

**MAINE DEPARTMENT OF TRANSPORTATION
HIGHWAY PROGRAM
GEOTECHNICAL SECTION
AUGUSTA, MAINE**

GEOTECHNICAL DESIGN REPORT

For the Rehabilitation of

**ROUTE 1
FRENCHVILLE-FORT KENT, MAINE**

Prepared by:
Yueh-Ti Lee
Assistant Geotechnical Engineer

Reviewed by:
Devan Eaton, P.E.
Assistant Program Manager

Aroostook County
WIN 22656.00

Soils Report 2026-63
Federal Project No. STP-2265(600)

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Additional review of this report provided by
, see stamped memo dated August 2026.

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1.0 INTRODUCTION

The purpose of this Geotechnical Design Report is to present subsurface information and make geotechnical design and construction recommendations for the rehabilitation of an approximately 4.64-mile portion of US Route 1 in Frenchville and Fort Kent, as shown on Sheet 1 – Location Map. The project is needed to improve drainage and the roadway structure. The scope includes highway reconstruction of the existing pavement with highway reconstruction of roadway shoulders for roadway geometric improvements. Geometric improvements include horizontal alignment and vertical alignment modifications, where sight distances are inadequate for posted roadway speeds. Roadside ditching, cross culverts, driveway culverts and sections of closed drainage are proposed to improve both surface and roadway subbase material drainage. Route 1 is a Highway Corridor Priority 2 road.

2.0 GEOLOGIC SETTING

According to the Reconnaissance Surficial Geology Map of the Edmundston Quadrangle, Maine, Open File No. 87-17 (1987) published by the Maine Geological Survey (MGS), the surficial soils along the project length consist of stream alluvium consists of sand, gravel, and silt, ice-contact glaciofluvial deposits consists of sand, gravel, and silt, and till consists of sand, silt, clay, and stones.

According to the MGS map titled Bedrock Geologic Map of Maine (1985) the bedrock along the project consists of interbedded pelite and sandstone of the Seboomook Formation.

3.0 SUBSURFACE INVESTIGATION

Subsurface conditions at the site were explored by drilling a total of thirty-six (36) borings, fourteen (14) probes, and (8) test pits.

Borings HB-FRV-101 through HB-FRV-120 were drilled on October 28, 2015. Borings HB-FRV-201 through HB-FRV-213 and the probes were drilled from November 14 to November 15, 2017. Borings HB-FRV-301 and HB-FRV-303 were drilled on October 25, 2022. Boring HB-FRV-302 was drilled on December 6, 2022. The 100-series and 200-series explorations were drilled by the MaineDOT drill crew, and the 300-series explorations were drilled by the S.W.Cole drill crew. The borings were drilled to depths ranging from approximately 4.5 to 65.0 feet below ground surface (bgs) using solid stem auger, cased wash boring, open hole, hydraulic push, and rock core drilling techniques. The probes were drilled to a depth of approximately 8.2 to 10.0 feet bgs using solid stem auger drilling techniques. The depths of test pits were not recorded. Boring, probe, and test pit locations are shown on Sheets 2 through 40 Boring Location Plans. The Boring Logs and Probe Summary Sheet are presented in Appendix A.

Soil samples were obtained from eight (8) test pits, from the auger flights in twenty (20) 100-series borings, and at standard 5-foot intervals in thirteen (13) 200-series borings and three (3) 300-series borings using the Standard Penetration Test (SPT). During SPT sampling, the sampler is driven 24 inches and the hammer blows for each 6-inch interval of penetration are recorded. The sum of the

blows for the second and third intervals is the N-value, or standard penetration resistance. No soil sampling was done in the probes and no soil descriptions were recorded.

The MaineDOT and S.W.Cole drill rigs are equipped with automatic hammers to drive the split spoon. The hammers were calibrated per ASTM D4633 “Standard Test Method for Energy Measurement for Dynamic Penetrometers” in May 2017 and November 2022, respectively. The N-values discussed in this report are corrected values (N60) computed by applying average energy transfer factors of 0.854 for the MaineDOT drill rig and 0.92 for the S.W.Cole drill rig to the raw field N-values. These hammer efficiency factors (0.854 and 0.92) and both the raw field N-values and the corrected N-values (N60), are shown on the Boring Logs in Appendix A.

Details and sampling methods used, field data obtained, and soil and groundwater conditions encountered are shown in the Boring Logs in Appendix A. The MaineDOT Geotechnical Team member selected the boring locations, drilling methods, designated type and depth of sampling, reviewed field logs for accuracy and identified field and laboratory testing requirements. A North East Transportation Training and Certification Program (NETTCP) certified subsurface inspector logged the subsurface conditions encountered. The boring and probes were located in the field by taping to site features after completion of the drilling program.

4.0 LABORATORY TESTING

A laboratory testing program was conducted on select soil samples obtained in the test borings to assist in soil classification, evaluation of engineering properties of the soils and geologic assessment of the project site. Laboratory testing consisted of seventy-one (71) standard grain size analyses and natural water content, twenty-two (22) grain size analyses with hydrometer and natural water content, and one (1) Atterberg Limits test. The results of the laboratory tests are in Appendix B – Laboratory Test Results. Laboratory test results are also summarized on the Boring Logs in Appendix A.

5.0 SUBSURFACE CONDITIONS

Subsurface conditions encountered at the test borings and probes generally consisted of pavement and fill underlain by layers of native gravel, sandy gravel, sand, gravelly sand, silty sand, and silt, underlain by bedrock. The boring locations are shown on Sheets 2 through 40 - Boring Location Plans. The boring logs are presented in Appendix A – Boring Logs.

5.1 Pavement and Fill Soils

The subsurface investigations found areas of pavement and roadway fill soils along the project. Where present, the pavement thickness ranged from approximately 1.5 to 9.0 inches. The fill soils consisted of:

- Brown, dry to moist, fine to coarse sand, little to some gravel, trace to some silt, occasional cobbles.

- Brown, damp to moist, gravelly fine to coarse sand, little to some silt.
- Brown, damp, fine to coarse sandy gravel, trace to little silt, occasional cobbles.

The thickness of the fill ranged from approximately 1.6 to 12.0 feet. The full depth of the fill was not penetrated in all of the explorations. SPT N_{60} -values obtained in the fill ranged from 19 to 87 blows per foot (bpf) indicating that the fill is medium dense to very dense.

Water contents from forty-one (41) samples obtained within the fill range from approximately 1.1% to 7.9%. Grain size analyses conducted on forty-one (41) samples of the fill resulted in the soil being classified as an A-1-a, A-1-b, or A-2-4 under the AASHTO Soil Classification System and a SM, SW-SM, or GW-GM under the Unified Classification System.

5.2 Native Soils

The fill soils are underlain by layers of native soils consisting of gravel, sand, and silt.

5.2.1 Native Gravel

The native gravel encountered in the borings consisted of:

- Grey, wet, gravel, some fine to coarse sand, some silt.
- Grey, wet, fine to coarse sandy gravel, little silt.

The thickness of the native gravel layers ranged from approximately 3.0 to 10.6 feet. The full depth of the native gravel was not penetrated in all of the explorations. SPT N-values obtained in the native gravel ranged from 20 to 343 bpf indicating that the native gravel is medium dense to very dense.

Water contents from two (2) samples obtained within the native gravel range from approximately 7.3% to 11.6%. Grain size analyses conducted on two (2) samples of the native gravel resulted in the soil being classified as an A-2-4 or A-1-b under the AASHTO Soil Classification System and a GM under the Unified Classification System.

5.2.2 Native Sand

The native sand encountered in the borings consisted of:

- Brown, light grey, grey, reddish brown, and grey brown, damp to wet, fine to coarse sand, trace to some silt, trace to some gravel, trace clay, occasional cobbles.
- Brown and grey brown, moist to wet, gravelly fine to coarse sand, little silt, trace clay.
- Brown, moist, silty fine to coarse sand, trace gravel.

The thickness of the native sand ranged from approximately 1.2 to 24.0 feet. The full depth of the native sand was not encountered or fully penetrated in all of the explorations. SPT N-values obtained in the native sand ranged from 3 to 63 bpf indicating that the native sand is very loose to very dense.

Water contents from twenty-seven (27) samples obtained within the native sand range from approximately 5.3% to 22.9%. Grain size analyses conducted on twenty-seven (27) samples of the native sand resulted in the soil being classified as an A-1-a, A-1-b, A-2-4, or A-4 under the AASHTO Soil Classification System and a SM, SC-SM, SW-SM, or SP-SM under the Unified Classification System.

5.2.3 Native Silt

The native silt encountered in the borings consisted of:

- Light brown, brown, reddish brown, and grey, damp to wet, silt, trace to some fine to coarse sand, trace to some gravel, trace to some clay.

The thickness of the native silt layers ranged from approximately 1.1 to 34.0 feet. The full depth of the native silt was not penetrated in all of the explorations. SPT N-values obtained in the native silt ranged from 3 to 51 bpf indicating that the native silt is soft to hard in consistency.

Water contents from fifteen (15) samples obtained within the native silt range from approximately 9.9% to 33.0%. Grain size analyses conducted on fifteen (15) samples of the native silt resulted in the soil being classified as an A-4 under the AASHTO Soil Classification System and a CL, CL-ML, or SM under the Unified Classification System.

The following table summarizes the results of Atterberg Limits tests done on one (1) sample of the silt:

Boring No. and Sample No.	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index
HB-FRV-303 10D	24.3	24	18	6	1.05

Interpretation of these results indicates that the silt has low plasticity (Burmister, 1949). The natural water content is close to the liquid limit. Based on Bowles, 2016, the index tests indicate that this sample is normally consolidated.

5.3 Test Pits

Eight (8) test pits were completed along the project. The soils encountered consisted of:

- Fine to coarse sand, little to some gravel, trace to little silt.
- Gravelly fine to coarse sand, trace silt.

Water contents from eight (8) samples obtained within the test pits range from approximately 2.2% to 4.2%. Grain size analyses conducted on eight (8) test pits samples resulted in the soil being classified as an A-1-a or A-1-b under the AASHTO Soil Classification System and a SW-SM or SM under the Unified Classification System.

5.4 Bedrock and Refusal Surfaces

Refusal surfaces were encountered at varying depths along the project. Refusal of the drilling tools varied from a depth of approximately 7.3 feet to 59.5 feet bgs. The table below summarizes the refusal surfaces encountered.

Boring No.	Station	Offset (feet)	Approximate Depth to Top of Refusal Surface (feet)	Approximate Elevation of Top of Refusal Surface (feet)	RQD (%) ¹
--	647+50	13.0 Left	9.5	503.0	NA
--	648+50	15.0 Left	7.5	503.5	NA
--	649+00	13.5 Left	7.5	501.8	NA
--	649+50	13.5 Left	8.2	498.9	NA
--	650+00	14.0 Left	7.3	497.8	NA
HB-FRV-301	666+00	6.0 Right	59.5	434.2	17

¹ RQD = Rock Quality Designation

A 5.5-foot bedrock core was drilled in boring HB-FRV-301 where refusal was encountered. The exact nature of the refusal surface was not determined in the remaining explorations.

The bedrock consists of interbedded pelite and sandstone of the Seboomook Formation. The Rock Quality Designation (RQD) of the bedrock was 17%, correlating to a Rock Quality of Very Poor. The approximate elevations of the top of bedrock or the refusal surface encountered at the boring and probe locations are presented in Appendix A – Boring Logs and Probe Summary Sheet.

5.4 Groundwater

Groundwater was recorded at depths ranging from approximately 20.0 feet to 23.0 feet bgs in three (3) 300-series borings. The water levels observed are indicated on the Boring logs in Appendix A. Groundwater levels can be expected to fluctuate subject to seasonal variations, local soil conditions, topography, precipitation, and construction activity.

6.0 GEOTECHNICAL RECOMMENDATIONS

The following sections discuss the geotechnical-related design features of this project. Areas of geotechnical concern include the large culvert at approximate Station 677+94, the precast concrete block gravity wall from approximate Stations 629+13 to 629+23, 630+52 to 631+23, and 633+12

to 634+18, and the proposed oversteepened slopes from approximate Stations 639+50 to 642+35, 646+50 to 651+00, 665+50 to 668+50, and 833+00 to 834+00.

6.1 Large Culvert at approximate Station 677+94

6.1.1 General Information

The existing structure at approximate Station 677+94 is a 48-inch diameter, approximately 60-foot long CMP culvert. The proposed replacement structure is a 72-inch diameter, 91-foot long Option III culvert on an approximately 3.6-degree skew to the roadway centerline with an inlet elevation of approximately 485.70 feet and an outlet elevation of approximately 482.27 feet. No boring or probe was drilled near the proposed structure.

6.1.2 Design and Construction

The proposed Option III culvert shall be constructed in accordance with MaineDOT Standard Specification Section 603 and the Contract Plans. To facilitate fish passage, Habitat Connectivity Design elements will be used inside the proposed Option III culvert as shown on the Special Details sheet in the Contract Plans.

While no boring or probe was drilled near the proposed culvert location, a review of borings completed along the project did not identify soft or cohesive soils at the proposed culvert invert elevations. Therefore, the proposed Option III culvert is recommended to be bedded on a 1-foot thick layer of Granular Borrow, Material for Underwater Backfill (MaineDOT Item 203.25, Granular Borrow). The bedding material should be placed in lifts of 6 to 8 inches loose measure and compacted to at least 95 percent of the AASHTO T-180 maximum dry density. The exposed subgrade shall be free of ponded water so that bedding material placement and compaction can be completed in the dry. Any disturbed soils at the bedding elevation resulting from excavation activities shall be removed by hand prior to placement of the bedding material. All subgrade surfaces should be protected from construction traffic in order to limit disturbance. Groundwater and surface water levels shall be depressed sufficiently to allow work in the dry.

The full nature of the culvert bearing surface will not become evident until the culvert excavation is made. The bottom elevation of the excavation shall take into account the wall thickness of the Option III culvert and the required 1-foot layer of bedding material. Any loose or soft soils in the excavations shall be removed and replaced with Granular Borrow Material for Underwater Backfill (MaineDOT 703.19) or Crushed Stone $\frac{3}{4}$ -Inch (MaineDOT 703.13). Any cobbles or boulders encountered in excess of 6 inches shall be removed and replaced with compacted Granular Borrow Material for Underwater Backfill or Crushed Stone $\frac{3}{4}$ -Inch.

The soil envelope and backfill shall consist of Granular Borrow (703.19) with a maximum particle size of 4 inches. The granular borrow backfill material shall be placed in lifts of 6 to 8 inches loose measure and compacted to the manufacturer's specifications or, in the absence of manufacturer's specifications, the bedding and backfill soil shall be compacted to at least 92 percent of the AASHTO T-180 maximum dry density.

6.2 Settlement

Subsurface conditions encountered along the project generally consisted of pavement and fill underlain by native cohesionless soils and bedrock. These materials undergo elastic, immediate, compression in response to an increase of vertical overburden pressure. The proposed vertical alignment will approximately match the existing. As a result, little to no increase in vertical overburden pressure is expected and any settlement is anticipated to be small and will occur quickly as load is applied to the structure.

6.3 Scour and Riprap

Where required, slopes shall be armored with riprap conforming to MaineDOT Standard Specification 703.26 – Plain and Hand Laid Riprap. The riprap shall be underlain by a Class 1 erosion control geotextile conforming to MaineDOT Standard Specification 722.03 – Erosion Control Geotextile and a 1-foot layer of bedding material conforming to MaineDOT standard Specification 703.19 Granular Borrow Material for Underwater Backfill. The toe of the riprap sections shall be constructed 1-foot below the streambed elevation. The riprap slopes shall be constructed no steeper than 2H:1V extending from the edge of the roadway down to the existing ground surface.

6.4 Seismic Design Considerations

In conformance with LRFD Article 3.10.1, seismic analysis is not required for buried structures, except where they cross active faults. There are no known active faults in Maine; therefore, seismic analysis is not required.

6.5 Precast Concrete Block Gravity Wall at Stations 629+13 to 629+23, 630+52 to 631+23, and 633+12 to 634+18

The proposed replacement retaining wall shall be constructed as shown on the Contract Plans and shall meet the requirements of Standard Specification 672 Precast Concrete Block Gravity Wall. The proposed wall shall be supplier designed in accordance with AASHTO LRFD Bridge Design Specifications (LRFD) 10th Edition 2024 and Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Slopes (FHWA-NHI-10-024 and FHWA-NHI-10-025, March 2012).

The proposed retaining wall shall be designed to withstand lateral earth pressures. Earth loads may be calculated using an active earth pressure coefficient, K_a , calculated using Rankine or Coulomb Theory. Refer to LRFD Article 3.11.5.3 and Equations 3.11.5.3-1 and -2 for calculating Coulomb active earth pressure coefficient. Lateral earth pressure distributions for design of MSE walls are provided in LRFD Figures 3.11.5.8.1-1, -2 and -3. Passive earth pressure in front of the wall should be neglected in the design.

The factored bearing resistances for the retaining wall bearing on a concrete leveling pad on native soils at the service and strength limit states are presented in the table below. In no instance shall

the bearing stress exceed the nominal resistance of the structural concrete which may be taken as $0.3f'_c$.

Limit State	Resistance Factor ϕ_b	AASHTO LRFD Reference	Factored Bearing Resistance (ksf)
Service	1.0	Article 10.5.5.1	5.0
Strength	0.45	Table 10.5.5.2.2-1	4.5

The following additional considerations should be addressed in the wall design:

- No traffic load will be required in the design of the wall.
- Piped drainage shall be included in the design of the wall.
- A minimum embedment of 2.0 feet is required for the wall design.
- The retaining wall design shall include a drainage system (swale) at the top of the wall to carry surface water runoff away from the face of the wall.

6.6 Oversteepened Slopes at Stations 639+50 to 642+35, 646+50 to 651+00, 665+50 to 668+50, and 833+00 to 834+00

Oversteepened slopes ranging from 1.75H:1V to 1.5H:1V are proposed at approximate Stations 639+50 to 642+35 left, 646+50 to 651+00 left, 665+50 to 668+50 right, and 833+00 to 834+00 right. Cross sections along the proposed oversteepened slopes were analyzed to evaluate slope stability. The cross sections were chosen to represent critical slope locations along the oversteepened slopes. Geostudio Slope/W software was used to evaluate the slopes. The stability analyses were based on subsurface conditions encountered in the borings drilled in the roadway shoulder at the crest of the existing slopes. No borings were drilled near the proposed slope at Stations 833+00 to 834+00 right. Therefore, a conservative sand layer with a friction angle of 30 degrees was assumed in the stability analysis for this location. In accordance with AASHTO LRFD Bridge Design Specifications 10th Edition 2024 (LRFD) Article 11.6.3.7 evaluation of earth slopes where geotechnical parameters are well defined shall achieve a factor of safety of 1.3 (equivalent to a resistance factor of 0.75).

The results of these analyses are presented in the following table:

Station	Proposed Slope Angle	Proposed Slope Factor of Safety with 3 feet of Plain Riprap	Proposed Slope Factor of Safety with 4 feet of Heavy Riprap
640+00 Left	1.75H:1V	1.289	--
640+50 Left	1.75H:1V	1.301	--
641+00 Left	1.75H:1V	1.328	--
647+50 Left	1.75H:1V	1.297	--
648+50 Left	1.75H:1V	1.344	--
649+50 Left	1.75H:1V	1.334	--
666+00 Right	1.75H:1V	--	1.344
667+00 Right	1.75H:1V	--	1.331

668+00 Right	1.75H:1V	--	1.293
668+50 Right	1.75H:1V	--	1.307
833+31 Right	1.5H:1V	--	1.228

Based on these analyses, all of the proposed slopes shall be armored with 3 feet or 4 feet of riprap conforming to MaineDOT Standard Specification Section 703.26 Plain Riprap and Hand Laid Riprap and 703.28 Heavy Riprap underlain by a 1-foot layer of protective aggregate cushion conforming to MaineDOT Standard Specification 703.19 Granular Borrow Material for Underwater Backfill that is underlain by a non-woven Class 1 erosion control geotextile that meets the requirements for MaineDOT Standard Specification 722.03. Although the proposed 1.5H:1V slope at Stations 833+00 to 834+00 right does not achieve the target factor of safety of 1.3, a cross culvert beneath the railroad is located at the toe of the proposed slope. Flattening the slope to 1.75H:1V would bury the culvert inlet and is therefore not feasible. Accordingly, the proposed 1.5H:1V slope armored with 4 feet of heavy riprap is recommended at this location. Appendix D – Slope Stability Analyses presents the final slope configuration results from these slope stability analyses.

6.7 Bedrock Removal

Refusal of the drilling tools was encountered in borings and probes along the project (see Section 5.4). Bedrock removal is anticipated for drainage and subgrade installation near these locations. Additional shallow bedrock should be expected during construction at other locations.

Blasting, if required, shall be conducted in accordance with MaineDOT Standard Specifications Sections 105.2.7 and 203. The Contractor is required to conduct pre- and post-blast surveys, as well as blast vibrations monitoring at nearby structures in accordance with industry standards at the time of the blast.

6.8 Additional Construction Considerations

Construction of the Option III culvert will require soil excavation. Earth support systems will be required if laying back slopes is not feasible. Regardless of the method of excavation, all excavations and earth support systems shall meet all applicable OSHA regulations.

If organic silt or peat is encountered in the project excavations, the materials should be over excavated to be completely removed and replaced with Granular Borrow, Material for Underwater Backfill or Crushed Stone, $\frac{3}{4}$ -Inch.

The Contractor shall control groundwater and surface water infiltration using temporary ditches, sumps, granular drainage blankets, stone ditch protection or hand-laid riprap with geotextile underlayment to divert groundwater and surface water to allow construction in the dry.

7.0 CLOSURE

This report has been prepared for the use of the MaineDOT Highway Program for specific application to the proposed rehabilitation of U.S. Route 1 in Frenchville-Fort Kent, Maine in

accordance with generally accepted geotechnical and foundation engineering practices. No other intended use or warranty is expressed or implied.

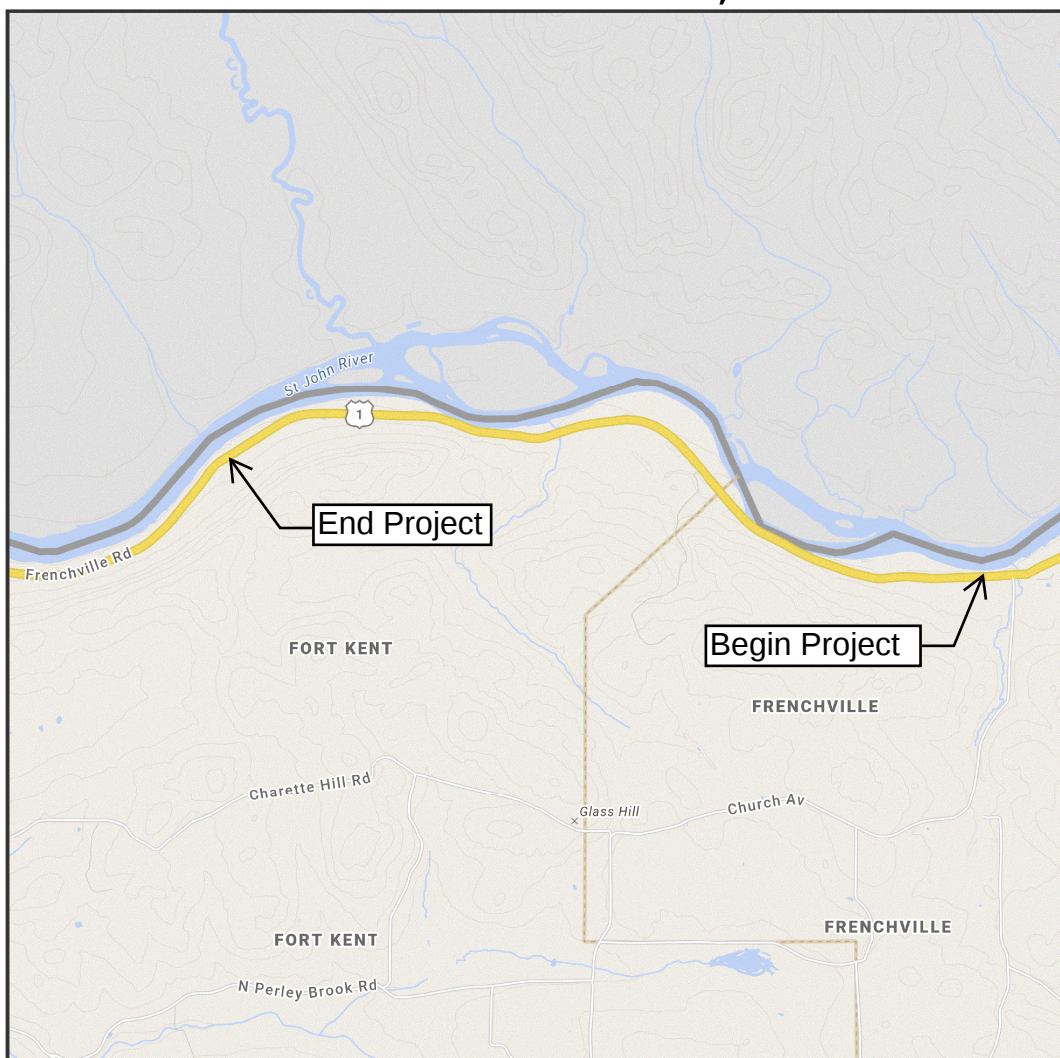
In the event that any changes in the nature, design, or location of the proposed project are planned, this report should be reviewed by a geotechnical engineer to assess the appropriateness of the conclusions and recommendations and to modify the recommendations as appropriate to reflect the changes in design. These analyses and recommendations are based in part upon a limited subsurface investigation at discrete exploratory locations completed at the site. If variations from the conditions encountered during the investigation appear evident during construction, it may also become necessary to re-evaluate the recommendations made in this report.

It is recommended that a geotechnical engineer be provided the opportunity for a review of the design and specifications in order that the earthwork and foundation recommendations and construction considerations presented in this report are properly interpreted and implemented in the design and specifications.

Sheets



FRENCHVILLE-FORT KENT, MAINE

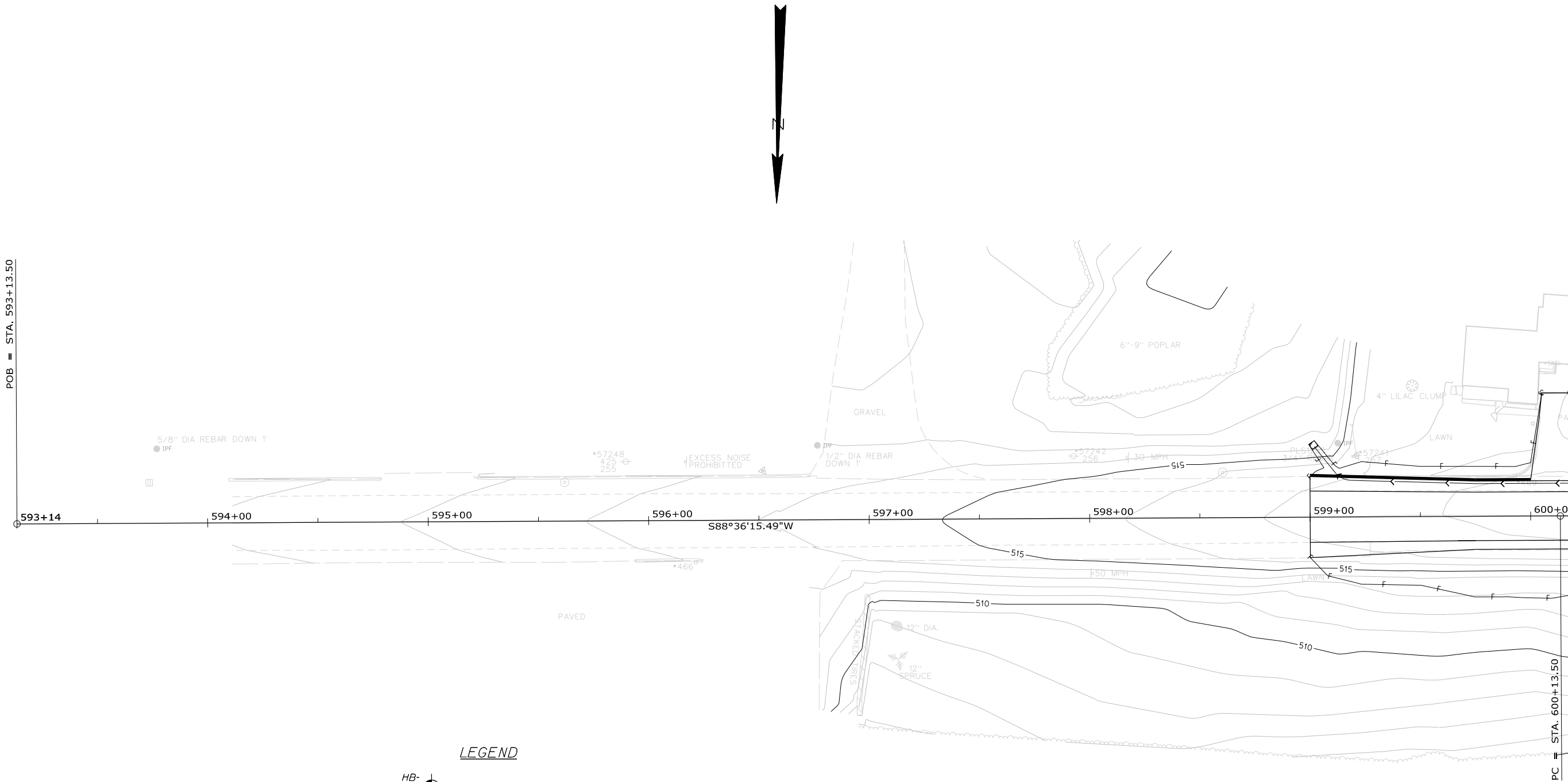


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1 Miles
1 inch = 1.19 miles

Date: 7/14/2026
Time: 10:30:24 AM

SHEET NUMBER 1 OF 40	FRENCHVILLE-FORT KENT US ROUTE 1 LOCATION MAP	STATE OF MAINE DEPARTMENT OF TRANSPORTATION STP-2265(600) WIN 22656.00 HIGHWAY PLANS
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HB-

BORING

P-

PROBE

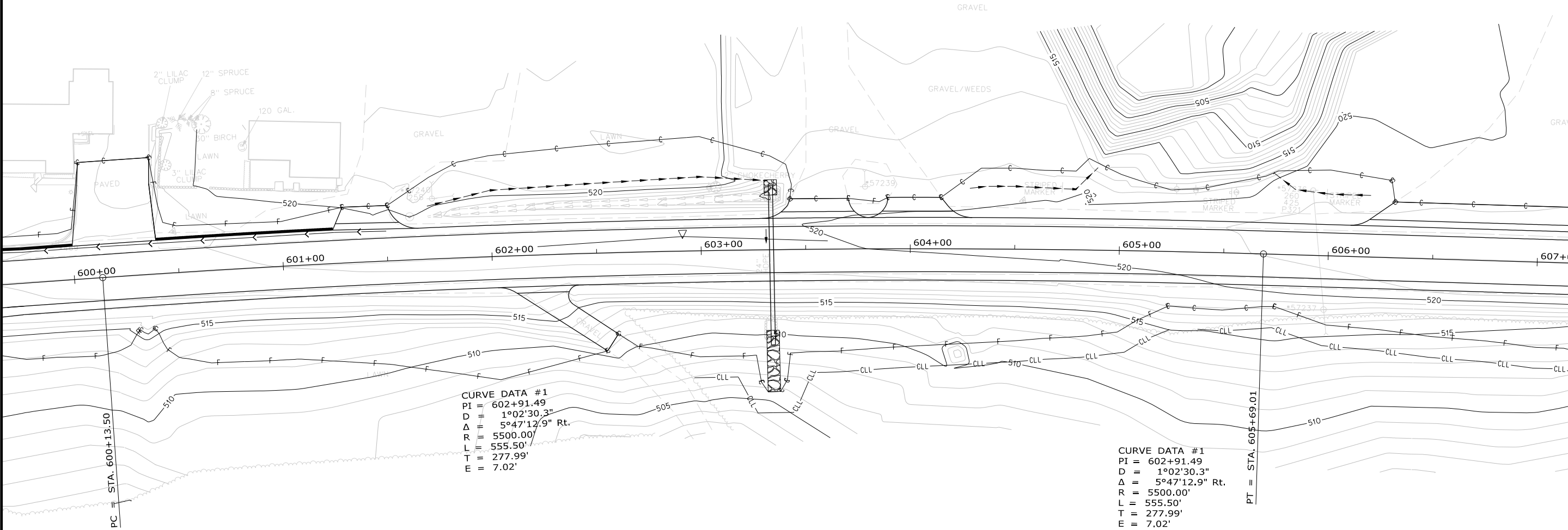
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R = Refusal of augers (actual nature of refusal surface unknown)

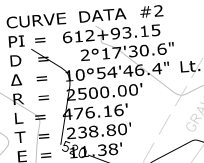
NR = No Refusal surface encountered

W = Weathered Rock, top of

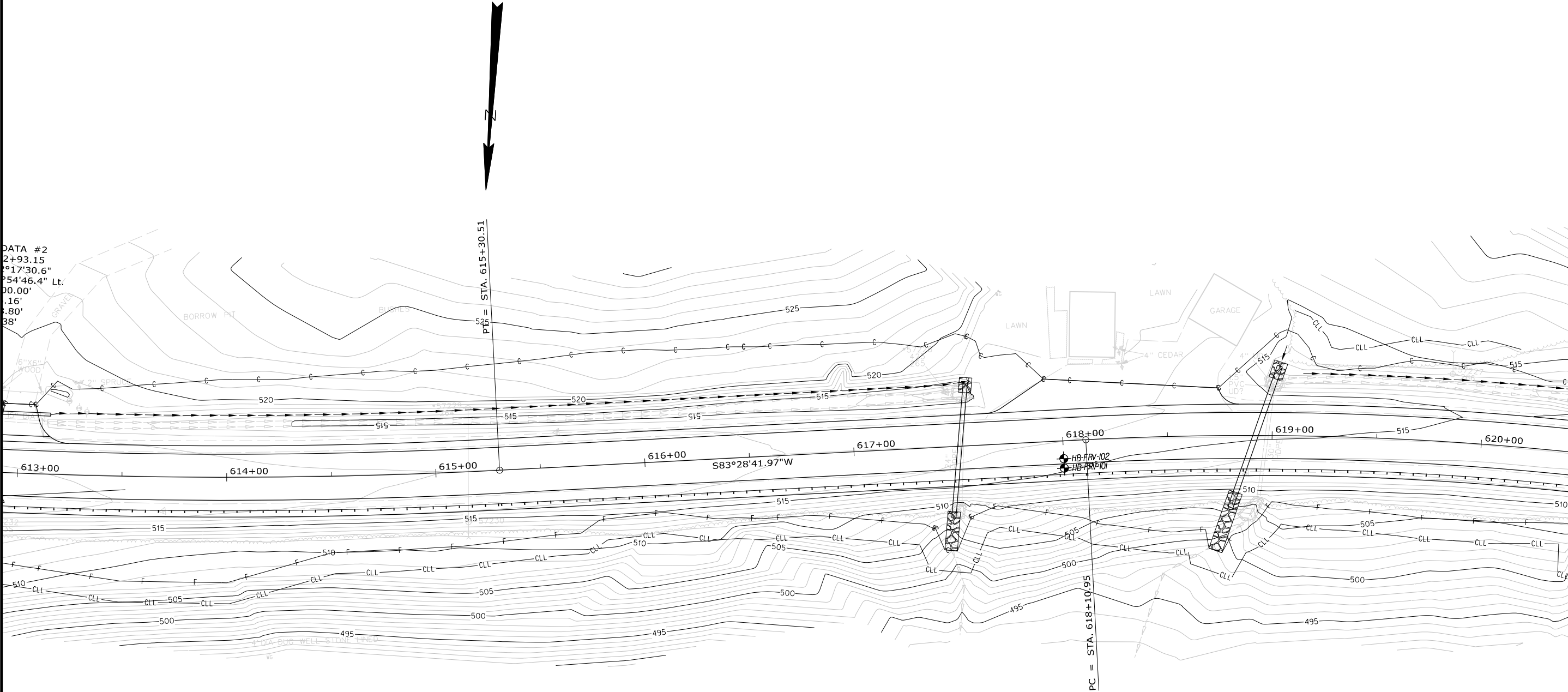
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FRENCHVILLE - FORT KENT US ROUTE 1		DESIGN-DETAILED	CHECKED-REVIEWED	DESIGNS-DETAILED	DESIGNS-DETAILED	DESIGNS-DETAILED		
		REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	REVISIONS 5		
		REVISIONS 6	REVISIONS 7	REVISIONS 8	REVISIONS 9	REVISIONS 10		
BORING LOCATION PLAN		STP-2265(600)						
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					REVISIONS 4			
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4 OF 40	SHEET NUMBER	FRENCHVILLE - FORT KENT US ROUTE 1		PROJ. MANAGER	E. MARTIN	BY	DATE	STATE OF MAINE DEPARTMENT OF TRANSPORTATION STP-2265(600) WIN 22656.00 HIGHWAY PLANS	
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			FIELD CHANGES				DATE		
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DATA #2
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 1.80'
 38'

STATE OF MAINE

DEPARTMENT OF TRANSPORTATION

STP-2265(600)

WIN 22656.00 HIGHWAY PLANS

PROJ. MANAGER

E. MARTIN

BY

T. WHITE

DATE

JUL 2026

DESIGN-DETAILED

CHECKED-REVIEWED

DESIGN-DETAILED

DESIGN-DETAILED

REVISIONS 1

REVISIONS 2

REVISIONS 3

REVISIONS 4

FIELD CHANGES

SIGNATURE

P.E. NUMBER

DATE

FRENCHVILLE - FORT KENT

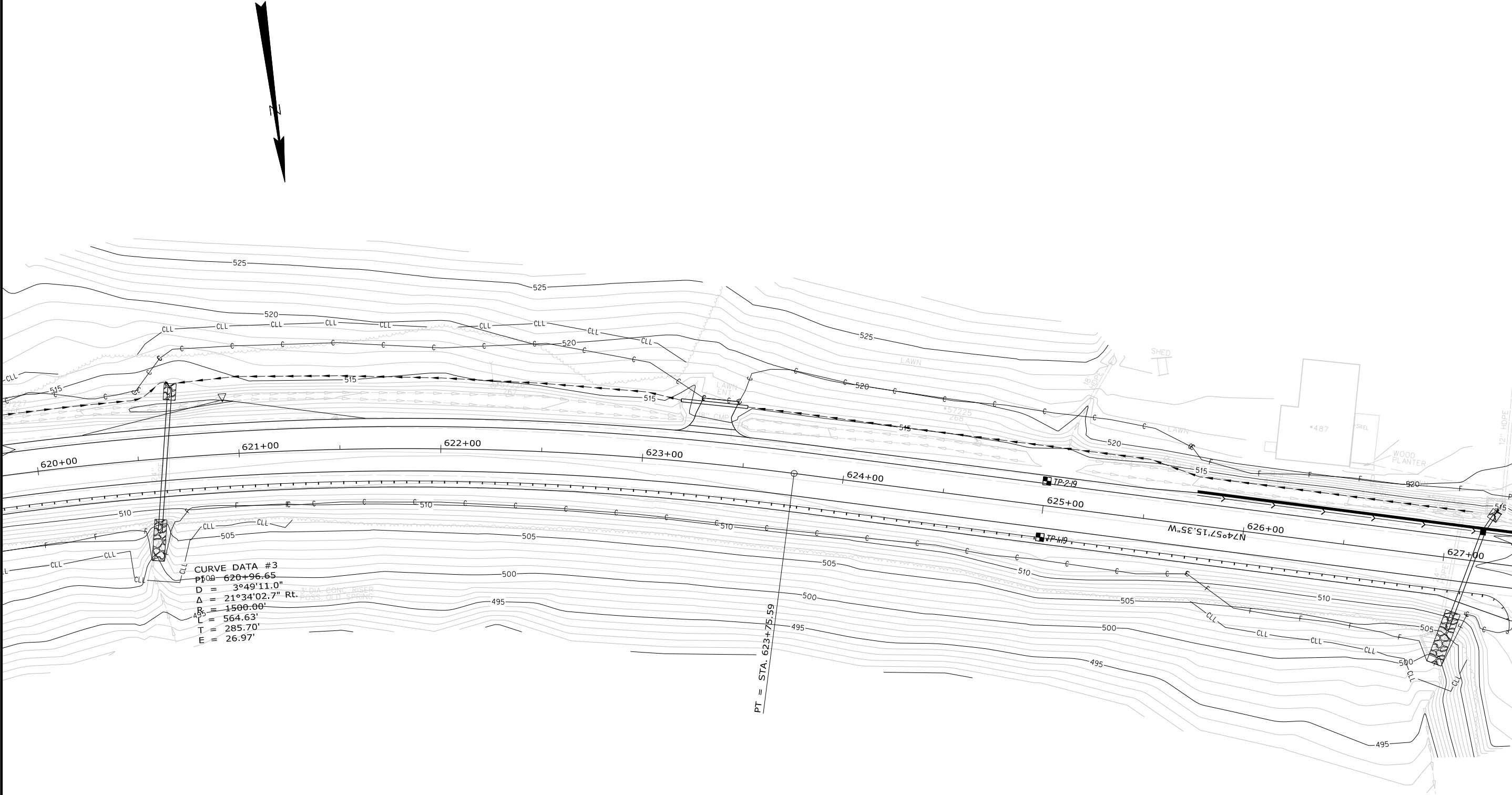
US ROUTE 1

BORING LOCATION PLAN

SHEET NUMBER

5

OF 40



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE		DATE
	STP-2265(600)		
WIN 22656.00		HIGHWAY PLANS	

PROJ. MANAGER	BY	DATE
DESIGN-DETAILED	E. MARTIN	
CHECKED-REVIEWED		
DESIGN-DETAILED	YT LEE	JUL 2026
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

