88.7**
½ in. [12.5 mm]	**81.2**
⅜ in. [9.5 mm]	**79.5**
¼ in. [6.3 mm]	**73.9**
No. 4 [4.75 mm]	**69.7**
No. 10 [2.00 mm]	**58.2**
No. 20 [0.850 mm]	**39.0**
No. 40 [0.425 mm]	**26.7**
No. 60 [0.250 mm]	**19.9**
No. 100 [0.150 mm]	**15.2**
No. 200 [0.075 mm]	**10.7**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
5.5

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/8/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128045	**HB-WEL-208/1D(B)**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **22+500** Offset, m: **2.2** **LT** Dbfg, m: **0.67-0.91**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**81.0**
½ in. [12.5 mm]	**73.4**
⅜ in. [9.5 mm]	**68.0**
¼ in. [6.3 mm]	**63.9**
No. 4 [4.75 mm]	**60.5**
No. 10 [2.00 mm]	**52.5**
No. 20 [0.850 mm]	**39.9**
No. 40 [0.425 mm]	**29.6**
No. 60 [0.250 mm]	**22.7**
No. 100 [0.150 mm]	**17.4**
No. 200 [0.075 mm]	**12.1**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

10.1

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/14/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128046	**HB-WEL-208/2D(B)**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **22+500** Offset, m: **2.2** **LT** Dbfg, m: **1.07-1.37**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**87.2**
½ in. [12.5 mm]	**78.0**
⅜ in. [9.5 mm]	**75.1**
¼ in. [6.3 mm]	**68.7**
No. 4 [4.75 mm]	**62.7**
No. 10 [2.00 mm]	**47.9**
No. 20 [0.850 mm]	**36.1**
No. 40 [0.425 mm]	**25.4**
No. 60 [0.250 mm]	**16.4**
No. 100 [0.150 mm]	**11.5**
No. 200 [0.075 mm]	**7.3**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
6.3

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128047	**HB-WEL-210/1D(A)**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **23+700** Offset, m: **2.4** **LT** Dbfg, m: **0.30-0.58**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**84.0**
¾ in. [19.0 mm]	**77.9**
½ in. [12.5 mm]	**70.9**
⅜ in. [9.5 mm]	**69.8**
¼ in. [6.3 mm]	**64.9**
No. 4 [4.75 mm]	**62.2**
No. 10 [2.00 mm]	**53.4**
No. 20 [0.850 mm]	**41.1**
No. 40 [0.425 mm]	**30.9**
No. 60 [0.250 mm]	**24.6**
No. 100 [0.150 mm]	**19.0**
No. 200 [0.075 mm]	**12.6**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

2.6

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

Brown sandy gravel

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/16/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128048	**HB-WEL-210/1D(B)**	**GEOTECHNICAL (DISTURBED)**	**12/17/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **23+700** Offset, m: **2.4** **LT** Dbfg, m: **0.58-0.91**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	**100.0**
⅜ in. [9.5 mm]	**95.0**
¼ in. [6.3 mm]	**89.6**
No. 4 [4.75 mm]	**83.7**
No. 10 [2.00 mm]	**73.0**
No. 20 [0.850 mm]	**57.4**
No. 40 [0.425 mm]	**40.3**
No. 60 [0.250 mm]	**30.0**
No. 100 [0.150 mm]	**20.8**
No. 200 [0.075 mm]	**11.6**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
10.8

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128892	**HB-WEL-211/S10**	**GEOTECHNICAL (DISTURBED)**	**12/19/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **24+500** Offset, m: **5.4** **LT** Dbfg, m: **1.68-3.05**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	
⅜ in. [9.5 mm]	
¼ in. [6.3 mm]	
No. 4 [4.75 mm]	**100.0**
No. 10 [2.00 mm]	**99.7**
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	**98.4**
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	**86.1**
[0.0296 mm]	**57.5**
[0.0195 mm]	**50.3**
[0.0118 mm]	**40.7**
[0.0085 mm]	**38.3**
[0.0061 mm]	**33.5**
[0.0031 mm]	**24.0**
[0.0013 mm]	**19.2**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)
2.67
Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
16.5

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/22/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128049	**HB-WEL-211/S8**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **24+500** Offset, m: **5.4** **LT** Dbfg, m: **0.0-0.73**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**91.6**
¾ in. [19.0 mm]	**87.8**
½ in. [12.5 mm]	**80.3**
⅜ in. [9.5 mm]	**73.0**
¼ in. [6.3 mm]	**65.6**
No. 4 [4.75 mm]	**61.6**
No. 10 [2.00 mm]	**50.9**
No. 20 [0.850 mm]	**36.3**
No. 40 [0.425 mm]	**21.7**
No. 60 [0.250 mm]	**15.8**
No. 100 [0.150 mm]	**11.3**
No. 200 [0.075 mm]	**7.6**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

6.3

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

Brown Sandy Gravel

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/16/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128891	**HB-WEL-211/S9**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **24+500** Offset, m: **5.4** **LT** Dbfg, m: **0.73-1.68**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	**100.0**
½ in. [12.5 mm]	**98.7**
⅜ in. [9.5 mm]	**97.6**
¼ in. [6.3 mm]	**95.4**
No. 4 [4.75 mm]	**93.6**
No. 10 [2.00 mm]	**88.8**
No. 20 [0.850 mm]	**79.4**
No. 40 [0.425 mm]	**67.7**
No. 60 [0.250 mm]	**54.5**
No. 100 [0.150 mm]	**40.5**
No. 200 [0.075 mm]	**27.9**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

12.9

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

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Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128893	**HB-WEL-212/1D**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **24+500** Offset, m: **2.5** **LT** Dbfg, m: **0.30-0.91**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**95.7**
¾ in. [19.0 mm]	**90.8**
½ in. [12.5 mm]	**82.2**
⅜ in. [9.5 mm]	**75.5**
¼ in. [6.3 mm]	**67.2**
No. 4 [4.75 mm]	**62.7**
No. 10 [2.00 mm]	**50.7**
No. 20 [0.850 mm]	**36.2**
No. 40 [0.425 mm]	**25.5**
No. 60 [0.250 mm]	**19.1**
No. 100 [0.150 mm]	**14.2**
No. 200 [0.075 mm]	**9.2**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

4.0

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

Brown sandy gravel

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/16/2003**

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Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128894	**HB-WEL-213/S11**	**GEOTECHNICAL (DISTURBED)**	**12/19/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **25+560** Offset, m: **4.4** **LT** Dbfg, m: **0.0-1.4**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**93.2**
½ in. [12.5 mm]	**82.4**
⅜ in. [9.5 mm]	**77.1**
¼ in. [6.3 mm]	**72.0**
No. 4 [4.75 mm]	**67.7**
No. 10 [2.00 mm]	**56.6**
No. 20 [0.850 mm]	**42.3**
No. 40 [0.425 mm]	**29.6**
No. 60 [0.250 mm]	**21.4**
No. 100 [0.150 mm]	**14.1**
No. 200 [0.075 mm]	**8.2**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

5.0

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/21/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128895	**HB-WEL-214/1D**	**GEOTECHNICAL (DISTURBED)**	**12/19/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **25+560** Offset, m: **2.4** **LT** Dbfg, m: **0.30-0.91**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**91.4**
¾ in. [19.0 mm]	**87.9**
½ in. [12.5 mm]	**76.6**
⅜ in. [9.5 mm]	**73.5**
¼ in. [6.3 mm]	**66.5**
No. 4 [4.75 mm]	**63.5**
No. 10 [2.00 mm]	**53.1**
No. 20 [0.850 mm]	**39.6**
No. 40 [0.425 mm]	**29.0**
No. 60 [0.250 mm]	**21.5**
No. 100 [0.150 mm]	**15.1**
No. 200 [0.075 mm]	**9.6**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
5.4

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128896	**HB-WEL-215/S13**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **26+500** Offset, m: **3.8** **LT** Dbfg, m: **0.0-0.55**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**85.4**
½ in. [12.5 mm]	**83.0**
⅜ in. [9.5 mm]	**81.3**
¼ in. [6.3 mm]	**76.7**
No. 4 [4.75 mm]	**73.6**
No. 10 [2.00 mm]	**64.7**
No. 20 [0.850 mm]	**51.7**
No. 40 [0.425 mm]	**36.4**
No. 60 [0.250 mm]	**24.8**
No. 100 [0.150 mm]	**16.5**
No. 200 [0.075 mm]	**9.9**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

8.7

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/21/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128897	**HB-WEL-215/S14**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **26+500** Offset, m: **3.8** **LT** Dbfg, m: **0.55-1.98**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	**100.0**
⅜ in. [9.5 mm]	**96.1**
¼ in. [6.3 mm]	**92.1**
No. 4 [4.75 mm]	**89.4**
No. 10 [2.00 mm]	**82.5**
No. 20 [0.850 mm]	**73.3**
No. 40 [0.425 mm]	**60.9**
No. 60 [0.250 mm]	**50.5**
No. 100 [0.150 mm]	**39.1**
No. 200 [0.075 mm]	**28.0**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
8.3

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

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Reported by: **FOGG, BRIAN** Date Reported: **1/21/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128898	**HB-WEL-216/1D**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **26+500** Offset, m: **2.4** **LT** Dbfg, m: **0.30-0.91**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	**100.0**
¾ in. [19.0 mm]	**90.8**
½ in. [12.5 mm]	**90.2**
⅜ in. [9.5 mm]	**87.3**
¼ in. [6.3 mm]	**83.1**
No. 4 [4.75 mm]	**78.4**
No. 10 [2.00 mm]	**64.4**
No. 20 [0.850 mm]	**46.8**
No. 40 [0.425 mm]	**33.3**
No. 60 [0.250 mm]	**23.7**
No. 100 [0.150 mm]	**16.5**
No. 200 [0.075 mm]	**10.0**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

3.7

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128899	**HB-WEL-216/2D(A)**	**GEOTECHNICAL (DISTURBED)**	**12/18/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **26+500** Offset, m: **2.4** **LT** Dbfg, m: **0.91-1.28**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	**100.0**
⅜ in. [9.5 mm]	**94.3**
¼ in. [6.3 mm]	**86.0**
No. 4 [4.75 mm]	**81.0**
No. 10 [2.00 mm]	**67.1**
No. 20 [0.850 mm]	**48.7**
No. 40 [0.425 mm]	**33.1**
No. 60 [0.250 mm]	**22.8**
No. 100 [0.150 mm]	**15.8**
No. 200 [0.075 mm]	**9.2**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

4.0

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/21/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
133046	**HB-WEL-217/S15**	**GEOTECHNICAL (DISTURBED)**	**12/19/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **27+340** Offset, m: **4.6** **LT** Dbfg, m: **0.24-0.85**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	
⅜ in. [9.5 mm]	**100.0**
¼ in. [6.3 mm]	**99.0**
No. 4 [4.75 mm]	**98.4**
No. 10 [2.00 mm]	**96.1**
No. 20 [0.850 mm]	**90.2**
No. 40 [0.425 mm]	**53.7**
No. 60 [0.250 mm]	**17.8**
No. 100 [0.150 mm]	**9.0**
No. 200 [0.075 mm]	**5.9**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

5.1

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
133047	**HB-WEL-217/S16**	**GEOTECHNICAL (DISTURBED)**	**12/19/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **27+340** Offset, m: **4.6** **LT** Dbfg, m: **0.85-1.83**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	
⅜ in. [9.5 mm]	**100.0**
¼ in. [6.3 mm]	**99.7**
No. 4 [4.75 mm]	**99.7**
No. 10 [2.00 mm]	**99.4**
No. 20 [0.850 mm]	**98.8**
No. 40 [0.425 mm]	**97.0**
No. 60 [0.250 mm]	**83.6**
No. 100 [0.150 mm]	**29.5**
No. 200 [0.075 mm]	**12.6**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

7.4

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
128500	**HB-WEL-218/1D(A)**	**GEOTECHNICAL (DISTURBED)**	**12/19/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **27+340** Offset, m: **2.3** **LT** Dbfg, m: **0.30-0.67**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**82.3**
¾ in. [19.0 mm]	**72.5**
½ in. [12.5 mm]	**68.0**
⅜ in. [9.5 mm]	**62.5**
¼ in. [6.3 mm]	**57.4**
No. 4 [4.75 mm]	**53.9**
No. 10 [2.00 mm]	**43.5**
No. 20 [0.850 mm]	**32.5**
No. 40 [0.425 mm]	**22.6**
No. 60 [0.250 mm]	**15.8**
No. 100 [0.150 mm]	**12.0**
No. 200 [0.075 mm]	**8.4**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

4.2

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

Brown sandy gravel

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/16/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
133048	**HB-WEL-218/1D(B)**	**GEOTECHNICAL (DISTURBED)**	**12/19/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **27+340** Offset, m: **2.3** **LT** Dbfg, m: **0.67-0.91**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	**100.0**
⅜ in. [9.5 mm]	**99.3**
¼ in. [6.3 mm]	**99.0**
No. 4 [4.75 mm]	**98.5**
No. 10 [2.00 mm]	**96.7**
No. 20 [0.850 mm]	**90.9**
No. 40 [0.425 mm]	**63.3**
No. 60 [0.250 mm]	**19.1**
No. 100 [0.150 mm]	**8.9**
No. 200 [0.075 mm]	**4.6**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

4.4

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
133049	**HB-WEL-218/2D**	**GEOTECHNICAL (DISTURBED)**	**12/19/2002**	**12/22/2002**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **27+340** Offset, m: **2.3** **LT** Dbfg, m: **0.91-1.52**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	
¾ in. [19.0 mm]	
½ in. [12.5 mm]	
⅜ in. [9.5 mm]	
¼ in. [6.3 mm]	**100.0**
No. 4 [4.75 mm]	**100.0**
No. 10 [2.00 mm]	**99.7**
No. 20 [0.850 mm]	**99.3**
No. 40 [0.425 mm]	**97.9**
No. 60 [0.250 mm]	**86.8**
No. 100 [0.150 mm]	**21.0**
No. 200 [0.075 mm]	**6.6**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

7.6

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **1/6/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
176180	**TP-WEL-101**	**GEOTECHNICAL (DISTURBED)**	**12/3/2003**	**12/8/2003**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **20+940** Offset, m: **3.5** **LT** Dbfg, m: **0.19-0.60**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**99.9**
¾ in. [19.0 mm]	**99.9**
½ in. [12.5 mm]	**99.8**
⅜ in. [9.5 mm]	**97.0**
¼ in. [6.3 mm]	**92.4**
No. 4 [4.75 mm]	**88.5**
No. 10 [2.00 mm]	**72.5**
No. 20 [0.850 mm]	**38.4**
No. 40 [0.425 mm]	**16.8**
No. 60 [0.250 mm]	**9.0**
No. 100 [0.150 mm]	**5.7**
No. 200 [0.075 mm]	**3.8**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

4.2

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **12/18/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
176179	**TP-WEL-102**	**GEOTECHNICAL (DISTURBED)**	**12/3/2003**	**12/8/2003**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **22+500** Offset, m: **2.7** **LT** Dbfg, m: **0.28-0.57**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**99.7**
¾ in. [19.0 mm]	**99.7**
½ in. [12.5 mm]	**99.6**
⅜ in. [9.5 mm]	**95.0**
¼ in. [6.3 mm]	**84.2**
No. 4 [4.75 mm]	**77.2**
No. 10 [2.00 mm]	**56.4**
No. 20 [0.850 mm]	**29.1**
No. 40 [0.425 mm]	**14.3**
No. 60 [0.250 mm]	**8.4**
No. 100 [0.150 mm]	**5.5**
No. 200 [0.075 mm]	**3.7**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
3.3

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **12/18/2003**

Paper Copy: Lab File; Project File; Geotech File

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GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
176178	**TP-WEL-103**	**GEOTECHNICAL (DISTURBED)**	**12/3/2003**	**12/8/2003**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **24+500** Offset, m: **3.4** **LT** Dbfg, m: **0.25-0.55**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**100.0**
1 in. [25.0 mm]	**99.9**
¾ in. [19.0 mm]	**99.8**
½ in. [12.5 mm]	**99.7**
⅜ in. [9.5 mm]	**87.8**
¼ in. [6.3 mm]	**76.1**
No. 4 [4.75 mm]	**69.3**
No. 10 [2.00 mm]	**51.2**
No. 20 [0.850 mm]	**32.1**
No. 40 [0.425 mm]	**18.0**
No. 60 [0.250 mm]	**11.8**
No. 100 [0.150 mm]	**8.3**
No. 200 [0.075 mm]	**5.3**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

3.2

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **12/18/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
176177	TP-WEL-104	GEOTECHNICAL (DISTURBED)	12/3/2003	12/8/2003

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **26+500** Offset, m: **3.0** **LT** Dbfg, m: **0.20-0.53**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**99.9**
1 in. [25.0 mm]	**99.7**
¾ in. [19.0 mm]	**99.6**
½ in. [12.5 mm]	**99.5**
⅜ in. [9.5 mm]	**92.1**
¼ in. [6.3 mm]	**81.0**
No. 4 [4.75 mm]	**75.3**
No. 10 [2.00 mm]	**60.8**
No. 20 [0.850 mm]	**46.4**
No. 40 [0.425 mm]	**35.6**
No. 60 [0.250 mm]	**26.8**
No. 100 [0.150 mm]	**18.0**
No. 200 [0.075 mm]	**11.4**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %
Plastic Limit (T 90), %
Plasticity Index (T 90), %
Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %
4.1

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **12/18/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Materials Testing & Exploration, 219 Hogan Road, Bangor, Maine 04401

GEOTECHNICAL TEST REPORT
Central Laboratory

SAMPLE INFORMATION

Reference No.	Boring No./Sample No.	Sample Description	Sampled	Received
176176	**TP-WEL-105**	**GEOTECHNICAL (DISTURBED)**	**12/3/2003**	**12/8/2003**

Sample Type: **GEOLOGY** Location: **ROADWAY** Station: **27+340** Offset, m: **3.1** **LT** Dbfg, m: **0.20-0.76**

PIN: **007998.10** Town: **Wells** Sampler: **GROSS, KAREN L**

TEST RESULTS

Sieve Analysis (T 27, T 11)

Wash Method

Procedure A

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	**99.9**
1 in. [25.0 mm]	**99.7**
¾ in. [19.0 mm]	**99.7**
½ in. [12.5 mm]	**99.6**
⅜ in. [9.5 mm]	**94.8**
¼ in. [6.3 mm]	**88.8**
No. 4 [4.75 mm]	**84.8**
No. 10 [2.00 mm]	**73.1**
No. 20 [0.850 mm]	**55.8**
No. 40 [0.425 mm]	**34.2**
No. 60 [0.250 mm]	**14.2**
No. 100 [0.150 mm]	**9.8**
No. 200 [0.075 mm]	**7.2**

Direct Shear (T 236)

Shear Angle, °			
Initial Water Content, %			
Normal Stress, kPa			
Wet Density, kg/m³			
Dry Density, kg/m³			
Specimen Thickness, m			

Consolidation (T 216)

Trimmings, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, kg/m³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %

Plastic Limit (T 90), %

Plasticity Index (T 90), %

Specific Gravity, Corrected to 20°C (T 100)

Loss on Ignition (T 267)

Loss, %	H2O, %

Water Content (T 265), %

4.8

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, m	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear kPa	Remold kPa	U. Shear kPa	Remold kPa		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **FOGG, BRIAN** Date Reported: **12/18/2003**

Paper Copy: Lab File; Project File; Geotech File

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

TERRY

SAMPLE INFORMATION

Reference No. **98593**

Sample Description: **GEOLOGY CUP** FWD-100SB

Sampled: **08/29/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 274315 Offset: ~~92mm~~ 24m Depth: .92-.61m

Washboring: **100 fwd m**

PIN: 7998.10 10 Town: WELLS

Sample: **Sample #1**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	100.0
12.5 mm	[½ in.]	97.7
mm	[3/8 in.]	79.2
mm	[¼ in.]	70.3
4.75 mm	[No. 4]	65.9
2.00 mm	[No. 10]	56.2
850 µm	[No. 20]	43.5
425 µm	[No. 40]	29.8
250 µm	[No. 60]	21.3
150 µm	[No. 100]	14.8
75 µm	[No. 200]	9.6

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):	
Plastic Limit, %, (T90):	
Plasticity Index, %, (T90):	
Loss on Ignition, %, (T267):	
Water Content, %, (Maine DOT)	1.3
Specific Gravity (T100) Corrected to 20°C:	

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown silty sandy gravel

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **98594**

Sample Description: **GEOLOGY CUP** FWD-100SB

Sampled: **08/29/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 27+315 Offset: ~~**90mm**~~ 2.4m Depth: .61 - 1.52m Washboring: **100 FWD M**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #2**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	
mm	[3/8 in.]	**100.0**
mm	[¼ in.]	**96.4**
4.75 mm	[No. 4]	**91.7**
2.00 mm	[No. 10]	**78.2**
850 µm	[No. 20]	**57.4**
425 µm	[No. 40]	**37.3**
250 µm	[No. 60]	**27.0**
150 µm	[No. 100]	**19.6**
75 µm	[No. 200]	**13.9**

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):

Plastic Limit, %, (T90):

Plasticity Index, %, (T90):

Loss on Ignition, %, (T267):

Water Content, %, (Maine DOT) **2.7**

Specific Gravity (T100) Corrected to 20°C:

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown f-c sand, some gravel, some silt

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **98595**

Sample Description: **GEOLOGY CUP** FWD-100SB

Sampled: **08/29/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 27+315 Offset: ~~1.52m~~ 2.4m Depth: 1.52-2.74m Washboring: **100 FWD M**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #3**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	
mm	[3/8 in.]	
mm	[¼ in.]	
4.75 mm	[No. 4]	**100.0**
2.00 mm	[No. 10]	**99.8**
850 µm	[No. 20]	**98.0**
425 µm	[No. 40]	**92.1**
250 µm	[No. 60]	**61.7**
150 µm	[No. 100]	**20.3**
75 µm	[No. 200]	**10.7**

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):

Plastic Limit, %, (T90):

Plasticity Index, %, (T90):

Loss on Ignition, %, (T267):

Water Content, %, (Maine DOT) **2.5**

Specific Gravity (T100) Corrected to 20°C:

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown f-sand

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **98596**

Sample Description: **GEOLOGY CUP** FWD-10 OSB

Sampled: **08/29/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 27+315 Offset: ~~2+74-2~~ 2.4m Depth: 2.74-2.9m

Washboring: **100 FWD M**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #4**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	
mm	[3/8 in.]	
mm	[¼ in.]	**100.0**
4.75 mm	[No. 4]	**99.9**
2.00 mm	[No. 10]	**99.7**
850 µm	[No. 20]	**99.1**
425 µm	[No. 40]	**97.8**
250 µm	[No. 60]	**95.3**
150 µm	[No. 100]	**89.9**
75 µm	[No. 200]	**83.4**

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):

Plastic Limit, %, (T90):

Plasticity Index, %, (T90):

Loss on Ignition, %, (T267):

Water Content, %, (Maine DOT) **21.0**

Specific Gravity (T100) Corrected to 20°C:

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown mottled clayey silt

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

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SAMPLE INFORMATION

Reference No. **98597**

Sample Description: **GEOLOGY CUP** FWD-1000

Sampled: **08/29/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 26+415 Offset: ~~243m~~ 2.5m Depth: .243 - .76 m Washboring: **FWD 1000**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #5**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	100.0
19 mm	[¾ in.]	94.8
12.5 mm	[½ in.]	82.3
mm	[3/8 in.]	75.4
mm	[¼ in.]	67.0
4.. 3 mm	[No. 4]	62.8
2.00 mm	[No. 10]	50.9
850 µm	[No. 20]	38.3
425 µm	[No. 40]	29.1
250 µm	[No. 60]	23.1
150 µm	[No. 100]	17.8
75 µm	[No. 200]	12.8

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):	
Plastic Limit, %, (T90):	
Plasticity Index, %, (T90):	
Loss on Ignition, %, (T267):	
Water Content, %, (Maine DOT)	12,096.3
Specific Gravity (T100) Corrected to 20°C:	

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown silty sandy gravel

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **07/02/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

TERRY

SAMPLE INFORMATION

Reference No. **98598**

Sample Description: **GEOLOGY CUP** FWD - 1000

Sampled: **08/29/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN** Received: **06/26/2001**

Location: **ROADWAY** Station: 26+415 Offset: ~~70-1.~~ 2.5m Depth: .76-1.83m Washboring: **FWD 1000**

PIN: **007998.10** Town: **WELLS** Sample: **Sample #6**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	
mm	[3/8 in.]	**100.0**
mm	[¼ in.]	**98.8**
4.75 mm	[No. 4]	**97.1**
2.00 mm	[No. 10]	**91.8**
850 µm	[No. 20]	**84.4**
425 µm	[No. 40]	**66.1**
250 µm	[No. 60]	**34.9**
150 µm	[No. 100]	**14.6**
75 µm	[No. 200]	**5.9**

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):

Plastic Limit, %, (T90):

Plasticity Index, %, (T90):

Loss on Ignition, %, (T267):

Water Content, %, (Maine DOT) **9.0**

Specific Gravity (T100) Corrected to 20°C:

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: red-brown f-c sand, some silt

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **98599**

Sample Description: **GEOLOGY CUP** FWD-2400

Sampled: **08/30/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 25+005 Offset: ~~1.68m~~ 2.7m Depth: 1.68 - 1.98m Washboring: **FWD 2400**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #7**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	
mm	[3/8 in.]	100.0
mm	[¼ in.]	98.9
4.75 mm	[No. 4]	97.0
2.00 mm	[No. 10]	90.7
850 µm	[No. 20]	75.1
425 µm	[No. 40]	56.7
250 µm	[No. 60]	40.0
150 µm	[No. 100]	26.4
75 µm	[No. 200]	15.0

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):	
Plastic Limit, %, (T90):	
Plasticity Index, %, (T90):	
Loss on Ignition, %, (T267):	
Water Content, %, (Maine DOT)	60.3
Specific Gravity (T100) Corrected to 20°C:	

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown organic silt (peat), some sand

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/29/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **98600**

Sample Description: **GEOLOGY CUP** FWD - 2400

Sampled: **08/30/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 25+005 Offset: ~~1.83m~~ 2.7m Depth: 1.98-2.9m Washboring: **FWD 2400**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #8**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	100.0
mm	[3/8 in.]	96.5
mm	[¼ in.]	89.7
4.75 mm	[No. 4]	85.2
2.00 mm	[No. 10]	71.7
850 µm	[No. 20]	61.5
425 µm	[No. 40]	49.4
250 µm	[No. 60]	38.7
150 µm	[No. 100]	27.1
75 µm	[No. 200]	17.4

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):	
Plastic Limit, %, (T90):	
Plasticity Index, %, (T90):	
Loss on Ignition, %, (T267):	
Water Content, %, (Maine DOT)	25.0
Specific Gravity (T100) Corrected to 20°C:	

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown f-c sand, some clay

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **07/02/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **105032**

Sample Description: **GEOLOGY CUP** FWD - 3000

Sampled: **08/30/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 24+405 Offset: ~~195m~~ 2.4m Depth: .195 - .58m

Washboring: **FWD 3000**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #9**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	100.0
19 mm	[¾ in.]	87.9
12.5 mm	[½ in.]	74.8
mm	[3/8 in.]	70.4
mm	[¼ in.]	61.1
4.75 mm	[No. 4]	57.2
2.00 mm	[No. 10]	47.7
850 µm	[No. 20]	37.5
425 µm	[No. 40]	29.1
250 µm	[No. 60]	22.9
150 µm	[No. 100]	18.0
75 µm	[No. 200]	12.8

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):

Plastic Limit, %, (T90):

Plasticity Index, %, (T90):

Loss on Ignition, %, (T267):

Water Content, %, (Maine DOT) **2.2**

Specific Gravity (T100) Corrected to 20°C:

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati		% Strain
GWN			Pmin	Pmin	
Void Ratio			Pp	Pp	
ry Density, kg/m³			Pmax	Pmax	
Saturation, %			Cc	Cc	

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown silty sandy gravel

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **105033**

Sample Description: **GEOLOGY CUP** FWD-3000

Sampled: **08/30/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 24+405 Offset: ~~195m~~ 2.4m Depth: .58-.98m

Washboring: **FWD 3000**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #10**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	**100.0**
12.5 mm	[½ in.]	**97.2**
mm	[3/8 in.]	**93.0**
mm	[¼ in.]	**90.1**
4.75 mm	[No. 4]	**87.1**
2.00 mm	[No. 10]	**79.0**
850 µm	[No. 20]	**68.7**
425 µm	[No. 40]	**56.9**
250 µm	[No. 60]	**48.0**
150 µm	[No. 100]	**37.9**
75 µm	[No. 200]	**27.2**

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):	
Plastic Limit, %, (T90):	
Plasticity Index, %, (T90):	
Loss on Ignition, %, (T267):	
Water Content, %, (Maine DOT)	**4.5**
Specific Gravity (T100) Corrected to 20°C:	

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati		% Strain
GWN			Pmin	Pmin	
Void Ratio			Pp	Pp	
ry Density, kg/m³			Pmax	Pmax	
Saturation, %			Cc	Cc	

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown silty f-m sand, some cobbles, some gravel

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **105034**

Sample Description: **GEOLOGY CUP** FWD-3402

Sampled: **08/30/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 23+998 Offset: ~~1.52m~~ 2.7m Depth: 1.52-2.9m Washboring: **FWD 3402**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #11**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	
mm	[3/8 in.]	**100.0**
mm	[¼ in.]	**99.9**
4.75 mm	[No. 4]	**99.9**
2.00 mm	[No. 10]	**99.3**
850 µm	[No. 20]	**98.2**
425 µm	[No. 40]	**95.8**
250 µm	[No. 60]	**93.6**
150 µm	[No. 100]	**91.9**
75 µm	[No. 200]	**88.6**

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):

Plastic Limit, %, (T90):

Plasticity Index, %, (T90):

Loss on Ignition, %, (T267):

Water Content, %, (Maine DOT) **23.2**

Specific Gravity (T100) Corrected to 20°C:

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: olive brown mottled clay silt

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **105035**

Sample Description: **GEOLOGY CUP** FWD-4200

Sampled: **08/30/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 23+196 Offset: ~~17.0m~~ 2.5m Rt Depth: .17 - .91m

Washboring: **FWD 4200**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #13**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	100.0
19 mm	[¾ in.]	95.0
12.5 mm	[½ in.]	86.6
[illegible] mm	[3/8 in.]	82.1
[illegible] mm	[¼ in.]	72.8
4.[illegible] mm	[No. 4]	68.2
2.00 mm	[No. 10]	55.3
850 µm	[No. 20]	34.9
425 µm	[No. 40]	19.9
250 µm	[No. 60]	14.2
150 µm	[No. 100]	10.4
75 µm	[No. 200]	7.0

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):

Plastic Limit, %, (T90):

Plasticity Index, %, (T90):

Loss on Ignition, %, (T267):

Water Content, %, (Maine DOT) 1.7

Specific Gravity (T100) Corrected to 20°C:

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown f-c sand, some gravel

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/29/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **105036**

Sample Description: **GEOLOGY CUP** FWD-4200

Sampled: **08/30/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 23+196 Offset: ~~.91m~~ 2.5m RT Depth: .91-1.58 m