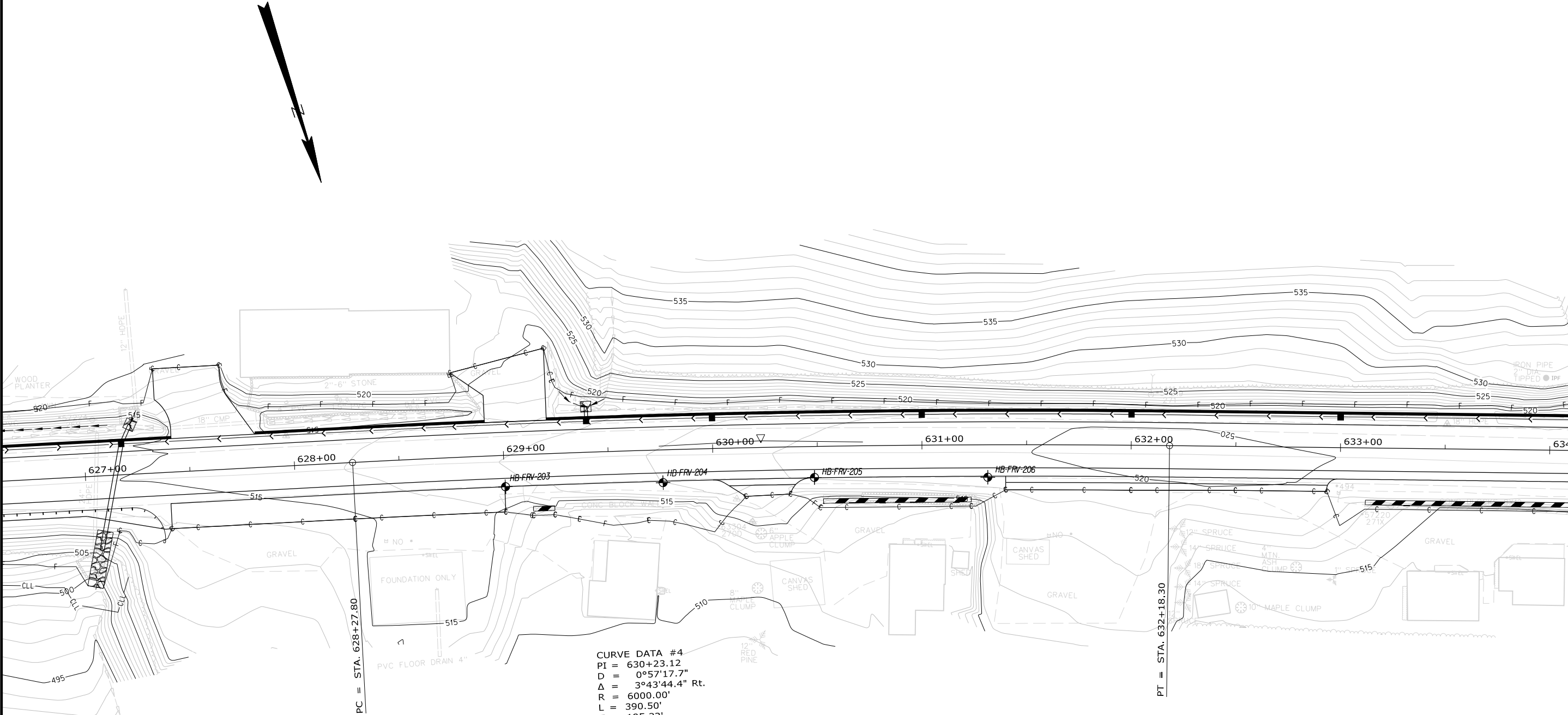
FRENCHVILLE - FORT KENT
US ROUTE 1

BORING LOCATION PLAN

SHEET NUMBER

6

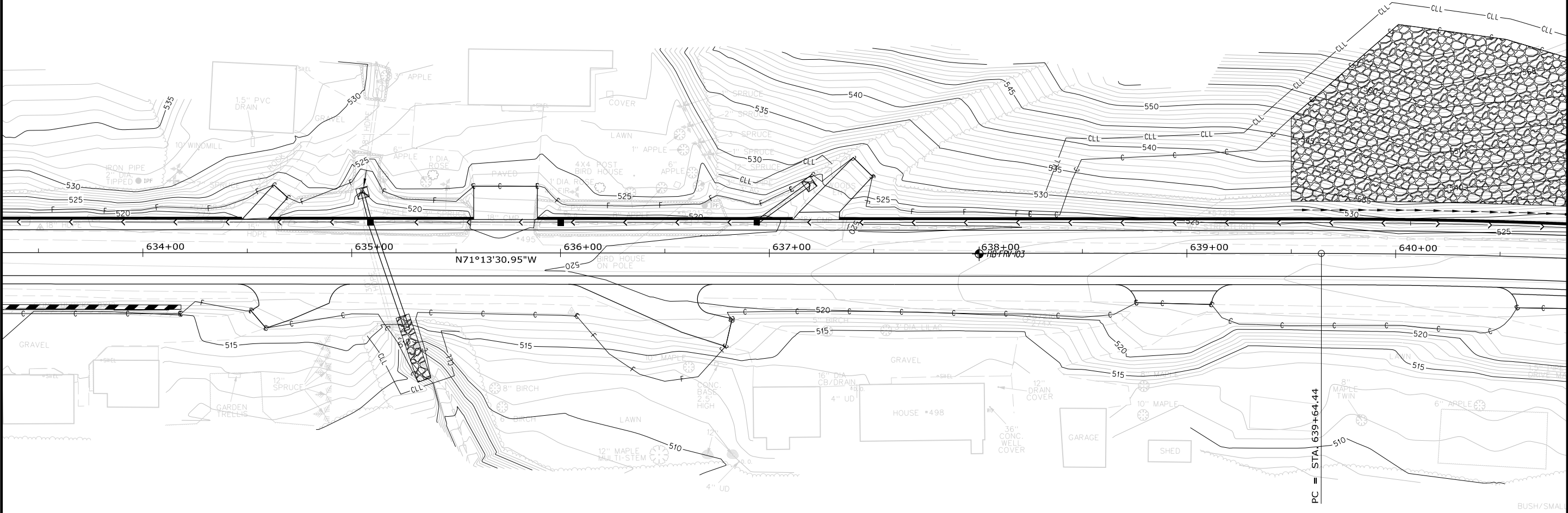
OF 40



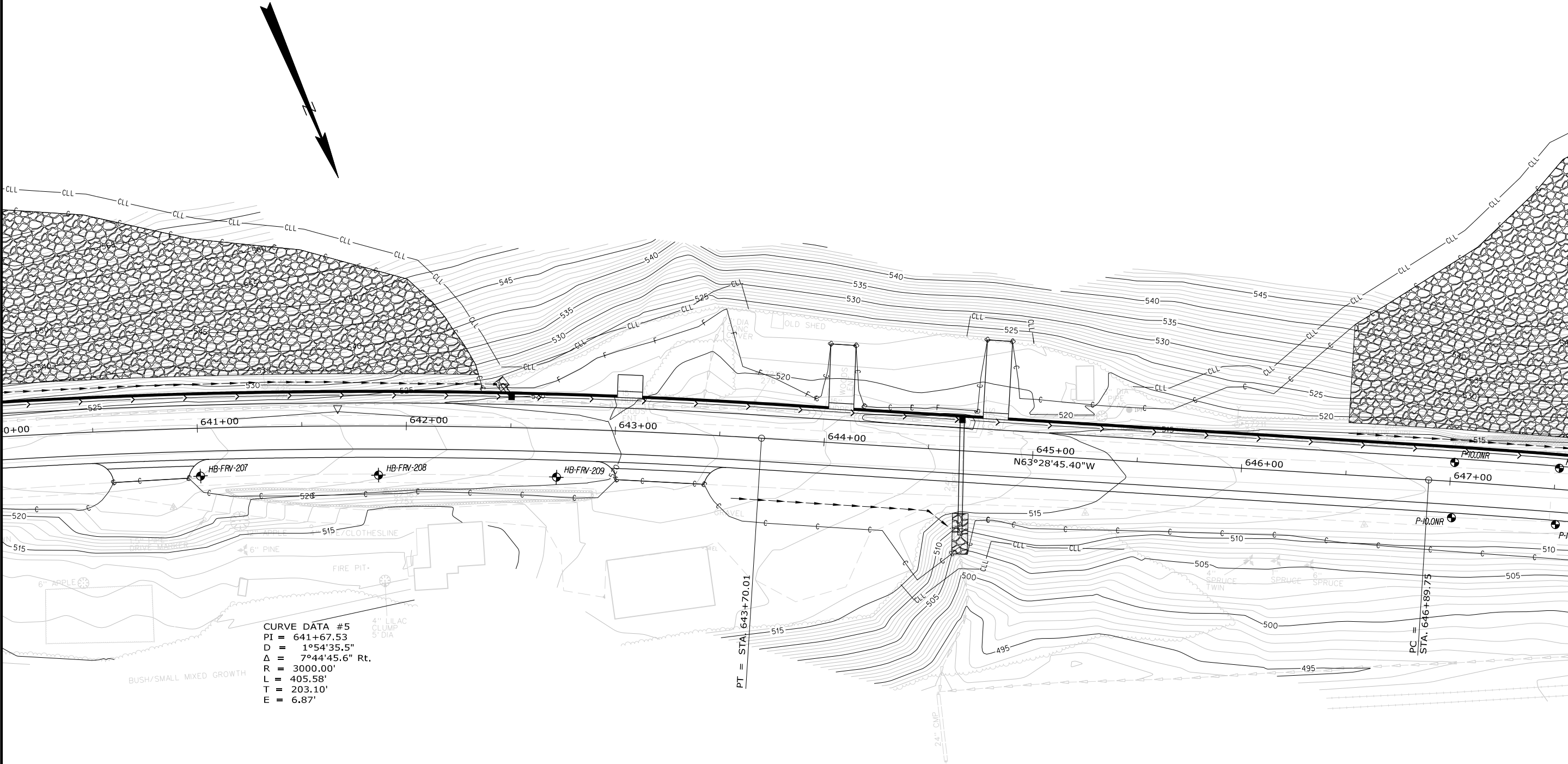
PROJ. MANAGER	E. MARTIN	BY	DATE	SIGNATURE
CHECKED-REVIEWED			JUL 2026	T. WHITE
DESIGN-DETAILED				
DESIGN-DETAILED				
REVISIONS 1				
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

FRENCHVILLE - FORT KENT
US ROUTE 1

BORING LOCATION PLAN



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
STP-2265(600)		WIN 22656.00	
HIGHWAY PLANS			
FRENCHVILLE - FORT KENT US ROUTE 1		BORING LOCATION PLAN	
SHEET NUMBER		8	
OF 40			
PROJ. MANAGER	E. MARTIN	BY	DATE
CHECKED-REVIEWED	Y.T. LEE	T. WHITE	JUL 2026
DESIGN-DETAILED	Y.T. LEE		
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			
SIGNATURE		P.E. NUMBER	DATE

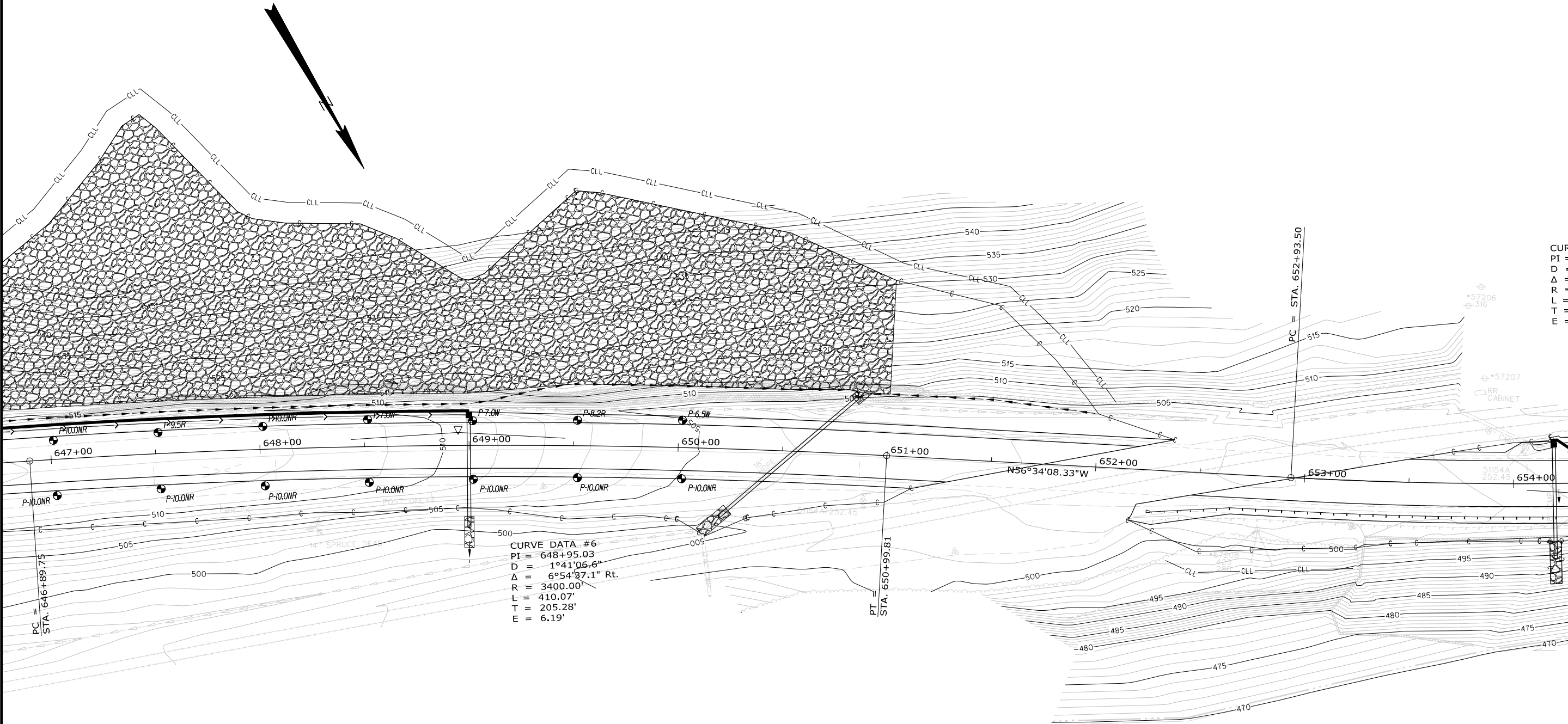


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Δ = 7°44'45.6" Rt.
R = 3000.00'
L = 405.58'
T = 203.10'
E = 6.87'

PT = STA 643+70.01

PC = STA 646+89.75

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE		DATE
	T. WHITE		JUL 2026
STP-2265(600)	P.E. NUMBER		
WIN 22656.00	HIGHWAY PLANS		
FRENCHVILLE - FORT KENT US ROUTE 1			
BORING LOCATION PLAN			
SHEET NUMBER			
9			
OF 40			



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-2265(600)

WIN
22656.00

HIGHWAY PLANS

FRENCHVILLE - FORT KENT
US ROUTE 1

BORING LOCATION PLAN

SHEET NUMBER

10

OF 40

PROJ. MANAGER
E. MARTIN

BY
T. WHITE

DATE
JUL 2026

SIGNATURE

DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN-DETAILED
DESIGN-DETAILED

DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN-DETAILED
DESIGN-DETAILED

DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN-DETAILED
DESIGN-DETAILED

DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN-DETAILED
DESIGN-DETAILED

REVISIONS 1

REVISIONS 2

REVISIONS 3

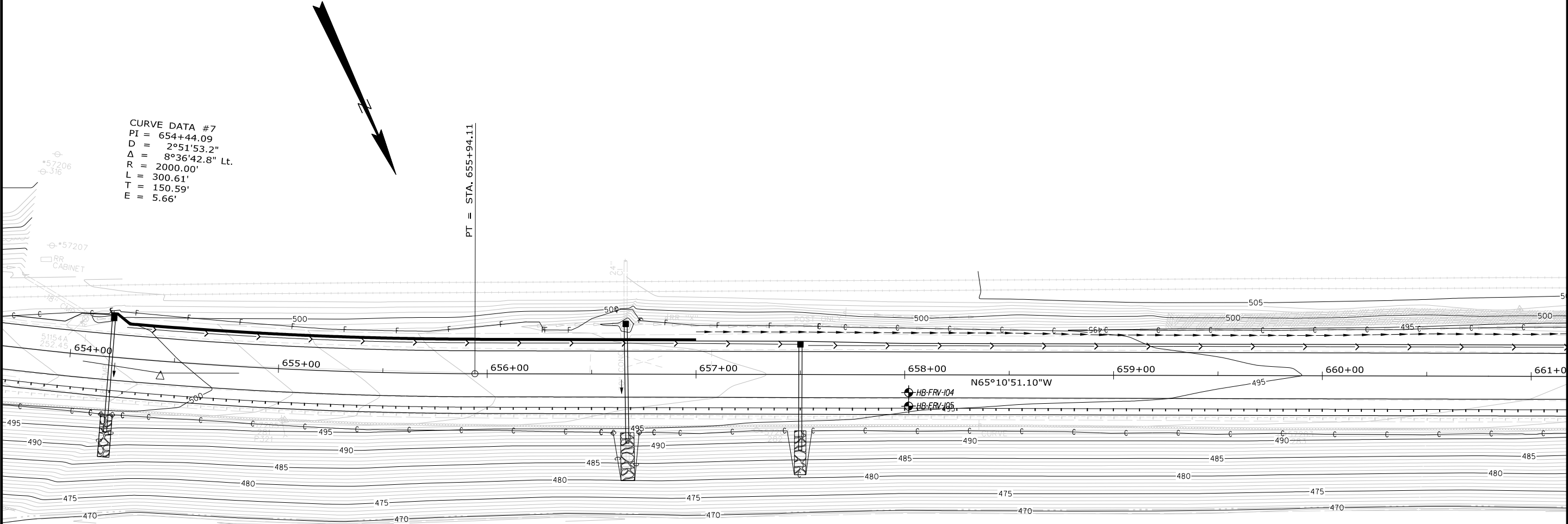
REVISIONS 4

FIELD CHANGES

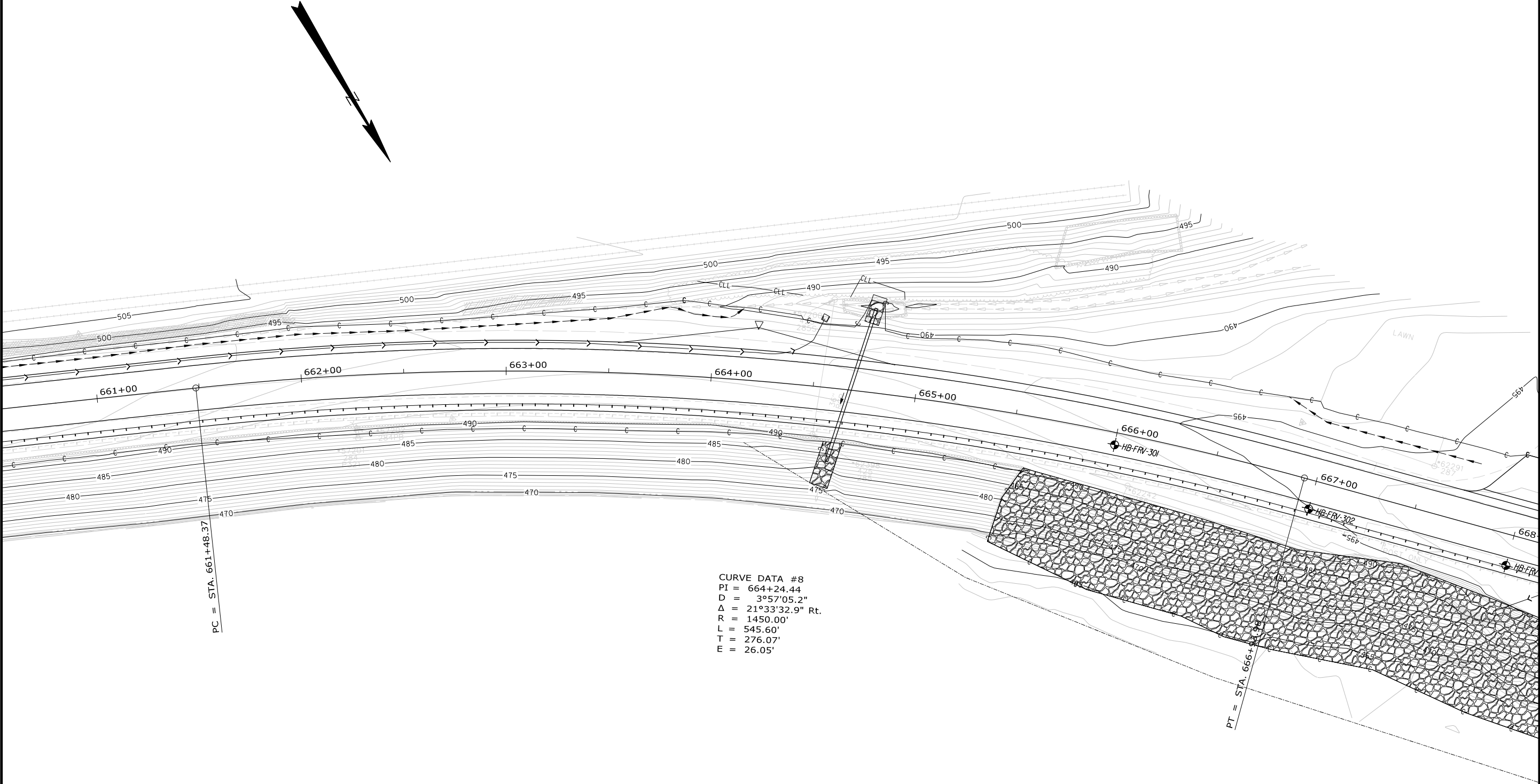
P.E. NUMBER

DATE

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STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE JUL 2026 T. WHITE		P.E. NUMBER		DATE
STP-2265(600)		WIN		22656.00		HIGHWAY PLANS
FRENCHVILLE - FORT KENT US ROUTE 1		BORING LOCATION PLAN		SHEET NUMBER		
11		OF 40				



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-2265(600)

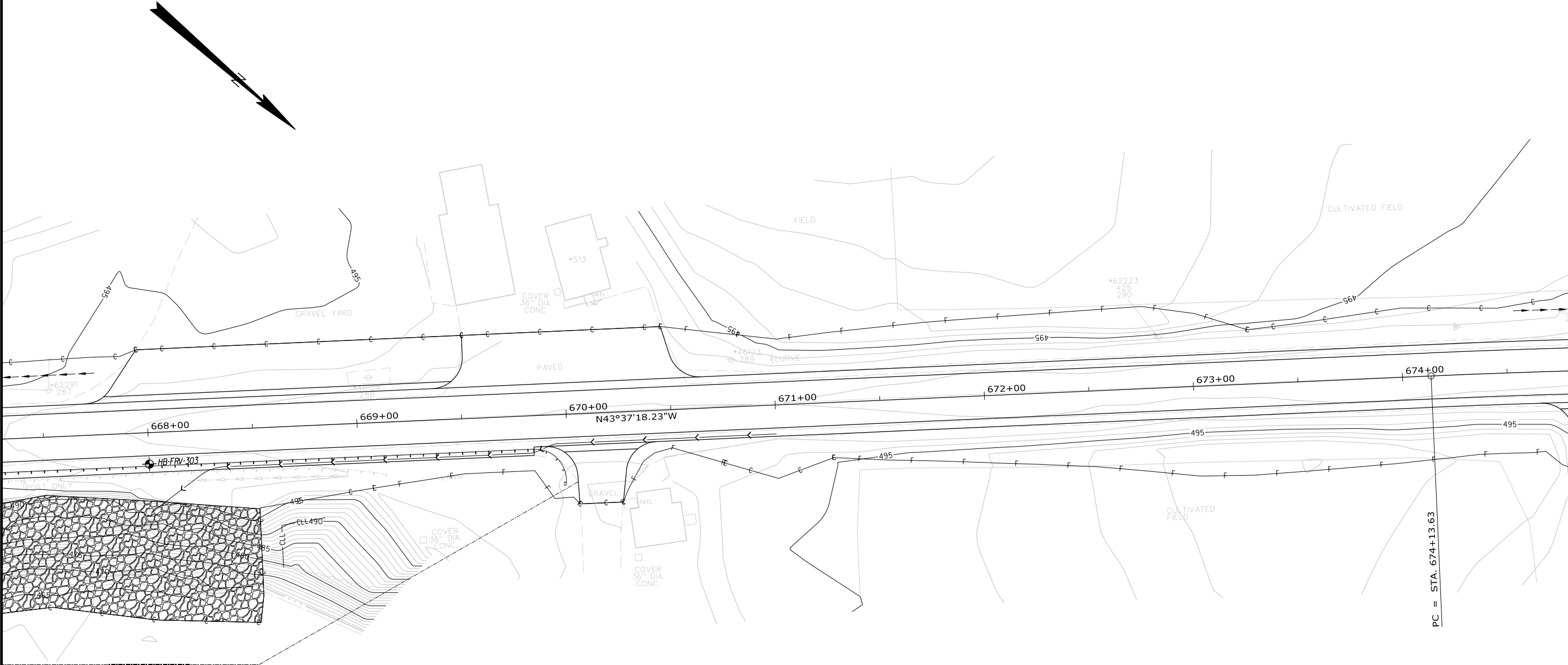
WIN
22656.00
HIGHWAY PLANS

FRENCHVILLE - FORT KENT
US ROUTE 1

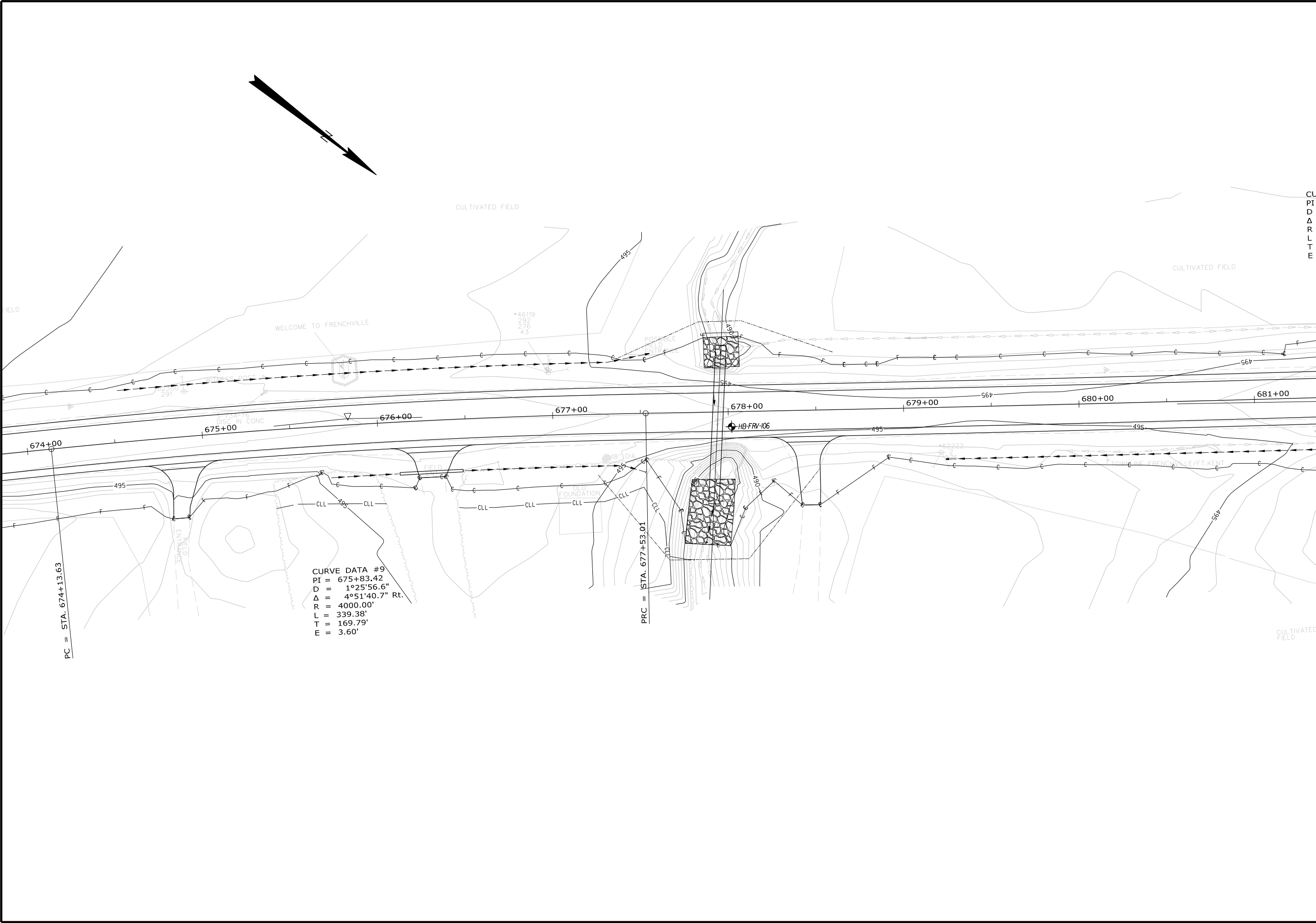
BORING LOCATION PLAN

PROJ. MANAGER	E. MARTIN	BY	DATE
CHECKED-REVIEWED			
DESIGNED-DETAILED	YT LEE		JUL 2026
DESIGNED-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SHEET NUMBER
12
OF 40



STATE OF MAINE DEPARTMENT OF TRANSPORTATION STP-2265(600) WIN 22656.00 HIGHWAY PLANS					
		PROJ. MANAGER	BY	DATE	SIGNATURE
		CHECKED-REVIEWED	T. WHITE	JUL 2026	
FRENCHVILLE - FORT KENT US ROUTE 1 BORING LOCATION PLAN		DESIGN-DETAILED	YT LEE		P.E. NUMBER
		DESIGN-DETAILED			DATE
		REVISIONS 1			
		REVISIONS 2			
		REVISIONS 3			
SHEET NUMBER		FIELD CHANGES			
13 OF 40					

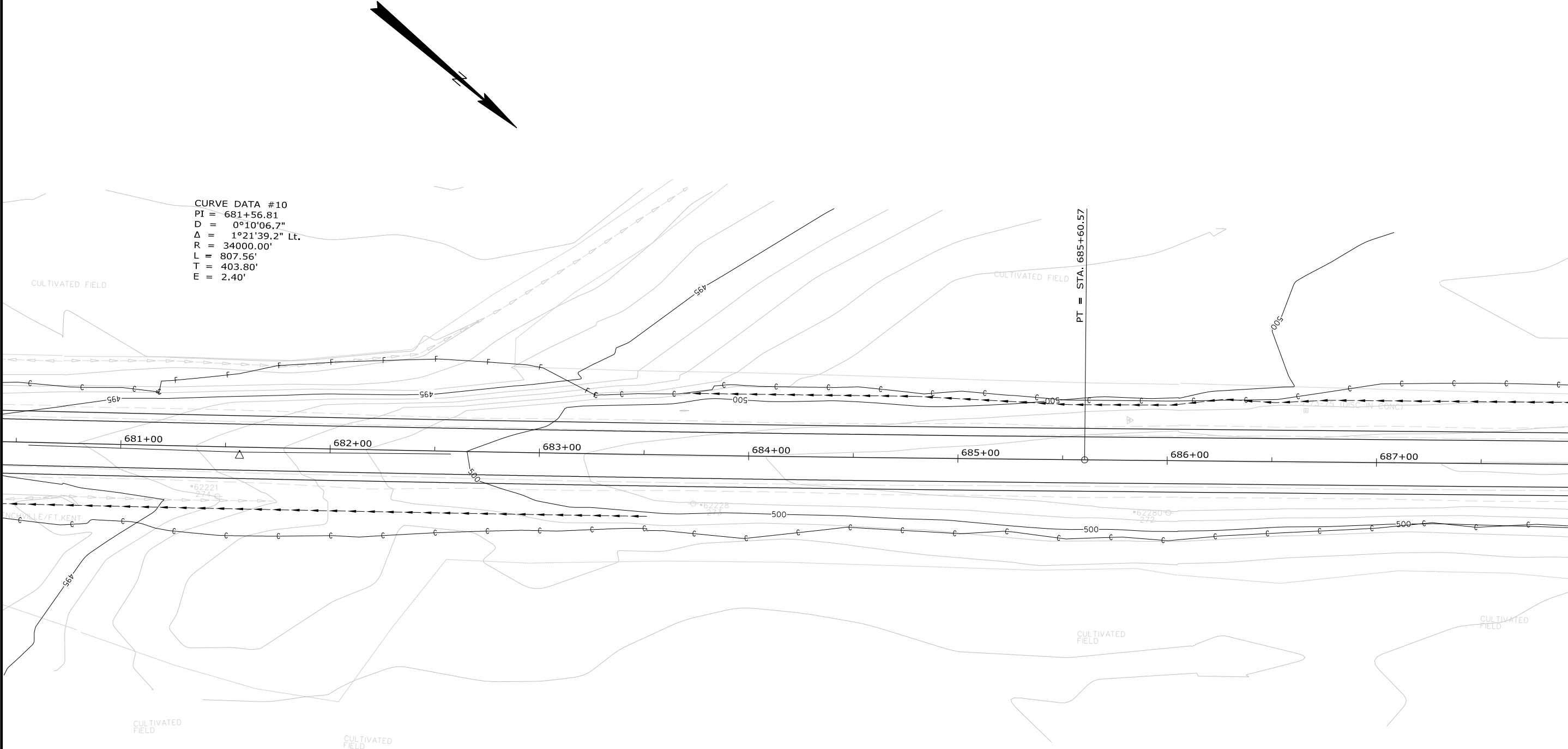


STATE OF MAINE DEPARTMENT OF TRANSPORTATION				
	STP-2265(600)			
	WIN 22656.00			
	HIGHWAY PLANS			

FRENCHVILLE - FORT KENT US ROUTE 1	PROJ. MANAGER	E. MARTIN	BY	DATE
	DESIGN-DETAILED			
	CHECKED-REVISED			
	DESIGN2-DETAILED2	YI LEE	T. WHITE	JUL 2026
	DESIGN3-DETAILED3			
	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

BORING LOCATION PLAN		

SHEET NUMBER	14
OF 40	

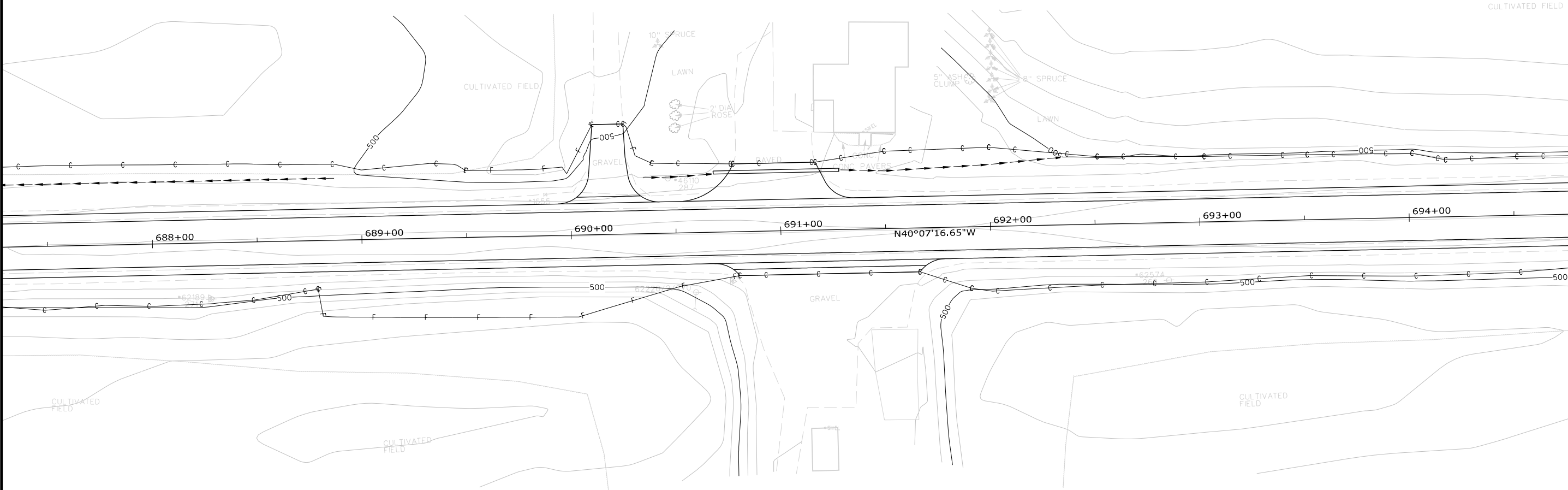


STATE OF MAINE DEPARTMENT OF TRANSPORTATION					SIGNATURE
STP-2265(600)					
WIN 22656.00					
HIGHWAY PLANS					

FRENCHVILLE - FORT KENT US ROUTE 1	PROJ. MANAGER	E. MARTIN	BY	DATE
	CHECKED-REVIEWED			
	DESIGN2-DETAILED2	YT LEE	T. WHITE	JUL 2026
	DESIGN3-DETAILED3			
	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

BORING LOCATION PLAN	

SHEET NUMBER	15
OF 40	



STATE OF MAINE

DEPARTMENT OF TRANSPORTATION

STP-2265(600)

WIN 22656.00

HIGHWAY PLANS

FRENCHVILLE - FORT KENT

US ROUTE 1

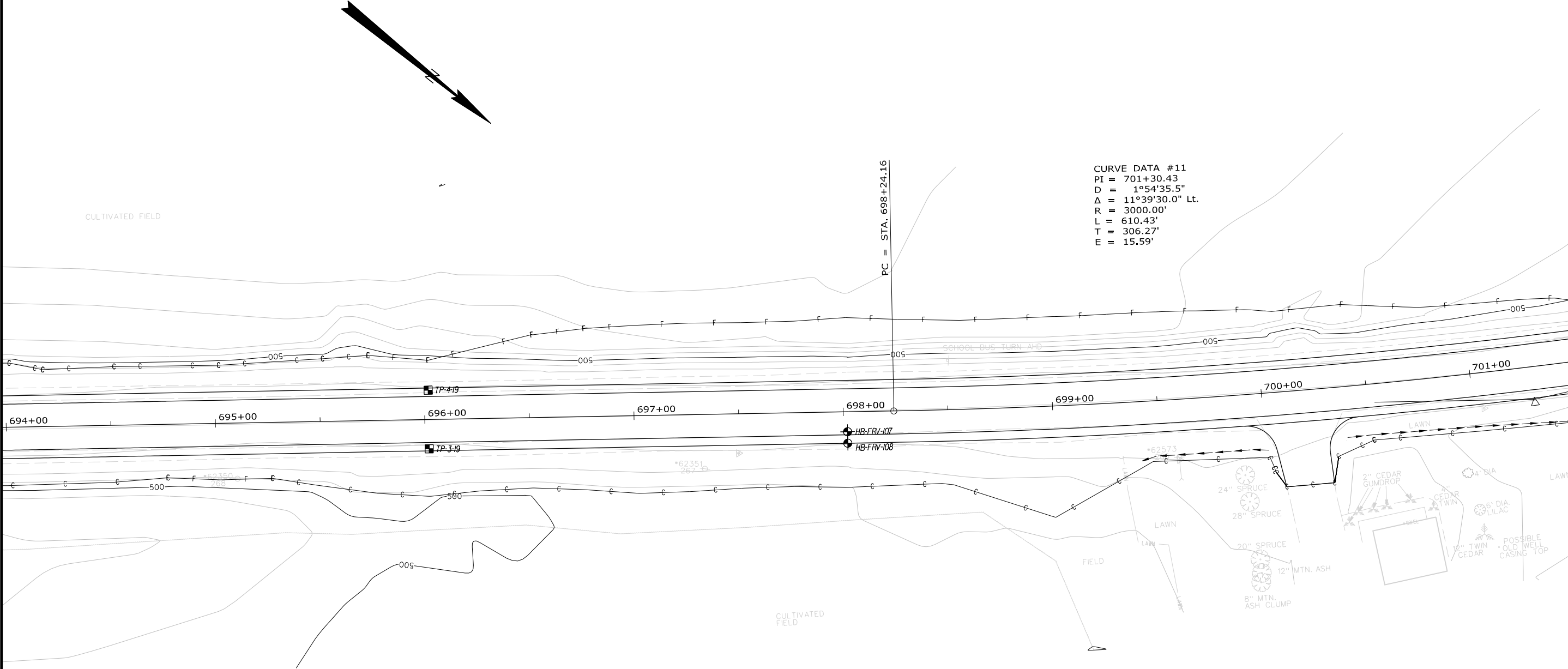
BORING LOCATION PLAN

SHEET NUMBER

16

OF 40

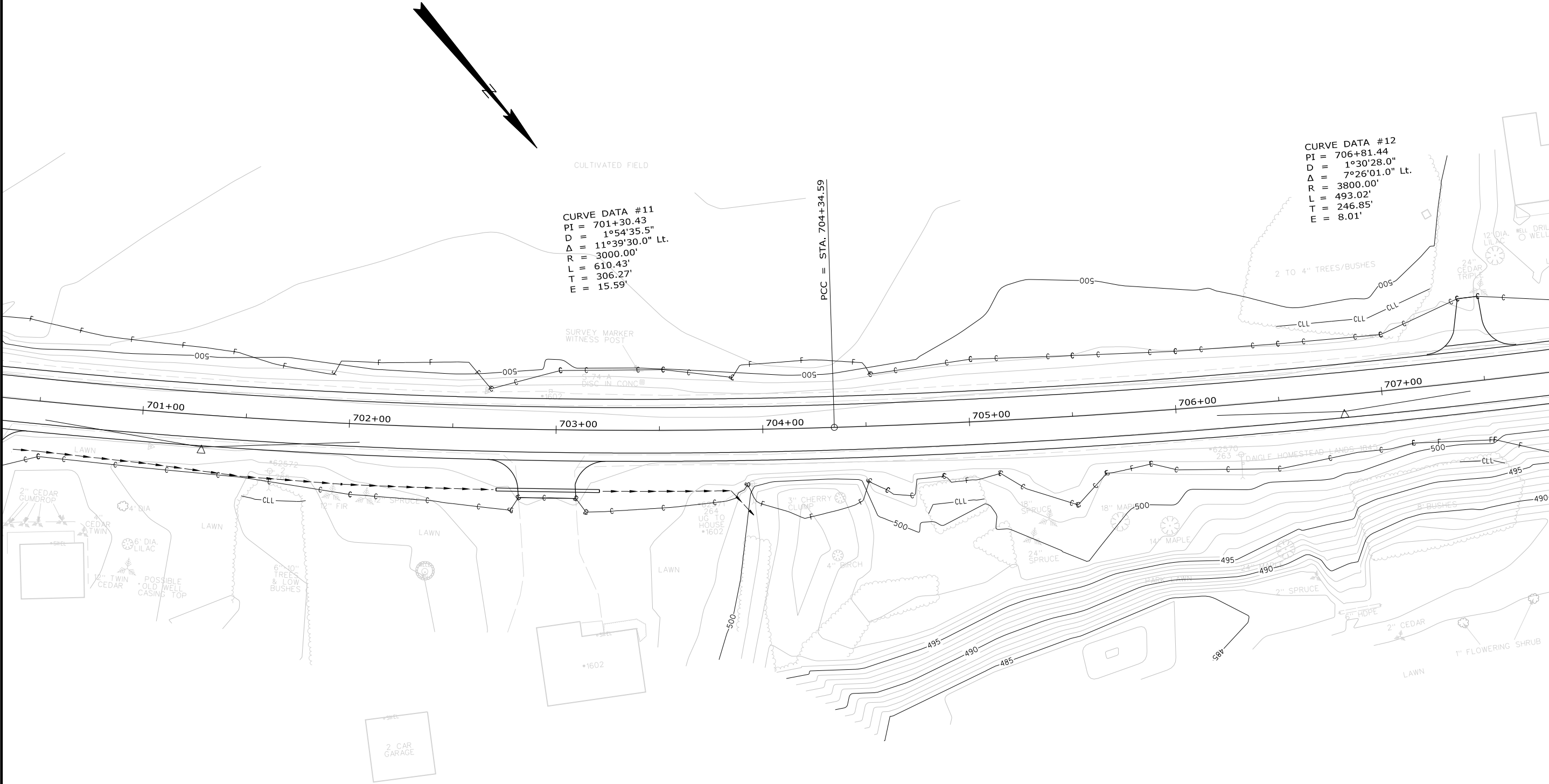
PROJ. MANAGER	E. MARTIN	BY	DATE	SIGNATURE
DESIGN-DETAILED				
CHECKED-REVIEWED			JUL 2026	
DESIGN-DETAILED	YT LEE	T. WHITE		
DESIGN-DETAILED				P.E. NUMBER
REVISIONS 1				DATE
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				



STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE		P.E. NUMBER		DATE		WIN 22656.00 HIGHWAY PLANS	
STP-2265(600)									

FRENCHVILLE - FORT KENT US ROUTE 1		BORING LOCATION PLAN	
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SHEET NUMBER		17	
		OF 40	

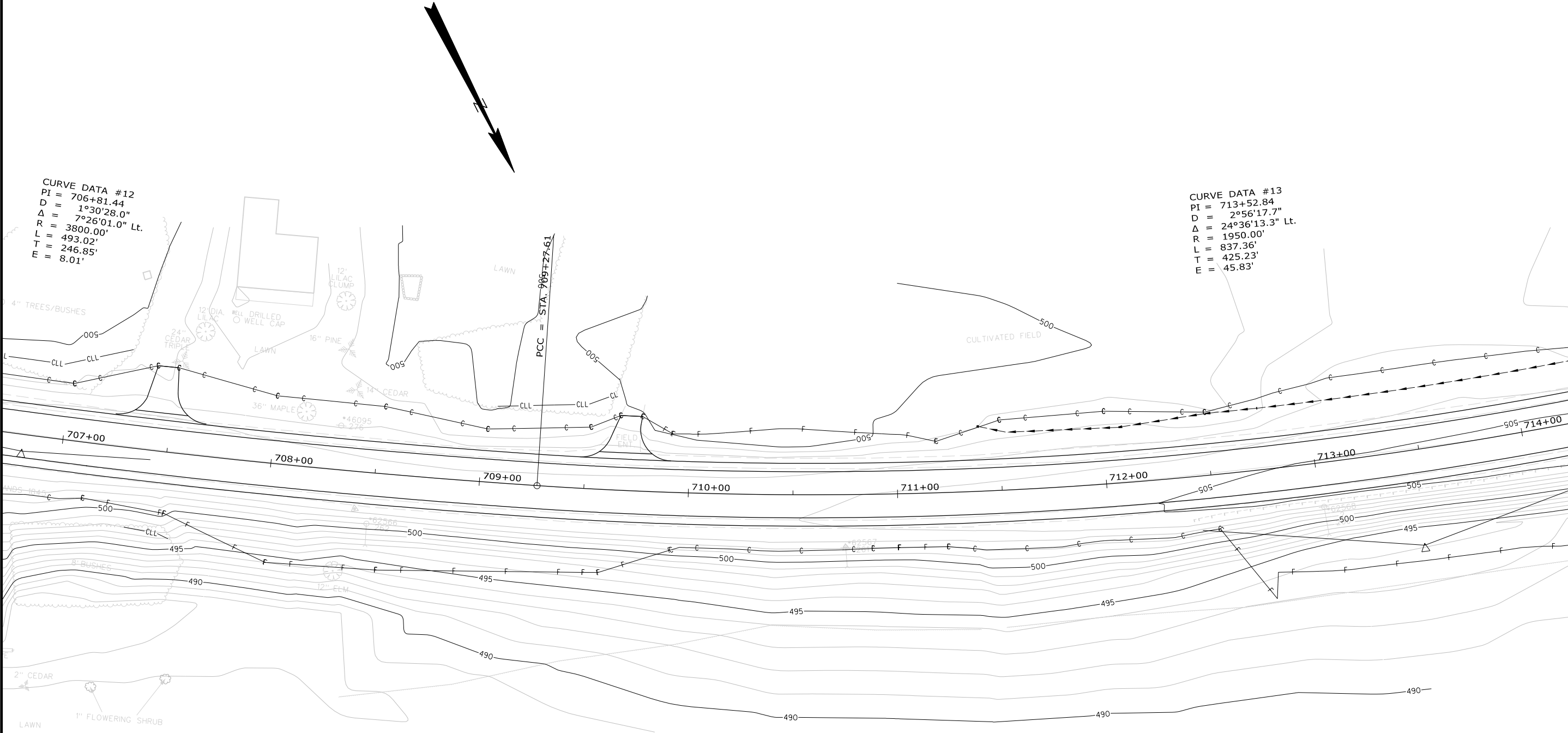


STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-2265(600)
WIN
22656.00
HIGHWAY PLANS

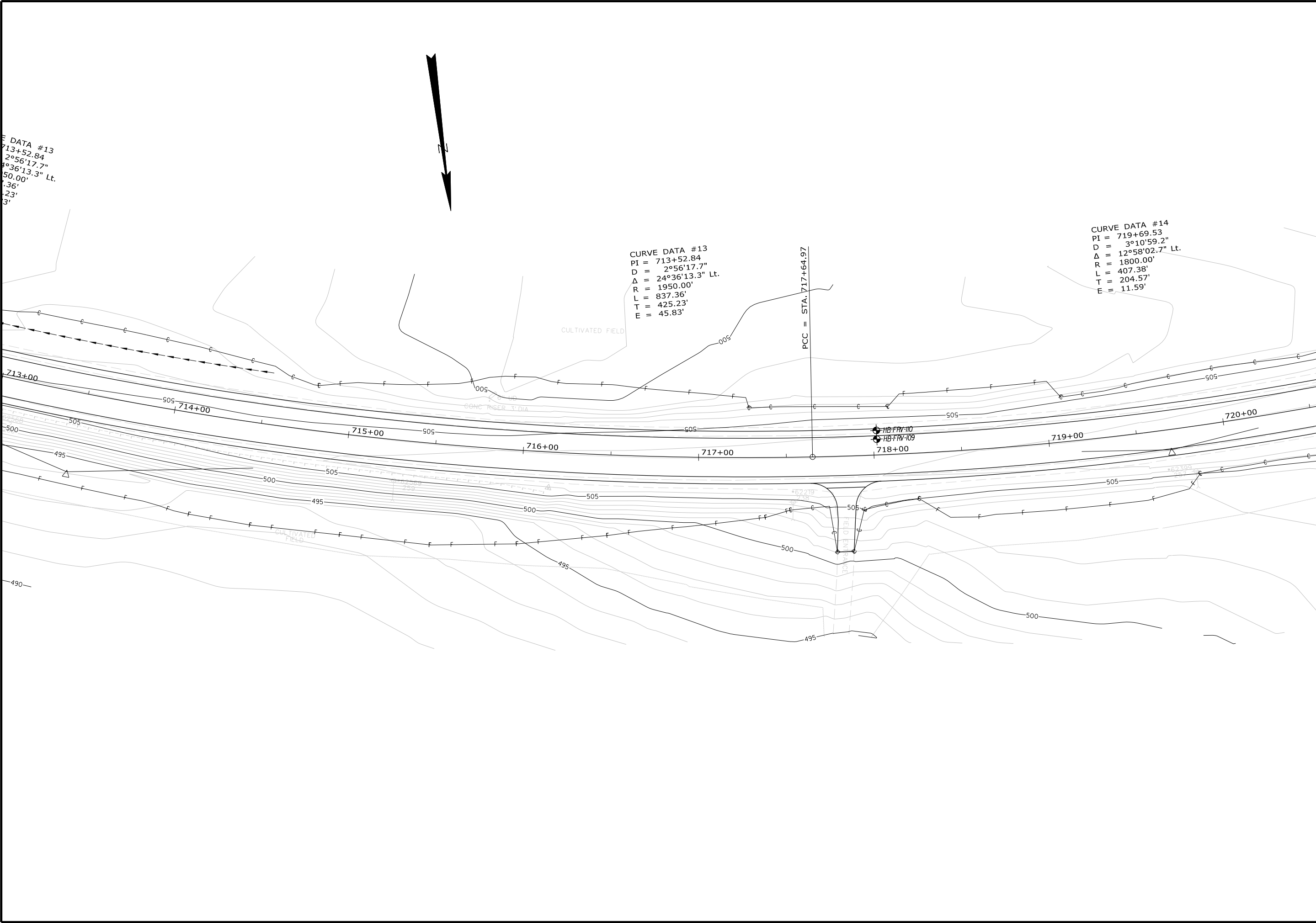
PROJ. MANAGER	E. MARTIN	BY	DATE
CHECKED-REVIEWED			
DESIGN-DETAILED	YT LEE	SIGNATURE	JUL 2026
REVISIONS 1		P.E. NUMBER	
REVISIONS 2		DATE	
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

FRENCHVILLE - FORT KENT
US ROUTE 1
BORING LOCATION PLAN

SHEET NUMBER
18
OF 40



STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
STP-2265(600)		WIN 22656.00	
HIGHWAY PLANS			
FRENCHVILLE - FORT KENT US ROUTE 1		SIGNATURE JUL 2026 T. WHITE	
BORING LOCATION PLAN		P.E. NUMBER DATE	
SHEET NUMBER		19	
OF 40			



STATE OF MAINE

DEPARTMENT OF TRANSPORTATION

STP-2265(600)

WIN 22656.00

HIGHWAY PLANS

FRENCHVILLE - FORT KENT

US ROUTE 1

BORING LOCATION PLAN

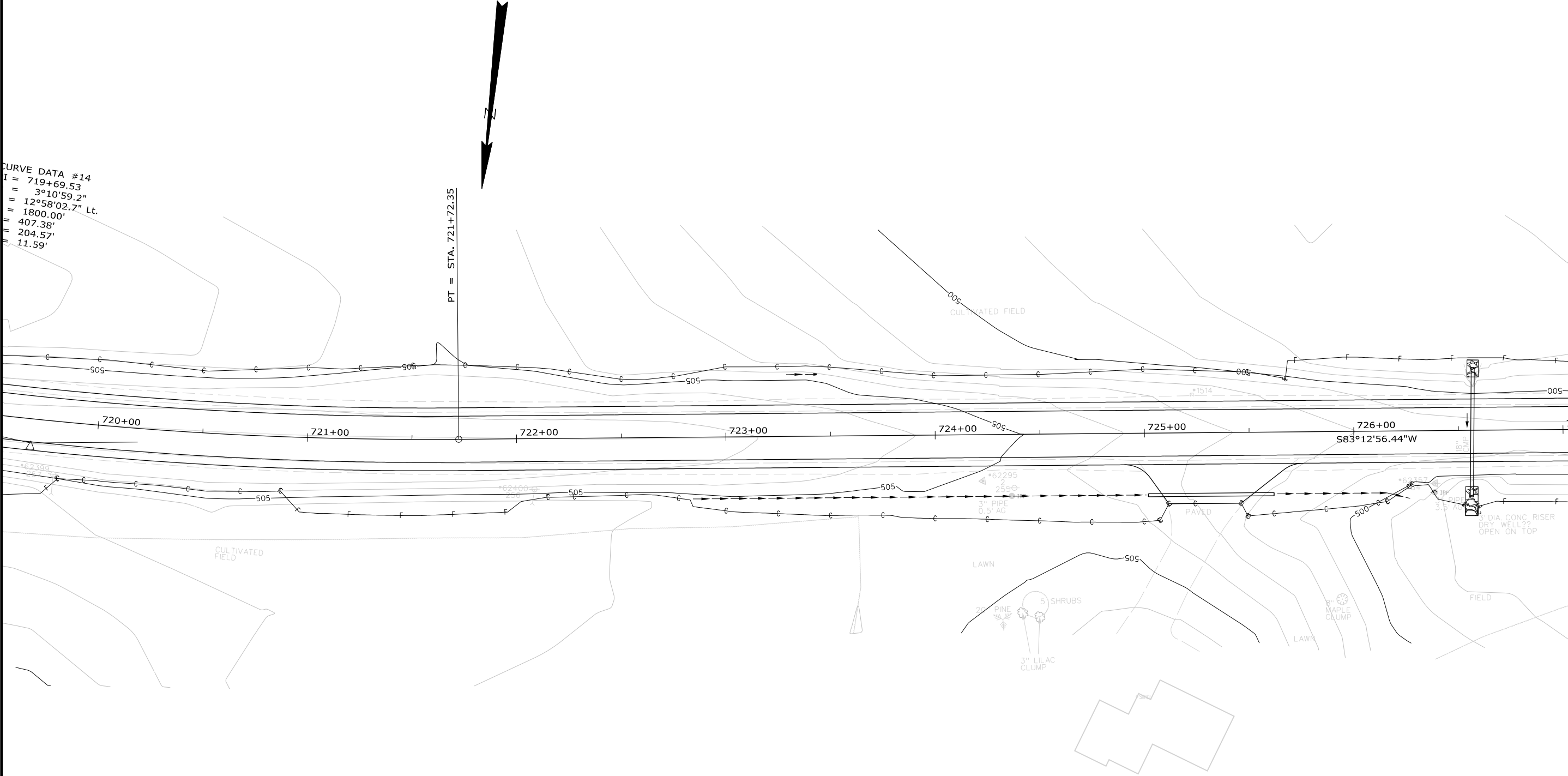
SHEET NUMBER

20

OF 40

PROJ. MANAGER	E. MARTIN	BY	DATE	SIGNATURE
DESIGN-DETAILED				
CHECKED-REVIEWED			JUL 2026	
DESIGN-DETAILED	YT LEE			
DESIGN-DETAILED				
REVISIONS 1				P.E. NUMBER
REVISIONS 2				
REVISIONS 3				DATE
REVISIONS 4				
FIELD CHANGES				

CURVE DATA #14
I = 719+69.53
= 3°10'59.2"
= 12°58'02.7" Lt.
= 1800.00'
= 407.38'
= 204.57'
= 11.59'



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-2265(600)

WIN
22656.00
HIGHWAY PLANS

FRENCHVILLE - FORT KENT
US ROUTE 1

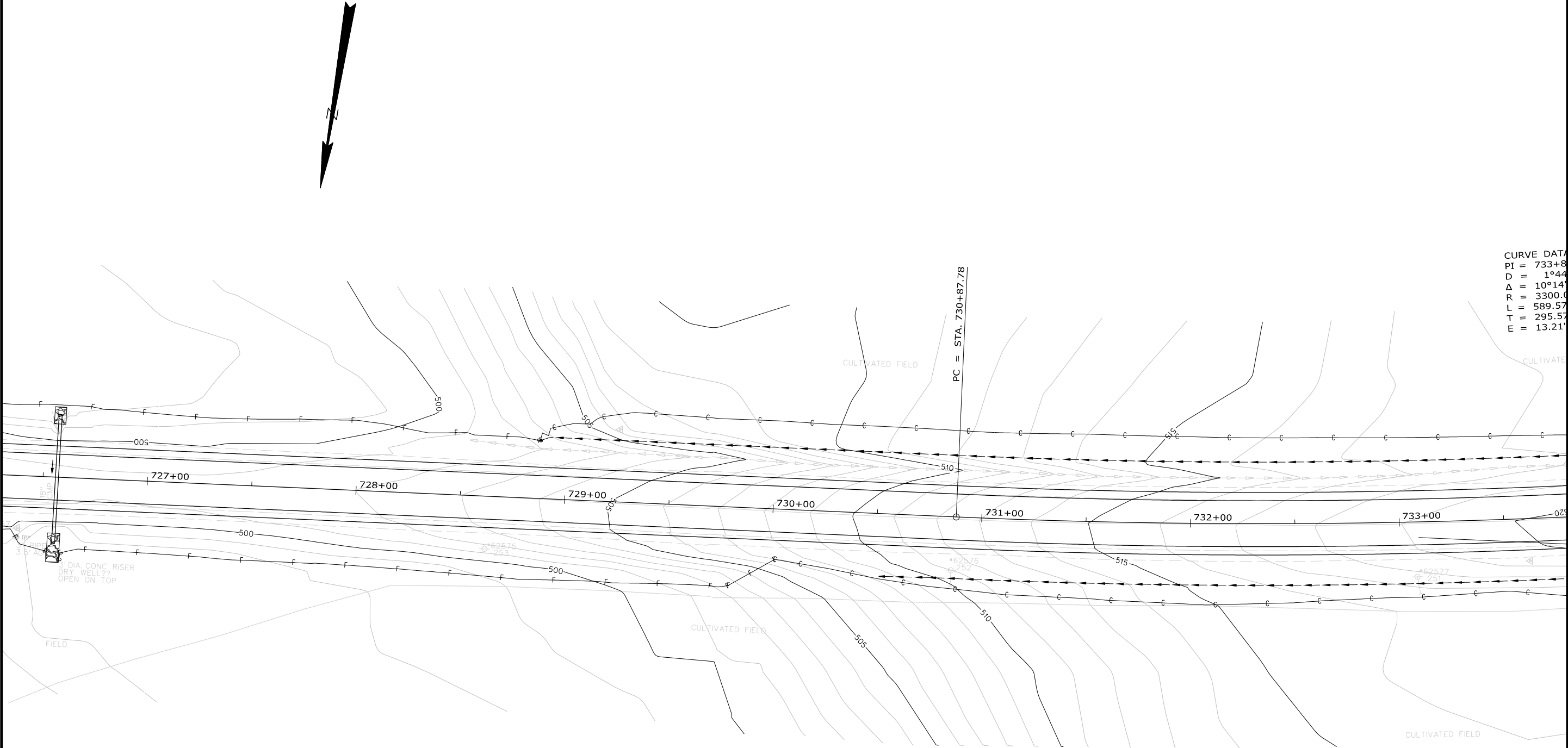
BORING LOCATION PLAN

SHEET NUMBER

21

OF 40

PROJ. MANAGER	E. MARTIN	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
CHECKED-REVIEWED						
DESIGNS DETAILED	YT LEE	T. WHITE	JUL 2026			
DESIGNS DETAILED						
REVISIONS 1						
REVISIONS 2						
REVISIONS 3						
REVISIONS 4						
FIELD CHANGES						

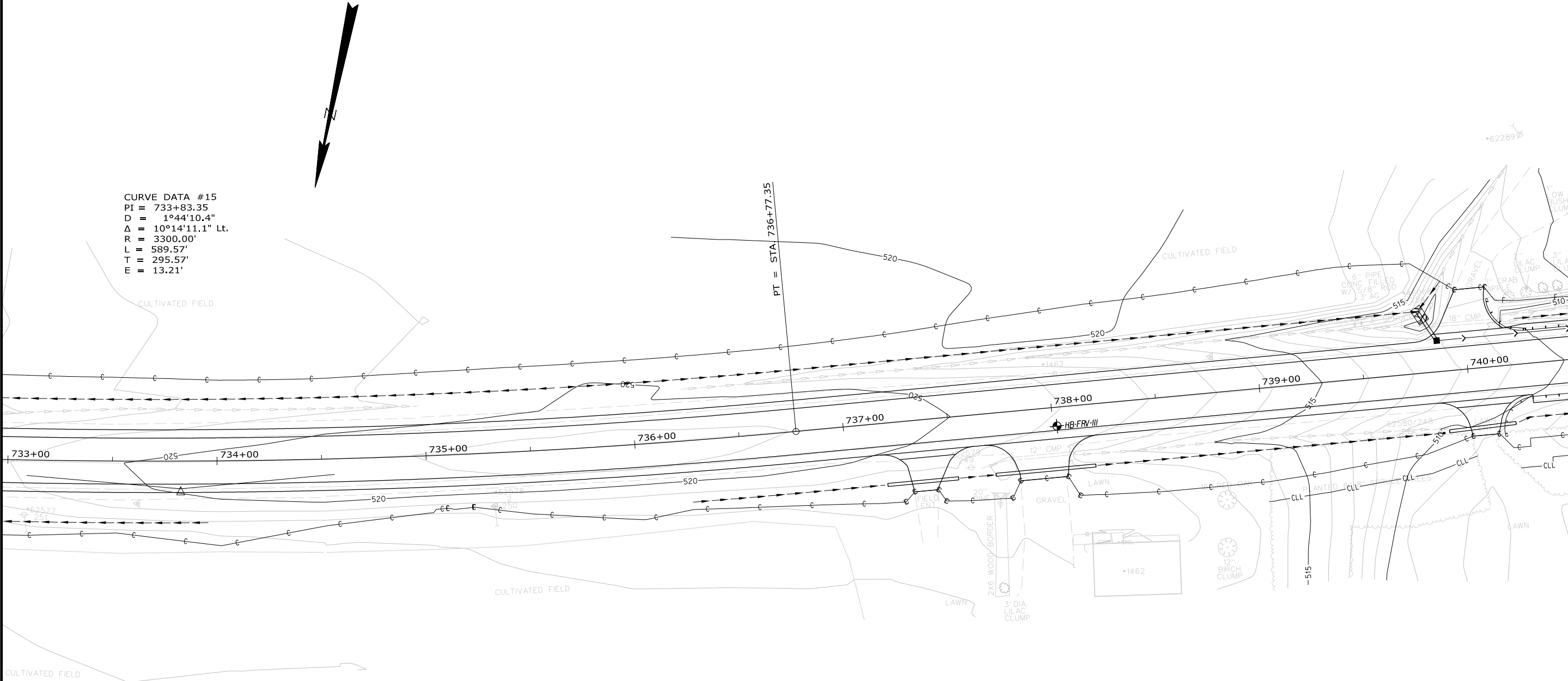


CURVE DATA
 PI = 733+87.78
 Δ = 1°44'10\"/>

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
STP-2265(600)		SIGNATURE	
WIN		P.E. NUMBER	
22656.00		DATE	
HIGHWAY PLANS		FIELD CHANGES	

FRENCHVILLE - FORT KENT
 US ROUTE 1

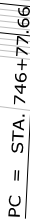
BORING LOCATION PLAN



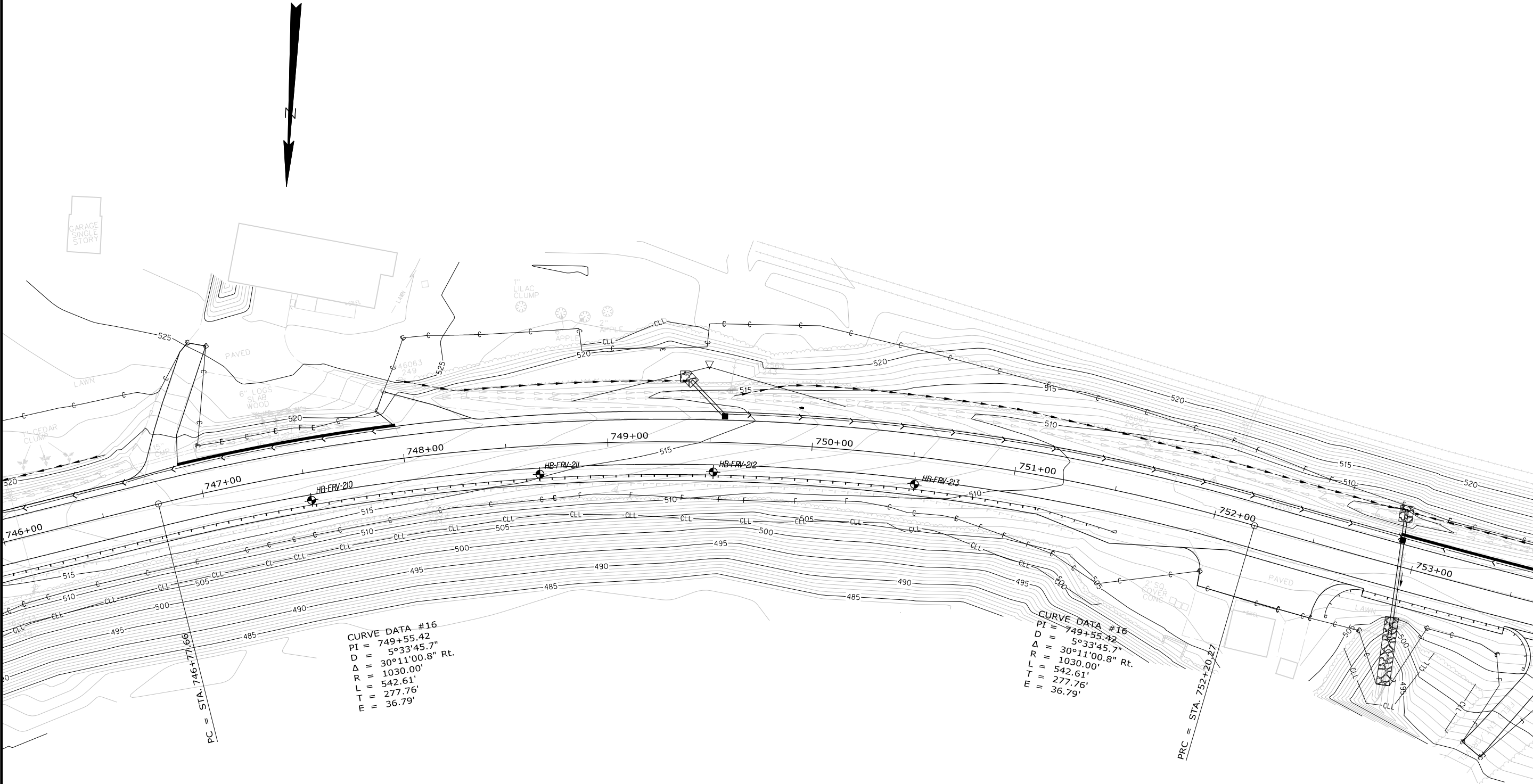
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L = 589.57'
T = 295.57'
E = 13.21'

PT = STA. 736+77.35

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE			
	P.E. NUMBER			
	DATE			
SHEET NUMBER		BORING LOCATION PLAN		
23				
OF 40				
STP-2265(600)				
WIN				
22656.00				
HIGHWAY PLANS				



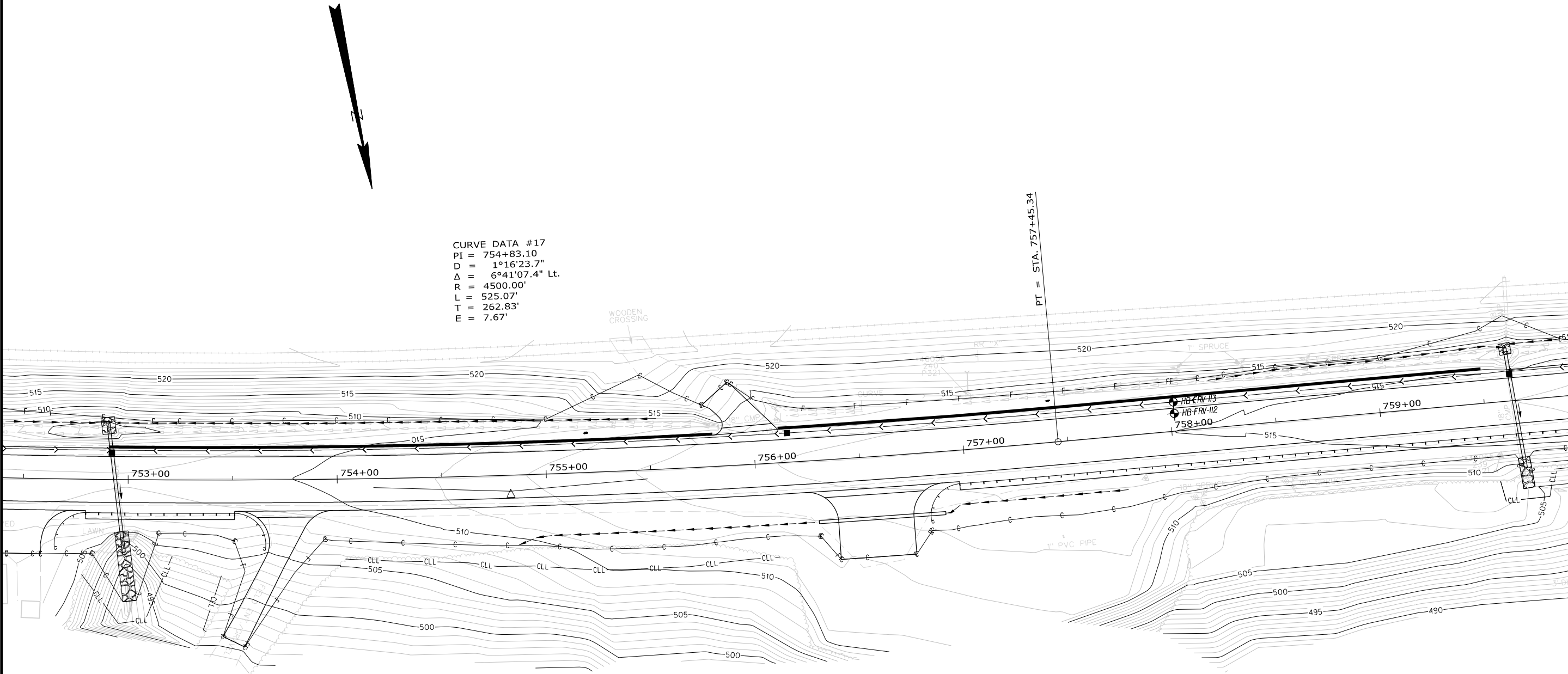
24 OF 40	SHEET NUMBER	FRENCHVILLE - FORT KENT US ROUTE 1				PROJ. MANAGER	E. MARTIN	BY	DATE	STATE OF MAINE DEPARTMENT OF TRANSPORTATION STP-2265(600) WIN 22656.00 HIGHWAY PLANS
		BORING LOCATION PLAN				CHECKED-REVIEWED				
					DESIGN2-DETAILED2	YI LEE	T. WHITE	JUL 2026		
					DESIGN3-DETAILED3				P.E. NUMBER	
					REVISIONS 1					
					REVISIONS 2					
					REVISIONS 3					
					REVISIONS 4					
					FIELD CHANGES				DATE	



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE		DATE
	P.E. NUMBER		DATE
STP-2265(600)			
WIN 22656.00		HIGHWAY PLANS	

FRENCHVILLE - FORT KENT US ROUTE 1	PROJ. MANAGER	E. MARTIN	BY	DATE
	DESIGN-DETAILED			
	CHECKED-REVIEWED			
	DESIGN-DETAILED	YT LEE	T. WHITE	JUL 2026
	DESIGN-DETAILED			
BORING LOCATION PLAN	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

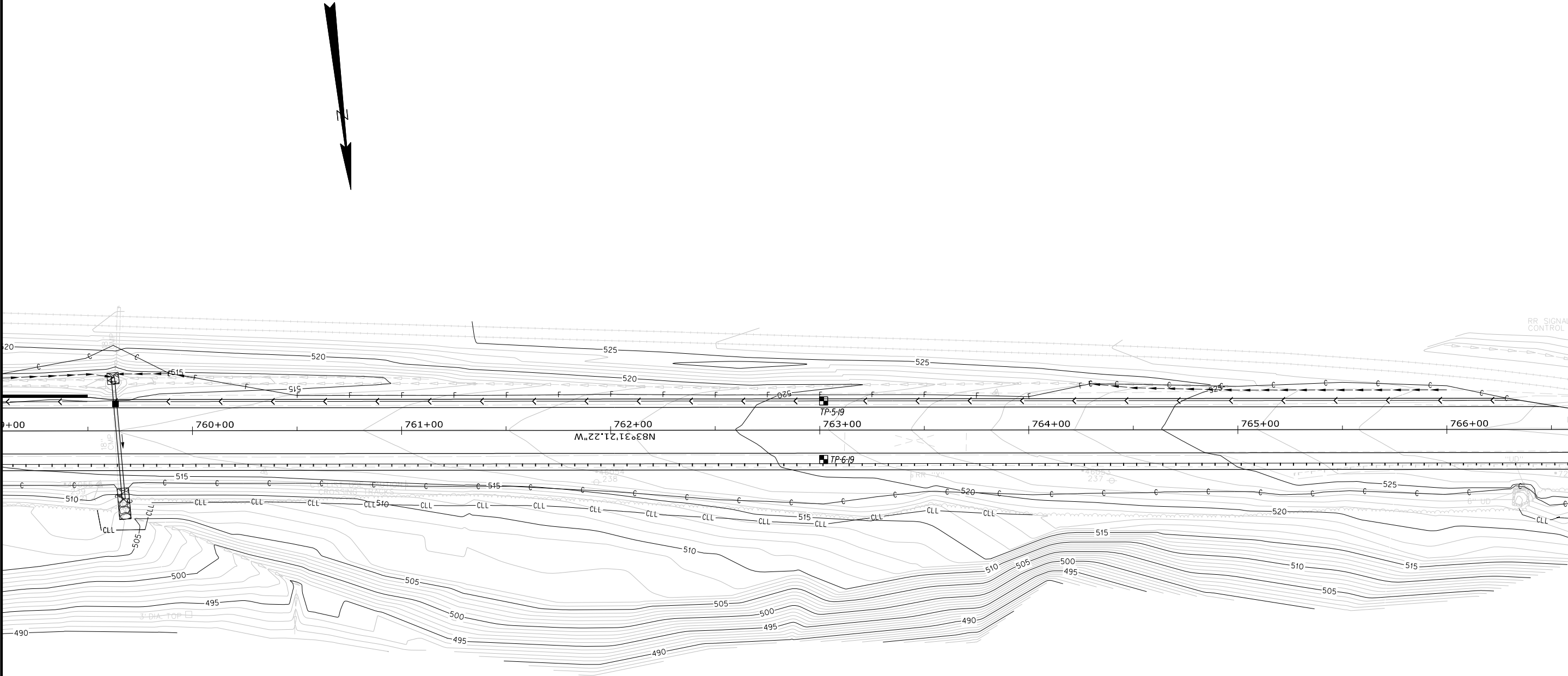
SHEET NUMBER
25
OF 40



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R = 4500.00'
L = 525.07'
T = 262.83'
E = 7.67'

PT = STA. 757+45.34

STATE OF MAINE DEPARTMENT OF TRANSPORTATION					SIGNATURE
STP-2265(600)				P.E. NUMBER	
				DATE	
				HIGHWAY PLANS	



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	PROJ. MANAGER		BY	DATE	SIGNATURE
	DESIGN-DETAILED				
STP-2265(600)	DESIGN-DETAILED		YT LEE	JUL 2026	P.E. NUMBER
	DESIGN-DETAILED				DATE
WIN 22656.00 HIGHWAY PLANS	REVISIONS 1				
	REVISIONS 2				
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

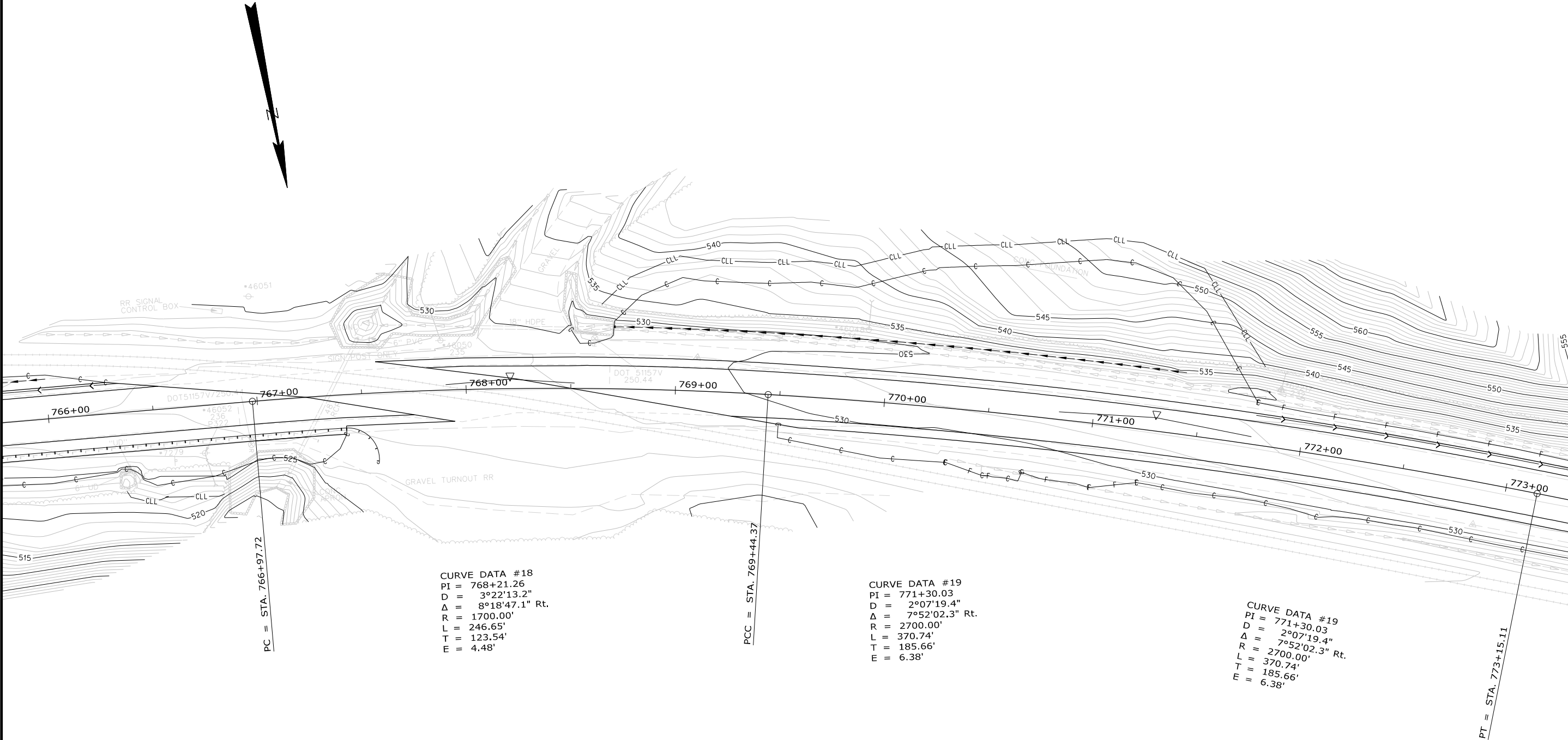
FRENCHVILLE - FORT KENT
US ROUTE 1

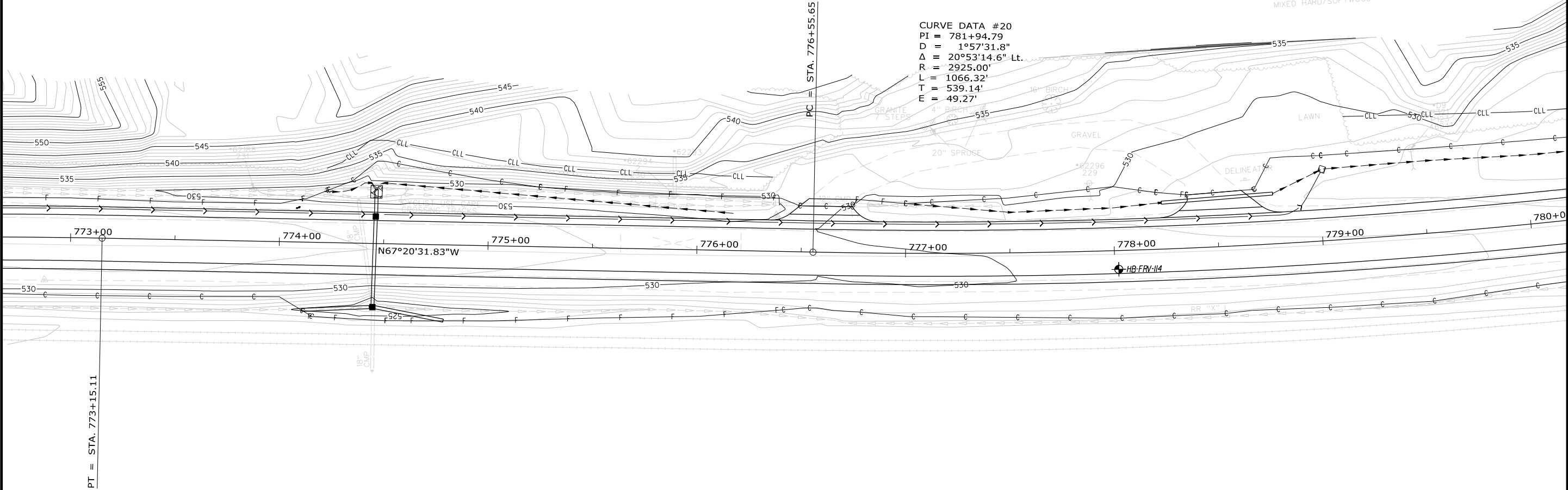
BORING LOCATION PLAN

SHEET NUMBER

27

OF 40





STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-2265(600)