Washboring: **FWD 4200**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #14**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	
mm	[3/8 in.]	100.0
mm	[¼ in.]	99.7
mm	[No. 4]	99.3
2.00 mm	[No. 10]	97.2
850 µm	[No. 20]	91.9
425 µm	[No. 40]	81.3
250 µm	[No. 60]	67.8
150 µm	[No. 100]	54.9
75 µm	[No. 200]	41.8

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):	
Plastic Limit, %, (T90):	
Plasticity Index, %, (T90):	
Loss on Ignition, %, (T267):	
Water Content, %, (Maine DOT)	20.8
Specific Gravity (T100) Corrected to 20°C:	

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati		% Strain
GWN			Pmin	Pmin	
Void Ratio			Pp	Pp	
ry Density, kg/m³			Pmax	Pmax	
Saturation, %			Cc	Cc	

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown silty f-sand

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **07/02/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **105037**

Sample Description: **GEOLOGY CUP** FWD - 5000

Sampled: **08/30/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN** Received: **06/26/2001**

Location: **ROADWAY** Station: 22+396 Offset: [redacted] Depth: .21m - .55m Washboring: **FWD 5000**

PIN: **007998.10** Town: **WELLS** 2.5m Rt Sample: **Sample #15**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	100.0
19 mm	[¾ in.]	89.9
12.5 mm	[½ in.]	80.5
mm	[3/8 in.]	73.0
mm	[¼ in.]	64.7
4.75 mm	[No. 4]	59.8
2.00 mm	[No. 10]	49.4
850 µm	[No. 20]	34.1
425 µm	[No. 40]	21.8
250 µm	[No. 60]	15.4
150 µm	[No. 100]	11.5
75 µm	[No. 200]	7.7

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):

Plastic Limit, %, (T90):

Plasticity Index, %, (T90):

Loss on Ignition, %, (T267):

Water Content, %, (Maine DOT) **3.2**

Specific Gravity (T100) Corrected to 20°C:

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown f-c sand, some gravel

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/28/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **105038**

Sample Description: **GEOLOGY CUP** FWD - 5000

Sampled: **08/29/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 22+396 Offset: ~~.55m~~ 2.5m Rt Depth: .55 - 2.44m Washboring: **FWD 5000**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #16**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	100.0
12.5 mm	[½ in.]	97.4
[illegible] mm	[3/8 in.]	95.3
mm	[¼ in.]	84.8
[illegible] mm	[No. 4]	79.8
2.00 mm	[No. 10]	67.5
850 µm	[No. 20]	53.0
425 µm	[No. 40]	36.0
250 µm	[No. 60]	28.2
150 µm	[No. 100]	22.3
75 µm	[No. 200]	16.4

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):	
Plastic Limit, %, (T90):	
Plasticity Index, %, (T90):	
Loss on Ignition, %, (T267):	
Water Content, %, (Maine DOT)	0.8
Specific Gravity (T100) Corrected to 20°C:	

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown sandy silt, some gravel

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/29/2001**

Maine DOT, Construction Division, CENTRAL LABORATORY, 219 Hogan Road, Bangor, Maine 04401

LABORATORY TEST REPORT
Geology

SAMPLE INFORMATION

Reference No. **105039**

Sample Description: **GEOLOGY CUP** FWD - 5000

Sampled: **08/29/2000**

Sample Type: **GEOLOGY** Sampler: **GROSS, KAREN**

Received: **06/26/2001**

Location: **ROADWAY** Station: 22+396 Offset: ~~2.44m~~ 2.5m Rt Depth: 2.44 - 2.9m

Washboring: **FWD 5000**

PIN: **007998.10** Town: **WELLS**

Sample: **Sample #17**

TEST RESULTS

Sieve Analysis (AASHTO T27)

SIEVE SIZE Metric	Standard	% Passing
75 mm	[3 in.]	
25 mm	[1 in.]	
19 mm	[¾ in.]	
12.5 mm	[½ in.]	100.0
mm	[3/8 in.]	98.6
mm	[¼ in.]	96.7
4.75 mm	[No. 4]	94.7
2.00 mm	[No. 10]	85.1
850 µm	[No. 20]	69.1
425 µm	[No. 40]	42.7
250 µm	[No. 60]	28.5
150 µm	[No. 100]	22.4
75 µm	[No. 200]	17.4

Hydrometer Analysis (AASHTO T88)

Particle Size, mm	% Passing	Particle Size, mm	% Passing

Miscellaneous Tests

Liquid Limit, %, (T89):	
Plastic Limit, %, (T90):	
Plasticity Index, %, (T90):	
Loss on Ignition, %, (T267):	
Water Content, %, (Maine DOT)	4.2
Specific Gravity (T100) Corrected to 20°C:	

Consolidation (AASHTO T297)

	Initial	Final	Voids Rati	% Strain
GWN			Pmin	Pmin
Void Ratio			Pp	Pp
ry Density, kg/m³			Pmax	Pmax
Saturation, %			Cc	Cc

Vane Shear Test on Shelby Tubes (Maine DOT)

(T/ft2)(95.76)=kPa

Depth of Sample in Tube (m)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	Undisturbed Shear Strength Vane (kPa)	Remolding Vane (kPa)	% Water Content	Description of Tube Sample at Various Depths

Comments: brown f-c sand

AUTHORIZATION

Reported by: **FOGG, BRIAN** Date Reported: **06/29/2001**

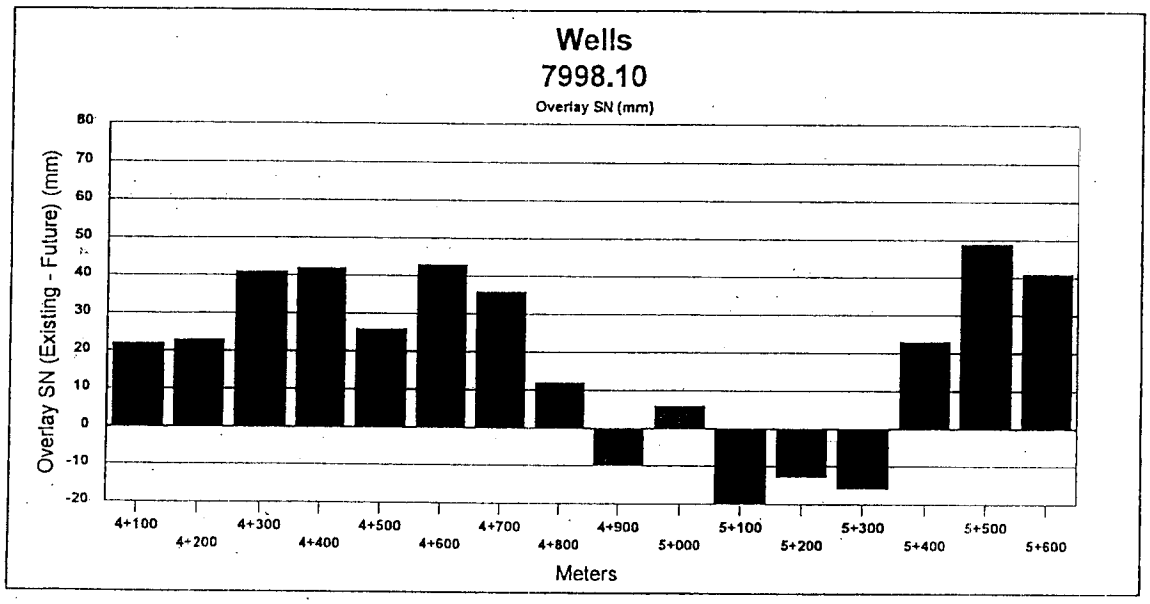
Appendix D: Design

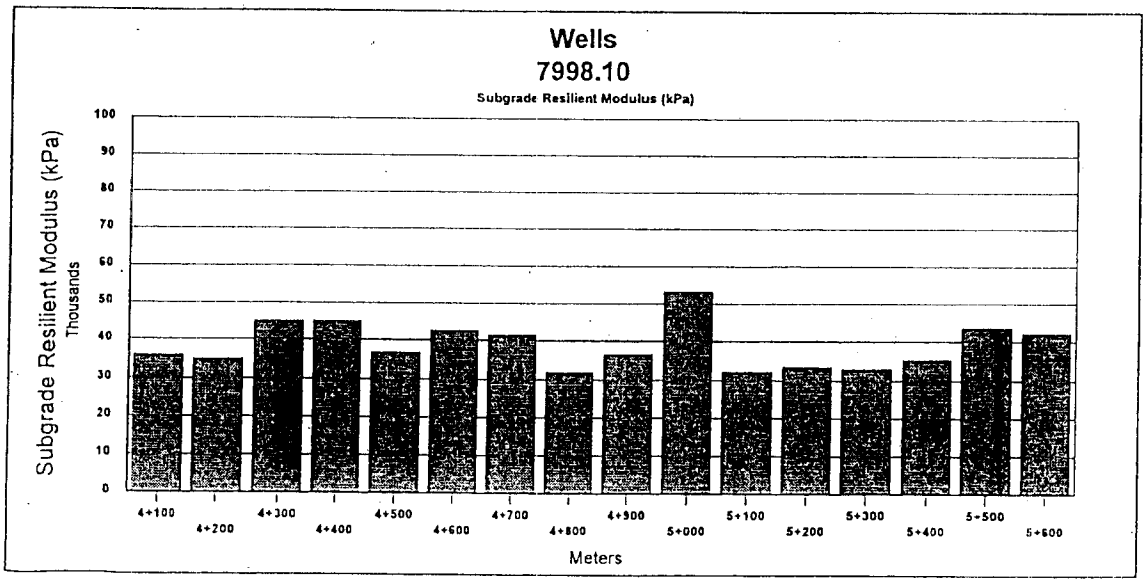
- FWD Analysis
- Resilient Modulus (Mr) Calculation
- Frost Depth Information
- Detail – *Frost Susceptible Soils over Ledge*

Wells
7998.10
Sta. 4+000 to 5+600

Station (Meters)	Existing Structural Number (mm)	Future Traffic Structural Number (mm)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (mm)	Existing Pavement Modulus (kPa)	Subgrade Resilient Modulus (kPa)	Pavement Depth (mm)	Pavement/ Gravel Depth (mm)
4+100	141	119	22	-	458716	36102	90	760
4+200	143	120	23	-	483624	35011	90	760
4+300	151	110	41	-	570887	45162	90	760
4+400	152	110	42	-	579202	45197	90	760
4+500	144	118	26	-	487609	37005	125	760
4+600	155	112	43	-	616077	42773	125	760
4+700	149	113	36	-	540612	41541	125	760
4+800	135	123	12	-	409393	32154	125	760
4+900	108	118	10	23	550158	36630	105	550
5+000	110	104	6	-	581710	53310	105	550
5+100	102	123	21	8	461475	32393	105	550
5+200	109	122	8	30	557111	33582	105	550
5+300	106	122	16	36	514077	33222	105	550
5+400	143	120	23	-	478075	35372	150	760
5+500	161	112	49	-	691217	43699	150	760
5+600	154	113	41	-	601175	42082	150	760

FWD Test Location	Design Station
5600	21+796
5500	21+896
5400	21+996
5300	22+096
5200	22+196
5100	22+296
5000	22+396
4900	22+496
4800	22+596
4700	22+696
4600	22+796
4500	22+896
4400	22+996
4300	23+096
4200	23+196
4100	23+296
4000	23+396
3900	23+496
3800	23+596
3700	23+696
3600	23+796
3500	23+896
3400	23+996
3300	24+096
3200	24+196
3100	24+296
3000	24+396
2900	24+496
2800	24+596
2700	24+696
2600	24+796
2500	24+896
2400	24+996
2300	25+096
2200	25+196
2100	25+296

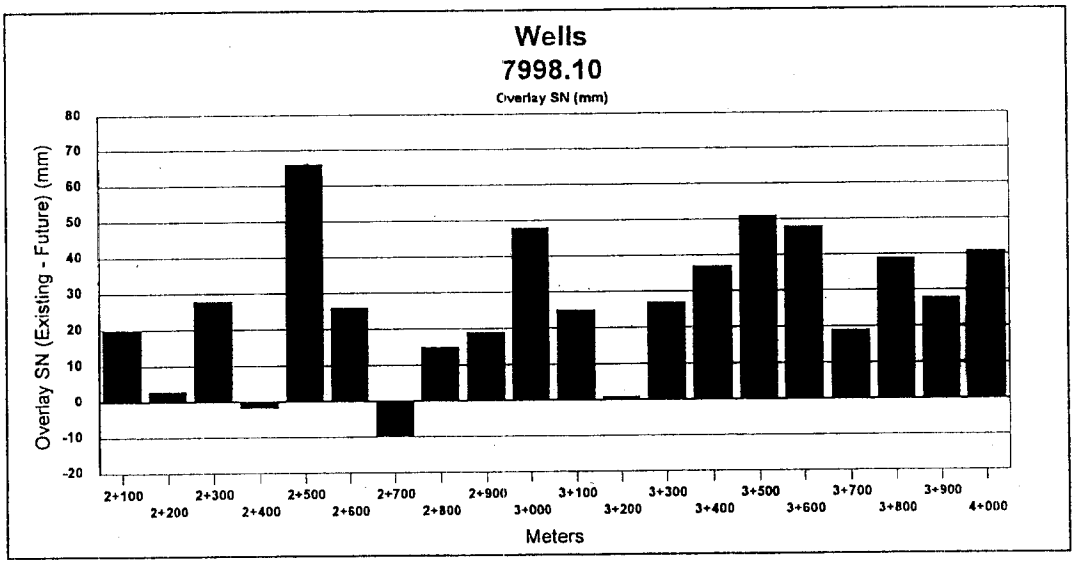


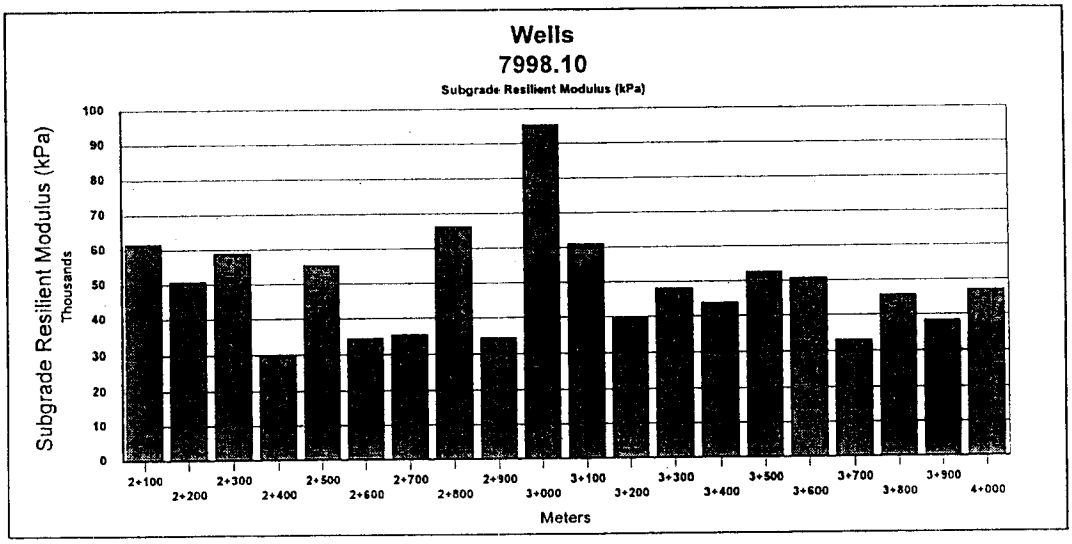


Wells
7998.10
Sta. 2+000 to 4+000

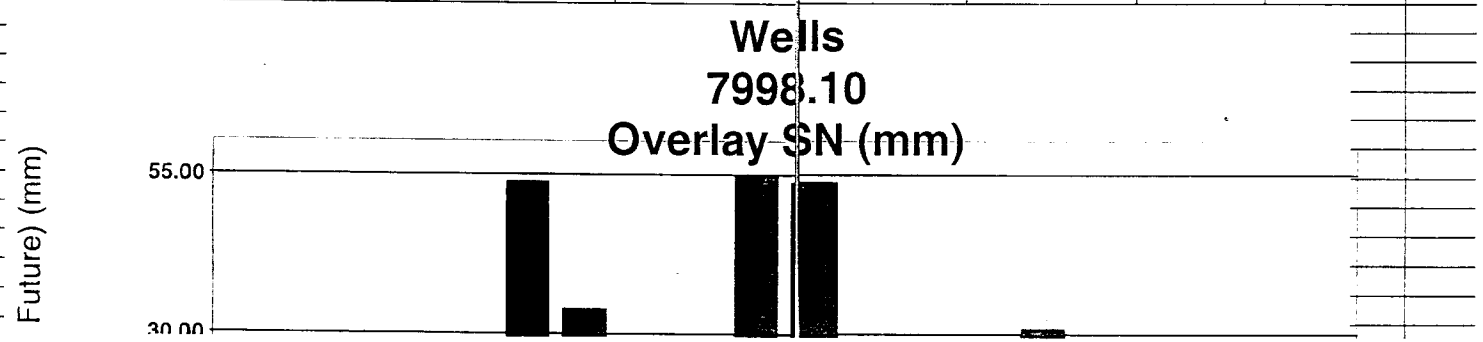
Station (Meters)	Existing Structural Number (mm)	Future Traffic Structural Number (mm)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (mm)	Existing Pavement Modulus (kPa)	Subgrade Resilient Modulus (kPa)	Pavement Depth (mm)	Pavement/ Gravel Depth (mm)
2+100	119	99	20	-	738582	61719	165	550
2+200	109	106	3	-	569694	50958	165	550
2+300	129	101	28	-	690319	59082	125	610
2+400	124	126	-2	5	609278	30206	125	610
2+500	169	103	66	-	795145	55448	255	760
2+600	146	120	26	-	513329	34698	255	760
2+700	109	119	-10	23	786715	35666	220	490
2+800	112	97	15	-	855604	66351	220	490
2+900	139	120	19	-	988795	34608	195	580
3+000	133	85	48	-	872047	95441	195	580
3+100	125	100	25	-	723122	61107	85	520
3+200	116	115	1	-	805279	39596	85	520
3+300	135	108	27	-	409210	48129	195	760
3+400	148	111	37	-	534474	43931	195	760
3+500	156	105	51	-	630543	52703	205	760
3+600	154	106	48	-	607537	50813	205	760
3+700	141	122	19	-	464748	33249	160	760
3+800	149	110	39	-	549227	45822	160	760
3+900	144	116	28	-	495381	38466	160	760
4+000	150	109	41	-	554182	47135	160	760

FWD Test Location	Design Station
5600	21+796
5500	21+896
5400	21+996
5300	22+096
5200	22+196
5100	22+296
5000	22+396
4900	22+496
4800	22+596
4700	22+696
4600	22+796
4500	22+896
4400	22+996
4300	23+096
4200	23+196
4100	23+296
4000	23+396
3900	23+496
3800	23+596
3700	23+696
3600	23+796
3500	23+896
3400	23+996
3300	24+096
3200	24+196
3100	24+296
3000	24+396
2900	24+496
2800	24+596
2700	24+696
2600	24+796
2500	24+896
2400	24+996
2300	25+096
2200	25+196
2100	25+296





	A	B	C	D	E	F	G	H	I	J
1					*Wells*					
2					7998.10					
3					Sta. 0+000 to 2+000					
4										
5		Existing	Future Traffic	Overlay	Recommended	Existing	Subgrade		Pavement/	
6	Station	Structural	Structural	Structural Number	Pavement	Pavement	Resilient	Pavement	Gravel	
7	(Meters)	Number (mm)	Number (mm)	(Existing - Future)	Thickness (mm)	Modulus (kPa)	Modulus (kPa)	Depth (mm)	Depth (mm)	
8										
9	0+100	114	120	-6	14	475117	34789	95	610	
10	0+200	126	114	12	-	632448	40709	95	610	
11	0+300	141	126	15	-	900745	29769	95	610	
12	0+400	109	121	-12	27	844458	33778	220	480	
13	0+500	127	119	8	-	681766	35949	95	600	
14	0+600	168	114	54	-	777658	40907	85	760	
15	0+700	151	117	34	-	571463	37763	85	760	
16	0+800	132	104	28	-	860063	53741	90	580	
17	0+900	119	107	12	-	621873	49840	90	580	
18	1+000	160	105	55	-	681302	51928	240	760	
19	1+100	157	103	54	-	635837	54693	240	760	
20	1+200	109	109	0	-	667473	47391	180	520	
21	1+300	103	109	-6	14	560877	46648	180	520	
22	1+400	110	115	-5	11	573019	39769	200	550	
23	1+500	122	91	31	-	792505	79813	200	550	
24	1+600	125	105	20	-	999033	51610	205	520	
25	1+700	111	116	-5	11	706476	38866	205	520	
26	1+800	133	121	12	-	1209509	33866	205	520	
27	1+900	108	117	-9	20	945154	38277	180	460	
28	2+000	104	115	-11	25	846188	39489	180	460	
29										
30										



FWD Test Location	Design Station
2+000	25+396
1+900	25+496
1+800	25+596
1+700	25+696
1+600	25+796
1+500	25+896
1+400	25+996
1+300	26+096
1+200	26+196
1+100	26+296
1+000	26+396
0+900	26+496
0+800	26+596
0+700	26+696
0+600	26+796
0+500	26+896
0+400	26+996
0+300	27+096
0+200	27+196
0+100	27+296
0+000	27+396

STATE OF MAINE

INTERDEPARTMENTAL MEMORANDUM

FILE: 109
Also: Rte 9

Date of Request: 2/12/2009
Return: 2/20/09
Latest Date Needed By 2/19/2009

To: **Ed Hanscom** Dept.: MDOT, Bureau of Planning

From: **Shawn Smith** Dept.: Highway Division

Subject: **Request for Traffic Information** Project Manager: **Shawn Smith**

TOWN(S): Wells P.I.N. **7998.10** Consultant Proj [X]

COUNTY: York ROUTE: Route 109

LOCATION/ DESCRIPTION: Starting 0.15 miles Northerly of the Wells Turnpike Exit # 19 ramp, extending northerly 2.33 miles.

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

Prep By: MAM

Description of Sections	Sec. 1 Wells - SR 9/109 W/O Ramp to Maine Turnpike	Sec. 2A Wells - SR 9/109 (Sanford Road) SE/O SR 9A (Branch Rd)	Sec. 2B Wells - SR 109 (Sanford Road) SE/O Meeting House Road)	Sec. 4	Sec. 5
1 Latest AADT (Year)	16780(2005)	9240(2007)	7990(2000)		
2 Current **2009** AADT	17330	9520	8770		
3 Future **2019** AADT	19930	10950	10090		
4 Future **2029** AADT	22530	12380	11400		
5 DHV - % of AADT	9%	9%	9%	%	%
6 Design Hourly Volume	1938	1098	1047		
7 % Heavy Trucks (AADT)	11%	8%	7%	%	%
8 % Heavy Trucks (DHV)	8%	6%	5%	%	%
9 Direct.Dist. (DHV)	54%	66%	65%	%	%
10 18-KIP Equivalent P 2.0	1109	457	345		
11 18-KIP Equivalent P 2.5	1056	435	329		

Notes or Remarks: 18-Kip ESALS is based on 20 year life

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

Need Only Data Items Numbered

Comments: Traffic Data and Truck Counts needed to design pavement section, and turn movements.
This is an update to exsiting Traffic Counts from 2005.

ESALS } (1056)(20)(365) = 7,708,800
(435)(20)(365) = 3,175,500

NHS - Rel = 95% Principal arterial

STATE OF MAINE

FILE: Rte 109

INTERDEPARTMENTAL MEMORANDUM

Date of Request: 2/12/2009 Return:2/20/09

Latest Date Needed By 2/19/2009

To: **Ed Hanscom** Dept.: MDOT, Bureau of Planning

From: **Shawn Smith** Dept.: Highway Division

Subject: **Request for Traffic Information** Project Manager: **Shawn Smith**

TOWN(S): Wells P.I.N. **7998.20** Consultant Proj [X]

COUNTY: York ROUTE: Route 109

LOCATION/ DESCRIPTION: Starting 2.33miles Northerly of the Wells Turnpike Exti 19 in Wells, extending 2.25 miles

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

Prep By: MAM

Description of Sections	Sec. 3A Wells - SR 109(sanford rd) SE/O High Pine Loop	Sec. 3B SR 109 - Wells-Sanford Town Line			
1 Latest AADT (Year)	7780(2007)	7050(2007)			
2 Current **2009** AADT	8010	7260			
3 Future **2019** AADT	9210	8350			
4 Future **2029** AADT	10410	9440			
5 DHV - % of AADT	9%	10%	%	%	%
6 Design Hourly Volume	989	944			
7 % Heavy Trucks (AADT)	8%	9%	%	%	%
8 % Heavy Trucks (DHV)	6%	7%	%	%	%
9 Direct.Dist. (DHV)	65%	65%	%	%	%
10 18-KIP Equivalent P 2.0	345	345			
11 18-KIP Equivalent P 2.5	329	329			

Notes or Remarks: 18-Kip ESALS is based on 20 year life

PLEASE PROVIDE: (1) PIN NUMBER, (2) THE CURRENT & FUTURE YEARS FOR WHICH YOU WANT AADT CALCULATED, AND SEND TO MIKE MORGAN. (A LOCATION MAP IS NO LONGER NEEDED.)

TRAFFIC REQUESTS WILL BE FILLED ON A FIRST COME / SERVE BASIS. PLEASE SEND WHEN PROJECT KICKS OFF!!!

Need Only Data Items Numbered [ ]

Comments: Traffic Data and Truck Counts needed to design pavement section. Will need Turning movements.

This is an update to the original counts completed in 2005.

ESAL's = (329)(20)(365) = 2,401,700

PIN # 7998.10 /.20

Mr Calculation

Phase 1

Mr from FWD (kPa)	Mr throw outs (kPa)
42082	
43699	
35372	
33222	
33582	
32393	
53310	
36630	
32154	
41541	
42773	
34005	
45197	
35011	
36102	
47135	
38466	
45822	
33249	
50813	
52703	
43931	
48129	
39596	
	61107
	95441
34608	
	66351

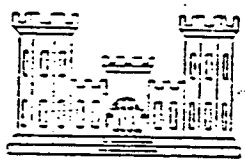
75th percentile
34610 kPa

Phase 2

35666	
34698	
30206	
59082	
50958	
61719	

FROST INVESTIGATIONS

PREDICTION OF FREEZING TEMPERATURE PENETRATION IN NEW ENGLAND



MISCELLANEOUS PAPER NO. 11

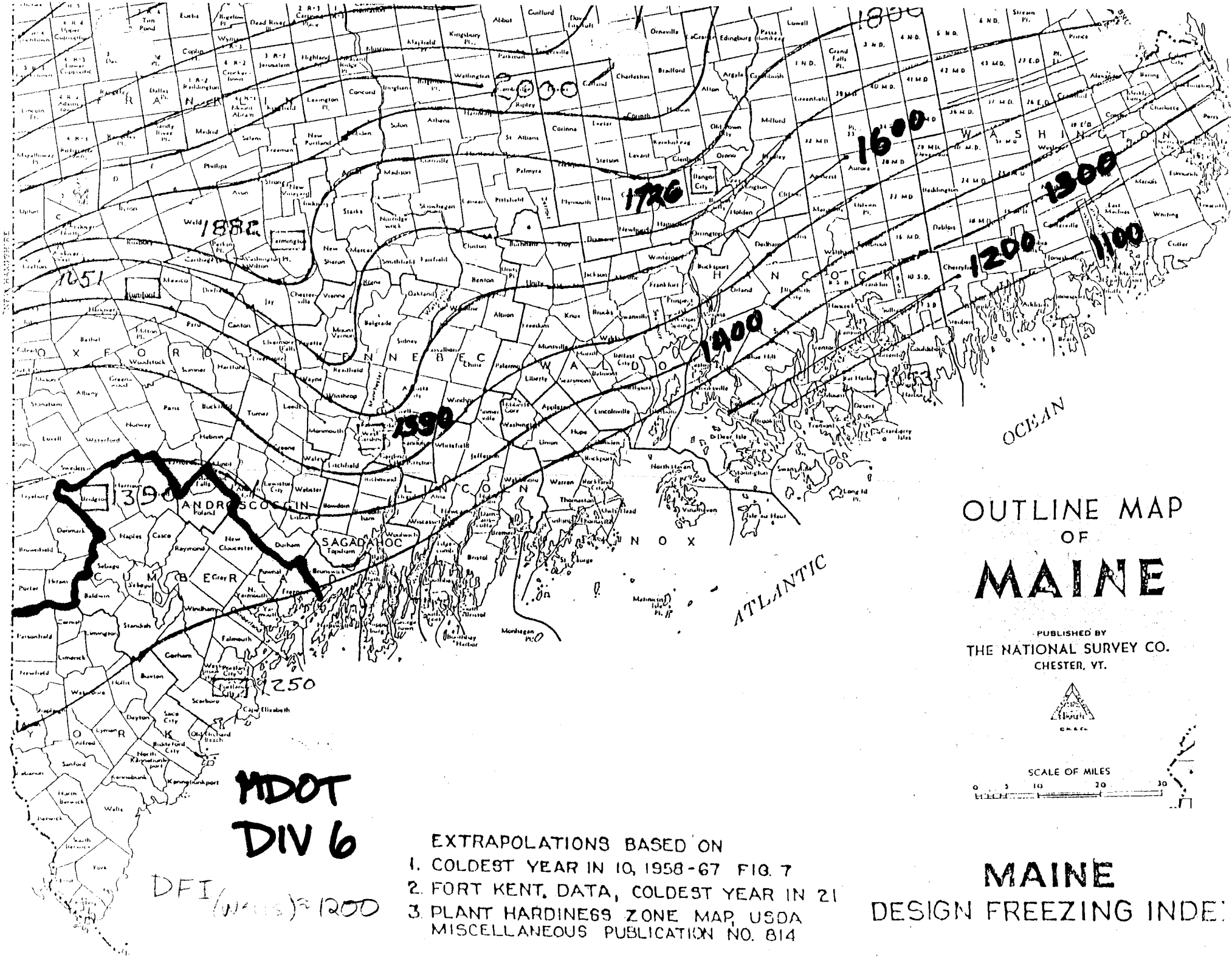
PREPARED BY

ARCTIC CONSTRUCTION AND FROST EFFECTS LABORATORY
NEW ENGLAND DIVISION
BOSTON, MASSACHUSETTS

FOR

OFFICE OF THE CHIEF OF ENGINEERS
AIRFIELDS BRANCH
ENGINEERING DIVISION
MILITARY CONSTRUCTION

June 1955

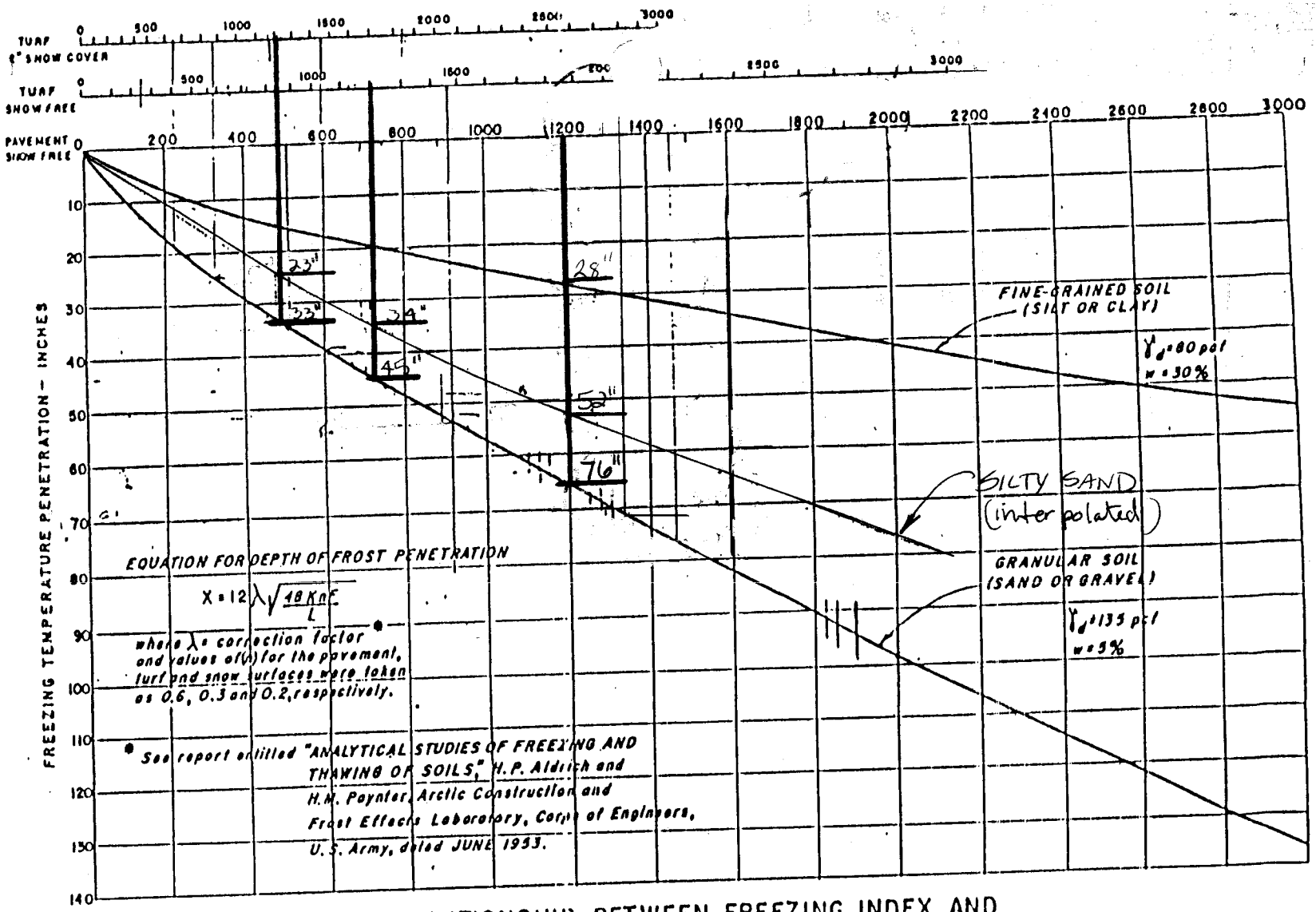


MDOT
DIV 6

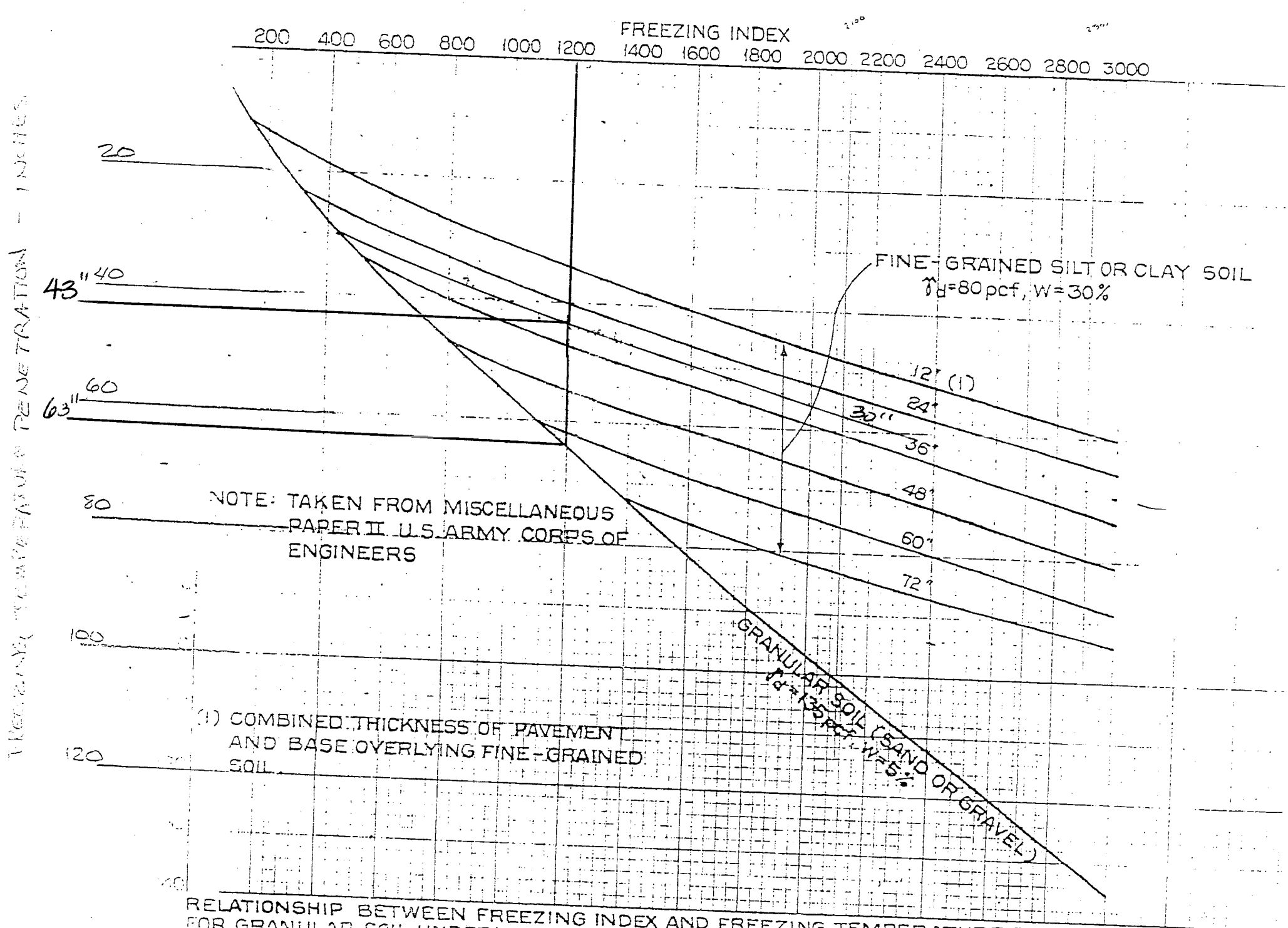
DFI (units) = 1200

EXTRAPOLATIONS BASED ON
1. COLDEST YEAR IN 10, 1958-67 FIG. 7
2. FORT KENT, DATA, COLDEST YEAR IN 21
3. PLANT HARDINESS ZONE MAP, USDA MISCELLANEOUS PUBLICATION NO. 814

MAINE
DESIGN FREEZING INDE



RELATIONSHIP BETWEEN FREEZING INDEX AND FREEZING TEMPERATURE PENETRATION FOR VARIOUS SURFACE CONDITIONS FOR GRANULAR AND FINE-GRAINED SOILS



RELATIONSHIP BETWEEN FREEZING INDEX AND FREEZING TEMPERATURE PENETRATION FOR GRANULAR SOIL UNDERLAIN BY FINE-GRAINED SOIL

Appendix E: Plans

- As-Built Plans
- Geoplans

Fed. Road Dist. No.	State	Fed. Aid Proj. No.	Fiscal Year
9	Maine	293-A	

WELL

STATE OF MAINE
STATE HIGHWAY COMMISSION

PLAN AND PROFILE
STATE HIGHWAY "A-SPUR" 1-5
WELLS
YORK COUNTY
FEDERAL AID PROJECT NO. 293-A

TOTAL LENGTH 1.800 MILES

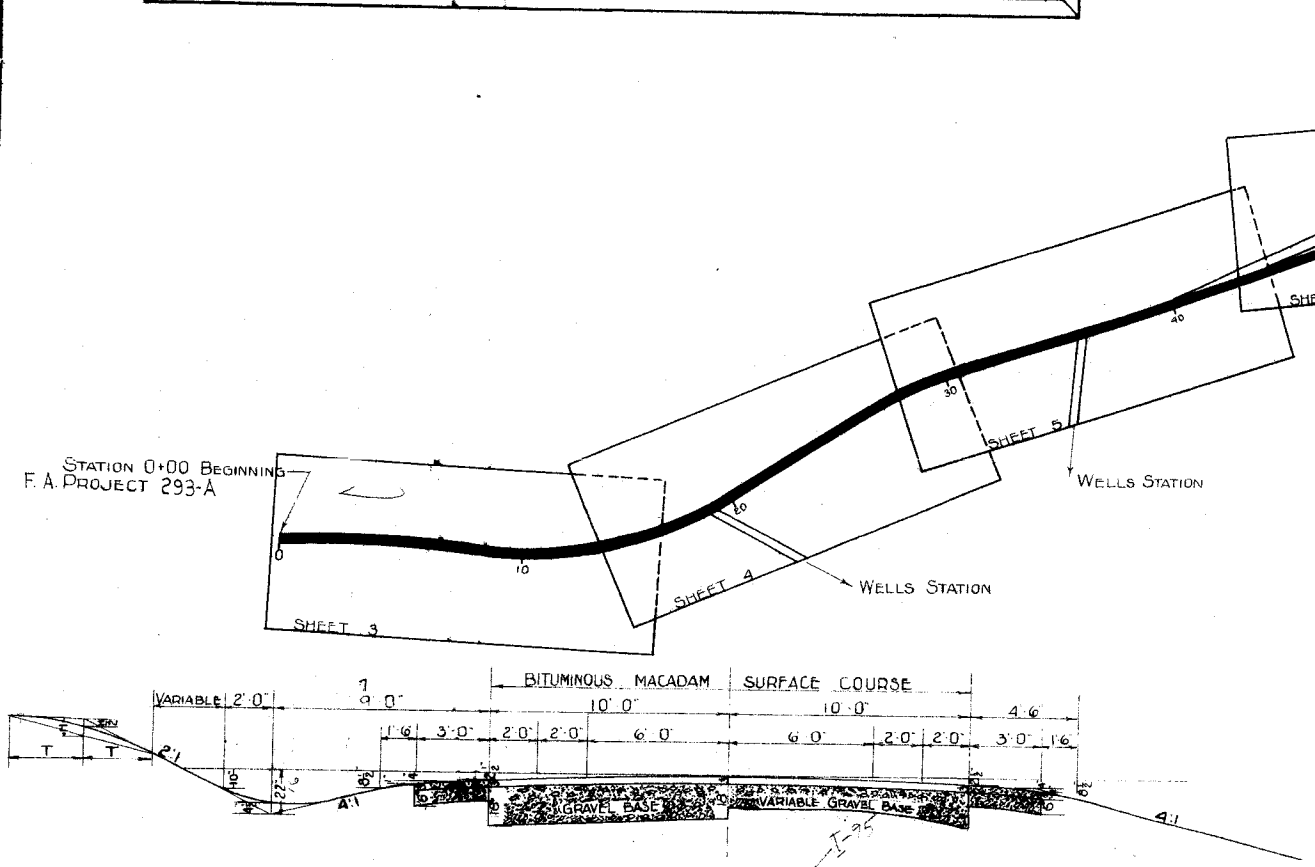
SCALES
- PLAN 1 IN. = 50 FT.
- PROFILE — HOR. 1 IN. = 50 FT. / VER. 1 IN. = 5 FT.
- CROSS SECTIONS 1 IN. = 5 FT.

CONVENTIONAL SIGNS

State or National Line		Survey Line	
County Line		Culvert	
Town Line		Drop Inlet	
Unfenced Property		Trolley Pole	
Fence		Power Pole	
Right of Way Line		Tel. Pole	
Traveled Way		Marsh	
Railroad		Trees	
Retaining Wall		Stone Wall	

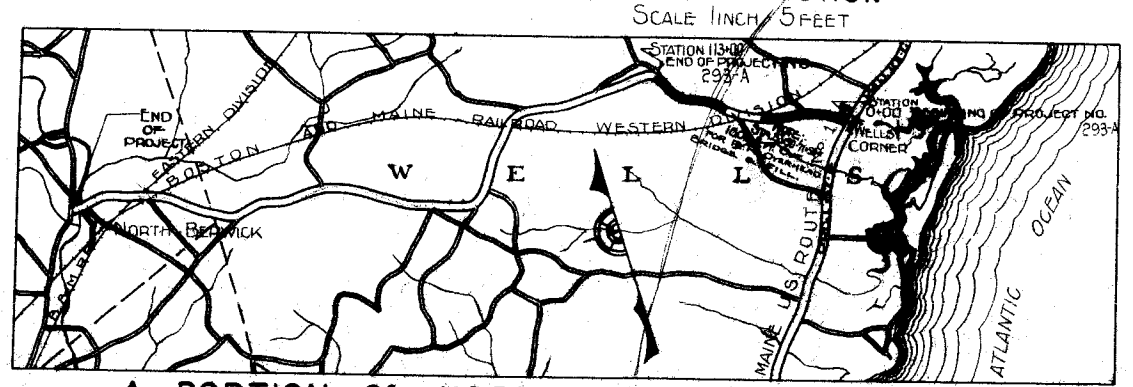
INDEX OF SHEETS

Sheet No.	1	Title Page	Sta.	0+00 — 113+00
Sheet No.	2	Typical Sections		
Sheet No.	3—10	Plan and Profile	Sta.	0+00 — 113+00
Sheet No.	11—24	Cross-Sections	Sta.	0+00 — 113+00
Sheet No.		Bridges	Sta.	
Sheet No.		Special Details		



SHEET LAYOUT PLAN
Scale 1 inch = 400 feet

TYPICAL SECTION
Scale 1 inch = 5 feet



A PORTION OF YORK COUNTY Approx. Scale 1 inch = 1 mile

NOTE: All work contemplated under this contract to be governed by and in conformity with the specifications revised May 1935, except as modified on this plan.

Design
Note: Stations are approximate

17+407 → 21+56

Approved:
Maine State Highway Commission
Chairman

Approved:
U. S. Bureau of Public Roads
District Engineer
Chief Engineer
Director

Fed. Road Dist. No.	State	Fed. Aid Proj. No.	Fed. Year
9	Maine	294-A	

WELLS

STATE OF MAINE
STATE HIGHWAY COMMISSION

PLAN AND PROFILE
STATE HIGHWAY "A-2"
WELLS
YORK COUNTY
FEDERAL AID PROJECT NO. 294-A

TOTAL LENGTH 1.022 MILES

SCALES
- PLAN — 1 IN. = 50 FT.
- PROFILE — HOR. 1 IN. = 50 FT.; VER. 1 IN. = 5 FT.
- CROSS SECTIONS — 1 IN. = 5 FT.

CONVENTIONAL SIGNS

State or National Line	Survey Line
County Line	Culvert
Town Line	Drop Inlet
Unfenced Property	Trolley Pole
Fence	Power Pole
Right of Way Line	Tel. Pole
Traveled Way	Marsh
Railroad	Trees
Retaining Wall	Stone Wall

INDEX OF SHEETS

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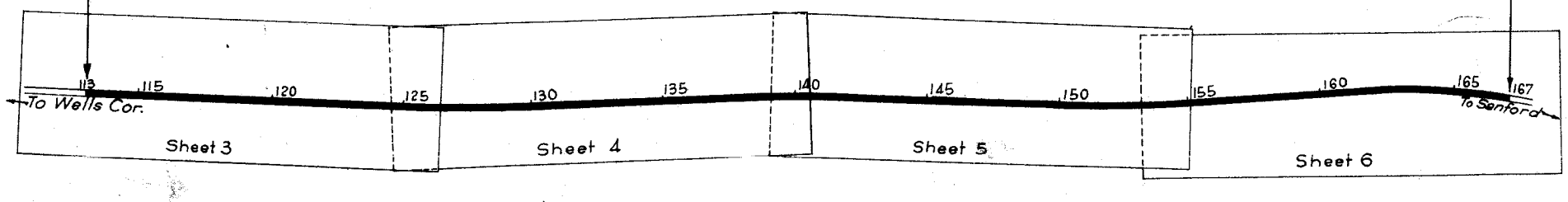
Sheet No.	3-6	Plan and Profile	Sta. 113+0 to 167+0
Sheet No.	6-12	Cross-Sections	Sta. 113+0 to 167+0
Sheet No.		Bridges	Sta.
Sheet No.		Special Details	

Sta. 113+0 Beg. Fed. Aid Project No. 294-A

Sta. 167+0 End Fed. Aid Proj. No. 294-A

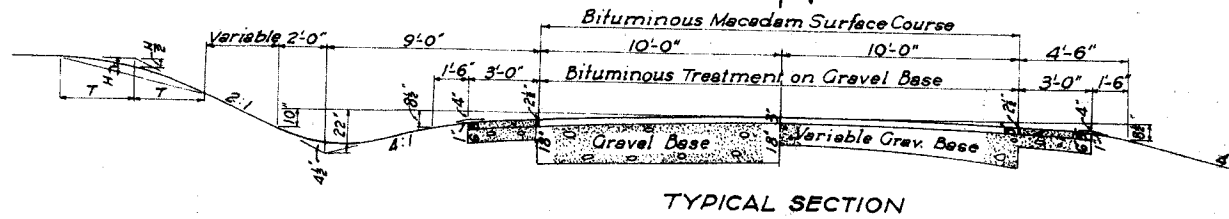


LAYOUT PLAN
Scale 1 in. = 300 ft.

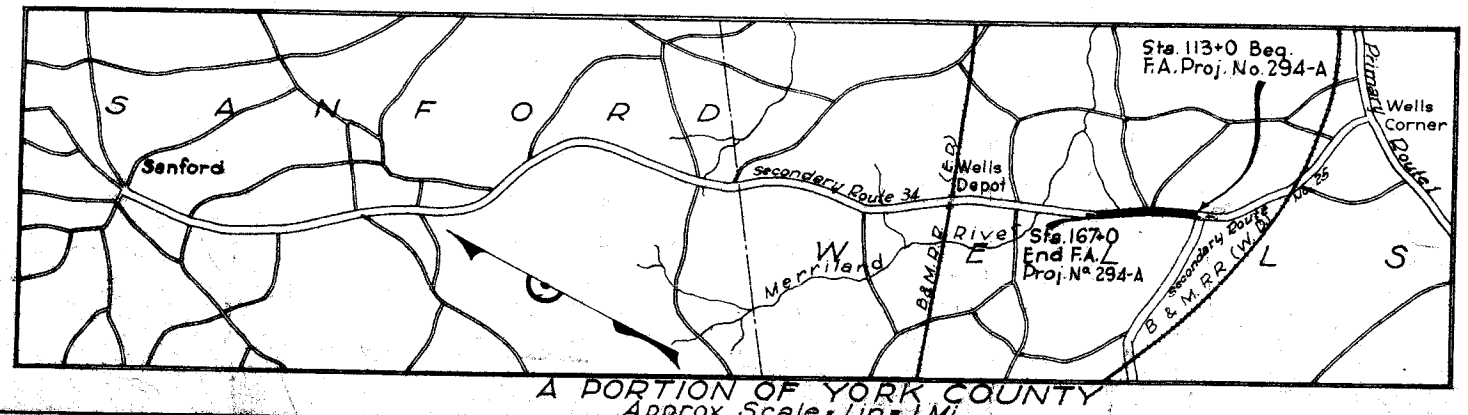
All work contemplated under this contract to be governed by and in conformity with the specifications revised May 1935, except as modified on these plans.

2H 564 → 23+210

NOTE: Design Stations are approximate



TYPICAL SECTION



A PORTION OF YORK COUNTY
Approx. Scale - 1 in. - 1 Mi.

APPROVED:
MAINE STATE HIGHWAY COMMISSION
Paul E. Runnells — CHAIRMAN
[redacted] — CHIEF ENGINEER

APPROVED:
U. S. BUREAU OF PUBLIC ROADS
[redacted] — DISTRICT ENGINEER
[redacted] — CHIEF ENGINEER
[redacted] — DIRECTOR

Fed. Road Dist. No.	State	Fed. Proj.
9	Maine	294

WELLS

23+210 → ~~27+63~~ 28+04

Note: Design St... are approximat...

STATE OF MAINE
STATE HIGHWAY COMMISSION

PLAN AND PROFILE
STATE HIGHWAY "A-2"

WELLS-SANFORD
YORK COUNTY
FEDERAL AID PROJECTS NO. 290 AND 294-B

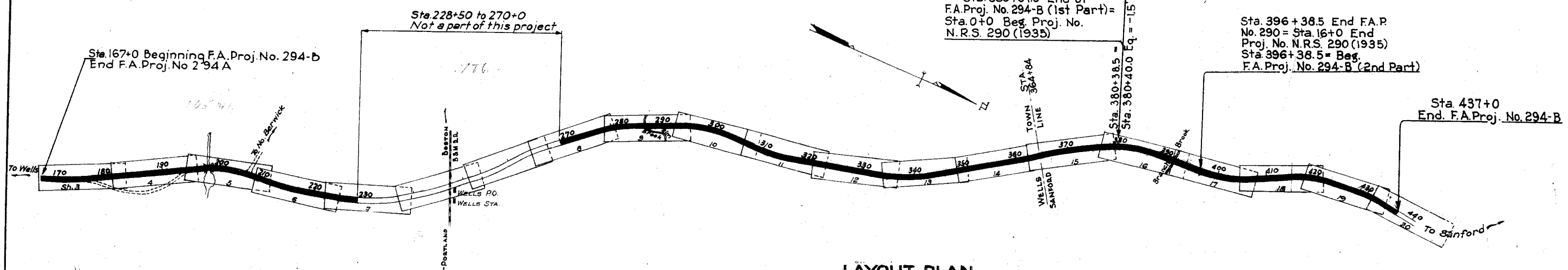
TOTAL LENGTH F.A.P. NO. 290 = 0.303 MILES
TOTAL LENGTH F.A.P. NO. 294-B = 4.024 MILES
4.327

SCALES
- PLAN 1 IN. = 50 FT.
- PROFILE HOR. 1 IN. = 50 FT.
- PROFILE VER. 1 IN. = 5 FT.
- CROSS SECTIONS 1 IN. = 5 FT.

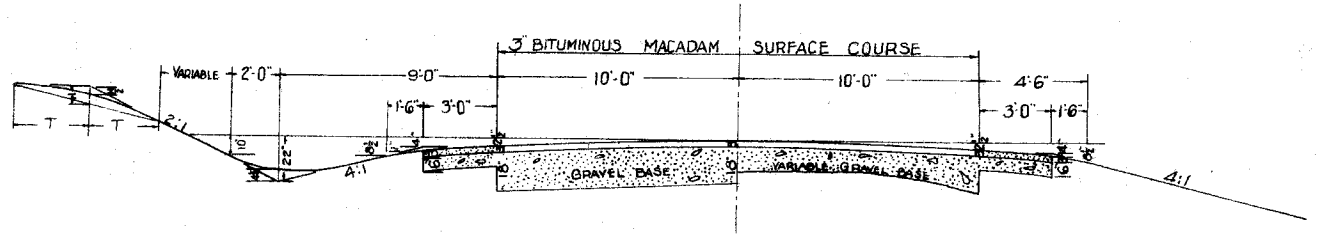
CONVENTIONAL SIGNS

State or National Line		Survey Line	
County Line		Culvert	
Town Line		Drop Inlet	
Unfenced Property		Trolley Pole	
Fence		Power Pole	
Right of Way Line		Tel. Pole	
Traveled Way		Marsh	
Railroad		Trees	
Retaining Wall		Stone Wall	

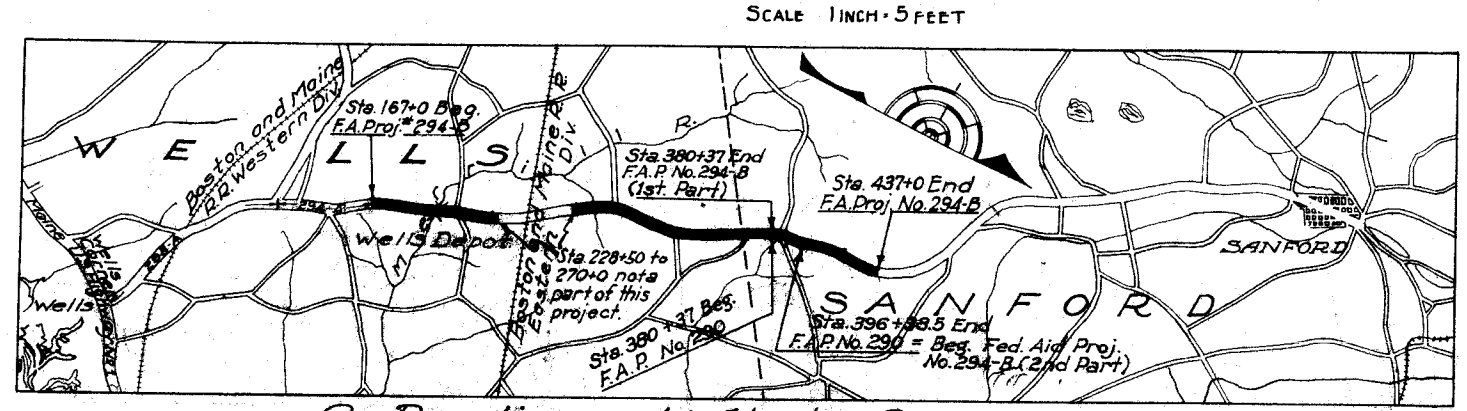
INDEX OF SHEETS



LAYOUT PLAN
Scale 1 inch = 1000 ft.



TYPICAL SECTION
Scale 1 Inch = 5 Feet



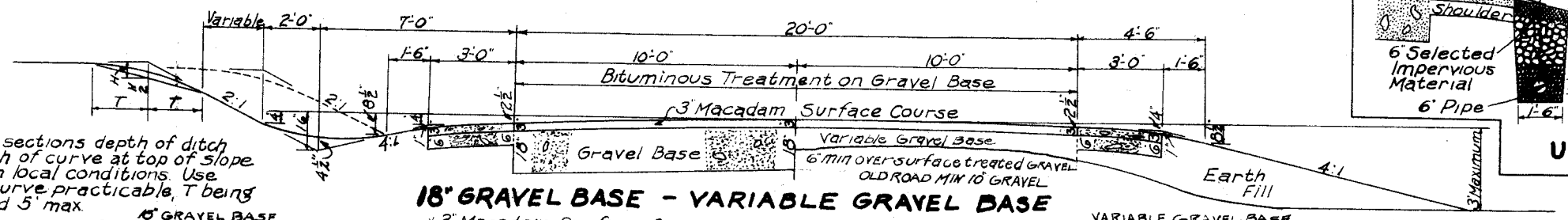
A Portion of York County
Approx. Scale 1 in. = 1 mile

All work contemplated under this contract to be governed by and in conformity with the Specifications adopted Sept. 20, 1935, except as modified on these plans.

APPROVED:
MAINE STATE HIGHWAY COMMISSION
Paul C. Curtis
CHAIRMAN
[redacted]
[redacted]
CHIEF ENGINEER.

APPROVED:
U. S. BUREAU OF PUBLIC ROADS
[redacted]
DISTRICT ENGINEER
[redacted]
CHIEF ENGINEER
[redacted]
DIRECTOR

BITUMINOUS MACADAM SURFACE COURSE



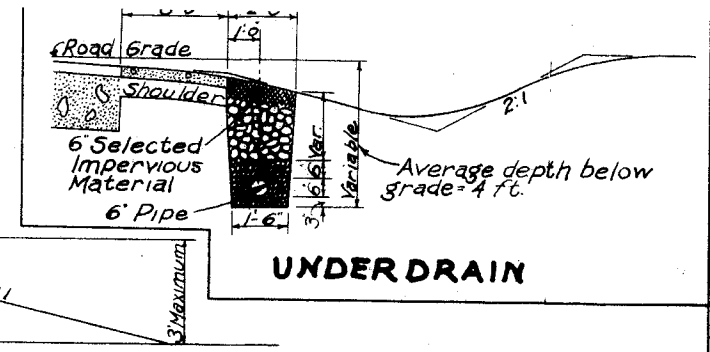
For all sections depth of ditch and length of curve at top of slope depend on local conditions. Use longest curve practicable, T being 2' min. and 5' max.

18" GRAVEL BASE
Sta 167+0 to 228+50 (except bridge)
270+0 to 326+50
375+50 to 382+0
404+0 to 421+50

18" GRAVEL BASE - VARIABLE GRAVEL BASE

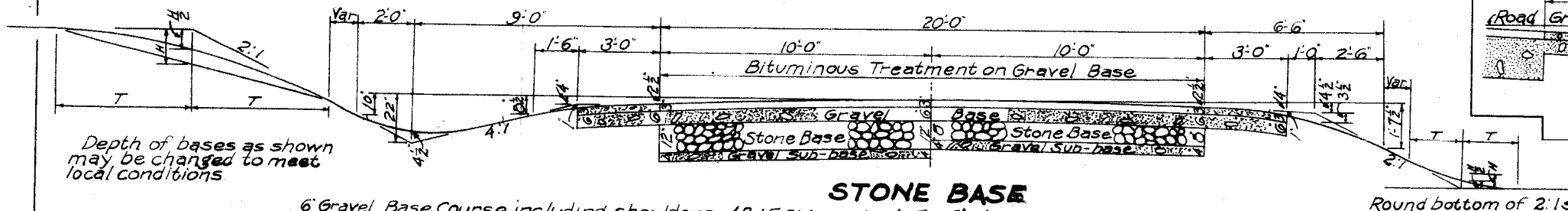
3" Macadam Surface Course = 18.52 C.Y. per 100 L.F.
3" Grav. Surface Course both shoulders = 5.56 " " " "
6" " Base " " " = 11.11 " " " "
18" " inc. shoulders = 124.79 " " " "

VARIABLE GRAVEL BASE
Sta 326+50 to 375+50
382+0 to 404+0
421+50 to 437+0



UNDER DRAIN

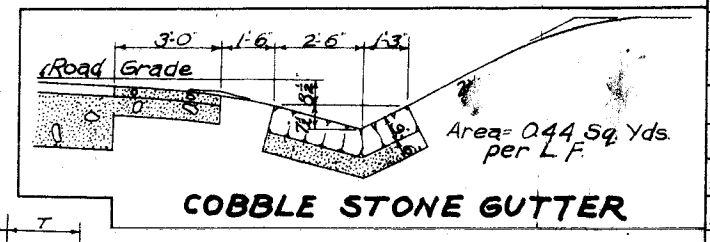
No bottom rounding with 4:1 slope.



Depth of bases as shown may be changed to meet local conditions.