WIN
22656.00
HIGHWAY PLANS

FRENCHVILLE - FORT KENT
US ROUTE 1

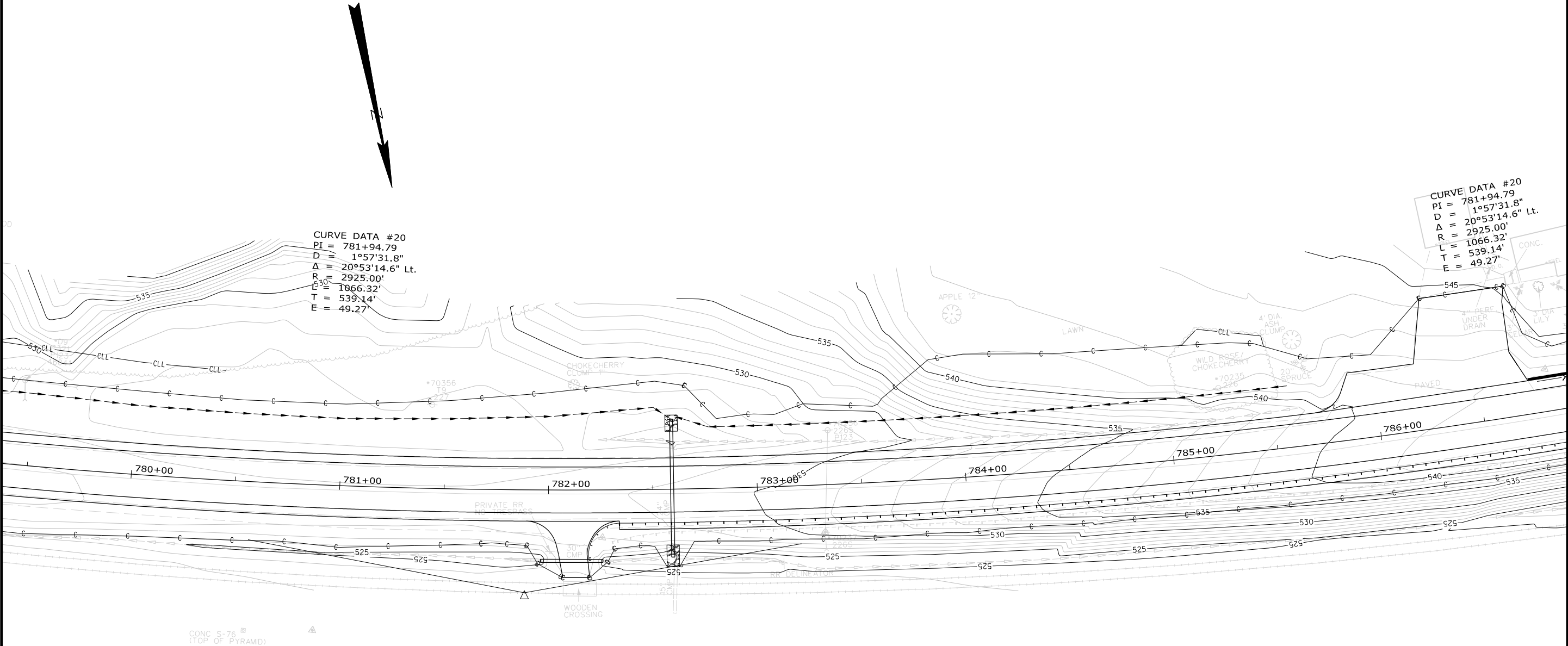
BORING LOCATION PLAN

SHEET NUMBER

29

OF 40

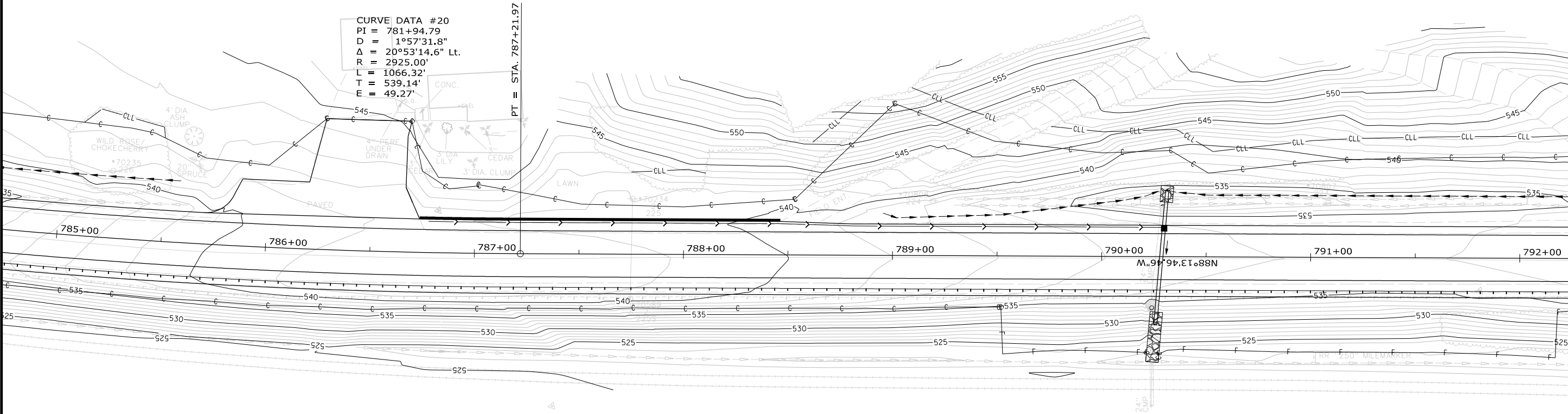
PROJ. MANAGER	E. MARTIN	BY	DATE
DESIGN-DETAILED			
CHECKED-REVIEWED			
DESIGN-DETAILED	YT LEE	T. WHITE	JUL 2026
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			
SIGNATURE		P.E. NUMBER	
DATE			



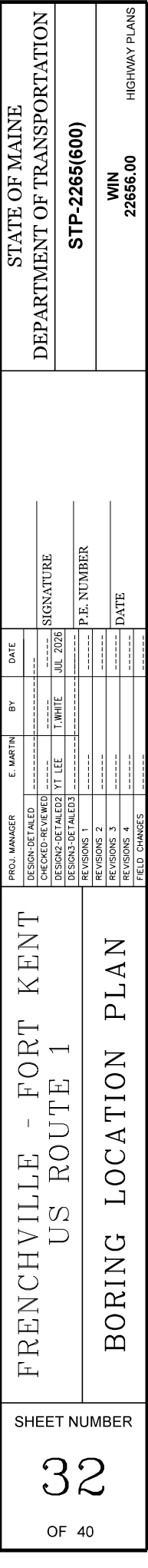
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L = 1066.32'
T = 539.14'
E = 49.27'

CURVE DATA #20
PI = 781+94.79
D = 1°57'31.8"
Δ = 20°53'14.6" Lt.
R = 2925.00'
L = 1066.32'
T = 539.14'
E = 49.27'

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE		DATE
	P.E. NUMBER		DATE
SHEET NUMBER		FIELD CHANGES	
30		REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4	
OF 40		BORING LOCATION PLAN	
STP-2265(600)		WIN 22656.00 HIGHWAY PLANS	



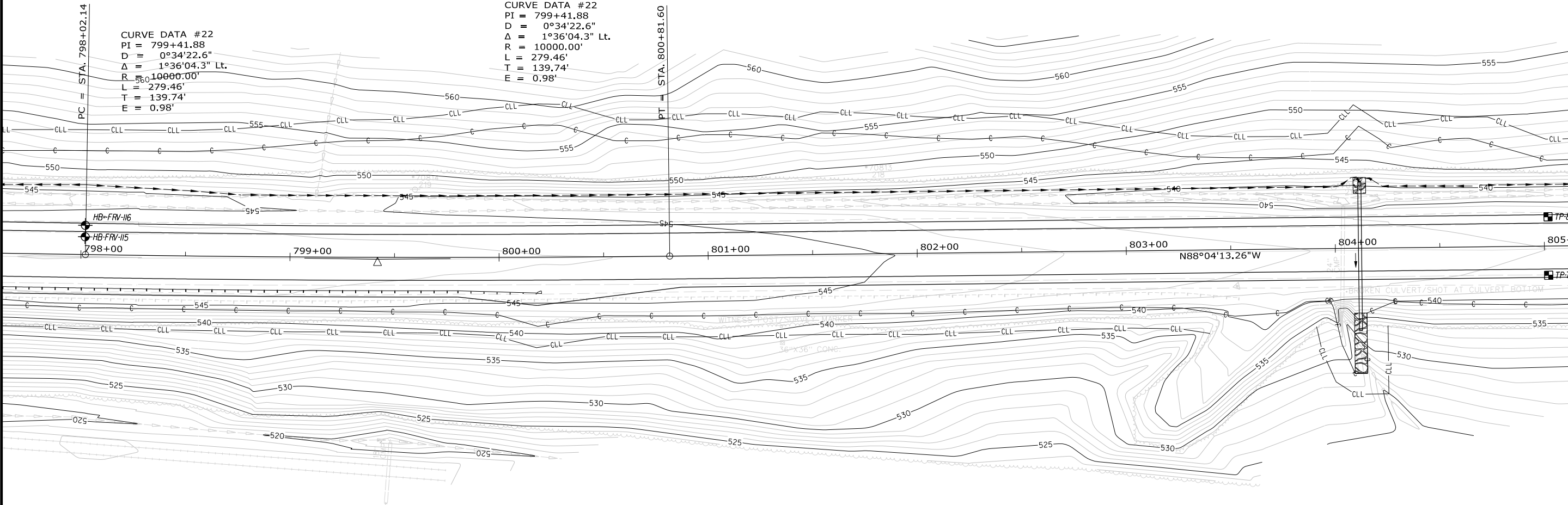
STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE				DATE
	STP-2265(600)				P.E. NUMBER
WIN 22656.00				HIGHWAY PLANS	
FRENCHVILLE - FORT KENT US ROUTE 1					
BORING LOCATION PLAN					
SHEET NUMBER					
31					
OF 40					



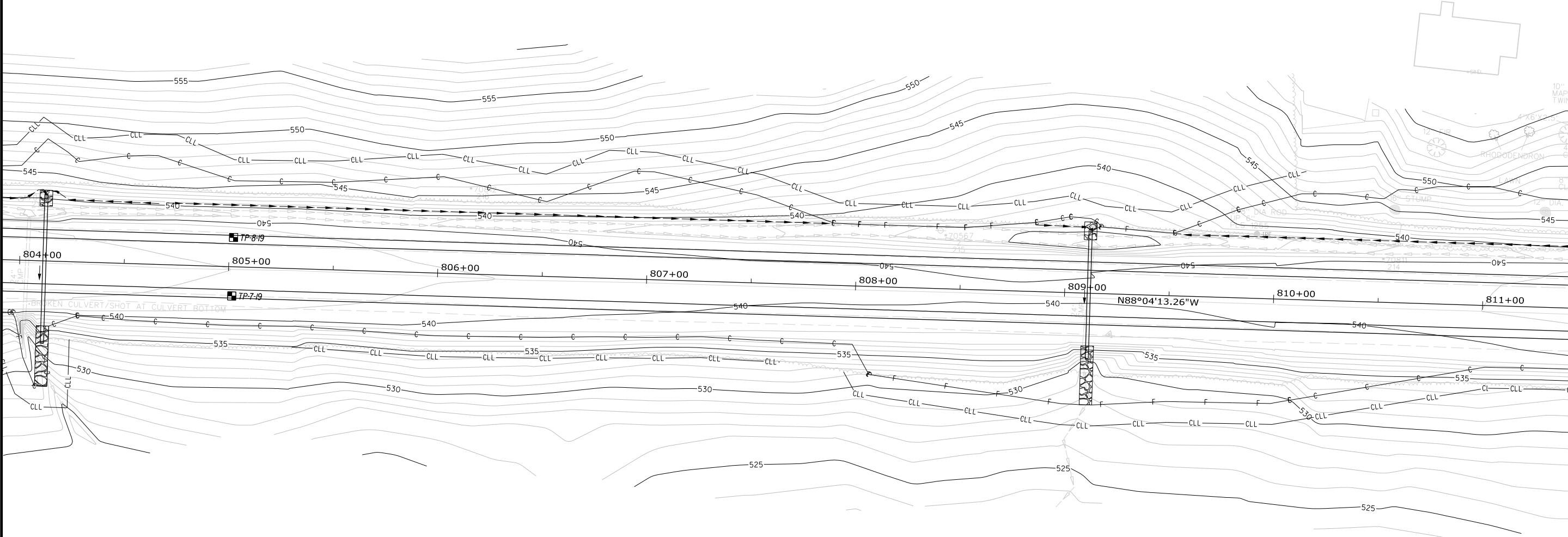
Date:7/14/2026

Username: Terry.White

Filename: ... \GEOTECH\MTA\033_Geoplan32.dgn Division: GEOTECH



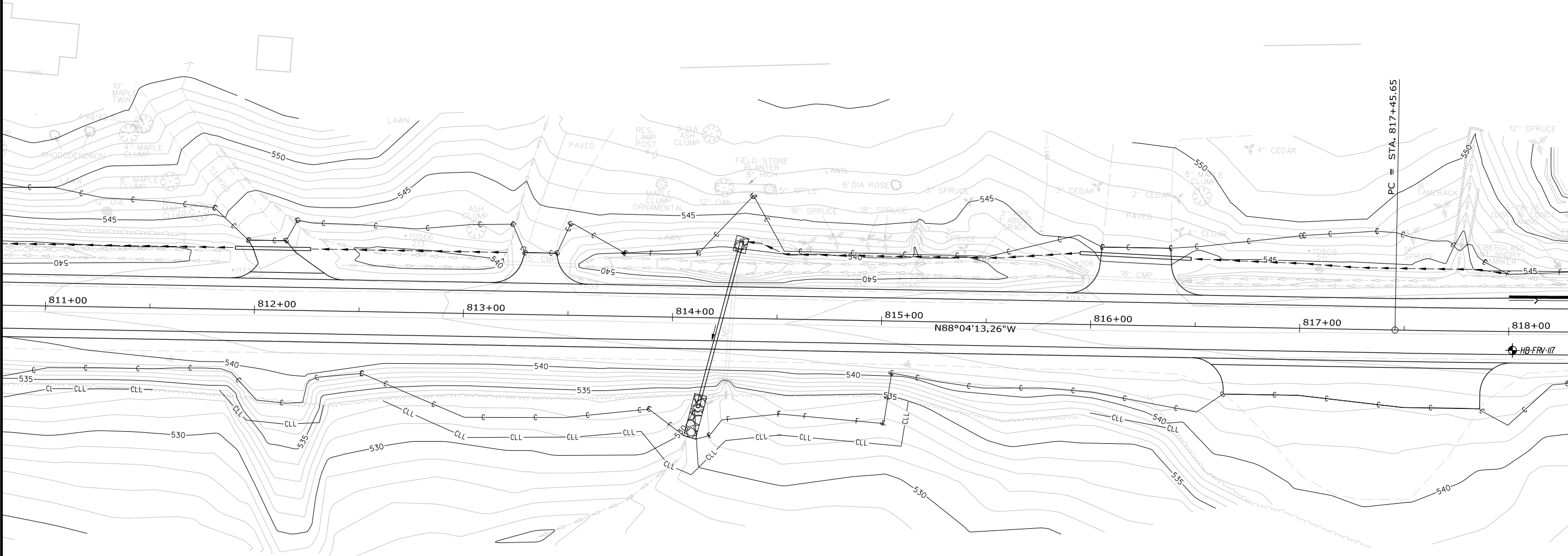
STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
STP-2265(600)		WIN	
22656.00		HIGHWAY PLANS	
FRENCHVILLE - FORT KENT US ROUTE 1		BORING LOCATION PLAN	
SHEET NUMBER		33	
OF 40		33	
PROJ. MANAGER	E. MARTIN	BY	DATE
CHECKED-DETAILED			
DESIGN-REVIEWED	Y. LEE		JUL 2026
DESIGN-DETAILED			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES		SIGNATURE	
		P.E. NUMBER	
		DATE	



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE		DATE
	STP-2265(600)		
WIN 22656.00		P.E. NUMBER	
HIGHWAY PLANS		DATE	

FRENCHVILLE - FORT KENT US ROUTE 1		PROJ. MANAGER	E. MARTIN	BY	DATE
BORING LOCATION PLAN		DESIGN-DETAILED			
		CHECKED-REVIEWED			
		DESIGN-DETAILED	YT LEE	T. WHITE	JUL 2026
		REVISIONS 1			
		REVISIONS 2			
		REVISIONS 3			
		REVISIONS 4			
		FIELD CHANGES			

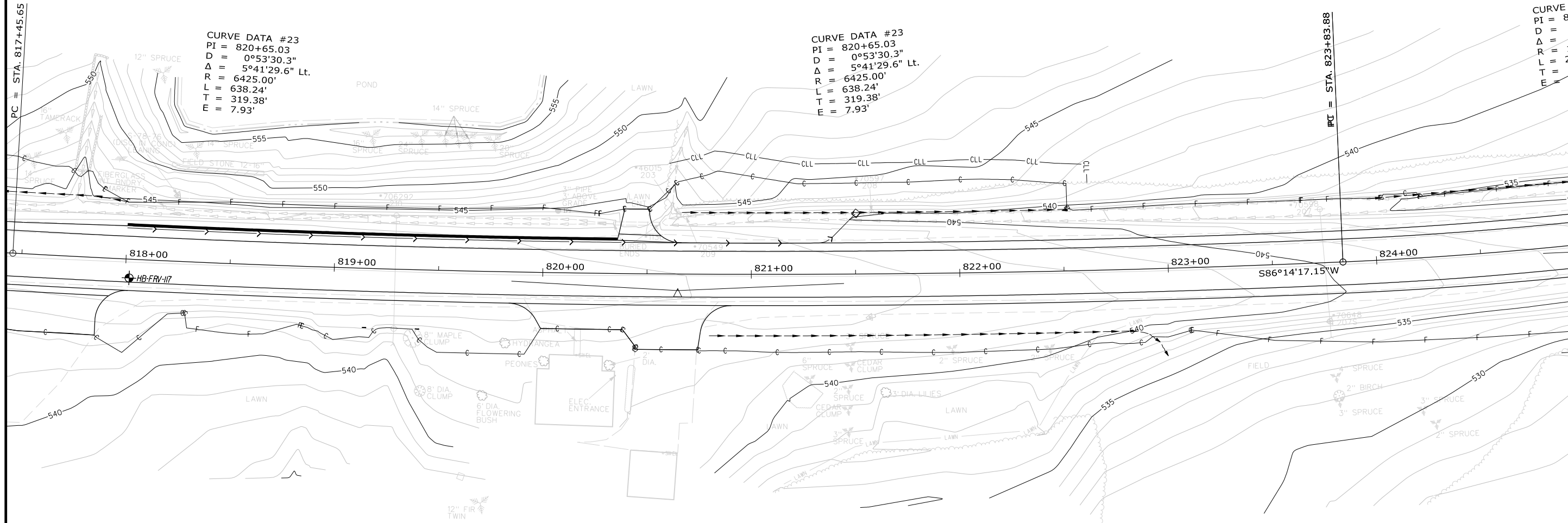
SHEET NUMBER
34
OF 40

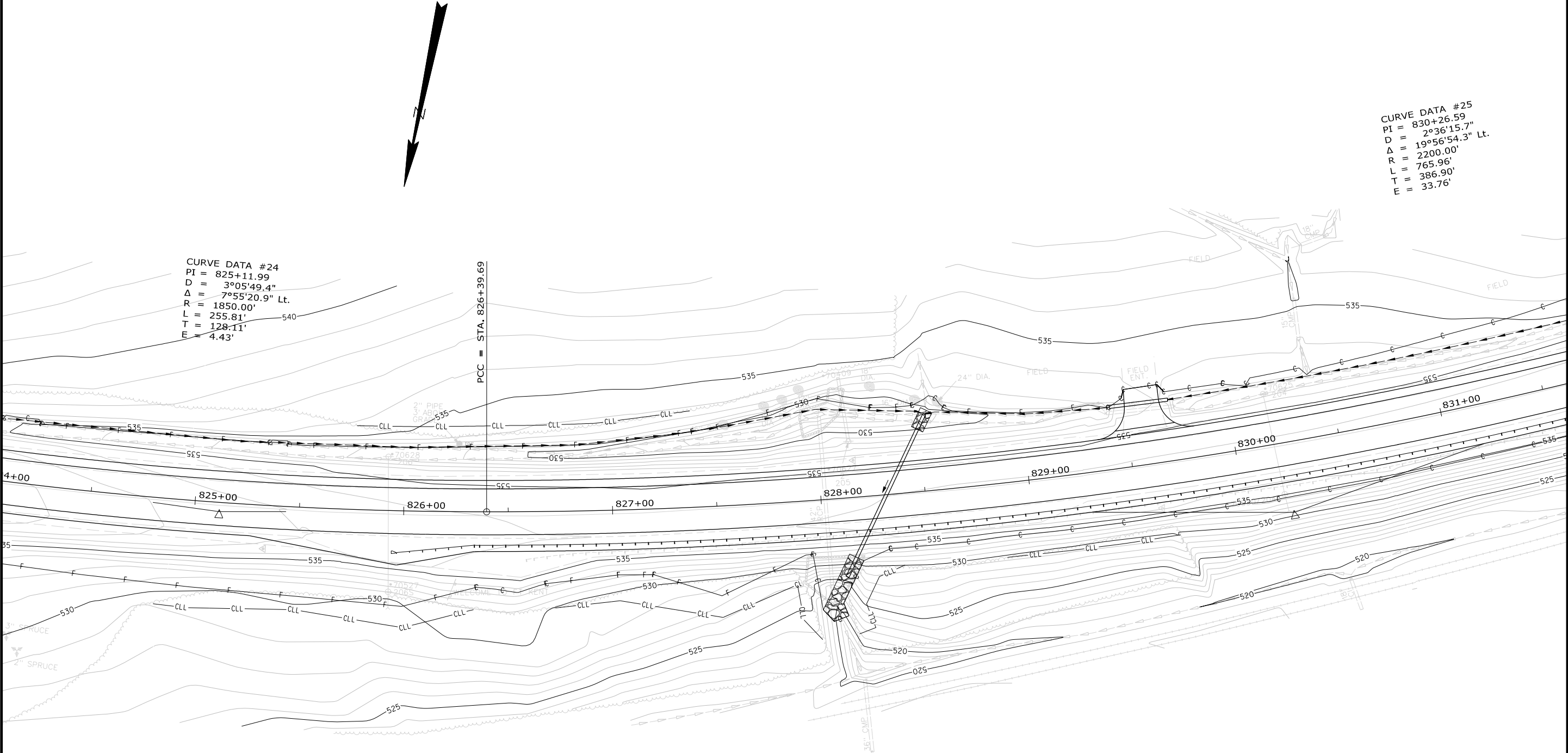


STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE		DATE
	STP-2265(600)		P.E. NUMBER
	WIN 22656.00		DATE
HIGHWAY PLANS			

FRENCHVILLE - FORT KENT US ROUTE 1	PROJ. MANAGER	E. MARTIN	BY	DATE
	DESIGN-DETAILED			
	CHECKED-REVIEWED			
	DESIGN-DETAILED	YT LEE	T. WHITE	JUL 2026
	DESIGN-DETAILED			
BORING LOCATION PLAN	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

SHEET NUMBER
35
OF 40



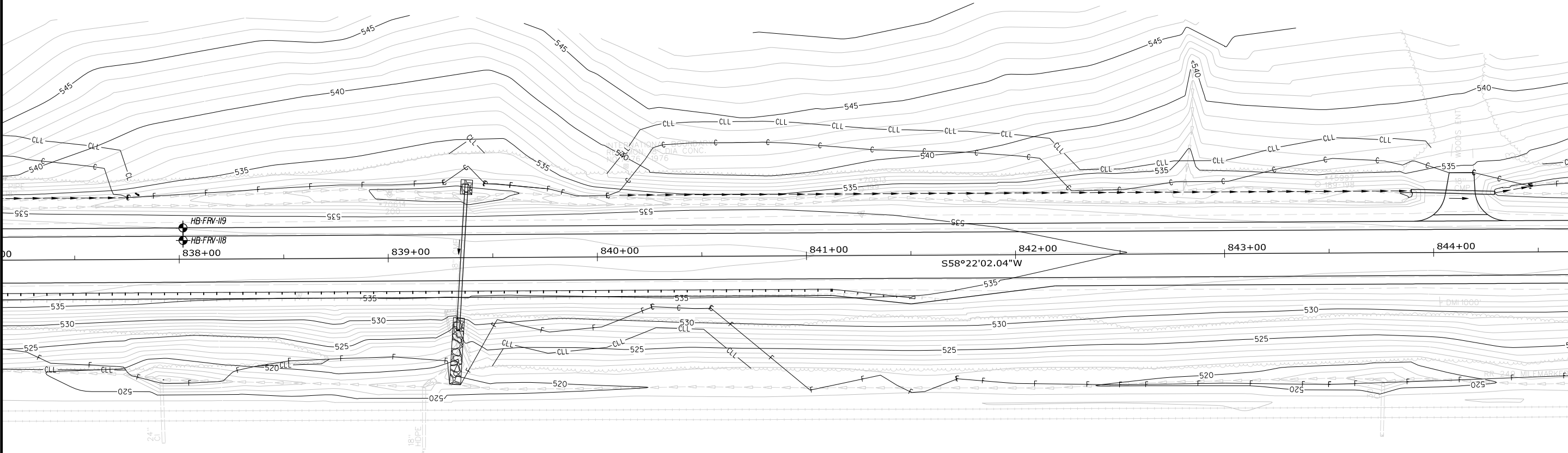


CURVE DATA #24
PI = 825+11.99
D = 3°05'49.4"
Δ = 7°55'20.9" Lt.
R = 1850.00'
L = 255.81'
T = 128.11'
E = 4.43'

PCC = STA. 826+39.69

CURVE DATA #25
PI = 830+26.59
D = 2°36'15.7"
Δ = 19°56'54.3" Lt.
R = 2200.00'
L = 765.96'
T = 386.90'
E = 33.76'

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
STP-2265(600)		WIN 22656.00	
HIGHWAY PLANS			
FRENCHVILLE - FORT KENT US ROUTE 1		SIGNATURE JUL 2026 T. WHITE	
BORING LOCATION PLAN		P.E. NUMBER DATE	
SHEET NUMBER 37		PROJ. MANAGER E. MARTIN	
OF 40		BY JUL 2026	
		CHECKED-REVIEWED DESIGN-DETAILED DESIGN-DETAILED DESIGN-DETAILED	
		REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4	
		FIELD CHANGES	



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	<table><tr><td colspan="2">SIGNATURE</td></tr><tr><td colspan="2">JUL 2026</td></tr><tr><td colspan="2">T. WHITE</td></tr><tr><td colspan="2">P.E. NUMBER</td></tr><tr><td colspan="2">DATE</td></tr></table>				SIGNATURE		JUL 2026		T. WHITE		P.E. NUMBER		DATE		SHEET NUMBER	
					SIGNATURE											
					JUL 2026											
T. WHITE																
P.E. NUMBER																
DATE																
STP-2265(600)	BORING LOCATION PLAN		39													
WIN 22656.00	HIGHWAY PLANS		OF 40													

Appendix A

Boring Logs and Probe Summary Sheet

UNIFIED SOIL CLASSIFICATION SYSTEM					MODIFIED BURMISTER SYSTEM																											
MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES																												
COARSE-GRAINED SOILS (more than half of material is larger than No. 200 sieve size)	GRAVELS (more than half of coarse fraction is larger than No. 4 sieve size)	CLEAN GRAVELS (little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.	<u>Descriptive Term</u> trace little some adjective (e.g. Sandy, Clayey)	<u>Portion of Total (%)</u> 0 - 10 11 - 20 21 - 35 36 - 50																										
			GP	Poorly-graded gravels, gravel sand mixtures, little or no fines.																												
			GRAVEL WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.	TERMS DESCRIBING DENSITY/CONSISTENCY Coarse-grained soils (more than half of material is larger than No. 200 sieve): Includes (1) clean gravels; (2) Silty or Clayey gravels; and (3) Silty, Clayey or Gravelly sands. Density is rated according to standard penetration resistance (N-value). <table><tr><th><u>Density of Cohesionless Soils</u></th><th><u>Standard Penetration Resistance</u> N₆₀-Value (blows per foot)</th></tr><tr><td>Very loose</td><td>0 - 4</td></tr><tr><td>Loose</td><td>5 - 10</td></tr><tr><td>Medium Dense</td><td>11 - 30</td></tr><tr><td>Dense</td><td>31 - 50</td></tr><tr><td>Very Dense</td><td>> 50</td></tr></table>				<u>Density of Cohesionless Soils</u>	<u>Standard Penetration Resistance</u> N ₆₀ -Value (blows per foot)	Very loose	0 - 4	Loose	5 - 10	Medium Dense	11 - 30	Dense	31 - 50	Very Dense	> 50											
	<u>Density of Cohesionless Soils</u>	<u>Standard Penetration Resistance</u> N ₆₀ -Value (blows per foot)																														
	Very loose	0 - 4																														
	Loose	5 - 10																														
Medium Dense	11 - 30																															
Dense	31 - 50																															
Very Dense	> 50																															
		GC	Clayey gravels, gravel-sand-clay mixtures.																													
SANDS (more than half of coarse fraction is smaller than No. 4 sieve size)	CLEAN SANDS (little or no fines)	SW	Well-graded sands, Gravelly sands, little or no fines	Fine-grained soils (more than half of material is smaller than No. 200 sieve): Includes (1) inorganic and organic silts and clays; (2) Gravelly, Sandy or Silty clays; and (3) Clayey silts. Consistency is rated according to undrained shear strength as indicated. <table><tr><th><u>Consistency of Cohesive soils</u></th><th><u>SPT N₆₀-Value (blows per foot)</u></th><th><u>Approximate Undrained Shear Strength (psf)</u></th><th><u>Field Guidelines</u></th></tr><tr><td>Very Soft</td><td>WOH, WOR, WOP, <2</td><td>0 - 250</td><td>Fist easily penetrates</td></tr><tr><td>Soft</td><td>2 - 4</td><td>250 - 500</td><td>Thumb easily penetrates</td></tr><tr><td>Medium Stiff</td><td>5 - 8</td><td>500 - 1000</td><td>Thumb penetrates with moderate effort</td></tr><tr><td>Stiff</td><td>9 - 15</td><td>1000 - 2000</td><td>Indented by thumb with great effort</td></tr><tr><td>Very Stiff</td><td>16 - 30</td><td>2000 - 4000</td><td>Indented by thumbnail</td></tr><tr><td>Hard</td><td>>30</td><td>over 4000</td><td>Indented by thumbnail with difficulty</td></tr></table>	<u>Consistency of Cohesive soils</u>	<u>SPT N₆₀-Value (blows per foot)</u>	<u>Approximate Undrained Shear Strength (psf)</u>	<u>Field Guidelines</u>	Very Soft	WOH, WOR, WOP, <2	0 - 250	Fist easily penetrates	Soft	2 - 4	250 - 500	Thumb easily penetrates	Medium Stiff	5 - 8	500 - 1000	Thumb penetrates with moderate effort	Stiff	9 - 15	1000 - 2000	Indented by thumb with great effort	Very Stiff	16 - 30	2000 - 4000	Indented by thumbnail	Hard	>30	over 4000	Indented by thumbnail with difficulty
	<u>Consistency of Cohesive soils</u>	<u>SPT N₆₀-Value (blows per foot)</u>	<u>Approximate Undrained Shear Strength (psf)</u>		<u>Field Guidelines</u>																											
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Very Stiff	16 - 30	2000 - 4000	Indented by thumbnail																													
Hard	>30	over 4000	Indented by thumbnail with difficulty																													
		SP	Poorly-graded sands, Gravelly sand, little or no fines.																													
	SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures																													
FINE-GRAINED SOILS (more than half of material is smaller than No. 200 sieve size)	SILTS AND CLAYS (liquid limit less than 50)		SC	Clayey sands, sand-clay mixtures.																												
			ML	Inorganic silts and very fine sands, rock flour, Silty or Clayey fine sands, or Clayey silts with slight plasticity.																												
			CL	Inorganic clays of low to medium plasticity, Gravelly clays, Sandy clays, Silty clays, lean clays.																												
		OL	Organic silts and organic Silty clays of low plasticity.																													
	SILTS AND CLAYS (liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine Sandy or Silty soils, elastic silts.																												
			CH	Inorganic clays of high plasticity, fat clays.																												
		OH	Organic clays of medium to high plasticity, organic silts.																													
	HIGHLY ORGANIC SOILS	Pt	Peat and other highly organic soils.	Rock Quality Designation (RQD): RQD (%) = $\frac{\text{sum of the lengths of intact pieces of core}^* > 4 \text{ inches}}{\text{length of core advance}}$ *Minimum NQ rock core (1.88 in. OD of core) Rock Quality Based on RQD <table><tr><th><u>Rock Quality</u></th><th><u>RQD (%)</u></th></tr><tr><td>Very Poor</td><td>≤25</td></tr><tr><td>Poor</td><td>26 - 50</td></tr><tr><td>Fair</td><td>51 - 75</td></tr><tr><td>Good</td><td>76 - 90</td></tr><tr><td>Excellent</td><td>91 - 100</td></tr></table> Desired Rock Observations (in this order, if applicable): Color (Munsell color chart) Texture (aphanitic, fine-grained, etc.) Rock Type (granite, schist, sandstone, etc.) Hardness (very hard, hard, mod. hard, etc.) Weathering (fresh, very slight, slight, moderate, mod. severe, severe, etc.) Geologic discontinuities/jointing: -dip (horiz - 0-5 deg., low angle - 5-35 deg., mod. dipping - 35-55 deg., steep - 55-85 deg., vertical - 85-90 deg.) -spacing (very close - <2 inch, close - 2-12 inch, mod. close - 1-3 feet, wide - 3-10 feet, very wide >10 feet) -tightness (tight, open, or healed) -infilling (grain size, color, etc.) Formation (Waterville, Ellsworth, Cape Elizabeth, etc.) RQD and correlation to rock quality (very poor, poor, etc.) ref: ASTM D6032 and FHWA NHI-16-072 GEC 5 - Geotechnical Site Characterization, Table 4-12 Recovery (inch/inch and percentage) Rock Core Rate (X.X ft - Y.Y ft (min:sec))				<u>Rock Quality</u>	<u>RQD (%)</u>	Very Poor	≤25	Poor	26 - 50	Fair	51 - 75	Good	76 - 90	Excellent	91 - 100													
<u>Rock Quality</u>	<u>RQD (%)</u>																															
Very Poor	≤25																															
Poor	26 - 50																															
Fair	51 - 75																															
Good	76 - 90																															
Excellent	91 - 100																															
Desired Soil Observations (in this order, if applicable): Color (Munsell color chart) Moisture (dry, damp, moist, wet) Density/Consistency (from above right hand side) Texture (fine, medium, coarse, etc.) Name (Sand, Silty Sand, Clay, etc., including portions - trace, little, etc.) Gradation (well-graded, poorly-graded, uniform, etc.) Plasticity (non-plastic, slightly plastic, moderately plastic, highly plastic) Structure (layering, fractures, cracks, etc.) Bonding (well, moderately, loosely, etc.,) Cementation (weak, moderate, or strong) Geologic Origin (till, marine clay, alluvium, etc.) Groundwater level					Sample Container Labeling Requirements: WIN Bridge Name / Town Boring Number Sample Number Sample Depth Blow Counts Sample Recovery Date Personnel Initials																											
Maine Department of Transportation Geotechnical Section Key to Soil and Rock Descriptions and Terms Field Identification Information																																

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine		Boring No.: HB-FRV-101 WIN: 22656.00			
Drilling Contractor: MaineDOT				Elevation (ft.): 515.1		Auger ID/OD: 10" Dia.			
Operator: Daggett				Datum: NAVD88		Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C		Hammer Wt./Fall: N/A			
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger		Core Barrel: N/A			
Boring Location: 618+00, 13.0 ft Rt.				Casing ID/OD: N/A		Water Level*: None Observed			
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test									
Depth (ft.)	Sample Information							Laboratory Testing Results/ AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)		Graphic Log
0	B1		0.00 - 1.60			SSA	513.5		Brown, moist, fine to coarse SAND, some gravel, little silt, (Fill). 1.6
	S1		1.60 - 4.50				510.6		Brown, wet, fine to coarse SAND, some silt, some gravel. 4.5
5									Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL
10									
15									
20									
25									

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.

Page 1 of 1

Boring No.: HB-FRV-101

Maine Department of Transportation Soil/Rock Exploration Log <u>US CUSTOMARY UNITS</u>								Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine		Boring No.: HB-FRV-102 WIN: 22656.00	
Drilling Contractor: MaineDOT							Elevation (ft.) : 515.5		Auger ID/OD: 10" Dia.		
Operator: Daggett							Datum: NAVD88		Sampler: Off Flights		
Logged By: B. Wilder							Rig Type: CME 45C		Hammer Wt./Fall: N/A		
Date Start/Finish: 10/28/2015-10/28/2015							Drilling Method: Solid Stem Auger		Core Barrel: N/A		
Boring Location: 618+00, 8.5 ft Rt.							Casing ID/OD: N/A		Water Level*: None Observed		
Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer							MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing		WOP = Weight of 1 Person Su = Peak/Remolded Field Vane Undrained Shear Strength (psf) Su(lab) = Lab Vane Undrained Shear Strength (psf) qp = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value Tv = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ Similar or Equal too		
									LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test		
Sample Information									Visual Description and Remarks		Laboratory Testing Results/ AASHTO and Unified Class.
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log			
0	B2		0.50 - 2.40			SSA	515.0	[Cross-hatched pattern]	6" PAVEMENT	-0.5'	G#302068 A-1-b, SM WC=1.3%
									Brown, damp, fine to coarse SAND, some gravel, little silt, (Fill).		
	S2		2.40 - 4.50				513.1	[Stippled pattern]	Light grey, wet, fine to coarse SAND, some silt, little gravel.	-2.4'	G#302069 A-2-4, SM WC=15.4%
							511.0	[Solid black box]	Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL	-4.5'	
5											
20											
25											

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.