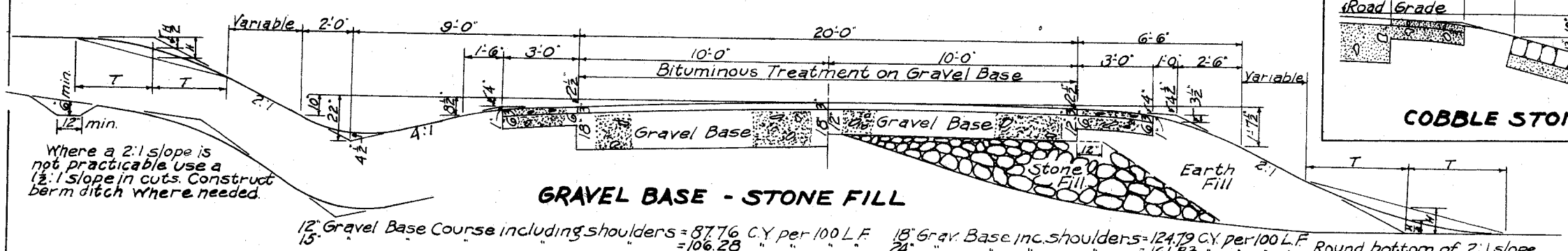
STONE BASE

6" Gravel Base Course including shoulders = 48.15 C.Y. per 100 L.F.
4" Gravel Sub-base Course = 27.26 " " " "
8" Stone Base Course = 49.38 C.Y. per 100 L.F.
12" " " = 74.07 " " " "



COBBLE STONE GUTTER

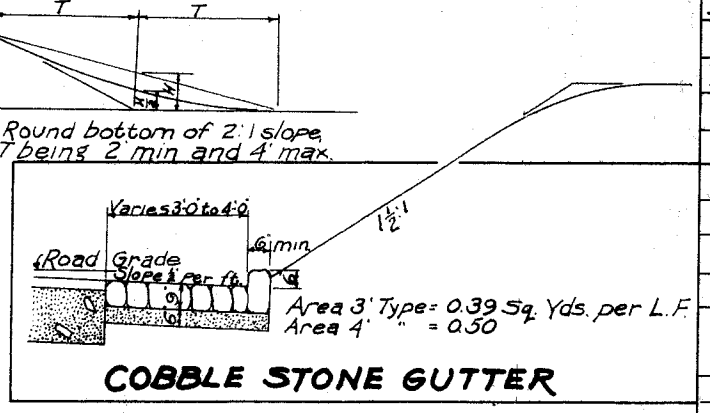
Round bottom of 2:1 slope T being 2' min and 4' max.



Where a 2:1 slope is not practicable use a 1½:1 slope in cuts. Construct berm ditch where needed.

GRAVEL BASE - STONE FILL

12" Gravel Base Course including shoulders = 87.76 C.Y. per 100 L.F.
15" " " " = 106.28 " " " "
18" Grav. Base inc. shoulders = 124.79 C.Y. per 100 L.F.
24" " " " = 161.83 " " " "



COBBLE STONE GUTTER

Round bottom of 2:1 slope T being 2' min and 4' max.

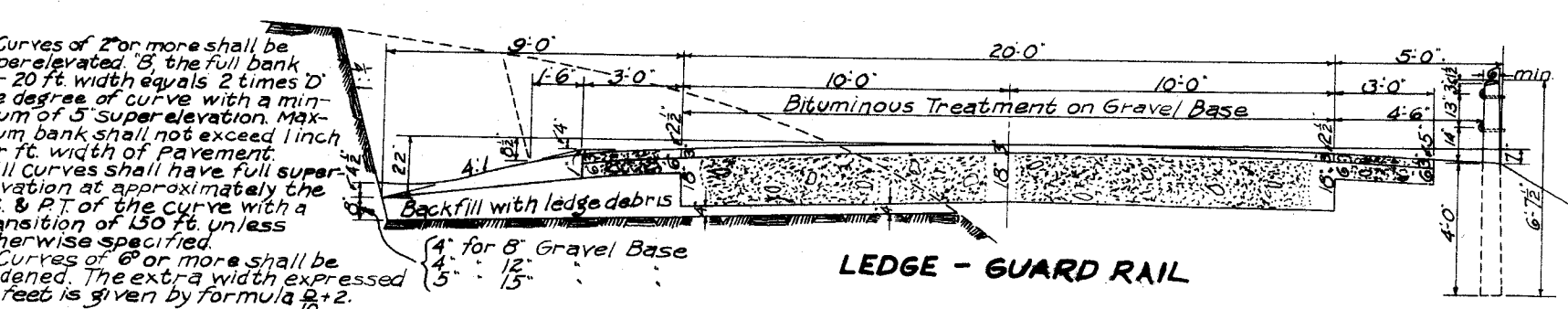
COBBLE STONE GUTTER

Curves of 2° or more shall be superelevated. 'B', the full bank for 20 ft. width equals 2 times 'D' the degree of curve with a minimum of 5" superelevation. Maximum bank shall not exceed 1 inch per ft. width of pavement.

All curves shall have full superelevation at approximately the P.C. & P.T. of the curve with a transition of 150 ft. unless otherwise specified.

Curves of 6° or more shall be widened. The extra width expressed in feet is given by formula $\frac{D}{10}+2$.

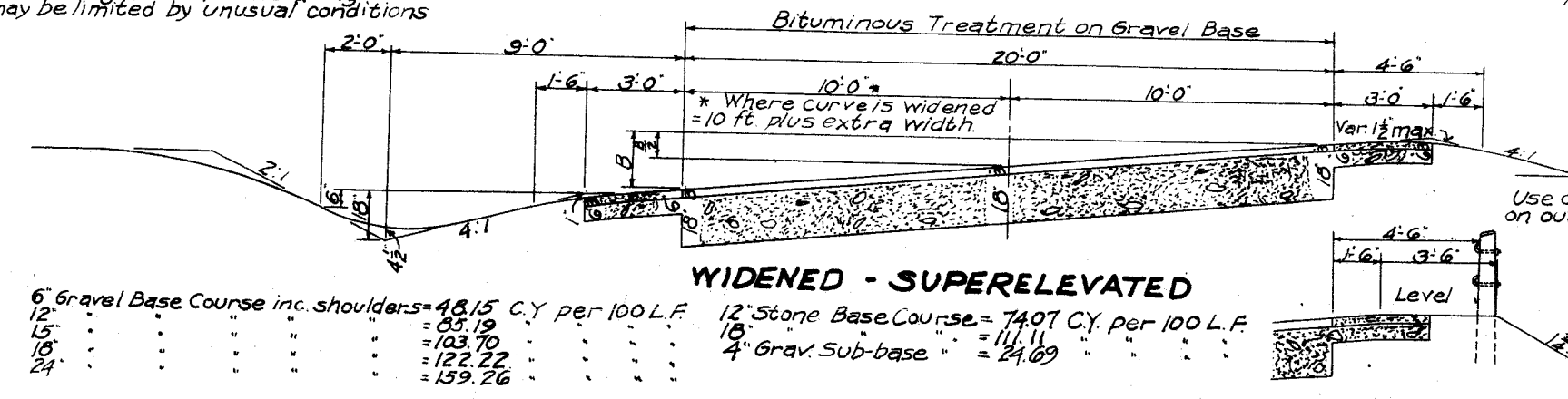
Widening and superelevating may be limited by unusual conditions



4" for 8" Gravel Base
4" " 12" "
5" " 15" "

LEDGE - GUARD RAIL

No top or bottom rounding with 1¾:1 slope.

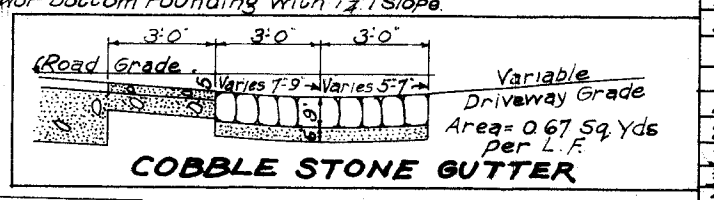


WIDENED - SUPERELEVATED

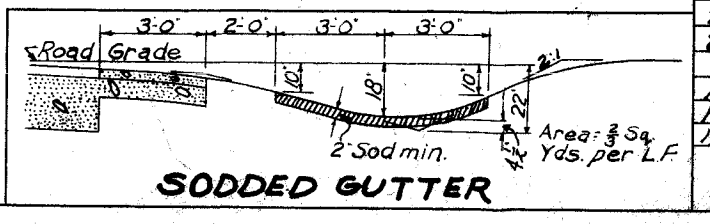
Use only 4:1 slope or guard rail on outside of superelevated curve.

6" Gravel Base Course inc. shoulders = 48.15 C.Y. per 100 L.F.
12" " " " " = 85.19 " " " "
15" " " " " = 103.70 " " " "
18" " " " " = 122.22 " " " "
24" " " " " = 159.26 " " " "

12" Stone Base Course = 74.07 C.Y. per 100 L.F.
18" " " = 111.11 " " " "
4" Grav. Sub-base " = 24.69 " " " "



COBBLE STONE GUTTER



SODDED GUTTER

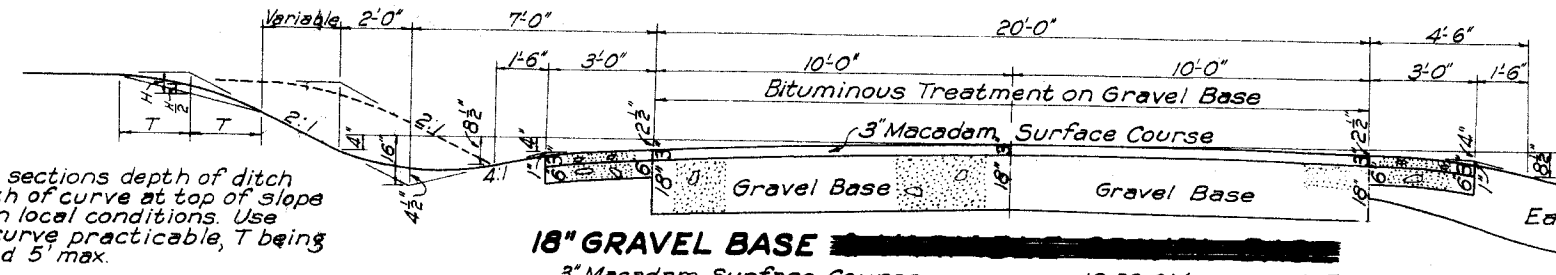
ESTIMATED QUANTITIES

ITEM	DESCRIPTION
11	Clearing and Grubbing
12-A	Earth Excavation
12-B	Rock Excavation
12-C	Trees Removed
13	Excavation for Structures
17-A	Common Borrow
23	Gravel Base Course
27	Gravel Surface Course
29-A	Bit. Mac. Surface Course
29-B	Emul. Asphalt for and Applied
35-A	Class "A" Concrete
35-B	Class "B" Concrete
36	Steel Reinf. for Conc. Struct.
38	Cement Rubble Masonary
40-A	12" C.M.P.
40-B	15" C.M.P.
40-C	18" C.M.P.
43-B	15" R.C.P.
43-C	18" R.C.P.
43-D	24" R.C.P.
51-A	Wire Cable Guard Rail
51-B	Anchorages for W.C.G.R.
51-C	Anchorages at Bridges
52	Loam
55	Bituminous Treatment
57	Muck Excavation

CULVERTS

R.C.P.		
179+50	24"x 36"	197+55 R
188+32	18"x 40"	201+68 L
194+0	24"x 36"	211+20 R
204+40	18"x 44"	211+30 L
216+08	15"x 48"	273+84 R
219+49	18"x 48"	276+34 L
278+52	18"x 44"	278+82 R
284+14	18"x 40"	282+04 L
295+50	24"x 40"	284+30 L
299+50	15"x 40"	289+56 L
303+70	18"x 36"	289+94 R
325+50	24"x 40"	297+18 R
398+88	15"x 36"	297+10 L
420+90	15"x 44"	300+13 L
Reinf. Conc. Box.		308+70 L
226+35	9'x 3'x 48"	313+14 R
286+24	4'x 3'x 46"	317+70 R
C.M.P.		333+97 R
172+26 L	12"x 20"	377+32 R
172+93 L	12"x 20"	380+82 R
172+76 R	12"x 20"	413+25 R
		423+22 L

BITUMINOUS MACADAM SURFACE COURSE



For all sections depth of ditch and length of curve at top of slope depend on local conditions. Use longest curve practicable, T being 2' min. and 5' max.

18" GRAVEL BASE

3" Macadam Surface Course = 18.52 C.Y. per 100 L.F.
3" Grav. Surface Course both shoulders = 5.56 " " " "
6" " Base " " " = 11.11 " " " "
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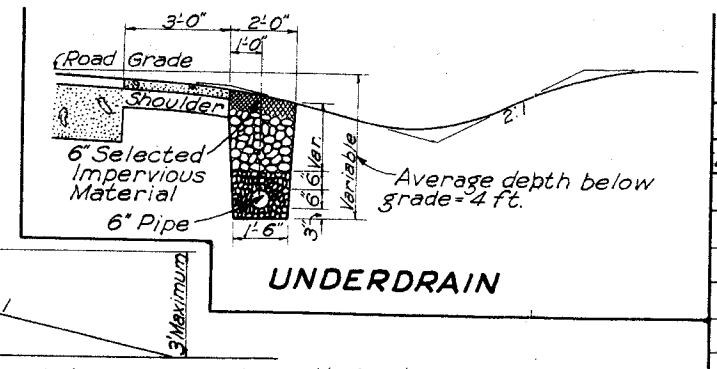
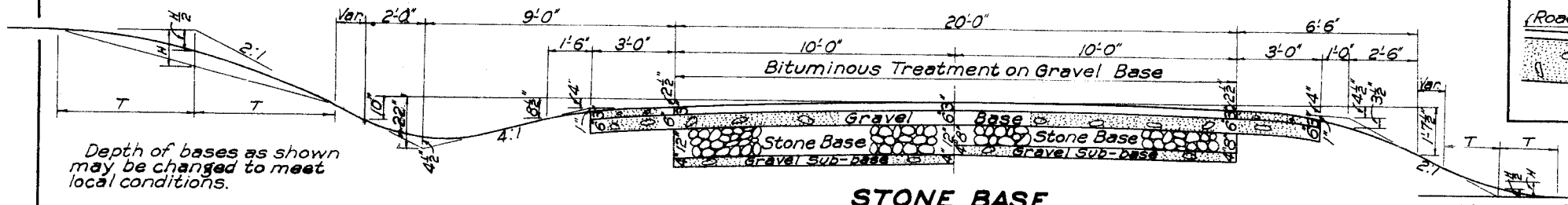
No bottom rounding with 4:1 slope.



UNDERDRAIN



Depth of bases as shown may be changed to meet local conditions.

STONE BASE

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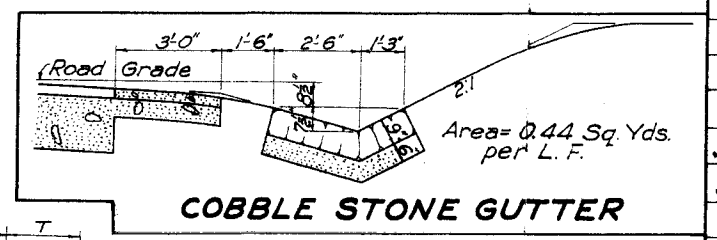
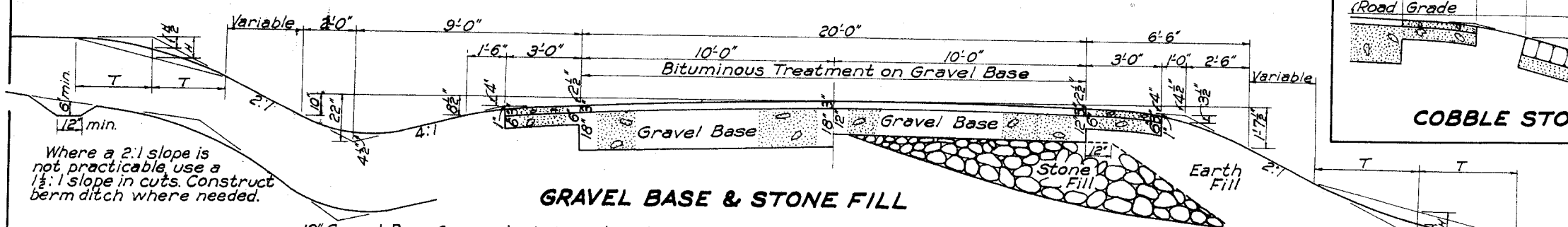
4" Gravel Sub-base Course = 27.26 " " " "
8" Stone Base Course = 49.38 C.Y. per 100 L.F.
12" " " " = 74.07 " " " "

Round bottom of 2:1 slope, T being 2' min. and 4' max.



COBBLE STONE GUTTER



Where a 2:1 slope is not practicable use a 1½:1 slope in cuts. Construct berm ditch where needed.

GRAVEL BASE & STONE FILL

12" Gravel Base Course including shoulders = 87.76 C.Y. per 100 L.F.
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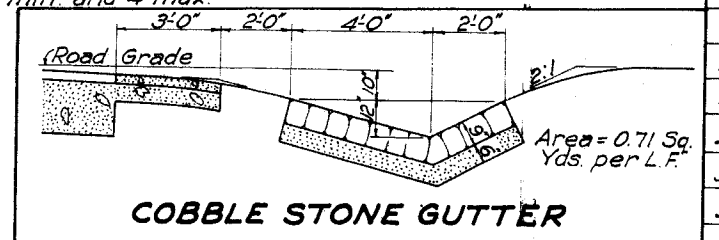
Round bottom of 2:1 slope, T being 2' min. and 4' max.



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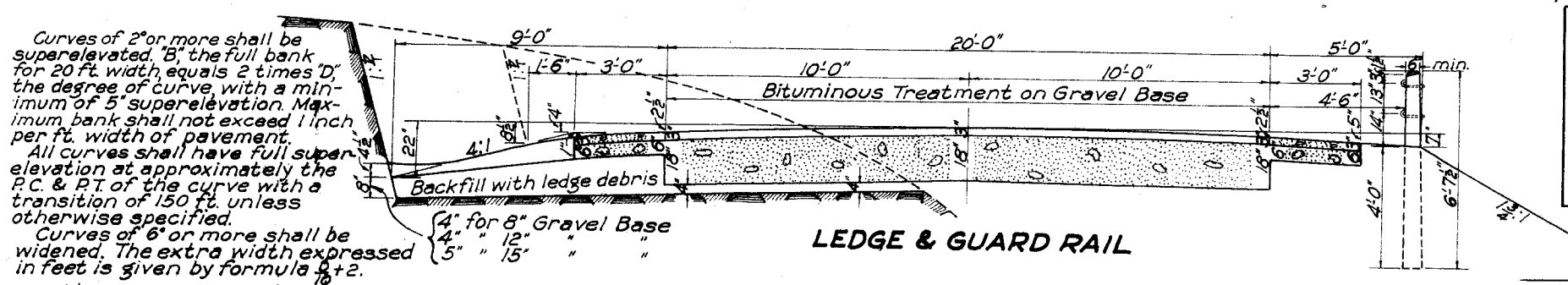


Curves of 2° or more shall be superelevated. "D" the full bank for 20 ft. width equals 2 times "D", the degree of curve, with a minimum of 5" superelevation. Maximum bank shall not exceed 1 inch per ft. width of pavement.

All curves shall have full superelevation at approximately the P.C. & P.T. of the curve with a transition of 150 ft. unless otherwise specified.

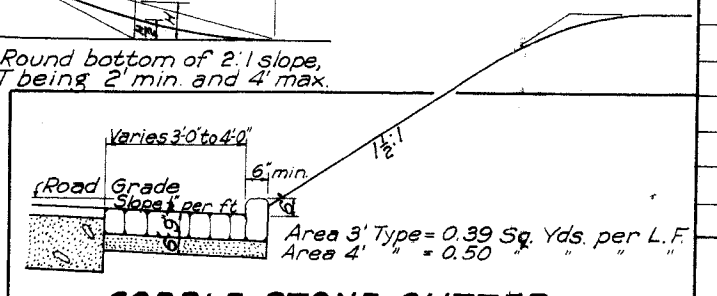
Curves of 6° or more shall be widened. The extra width expressed in feet is given by formula $\frac{D}{8}+2$.

Widening and superelevating may be limited by unusual conditions.

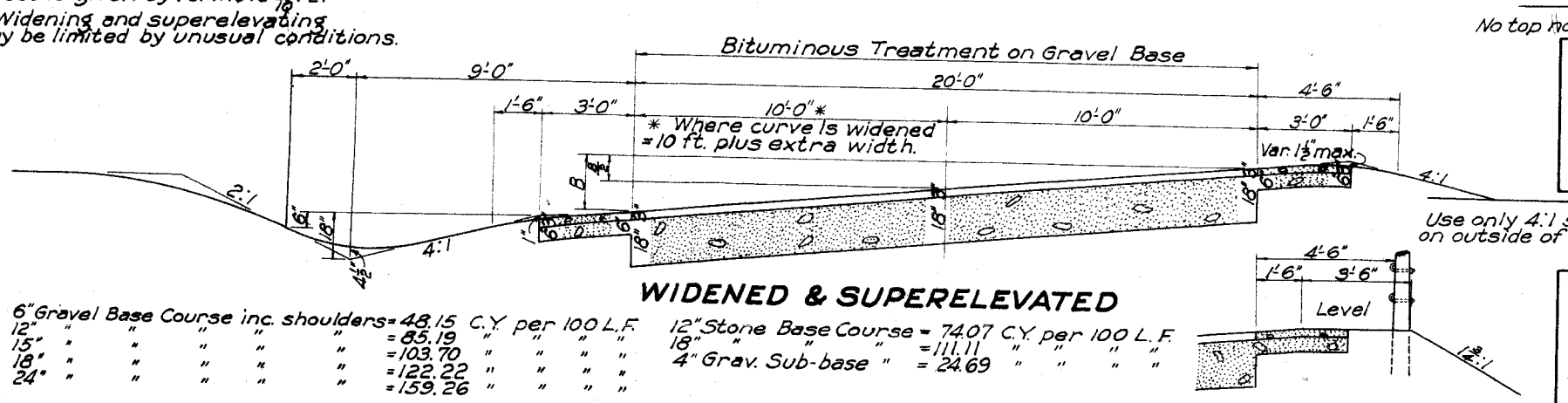
LEDGE & GUARD RAIL

4" for 8" Gravel Base
4" " 12" " "
5" " 15" " "

No top nor bottom rounding with 1¾:1 slope.



COBBLE STONE GUTTER



Use only 4:1 slope or guard rail on outside of superelevated curve.

WIDENED & SUPERELEVATED

6" Gravel Base Course inc. shoulders = 48.15 C.Y. per 100 L.F.
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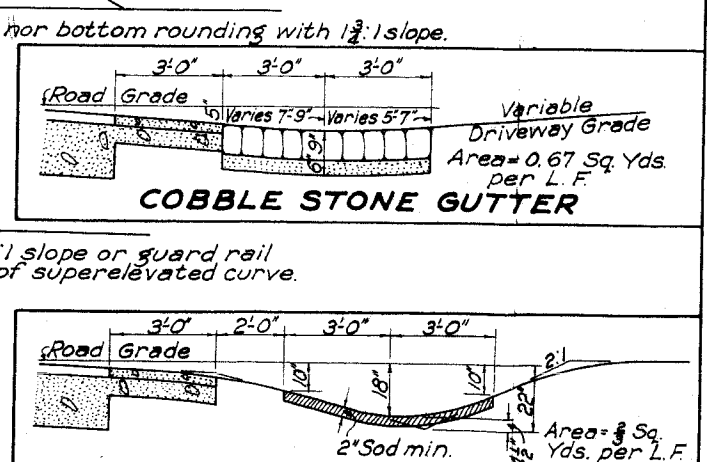

COBBLE STONE GUTTER

SODDED GUTTER

ESTIMATED QUANTITIES

ITEM	DESCRIPTION
11	Clearing and Grubbing
12-A	Earth Excavation
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27	Gravel Surface Course
29A	Bit. Mac. Surface Course
29-B	Emul. Asph. furnished and Applied
35-A	Class "A" Concrete
35-B	Class "B" Concrete
36	Steel Reinf. for Concrete Structures
38	Cement Rubble Masonary
40-A	12" C.M.P.
40-B	15" C.M.P.
43C	18" R.C.P.
43E	30" R.C.P.
51-A	Wire Cable Guard Rail
51-B	Anchorages for W.C.G.R.
52	Loam
55	Bituminous Treatment

MORRIS SHIBLES

BUSHES

FIELD

ROAD MON

RIGHT OF WAY LINE

BAPPIE

DOT 87+20.30

27.77

36.67

6" OAK

18" ELM

STONE POST

STONE POST

WELL

HOUSE

PC 90+39.05

FIELD

M.S. KELLY

E.S. METCALF
FOSTER

LIBBY 1 12 34 35

A-3-2

STONE POST

TOMB OF DANIEL HEARD

MONUMENT 1815

PI 92+31.88
Δ 34° 39' R
D 3° 00'
R 1910.0
T 595.8'
L 1155.00'

WOODS

ROBERT AND CHESTER ANNIS

FIELD

ROAD MON.

CEM

Sta. 98+25
New 18"x40' RCP
2 Conc. H.W.s.

RIGHT OF WAY LINE

N 24° 8' 33" W

PT 97+91.05

WOODS

R. & C. ANNIS

New

MORRIS SHIBLES

WALLACE HUBE

WOODS

WO

A.N.Y

81+0 to 107+25 — 18" Gravel Base

Phase 1

E.S. METCALF
METCALF

A-3-4

20+915

20+940
HB-WEL-201
HB-WEL-202

164.88

+0.84%

+2.34%

Construction Profile

V.C. 200'
Ex-1.04'

V.C. 300'
Ex-0.27'

V.C. 300'
Ex+1.50'

Shoulder
R=1.58m
5.2'

Travelway
R=0.91m
=3.0'

Refusal
Travelway
R=.98m
=3.2'
Shoulder
R=.88m
=2.9'

21+180
HB-WEL-203
HB-WEL-204

165.00

165.62

180
175
170
165
160
155
150

85 +72 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

20+741 20+772 20+802 20+832 20+863 20+893 20+924 20+954 20+985 21+015 21+046 21+076 21+107 21+137 21+168

WALLACE HUBBARD

WOODS

W.E. PHILLIPS P.L.

A.N. YOUNG

WOODS

A.N. YOUNG

OLD FIELD

Sta. 107+87 - New 15" x 36' RCP
2 Conc. Headwalls

FLORENCE HOWARD

OLD FIELD

P.L.

SMALL GROWTH

CEM.

TO NORTH BERWICK

FILLING STA

GAS PUMPS

GAS PUMP

HOUSE

RIGHT OF WAY LINE

POT. 103 + 50

N. 28° 33' W

1" C.M.P.

12" APPLE

RIGHT OF WAY LINE

BROAD MON.

N. 28° 33' W

BROAD MON.

DRY MASONRY STONE WALL

GRAVE STONE

RIGHT OF WAY LINE

SHOP

HOUSE

WOODS

WOODS

OLD FIELD

ORCHARD

R. & C. ANNIS

A. N. YOUNG

A. N. YOUNG

D. M. BURGESS

Sta. 97+[illegible]

E.S. METCALF FOSTER LIBBY 12 34 1 35

A-3e2

81+0 to 107+25 - 18" Gravel Base

107+25 to 109+25
Variable Gravel Base

109+25 to 113+0 - 18" Gravel Base

Sta. 113+0 - End Proj.
Begin Proj 294 - A

E.S. METCALF METCALF FOSTER 12 34 1 33

A-3e 4

195
190
185
180
175
170
165

Ledge 1 ft
under subbase

181.06

+4.11%

V.C. 400
Ex - 2.03

+0.06%

V.C. 250
Ex +0.90

21+420
HG - WEL - 205
HG - WEL - 206

ZR

181.75

21+564

21+137
21+168
21+180
21+198
21+229
21+259
21+290
21+320
21+351
21+381
21+412
21+442
21+473
21+503
21+534
21+564
21+594

99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114

FLORENCE HOWARD

OLD FIELD

FILLING STA

GAS PUMPS

GAS PUMP

TO NORTH BERWICK

P L

SAMUEL MURRAY

FIELD

Sta. 115+35 Left
New 15"x44' RCP
2 CPM Hws.

ROAD MON.

24" ELM

RIGHT OF WAY

RIGHT OF WAY ROAD MON.

RIGHT OF WAY LINE

D. M. BURGESS

NORWAY PINE SCRUB

4" PINE
30.10'

POT 117+42.60
47.30'

12" PINE

N 28° 33' W

6" PINE
47.25

2" BIRCH
48.30

POT 120+69.57

Sta. 122+0
New 18"x40' RCP
2 Conc. Hws.

P L

FIELD

PC 125+86.5

HATCH HEIRS ETTA ELWELL

OLD FIELD

NORWAY PINE SCRUB

FIELD

HATCH HEIRS ETTA ELWELL

D. M. BURGESS

D. M. BURGESS

P L

Sta. 113+0 — End Proj 293-A
Begin Proj 294-A.