Page 1 of 1

Boring No.: HB-FRV-102

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-103 WIN: 22656.00																																																																																								
Drilling Contractor: MaineDOT				Elevation (ft.): 521.9				Auger ID/OD: 10" Dia.																																																																																								
Operator: Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																								
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A																																																																																								
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																								
Boring Location: 638+00, 8.0 ft Lt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																								
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test																																																																																																
<table><thead><tr><th rowspan="2">Depth (ft.)</th><th colspan="8">Sample Information</th><th rowspan="2">Visual Description and Remarks</th><th rowspan="2">Laboratory Testing Results/ AASHTO and Unified Class.</th></tr><tr><th>Sample No.</th><th>Pen./Rec. (in.)</th><th>Sample Depth (ft.)</th><th>Blows (6 in.) Shear Strength (psf) or RQD (%)</th><th>N-value</th><th>Casing Blows</th><th>Elevation (ft.)</th><th>Graphic Log</th></tr></thead><tbody><tr><td>0</td><td>B3</td><td></td><td>0.54 - 4.50</td><td></td><td></td><td>SSA</td><td>521.4</td><td></td><td>6½" PAVEMENT Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).</td><td>G#302061 A-1-a, SW-SM WC=2.9%</td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td>517.4</td><td></td><td>Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL</td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>15</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>20</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>												Depth (ft.)	Sample Information								Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	0	B3		0.54 - 4.50			SSA	521.4		6½" PAVEMENT Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).	G#302061 A-1-a, SW-SM WC=2.9%	5							517.4		Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL		10											15											20											25										
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* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.										Boring No.: HB-FRV-103																																																																																						

[illegible]

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine		Boring No.: HB-FRV-105 WIN: 22656.00				
Drilling Contractor: MaineDOT				Elevation (ft.): 495.2		Auger ID/OD: 10" Dia.				
Operator: Daggett				Datum: NAVD88		Sampler: Off Flights				
Logged By: B. Wilder				Rig Type: CME 45C		Hammer Wt./Fall: N/A				
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger		Core Barrel: N/A				
Boring Location: 658+00, 15.0 ft Rt.				Casing ID/OD: N/A		Water Level*: None Observed				
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test										
Depth (ft.)	Sample Information							Laboratory Testing Results/ AASHTO and Unified Class.		
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)		Graphic Log	
0	B5		0.13 - 4.50			SSA	495.1		1½" PAVEMENT Brown, damp, fine to coarse Sandy GRAVEL, trace silt, (Fill).	G#302057 A-1-a, GW-GM WC=1.4%
5							490.7			
10										
15										
20										
25										
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.									Page 1 of 1 Boring No.: HB-FRV-105	

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-106 WIN: 22656.00																																																																																																												
Drilling Contractor: MaineDOT				Elevation (ft.): 495.7				Auger ID/OD: 10" Dia.																																																																																																												
Operator: Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																																												
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A																																																																																																												
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																												
Boring Location: 678+00, 8.5 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																												
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Maine Department of Transportation Soil/Rock Exploration Log <u>US CUSTOMARY UNITS</u>							Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine						Boring No.: HB-FRV-107 WIN: 22656.00																																																																																																																																																																																																																																																							
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS						Project: Route 1 Reconstruction			Boring No.: HB-FRV-109																										
						Location: Frenchville - Fort Kent, Maine			WIN: 22656.00																										
Drilling Contractor: MaineDOT						Elevation (ft.): 506.2			Auger ID/OD: 10" Dia.																										
Operator: Daggett						Datum: NAVD88			Sampler: Off Flights																										
Logged By: B. Wilder						Rig Type: CME 45C			Hammer Wt./Fall: N/A																										
Date Start/Finish: 10/28/2015-10/28/2015						Drilling Method: Solid Stem Auger			Core Barrel: N/A																										
Boring Location: 718+00, 9.0 ft Lt.						Casing ID/OD: N/A			Water Level*: None Observed																										
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer									MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing									WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ Similar or Equal too									LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test								
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-110 WIN: 22656.00		
Drilling Contractor: MaineDOT				Elevation (ft.): 505.8				Auger ID/OD: 10" Dia.		
Operator: Daggett				Datum: NAVD88				Sampler: Off Flights		
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A		
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger				Core Barrel: N/A		
Boring Location: 718+00, 14.0 ft Lt.				Casing ID/OD: N/A				Water Level*: None Observed		
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-111 WIN: 22656.00																																																																																																																																																																																								
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine		Boring No.: HB-FRV-112 WIN: 22656.00			
Drilling Contractor: MaineDOT				Elevation (ft.): 514.7		Auger ID/OD: 10" Dia.			
Operator: Daggett				Datum: NAVD88		Sampler: Off Flights			
Logged By: B. Wilder				Rig Type: CME 45C		Hammer Wt./Fall: N/A			
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger		Core Barrel: N/A			
Boring Location: 758+00, 8.5 ft Lt.				Casing ID/OD: N/A		Water Level*: None Observed			
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test									
Depth (ft.)	Sample Information							Laboratory Testing Results/ AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)		
0	B11		0.75 - 4.50			SSA	514.0	9" PAVEMENT Brown, damp, fine to coarse SAND, some gravel, little silt, (Fill).	0.8
5						↓	510.2	Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL	4.5
10									
15									
20									
25									
Remarks:									
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.								Page 1 of 1 Boring No.: HB-FRV-112	

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

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-113 WIN: 22656.00		
Drilling Contractor: MaineDOT				Elevation (ft.): 514.5				Auger ID/OD: 10" Dia.		
Operator: Daggett				Datum: NAVD88				Sampler: Off Flights		
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A		
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger				Core Barrel: N/A		
Boring Location: 758+00, 14.0 ft Lt. Shoulder				Casing ID/OD: N/A				Water Level*: None Observed		
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test										
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	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log		
0	B12		0.00 - 4.50			SSA			Brown, damp, Gravelly fine to coarse SAND, little silt, (Fill).	G#302060 A-1-a, SW-SM WC=1.1%
5							510.0		Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL	
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15										
20										
25										
Remarks:										
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.									Page 1 of 1	
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-114 WIN: 22656.00																																																																																																								
Drilling Contractor: MaineDOT				Elevation (ft.): 529.6				Auger ID/OD: 10" Dia.																																																																																																								
Operator: Daggett				Datum: NAVD88				Sampler: Off Flights																																																																																																								
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A																																																																																																								
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																								
Boring Location: 778+00, 9.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																								
Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_u(lab) = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test																																																																																																																
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Maine Department of Transportation								Project: Route 1 Reconstruction		Boring No.: HB-FRV-115		
Soil/Rock Exploration Log US CUSTOMARY UNITS								Location: Frenchville - Fort Kent, Maine		WIN: 22656.00		
Drilling Contractor: MaineDOT							Elevation (ft.): 546.5		Auger ID/OD: 10" Dia.			
Operator: Daggett							Datum: NAVD88		Sampler: Off Flights			
Logged By: B. Wilder							Rig Type: CME 45C		Hammer Wt./Fall: N/A			
Date Start/Finish: 10/28/2015-10/28/2015							Drilling Method: Solid Stem Auger		Core Barrel: N/A			
Boring Location: 798+00, 8.5 ft Lt.							Casing ID/OD: N/A		Water Level*: None Observed			
Definitions: D = Spilt Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent = = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Sample Information										Visual Description and Remarks		Laboratory Testing Results/ AASHTO and Unified Class.
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log				
0	B14		0.75 - 3.30			SSA	545.8		9" PAVEMENT			
									Brown, moist, fine to coarse SAND, some gravel, little silt, (Fill).	0.8 G#302056 A-1-b, SW-SM WC=1.6%		
	S6		3.30 - 4.50				543.2		Grey, wet, fine to coarse SAND, some silt, some gravel.	3.3 G#302071 A-2-4, SM WC=20.0%		
							542.0		Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL	4.5		
5												
20												
25												
Remarks:												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.												
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.												

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine		Boring No.: HB-FRV-116 WIN: 22656.00				
Drilling Contractor: MaineDOT				Elevation (ft.): 546.1		Auger ID/OD: 10" Dia.				
Operator: Daggett				Datum: NAVD88		Sampler: Off Flights				
Logged By: B. Wilder				Rig Type: CME 45C		Hammer Wt./Fall: N/A				
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger		Core Barrel: N/A				
Boring Location: 798+00, 14.0 ft Lt.				Casing ID/OD: N/A		Water Level*: None Observed				
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test										
Depth (ft.)	Sample Information							Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)			Graphic Log
0	B15		0.00 - 2.80						Brown, moist, fine to coarse SAND, some gravel, little silt, (Fill).	G#302058 A-1-b, SM WC=1.2%
							543.3		Grey, wet, fine to coarse SAND, some silt, some gravel.	
							541.6		Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL	
5										
10										
15										
20										
25										
Remarks:										
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.									Page 1 of 1 Boring No.: HB-FRV-116	
* 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.										

[illegible]

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine		Boring No.: HB-FRV-118 WIN: 22656.00		
Drilling Contractor: MaineDOT			Elevation (ft.): 536.3		Auger ID/OD: 10" Dia.			
Operator: Daggett			Datum: NAVD88		Sampler: Off Flights			
Logged By: B. Wilder			Rig Type: CME 45C		Hammer Wt./Fall: N/A			
Date Start/Finish: 10/28/2015-10/28/2015			Drilling Method: Solid Stem Auger		Core Barrel: N/A			
Boring Location: 838+00, 9.0 ft Lt.			Casing ID/OD: N/A		Water Level*: None Observed			
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test								
Depth (ft.)	Sample Information							
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log
0	B17		0.63 - 4.50			SSA	535.7	
5							531.8	
10								
15								
20								
25								
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.

Page 1 of 1

Boring No.: HB-FRV-118

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine		Boring No.: HB-FRV-119 WIN: 22656.00				
Drilling Contractor: MaineDOT				Elevation (ft.): 535.9		Auger ID/OD: 10" Dia.				
Operator: Daggett				Datum: NAVD88		Sampler: Off Flights				
Logged By: B. Wilder				Rig Type: CME 45C		Hammer Wt./Fall: N/A				
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger		Core Barrel: N/A				
Boring Location: 838+00, 15.0 ft Lt. Shoulder				Casing ID/OD: N/A		Water Level*: None Observed				
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of 1 Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test										
Depth (ft.)	Sample Information								Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log		
0						SSA			Brown, damp, fine to coarse SAND, some gravel, little silt, (Fill).	
5						↓	531.4		Bottom of Exploration at 4.5 feet below ground surface. NO REFUSAL	4.5
10										
15										
20										
25										
Remarks:										
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1 Boring No.: HB-FRV-119

* 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 <u>Soil/Rock Exploration Log</u> <u>US CUSTOMARY UNITS</u>				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-120 WIN: 22656.00							
Drilling Contractor: MaineDOT				Elevation (ft.): 533.7				Auger ID/OD: 10" Dia.							
Operator: Daggett				Datum: NAVD88				Sampler: Off Flights							
Logged By: B. Wilder				Rig Type: CME 45C				Hammer Wt./Fall: N/A							
Date Start/Finish: 10/28/2015-10/28/2015				Drilling Method: Solid Stem Auger				Core Barrel: N/A							
Boring Location: 848+00, 9.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed							
Definitions: D = Split Spoon Sample S = Sample off Auger Flights B = Bucket Sample off Auger Flights MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MV = Unsuccessful Field Vane Shear Test Attempt V = Field Vane Shear Test, PP= Pocket Penetrometer				MU = Unsuccessful Thin Wall Tube Sample Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing				WO1P = Weight of 1 Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too							
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Sample Information										Visual Description and Remarks				Laboratory Testing Results/ AASHTO and Unified Class.	
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log							
0	B18		0.58 - 4.50			SSA	533.1		7" PAVEMENT	0.6	G#302064 A-1-a, SM WC=1.2%				

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-201 WIN: 22656.00																																																																																																																																
Driller: MaineDOT				Elevation (ft.): 520.5				Auger ID/OD: 5" Dia.																																																																																																																																
Operator: Daggett/Archer				Datum: NAVD88				Sampler: Standard Split Spoon																																																																																																																																
Logged By: C. Russell				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"																																																																																																																																
Date Start/Finish: 11/14/2017; 08:35-09:15				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																																																
Boring Location: 611+00, 13.5 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed																																																																																																																																
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-202 WIN: 22656.00		
Driller: MaineDOT			Elevation (ft.): 520.1			Auger ID/OD: 5" Dia.				
Operator: Daggett/Archer			Datum: NAVD88			Sampler: Standard Split Spoon				
Logged By: C. Russell			Rig Type: CME 45C			Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 11/14/2017; 09:20-09:40			Drilling Method: Solid Stem Auger			Core Barrel: N/A				
Boring Location: 611+78, 13.5 ft Rt.			Casing ID/OD: N/A			Water Level*: None Observed				
Hammer Efficiency Factor: 0.854			Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐							
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test										
Depth (ft.)	Sample Information								Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)		
0	1D	24/18	0.00 - 2.00	26/21/12/7	33	47	SSA	508.1	Brown, damp, dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#300784 A-1-b, SM WC=4.7%
5	2D	24/12	5.00 - 7.00	6/6/7/5	13	19			Brown, damp, medium dense, fine to coarse SAND, little gravel, little silt, (Fill).	G#300785 A-1-b, SM WC=5.2%
10	3D	24/20	10.00 - 12.00	10/11/12/15	23	33			Brown, damp, dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#300786 A-1-b, SM WC=5.0%
12.0	Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL									
15										
20										
25										
Remarks:										
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1 Boring No.: HB-FRV-202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-203 WIN: 22656.00				
Driller: MaineDOT			Elevation (ft.): 516.8			Auger ID/OD: 5" Dia.						
Operator: Daggett/Archer			Datum: NAVD88			Sampler: Standard Split Spoon						
Logged By: C. Russell			Rig Type: CME 45C			Hammer Wt./Fall: 140#/30"						
Date Start/Finish: 11/14/2017; 09:45-10:15			Drilling Method: Solid Stem Auger			Core Barrel: N/A						
Boring Location: 629+00, 13.5 ft Rt.			Casing ID/OD: N/A			Water Level*: None Observed						
Hammer Efficiency Factor: 0.854			Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐									
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/20	0.00 - 2.00	31/29/15/14	44	63	SSA				Brown, damp, very dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#300787 A-1-b, SM WC=4.5%
5	2D	24/20	5.00 - 7.00	4/9/10/12	19	27					Brown, moist, medium dense, fine to coarse SAND, some gravel, some silt, (Fill).	G#300788 A-1-b, SM WC=7.9%
10	3D	24/10	10.00 - 12.00	2/2/2/2	4	6					Brown, moist, loose, fine to coarse SAND, some gravel, little silt, trace clay, (Glacial Till).	G#300789 A-1-b, SC-SM WC=9.5%
15											Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL	
16												
17												
18												
19												
20												
21												
22												
25												
Remarks:												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.											Page 1 of 1 Boring No.: HB-FRV-203	
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.												

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-204 WIN: 22656.00				
Driller: MaineDOT				Elevation (ft.): 518.0				Auger ID/OD: 5" Dia.				
Operator: Daggett/Archer				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: C. Russell				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 11/14/2017; 10:20-10:35				Drilling Method: Solid Stem Auger				Core Barrel: N/A				
Boring Location: 629+75.5, 14.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed				
Hammer Efficiency Factor: 0.854				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/15	0.00 - 2.00	31/24/12/9	36	51	SSA				Brown, damp, very dense, fine to coarse SAND, some gravel, little silt, (Fill). G#300790 A-1-b, SM WC=4.6%	
5	2D	24/24	5.00 - 7.00	7/13/14/19	27	38					Brown, damp, dense, fine to coarse SAND, some gravel, little silt, (Fill). G#300791 A-1-b, SM WC=6.4%	
10	3D	24/24	10.00 - 12.00	7/9/8/17	17	24			508.0		Brown, moist, very stiff, SILT, some fine to coarse sand, some gravel, little clay, (Glacial Till). Weathered Rock in tip of spoon.	G#300792 A-4, CL WC=10.3%
								506.0				
										Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL		
15												
20												
25												
Remarks:												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1		
* 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-FRV-204		

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-205 WIN: 22656.00				
Driller: MaineDOT				Elevation (ft.): 519.1				Auger ID/OD: 5" Dia.				
Operator: Daggett/Archer				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: C. Russell				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 11/14/2017; 10:40-11:00				Drilling Method: Solid Stem Auger				Core Barrel: N/A				
Boring Location: 630+48, 13.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed				
Hammer Efficiency Factor: 0.854				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/20	0.00 - 2.00	26/24/13/11	37	53	SSA			Brown, damp, very dense, fine to coarse SAND, some gravel, little silt, (Fill). Cobbles from 2.0-2.5 ft bgs.	G#300793 A-1-b, SM WC=3.8%	
5	2D	24/20	5.00 - 7.00	21/25/28/27	53	75				Brown, damp, very dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#300794 A-1-b, SM WC=5.3%	
10	3D	24/24	10.00 - 12.00	14/12/10/12	22	31				Brown, moist, dense, fine to coarse SAND, some silt, some gravel, (Glacial Till).	G#300795 A-2-4, SM WC=8.5%	
										Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL		
25												
Remarks:												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1		
* 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-FRV-205		

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-206 WIN: 22656.00					
Driller: MaineDOT				Elevation (ft.): 519.6				Auger ID/OD: 5" Dia.					
Operator: Daggett/Archer				Datum: NAVD88				Sampler: Standard Split Spoon					
Logged By: C. Russell				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"					
Date Start/Finish: 11/14/2017; 11:05-11:30				Drilling Method: Solid Stem Auger				Core Barrel: N/A					
Boring Location: 631+31, 13.5 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed					
Hammer Efficiency Factor: 0.854				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐									
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test													
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows					
0	1D	24/20	0.00 - 2.00	22/17/9/7	26	37	SSA		514.6		Brown, damp, dense, fine to coarse SAND, little gravel, little silt, (Fill). G#300796 A-1-b, SM WC=5.0%		
5	2D	24/18	5.00 - 7.00	12/8/14/17	22	31			5.0				Grey and brown, damp, dense, fine to coarse SAND, some silt, some gravel, trace clay, (Glacial Till). G#300797 A-1-b, SC-SM WC=7.0%
10	3D	24/22	10.00 - 12.00	21/19/23/24	42	60			507.6				
12.0										Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL			
15													
20													
25													
Remarks:													
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1			
* 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-FRV-206			

Maine Department of Transportation <u>Soil/Rock Exploration Log</u> <u>US CUSTOMARY UNITS</u>				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-207 WIN: 22656.00																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Date Start/Finish: 11/14/2017; 12:35-13:05				Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Shear Strength (psf) or RQD (%)</th><th>N-uncorrected</th><th>N₆₀</th><th>Casing Blows</th><th>Elevation (ft.)</th></tr><tr><td>0</td><td>1D</td><td>24/18</td><td>0.00 - 2.00</td><td>36/38/23/18</td><td>61</td><td>87</td><td>SSA</td><td></td><td rowspan="3">514.0</td><td rowspan="3"></td><td rowspan="3">Brown, damp, very dense, fine to coarse SAND, some gravel, little silt, (Fill).</td><td rowspan="3">G#300799 A-1-b, SM WC=5.6%</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td>2D</td><td>24/20</td><td>5.00 - 7.00</td><td>8/8/9/10</td><td>17</td><td>24</td><td></td><td></td><td rowspan="3">512.0</td><td rowspan="3"></td><td rowspan="3">Brown, damp, medium dense, fine to coarse SAND, some silt, little gravel, (Fill).</td><td rowspan="3">G#300800 A-2-4, SM WC=7.8%</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td>3D</td><td>24/24</td><td>10.00 - 12.00</td><td>18/14/22/27</td><td>36</td><td>51</td><td></td><td></td><td rowspan="3">512.0</td><td rowspan="3"></td><td rowspan="3">Brown, damp, very dense, fine to coarse SAND, some silt, little gravel, trace clay, (Glacial Till). Cobbles from 10.8-11.0 ft bgs.</td><td rowspan="3">G#303001 A-2-4, SC-SM WC=5.3%</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td rowspan="3">Bottom of Exploration at 12.0 feet below ground surface. 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Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)	0	1D	24/18	0.00 - 2.00	36/38/23/18	61	87	SSA		514.0		Brown, damp, very dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#300799 A-1-b, SM WC=5.6%																			5	2D	24/20	5.00 - 7.00	8/8/9/10	17	24			512.0		Brown, damp, medium dense, fine to coarse SAND, some silt, little gravel, (Fill).	G#300800 A-2-4, SM WC=7.8%																			10	3D	24/24	10.00 - 12.00	18/14/22/27	36	51			512.0		Brown, damp, very dense, fine to coarse SAND, some silt, little gravel, trace clay, (Glacial Till). Cobbles from 10.8-11.0 ft bgs.	G#303001 A-2-4, SC-SM WC=5.3%																														Bottom of Exploration at 12.0 feet below ground surface. 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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-208 WIN: 22656.00					
Driller: MaineDOT				Elevation (ft.): 522.3				Auger ID/OD: 5" Dia.					
Operator: Daggett/Archer				Datum: NAVD88				Sampler: Standard Split Spoon					
Logged By: C. Russell				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"					
Date Start/Finish: 11/14/2017; 13:00-13:20				Drilling Method: Solid Stem Auger				Core Barrel: N/A					
Boring Location: 641+85.5, 14.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed					
Hammer Efficiency Factor: 0.854				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐									
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N _{uncorrected} = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N _{uncorrected} T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test													
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.	
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows					
0	1D	24/17	0.00 - 2.00	23/19/8/9	17	24	SSA		517.3		Brown, damp, medium dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#303002 A-1-b, SM WC=5.5%	
5	2D	24/20	5.00 - 7.00	3/3/4/4	7	10			517.3			Brown, damp, loose, fine to coarse SAND, some gravel, little silt, trace clay, (Glacial Till).	G#303003 A-1-b, SC-SM WC=11.0%
10	3D	24/20	10.00 - 12.00	12/19/25/19	44	63			510.3				Brown, moist, very dense, fine to coarse SAND, some silt, little gravel, trace clay, (Glacial Till). Cobbles from 10.3-10.8 ft bgs.
15													Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL
20													
25													
Remarks:													
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1			
* 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-FRV-208			

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-209 WIN: 22656.00				
Driller: MaineDOT			Elevation (ft.): 520.5			Auger ID/OD: 5" Dia.						
Operator: Daggett/Archer			Datum: NAVD88			Sampler: Standard Split Spoon						
Logged By: C. Russell			Rig Type: CME 45C			Hammer Wt./Fall: 140#/30"						
Date Start/Finish: 11/14/2017; 13:25-14:00			Drilling Method: Solid Stem Auger			Core Barrel: N/A						
Boring Location: 642+71, 14.0 ft Rt.			Casing ID/OD: N/A			Water Level*: None Observed						
Hammer Efficiency Factor: 0.854			Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐									
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/18	0.00 - 2.00	25/27/9/7	36	51	SSA	515.5		Brown, damp, very dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#303005 A-1-b, SM WC=4.7%	
5	2D	24/8	5.00 - 7.00	2/2/4/10	6	9		508.5		Reddish-brown, damp, loose, fine to coarse SAND, some silt, little gravel, trace clay, (Glacial Till).	G#303006 A-4, SC-SM WC=21.3%	
10	3D	24/24	10.00 - 12.00	11/12/10/11	22	31		508.5		Brown, damp, dense, fine to coarse SAND, some gravel, little silt, trace clay, (Glacial Till). Cobbles from 10.5-10.6 ft bgs. Cobbles from 11.0-11.3 ft bgs.	G#303007 A-1-b, SC-SM WC=7.0%	
15								508.5		Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL		
20								508.5				
25								508.5				

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.

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Boring No.: HB-FRV-209

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-210 WIN: 22656.00				
Driller: MaineDOT				Elevation (ft.): 517.4				Auger ID/OD: 5" Dia.				
Operator: Daggett/Archer				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: C. Russell				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 11/15/2017; 13:40-14:00				Drilling Method: Solid Stem Auger				Core Barrel: N/A				
Boring Location: 747+50, 13.7 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed				
Hammer Efficiency Factor: 0.854				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/24	0.00 - 2.00	21/13/11/17	24	34	SSA				Brown, damp, dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#303008 A-1-b, SM WC=5.5%
5	2D	24/24	5.00 - 7.00	8/8/7/9	15	21					Brown, damp, medium dense, fine to coarse SAND, some gravel, trace silt, (Fill).	G#303009 A-1-a, SW-SM WC=3.2%
10	3D	24/24	10.00 - 12.00	6/8/9/9	17	24					Brown, moist, very stiff, SILT, some fine to coarse sand, trace clay, trace gravel, (Glacial Till).	G#303010 A-4, CL WC=13.8%
12.0	Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL											
25												
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.											Page 1 of 1 Boring No.: HB-FRV-210	

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-211 WIN: 22656.00				
Driller: MaineDOT				Elevation (ft.): 515.2				Auger ID/OD: 5" Dia.				
Operator: Daggett/Archer				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: C. Russell				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 11/15/2017; 14:00-14:20				Drilling Method: Solid Stem Auger				Core Barrel: N/A				
Boring Location: 748+64, 14.0 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed				
Hammer Efficiency Factor: 0.854				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/24	0.00 - 2.00	23/20/10/10	30	43	SSA		515.2		G#303011 A-1-b, SM WC=7.0%	
5	2D	24/12	5.00 - 7.00	2/2/2/3	4	6			510.2		G#303012 A-1-b, SC-SM WC=4.5%	
10	3D	24/20	10.00 - 12.00	1/2/2/3	4	6			505.2		G#303013 A-4, CL-ML WC=9.9%	
									503.2	Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL		
15												
20												
25												
Remarks:												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 1		
* 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-FRV-211		

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-212 WIN: 22656.00				
Driller: MaineDOT			Elevation (ft.): 513.1			Auger ID/OD: 5" Dia.						
Operator: Daggett/Archer			Datum: NAVD88			Sampler: Standard Split Spoon						
Logged By: C. Russell			Rig Type: CME 45C			Hammer Wt./Fall: 140#/30"						
Date Start/Finish: 11/15/2017; 14:20-14:35			Drilling Method: Solid Stem Auger			Core Barrel: N/A						
Boring Location: 749+50, 14.5 ft Rt.			Casing ID/OD: N/A			Water Level*: None Observed						
Hammer Efficiency Factor: 0.854			Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐									
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/24	0.00 - 2.00	19/15/8/8	23	33	SSA		508.1		Brown, damp, dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#303014 A-1-b, SM WC=5.7%
5	2D	24/6	5.00 - 7.00	3/3/2/2	5	7			508.1		Brown, moist, loose, fine to coarse SAND, some gravel, little silt, trace clay, (Glacial Till).	G#303015 A-1-b, SC-SM WC=6.6%
10	3D		10.00 - 12.00	4/3/3/4	6	9			503.1		Brown, moist, loose, Gravelly fine to coarse SAND, little silt, trace clay, (Glacial Till).	G#303016 A-1-b, SC-SM WC=8.0%
									501.1	Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL		
15												
20												
25												
Remarks:												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.												
* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.												

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-213 WIN: 22656.00				
Driller: MaineDOT				Elevation (ft.): 510.9				Auger ID/OD: 5" Dia.				
Operator: Daggett/Archer				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: C. Russell				Rig Type: CME 45C				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 11/15/2017; 14:35-15:00				Drilling Method: Solid Stem Auger				Core Barrel: N/A				
Boring Location: 750+50, 13.5 ft Rt.				Casing ID/OD: N/A				Water Level*: None Observed				
Hammer Efficiency Factor: 0.854				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing	Blows				
0	1D	24/18	0.00 - 2.00	28/20/14/9	34	48	SSA				Brown, damp, dense, fine to coarse SAND, some gravel, little silt, (Fill).	G#303017 A-1-b, SM WC=5.0%
5	2D	24/14	5.00 - 7.00	2/2/3/18	5	7			505.4		2D (5.5-7.0 ft bgs) Light brown to reddish brown, medium stiff, SILT, some fine to coarse sand, trace clay, trace gravel, (Glacial Till).	G#303018 A-4, CL WC=19.8%
10	3D	24/24	10.00 - 12.00	4/6/5/5	11	16			498.9		Light brown, moist, very stiff, SILT, little fine sand, trace clay, (Glacial Till).	G#303019 A-4, CL WC=16.2%
15										Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL		
20										Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL		
25										Bottom of Exploration at 12.0 feet below ground surface. NO REFUSAL		

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.

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 Boring No.: HB-FRV-213

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine		Boring No.: HB-FRV-301 WIN: 22656.00					
Driller: S.W. Cole			Elevation (ft.): 493.7			Auger ID/OD: 5" Solid Stem					
Operator: Kevin/Ryan			Datum: NAVD88			Sampler: Standard Split Spoon					
Logged By: B. Wilder/Daggett			Rig Type: Diedrich D-50			Hammer Wt./Fall: 140#/30"					
Date Start/Finish: 10/25/2022; 07:00-16:00			Drilling Method: Cased Wash Boring			Core Barrel: N/A					
Boring Location: 666+00, 6.0 ft Rt.			Casing ID/OD: HW-4" & NW-3"			Water Level*: 22.0 ft bgs.					
Hammer Efficiency Factor: 0.92			Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S_{u(lab)} = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T_v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test											
Depth (ft.)	Sample Information							Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows				
0							SSA	493.1		7" HMA.	
	1D	24/20	1.00 - 3.00	18/25/26/25	51	78				Brown, damp, very dense, fine to coarse SAND, some gravel, little silt, occasional small cobbles, (Fill).	G#380775 A-1-b, SM WC=3.9%
5	2D	24/18	5.00 - 7.00	9/9/8/8	17	26		488.7		Light brown, damp, very stiff, SILT, little fine to coarse sand, trace gravel.	G#380851 A-4, CL WC=18.5%
10	3D	24/14	10.00 - 12.00	WOR/1/1/1	2	3	21	485.2		Grey, wet, very loose, fine to coarse SAND, some silt, trace gravel.	G#380852 A-2-4, SM WC=22.9%
							24				
							28				
							27				
							23				
15	4D	24/12	15.00 - 17.00	2/4/4/5	8	12	HP			Grey brown, wet, medium dense, fine to coarse SAND, some silt. Roller Coned ahead to 20.0 ft bgs. HP = Hydraulic Push	
							HP				
							HP				
							HP				
							HP				
20	5D	24/16	20.00 - 22.00	13/13/18/11	31	48	34			Brown, wet, dense, fine to coarse SAND, some gravel, little silt.	G#380853 A-1-a, SM WC=11.1%
							47				
							29				
							36				
							35				
25								469.7			
Remarks: Hammer #367 New 2022 Calibration 92.0											
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 1 of 3 Boring No.: HB-FRV-301	

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-301 WIN: 22656.00							
Driller: S.W. Cole				Elevation (ft.): 493.7				Auger ID/OD: 5" Solid Stem							
Operator: Kevin/Ryan				Datum: NAVD88				Sampler: Standard Split Spoon							
Logged By: B. Wilder/Daggett				Rig Type: Diedrich D-50				Hammer Wt./Fall: 140#/30"							
Date Start/Finish: 10/25/2022; 07:00-16:00				Drilling Method: Cased Wash Boring				Core Barrel: N/A							
Boring Location: 666+00, 6.0 ft Rt.				Casing ID/OD: HW-4" & NW-3"				Water Level*: 22.0 ft bgs.							
Hammer Efficiency Factor: 0.92				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐											
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140 lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test															
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.			
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows								
25	6D	24/17	25.00 - 27.00	3/3/9/8	12	18	37	463.7		Grey, wet, very stiff, SILT, little fine to coarse sand, little gravel, trace clay.	G#380854 A-4, CL WC=11.7%				
							51								
							126								
							142								
							143								
30	7D	24/17	30.00 - 32.00	13/19/19/19	38	58	SPUN NW-3			459.7		7D (30.5-32.0 ft bgs.) Grey brown, wet, very dense, Gravelly fine to coarse SAND, little silt.	G#380855 A-1-b, SM WC=10.5%		
35	8D	24/16	35.00 - 37.00	21/22/6/22	28	43				Grey, wet, dense, fine to coarse SAND, some silt, some gravel, (Glacial Till).	G#380856 A-2-4, SM WC=10.0%				
40	9D	12/12	40.00 - 41.00	27/60	---					Grey, wet, fine to coarse SAND, some silt, some gravel, (Glacial Till).					
45	10D	4.8/4.8	45.00 - 45.40	60(4.8")	---					Grey, wet, fine to coarse SAND, some silt, some gravel, (Glacial Till).					
50															
Remarks: Hammer #367 New 2022 Calibration 92.0															
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 2 of 3					
* 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-FRV-301					

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS						Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine							Boring No.: HB-FRV-301 WIN: 22656.00																																																																																																																																																																																																													
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Date Start/Finish: 12/6/2022; 09:00-13:30				Drilling Method: Cased Wash Boring				Core Barrel: N/A																																																																																																																																																																																																																																																																																																																															
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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-302 WIN: 22656.00				
Driller: S.W. Cole				Elevation (ft.): 494.9				Auger ID/OD: 5" Solid Stem				
Operator: Kevin/Ryan				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: B. Wilder				Rig Type: Diedrich D-50				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 12/6/2022; 09:00-13:30				Drilling Method: Cased Wash Boring				Core Barrel: N/A				
Boring Location: 667+00, 14.0 ft Rt.				Casing ID/OD: HW-4"				Water Level*: 20.0 ft bgs.				
Hammer Efficiency Factor: 0.92				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140 lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
25	6D	24/18	25.00 - 27.00	2/3/3/3	6	9	16			Grey, wet, stiff, SILT, little clay, trace fine to coarse sand.	G#380860 A-4, CL WC=24.9%	
							26					
							33					
							42					
							50					
30	7D	24/24	30.00 - 32.00	4/4/4/5	8	12	OPEN HOLE				Grey, wet, stiff, SILT, little clay, trace fine to coarse sand.	
35	8D	24/24	35.00 - 37.00	3/3/3/3	6	9					Grey, wet, stiff, SILT, some clay, trace fine to medium sand.	G#380861 A-4, CL WC=25.1%
40	9D	24/24	40.00 - 42.00	3/3/4/4	7	11					Grey, wet, stiff, SILT, some clay, trace fine to medium sand.	
45	10D	24/15	45.00 - 47.00	5/6/7/9	13	20				Grey, wet, medium dense, GRAVEL, some fine to coarse sand, some silt, (Glacial Till).	G#380862 A-2-4, GM WC=11.6%	
50												
Remarks: Hammer #367 New 2022 Calibration 92.0												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 2 of 3		
* 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-FRV-302		

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-302 WIN: 22656.00				
Driller: S.W. Cole				Elevation (ft.): 494.9				Auger ID/OD: 5" Solid Stem				
Operator: Kevin/Ryan				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: B. Wilder				Rig Type: Diedrich D-50				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 12/6/2022; 09:00-13:30				Drilling Method: Cased Wash Boring				Core Barrel: N/A				
Boring Location: 667+00, 14.0 ft Rt.				Casing ID/OD: HW-4"				Water Level*: 20.0 ft bgs.				
Hammer Efficiency Factor: 0.92				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140 lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plasticity Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
50	11D	24/15	50.00 - 52.00	16/22/37/17	59	90				Grey, wet, very dense, GRAVEL, some fine to coarse sand, some silt, (Glacial Till). Hydraulic Push HW Casing to 53.0 ft bgs.	G#380863 A-1-b, SM WC=9.3%	
55	12D	24/11	55.00 - 57.00	21/9/17/30	26	40	OPEN HOLE			Grey brown, wet, dense, Gravelly fine to coarse SAND, little silt, (Glacial Till).	G#380863 A-1-b, SM WC=9.3%	
60	13D	24/13	60.00 - 62.00	29/50/174/170	224	343				Grey, wet, very dense, fine to coarse Sandy GRAVEL, little silt, (Glacial Till).	G#380864 A-1-b, GM WC=7.3%	
65										Bottom of Exploration at 62.0 feet below ground surface. NO REFUSAL, very dense.		
70												
75												
Remarks: Hammer #367 New 2022 Calibration 92.0												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 3 of 3		
* 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-FRV-302		

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-303 WIN: 22656.00				
Driller: S.W. Cole				Elevation (ft.): 496.6				Auger ID/OD: 5" Solid Stem				
Operator: Kevin/Ryan				Datum: NAVD88				Sampler: Standard Split Spoon				
Logged By: B. Wilder/Daggett				Rig Type: Diedrich D-50				Hammer Wt./Fall: 140#/30"				
Date Start/Finish: 10/26/2022; 07:30-13:00				Drilling Method: Cased Wash Boring				Core Barrel: N/A				
Boring Location: 668+00, 15.0 ft Rt.				Casing ID/OD: HW-4"				Water Level*: 23.0 ft bgs.				
Hammer Efficiency Factor: 0.92				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐								
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _{u(lab)} = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test												
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows					
0	1D	24/19	0.00 - 2.00	6/8/7/5	15	23	SSA				Brown, damp, medium dense, Gravelly fine to coarse SAND, some silt, (Fill).	
5	2D	24/18	5.00 - 7.00	1/1/2/2	3	5					Brown, moist, loose, Silty fine to coarse SAND, trace gravel.	G#380865 A-4, SM WC=19.2%
10	3D	24/15	10.00 - 12.00	2/2/3/2	5	8					Grey brown, damp, loose, fine to coarse SAND, trace silt, trace gravel.	G#380866 A-1-b, SP-SM WC=9.5%
15	4D	24/14	15.00 - 17.00	3/4/4/3	8	12	30				Brown, damp, medium dense, fine to coarse SAND, some gravel, little silt.	
							32					
							32					
							25					
							53					
20	5D	24/14	20.00 - 22.00	5/7/6/5	13	20	6				Grey, moist, medium dense, fine to coarse SAND, little gravel, little silt.	G#380867 A-1-b, SM WC=10.6%
							11					
							24					
							29					
25							39					
Remarks: Hammer #367 New 2022 Calibration 92.0												
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.											Page 1 of 3	
* 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-FRV-303	

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-303 WIN: 22656.00						
Driller: S.W. Cole				Elevation (ft.): 496.6				Auger ID/OD: 5" Solid Stem						
Operator: Kevin/Ryan				Datum: NAVD88				Sampler: Standard Split Spoon						
Logged By: B. Wilder/Daggett				Rig Type: Diedrich D-50				Hammer Wt./Fall: 140#/30"						
Date Start/Finish: 10/26/2022; 07:30-13:00				Drilling Method: Cased Wash Boring				Core Barrel: N/A						
Boring Location: 668+00, 15.0 ft Rt.				Casing ID/OD: HW-4"				Water Level*: 23.0 ft bgs.						
Hammer Efficiency Factor: 0.92				Hammer Type: Automatic ☒ Hydraulic ☐ Rope & Cathead ☐										
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140 lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person S _u = Peak/Remolded Field Vane Undrained Shear Strength (psf) S _u (lab) = Lab Vane Undrained Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N ₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency N ₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected T _v = Pocket Torvane Shear Strength (psf) WC = Water Content, percent LL = Liquid Limit PL = Plasticity Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test														
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.		
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows							
25	6D	24/13	25.00 - 27.00	5/5/7/12	12	18	22	468.6		Grey, moist, medium dense, fine to coarse SAND, little gravel, little silt.	G#380868 A-4, CL WC=25.6%			
							51							
							43							
							43							
							52							
30	7D	24/21	30.00 - 32.00	3/3/3/3	6	9	46						Grey, wet, stiff, SILT, trace clay, trace fine to medium sand, (Alluvium).	
							54							
							58							
							55							
							58							
35	8D	24/24	35.00 - 37.00	WOR/1/1/1	2	3	35						Grey, wet, soft, SILT, trace clay, trace fine to medium sand, (Alluvium).	
							31							
							52							
							55							
							55							
40	9D	24/17	40.00 - 42.00	3/4/4/4	8	12	OPEN HOLE						Grey, wet, stiff, SILT, trace clay, trace fine to medium sand, (Alluvium).	
45	10D	24/24	45.00 - 47.00	2/2/2/3	4	6				Grey, wet, medium stiff, SILT, some clay, trace fine to medium sand.	G#380869 A-4, CL-ML WC=24.3% LL=24 PL=18 PI=6			
50														
Remarks: Hammer #367 New 2022 Calibration 92.0														
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										Page 2 of 3				
* 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-FRV-303				

Maine Department of Transportation <u>Soil/Rock Exploration Log</u> <u>US CUSTOMARY UNITS</u>				Project: Route 1 Reconstruction Location: Frenchville - Fort Kent, Maine				Boring No.: HB-FRV-303 WIN: 22656.00																																																																																																																																										
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Boring Location: 668+00, 15.0 ft Rt.				Casing ID/OD: HW-4"				Water Level*: 23.0 ft bgs.																																																																																																																																										
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<table><tr><th colspan="9">Sample Information</th><th rowspan="2">Graphic Log</th><th rowspan="2">Visual Description and Remarks</th><th rowspan="2">Laboratory Testing Results/ AASHTO and Unified Class.</th></tr><tr><th>Depth (ft.)</th><th>Sample No.</th><th>Pen./Rec. (in.)</th><th>Sample Depth (ft.)</th><th>Blows (16 in.) Shear Strength (psf) or RQD (%)</th><th>N-uncorrected</th><th>N₆₀</th><th>Casing Blows</th><th>Elevation (ft.)</th></tr><tr><td>50</td><td>11D</td><td>24/24</td><td>50.00 - 52.00</td><td>2/2/2/2</td><td>4</td><td>6</td><td></td><td></td><td rowspan="10"></td><td>Grey, wet, medium stiff, SILT, some clay, trace fine to medium sand.</td><td rowspan="10">G#380870 A-4, SM WC=10.6%</td></tr><tr><td>55</td><td>12D</td><td>24/24</td><td>55.00 - 57.00</td><td>1/1/2/3</td><td>3</td><td>5</td><td></td><td></td><td>Grey, wet, medium stiff, SILT, some clay, trace fine to medium sand.</td></tr><tr><td>60</td><td>13D</td><td>24/20</td><td>60.00 - 62.00</td><td>6/13/20/19</td><td>33</td><td>51</td><td></td><td></td><td>Grey, wet, hard, SILT, some gravel, some fine to coarse sand, (Glacial Till).</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Bottom of Exploration at 62.0 feet below ground surface. NO REFUSAL</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>75</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>												Sample Information									Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.	Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (16 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N ₆₀	Casing Blows	Elevation (ft.)	50	11D	24/24	50.00 - 52.00	2/2/2/2	4	6				Grey, wet, medium stiff, SILT, some clay, trace fine to medium sand.	G#380870 A-4, SM WC=10.6%	55	12D	24/24	55.00 - 57.00	1/1/2/3	3	5			Grey, wet, medium stiff, SILT, some clay, trace fine to medium sand.	60	13D	24/20	60.00 - 62.00	6/13/20/19	33	51			Grey, wet, hard, SILT, some gravel, some fine to coarse sand, (Glacial Till).										Bottom of Exploration at 62.0 feet below ground surface. NO REFUSAL																																																													75											
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Probe Summary Sheet

Work Number: 22656.00

MaineDOT Drill Crew
Logged By: C. Russell
Drill Rig: CME 45C

Appendix B

Laboratory Test Results

State of Maine - Department of Transportation
Laboratory Testing Summary Sheet

Town(s): Frenchville-Fort Kent Work Number: 22656.00

Boring & Sample Identification Number	Station (Feet)	Offset (Feet)	Depth (Feet)	Reference Number	G.S.D.C. Sheet	W.C. %	L.L.	P.I.	Classification		
									Unified	AASHTO	Frost
HB-FRV-101, B1	618+00	13.0 Rt.	0.0-1.6	302067	1	1.3			SM	A-1-b	II
HB-FRV-101, S1	618+00	13.0 Rt.	1.6-4.5	302074	1	19.6			SM	A-2-4	II
HB-FRV-102, B2	618+00	8.5 Rt.	0.5-2.4	302068	1	1.3			SM	A-1-b	II
HB-FRV-102, S2	618+00	8.5 Rt.	2.4-4.5	302069	1	15.4			SM	A-2-4	II
HB-FRV-103, B3	638+00	8.0 Lt.	0.54-4.5	302061	2	2.9			SW-SM	A-1-a	0
HB-FRV-104, B4	658+00	8.5 Rt.	0.67-4.5	302063	2	1.4			SW-SM	A-1-a	0
HB-FRV-105, B5	658+00	15.0 Rt.	0.13-4.5	302057	2	1.4			GW-GM	A-1-a	0
HB-FRV-106, B6	678+00	8.5 Rt.	0.75-3.0	302055	2	1.6			SW-SM	A-1-b	0
HB-FRV-106, S3	678+00	8.5 Rt.	3.0-4.5	302075	2	23.1			CL	A-4	IV
HB-FRV-107, B7	698+00	9.5 Rt.	0.67-3.3	302059	3	1.4			SW-SM	A-1-a	0
HB-FRV-107, S4	698+00	9.5 Rt.	3.3-4.5	302072	3	33.0			CL	A-4	IV
HB-FRV-108, B8	698+00	15.0 Rt.	0.0-3.4	302054	3	1.7			SM	A-1-a	II
HB-FRV-109, B9	718+00	9.0 Lt.	0.67-4.5	302053	3	0.7			SW-SM	A-1-a	0
HB-FRV-111, B10	738+00	9.0 Rt.	0.58-2.9	302066	3	1.7			SM	A-1-b	II
HB-FRV-111, S5	738+00	9.0 Rt.	2.9-4.5	302070	3	12.4			SM	A-2-4	II
HB-FRV-112, B11	758+00	8.5 Lt.	0.75-4.5	302065	4	2.0			SM	A-1-a	II
HB-FRV-113, B12	758+00	14.0 Lt.	0.0-4.5	302060	4	1.1			SW-SM	A-1-a	0
HB-FRV-114, B13	778+00	9.0 Rt.	0.63-4.5	302062	4	1.7			SM	A-1-a	II
HB-FRV-115, B14	798+00	8.5 Lt.	0.75-3.3	302056	4	1.6			SW-SM	A-1-b	0
HB-FRV-115, S6	798+00	8.5 Lt.	3.3-4.5	302071	4	20.0			SM	A-2-4	II
HB-FRV-116, B15	798+00	14.0 Lt.	0.0-2.8	302058	5	1.2			SM	A-1-b	II
HB-FRV-117, B16	818+00	9.0 Rt.	0.67-3.4	302052	5	1.7			SM	A-1-a	II
HB-FRV-117, S7	818+00	9.0 Rt.	3.4-4.5	302073	5	21.9			SM	A-2-4	II
HB-FRV-118, B17	838+00	9.0 Lt.	0.63-4.5	302051	5	1.5			SM	A-1-b	II
HB-FRV-120, B18	848+00	9.0 Rt.	0.58-4.5	302064	5	1.2			SM	A-1-a	II
HB-FRV-201, 1D	611+00	13.5 Rt.	0.0-2.0	300781	6	5.0			SM	A-2-4	II
HB-FRV-201, 2D	611+00	13.5 Rt.	5.0-7.0	300782	6	5.2			SW-SM	A-1-b	0
HB-FRV-201, 3D	611+00	13.5 Rt.	10.0-12.0	300783	6	24.6			CL	A-4	IV
HB-FRV-202, 1D	611+78	13.5 Rt.	0.0-2.0	300784	6	4.7			SM	A-1-b	II
HB-FRV-202, 2D	611+78	13.5 Rt.	5.0-7.0	300785	6	5.2			SM	A-1-b	II
HB-FRV-202, 3D	611+78	13.5 Rt.	10.0-12.0	300786	6	5.0			SM	A-1-b	II
HB-FRV-203, 1D	629+00	13.5 Rt.	0.0-2.0	300787	7	4.5			SM	A-1-b	II
HB-FRV-203, 2D	629+00	13.5 Rt.	5.0-7.0	300788	7	7.9			SM	A-1-b	II
HB-FRV-203, 3D	629+00	13.5 Rt.	10.0-12.0	300789	7	9.5			SC-SM	A-1-b	III
HB-FRV-204, 1D	629+75.5	14.0 Rt.	0.0-2.0	300790	7	4.6			SM	A-1-b	II
HB-FRV-204, 2D	629+75.5	14.0 Rt.	5.0-7.0	300791	7	6.4			SM	A-1-b	II
HB-FRV-204, 3D	629+75.5	14.0 Rt.	10.0-12.0	300792	7	10.3			CL	A-4	IV
HB-FRV-205, 1D	630+48	13.0 Rt.	0.0-2.0	300793	8	3.8			SM	A-1-b	II
HB-FRV-205, 2D	630+48	13.0 Rt.	5.0-7.0	300794	8	5.3			SM	A-1-b	II
HB-FRV-205, 3D	630+48	13.0 Rt.	10.0-12.0	300795	8	8.5			SM	A-2-4	II
HB-FRV-206, 1D	631+31	13.5 Rt.	0.0-2.0	300796	8	5.0			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 MaineDOT and Corps of Engineers Classification Systems.