21+564

Sta 113+0 to 116+0 — 18" Gravel Base

Phase 1

V.C. 250
Ex + 0.90

+0.06%

+2.937%

V.C. 550
Ex - 2.03

LEVEL

21+796
FWD 5400

ZR

V.C. 300
Ex + 1.13

+2.95%

V.C. 300
Ex - 0.67

19.16

19.76

182.65

21+564

21+594

21+625

21+655

21+686

21+716

21+747

21+777

21+808

21+838

21+869

21+899

21+930

21+960

111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126

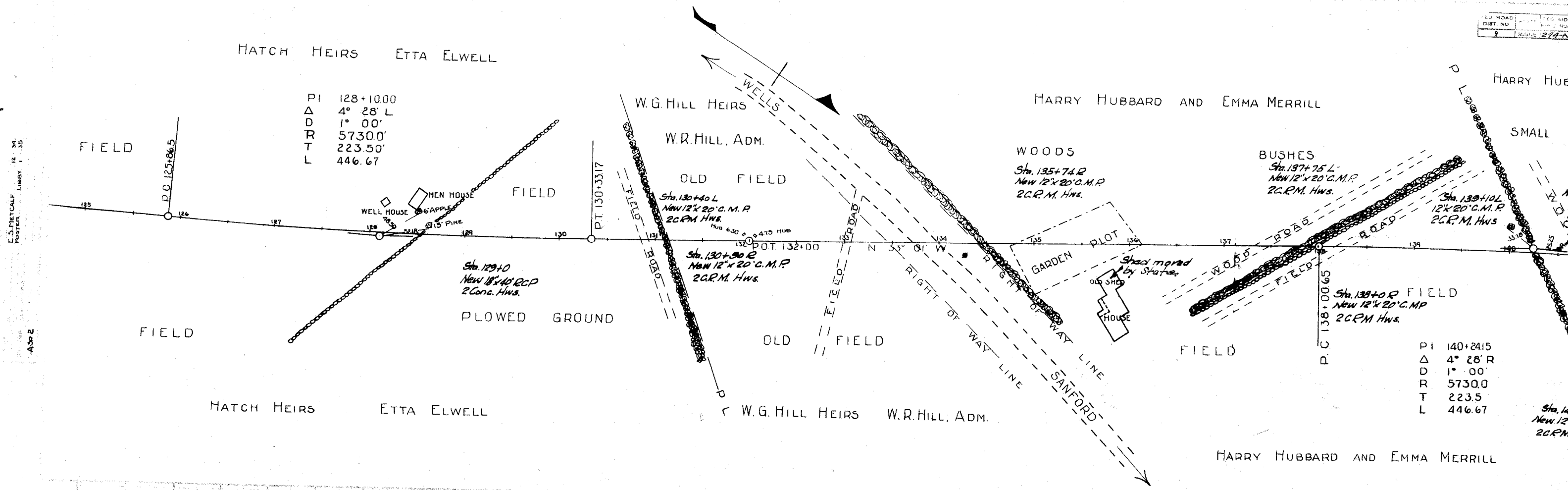
205 200 195 190 185 180

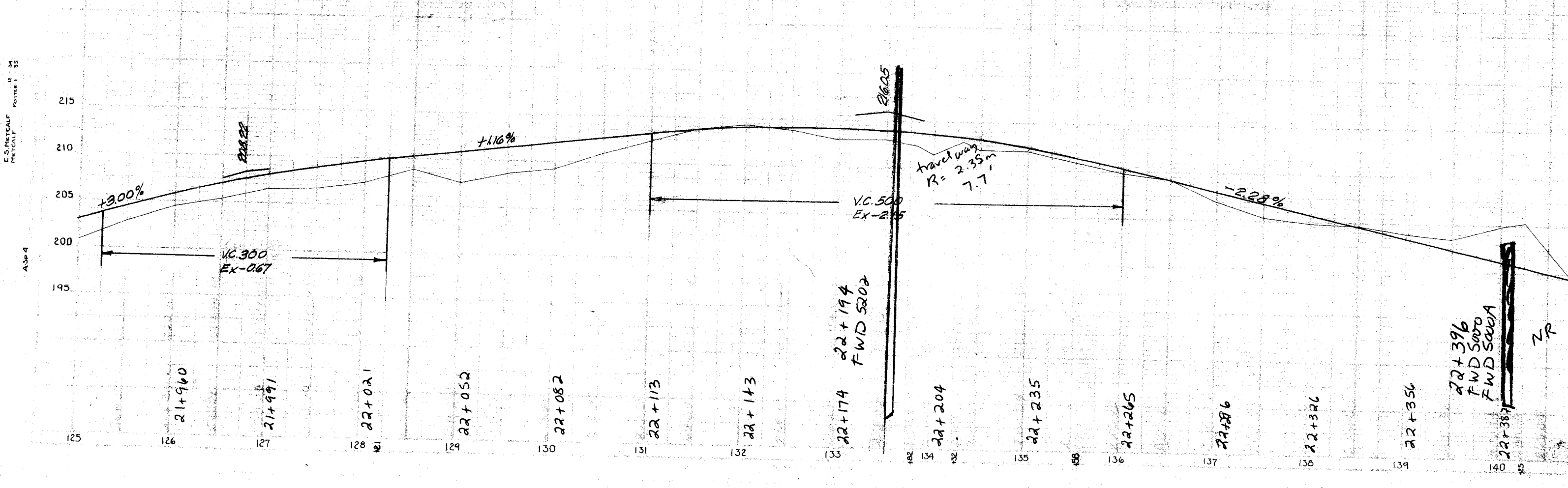
E.S. METCALF FOSTER Library 12 : 34 1 : 35

A-3-2

E.S. METCALF METCALF 12 : 34 1 : 35

A-3-4


HATCH HEIRS ETTA ELWELL
PI 128+10.00
Δ 4° 28' L
D 1° 00'
R 5730.0'
T 223.50'
L 446.67
FIELD
P.C. 125+86.5
HEN HOUSE
WELL HOUSE
APPLE
15" PINE
FIELD
W.G. HILL HEIRS
W.R. HILL, ADM.
OLD FIELD
PT. 130+33.17
Sta. 130+40 L
New 12"x 20' C.M.P.
2 C.R.M. Hws.
Hub 6.30 @ 0.475 Hub
Sta. 130+90 R
New 12" x 20' C.M.P.
2 C.R.M. Hws.
Sta. 129+0
New 18"x 40' RCP
2 Conc. Hws.
PLOWED GROUND
FIELD
HATCH HEIRS ETTA ELWELL
W.G. HILL HEIRS W.R. HILL, ADM.
WELLS
FIELD ROAD
P.O.T. 132+00
N 33° 01' W
RIGHT OF WAY LINE
SANFORD
HARRY HUBBARD AND EMMA MERRILL
WOODS
Sta. 135+74 R
New 12"x 20' C.M.P.
2 C.R.M. Hws.
GARDEN PLOT
Shed moved by State.
OLD SHED
HOUSE
FIELD
BUSHES
Sta. 137+75 L
New 12"x 20' C.M.P.
2 C.R.M. Hws.
Sta. 139+10 L
12"x 20' C.M.P.
2 C.R.M. Hws
WOOD ROAD
FIELD ROAD
P.C. 138+00.65
Sta. 139+0 R FIELD
New 12"x 20' C.M.P.
2 C.R.M. Hws.
PI 140+24.15
Δ 4° 28' R
D 1° 00'
R 5730.0
T 223.5
L 446.67
HARRY HUBBARD AND EMMA MERRILL
HARRY HUE
SMALL
E.S. METCALF
FOSTER
LIBBY
12 - 34
1 - 35
A-3-2


E.S. METCALF
METCALF
12 - 34
FOSTER 1 - 35
A-3-4
+3.00%
+1.16%
-2.28%
V.C. 300
Ex-0.67
V.C. 500
Ex-2.45
travel way
R= 2.35m
7.7'
21+960
21+991
22+021
22+052
22+082
22+113
22+143
22+174
22+194
FWD 5202
22+204
22+235
22+265
22+296
22+326
22+356
22+396
FWD 5000
FWD 5201
22+386
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140

DIST NO. 9 | STATE MAINE

HARRY HUBBARD

SMALL PINE GROWTH

ALDERS & BIRCHES

HARRY HUBBARD

W. E. SHAW

FIELD

PINE GROWTH

ALDERS & BIRCHES

HARRY HUBBARD

HARRY HUBBARD
EMMA MERRILL

HARRY HUBBARD

HARRY HUBBARD

MILLIE PITT

OLD FIE

HOUSE

WELLS

E.S. METCALF Foster 12 : 34 Liberty 1 : 35

A3e2

P.C. 138+00.65

P I 140+24.15
Δ 4° 28' R
D 1° 00'
R 5730.0'
T 223.5
L 446.67

Sta. 140+50 R
New 12'x 20' C.M.P
2 C.R.M. Hws.

Sta. 141+0 R.
New 12'x 20' C.M.P
2 C.R.M. Hws.

P.T. 142+47.32

N. 28° 33' W

144+80.70

P O T 147+00.0

P.C. 149+90.4

Sta. 150+0
New 3'x 3'x 34' R.C. B.C.

P I 152+94.9
Δ 6° 05' L
D 1° 00'
R 5730.0'
T 304.5'
L 608.33'

8" Pine 3318
Pine Stub 3225
4" Pine 3525
5" Pine 24.30
10" Pine 29.18
6" Pine 17.30
4" Maple 16.20
6" Maple 13.5
10" Oak 13.3

113+0 to 167+0 — 18" Gravel Base

E.S. METCALF Foster 12 : 34 Metcalf 1 : 35

A3e4

205
200
195
190
185
180
175

22+500
HB-WEL-207
HB-WEL-208

Travel way 18' NK

Shoulder R=2.5% 8.5'

V.C. 300
Ex+1.06

+0.56 %

181.28

22+356
22+387
22+417
22+448
22+478
22+509
22+539
22+570
22+600
22+631
22+661
22+692
22+722
22+753
22+796
22+783 FWD 4600
22+814

139
140 +25
141
142
143
144 +12
145
146
147
148
149
150
151
152
153 +62
154 +49

NR

W. E. SHAW

PATRICK SHANAHAN

PATRICK SHANAHAN

PI 152+94.9
Δ 6° 05' L
D 1° 00'
R 5730.0'
T 304.5
L 608.33'

Sta. 153+76
New 12"x40' CMP
2 C.R.M. Hws.

FIELD

FIELD

WOODS

Sta. 159+72L
New 12"x20' C.M.P.
2 C.R.M. Hws.

Sta. 162+25
New 30"x48' RCP
2 Conc. Hws.

Sta. 163+16L - New 12"x24' CMP
2 C.R.M. Hws.

2'0"x2'0" STONE BOX CULV.

WOODS

Sta. 167+33
New 18"x40' R.C.P.
2 Conc. Hws.

HOUSE

HOUSE

MEDER

OLD

PT. 155+98.73

ROAD MON.

P.O.T. 160+00

N 34° 30 -W

15" APPLE

3 PINE

W.B.M. GUARD RAIL

P.T. 161+96.9

P.C. 162+35.77

PI 165+26.6
Δ 17° 19' R
D 3° 00'
R 1910.0'
T 290.83'
L 577.22

1'0" C.M.P.

PT 168+12.99

OLD FIELD

WOODS

WOODS

WOODS

MILLIE PITTS

MILLIE PITTS

MILLIE PITTS

E.S. METCALF
FOSTER
12 - 34
1 - 35

A-3.2

E.S. METCALF
METCALF
12 - 34
1 - 35

A-3.4

113+0 to 167+0 — 18" Gravel Base

Sta. 167+0 — End Proj 2
Begin Proj 294-B

190
185
180
175
170

+0.56%

-2.20%

+1.52%

VC300
Ex+1.40

VC300
Ex-1.04

VC200
Ex-0.84

186.46

176.86

196.16

23+196
FWD 4200
FWD 4200A

23+209.9

shoulder
R=1.71%
(5.6')

travelway
R=2.35%
(7.7')

22+783
153

22+814
154

22+844
155

22+875
156

22+905
157

22+936
158

22+966
159

22+997
160

23+027
161

23+058
162

23+088
163

23+118
164

23+149
165

23+179
166

23+210
167

23+240
168

PAT SHANAHAN

WOODS

OLD FIELD

MEDERIC CREPEAU

P.L.

30" OAK

TWIGS P.C. 169+41.57

172+26 L
New 12"x20' CMP
2 C.R.M. Hws

P.I. 172 + 97.1
Δ 10° 38' L
D 1° 30'
R 3820.0
T 355.53
L 708.88

172+93 L
New 12"x20' CMP
2 C.R.M Hws

HOUSE

18" FIR

18" OAK

12" OAK

10" PINE

10" STUMP

ROBERT ANNIS

SMALL GROWTH

P.T. 176+50.45

179+50
New 24"x36" RCP
2 C.R.M. Hws.

G.A. TILTON

PINE

THORN BUSH

12" PINE

P.O.T. 181+85.

N 27° 57' W

N 17° 15' W

1'0" CMP

P.T. 168+12.49

WOODS

MILLIE PITTS

P.L. CEMETERY

P.L.

P.O.T. 174+17.6

TO SANFORD

ROBERT ANNIS

PINE

G.A. TILTON

172+76 R
New 12"x20' CMP
2 C.R.M Hws

5" BIRCH

OLD FIELD

SMALL GROWTH

GEORGE FORBES

CHESTER HATCH

Sta 167+0 End
F.A. Proj. 294-A

STA. 167+00 BEGINNING
FEDERAL AID PROJ. No. 294-B

167+0 to 195+0 — 18" Gravel Base

E.S. METCALF 12-34
METCALF FOSTER LIBER I 33

A-3-4

234+09.9

200.48

184.16

184.58

189.00

+6.42%

+4.24%

-3.06%

-0.024%

VC 200
Ex -0.34

VC 300
Ex +1.54

VC 450
Ex -4.10

VC 300
Ex +1.14

234+596
FWD 3800

Z R

167 | 23+210 | 18331
168 | 23+240
169 | 23+271
170 | 23+301
171 | 23+332
172 | 23+362
173 | 23+393
174 | 23+423
175 | 23+454
176 | 23+484
177 | 23+515
178 | 23+545
179 | 23+576
180 | 23+606
181 | 23+637
182 | 23+667

G. A. TILTON

WOODS

WOODS

G. A. TILTON

G A TILTON

LOW LAND

FIE

188+32
New 18"x40' RCP
2 Conc. Hws.

104+0
New 18"x36' RCP
2 Conc. Hws.

THORN BUSH
12" PINE
15.47 32.85
181 182

P.O.T. 181+85.4

4" BIRCH
2" BIRCH
31.49 31.71

P.O.T. 185+00

4" PINE
31.10

P.O.T. 189+07.33

31.71
4" PINE

N 27° 57' W

181 183 184 186 187 188 189 190 191 192 193 194 195 196

WOODS

WOODS

LOW LAND

FIELD

G. A. TILTON

G. A. TILTON

G.A.TILTON

TO

WELLS

E.S. METCALF 12 36
METCALF FOSTER 1 35

A-Sp4

16740 to 19540 - 18" Gravel Base

19540 to 19640 -
24" Gravel Base

190
185
180
175
170

188.87

23+700
HB-WELL-09
HB-WELL-210
16.900
2=0.50

Shoulder
R=.82 m
2.7'
travelway
NR

-1.35%

24+000
Fwd 3.800
23+998
Fwd 3.402
24+002

24+000
travelway
R=1.16 m
3.8'

181 23+637
182 23+667
183 23+698
184 23+728
185 23+759
186 23+789
187 23+820
188 23+850
189 23+880
190 23+911
191 23+941
192 23+972
193
194 24+033
195 24+063
196 24+094

G.A. TILTON

FIELD

ALDERS

WOODS

MRS F.A. MEYERS

WOODS

ALBERT CREPEAU

FIELD

FIE

NORTH BERWICK

HOUSE

WELL

E.S. METCALF 12-34
FOSTER LIBBY 1-35

A3e2

15" Apple

12" Apple

OLD CELLAR

201+68L
12"x20' C.M.P.
2 C.R.M. Hws.

Stone wall moved
to New Right of Way
by State

204+40
18"x40' R.C.P.
2 Conc. Hws.

WOOD GUARD RAIL

Wood Conc. Bridge
18' x 24'
7'-4" Underclearance
Built 1922

1'-0" x 1'-0" STONE BOX CULV.

PI 202+75.85
Δ 26° 42' R
D 4° 00'
R 1432.50'
T 339.95
L 667.50

PT 206+03.30

20" ELM

MAPLE

N 1° 15' W

FIELD

197+55 R
New 12"x40' C.M.P.
2 C.R.M. Hws.

G.A. TILTON

WOODS

THOMAS CHICK

WOODS

OLD FI

195+07 to 196+0
24" Gran. Base

196+0 to 199+22.4
18" Gran. Base

Var. Gr. Base

199+428 to 228+50 — 18" Gravel Base

E.S. METCALF 12-34
METCALF FOSTER-L-35

A3e3

Bridge - Check!

+D 24%

+1.00%

-3.5%

VC 150
Ex+0.61

VC 300
Ex - 0.62

24+405
EWD 3000
EWD 3000A

24+500
HB-WEL-211
HB WEL-212

travelway
R=.98 m
3.2'

shoulder
R=1.04 m
=3.4'

possible

24+043
24+094
24+124
24+155
24+185
24+216
24+246
24+277
24+307
24+338
24+368
24+399
24+429
24+460
24+490
24+521

ALBERT CREPEAU

FIELD

H. LORD

WOODS

PI 213 + 77.0
Δ 9° 51' L
D 1° 30'
R 3820.0'
T 329.13
L 656.67

216+08
New 15"x48' RCP
2 Conc. Hwys.

A. N. HOOPER

WOODS

219+49
New 18"x48' RCP
2 Conc. Hwys.

WOODS

P.C. 210+47.87

PT 217+04.54

N 1° 15' W

N 11° 06' W

15" Maple
15" Maple
15" Poplar
12" Maple
12" Maple
6" Oak

P.O.T. 223+74.8

4" Pine

FOUNDATION

1'0" CMP

2'0" 1'0" STONE BOX CULV

WELL

15" Maple
15" Elm
12" Maple
12" Maple

HOUSE

1'0" 1'0" STONE BOX CULV.
Omit

WOODS OLD FIELD

THOMAS CHICK

FARM ROAD

OLD FIELD

THOMAS CHICK

OLD FIELD

BROWN PROPERTY

OLD FIELD

EVA PLUMMER

E.S. METCALF
FOSTER LIBBY 12 34 35

A-364

199+42.8 to 228+50 — 18" Gravel Base

Phase 1

V.C. 300'
Ex +0.53

+1.66%

186.76

24+605
Fwd 2800

travelway
R=54m
=17.7'

V.C. 400'
Ex -0.98

-0.306%

24+805
Fwd 2600

travelway
NR

209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
	24+521	24+551	24+582	24+612	24+642	24+673	24+703	24+734	24+764	24+795	24+825	24+856	24+886	24+917	24+947
			+75		+25	+25	+00			+49	+20		+46	+78	

190
185
180
175
170

A N HOOPER

WOODS

226+35
3'x3'x18 RCBC

A N HOOPER

OLD FIELD

PLOWED LAND

A N HOOPER

PI 237+64.2
11°-40' L
D 2°-30'
R 2292.0
T 460.60
L 910.55

C J HIGGINS

FIELD

ROW OF MAPLES

CONST. ℄

WOODS

OLD FIELD

EVA PLUMMER

EVA PLUMMER

H. LORD

H. LORD

18" Gravel Base

Sta. 228+50 to 276+00 - Not a part of this Project.

-0.32% %

CONST. PROFILE

VC 300
2.04%

KENNEBUNK SAVINGS BANK

PERLEY C GOODWIN

GEORGE RICKER

ALBERT HATCH

FIELD

HOUSE

BARN

PI 265+10.1
Δ 14° 16 R
D 3° 00
R 1910.0'
T 240.3
L 575.55

PERLEY C GOODWIN

GEORGE RICKER

CLARENCE HILTON

ALBERT HATCH

276+34
New 12"x30' CMP
2 CRM Hw's.

278+52
New 18"x44' QCP
New 18"x26' CMP Ex. to R
Conc. Hw. L
CRM Hw R

PI 277+79.40

-2½ 0 +2½

-2½ -2½ -2½

P.C. 279+60.23

GRANGE HALL

TOWN BROOK GROUP

PI 282+00.0
Δ 15° 12 R
D 2° 15'
R 2546.66
T 339.77
L 675.55

OLD FIELD

Grange hall bought by State.

Sta. 228+50 to 270+0
Not a part of this Project.

2700 to 3260+50 — 18" Gravel Base

214.18

-0.30%

VC 200
Ex. 0.28

-0.982%

VC 200
Ex. 0.13

BROOK

VC 200
Ex. 0.45

263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280

26+197 26+227 26+258 26+288 26+319 26+349 26+380 26+410 26+441 26+471 26+501 26+532 26+562 26+593 26+623 26+654

ALBERT HATCH

FIELD

SANFORD

WILLIAM CARD

284+14
New 18"x 40' RCP

FIELD 2 Gas Hwys

282+01
New 12"x 80' C.M.P.
2 C.R.M. Hwys.

OLD FIELD

FIELD

ALDERS

PI 282+000
Δ 15° 12' R
D 2° 15'
R 2546.66
T 339.71
L 675.55

WILLIAM CARD

CLARENCE AND HARRY HILTON

284+30L
New 18"x 20' C.M.P.
2 C.R.M. Hwys.

SMALL GROWTH

ALDERS

284+24
[illegible]

CLARENCE AND HARRY HILTON

289+56
New 15"x 24' C.M.P.
2 C.R.M. Hwys.

DIG WELL

HOG HOUSE

289+94
New 12"x 20' C.M.P.
2 C.R.M. Hwys.

PASTURE

WILLIAM SHOREY

WILLIAM SHOREY

FIELD

FIELD

270+0 to 294+50 - 18" Gravel Base

206.04

V.C. 200
Ex -0.40

-2.40%

V.C. 800
Ex +3.16

194.04

+0.76%

24+623
24+654
24+664
24+715
24+745
24+776
24+806
24+837
24+867
24+898
24+928
24+959
24+989
25+020
25+050
25+081

WILLIAM SHORES

FIELD

FRANK SAYWARDS
294+01
New 12'x20' CMP
2 CRM Hds

FIELD

PASTURE

FIELD

FIELD

FRANK SAY...

WILLIAM SHORES

ALLEN HILTON

WELLS

RAMSDELL & PERKINS

RAMSDELL & PERKINS

FIELD

FIELD

SMALL PINE

SMALL GROWT

ANNIE MITCHELL

LYNTEL COTTAGE

308+70
New 18"x36
New 18"x38
Extended
Conc. Hw E
C.R.M. Hw L

270+0 to 294+50
18" Grav. Base

294+50 to 299+0 — 24" Grav. Base

299+0 to 326+50 — 18" Gravel Base

VC 300
Ex+0.54

+0.76%

202.97

VC 300
Ex-0.47

+0.94%

223.45

VC 350
Ex+1.07

27+050 293
27+081 294
27+111 295
27+142 296
27+172 297
27+203 298
27+233 299
27+263 300
27+294 301
27+324 302
27+355 303
27+385 304
27+416 305
27+446 306
27+477 307
27+507 308

EDWARD HUTCHINS | GRANVILLE LORD | GRANVILLE LORD

FIELD | FIELD | WOODS | WOODS

PI 312+31⌀
Δ 14° 21'L
D 2° 00'
R 2865.0'
T 360.65
L 717.50

PT 308+709

PT 315+425

OLD FIELD

HOUSE

HOUSE

SMALL GROWTH & PINE | SMALL PINE | SMALL PINE

ANNIE MITCHELL | ANNIE MITCHELL | CLARENCE & HARRY HILTON

289+0 to 326+50 — 18" Gravel Base

25.18

VC. 350'
Ex. +1.07'

+3.40%

VC. 850'
Ex. -7.84

22.98

245
240
235
230
225
220

307 +21 | 308 | +90 | 309 | 310 | 311 | 312 | 313 | 314 | 315 | 316 +23 +65 | 317 | 318 | 319 | 320 | +15 | 321 | 322

27+477 | 27+507 | 27+538 | 27+568 | 27+599 | 27+629 | 27+660 | 27+690 | 27+721 | 27+751 | 27+782 | 27+812 | 27+843 | 27+873 | 27+904 | 27+934

Fed. Road Dist. No.	State	Fed. Aid Proj. No.	Fiscal Year	Sheet No.
9	Maine	294-B		1

Wells-Sanford

STATE OF MAINE

STATE HIGHWAY COMMISSION

PLAN AND PROFILE

STATE HIGHWAY "A-2"

WELLS-SANFORD

YORK COUNTY

PROJECT IS NO. 290 AND 294-B

STATE F.A.P. NO. 290 = 0.303 MILES

F.A.P. NO. 294-B 1.024 MILES

1.327

INTERNATIONAL SIGNS

DROP INLET

TEL. POLE

INDEX OF SHEETS

Sta. 380+37.0 Beg. F.A. Proj. No. 290

Sta. 380+37.0 End of F.A. Proj. No. 294-B (1st Part) = Sta. 0+0 Beg. Proj. No. N.R.S. 290 (1935)

Sta. 396+38.5 End F.A.P. No. 290 = Sta. 16+0 End Proj. No. N.R.S. 290 (1935) Sta. 396+38.5 = Beg. F.A. Proj. No. 294-B (2nd Part)

Sta. 437+0 End F.A. Proj. No. 294-B

Sta. 228+50 to 270+0 Not a part of this project

Sta. 0+0 Beginning F.A. Proj. No. 294-B. End F.A. Proj. No. 294-A

Sta. 380+40.0 Eq. = -1.5

Sta. 380+38.5 =

TOWN LINE

WELLS

SANFORD

Boston & Maine R.R.

Portland

To Sanford

LAYOUT PLAN

Scale 1 inch = 1000 ft.

All work contemplated under this contract to be governed by and in conformity with the Specifications adopted Sept. 20, 1935, except as modified on these plans.

2" BITUMINOUS MACADAM SURFACE COURSE

TYPICAL SECTION

Scale 1 inch = 1 ft.

Sta. 380+37 End F.A.P. No. 294-B (1st Part)

Sta. 0+0 Beg. Proj. No. N.R.S. 290

Wells Depot

Sta. 228+50 to 270+0 not a part of this project

Sta. 380+37 Beg. F.A.P. No. 290

Sta. 396+38.5 End F.A.P. No. 290 = Beg. Fed. Aid Proj. No. 294-B (2nd Part)

SANFORD

A Portion of York County

Approx. Scale 1 in. = 1 mile

APPROVED:
MAINE STATE HIGHWAY COMMISSION
Paul C. Reed
CHAIRMAN

CHIEF ENGINEER

APPROVED:
U. S. BUREAU OF PUBLIC ROADS

DISTRICT ENGINEER

CHIEF ENGINEER

DIRECTOR

ALBERT MATCH

SANFORD

WILLIAM CARD

284+14
New 18"×40' C.M.P.
FIELD 2 Conc. Hwys

282+00L
New 12"×20' C.M.P.
2 C.R.M. Hwys

+2½
-2½

FIELD

ALDERS

P.I. 282+00.0
Δ 15° 12.0
D 2° 15'
R 2546.66
T 339.77
L 675.55

WILLIAM CARD

CLARENCE AND HARRY HILTON

284+30L
New 18"×20' C.M.P.
2 C.R.M. Hwys

ALDERS

+2½
-2½

ELM BROOK

SMALL GROWTH

N 22° 34' W

286+24
4×3×46' R.C. d.c.

ALDERS

CLARENCE AND HARRY HILTON

P.I. 288+50.0

289+56
New 15"×24' C.M.P.
2 C.R.M. Hwys

Shed
Barn
Barn
House

STO PEN
HEN HOUSE

289+94
New 12"×20' C.M.P.
2 C.R.M. Hwys.

PASTURE

WILLIAM SHOREY

WILLIAM SHOREY

FIELD

FIELD

-2½
-2½

P.C. 294+46.40

270+0 to 294+50 — 18" Gravel Base

VC 200
Ex +0.40

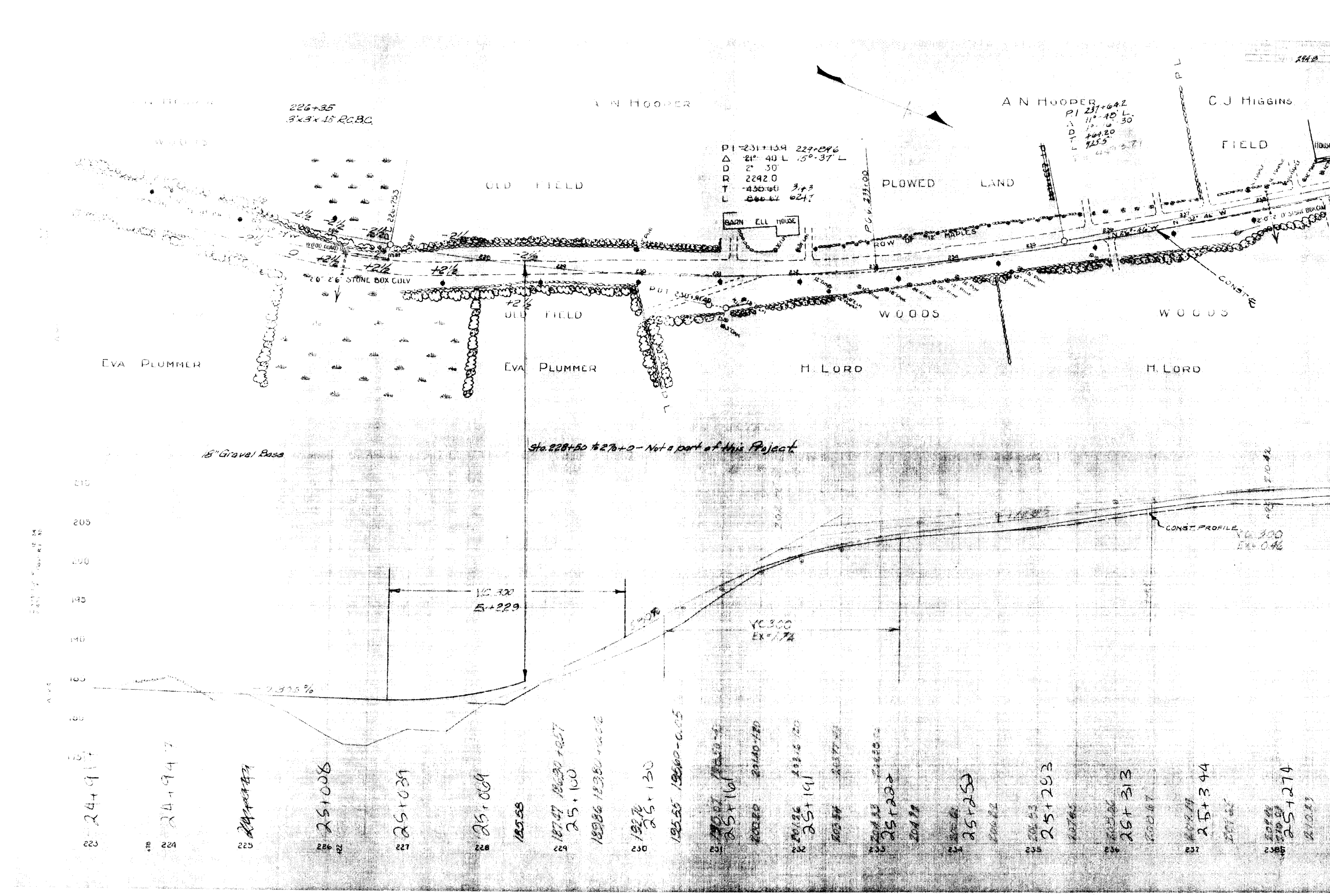
VC 800
Ex +2.16

+0.76%

19404

26+715
26+746
26+776
26+807
26+837
26+868
26+898
26+929
26+959
26+990
27+020
27+051
27+081

274 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294


226+35
3'x3'x16' R.C.B.C.
A N HOOPER
A N HOOPER
C J HIGGINS
WOODS
OLD FIELD
PLOWED LAND
FIELD
PI 231+13.9 227+89.6
Δ 21° 40' L 15°-37' L
D 2° 30'
R 2292.0
T 436.60 343
L 868.62 624.7
PI 237+64.2
Δ 11°-40' L
D 2°-30'
T 404.20
L 825.5
BARN ELL HOUSE
ROW OF 12" MAPLES
2'-6" 2'-6" STONE BOX CULV
OLD FIELD
WOODS
WOODS
EVA PLUMMER
EVA PLUMMER
H. LORD
H. LORD
8" Gravel Base
Sta. 228+50 to 278+2 - Not a part of this Project
CONST. PROFILE
VC 300
5+229
VC 300
EX+74
VC 300
EX+042
-2.33%
24+91.7
24+94.7
25+008
25+039
25+069
25+100
25+130
25+160
25+191
25+222
25+252
25+283
25+313
25+344
25+374
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238

ALLEN HILL

RAMSDELL & PERKINS

WILLIAM MITCHELL

ANNIE MITCHELL

270+0 to 294+50 — 18" Grav. Base.

294+50 to 299+0 — 22" Grav. Base

299+0 to 326+50 — 18" Gravel Base

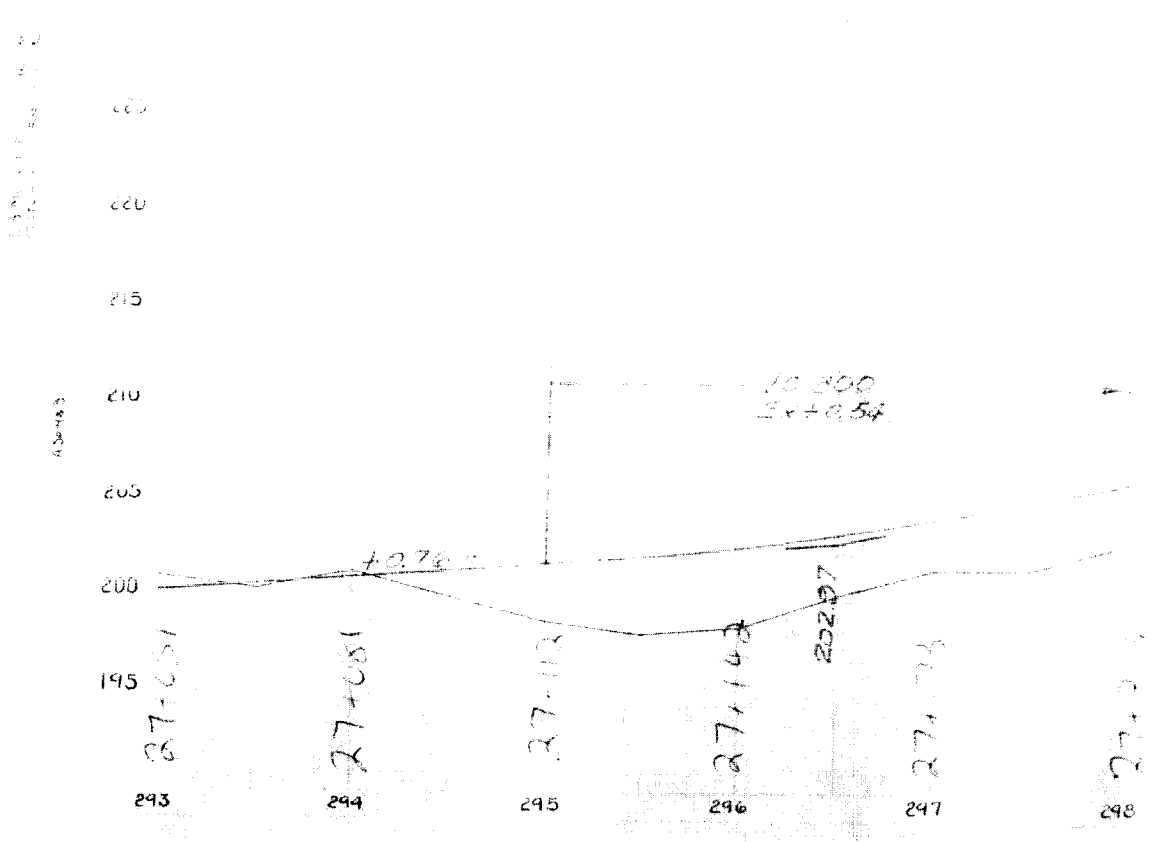
New 18"x 30 CMP

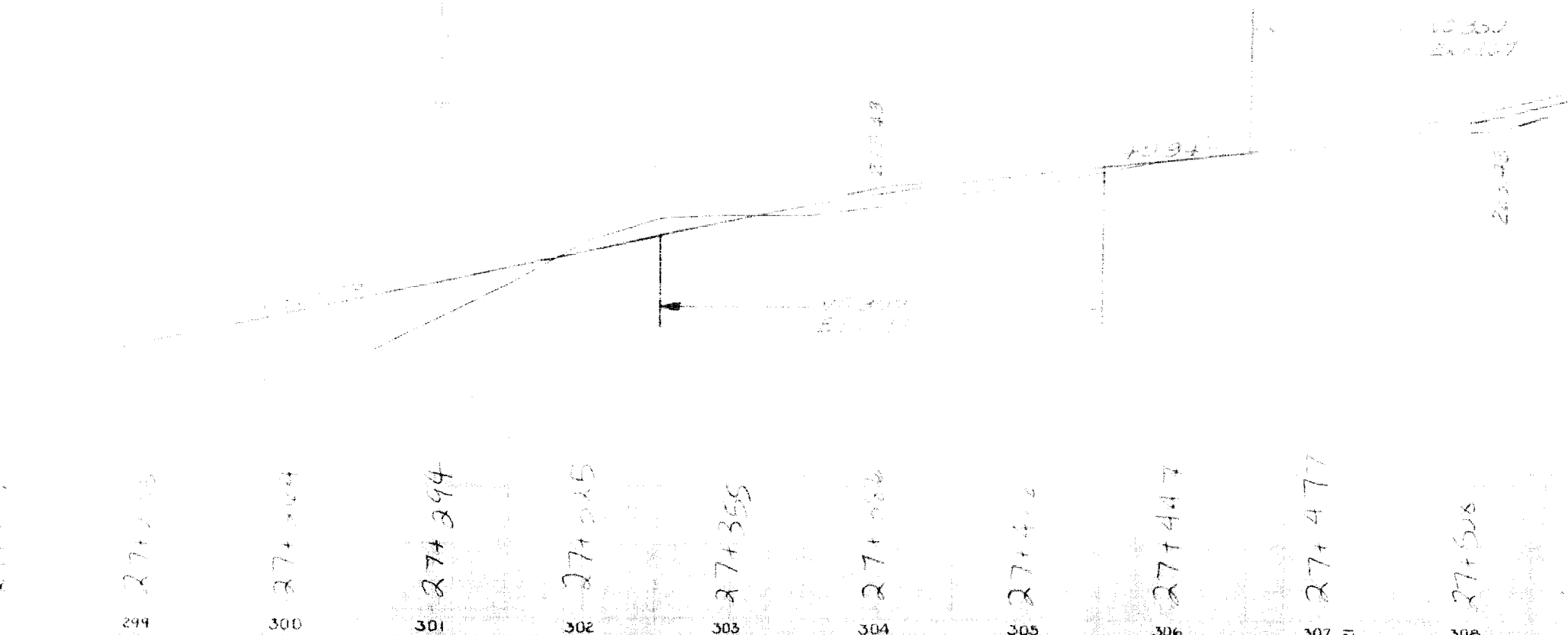
New 18"x 38

Extended

Conc. Hw

C.P.M. Hw





GRANVILLE LOOP

ANNIE MITCHELL

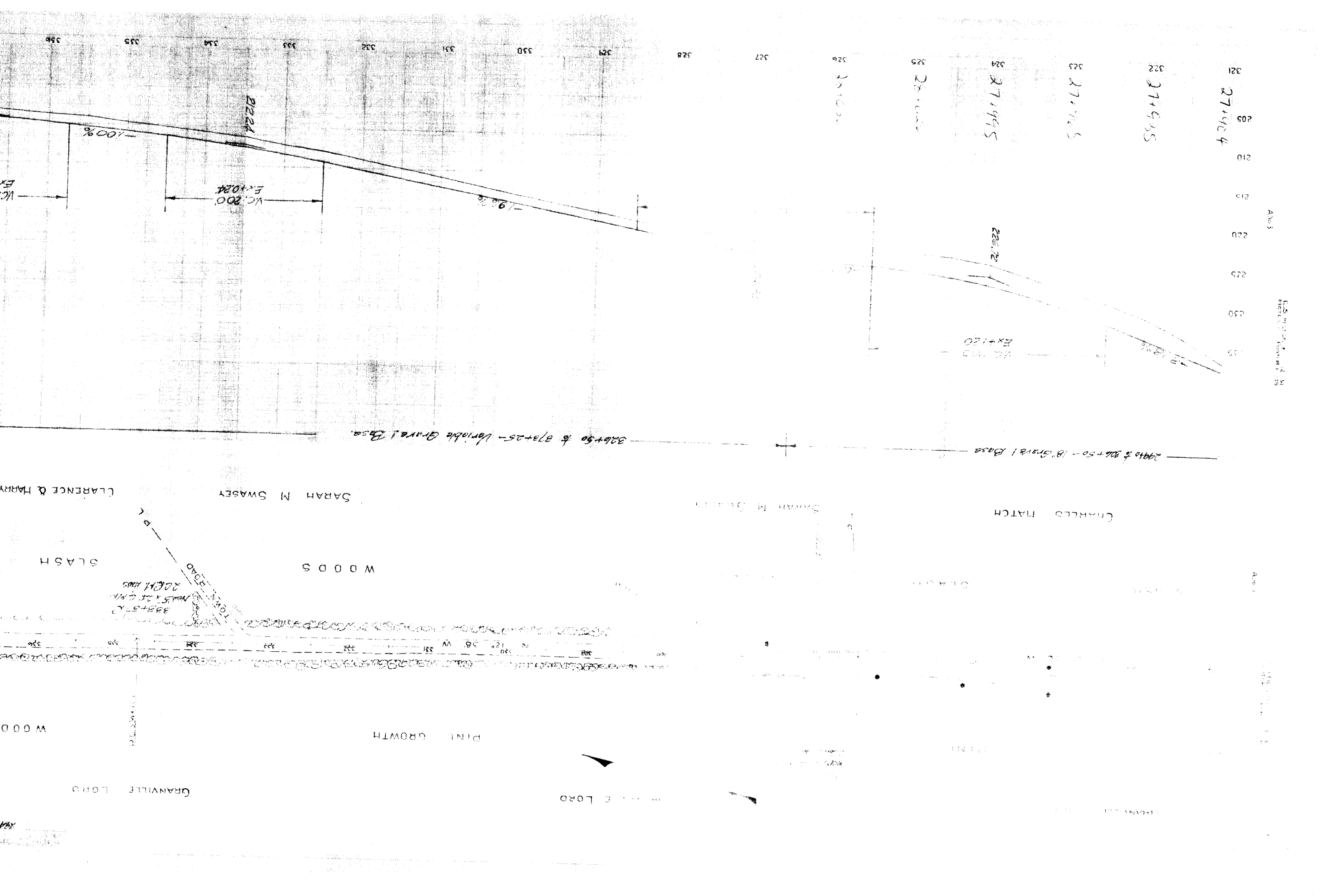
ANNIE MITCHELL

CLARENCE & HARRY HILTON

239+0 to 326+50 — 18" Gravel Base

307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322
27+477	27+508	27+538	27+569	27+599	27+630	27+660	27+691	27+721	27+752	27+782	27+813	27+843	27+874	27+904	27+935
121		170							423	43				475	

22343


3240+50 & 273+25- Variable Grade / Base.
2990+50 & 304+50 - 18" Grade / Base
VC. 200'
Ex.1024
-1.00%
-1.96%
2224
VC. 200'
Ex.1220
-1.96%
2222.72
SARAH M SWASEY
CLARENCE & HARRY
SLASH
WOODS
TOE EL. 2330
20.0% Hwds
NW1/4 x SE1/4
33S-5E
PINE GROWTH
GRANVILLE LORD
CHARLES TATCH
WOODS
N 12° 30' W
328
329
330
331
332
333
334
335
336
325
326
327
328
321
322
323
324
325
326
205
210
215
220
225
230
235
27+40.4
27+45.5
27+65.5
27+71.5
28+00.0
27+94.5

CLARENCE & HARRY HILTON

HARRY HILTON

MIXED GROWTH

WOODS MIXED GROWTH

SLASH

SLASH

CLARENCE & HARRY HILTON

CLARENCE & HARRY HILTON

Variable Gravel Base

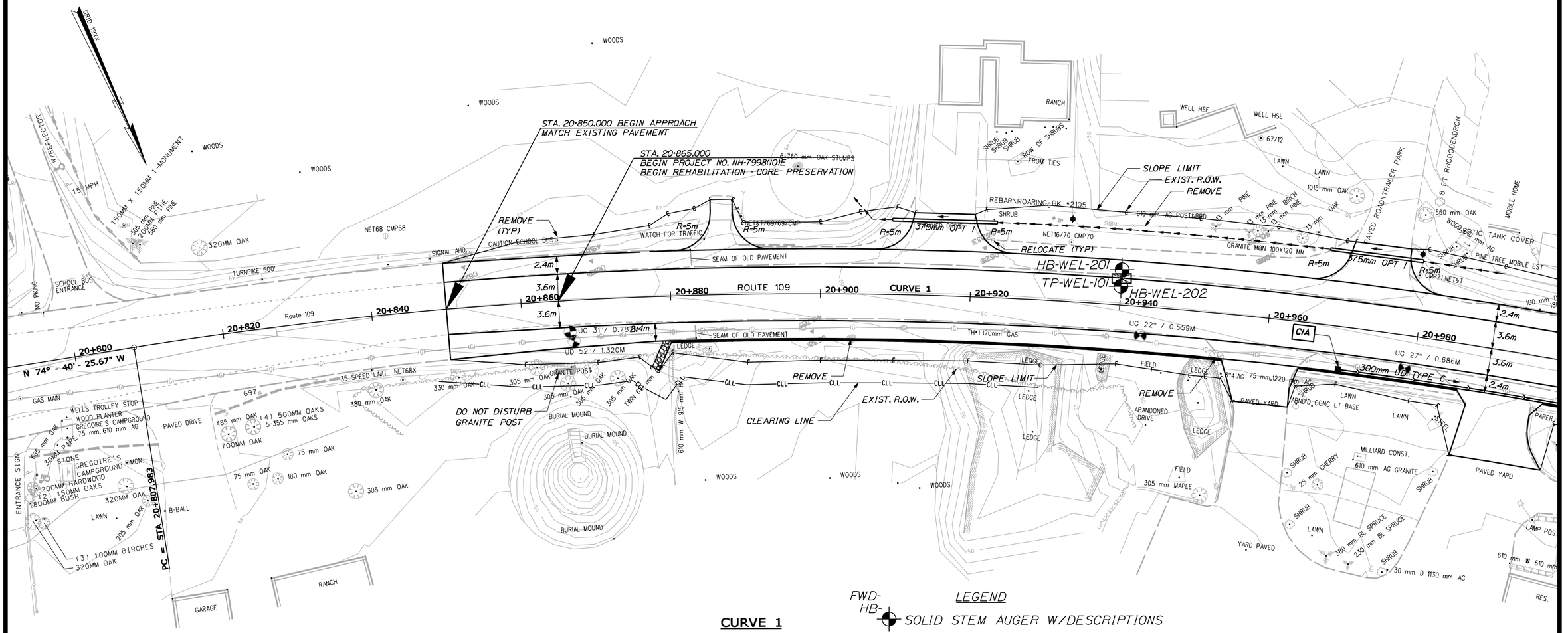
LEVEL

335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	1	28

7998.10



CURVE 1

PI = 20+954.592
Δ = 28° - 50' - 55.6" Rt.
R = 570.000 m
L = 286.999 m
T = 146.610 m
E = 18.553 m

LEGEND

FWD-HB- SOLID STEM AUGER W/DESCRIPTIONS

P- POWER AUGER PROBE

PC- PAVEMENT CORE

TEST PIT

KEY

R = Refusal of augers (actual nature of refusal surface unknown)

NR = No Refusal surface encountered

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K. GROSS	APR 2005
	CHECKED	T. WHITE	
	REVISIONS		
	FIELD CHANGES		

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE (in meters) 5 0 5 10

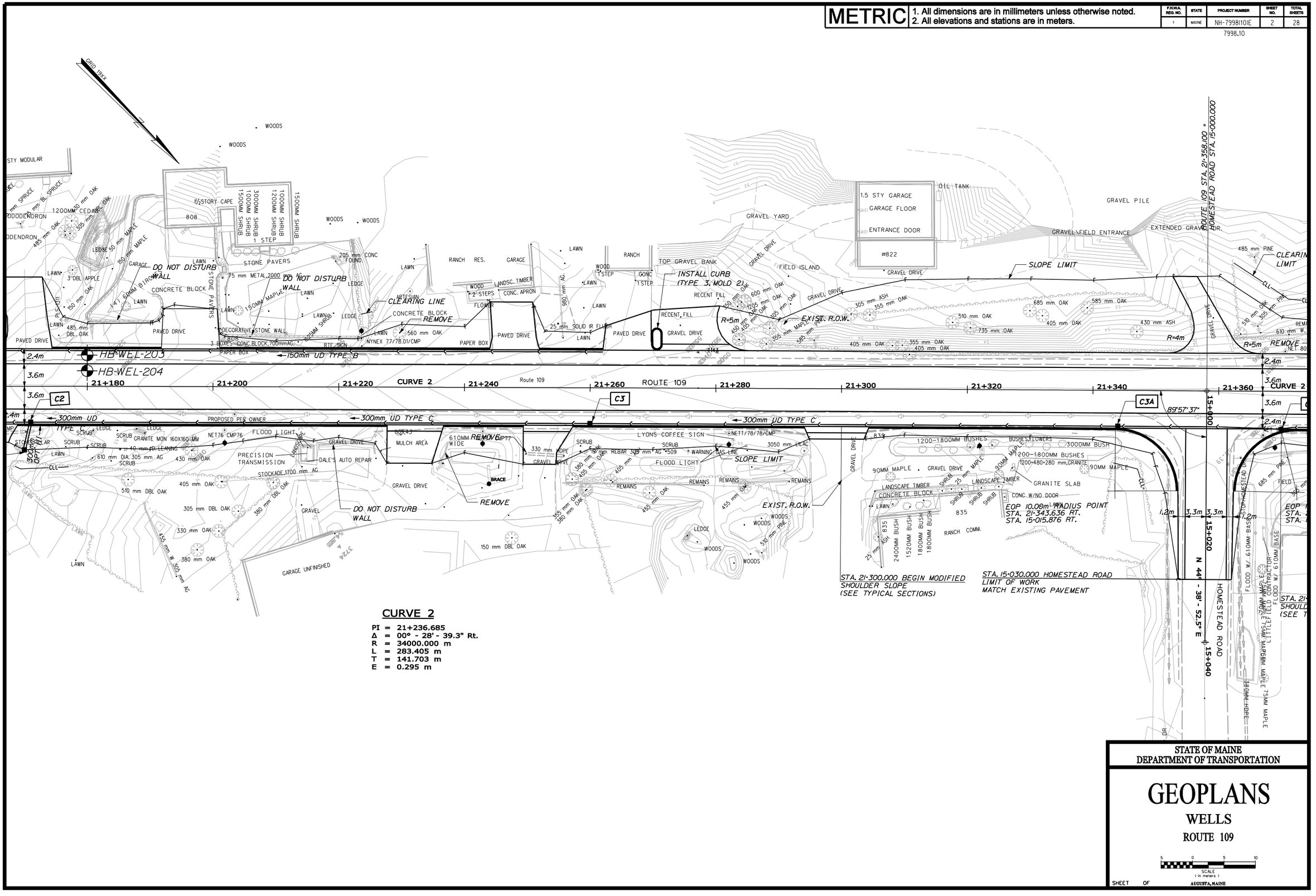
SHEET OF AUGUSTA, MAINE

Filename: ...\GEOTECH\MSTA\001_GEOPlan1.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	2	28

7998.10



CURVE 2

PI = 21+236.685
Δ = 00° - 28' - 39.3" Rt.
R = 34000.000 m
L = 283.405 m
T = 141.703 m
E = 0.295 m

PROJECT DESIGN ENGINEER		BY	DATE
	DESIGN-DETAILED	K. GROSS	T. WHITE	APR 2005
	CHECKED			
PLANS	REVISIONS			
	FIELD CHANGES			

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE
(in meters)
5 0 5 10

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msta\002_GEOPlan2.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	3	28

7998.10

GRID 19XX

CEMETERY

SCRUB

CLEARING LIMIT

SLOPE LIMIT

LP GAS

RANCH

WOODS

ROW OF SHRUBS

CONC BLK

SHRUB

1.22mW YEW

CONCRETE STEPS

1.22mW YEW

STA. 21+519.2 LEFT
BEGIN GRIND & OVERLAY

EXIST. R.O.W.

LAWN

PAVED DRIVE

ONE STY BLOCK GARAGE
AUTO LAND (USED CARS)

POLE

PEA STONE\GRAV

USED CAR LOT

STOP

PAVED SIDEWALK

BIT CURB

PAPERBOX

POOR COND

70MM*IP

150mm UD TYPE B

C5

ROUTE 109

RT 109

46+50 PK

48+00 PK

21+380

21+400

21+420

21+440

21+460

21+480

21+500

21+520

21+540

21+560

CURVE 2

N 45° - 20' - 50.6" W

C4A

C4

MH5

HB-WEL-205

HB-WEL-206

300mm UD TYPE C

SEAM OF OLD PROJECT

OLD PROJECT SEAM

REMOVE

REFLECTOR

RR SPIKE
45+50 RAIL SPIKE

PAVED APRON

SANFORD/NO.BERWICK

NET83/83CMP

DBL 100 mm HICKORY

30MM PIPE

BIT CURB

NET 84 CMP

SCHOOL BUS STOP AHEAD

PAVED DRIVEWAY

ARROW ICON BIKE ROUTE 9/109

ROUTE 9/109 BIKE ROUTE

CAP #179: FLUSH

EXIST. R.O.W.

GRIND EXISTING PAVEMENT (37.5mm) AND OVERLAY WITH 37.5mm OF HOT MIX ASPHALT

WELL HOUSE

STONE

PT = STA 21+378.386

EOP 10.00m RADIUS POINT
STA. 21+368.362 RT.
STA. 15+015.850 LT.

STA. 21+370.000 END MODIFIED
SHOULDER SLOPE
(SEE TYPICAL SECTIONS)

STA. 21+450.0, RIGHT
BEGIN GRIND & OVERLAY

PEASTONE DRIVE

ATTACHED GARAGE

1.5 STORY RES.

2 STEPS
CONCRETE

RANCH RES.

1 STEP
PRE-CAST CONC

PEASTONE

FIN FLOOR
GARAGE

ATTACHED GARAGE

FIELD

LAWN

APPLE

1500MM BUSH

1000MM BUSH

1200MM BUSH

FLOOD W/ 610MM BASE

FLOOD CONTRACTOR

CURVE 2

PI = 21+236.685
Δ = 00° - 28' - 39.3" Rt.
R = 34000.000 m
L = 283.405 m
T = 141.703 m
E = 0.295 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	T. WHITE	APR 2005
CHECKED		
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msta\003_GEOPlan3.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	4	28

7998.10

GRID 18XX

STATE FARM INSURANCE
2 STY WD CAPE BUSINESS

MEDIUM MIXED TREES

CURVE 3
PI = 21+840.360
Δ = 00° - 24' - 47.0" LT
R = 35715.000 m
L = 257.480 m
T = 128.740 m
E = 0.232 m

3 WOOD STEPS
3 STONE STEPS
STONE PAVERS

900MM PINE
900MM PINE
600MM OAK
(2) 460MM PINES
WOODS
560MM OAK
MEDIUM MIXED WOODS
1 X 1.25M BOULDER
1 X 1.25M BOULDER
LAWN
FIELD
GRAVEL AREA
LAWN
135 mm WOOD POST W/METER
375MM OAK
CRUSHED STONE DR
SLOPE LIMIT
CLEARING FOR FUTURE DEVELOPMENT
EXIST. R.O.W.
CLEARING LINE
R.S.1028 15 mm/100 mmAG
SHRUB
140 mm
150 mm
(5)100-150 mm BIRCH
PAVED DRIVE
C10A
C10
50 mm PINE
100 mm PINE
WOODEN POST ONLY
430MM WHITE PINE
430MM WHITE PINE
PAVED DRIVE
TWIN
PCC = STA. 21+969.100
C9B
C9A
C9
ME 1911 NH 749
ME 1311 NH 749-REBAR
RIGHT TURN
89D
STATE FARM INSURANCE
METAL POST
CONCRETE BURIED
15 mm IRON PIN-370 mm AG.
MULCH AREA
450mm CMP OPT 111
600mm UD TYPE C
600mm UD TYPE C
600mm UD TYPE C
FWD-5600
Route 109
21+760
21+780
21+800
21+820
21+840
ROUTE 109
21+860
CURVE 3
21+880
21+900
21+920
21+940
CURVE 3
21+960
1.8m
3.6m
3.6m
1.8m
150mm UD TYPE B
REMOVE
TH•3 170mm GAS
NETT/89/CMP
HOUSE 30M FROM ROAD\ACCESS DENIED
BURGESS WELDING•953
NETT/16/90/90/CMP
90•90-1870 mm AG.
MAILBOX •971
GRAVEL DRIVE
REMOVE
STEEL POST W/REFLECTOR
CONCRETE BASE
STEEL POST W/REFLECTOR
EXIST. R.O.W.
NETT/91
GASLINE,NORTH,UTILITIES
NETT/92
NYNEX 92D
R=5m
375mm OPTION
R=5m
INTERSECTION
PAVED DRIVE
3IN PINE
SLOPE LIMIT
CLEARING LINE
315MM OAK
305MM OAK
MEDIUM MIXED WOODS
FIELDSTONE WALL
WOODS
LAWN
LAWN
LAWN
FIELDSTONE WALL
FIELD
MOWED FIELD
953

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	T. WHITE	APR 2005
CHECKED		
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

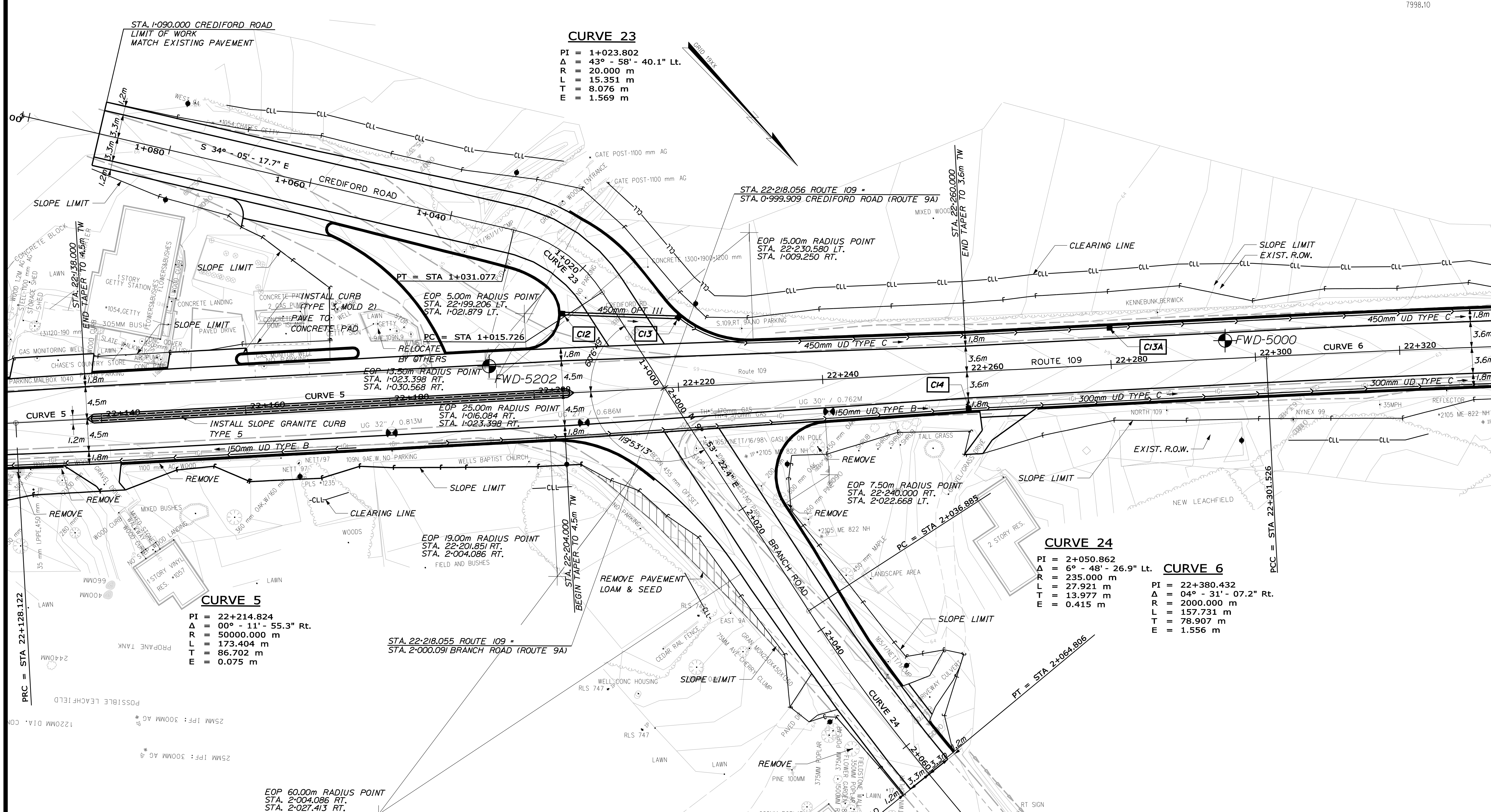
5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\ms1o\004_GEOPlan4.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	NH-7998(10)E	5	28

7998.10



Date:10/21/2010 Username: Karen.Gross Division: HIGHWAY Filename: ...\geotech\msta\005_GEOPlan5.dgn

PLANS		BY	DATE
	PROJECT DESIGN ENGINEER		
	DESIGN-DETAILED	K. GROSS	APR 2005
	CHECKED	T. WHITE	
	REVISIONS		
	FIELD CHANGES		

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE (in meters) 5 0 5 10

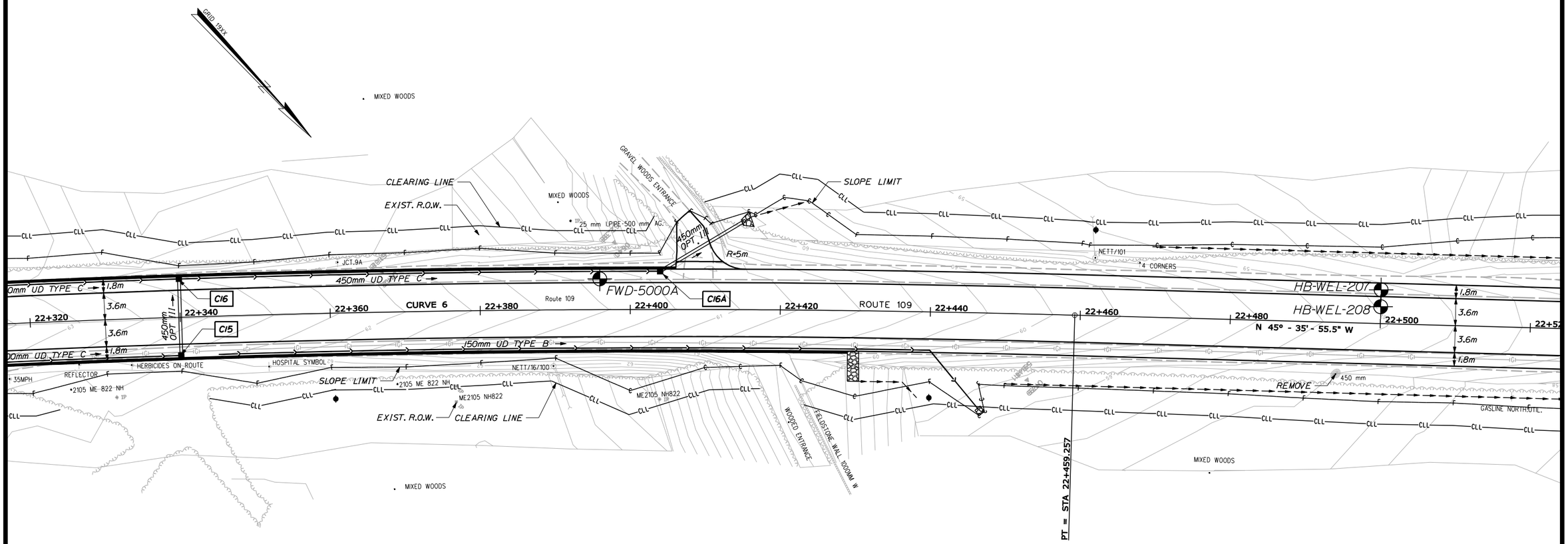
SHEET OF

AUGUSTA, MAINE

METRIC 1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	6	28

7998.10



CURVE 6

PI = 22+380.432
Δ = 04° - 31' - 07.2" Rt.
R = 2000.000 m
L = 157.731 m
T = 78.907 m
E = 1.556 m