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

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

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

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): Frenchville-Fort Kent Work Number: 22656.00

Boring & Sample Identification Number	Station (Feet)	Offset (Feet)	Depth (Feet)	Reference Number	G.S.D.C. Sheet	W.C. %	L.L.	P.I.	Classification		
									Unified	AASHTO	Frost
HB-FRV-206, 2D	631+31	13.5 Rt.	5.0-7.0	300797	8	7.0			SC-SM	A-1-b	III
HB-FRV-206, 3D	631+31	13.5 Rt.	10.0-12.0	300798	8	7.6			SC-SM	A-1-b	III
HB-FRV-207, 1D	641+00	13.0 Rt.	0.0-2.0	300799	9	5.6			SM	A-1-b	II
HB-FRV-207, 2D	641+00	13.0 Rt.	5.0-7.0	300800	9	7.8			SM	A-2-4	II
HB-FRV-207, 3D	641+00	13.0 Rt.	10.0-12.0	303001	9	5.3			SC-SM	A-2-4	II
HB-FRV-208, 1D	641+85.5	14.0 Rt.	0.0-2.0	303002	9	5.5			SM	A-1-b	II
HB-FRV-208, 2D	641+85.5	14.0 Rt.	5.0-7.0	303003	9	11.0			SC-SM	A-1-b	II
HB-FRV-208, 3D	641+85.5	14.0 Rt.	10.0-12.0	303004	9	7.6			SC-SM	A-2-4	III
HB-FRV-209, 1D	642+71	14.0 Rt.	0.0-2.0	303005	10	4.7			SM	A-1-b	II
HB-FRV-209, 2D	642+71	14.0 Rt.	5.0-7.0	303006	10	21.3			SC-SM	A-4	III
HB-FRV-209, 3D	642+71	14.0 Rt.	10.0-12.0	303007	10	7.0			SC-SM	A-1-b	III
HB-FRV-210, 1D	747+50	13.7 Rt.	0.0-2.0	303008	10	5.5			SM	A-1-b	II
HB-FRV-210, 2D	747+50	13.7 Rt.	5.0-7.0	303009	10	3.2			SW-SM	A-1-a	0
HB-FRV-210, 3D	747+50	13.7 Rt.	10.0-12.0	303010	10	13.8			CL	A-4	IV
HB-FRV-211, 1D	748+64	14.0 Rt.	0.0-2.0	303011	11	7.0			SM	A-1-b	II
HB-FRV-211, 2D	748+64	14.0 Rt.	5.0-7.0	303012	11	4.5			SC-SM	A-1-b	II
HB-FRV-211, 3D	748+64	14.0 Rt.	10.0-12.0	303013	11	9.9			CL-ML	A-4	II
HB-FRV-212, 1D	749+50	14.5 Rt.	0.0-2.0	303014	11	5.7			SM	A-1-b	II
HB-FRV-212, 2D	749+50	14.5 Rt.	5.0-7.0	303015	11	6.6			SC-SM	A-1-b	II
HB-FRV-212, 3D	749+50	14.5 Rt.	10.0-12.0	303016	11	8.0			SC-SM	A-1-b	II
HB-FRV-213, 1D	750+50	13.5 Rt.	0.0-2.0	303017	12	5.0			SM	A-1-b	II
HB-FRV-213, 2D	750+50	13.5 Rt.	5.0-7.0	303018	12	19.8			CL	A-4	IV
HB-FRV-213, 3D	750+50	13.5 Rt.	10.0-12.0	303019	12	16.2			CL	A-4	IV
TP-1-19, B1	625+00	14.0 Rt.	1.0-3.0	302752	13	4.2			SW-SM	A-1-a	0
TP-2-19, B2	625+00	14.0 Lt.	1.0-3.0	302753	13	3.8			SW-SM	A-1-a	0
TP-3-19, B3	696+00	14.0 Rt.	1.0-3.0	302754	13	2.6			SW-SM	A-1-a	0
TP-4-19, B4	696+00	14.0 Lt.	1.0-3.0	302755	13	3.7			SW-SM	A-1-a	0
TP-5-19, B5	763+00	14.0 Lt.	1.0-3.0	302756	14	2.2			SW-SM	A-1-a	0
TP-6-19, B6	763+00	14.0 Rt.	1.0-3.0	302757	14	3.3			SW-SM	A-1-a	0
TP-7-19, B7	805+00	14.0 Rt.	1.0-3.0	302758	14	3.1			SM	A-1-b	II
TP-8-19, B8	805+00	14.0 Lt.	1.0-3.0	302759	14	3.4			SM	A-1-b	II
HB-FRV-301, 1D	666+00	6.0 Rt.	1.0-3.0	380775	15	3.9			SM	A-1-b	II
HB-FRV-301, 2D	666+00	6.0 Rt.	5.0-7.0	380851	15	18.5			CL	A-4	IV
HB-FRV-301, 3D	666+00	6.0 Rt.	10.0-12.0	380852	15	22.9			SM	A-2-4	II
HB-FRV-301, 5D	666+00	6.0 Rt.	20.0-22.0	380853	15	11.1			SM	A-1-a	II
HB-FRV-301, 6D	666+00	6.0 Rt.	25.0-27.0	380854	16	11.7			CL	A-4	IV
HB-FRV-301, 7D	666+00	6.0 Rt.	30.5-32.0	380855	16	10.5			SM	A-1-b	II
HB-FRV-301, 8D	666+00	6.0 Rt.	35.0-37.0	380856	16	10.0			SM	A-2-4	II
HB-FRV-302, 1D	667+00	14.0 Rt.	1.0-3.0	380857	17	4.3			SM	A-2-4	II
HB-FRV-302, 3D	667+00	14.0 Rt.	10.0-12.0	380858	17	6.4			SW-SM	A-1-b	0
HB-FRV-302, 5D	667+00	14.0 Rt.	20.0-22.0	380859	17	8.4			SM	A-2-4	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 MaineDOT and Corps of Engineers Classification Systems.

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

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

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

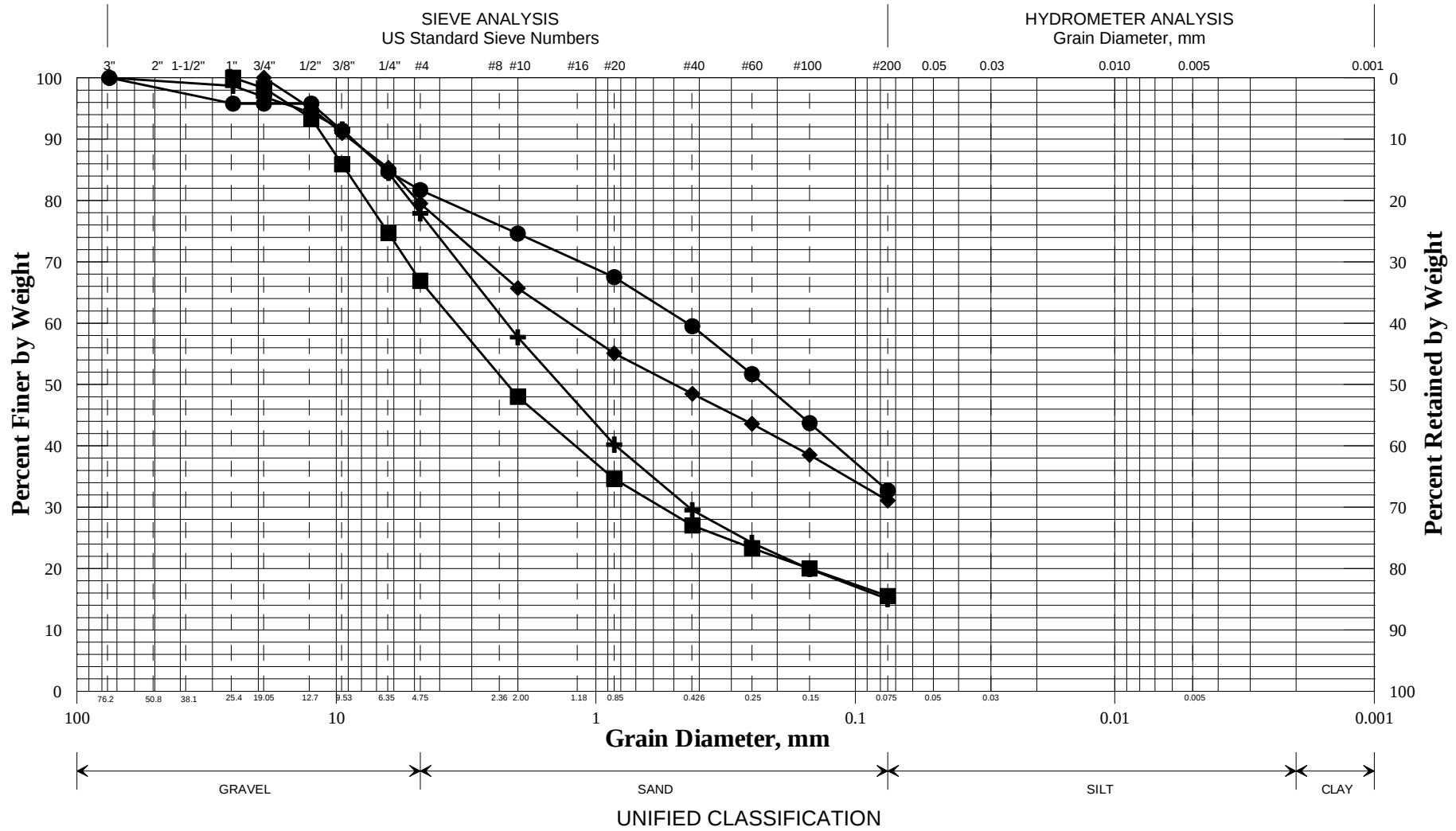
PI = Plasticity Index as determined by AASHTO 90-96 and/or ASTM D4318-98

Town(s): Frenchville-Fort Kent Work Number: 22656.00

Classification of these soil samples is in accordance with AASHTO Classification System M-145-40. This classification is followed by the "Frost Susceptibility Rating" from zero (non-frost susceptible) to Class IV (highly frost susceptible). The "Frost Susceptibility Rating" is based upon the MaineDOT and Corps of Engineers Classification Systems.

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

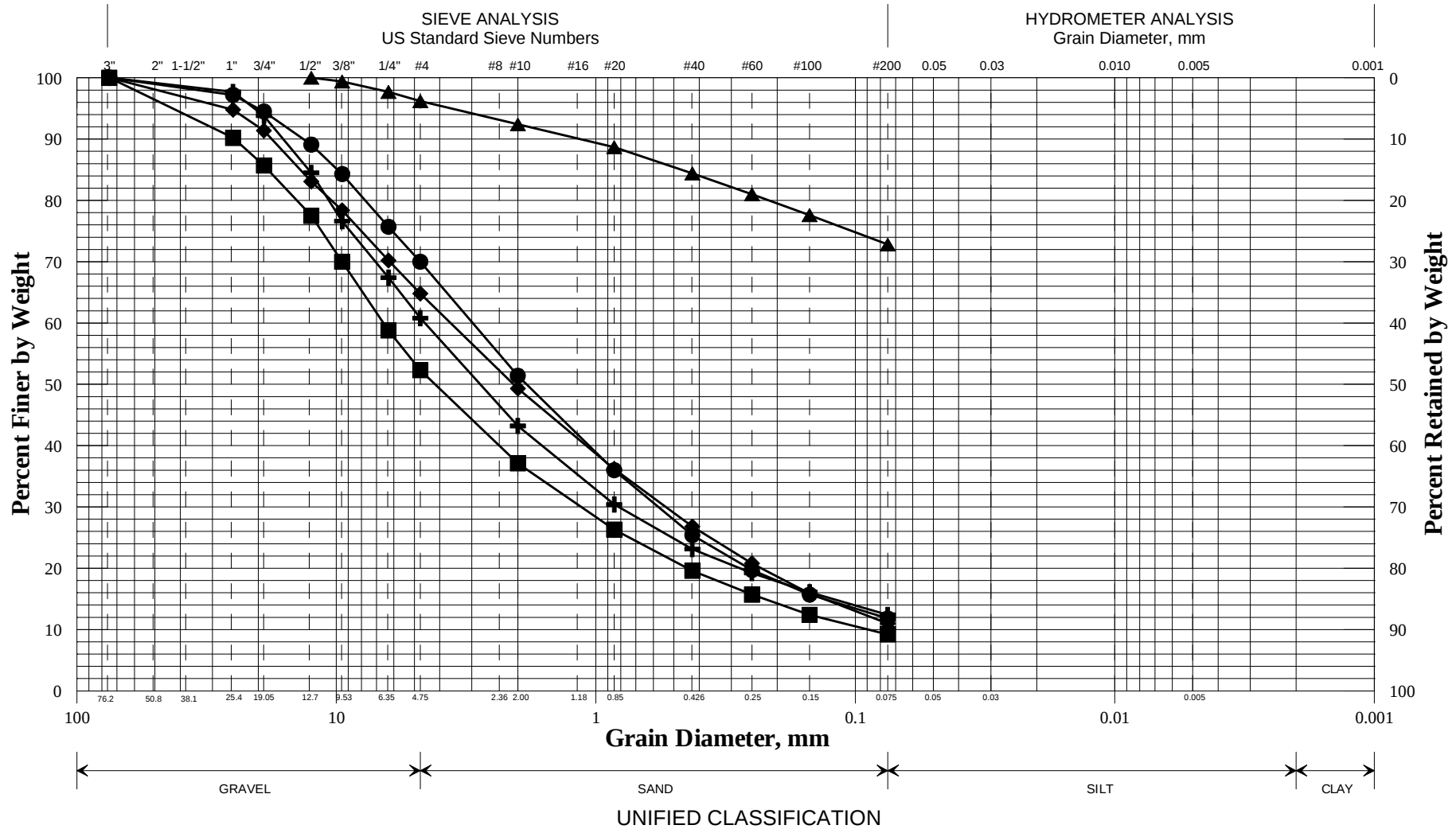
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-101/B1	618+00	13.0 RT	0.0-1.6	SAND, some gravel, little silt.	1.3			
◆	HB-FRV-101/S1	618+00	13.0 RT	1.6-4.5	SAND, some silt, some gravel.	19.6			
■	HB-FRV-102/B2	618+00	8.5 RT	0.5-2.4	SAND, some gravel, little silt.	1.3			
●	HB-FRV-102/S2	618+00	8.5 RT	2.4-4.5	SAND, some silt, little gravel.	15.4			
▲									
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WIN	
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Town	
Frenchville, Fort Kent	
Reported by/Date	
WHITE, TERRY A	11/30/2015

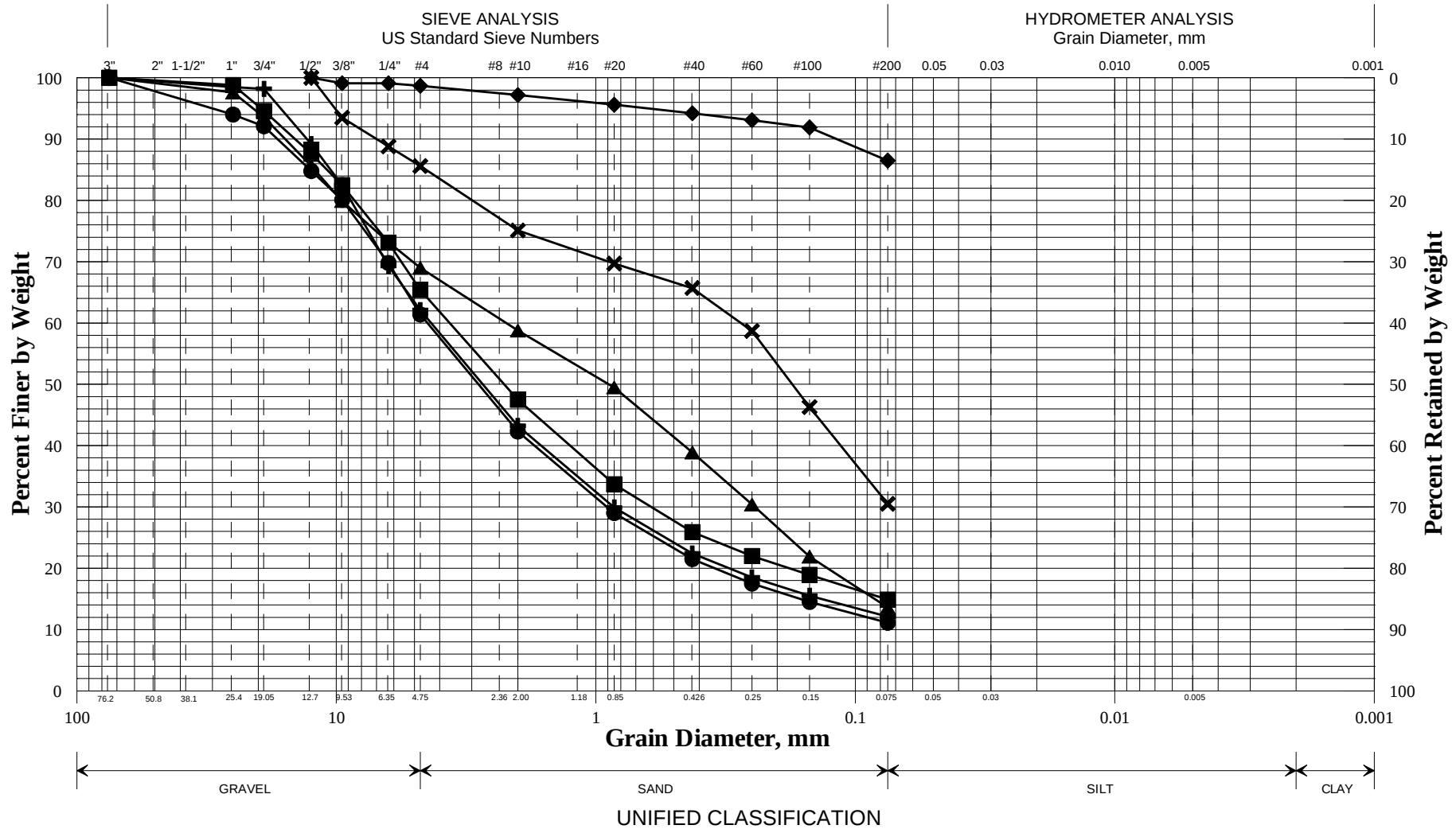
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft		W, %	LL	PL	PI
+	HB-FRV-103/B3	638+00	8.0 LT	0.54-4.5	Gravelly SAND, little silt.	2.9			
◆	HB-FRV-104/B4	658+00	8.5 RT	0.67-4.5	SAND, some gravel, little silt.	1.4			
■	HB-FRV-105/B5	658+00	15.0 RT	0.13-4.5	Sandy GRAVEL, trace silt.	1.4			
●	HB-FRV-106/B6	678+00	8.5 RT	0.75-3.0	SAND, some gravel, little silt.	1.6			
▲	HB-FRV-106/S3	678+00	8.5 RT	3.0-4.5	SILT, some sand, trace gravel.	23.1			
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WIN	
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Town	
Frenchville, Fort Kent	
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WHITE, TERRY A	12/1/2015

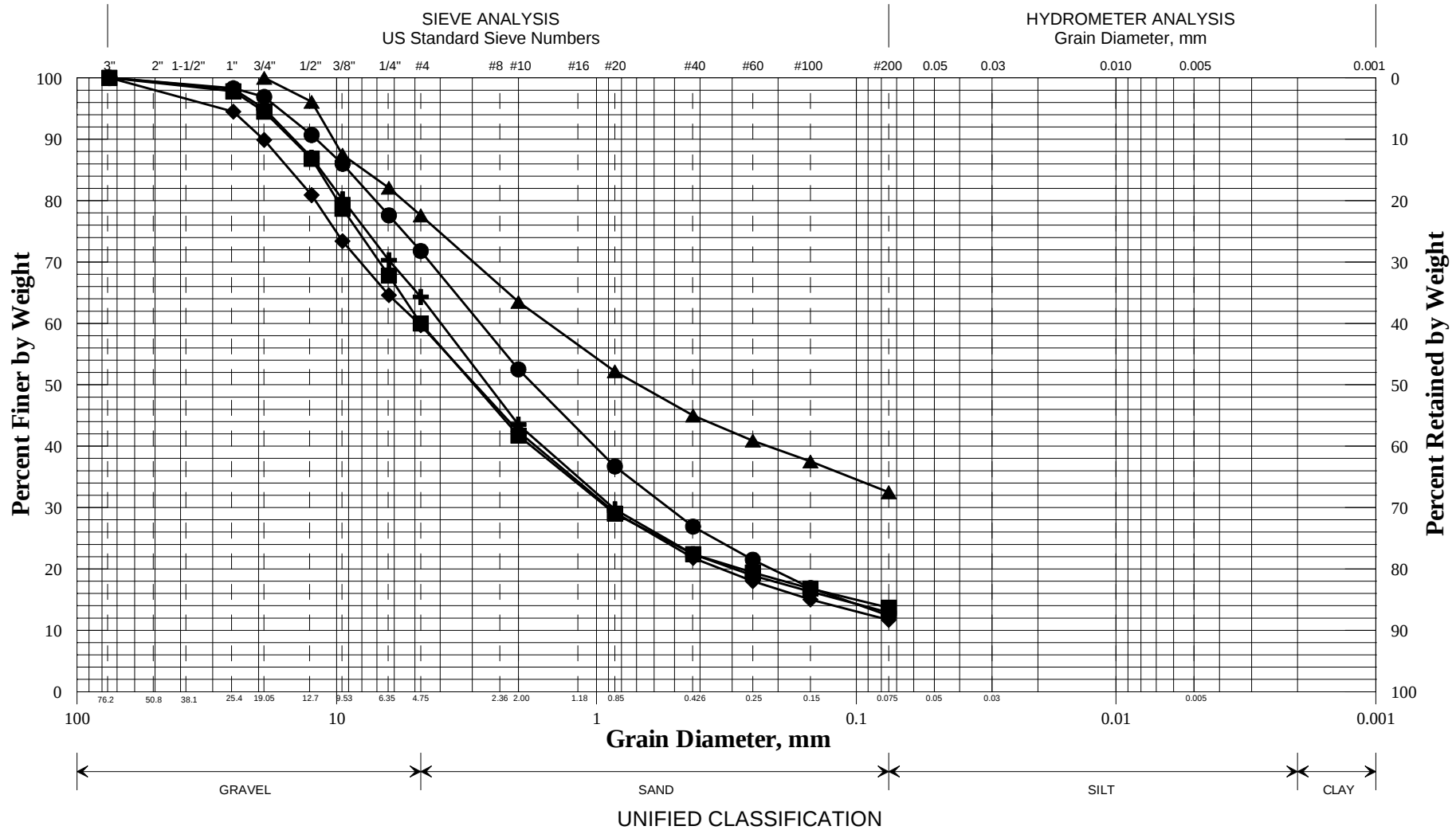
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-107/B7	698+00	9.5 RT	0.67-3.3	Gravelly SAND, little silt.	1.4			
◆	HB-FRV-107/S4	698+00	9.5 RT	3.3-4.5	SILT, little sand, trace gravel.	33.0			
■	HB-FRV-108/B8	698+00	15.0 RT	0.0-3.4	SAND, some gravel, little silt.	1.7			
●	HB-FRV-109/B9	718+00	9.0 LT	0.67-4.50	Gravelly SAND, little silt.	0.7			
▲	HB-FRV-111/B10	738+00	9.0 RT	0.58-2.9	SAND, some gravel, little silt.	1.7			
×	HB-FRV-111/S5	738+00	9.0 RT	2.9-4.5	SAND, some silt, little gravel.	12.4			

WIN
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Town
Frenchville, Fort Kent
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WHITE, TERRY A 12/1/2015

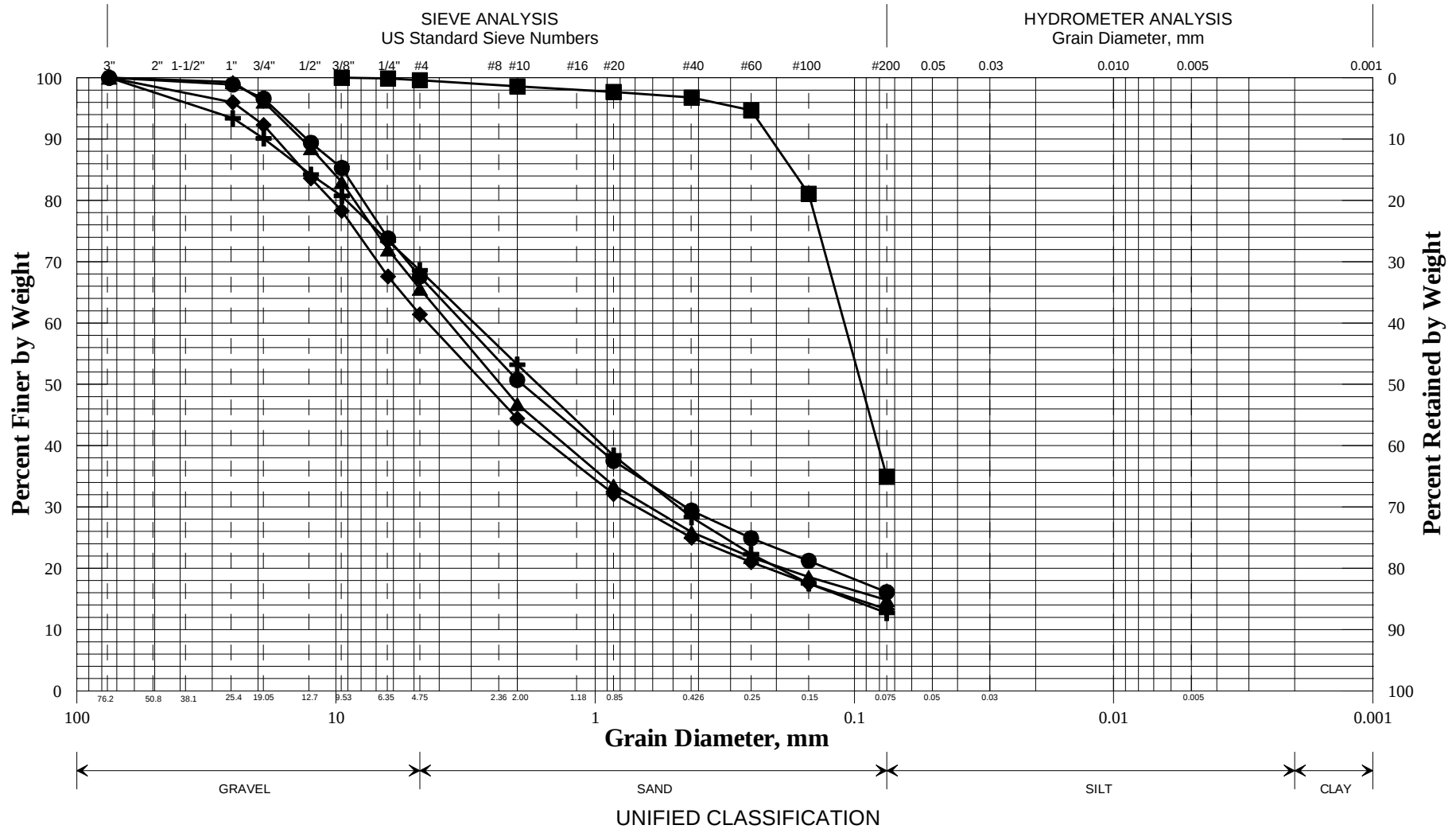
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-112/B11	758+00	8.5 LT	0.75-4.5	SAND, some gravel, little silt.	2.0			
◆	HB-FRV-113/B12	758+00	14.0 LT	0.0-4.5	Gravelly SAND, little silt.	1.1			
■	HB-FRV-114/B13	778+00	9.0 RT	0.63-4.5	Gravelly SAND, little silt.	1.7			
●	HB-FRV-115/B14	798+00	8.5 LT	0.75-3.3	SAND, some gravel, little silt.	1.6			
▲	HB-FRV-115/S6	798+00	8.5 LT	3.3-4.5	SAND, some silt, some gravel.	20.0			
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WHITE, TERRY A 12/1/2015

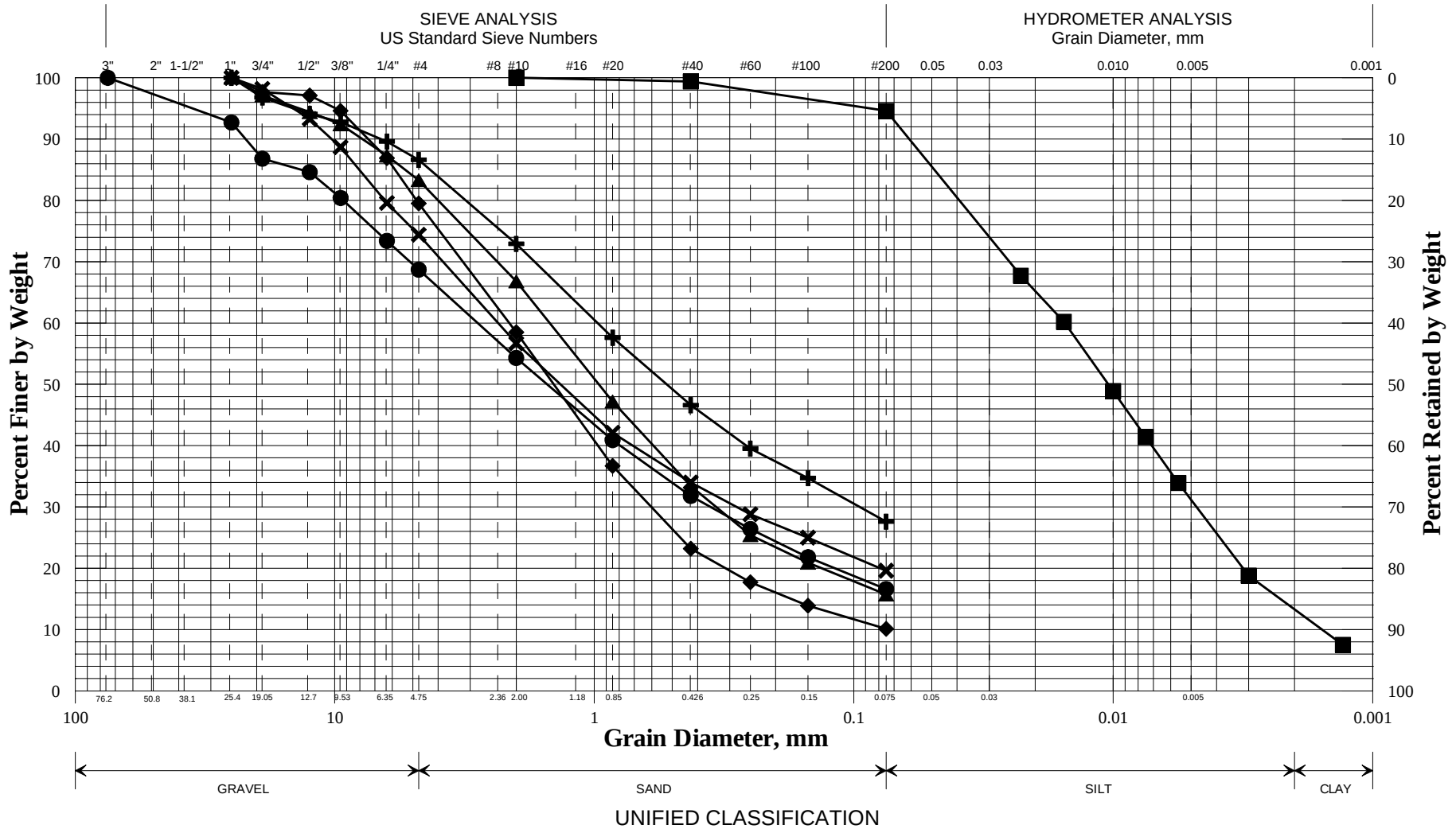
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-116/B15	798+00	14.0 LT	0.0-2.8	SAND, some gravel, little silt.	1.2			
◆	HB-FRV-117/B16	818+00	9.0 RT	0.67-3.4	Gravelly SAND, little silt.	1.7			
■	HB-FRV-117/S7	818+00	9.0 RT	3.4-4.5	SAND, some silt, trace gravel.	21.9			
●	HB-FRV-118/B17	838+00	9.0 LT	0.63-4.5	SAND, some gravel, little silt.	1.5			
▲	HB-FRV-120/B18	848+00	9.0 RT	0.58-4.5	SAND, some gravel, little silt.	1.2			
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Frenchville, Fort Kent	
Reported by/Date	
WHITE, TERRY A	12/1/2015

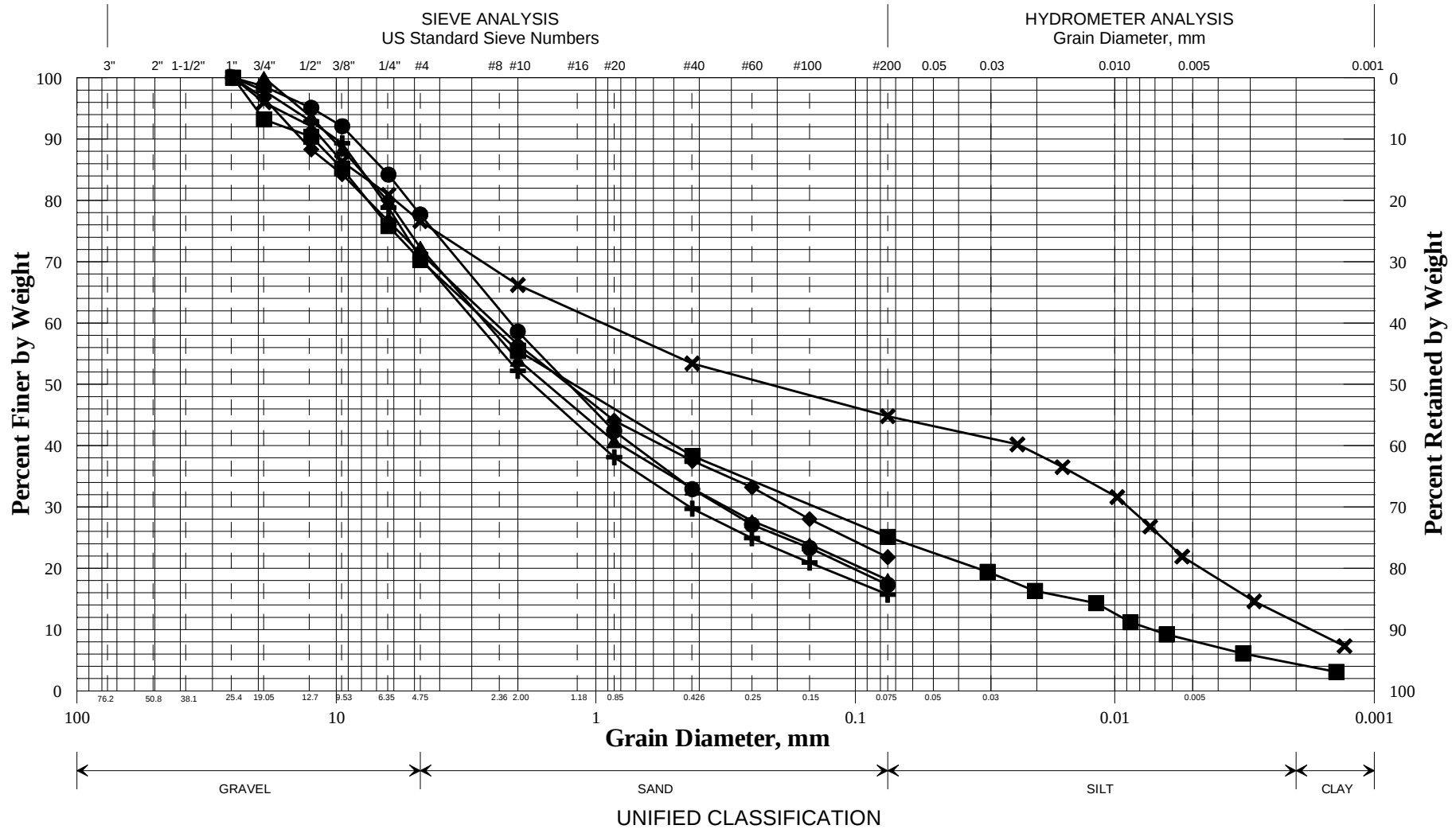
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-201/1D	611+00	13.5 RT	0.0-2.0	SAND, some silt, little gravel.	5.0			
◆	HB-FRV-201/2D	611+00	13.5 RT	5.0-7.0	SAND, little gravel, trace silt.	5.2			
■	HB-FRV-201/3D	611+00	13.5 RT	10.0-12.0	SILT, little clay, trace sand.	24.6			
●	HB-FRV-202/1D	611+78	13.5 RT	0.0-2.0	SAND, some gravel, little silt.	4.7			
▲	HB-FRV-202/2D	611+78	13.5 RT	5.0-7.0	SAND, little gravel, little silt.	5.2			
×	HB-FRV-202/3D	611+78	13.5 RT	10.0-12.0	SAND, some gravel, little silt.	5.0			

WIN	
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Town	
Frenchville, Fort Kent	
Reported by/Date	
WHITE, TERRY A	3/5/2018