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K. GROSS	APR 2005
	CHECKED	T. WHITE	
	REVISIONS		
	FIELD CHANGES		

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE (in meters) 5 0 5 10

SHEET OF AUGUSTA, MAINE

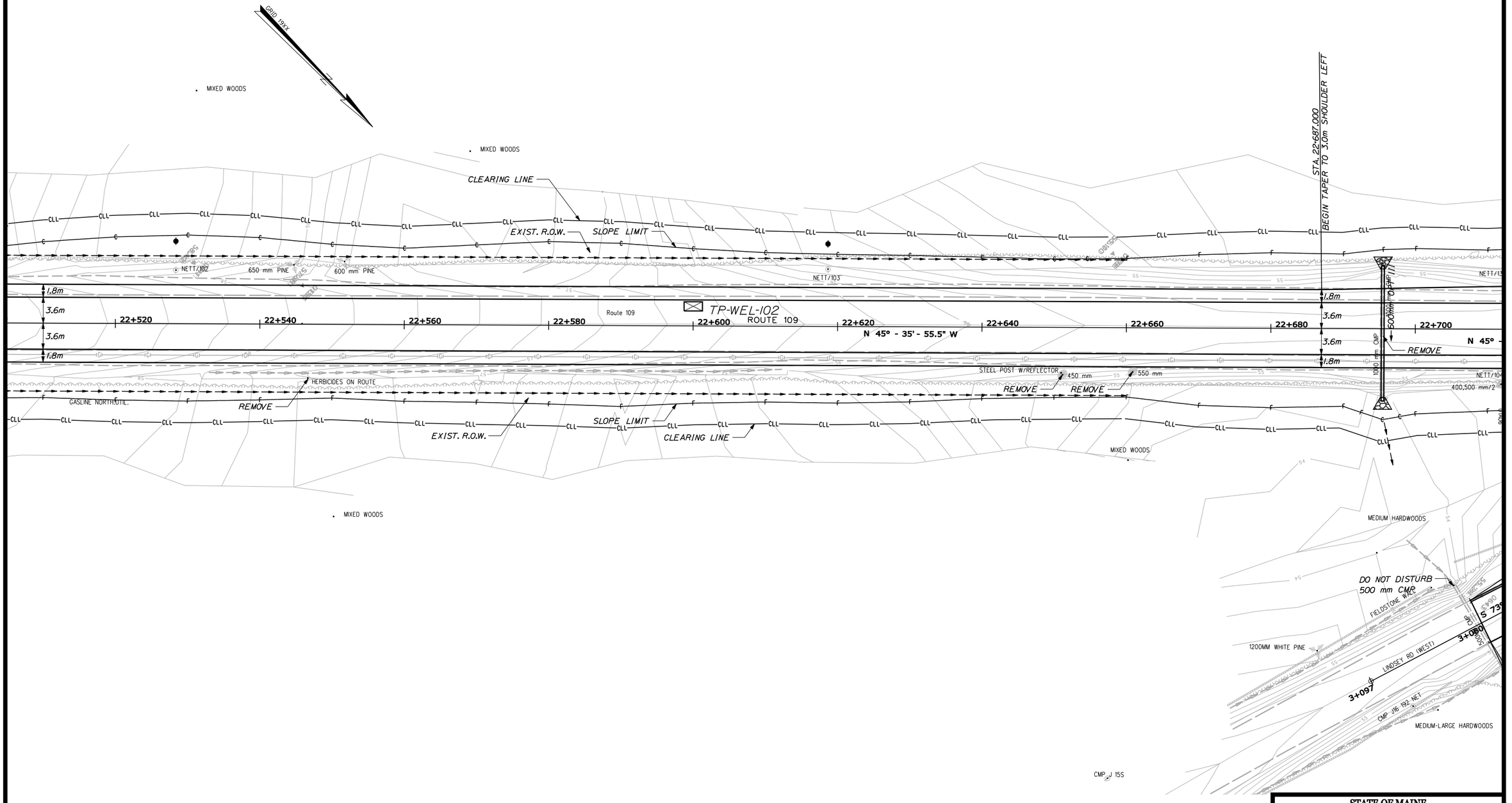
Filename: ...\geotech\msta\006_GEOPlan6.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC

1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	7	28

7998.10



PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

Filename: ...\geotech\nsto\007_GEOPlan7.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\mslo\008_GEOPlan8.dgn Username: Karen.Gross Date:10/21/2010

Division: HIGHWAY

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	8	28

7998.10

CURVE 7

PI = 22+794.467
Δ = 06° - 13' - 48.6" Lt.
R = 1350.000 m
L = 146.795 m
T = 73.470 m
E = 1.998 m

CURVE 25

PI = 3+008.962
Δ = 61° - 42' - 54.0" Rt.
R = 15.000 m
L = 16.157 m
T = 8.962 m
E = 2.473 m

CURVE 26

PI = 3+060.402
Δ = 1° - 39' - 59.8" Rt.
R = 190.000 m
L = 5.527 m
T = 2.764 m
E = 0.020 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

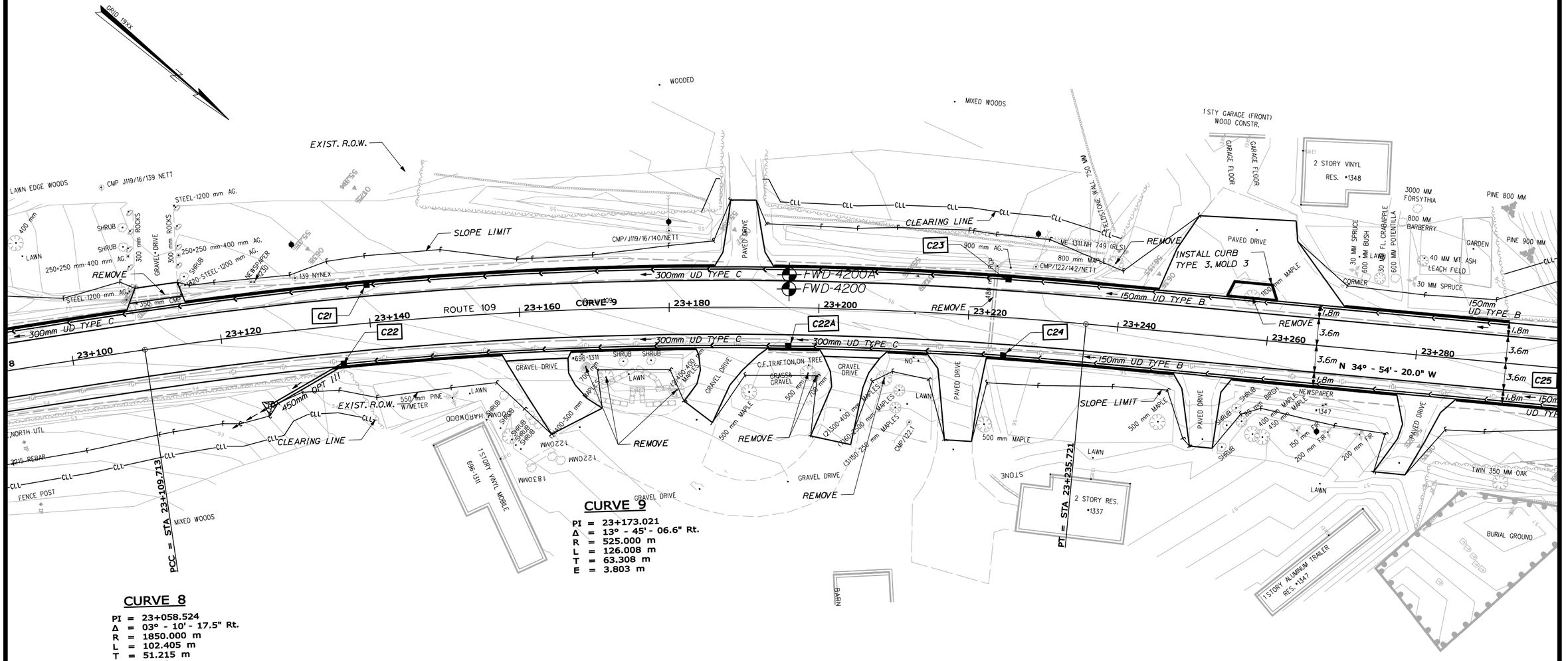
SCALE (in meters) 5 0 5 10

SHEET OF AUGUSTA, MAINE

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	9	28

7998.10



PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE (in meters) 5 0 5 10

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msto\009_GEOPlan9.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	10	28

7998.10

CURVE 10

PI = 23+399.115
Δ = 09° - 49' - 54.1" Lt.
R = 1075.000 m
L = 184.465 m
T = 92.460 m
E = 3.969 m

CURVE 27

+008.628
2° - 49' - 48.1" Rt.
2.000 m
6.446 m
628 m
532 m

PT = STA 23+491.120

EOP 32.00m RADIUS POINT
STA. 5-014.356RT.
STA. 5-007.410 RT.

PC = STA 23+641.909

EOP 3.00m RADIUS POINT
STA. 23+894.493 RT.
STA. 5-027.163 LT.

STA. 5+050.000 SAWYER ROAD
LIMIT OF WORK
MATCH EXISTING PAVEMENT

PC= STA 5+000.000
PT= STA 5+016.446
N 44° - 44' - 14.1" W
N 22° - 17' - 19.8" W

CLEARING LINE
EXIST. R.O.W.
SLOPE LIMIT
REMOVE
WARNING BRUSH HERBICIDES
ROUTE 109
SAWYER ROAD
SAWYER RD (EAST END)
CURVE 10
CURVE 11
FWD-3800
PONDING AREA
UG UTILITIES
MIXED GROWTH
MIXED WOODS
600MM PINE
500MM PINE
LAWN
GRASS AREA
BOULDERS
375mm OPTION I
300MM CMP
1436
NYNEX 128/129/CMP
NYNEX 149/130/CMP
NYNEX 16 150
900 mm CONCRETE 880 mm AC.
CIR #2190: 130MM AC
PAVED DRIVE
GRAVEL DRIVE
GRAVEL DRIVEWAY
ROARING BK CON.
5 BOXES
150 mm PLASTIC MAIN
UG 18" / 0.457M
UG 20" / 0.508M
UG TEL/ELEC/CATV/GASLINE NORTH/UTIL
20 mm LROY 520AG LEANING
400 mm MAPLE
350 mm MAPLE
300 mm MAPLE
(2)300 mm MAPLE
550 mm MAPLE
500 mm MAPLE
200 mm MAPLE
LANDSCAPE
GRANITE FIELDSTONE WALL
149 NET
800MM PINE
700MM OAK
650 mm MAPLE
LEACHFIELD
CLEANOUT COVER
ALUMINUM MOBILE HOME
325MM TWIN OAK
LARGE MIXED WOODS
CMP J6 NET 16 150
LEDGE PRESENT
CEDAR RAIL FENCE
CMP J4 151
DRILLED WELL
30MM COPPER ROD
175MM MAPLE
325MM MAPLE
400MM MAPLE
APPROX. LOCATION
375MM MAPLE
425MM MAPLE
275MM TWIN MAPLE
350MM MAPLE
700 MM OAK
BURIED
STONE
GRASS
R=3m
35 MPH
50 MPH
25 MPH
70 mm
90 mm
680 mm RCP
580 mm RCP
5+000
5+020
5+040
5+060
23+460
23+480
23+500
23+520
23+540
23+560
23+580
23+600
23+620
23+640
23+660
1.8m
3.6m
3.6m
1.8m

PROJECT DESIGN ENGINEER

	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE (in meters) 5 0 5 10

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msto\010_GEOPlan10.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	11	28

7998.10

CURVE 11

PI = 23+917.172
Δ = 00° - 25' - 14.0" Lt.
R = 75000.000 m
L = 550.523 m
T = 275.263 m
E = 0.505 m

GRID 19XX

PC = STA 23+641.909

23+640 CURVE 11 23+660 23+680 23+700 23+720 23+740 23+760 23+780 23+800 23+820

1.8m
3.6m
3.6m
1.8m

HB-WEL-209
HB-WEL-210

C27
C28

CLEARING LINE
SLOPE LIMIT
EXIST. R.O.W.
180 mm PINE WITH PINK FLAGGING
NYNEX 151
NYNEX 152
NYNEX 153
REMOVE
REMOVE
ROUTE 109
Route 109
150mm UD TYPE B
300mm UD TYPE C
300mm UD TYPE C
PROTECT, PREVENT FOREST FIRE
WARNING GAS LINE NORTH. UTIL.
MIXED WOODS
WOODS
WOODS
MIXED WOODS
CLL
LIMIT OF CLEARING

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

Filename: ...\geotech\msta\011_Geoplan11.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

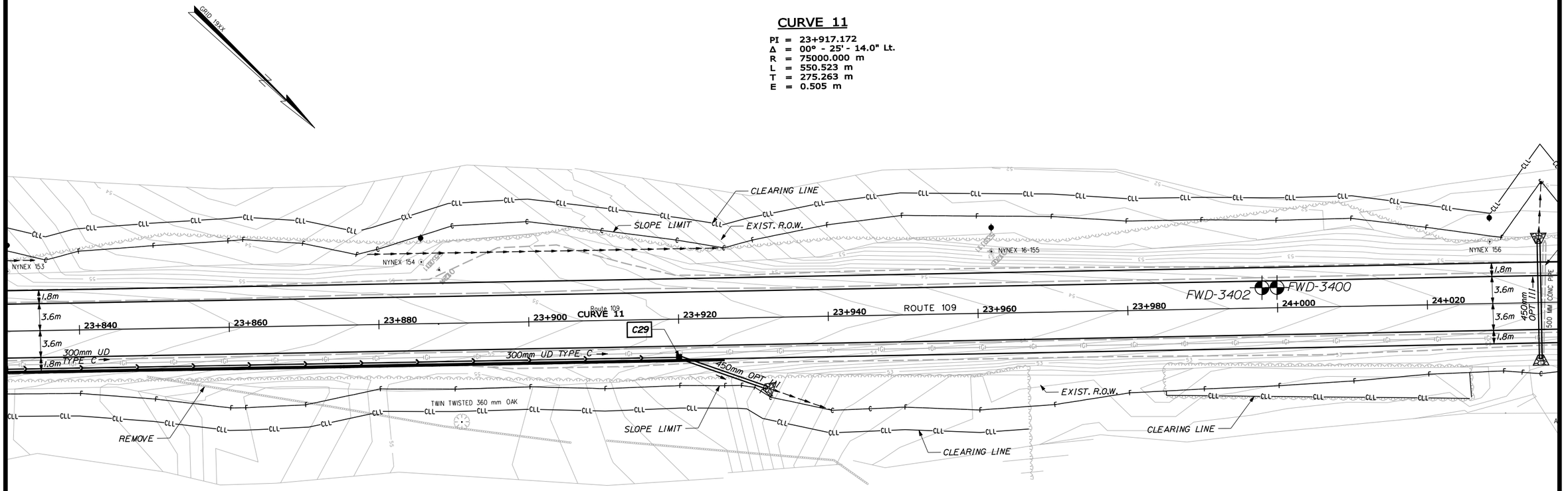
METRIC 1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	12	28

7998.10

CURVE 11

PI = 23+917.172
Δ = 00° - 25' - 14.0" Lt.
R = 75000.000 m
L = 550.523 m
T = 275.263 m
E = 0.505 m



PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	T. WHITE	APR 2005
CHECKED			
REVISIONS			
FIELD CHANGES			

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msta\012_Geoplan12.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC 1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	13	28

7998.10

CURVE 13

PI = 24+619.633
Δ = 08° - 10' - 37.5" Lt.
R = 950.000 m
L = 135.581 m
T = 67.906 m
E = 2.424 m

ROGER BRAGDON ROAD
STA. 7+030.000 ROGER BRAGDON ROAD
LIMIT OF WORK
MATCH EXISTING PAVEMENT
EOP 18.00m RADIUS POINT
STA. 24+436.742 LT.
STA. 7+019.259 RT.
POINT C34A
C34B
N 67° - 31' - 27.1" W
N 18° - 15' - 27.3" W
450mm OPT III
FWD-3000A
FWD-3000
BRAGDON RD
NYNEX166/16/173/CMP150
300mm UD TYPE C
150mm UD TYPE B
C35
C36
C37
C38
Route 109
3.6m
1.8m
7.2m
1.2m
REMOVE
TP-WEL-103
HB-WEL-211
HB-WEL-212
PC = STA 24+551.727
CURVE 13
ROUTE 109
PT = STA 24+403.706
STA. 24+415.205 ROUTE 109 ROGER BRAGDON ROAD
STA. 7+000.000 ROGER BRAGDON ROAD
STA. 24+472.000 BEGIN TAPER TO 7.2m TW
BEGIN TAPER TO 1.2m SHOULDER RIGHT
STA. 24+562.000 END TAPER TO 3.6m TW
END TAPER TO 1.8m SHOULDER
EXIST. R.O.W.
CLEARING LINE
SLOPE LIMIT
DO NOT DISTURB WALL
DO NOT DISTRUB STONE WALL
DO NOT DISTURB WALL/FOUNDATION
NEW PAVED DRIVE
2 STORY RES.
DRILLED WELL
CONC COVER,W/PLANTER
CONCRETE PAD
GARAGE
GRAVEL DRIVE
GRAVEL BRIKE
STOCKADE
MIXED WOODS
LAWN
YARD
BLUEBERRY RIDGE MOBILE PK
ENTRANCE TO WOODS
INTERSECTION
WOOD POST 1690
NORTH 109
30 MM IRON PROP PIPE
20 mm REBAR,700 mmAG POOR\BENT OVER
20 mm REBAR PLS1303 90 mmAG
NO NUMBER
BROKEN GUY WIRE
STONE WALL,170 mm×28(
GAS PIPELINE NORTHERN UTIL.
POSSIBLE FOUNDATION
CURVE HOOK
NYNEX174/151CMP
NYNEX177/CMP/J154
NYNEX176/CMP/J153
NYNEX174/151CMP
CMP 565
NODE 7270
NODE 7263
24+400
24+420
24+440
24+460
24+480
24+500
24+520
24+540
24+560
24+580

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE
(in meters)
5 0 5 10

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msla\013_Geoplan13.dgn Username: Karen.Gross Division: HIGHWAY Date:10/21/2010

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	14	28

7998.10

GRID 19XX

CURVE 13

PI = 24+619.633
Δ = 08° - 10' - 37.5" Lt.
R = 950.000 m
L = 135.581 m
T = 67.906 m
E = 2.424 m

CURVE 14

PI = 24+743.220
Δ = 01° - 33' - 45.3" Lt.
R = 4100.000 m
L = 111.816 m
T = 55.911 m
E = 0.381 m

STA. 24+617.936 = ROUTE 109
STA. 8+000.000 MEETINGHOUSE ROAD

STA. 24+765.000 END APPROACH
BEGIN PROJECT NO. NH-7998(10)E

STA. 24+750.000
END CORE PRESERVATION
BEGIN APPROACH

PCC = STA. 24+687.308

30 MM IRON PROP PIPE

NYNEX178/CMP/155

+WARNING,HERBICIDES,BRUSH

16/NYNEX/180/CMP/156

CLEARING LINE

SLOPE LIMIT

EXIST. R.O.W.

CMP/J157/181/NETT

REMOVE

20M REBAR RLS1530,100 mmAG

CMP/159/16/183/NETT

300mm UD TYPE C

150mm UD TYPE B

C38

C39

FWD-2800

CURVE 13

CURVE 14

ROUTE 109

Route 109

24+600 | 24+620 | 24+640 | 24+660 | 24+680 | 24+700 | 24+720 | 24+740 | 24+760 | 24+780

1.8m

3.6m

8+000

8+020

8+028

N 51°-10'-16.9" E

107'6.45"

MEETING HOUSE RD.

STONE WALL 170 mm+280 mm

DO NOT DISTRUB STONE WALL

EOP 15.00m RADIUS POINT
STA. 24+603.226 RT.
STA. 8+015.296 RT.

EOP 9.75m RADIUS POINT
STA. 24+637.578 RT.
STA. 8+020.156 LT.

STA. 8+027.500 MEETINGHOUSE ROAD
LIMIT OF WORK
MATCH EXISTING PAVEMENT

CLEARING LINE

EXIST. R.O.W.

MEETINGHOUSE ROAD

GRAVEL DRIVEWAY

NETT/702/1/1/CMP

HUB ST.

6" PLASTIC GAS MAIN

GRAVEL DRIVE

MIXED WOODS

DEER

STOCKADE

GRAVEL SAND DRIVE, 4" WSP, 6" BASE, 800 mm AC

R=5m

20 mm-I.PIPE 400 mm AC

20 mm-I.PIPE-150 mm

REMOVE

SHRUB

LAWN

CONCRETE WALKWAY

BRICK WALKWAY

CONCRETE

2 STORY RES. #1717

2 STORY UNFINISHED RES. #1737

MIXED GROWTH

SHED

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE (in meters) 5 0 5 10

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\mslo\014_Geoplan14.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	15	28

7998.10

GRID 19XX

PT = STA 24+799.124

FWD 2600

Route 109

ROUTE 109

N 27° - 59' - 50.0" W

24+780 | 24+800 | 24+820 | 24+840 | 24+860 | 24+880 | 24+900 | 24+920 | 24+940 | 24+960 | 24+980

MIXED WOODS

MIXED WOODS

MIXED WOODS

MIXED WOODS

MIXED GROWTH

MIXED GROWTH

700 mm PINE

600MM OAK

WOODLOT ENTRANCE

16/84/CMP/J60

16/186/NETT/CMP/161

EXIST. R.O.W.

EXIST. R.O.W.

CMP-162/16/NETT/187

CMP-J163 /188-NETT

NEWSPAPER •1803

NEW TREE LINE

20 mm-I.PIPE-150 mm AG.

450 mm RCP

350MM MAPLE

350MM MAPLE

250MM MAPLE

375MM MAPLE

350MM ELM

325MM MAPLE

STONEWALL REMOVED

350MM MAPLE

•1755

•1765

LAWN

AVD. DR

SHRUB

PAVED DRIVE

STOCKADE

GRAN. CURB

GARDEN

120 mm UNKN

50 mm PINE

30 mm PINE

100 mm MAPLE

STOCKADE

20 mm MAPLE

1 STORY GARAGE

RES. •1765• ALUMINUM TRAILER

GRAVEL DRIVE

MARSH AREA

GRAV ROAD

300 MM PVC

EARTHEN DAM

300 MM PVC

TOPO UPDATE AREA

FARM POND

TOP BANK POND

OWNER REPORTS APPROX. 20FT DEPTH

GARAGE

GARAGE

50MM HARDWOOD

150MM HARDWOOD

1830MM

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10

SCALE (in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msto\015_Geoplan15.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC 1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	16	28

7998.10

CURVE DATA

PI = 25+154.621
Δ = 19° - 03' - 44.9" Lt.
R = 805.000 m
L = 267.826 m
T = 135.162 m
E = 11.268 m

GRID 19XX

PC = STA 25+019.459

FWD-2400

24+980 | 25+000 | 25+020 | 25+040 | 25+060 | 25+080 | 25+100 | 25+120 | 25+140 | 25+160

N 27° - 59' - 50.0" W

STA. 25+086.625 ROUTE 109 =
STA. 9+000.000 SAGAMORE ROAD NORTH

Route 109 | ROUTE 109

EXIST. R.O.W.

MIXED WOODS | MIXED GROWTH | MIXED GROWTH

1.220M CMP HAS 4.8% NO

IP 35MM IRON PROP PIPE

CMP-J164 | CMP-J16/190 | CMP-J168/193/NETT | CMP/J169/NETT

210x210x400 mm AG/GRANITE | 500x400 mm | 500x500 mm | 1.230-CMP | 1.220-CMP | MIXED GROWTH

REMN.STONE WALL | 600-800 mm AG-WIRE | REMN.STONE WALL

300 mm OAK | 100 mm PINE | 300,300,400 mm MAPLES | 300 mm MAPLE | 400 mm MAPLE | 200 mm MAPLE | 330,300 mm MAPLE | 200-250 MAPLES | 400 mm

LAWN | SHRUB | PAVED DRIVE | STONE WALL | 40 mm | LAWN | PAVED WALKWAY | 20 mm MAPLE | 300 mm MAPLE | SHRUB | EST TOP | STONES | STONES | 1852 | 305 mm CMP

UG 22" / 0.559M | UG 14" / 0.356M

NET/1-192/67CMP | VERIZON 192 167 CMP

SAGAMORE DR | TRIANGLE CONC 1700x700x800 | 400MM PVC | 400MM PVC

H/W MON.160x160x200 mm

1.2m | 3.1m | 3.1m | 1.2m

9+000

9+020 SAGAMORE ROAD

9+032

N 57°-35'-05.9" E

0.6m | 3.1m | 3.1m | 0.6m

COMMUNITY MAILBOX

360MM HDPE

WOODS ENT.

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	T. WHITE	APR 2005
CHECKED		
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msta\016_Geoplan16.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	17	28

7998.10

CURVE DATA

PI = 25+154.621
Δ = 19° - 03' - 44.9" Lt.
R = 805.000 m
L = 267.826 m
T = 135.162 m
E = 11.268 m

CURVE DATA

PI = 25+398.874
Δ = 08° - 30' - 32.8" Lt.
R = 1500.000 m
L = 222.768 m
T = 111.589 m
E = 4.145 m

GRID 19XX

STA. 25+216.134 ROUTE 109 =
STA. 10+000.000 SAGAMORE ROAD NORTH

PCC = STA 25+287.285

ROUTE 109

SAGAMORE ROAD

RES. #1852

1 STORY RES.

#1852

PAVED DRIVE

PAVED WALKWAY

STONE WALL

SHRUB

LAWN

STONES

EST TOP

300 mm SAW

500 mm MAPLE

20 mm

80 mm MAPLE

L1180 mm

35MM IRON PROP PIPE

FWD-2200

Route 109

10+000

10+020

10+034

N 48°-02'-17.3" E

TH#8-170mm GAS

CMP/170/195/NETT

400MM PVC

LG 26" / 0.660M

VER 196-171 CMP
UNKNOWN/JT

UG 24" / 0.610M

6"PLASTIC GAS MAIN

CMP-J172/197-NETT

NET 197

NETT/98

30 mm-I.PIPE/870 mm AG.

EXIST. R.O.W.

MIXED GROWTH

POWERLINE/GAS EASEMENT

LAWN

CP-TEST GATE-WIRES

CATHODIC PROTECTION-WIRES

SM BOULDER WALL 1000MM

YELLOW POST

GRAVEL

FIELD

ENTRANCE

30" STEEL MAN

D.O.T.COMPACT-URBAN

35 MPH

FOR THE PIPELINE

800•700•700 mm

600•800•400 mm

500•700•200 mm

900•800•600 mm

CATHODIC PROTECTION WIRES FOR GAS LINE

250/200

250/200

LG GRAN WALL

LG MIXED WOODS

HIGH PINE ESTATES
WD POSTS

WOODS ENT.

SAGAMORE DR

COMMUNITY MAILBOX

1.2m 3.1m 3.1m 1.2m

0.6m 3.1m 3.1m 0.6m

NOW H

TOPO UPDATE AREA

LG MIXED WOODS

MIXED WOODS

GRAN MON (LOT 33) PROP

ME 1311 H749

360MM HDPE

POWERLINE/GAS EASEMENT

GAS LINE MARKER

PROJECT DESIGN ENGINEER		BY	DATE
PLANS	DESIGN-DETAILED	K. GROSS	APR 2005
	CHECKED	T. WHITE	
	REVISIONS		
	FIELD CHANGES		

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msto\017_Geoplan17.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

Filename: ...\geotech\msta\018_Geoplan18.dgn Username: Karen.Gross Date:10/21/2010

Division: HIGHWAY

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	18	28

7998.10

CURVE DATA

PI = 25+398.874
Δ = 08° - 30' - 32.8" Lt.
R = 1500.000 m
L = 222.768 m
T = 111.589 m
E = 4.145 m

GRID 1mX

PT = STA 25+510.052

N 55° - 34' - 07.7" W

FWD-2002A

FWD-2002

EXIST. R.O.W.

50 MPH

ROUTE 109

25+360 25+380 25+400 25+420 25+440 25+460 25+480 25+500 25+520 25+540

DRILLED WELL
1.5 STY WD BARN
FIELD/BUSHES
GRAVEL FIELD ENTRANCE
NEW LAWN
250 mm OAK
500 mm MAPLE
270 mm OAK
600 mm MAPLE
900 mm MAPLE
200D 176 CMP
600 mm MAPLE
(8)40-100 mm MAPLE
CRUSHED STONE DRIVE
1m WIDE
DEER XING
1904 HOUSE
CONC.
460 mm RCP
350 mm RCP
1100 mm MAPLE
LAWN
PAVED PARKING ENTRANCE
800MM
800MM
2 STORY VINYL MUNICIPAL
800•600•800 mm
SHRUB
SHRUB
WOOD PORCH
2 STONE STEPS
SHRUB
200 mm
PAVED WALKWAY
900•900•1900 OCEAN LODGE.
PAVED PARKING ENTRANCE
CONC.
NO NUMBERS
•1941/•1949
HB-WEL-21
CMP175
D.O.T.COMPACT URBAN LINE 'S'
400 mm CONC
NET 199 CMP
WIRES FOR GAS LINE
600 mm OAK
LAWN
WILSON STORE FIXTURES
180 mm WELL COVER
200 mm•470 mm
CRUSHED STONE
PAVED PARKING
CMP176/16/200NETT
•1907 SANFORD
LARGE BOULDERS
NORTHERN UTIL GAS LINE
WARNING GAS PIPELINE UTIL
CONC •63 •22 •27 •69
•64 WEBBER NEWSPAPER
LOW AREA
EVERGREEN DRIVE
2000 mm CONCRETE
100•100•500 mm W/DRILLHOLE
EXIST. R.O.W.
30 MM IRON PIPE W/TEETOP
NETT202/178CMP
SLOW CHILDREN
PAVED PARKING ENT.
90•90•1700
CARON ENGINEERING
1000L/CMP-179
LAWN
PAVED DRIVE
BARK MULCH
LANDSCAPE TIMBERS
GRAVEL PARKING
190•250 mm
LAWN
1 STEP W/LANDING
(4)200-500 mm MAPLE
120•110•40 mm GRANITE/HOLE
150MM BIRCH
•1941
2 STORY RES.
305MM CMP
179.1 CMP
SLOW CHILDREN PLAYING
100MM X 100MM GRANITE MON.: 75MM AC
100MM X 100MM GRANITE MON.: 45MM AC
WOODS/MIXED GROWTH
305MM CMP
105OMM CONCRETE WELL
105OMM CONCRETE WELL

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

METRIC 1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	19	28

7998.10

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

Filename: ...\geotech\msto\019_Geoplan19.dgn Username: Karen.Gross Date:10/21/2010

Division: HIGHWAY

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE (in meters) 5 0 5 10

SHEET OF AUGUSTA, MAINE

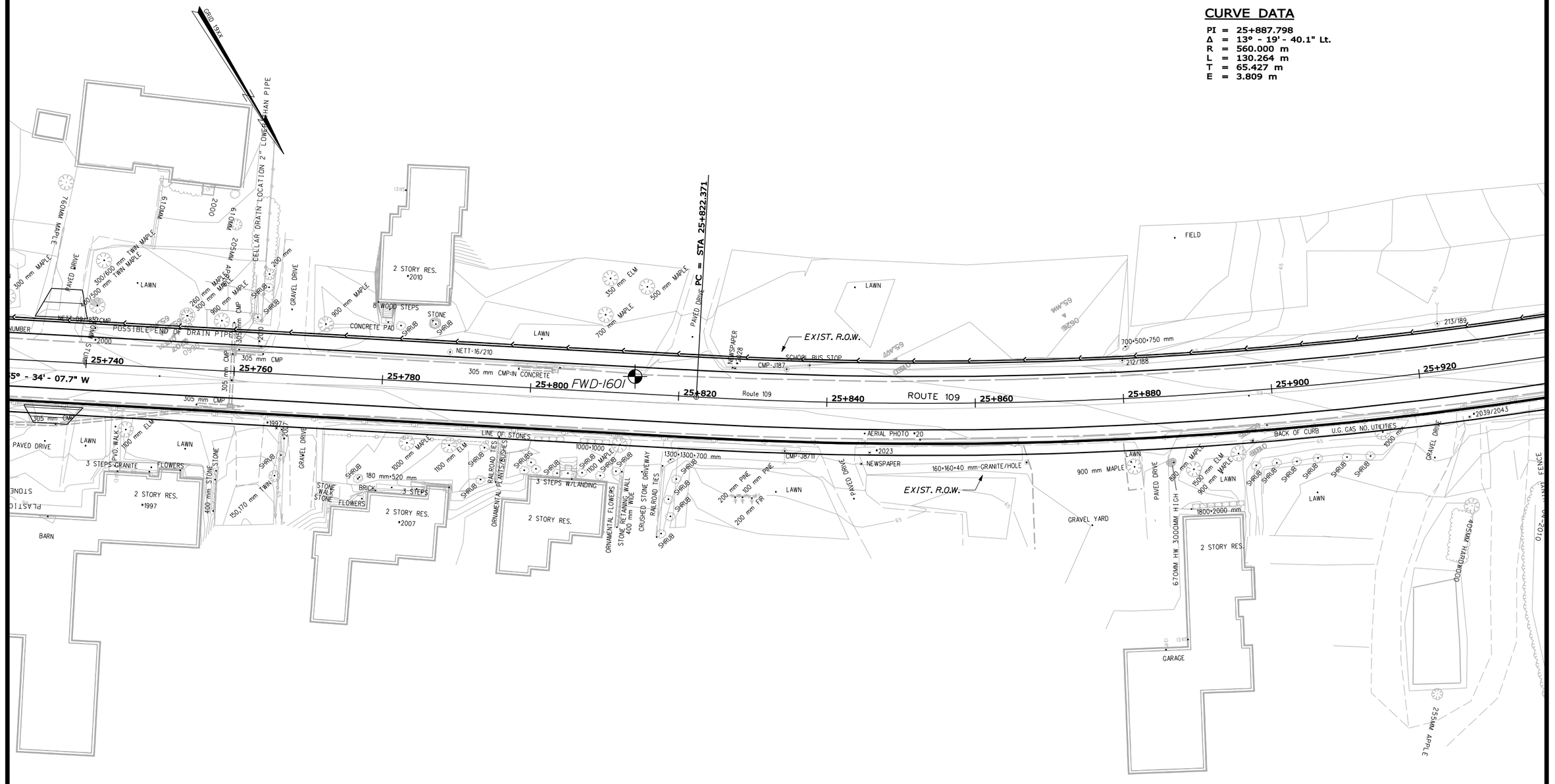
METRIC 1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	20	28

7998.10

CURVE DATA

PI = 25+887.798
Δ = 13° - 19' - 40.1" Lt.
R = 560.000 m
L = 130.264 m
T = 65.427 m
E = 3.809 m



PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE (in meters) 5 0 5 10

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msto\020_Geoplan20.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010

METRIC 1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	21	28

7998.10

Filename: ...\geotech\msto\021_Geoplan21.dgn Username: Karen.Gross Date:10/21/2010

Division: HIGHWAY

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

GRID NORTH

PT = STA 25+952.634

PC = STA 26+125.143

N 68° - 53' - 47.8" W

EXIST. R.O.W.

ROUTE 109

FWD-1400

25+920 25+940 25+960 25+980 26+000 26+020 26+040 26+060 26+080 26+100 26+120

FIELD

WOODS MIXED

MIXED GROWTH-CATTAILS

SWAMP WATER SURFACE ELEVATION 4-29-04

WOODS\FIELD ENTRANCE

LARGE BOULDERS

1000 MM CONC WELL

213/189

1000 mm PINE CURVE

900 mm PINE

700 mm PINE

800 mm PINE

400 mm PINE

500 mm MAPLE

1100 mm PINE

1500 mm PINE

LAWN

GRAVEL DRIVE

*2039/2043

1000 mm ELM

NETT214?/90CMP

1100 mm ELM

130•90•70 mm-GRANITE

HANDICAP PARKING

EXIST. R.O.W.

CONCRETE PARKING

*2053

1000X1700X1000 MM BOULDER

20•650 mm STEEL ROD

NETT-16/215/191/CMP

400 mm OAK

800 mm DECID

20•740 mm STEEL/CLEANING

800 mm PINE W/ANTI-CLIMB SIGN

160 mm BEECH

300 mm OAK

SHRUB

BLUEBERRY BUSH

200 mm MAPLE

1000 mm PINE

100 mm MAPLE

N2/CMP/192/16/216

100•100•1300-OPEN

ORNAMENTAL FLOWERS/SHRUBS

HANDICAP PARKING

CONCRETE

3 BRICK STEPS/CONCR.LAND.

WOOD HANDICAP RAMP

HANDRAIL

LAWN

HIGHPINE BAPTIST CHURCH

*2053

100 MM MAPLE

175 MM MAPLE

MIXED GROWTH

25 MM IRON ROD

CENTER 500 MM FELDSTONE WALL

(OLD) 1000 MM TILE WELL

200 MM MAPLE

250 MM MAPLE

250 MM APPLE -TRIPLE

BASKET BALL HOOP

BLUE SPRUCE 225 MM

FLAGPOLE

BLUE SPRUCE 250 MM

250 MM MAPLE -TRIPLE

(NEW) DRILLED WELL (CAP)

CEDAR RAIL FENCE

25 MM IRON RODS

250 MM CHERRY

BLUE SPRUCE 200 MM

EDGE OF WET AREA

COUNTRY MOUSE ANTIQUES

GRAVEL DRIVE

NETT-217/193

450 mm-PINE

600 mm-PINE

D\H IN ROCK,CAP MEPLS1311

REM.OF WALL

200 mm-MAPLE

80 mm-BIRCH

BUSHES

900 mm MAPLE

WOOD POST

TWIN600 mm MAPLE

300 mm-MAPLE

150 mm-MAPLE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

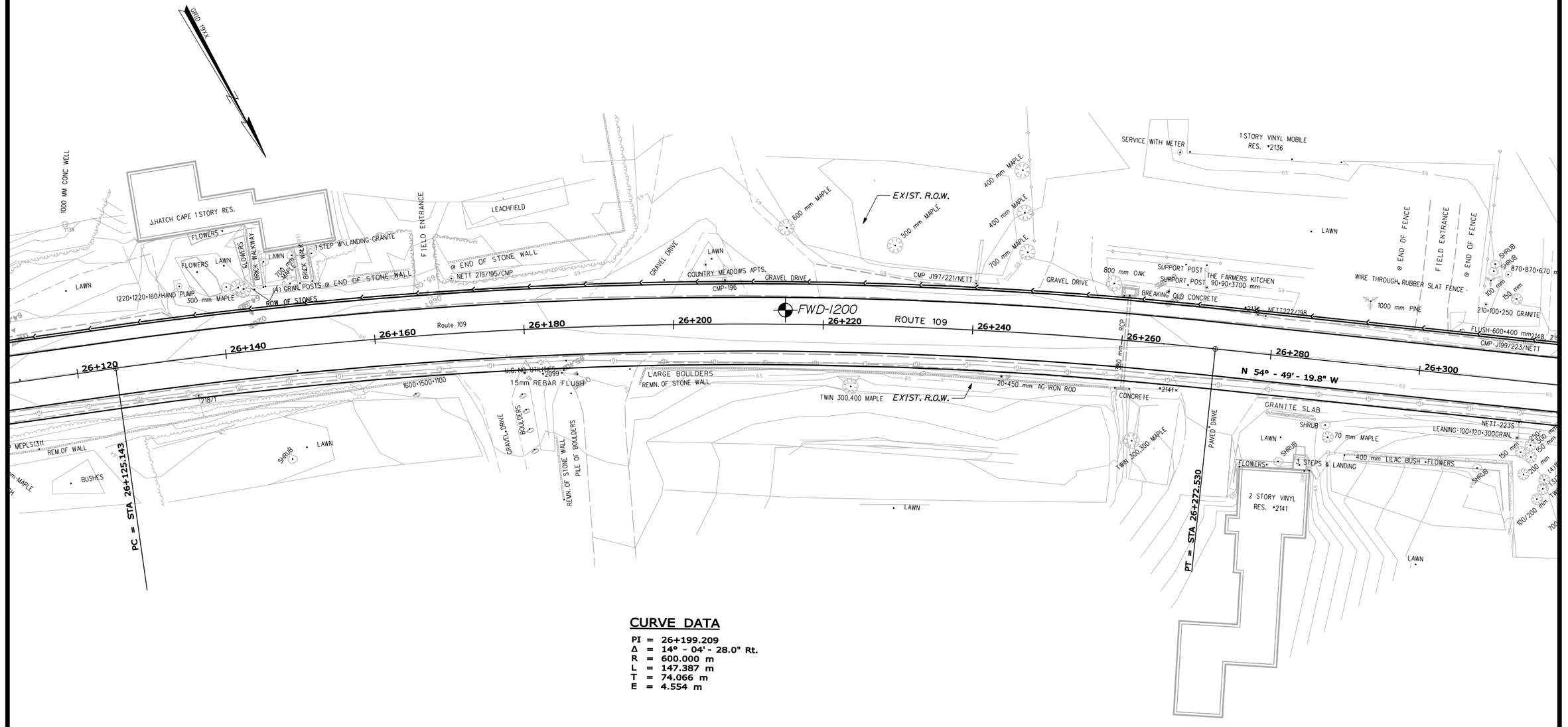
SHEET OF

AUGUSTA, MAINE

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	22	28

7998.10



CURVE DATA

PI = 26+199.209
Δ = 14° - 04' - 28.0" Rt.
R = 600.000 m
L = 147.387 m
T = 74.066 m
E = 4.554 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msto\022_Geoplan22.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	23	28

7998.10

GRID 19XY

2 STORY VINYL •2154

SHRUB
SHRUB
870•870•670 mm WELL
100 mm
150 mm
210•100•250 GRANITE
GRAVEL DRIVE
500 mm MAPLE
500 mm MAPLE
MIXED GROWTH,BUSHES
1 STORY WOOD SHED
145-180 mm TWIN MAPLE
170-250 mm TWIN ELM
1300 mm MAPLE
300 mm SPRUCE
POSSIBLE WELL CONCRETE
20 mm REBAR 100 mm AG LEANING
70•90•70 mm/DRILL HOLE
130•130•400 mm GRANITE
1000MM X 1000MM BOULDER
FLUSH-600•400 mm 2148, 2154,NEWSPAPER
CMP-J199/223/NETT
TRIANGLE/160•190•500 mm
NETT-2247/2007CMP
EXIST. R.O.W.
1 STORY ALUMINUM TRAILER •12
1 STORY ALUMINUM TRAILER
TIN SHED
SHED
POSSIBLE LEACH FIELD
1400 mm AG STEEL PIPE
MIXED GROWTH
PINE AND MIX
REMN. STONE WALL
JP 30 mm•200 mm-STEEL PIPE
130•130•370 mm
WOODS ENTRANCE
1690/CMP202/16/226NETT
NETT-2247/2007CMP
305 mm CMP
HB-WEL-215
TP-WEL-1041
HB-WEL-216
FWD-1000
ROUTE 109
Route 109
N 54° - 49' - 19.8" W
26+320
26+340
26+360
26+380
26+400
26+420
26+440
26+460
26+480
26+500
40 PHOTO CONTROL POINT
U.G. GAS NO. UTILITIES
PAVED DRIVE
GRAVEL DRIVE
LAWN
MIXED GROWTH
NETT-223S
100•120•300GRAN.
150 mm
250 mm
200 mm
150 mm
SHRUB
100/200 mm TWIN
(4)160-150 mm BIRCH
(3)70-200 mm BIRCH
700 mm ELM
400-600 mm TWIN ELM
600 mm ELM
DRIVE LAWN
280 mm MAPLE
70 mm RED MAPLE
LANDSCAPING-WOOD
400 mm MAPLE
FLOWERS
PAVED DRIVE
500 mm ELM
200-220 mm TWIN MAPLE
2155 • NEWSPAPER
200 mm
300 mm
300 mm
300 mm
LAWN
500 mm
400-500 mm TWIN MAPLE
PAVED DRIVE
170•120•200 mm
1000•1000•600 mm
800•1000•400 mm
70 mm MAPLE
300-1000 mm
360 mm TWIN MAPLE
500 mm MAPLE
500 mm PINE
400 mm MAPLE
500 mm PINE
LAWN
2173 NEWSPAPER
360 MAPLE
EXIST. R.O.W.
LAWN
PAVED DRIVE
600 mm MAPLE
1200•1200•800 mm GRANITE
1200•1200•800 mm GRANITE
MIXED GROWTH
PAVED DRIVE
GRAVEL DRIVE
370-600 mm TWIN MAPLE
350 mm MAPLE
1000•1000•800 mm
2185
120 mm MAPLE
900•1200•400 mm
GRAVEL DRIVE
LAWN
WOOD RAMP
1STEP WITH LANING CONC.
1 STORY VINYL SIDING •2185
REM. OF STONE WALL
120•120 mm•700 GRANITE
LAWN
RES. •2173
72/55/NETT
GARAGE

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

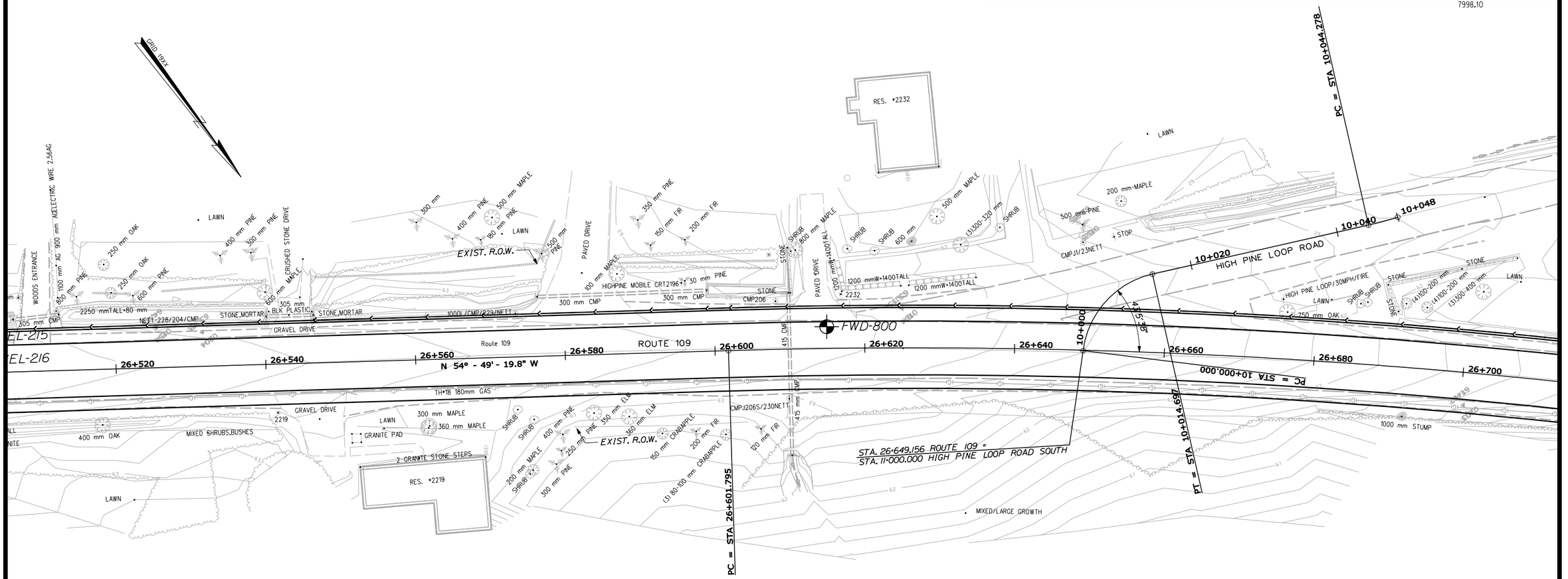
SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\msto\023_Geoplan23.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	24	28

7998.10



CURVE DATA

PI = 26+711.721
Δ = 15° - 10' - 44.9" Rt.
R = 825.000 m
L = 218.564 m
T = 109.926 m
E = 7.291 m

PROJECT DESIGN ENGINEER	K. GROSS	T. WHITE	APR 2005
DESIGN-DETAILED			
CHECKED			
REVISIONS			
FIELD CHANGES			

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

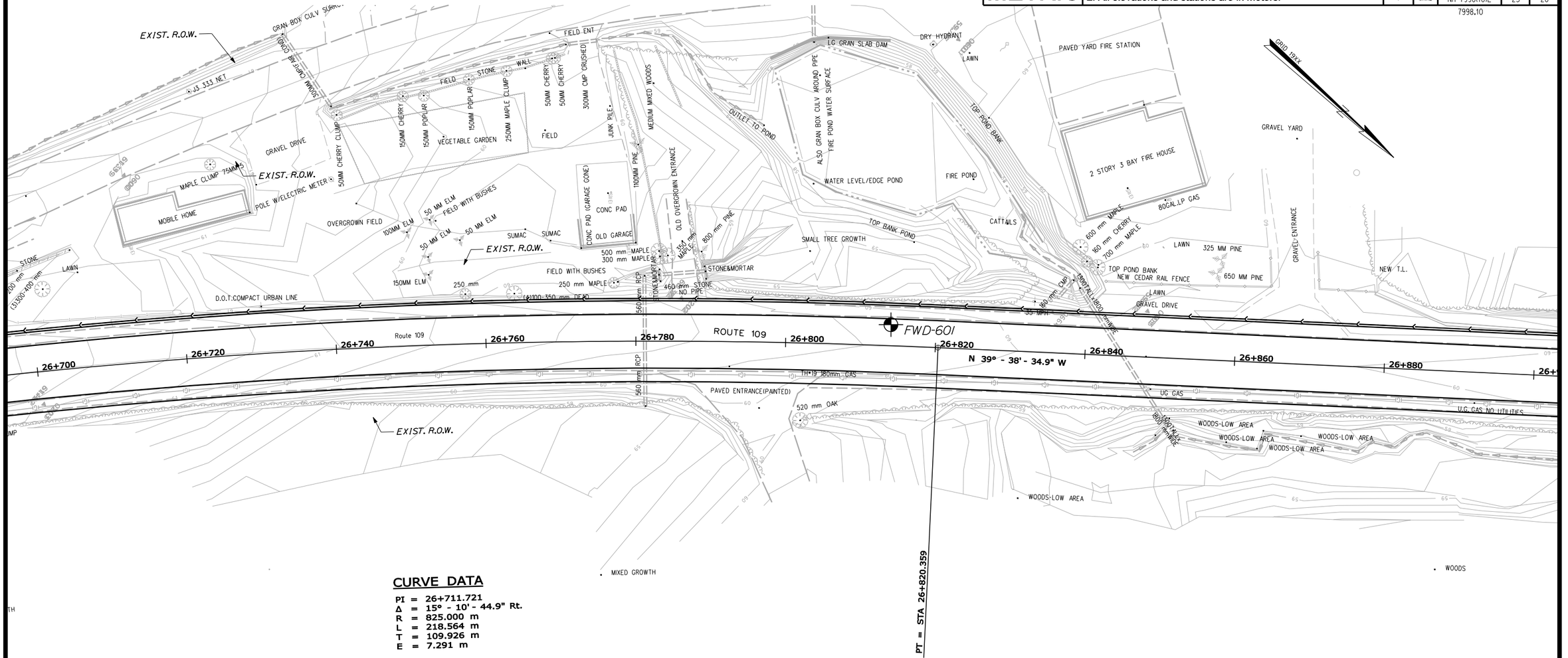
SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\vnsto\024_Geoplan24.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC 1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	25	28

7998.10



CURVE DATA

PI = 26+711.721
Δ = 15° - 10' - 44.9" Rt.
R = 825.000 m
L = 218.564 m
T = 109.926 m
E = 7.291 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

Filename: ...\geotech\mslo\025_Geoplan25.dgn Username: Karen.Gross Date:10/21/2010 Division: HIGHWAY

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	26	28

7998.10

GRID 19XX

WELLS FARGO TRADING POST

GRAVEL LOT

GRAVEL ENTRANCE

MEDIUM/LARGE PINE

RLS-1311,3/8REBAR

300 mm OAK

3500 mm PINE

1000 mm PINE

380 mm CMP

300 mm PINE

305 mm CMP

DENTED

30 mm IRON,500 mm AG/LEANS

20 mm IRONPIPE,300 mm AG

EXIST. R.O.W.

FLAT BOTTOM DITCH

TRIPLE CHERRY 170,200,200

TWIN CHERRY 360 mm

LEDGE OUTCROP

(4) 150-250 mm CHERRY

200 mm PINE

200 mm PINE

230 mm PINE

200 mm PINE

950 mm PINE

CIVIL CONS.CAP 5/8 REBAR

(7)100-300 mm MAPLE

(7) 100-300 mm MAPLE

750 mm PINE

100 mm PINE

800 mm PINE

LAWN

FWD-400

Route 109

ROUTE 109

26+900 | 26+920 | 26+940 | 26+960 | 26+980 | 27+000 | 27+020 | 27+040 | 27+060 | 27+080

N 39° - 38' - 34.9" W

U.G. GAS NO UTILITIES

305 mm CMP INACCESSIBLE CV,PCUI

410 mm CMP

WEATHERVANE

NEWSPAPER

STONE RIPRAP

620 mm PINE

20.7-CMP

NET&T160/6/206CMP

NO WIRE

NO WIRE

MIXED GROWTH

IP

50 mmPIPE-750 mmAG

700 mm PINE

GRAVEL DRIVE

WOODS

EXIST. R.O.W.

MUD MEADOW FARM&GARDENS

FARM MARKET GARDEN

GRAVEL DRIVE

VEGETABLES

TWIN CHERRY

750 mm PINE

270 mm 340 mm

BACKYARD

LAWN

SHOT IN FRONT WELL

GARAGE

BUILDING UNDER CONST.

WOODS

WOODS

WOODS

WOODS

PC = STA 27+088.357

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10

SCALE
(in meters)

SHEET OF

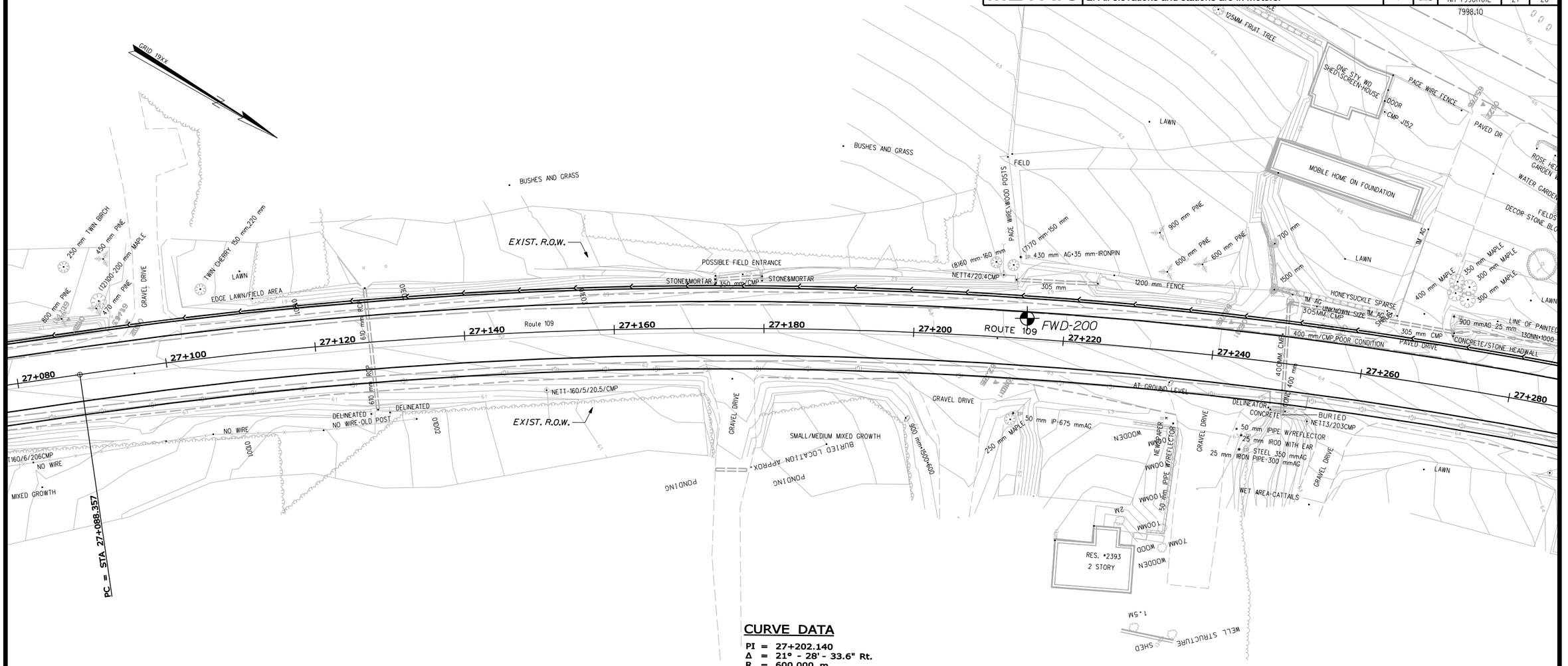
AUGUSTA, MAINE

Filename: ...\geotech\msta\026_Geoplan26.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010

Filename: ...\geotech\msta\027_Geoplan27.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010

METRIC	1. All dimensions are in millimeters unless otherwise noted. 2. All elevations and stations are in meters.	F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		1	MAINE	NH-7998(10)E	27	28

7998.10



CURVE DATA

PI = 27+202.140
Δ = 21° - 28' - 33.6" Rt.
R = 600.000 m
L = 224.896 m
T = 113.783 m
E = 10.694 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	T. WHITE	APR 2005
CHECKED		
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

5 0 5 10
SCALE
(in meters)

SHEET OF AUGUSTA, MAINE

METRIC 1. All dimensions are in millimeters unless otherwise noted.
2. All elevations and stations are in meters.

F.H.W.A. REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	NH-7998(10)E	28	28

7998.10

GRID 19XX

350MM ELM
200MM MAPLE CRIMSON
375MM MAPLE
75MM PINE
CUT-OFF TEL. POLE
40MM IRON PIPE
MEDIUM BOULDERS
PAVED ROAD PRIVATE
SM BOULDERS
LG MIXED TREES
900MM PINE
800MM PINE
BA 247
BA 248
MOBILE HOME
420 mm PINE
1000 mm 100 mmAC
250 mm PINE
270 mm PINE
300 mm PINE
500 mm PINE
450 mm
DEAD BROKEN 500 mm
LAWN
SHRUB
PAVED DRIVE
116016/249/20/CMP
MIXED GROWTH
EXIST. R.O.W.
IP 40 mm STEEL 700 mmAC
NET&T/16/250/CMP/21
30 MPH
HIGH PINE LOOP ROAD
DECOR STONE BLOCK
ROSE HEDGE 800 MM
GARDEN W/STATUE
WATER GARDEN
FIELDSTONE
DECOR STONE BLOCK
DOG PEN
LANDSCAPE
PLANTING
POLE
DECOR BLOCK WALL
PAVED DR
LINE OF PAINTED ROCKS
RESIDENTIAL
1M
350 mm MAPLE
300 mm MAPLE
300 mm MAPLE
LAWN
BARK MULCH
GRAVEL DRIVE
LINE OF PAINTED ROCK
900 mmAG 25 mm 130NN•1000 mm•850 mm
380 mm CMP
CONCRETE/STONE HEADWALL
1000 mm•1500 mm•900 mm
(3)150•250 mm MAPLE
20 mm/80 mm TWIN MAPLE
SHED
GARDEN ON SEPTIC
TOP OF SEPTIC
900 mm PINE
LAWN
800 mm PINE
600 mm PINE
450 mm PINE
300 mm PINE
SOUTH 109
700 mm PINE
GRAVEL AREA FOR TURNING
NET&T/16/250/CMP/21
DOT URBAN COMPACT LINE
WARNING BRUSH CNTR.RTE
300 MM MAPLE TWIN
175 MM ASH
MAPLE 700 MM
250 MM
NETT/251C
HB-WEL-217
FWD-100SB
TP-WEL-105
HB-WEL-218
Route 109
ROUTE 109
27+280
27+300
27+320
27+340
27+360
27+380
27+400
27+420
27+440
27+460
STA. 27+393.945 ROUTE 109 =
STA. 12+000.000 HIGH PINE LOOP ROAD SOUTH
PAVED
PAVED
PAVED
2 BOXES
SHRUB
NETT/2/CMP/20.2
LAWN
RAILROAD TIES
PCC = STA 27+313.253
1 STORY RES.
RES. #2409
1 STORY HOUSE
PAVED DRIVE
NETT/160/1/20.1/CMP
SURVEY MARKER
75 mm•75 mm•150 mmAG
GRAVEL DRIVE
MED--LG MIXED WOODS
470 mm OAK
550 mm PINE
2427 • 83
PORTLAND PRESS 83
730 mm PINE
30 mm IRON 200 mm AG
NETT/1650/1/224.1/CMP
CMP21.1
PAVED DRIVE
CHECKERBERRY WY.
72-74
250S
EXIST. R.O.W.
MD/LG MIXED WOODS
U.G. GAS NO. UTILITIES
NORTHERN UTILITIES
45 MPH
150 MM GAS MAIN
224S
3000 MM LILAC
PAVED DRIVE
150 MM CHERRY PIPE FENCE
250 MM NOR MAPLE
450 MM NOR
PAVED DRIVEWAY

CURVE DATA

PI = 27+396.170
Δ = 03° - 09' - 59.0" Rt.
R = 3000.000 m
L = 165.792 m
T = 82.917 m
E = 1.146 m

PROJECT DESIGN ENGINEER	BY	DATE
DESIGN-DETAILED	K. GROSS	APR 2005
CHECKED	T. WHITE	
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

GEOPLANS

WELLS

ROUTE 109

SCALE
(in meters)
5 0 5 10

SHEET OF

AUGUSTA, MAINE

Filename: ...\geotech\mst\028_Geoplan28.dgn Division: HIGHWAY Username: Karen.Gross Date:10/21/2010