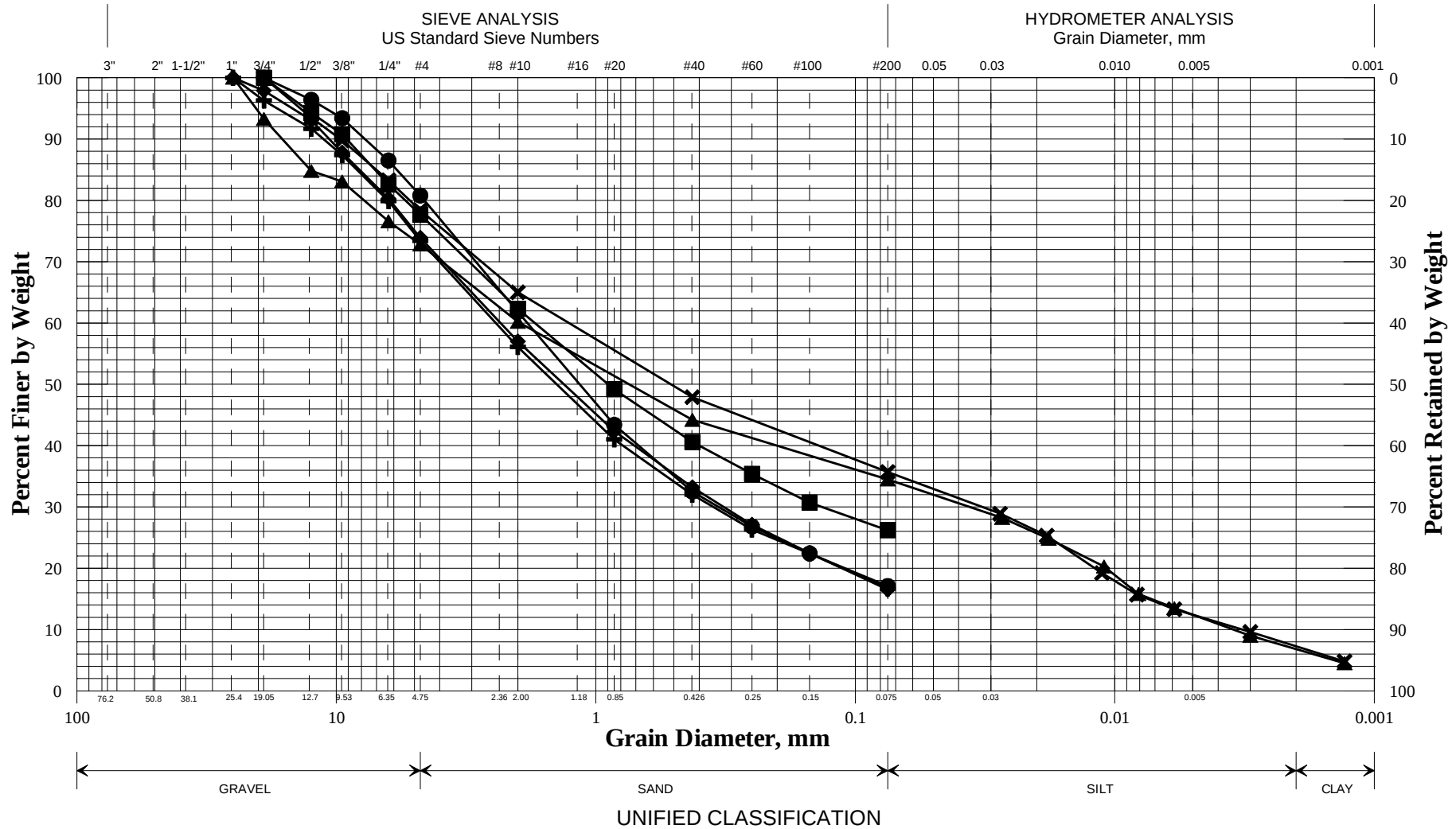
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-203/1D	629+00	13.5 RT	0.0-2.0	SAND, some gravel, little silt.	4.5			
◆	HB-FRV-203/2D	629+00	13.5 RT	5.0-7.0	SAND, some gravel, some silt.	7.9			
■	HB-FRV-203/3D	629+00	13.5 RT	10.0-12.0	SAND, some gravel, little silt, trace clay.	9.5			
●	HB-FRV-204/1D	629+75.5	14.0 RT	0.0-2.0	SAND, some gravel, little silt.	4.6			
▲	HB-FRV-204/2D	629+75.5	14.0 RT	5.0-7.0	SAND, some gravel, little silt.	5.4			
×	HB-FRV-204/3D	629+75.5	14.0 RT	10.0-12.0	SILT, some sand, some gravel, little clay.	10.3			

WIN	
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Town	
Frenchville, Fort Kent	
Reported by/Date	
WHITE, TERRY A	3/5/2018

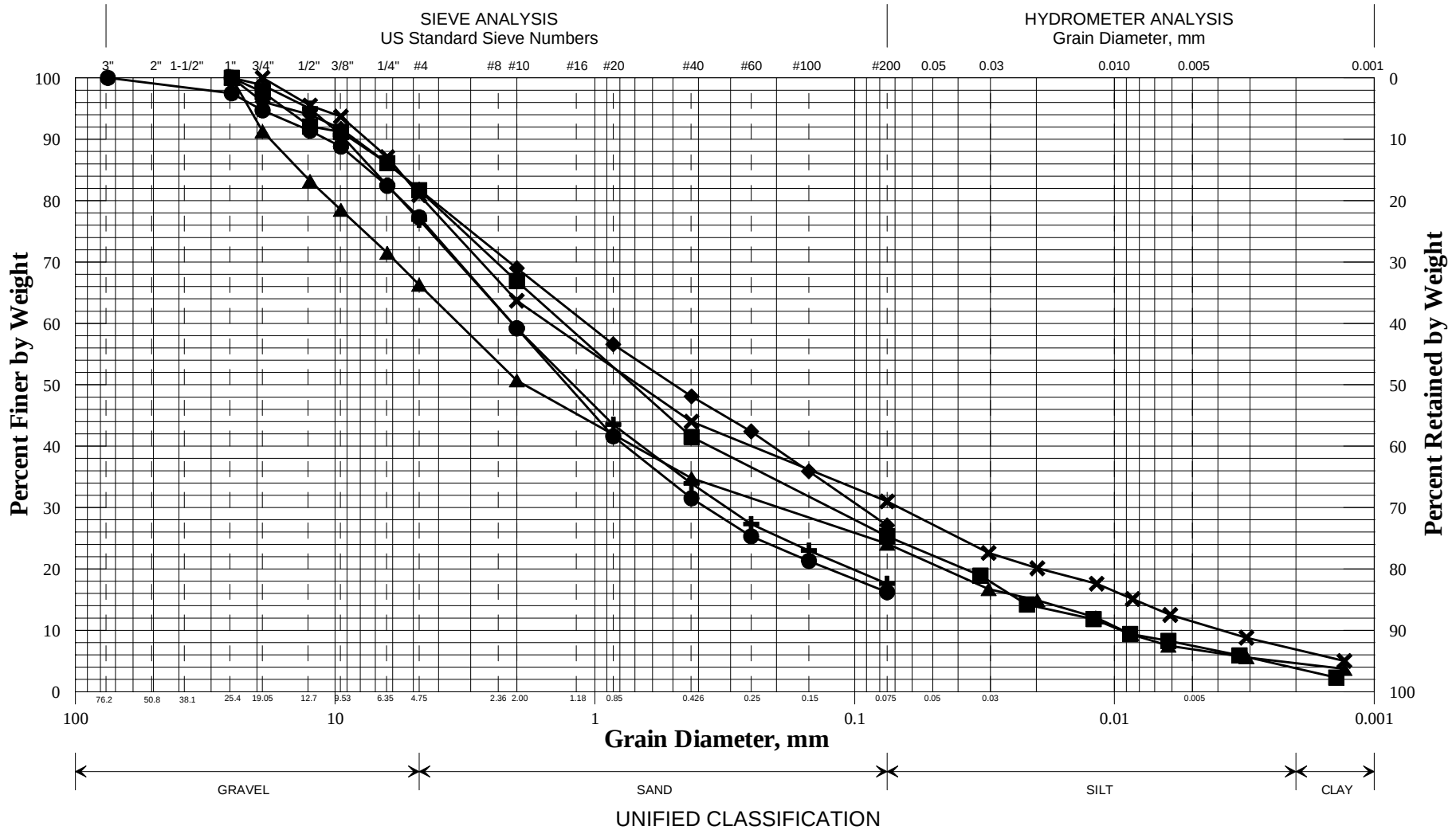
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-205/1D	630+48	13.0 RT	0.0-2.0	SAND, some gravel, little silt.	3.8			
◆	HB-FRV-205/2D	630+48	13.0 RT	5.0-7.0	SAND, some gravel, little silt.	5.3			
■	HB-FRV-205/3D	630+48	13.0 RT	10.0-12.0	SAND, some silt, some gravel.	8.5			
●	HB-FRV-206/1D	631+31	13.5 RT	0.0-2.0	SAND, little gravel, little silt.	5.0			
▲	HB-FRV-206/2D	631+31	13.5 RT	5.0-7.0	SAND, some silt, some gravel, trace clay.	7.0			
×	HB-FRV-206/3D	631+31	13.5 RT	10.0-12.0	SAND, some silt, some gravel, trace clay.	7.6			

WIN	
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Frenchville, Fort Kent	
Reported by/Date	
WHITE, TERRY A	3/5/2018

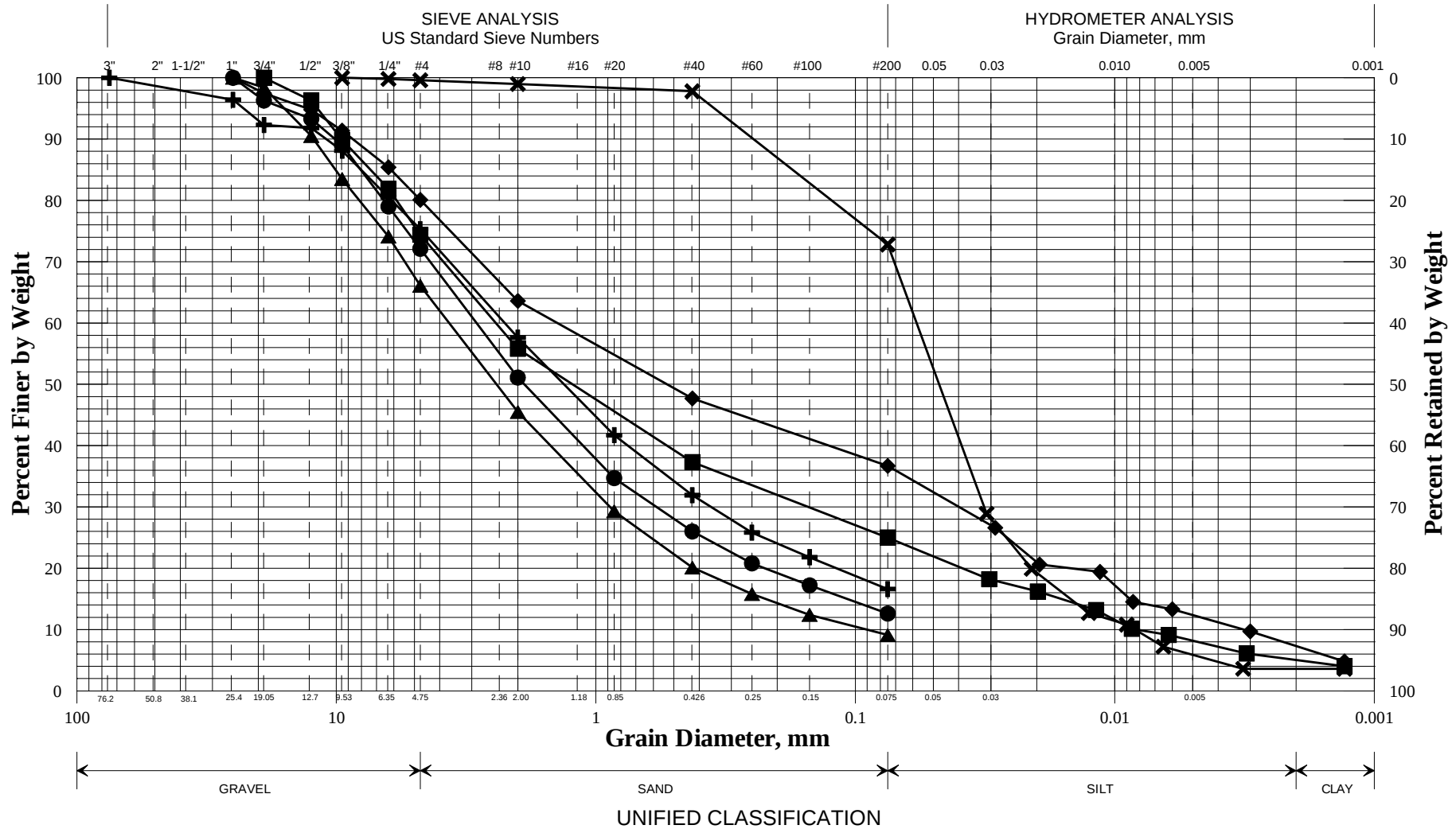
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-207/1D	641+00	13.0 RT	0.0-2.0	SAND, some gravel, little silt.	5.6			
◆	HB-FRV-207/2D	641+00	13.0 RT	5.0-7.0	SAND, some silt, little gravel.	7.8			
■	HB-FRV-207/3D	641+00	13.0 RT	10.0-12.0	SAND, some silt, little gravel, trace clay.	5.3			
●	HB-FRV-208/1D	641+85.5	14.0 RT	0.0-2.0	SAND, some gravel, little silt.	5.5			
▲	HB-FRV-208/2D	641+85.5	14.0 RT	5.0-7.0	SAND, some gravel, little silt, trace clay.	11.0			
×	HB-FRV-208/3D	641+85.5	14.0 RT	10.0-12.0	SAND, some silt, little gravel, trace clay.	7.6			

WIN	
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Town	
Frenchville, Fort Kent	
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WHITE, TERRY A	3/5/2018

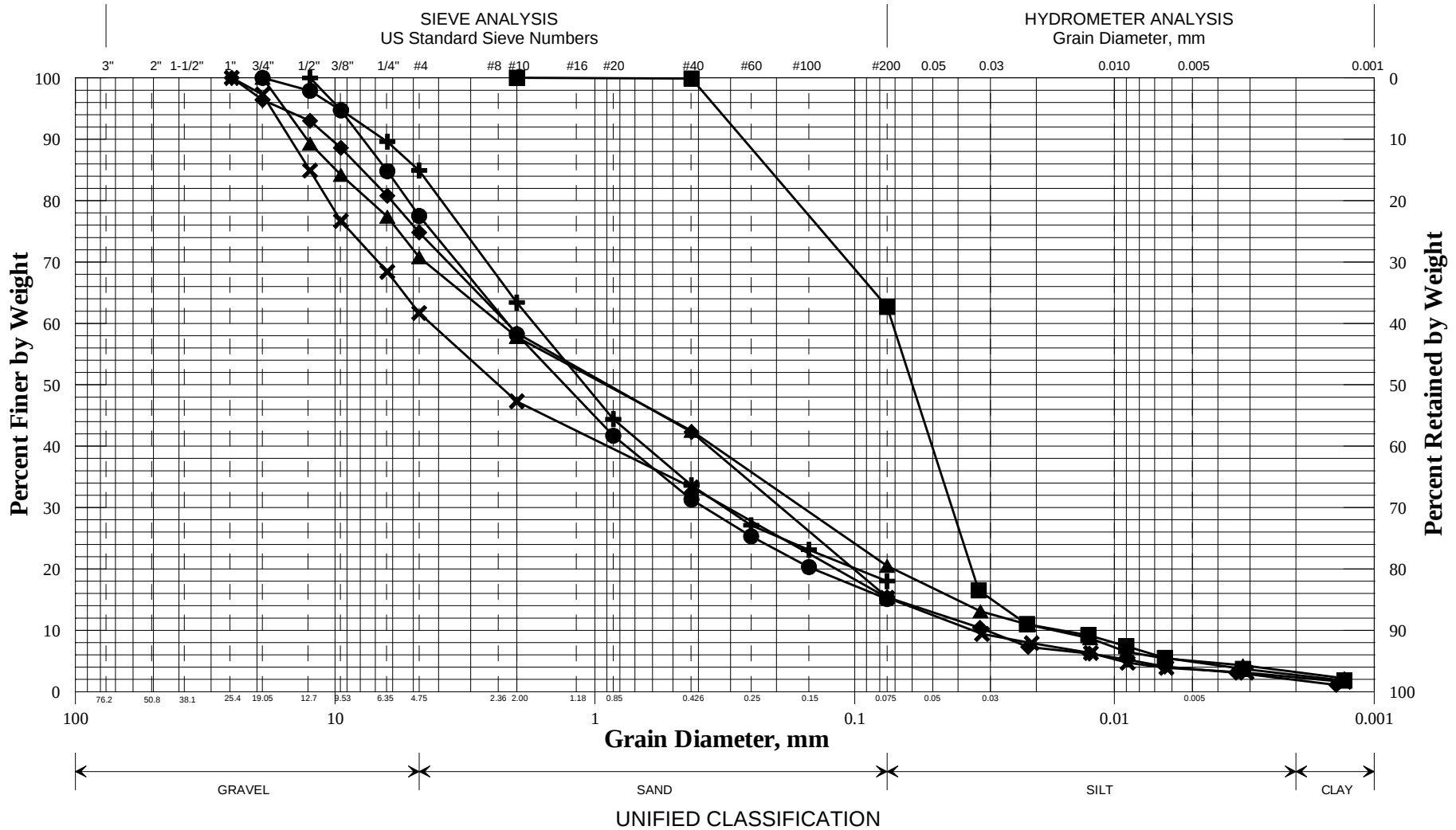
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-209/1D	642+71	14.0 RT	0.0-2.0	SAND, some gravel, little silt.	4.7			
◆	HB-FRV-209/2D	642+71	14.0 RT	5.0-7.0	SAND, some silt, little gravel, trace clay.	21.3			
■	HB-FRV-209/3D	642+71	14.0 RT	10.0-12.0	SAND, some gravel, little silt, trace clay.	7.0			
●	HB-FRV-210/1D	747+50	13.7 RT	0.0-2.0	SAND, some gravel, little silt.	5.5			
▲	HB-FRV-210/2D	747+50	13.7 RT	5.0-7.0	SAND, some gravel, trace silt.	3.2			
×	HB-FRV-210/3D	747+50	13.7 RT	10.0-12.0	SILT, some sand, trace clay, trace gravel.	13.8			

WIN	
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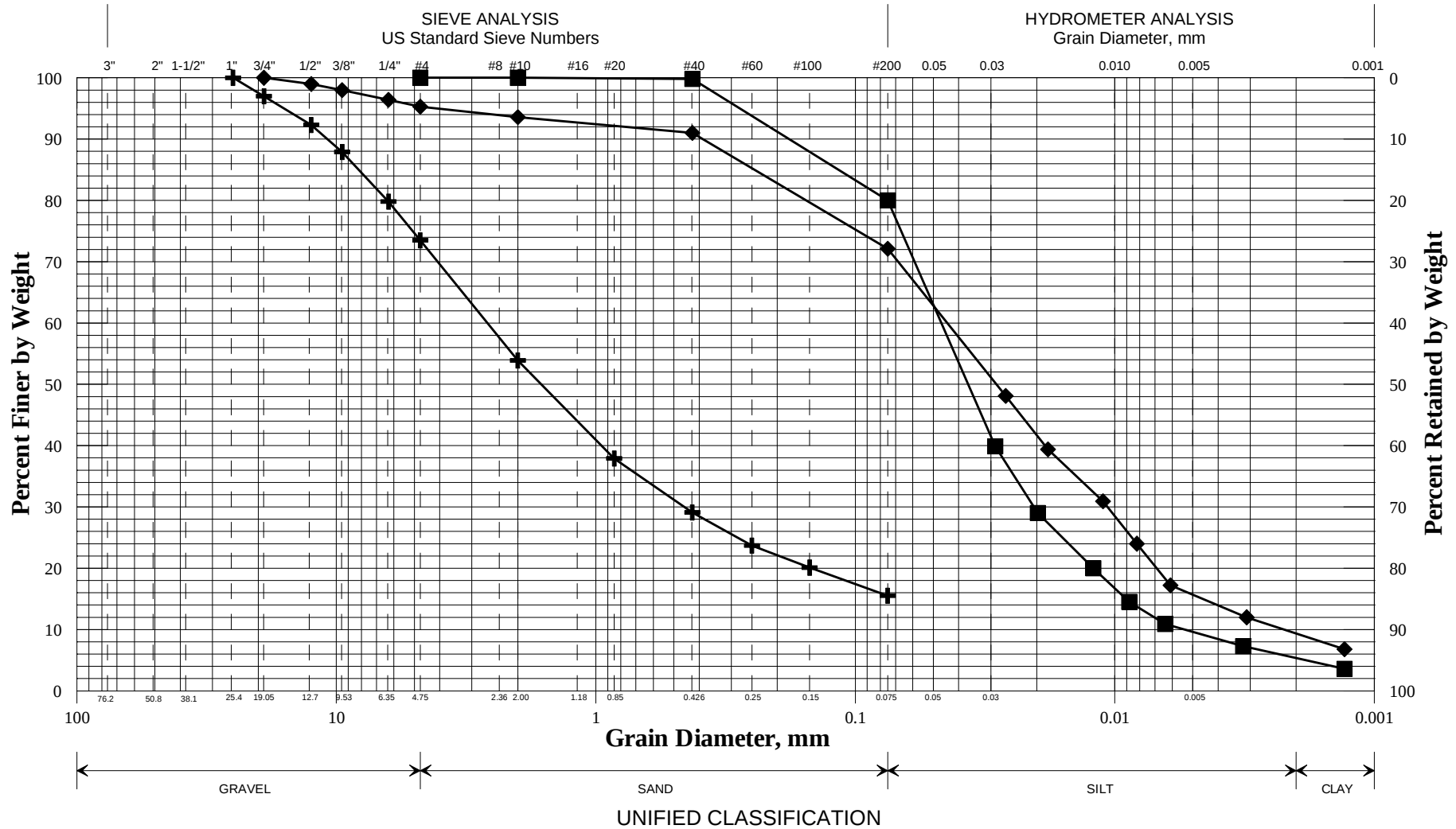
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-211/1D	748+64	14.0 RT	0.0-2.0	SAND, little silt, little gravel.	7.0			
◆	HB-FRV-211/2D	748+64	14.0 RT	5.0-7.0	SAND, some gravel, little silt, trace clay.	4.5			
■	HB-FRV-211/3D	748+64	14.0 RT	10.0-12.0	SILT, some sand, trace clay.	9.9			
●	HB-FRV-212/1D	749+50	14.5 RT	0.0-2.0	SAND, some gravel, little silt.	5.7			
▲	HB-FRV-212/2D	749+50	14.5 RT	5.0-7.0	SAND, some gravel, little silt, trace clay.	6.6			
×	HB-FRV-212/3D	749+50	14.5 RT	10.0-12.0	Gravelly SAND, little silt, trace clay.	8.0			

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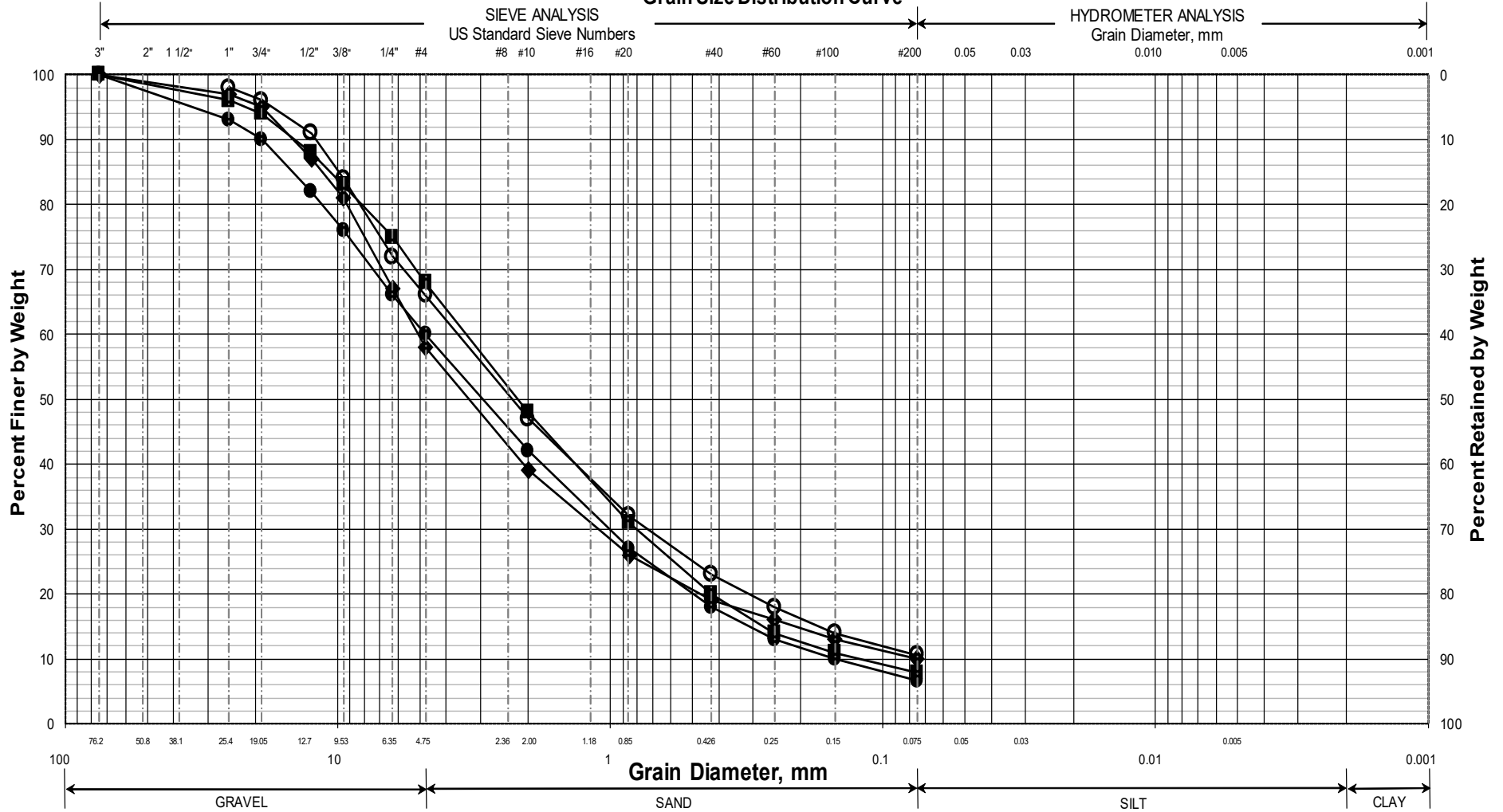
State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-FRV-213/1D	750+50	13.5 RT	0.0-2.0	SAND, some gravel, little silt.	5.0			
◆	HB-FRV-213/2D	750+50	13.5 RT	5.0-7.0	SILT, some sand, trace clay, trace gravel.	19.8			
■	HB-FRV-213/3D	750+50	13.5 RT	10.0-12.0	SILT, little sand, trace clay.	16.2			
●									
▲									
×									

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Maine Department of Transportation Grain Size Distribution Curve

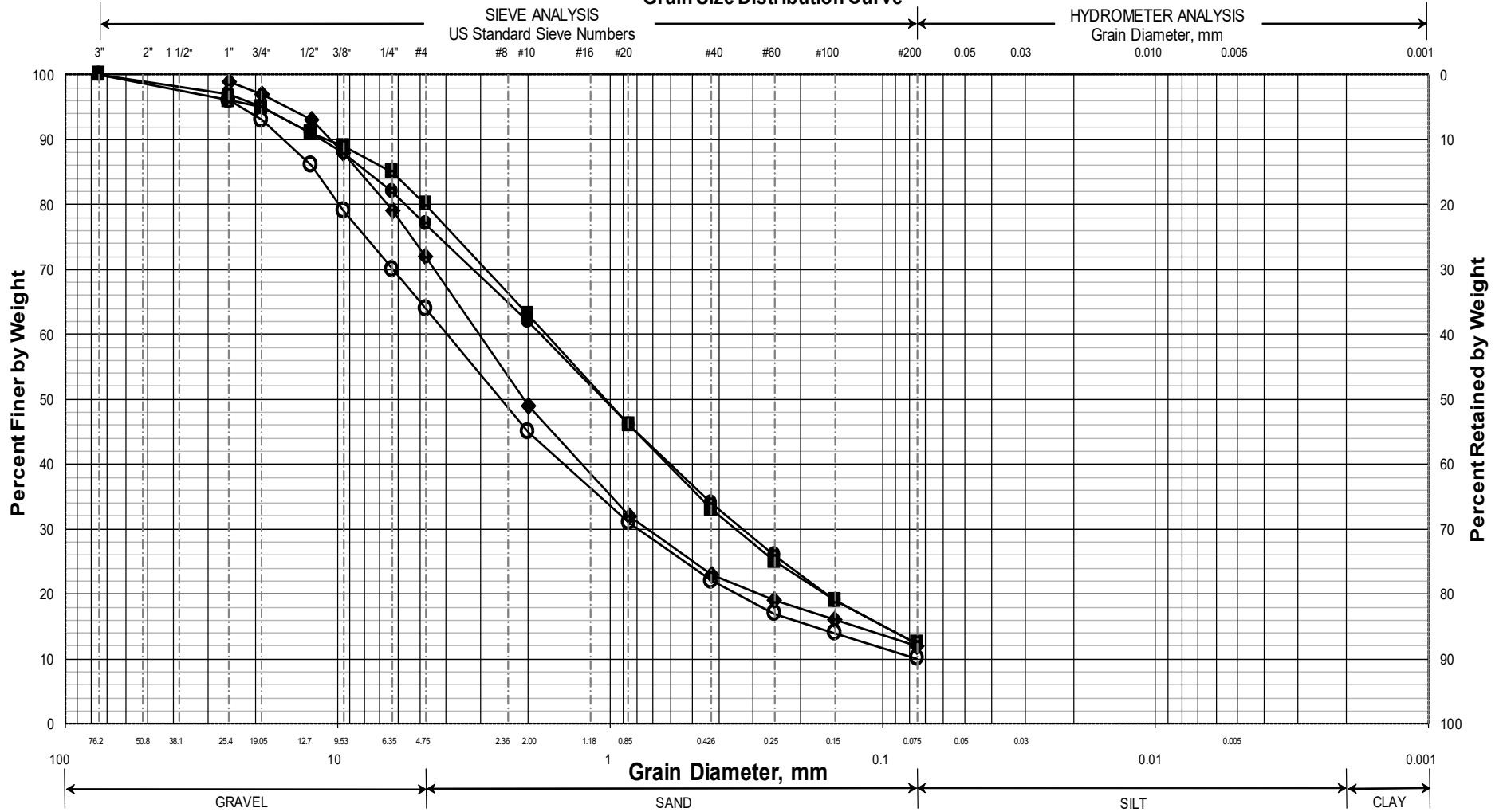


UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	WC, %	LL	PL	PI
○	TP-1-19/B1	625+00	14.0 RT	1.0-3.0	SAND, some gravel, little silt.	4.2			
◆	TP-2-19/B2	625+00	14.0 LT	1.0-3.0	Gravelly SAND, trace silt.	3.8			
■	TP-3-19/B3	696+00	14.0 RT	1.0-3.0	SAND, some gravel, trace silt.	2.6			
●	TP-4-19/B4	696+00	14.0 LT	1.0-3.0	Gravelly SAND, trace silt.	2.7			
▲									
X									

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Maine Department of Transportation Grain Size Distribution Curve

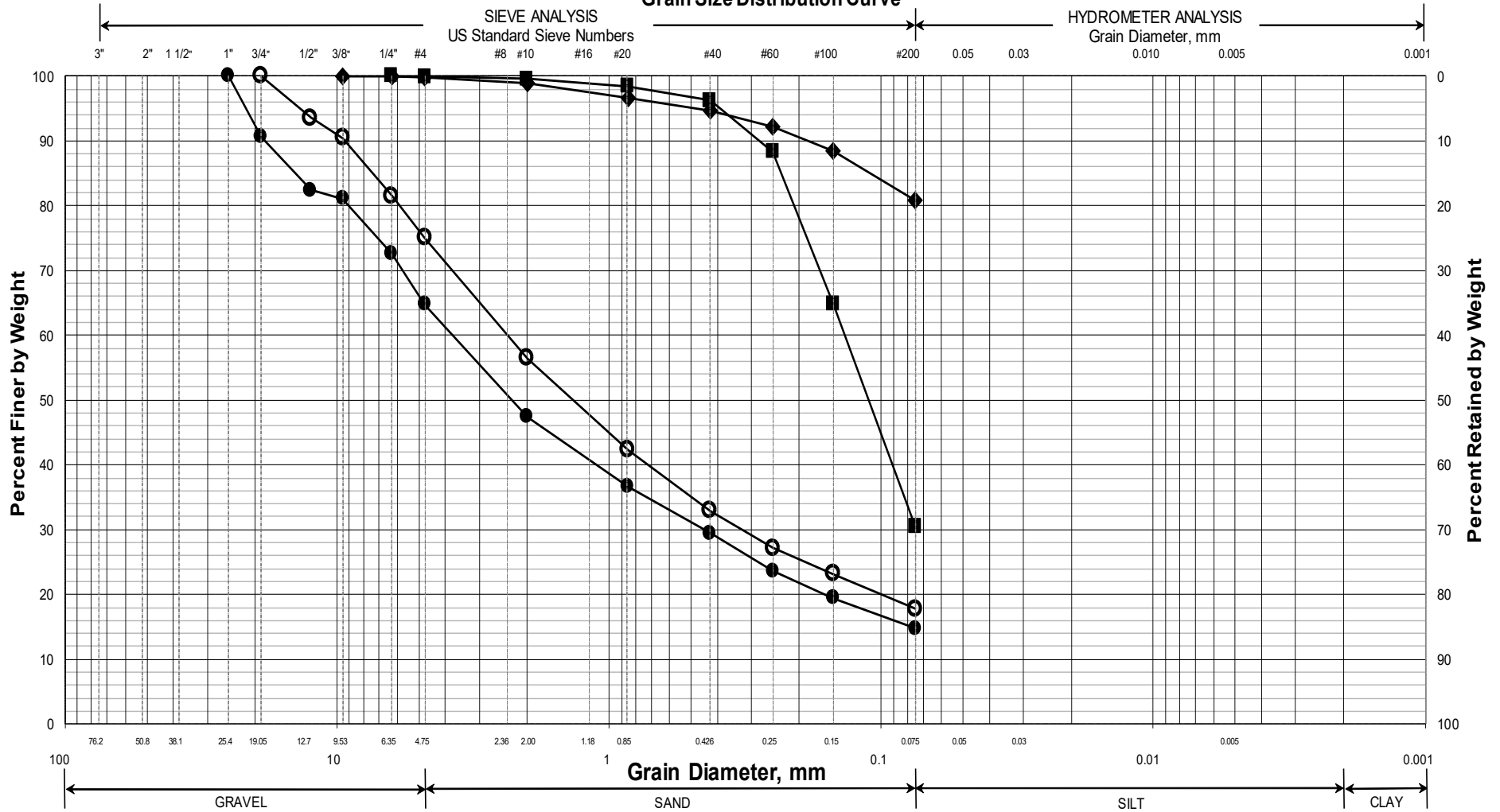


UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	WC, %	LL	PL	PI
○	TP-5-19/B5	763+00	14.0 LT	1.0-3.0	Gravelly SAND, trace silt.	2.2			
◆	TP-6-19/B6	763+00	14.0 RT	1.0-3.0	SAND, some gravel, little silt.	3.3			
■	TP-7-19/B7	805+00	14.0 RT	1.0-3.0	SAND, little gravel, little silt.	3.1			
●	TP-8-19/B8	805+00	14.0 LT	1.0-3.0	SAND, some gravel, little silt.	3.4			
▲									
X									

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Maine Department of Transportation Grain Size Distribution Curve

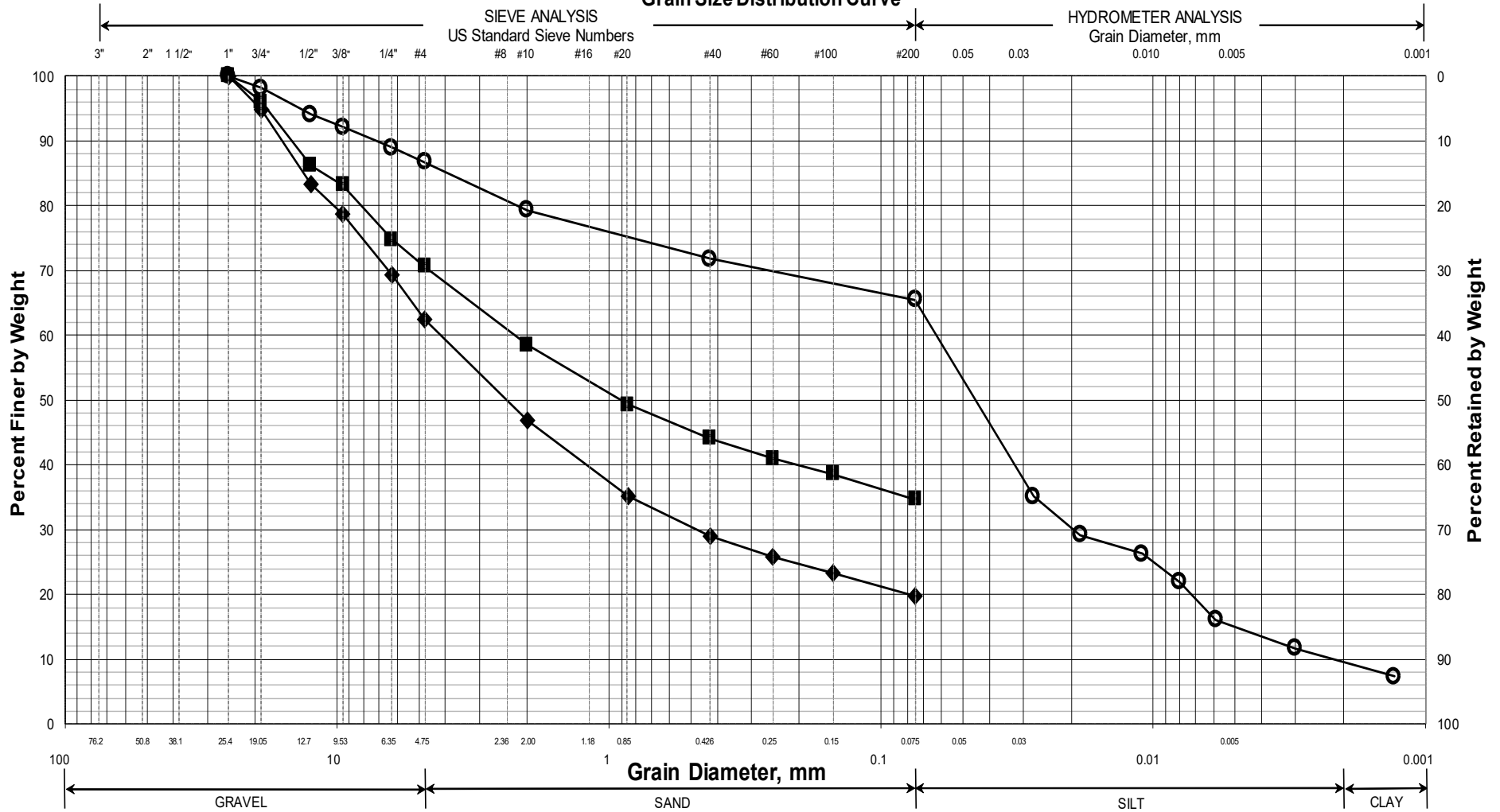


UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	WC, %	LL	PL	PI
○	HB-FRV-301/1D	666+00	6.0 RT	1.0-3.0	SAND, some gravel, little silt.	3.9			
◆	HB-FRV-301/2D	666+00	6.0 RT	5.0-7.0	SILT, little sand, trace gravel.	18.5			
■	HB-FRV-301/3D	666+00	6.0 RT	10.0-12.0	SAND, some silt, trace gravel.	22.9			
●	HB-FRV-301/5D	666+00	6.0 RT	20.0-22.0	SAND, some gravel, little silt.	11.1			
▲									
X									

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Maine Department of Transportation Grain Size Distribution Curve

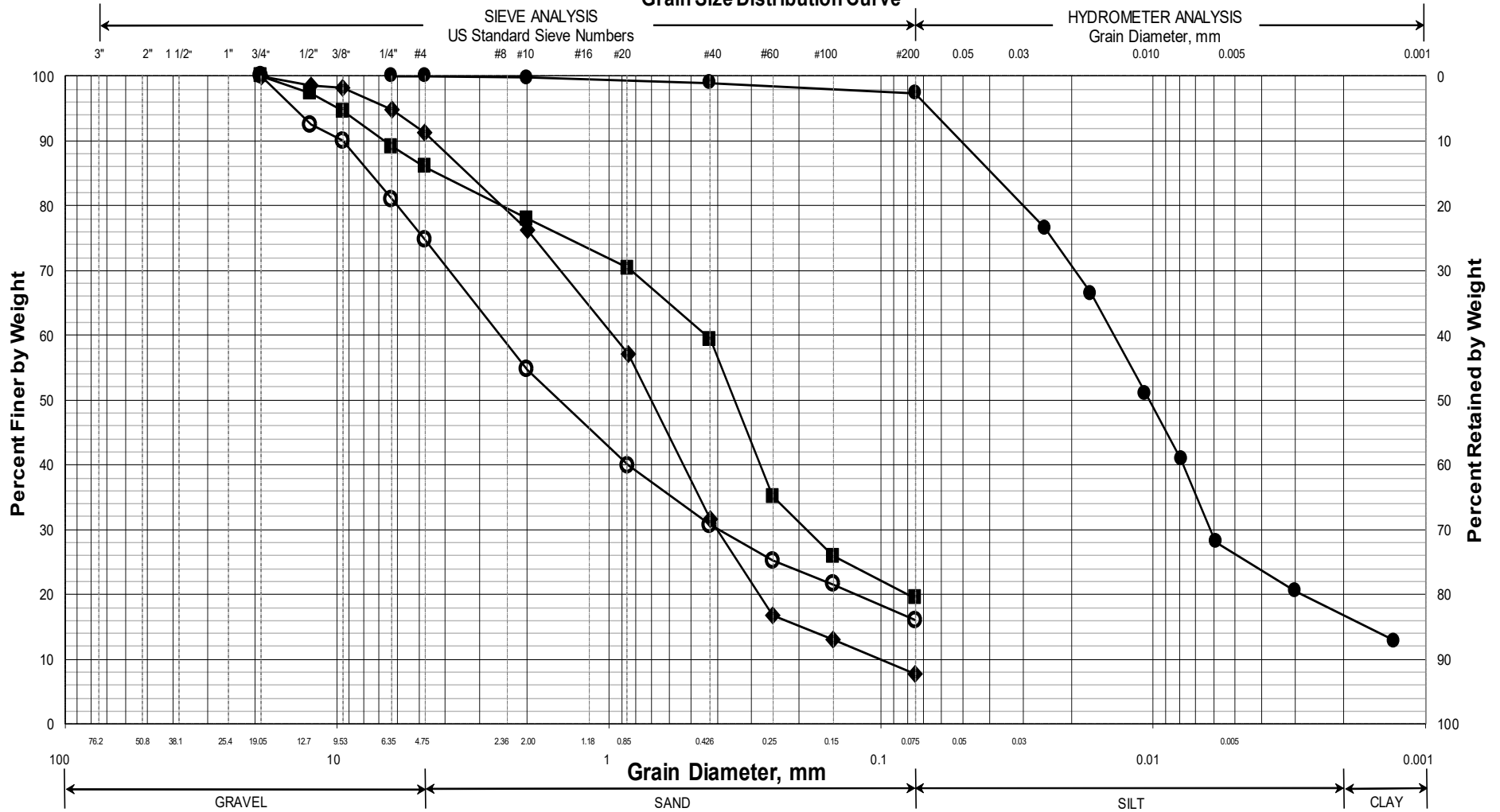


UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	WC, %	LL	PL	PI
○	HB-FRV-301/6D	666+00	6.0 RT	25.0-27.0	SILT, little sand, little gravel, trace clay.	11.7			
◆	HB-FRV-301/7D	666+00	6.0 RT	30.5-32.0	Gravelly SAND, little silt.	10.5			
■	HB-FRV-301/8D	666+00	6.0 RT	35.0-37.0	SAND, some silt, some gravel.	10.0			
●									
▲									
×									

WIN	
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Maine Department of Transportation Grain Size Distribution Curve

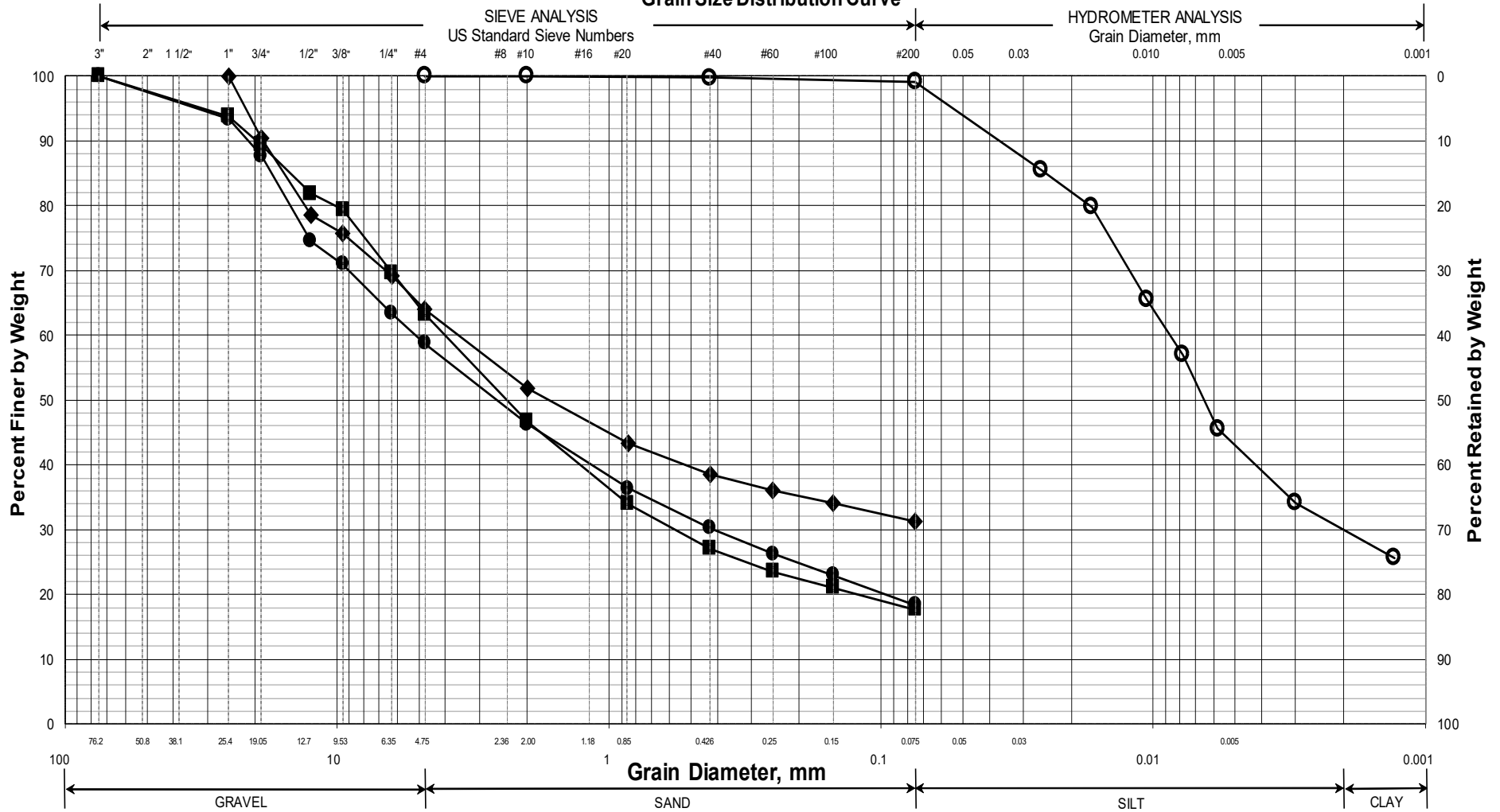


UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	WC, %	LL	PL	PI
○	HB-FRV-302/1D	667+00	14.0 RT	1.0-3.0	Sandy GRAVEL, little silt.	4.3			
◆	HB-FRV-302/3D	667+00	14.0 RT	10.0-12.0	SAND, some gravel, trace silt.	6.4			
■	HB-FRV-302/5D	667+00	14.0 RT	20.0-22.0	SAND, some gravel, little silt.	8.4			
●	HB-FRV-302/6D	667+00	14.0 RT	25.0-27.0	SILT, little clay, trace sand.	24.9			
▲									
X									

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Maine Department of Transportation Grain Size Distribution Curve

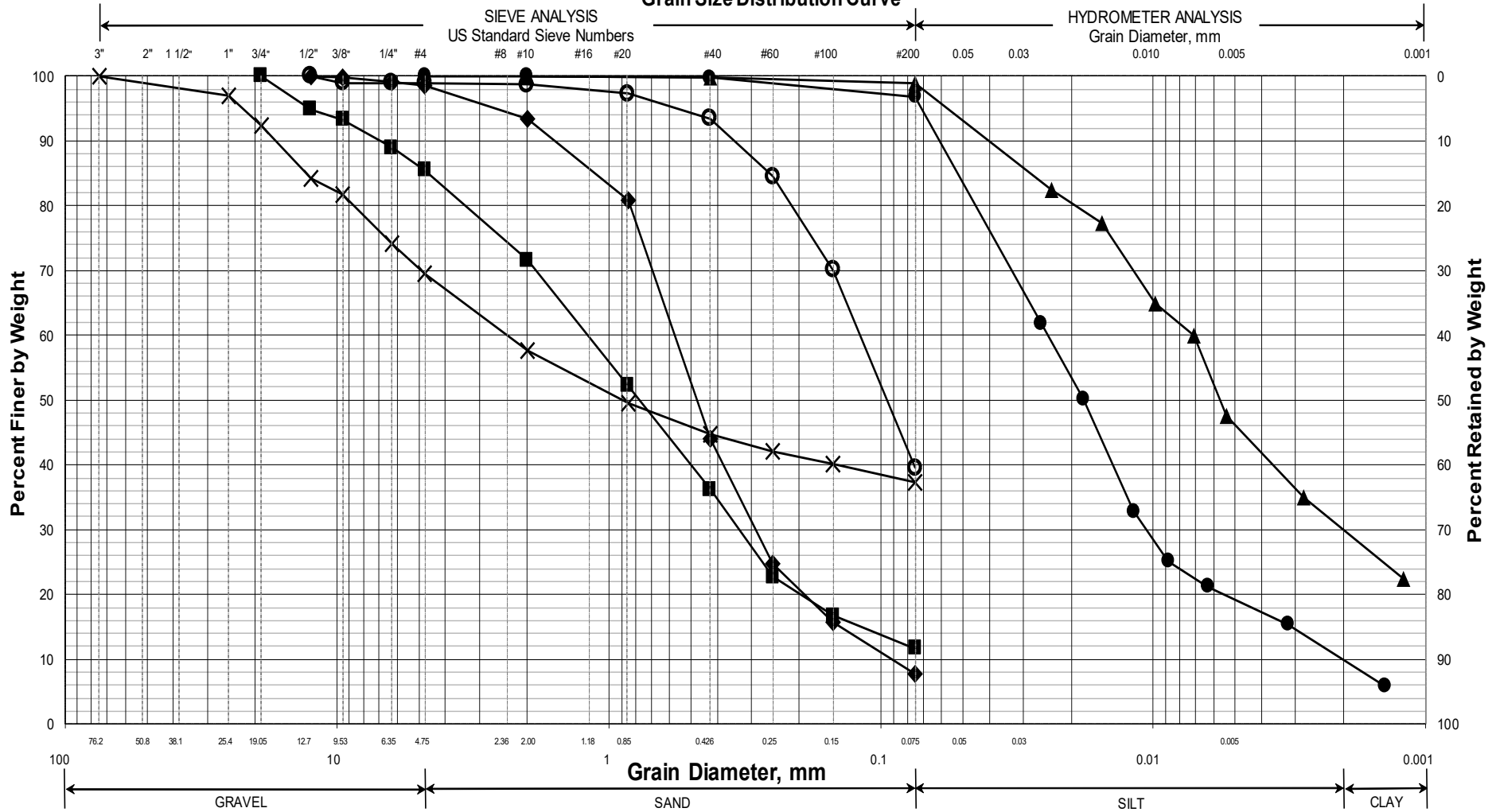


UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	WC, %	LL	PL	PI
O	HB-FRV-302/8D	667+00	14.0 RT	35.0-37.0	SILT, some clay, trace sand.	25.1			
◆	HB-FRV-302/10D	667+00	14.0 RT	45.0-47.0	GRAVEL, some sand, some silt.	11.6			
■	HB-FRV-302/12D	667+00	14.0 RT	55.0-57.0	Gravelly SAND, little silt.	9.3			
●	HB-FRV-302/13D	667+00	14.0 RT	60.0-62.0	Sandy GRAVEL, little silt.	7.3			
▲									
X									

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Maine Department of Transportation Grain Size Distribution Curve



UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	WC, %	LL	PL	PI
○	HB-FRV-303/2D	668+00	15.0 RT	5.0-7.0	Silty SAND, trace gravel.	19.2			
◆	HB-FRV-303/3D	668+00	15.0 RT	10.0-12.0	SAND, trace silt, trace gravel.	9.5			
■	HB-FRV-303/5D	668+00	15.0 RT	20.0-22.0	SAND, little gravel, little silt.	10.6			
●	HB-FRV-303/7D	668+00	15.0 RT	30.0-32.0	SILT, trace clay, trace sand.	25.6			
▲	HB-FRV-303/10D	668+00	15.0 RT	45.0-47.0	SILT, some clay, trace sand.	24.3	24	18	6
×	HB-FRV-303/13D	668+00	15.0 RT	60.0-62.0	SILT, some gravel, some sand.	10.6			

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302067** Boring No./Sample No. **HB-FRV-101/B1** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **618+00** Offset, ft: **13.0** RT Dbfg, ft: **0.0-1.6**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	98.7
¾ in. [19.0 mm]	96.9
½ in. [12.5 mm]	94.3
⅜ in. [9.5 mm]	91.6
¼ in. [6.3 mm]	84.5
No. 4 [4.75 mm]	77.9
No. 10 [2.00 mm]	57.7
No. 20 [0.850 mm]	40.2
No. 40 [0.425 mm]	29.5
No. 60 [0.250 mm]	24.2
No. 100 [0.150 mm]	19.9
No. 200 [0.075 mm]	15.0

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)	
Water Content (T 265), %	1.3

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302074** Boring No./Sample No. **HB-FRV-101/S1** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/16/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **618+00** Offset, ft: **13.0** RT Dbfg, ft: **1.6-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	95.0
⅜ in. [9.5 mm]	91.0
¼ in. [6.3 mm]	85.3
No. 4 [4.75 mm]	79.5
No. 10 [2.00 mm]	65.7
No. 20 [0.850 mm]	55.1
No. 40 [0.425 mm]	48.5
No. 60 [0.250 mm]	43.6
No. 100 [0.150 mm]	38.5
No. 200 [0.075 mm]	31.1

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)	
Water Content (T 265), %	19.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302068** Boring No./Sample No. **HB-FRV-102/B2** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **618+00** Offset, ft: **8.5** RT Dbfg, ft: **0.5-2.4**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	98.3
½ in. [12.5 mm]	93.4
⅜ in. [9.5 mm]	85.9
¼ in. [6.3 mm]	74.7
No. 4 [4.75 mm]	66.9
No. 10 [2.00 mm]	48.0
No. 20 [0.850 mm]	34.6
No. 40 [0.425 mm]	27.0
No. 60 [0.250 mm]	23.3
No. 100 [0.150 mm]	20.0
No. 200 [0.075 mm]	15.5

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)	
Water Content (T 265), %	1.3

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302069** Boring No./Sample No. **HB-FRV-102/S2** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/16/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **618+00** Offset, ft: **8.5** RT Dbfg, ft: **2.4-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	95.8
¾ in. [19.0 mm]	95.8
½ in. [12.5 mm]	95.8
⅜ in. [9.5 mm]	91.4
¼ in. [6.3 mm]	84.7
No. 4 [4.75 mm]	81.7
No. 10 [2.00 mm]	74.6
No. 20 [0.850 mm]	67.5
No. 40 [0.425 mm]	59.5
No. 60 [0.250 mm]	51.7
No. 100 [0.150 mm]	43.7
No. 200 [0.075 mm]	32.7

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)	
Water Content (T 265), %	15.4

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302061** Boring No./Sample No. **HB-FRV-103/B3** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **638+00** Offset, ft: **8.0** LT Dbfg, ft: **0.54-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	97.7
¾ in. [19.0 mm]	93.8
½ in. [12.5 mm]	84.5
⅜ in. [9.5 mm]	76.6
¼ in. [6.3 mm]	67.4
No. 4 [4.75 mm]	60.8
No. 10 [2.00 mm]	43.2
No. 20 [0.850 mm]	30.4
No. 40 [0.425 mm]	23.1
No. 60 [0.250 mm]	19.2
No. 100 [0.150 mm]	16.1
No. 200 [0.075 mm]	12.4

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)	
Water Content (T 265), %	2.9

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/24/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302063** Boring No./Sample No. **HB-FRV-104/B4** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **658+00** Offset, ft: **8.5** RT Dbfg, ft: **0.67-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	94.8
¾ in. [19.0 mm]	91.4
½ in. [12.5 mm]	83.1
⅜ in. [9.5 mm]	78.4
¼ in. [6.3 mm]	70.2
No. 4 [4.75 mm]	64.8
No. 10 [2.00 mm]	49.3
No. 20 [0.850 mm]	36.2
No. 40 [0.425 mm]	26.8
No. 60 [0.250 mm]	20.8
No. 100 [0.150 mm]	15.9
No. 200 [0.075 mm]	11.0

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)	
Water Content (T 265), %	1.4

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/18/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302057** Boring No./Sample No. **HB-FRV-105/B5** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **658+00** Offset, ft: **15.0** RT Dbfg, ft: **0.13-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	90.2
¾ in. [19.0 mm]	85.7
½ in. [12.5 mm]	77.5
⅜ in. [9.5 mm]	70.0
¼ in. [6.3 mm]	58.8
No. 4 [4.75 mm]	52.3
No. 10 [2.00 mm]	37.1
No. 20 [0.850 mm]	26.3
No. 40 [0.425 mm]	19.6
No. 60 [0.250 mm]	15.7
No. 100 [0.150 mm]	12.4
No. 200 [0.075 mm]	9.2

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)	
Water Content (T 265), %	1.4

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302055** Boring No./Sample No. **HB-FRV-106/B6** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **678+00** Offset, ft: **8.5** RT Dbfg, ft: **0.75-3.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	97.2
¾ in. [19.0 mm]	94.5
½ in. [12.5 mm]	89.1
⅜ in. [9.5 mm]	84.3
¼ in. [6.3 mm]	75.7
No. 4 [4.75 mm]	70.0
No. 10 [2.00 mm]	51.4
No. 20 [0.850 mm]	36.0
No. 40 [0.425 mm]	25.4
No. 60 [0.250 mm]	19.7
No. 100 [0.150 mm]	15.7
No. 200 [0.075 mm]	11.8

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)	
Water Content (T 265), %	1.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302075** Boring No./Sample No. **HB-FRV-106/S3** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/16/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **678+00** Offset, ft: **8.5** RT Dbfg, ft: **3.0-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	99.4
¼ in. [6.3 mm]	97.7
No. 4 [4.75 mm]	96.2
No. 10 [2.00 mm]	92.4
No. 20 [0.850 mm]	88.7
No. 40 [0.425 mm]	84.4
No. 60 [0.250 mm]	81.0
No. 100 [0.150 mm]	77.6
No. 200 [0.075 mm]	72.8

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)	
Water Content (T 265), %	23.1

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302059** Boring No./Sample No. **HB-FRV-107/B7** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **698+00** Offset, ft: **9.5** RT Dbfg, ft: **0.67-3.3**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	98.5
¾ in. [19.0 mm]	98.2
½ in. [12.5 mm]	89.2
⅜ in. [9.5 mm]	82.5
¼ in. [6.3 mm]	69.3
No. 4 [4.75 mm]	62.1
No. 10 [2.00 mm]	43.2
No. 20 [0.850 mm]	29.9
No. 40 [0.425 mm]	22.4
No. 60 [0.250 mm]	18.5
No. 100 [0.150 mm]	15.5
No. 200 [0.075 mm]	12.1

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)	
Water Content (T 265), %	1.4

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302072** Boring No./Sample No. **HB-FRV-107/S4** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/16/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **698+00** Offset, ft: **9.5** RT Dbfg, ft: **3.3-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	99.1
¼ in. [6.3 mm]	99.1
No. 4 [4.75 mm]	98.7
No. 10 [2.00 mm]	97.2
No. 20 [0.850 mm]	95.6
No. 40 [0.425 mm]	94.2
No. 60 [0.250 mm]	93.1
No. 100 [0.150 mm]	91.9
No. 200 [0.075 mm]	86.5

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)	
Water Content (T 265), %	33.0

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302054** Boring No./Sample No. **HB-FRV-108/B8** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **698+00** Offset, ft: **15.0** RT Dbfg, ft: **0.0-3.4**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	98.8
¾ in. [19.0 mm]	94.6
½ in. [12.5 mm]	87.6
⅜ in. [9.5 mm]	82.5
¼ in. [6.3 mm]	73.1
No. 4 [4.75 mm]	65.4
No. 10 [2.00 mm]	47.5
No. 20 [0.850 mm]	33.7
No. 40 [0.425 mm]	25.9
No. 60 [0.250 mm]	22.0
No. 100 [0.150 mm]	18.9
No. 200 [0.075 mm]	14.9

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)	
Water Content (T 265), %	1.7

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

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Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302053** Boring No./Sample No. **HB-FRV-109/B9** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **718+00** Offset, ft: **9.0** LT Dbfg, ft: **0.67-4.50**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	94.0
¾ in. [19.0 mm]	92.1
½ in. [12.5 mm]	84.8
⅜ in. [9.5 mm]	80.1
¼ in. [6.3 mm]	69.8
No. 4 [4.75 mm]	61.4
No. 10 [2.00 mm]	42.3
No. 20 [0.850 mm]	29.0
No. 40 [0.425 mm]	21.5
No. 60 [0.250 mm]	17.5
No. 100 [0.150 mm]	14.5
No. 200 [0.075 mm]	11.1

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)	
Water Content (T 265), %	0.7

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302066** Boring No./Sample No. **HB-FRV-111/B10** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **738+00** Offset, ft: **9.0** RT Dbfg, ft: **0.58-2.9**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	97.6
¾ in. [19.0 mm]	93.6
½ in. [12.5 mm]	85.6
⅜ in. [9.5 mm]	79.9
¼ in. [6.3 mm]	73.2
No. 4 [4.75 mm]	69.0
No. 10 [2.00 mm]	58.8
No. 20 [0.850 mm]	49.5
No. 40 [0.425 mm]	38.9
No. 60 [0.250 mm]	30.4
No. 100 [0.150 mm]	21.9
No. 200 [0.075 mm]	13.6

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)	
Water Content (T 265), %	1.7

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302070** Boring No./Sample No. **HB-FRV-111/S5** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/16/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **738+00** Offset, ft: **9.0** RT Dbfg, ft: **2.9-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	93.5
¼ in. [6.3 mm]	88.8
No. 4 [4.75 mm]	85.6
No. 10 [2.00 mm]	75.1
No. 20 [0.850 mm]	69.7
No. 40 [0.425 mm]	65.7
No. 60 [0.250 mm]	58.7
No. 100 [0.150 mm]	46.3
No. 200 [0.075 mm]	30.5

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)	
Water Content (T 265), %	12.4

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302065** Boring No./Sample No. **HB-FRV-112/B11** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **758+00** Offset, ft: **8.5** LT Dbfg, ft: **0.75-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	98.2
¾ in. [19.0 mm]	95.0
½ in. [12.5 mm]	87.0
⅜ in. [9.5 mm]	80.2
¼ in. [6.3 mm]	70.3
No. 4 [4.75 mm]	64.3
No. 10 [2.00 mm]	43.5
No. 20 [0.850 mm]	29.7
No. 40 [0.425 mm]	22.4
No. 60 [0.250 mm]	18.9
No. 100 [0.150 mm]	16.3
No. 200 [0.075 mm]	12.9

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)	
Water Content (T 265), %	2.0

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302060** Boring No./Sample No. **HB-FRV-113/B12** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **758+00** Offset, ft: **14.0** LT Dbfg, ft: **0.0-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	94.5
¾ in. [19.0 mm]	89.9
½ in. [12.5 mm]	80.9
⅜ in. [9.5 mm]	73.4
¼ in. [6.3 mm]	64.6
No. 4 [4.75 mm]	59.7
No. 10 [2.00 mm]	42.4
No. 20 [0.850 mm]	29.2
No. 40 [0.425 mm]	21.8
No. 60 [0.250 mm]	18.0
No. 100 [0.150 mm]	15.0
No. 200 [0.075 mm]	11.7

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)	
Water Content (T 265), %	1.1

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302062** Boring No./Sample No. **HB-FRV-114/B13** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **778+00** Offset, ft: **9.0** RT Dbfg, ft: **0.63-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	97.8
¾ in. [19.0 mm]	94.5
½ in. [12.5 mm]	86.8
⅜ in. [9.5 mm]	78.7
¼ in. [6.3 mm]	67.8
No. 4 [4.75 mm]	60.0
No. 10 [2.00 mm]	41.7
No. 20 [0.850 mm]	29.0
No. 40 [0.425 mm]	22.4
No. 60 [0.250 mm]	19.4
No. 100 [0.150 mm]	16.8
No. 200 [0.075 mm]	13.7

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)	
Water Content (T 265), %	1.7

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/24/2015**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302056** Boring No./Sample No. **HB-FRV-115/B14** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **798+00** Offset, ft: **8.5** LT Dbfg, ft: **0.75-3.3**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	98.3
¾ in. [19.0 mm]	96.9
½ in. [12.5 mm]	90.7
⅜ in. [9.5 mm]	86.0
¼ in. [6.3 mm]	77.6
No. 4 [4.75 mm]	71.8
No. 10 [2.00 mm]	52.5
No. 20 [0.850 mm]	36.7
No. 40 [0.425 mm]	26.9
No. 60 [0.250 mm]	21.5
No. 100 [0.150 mm]	16.9
No. 200 [0.075 mm]	12.4

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)	
Water Content (T 265), %	1.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/24/2015**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302071** Boring No./Sample No. **HB-FRV-115/S6** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/16/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **798+00** Offset, ft: **8.5** LT Dbfg, ft: **3.3-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	96.1
⅜ in. [9.5 mm]	87.5
¼ in. [6.3 mm]	82.1
No. 4 [4.75 mm]	77.6
No. 10 [2.00 mm]	63.5
No. 20 [0.850 mm]	52.2
No. 40 [0.425 mm]	45.0
No. 60 [0.250 mm]	40.9
No. 100 [0.150 mm]	37.5
No. 200 [0.075 mm]	32.5

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)	
Water Content (T 265), %	20.0

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **11/24/2015**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302058** Boring No./Sample No. **HB-FRV-116/B15** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **798+00** Offset, ft: **14.0** LT Dbfg, ft: **0.0-2.8**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	93.4
¾ in. [19.0 mm]	90.1
½ in. [12.5 mm]	84.2
⅜ in. [9.5 mm]	80.7
¼ in. [6.3 mm]	73.4
No. 4 [4.75 mm]	68.6
No. 10 [2.00 mm]	53.2
No. 20 [0.850 mm]	38.4
No. 40 [0.425 mm]	28.3
No. 60 [0.250 mm]	22.3
No. 100 [0.150 mm]	17.5
No. 200 [0.075 mm]	12.7

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)	
Water Content (T 265), %	1.2

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/24/2015**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302052** Boring No./Sample No. **HB-FRV-117/B16** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **818+00** Offset, ft: **9.0** RT Dbfg, ft: **0.67-3.4**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	96.0
¾ in. [19.0 mm]	92.3
½ in. [12.5 mm]	83.6
⅜ in. [9.5 mm]	78.3
¼ in. [6.3 mm]	67.6
No. 4 [4.75 mm]	61.4
No. 10 [2.00 mm]	44.4
No. 20 [0.850 mm]	32.1
No. 40 [0.425 mm]	25.0
No. 60 [0.250 mm]	21.0
No. 100 [0.150 mm]	17.5
No. 200 [0.075 mm]	13.3

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)	
Water Content (T 265), %	1.7

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/24/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No.

Boring No./Sample No.

Sample Description

Sampled

Received

302073

HB-FRV-117/S7

GEOTECHNICAL (DISTURBED)

10/28/2015

11/16/2015

Sample Type: **GEOTECHNICAL** Location:

Station: **818+00** Offset, ft: **9.0** RT Dbfg, ft: **3.4-4.5**

WIN/Town 022656.00 - FRENCHVILLE, FORT KE

Sampler: **BRUCE WILDER**

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]	99.9
No. 4 [4.75 mm]	99.6
No. 10 [2.00 mm]	98.6
No. 20 [0.850 mm]	97.7
No. 40 [0.425 mm]	96.8
No. 60 [0.250 mm]	94.7
No. 100 [0.150 mm]	81.1
No. 200 [0.075 mm]	34.9

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)	
Water Content (T 265), %	21.9

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **11/19/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302051** Boring No./Sample No. **HB-FRV-118/B17** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **838+00** Offset, ft: **9.0** LT Dbfg, ft: **0.63-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	98.9
¾ in. [19.0 mm]	96.6
½ in. [12.5 mm]	89.4
⅜ in. [9.5 mm]	85.3
¼ in. [6.3 mm]	73.8
No. 4 [4.75 mm]	67.6
No. 10 [2.00 mm]	50.7
No. 20 [0.850 mm]	37.5
No. 40 [0.425 mm]	29.4
No. 60 [0.250 mm]	24.9
No. 100 [0.150 mm]	21.2
No. 200 [0.075 mm]	16.1

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)	
Water Content (T 265), %	1.5

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/24/2015**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **302064** Boring No./Sample No. **HB-FRV-120/B18** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/28/2015** Received **11/10/2015**

Sample Type: **GEOTECHNICAL** Location: Station: **848+00** Offset, ft: **9.0** RT Dbfg, ft: **0.58-4.5**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **BRUCE WILDER**

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]	99.3
¾ in. [19.0 mm]	96.1
½ in. [12.5 mm]	88.5
⅜ in. [9.5 mm]	83.0
¼ in. [6.3 mm]	72.0
No. 4 [4.75 mm]	65.6
No. 10 [2.00 mm]	46.8
No. 20 [0.850 mm]	33.5
No. 40 [0.425 mm]	25.9
No. 60 [0.250 mm]	21.8
No. 100 [0.150 mm]	18.6
No. 200 [0.075 mm]	14.8

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)	
Water Content (T 265), %	1.2

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **11/19/2015**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300781** Boring No./Sample No. **HB-FRV-201/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **611+00** Offset, ft: **13.5** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	96.8
½ in. [12.5 mm]	94.1
⅜ in. [9.5 mm]	92.8
¼ in. [6.3 mm]	89.6
No. 4 [4.75 mm]	86.6
No. 10 [2.00 mm]	72.9
No. 20 [0.850 mm]	57.6
No. 40 [0.425 mm]	46.6
No. 60 [0.250 mm]	39.5
No. 100 [0.150 mm]	34.7
No. 200 [0.075 mm]	27.6

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)	
Water Content (T 265), %	5.0

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/15/2018**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300782** Boring No./Sample No. **HB-FRV-201/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **611+00** Offset, ft: **13.5** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	97.7
½ in. [12.5 mm]	97.1
⅜ in. [9.5 mm]	94.6
¼ in. [6.3 mm]	86.9
No. 4 [4.75 mm]	79.5
No. 10 [2.00 mm]	58.5
No. 20 [0.850 mm]	36.7
No. 40 [0.425 mm]	23.2
No. 60 [0.250 mm]	17.7
No. 100 [0.150 mm]	13.9
No. 200 [0.075 mm]	10.1

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)	
Water Content (T 265), %	5.2

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/16/2018**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300783** Boring No./Sample No. **HB-FRV-201/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **611+00** Offset, ft: **13.5** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	
No. 10 [2.00 mm]	100.0
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	99.4
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	94.6
[0.0227 mm]	67.7
[0.0155 mm]	60.2
[0.0100 mm]	48.9
[0.0075 mm]	41.4
[0.0056 mm]	33.9
[0.0030 mm]	18.8
[0.0013 mm]	7.5

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.64
Loss on Ignition, % (T 267)	
Water Content (T 265), %	24.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **3/1/2018**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300784** Boring No./Sample No. **HB-FRV-202/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **611+78** Offset, ft: **13.5** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	92.7
¾ in. [19.0 mm]	86.8
½ in. [12.5 mm]	84.6
⅜ in. [9.5 mm]	80.4
¼ in. [6.3 mm]	73.4
No. 4 [4.75 mm]	68.7
No. 10 [2.00 mm]	54.3
No. 20 [0.850 mm]	40.9
No. 40 [0.425 mm]	31.8
No. 60 [0.250 mm]	26.4
No. 100 [0.150 mm]	21.8
No. 200 [0.075 mm]	16.6

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)	
Water Content (T 265), %	4.7

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300785** Boring No./Sample No. **HB-FRV-202/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **611+78** Offset, ft: **13.5** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	97.1
½ in. [12.5 mm]	94.4
⅜ in. [9.5 mm]	92.4
¼ in. [6.3 mm]	87.3
No. 4 [4.75 mm]	83.3
No. 10 [2.00 mm]	66.8
No. 20 [0.850 mm]	47.2
No. 40 [0.425 mm]	33.4
No. 60 [0.250 mm]	25.4
No. 100 [0.150 mm]	20.9
No. 200 [0.075 mm]	15.7

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)	
Water Content (T 265), %	5.2

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300786** Boring No./Sample No. **HB-FRV-202/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **611+78** Offset, ft: **13.5** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	98.2
½ in. [12.5 mm]	93.3
⅜ in. [9.5 mm]	88.7
¼ in. [6.3 mm]	79.6
No. 4 [4.75 mm]	74.4
No. 10 [2.00 mm]	56.7
No. 20 [0.850 mm]	42.1
No. 40 [0.425 mm]	34.0
No. 60 [0.250 mm]	28.8
No. 100 [0.150 mm]	25.0
No. 200 [0.075 mm]	19.6

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)	
Water Content (T 265), %	5.0

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300787** Boring No./Sample No. **HB-FRV-203/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **629+00** Offset, ft: **13.5** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	97.9
½ in. [12.5 mm]	92.9
⅜ in. [9.5 mm]	89.3
¼ in. [6.3 mm]	78.8
No. 4 [4.75 mm]	70.6
No. 10 [2.00 mm]	52.2
No. 20 [0.850 mm]	38.1
No. 40 [0.425 mm]	29.7
No. 60 [0.250 mm]	24.9
No. 100 [0.150 mm]	20.9
No. 200 [0.075 mm]	15.7

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)	
Water Content (T 265), %	4.5

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300788** Boring No./Sample No. **HB-FRV-203/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **629+00** Offset, ft: **13.5** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	96.7
½ in. [12.5 mm]	88.3
⅜ in. [9.5 mm]	84.3
¼ in. [6.3 mm]	76.6
No. 4 [4.75 mm]	71.4
No. 10 [2.00 mm]	56.5
No. 20 [0.850 mm]	44.1
No. 40 [0.425 mm]	37.5
No. 60 [0.250 mm]	33.2
No. 100 [0.150 mm]	28.0
No. 200 [0.075 mm]	21.8

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)	
Water Content (T 265), %	7.9

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300789** Boring No./Sample No. **HB-FRV-203/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/7/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **629+00** Offset, ft: **13.5** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

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]	90.4
⅜ in. [9.5 mm]	85.2
¼ in. [6.3 mm]	75.8
No. 4 [4.75 mm]	70.3
No. 10 [2.00 mm]	55.5
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	38.3
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	25.1
[0.0309 mm]	19.4
[0.0203 mm]	16.3
[0.0118 mm]	14.3
[0.0087 mm]	11.2
[0.0063 mm]	9.2
[0.0032 mm]	6.1
[0.0014 mm]	3.1

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.63
Loss on Ignition, % (T 267)	
Water Content (T 265), %	9.5

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300790** Boring No./Sample No. **HB-FRV-204/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **629+75.5** Offset, ft: **14.0** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	98.6
½ in. [12.5 mm]	95.1
⅜ in. [9.5 mm]	92.1
¼ in. [6.3 mm]	84.2
No. 4 [4.75 mm]	77.7
No. 10 [2.00 mm]	58.6
No. 20 [0.850 mm]	42.4
No. 40 [0.425 mm]	32.9
No. 60 [0.250 mm]	27.1
No. 100 [0.150 mm]	23.3
No. 200 [0.075 mm]	17.3

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)	
Water Content (T 265), %	4.6

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300791** Boring No./Sample No. **HB-FRV-204/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **629+75.5** Offset, ft: **14.0** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	93.6
⅜ in. [9.5 mm]	88.3
¼ in. [6.3 mm]	79.8
No. 4 [4.75 mm]	72.3
No. 10 [2.00 mm]	54.0
No. 20 [0.850 mm]	40.7
No. 40 [0.425 mm]	33.0
No. 60 [0.250 mm]	27.7
No. 100 [0.150 mm]	23.9
No. 200 [0.075 mm]	18.1

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)	
Water Content (T 265), %	5.4

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300792** Boring No./Sample No. **HB-FRV-204/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **629+75.5** Offset, ft: **14.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	100.0
¾ in. [19.0 mm]	96.0
½ in. [12.5 mm]	92.1
⅜ in. [9.5 mm]	86.3
¼ in. [6.3 mm]	80.9
No. 4 [4.75 mm]	76.6
No. 10 [2.00 mm]	66.2
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	53.4
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	44.8
[0.0237 mm]	40.2
[0.0159 mm]	36.5
[0.0098 mm]	31.6
[0.0073 mm]	26.8
[0.0055 mm]	21.9
[0.0029 mm]	14.6
[0.0013 mm]	7.3

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.71
Loss on Ignition, % (T 267)	
Water Content (T 265), %	10.3

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/26/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300793** Boring No./Sample No. **HB-FRV-205/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **630+48** Offset, ft: **13.0** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	96.3
½ in. [12.5 mm]	91.7
⅜ in. [9.5 mm]	87.4
¼ in. [6.3 mm]	79.9
No. 4 [4.75 mm]	73.4
No. 10 [2.00 mm]	56.1
No. 20 [0.850 mm]	41.0
No. 40 [0.425 mm]	32.0
No. 60 [0.250 mm]	26.3
No. 100 [0.150 mm]	22.4
No. 200 [0.075 mm]	16.7

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)	
Water Content (T 265), %	3.8

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300794** Boring No./Sample No. **HB-FRV-205/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **630+48** Offset, ft: **13.0** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	97.9
½ in. [12.5 mm]	93.1
⅜ in. [9.5 mm]	87.8
¼ in. [6.3 mm]	80.3
No. 4 [4.75 mm]	73.9
No. 10 [2.00 mm]	57.0
No. 20 [0.850 mm]	42.4
No. 40 [0.425 mm]	33.2
No. 60 [0.250 mm]	27.1
No. 100 [0.150 mm]	22.5
No. 200 [0.075 mm]	16.5

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)	
Water Content (T 265), %	5.3

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No.

Boring No./Sample No.

Sample Description

Sampled

Received

300795

HB-FRV-205/3D

GEOTECHNICAL (DISTURBED)

11/14/2017

1/31/2018

Sample Type: **GEOTECHNICAL** Location:

Station: 630+48

Offset, ft: **13.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town 022656.00 - FRENCHVILLE, FORT KE

Sampler: **CODY RUSSELL**

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]	94.3
⅜ in. [9.5 mm]	90.8
¼ in. [6.3 mm]	82.6
No. 4 [4.75 mm]	77.7
No. 10 [2.00 mm]	62.3
No. 20 [0.850 mm]	49.2
No. 40 [0.425 mm]	40.6
No. 60 [0.250 mm]	35.4
No. 100 [0.150 mm]	30.7
No. 200 [0.075 mm]	26.2

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)	
Water Content (T 265), %	8.5

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300796** Boring No./Sample No. **HB-FRV-206/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **631+31** Offset, ft: **13.5** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	96.4
⅜ in. [9.5 mm]	93.4
¼ in. [6.3 mm]	86.5
No. 4 [4.75 mm]	80.8
No. 10 [2.00 mm]	61.8
No. 20 [0.850 mm]	43.4
No. 40 [0.425 mm]	32.5
No. 60 [0.250 mm]	26.8
No. 100 [0.150 mm]	22.4
No. 200 [0.075 mm]	17.1

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)	
Water Content (T 265), %	5.0

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/15/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300797** Boring No./Sample No. **HB-FRV-206/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **631+31** Offset, ft: **13.5** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	100.0
¾ in. [19.0 mm]	93.3
½ in. [12.5 mm]	84.8
⅜ in. [9.5 mm]	83.1
¼ in. [6.3 mm]	76.6
No. 4 [4.75 mm]	72.8
No. 10 [2.00 mm]	60.2
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	44.2
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	34.5
[0.0272 mm]	28.2
[0.0180 mm]	24.8
[0.0110 mm]	20.3
[0.0081 mm]	15.8
[0.0059 mm]	13.5
[0.0030 mm]	9.0
[0.0013 mm]	4.5
[mm]	

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.72
Loss on Ignition, % (T 267)	
Water Content (T 265), %	7.0

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/22/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300798** Boring No./Sample No. **HB-FRV-206/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **631+31** Offset, ft: **13.5** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	100.0
½ in. [12.5 mm]	93.5
⅜ in. [9.5 mm]	89.8
¼ in. [6.3 mm]	83.3
No. 4 [4.75 mm]	78.4
No. 10 [2.00 mm]	65.0
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	47.9
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	35.7
[0.0277 mm]	28.9
[0.0183 mm]	25.3
[0.0112 mm]	19.2
[0.0082 mm]	15.7
[0.0059 mm]	13.3
[0.0030 mm]	9.6
[0.0013 mm]	4.8

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.71
Loss on Ignition, % (T 267)	
Water Content (T 265), %	7.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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Date Reported: **2/23/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300799** Boring No./Sample No. **HB-FRV-207/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **641+00** Offset, ft: **13.0** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	98.8
½ in. [12.5 mm]	95.0
⅜ in. [9.5 mm]	90.7
¼ in. [6.3 mm]	82.5
No. 4 [4.75 mm]	76.9
No. 10 [2.00 mm]	59.2
No. 20 [0.850 mm]	43.5
No. 40 [0.425 mm]	33.9
No. 60 [0.250 mm]	27.3
No. 100 [0.150 mm]	23.0
No. 200 [0.075 mm]	17.6

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)	
Water Content (T 265), %	5.6

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **300800** Boring No./Sample No. **HB-FRV-207/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **641+00** Offset, ft: **13.0** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	96.1
½ in. [12.5 mm]	94.0
⅜ in. [9.5 mm]	91.7
¼ in. [6.3 mm]	86.1
No. 4 [4.75 mm]	81.8
No. 10 [2.00 mm]	69.0
No. 20 [0.850 mm]	56.6
No. 40 [0.425 mm]	48.1
No. 60 [0.250 mm]	42.4
No. 100 [0.150 mm]	35.9
No. 200 [0.075 mm]	27.1

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)	
Water Content (T 265), %	7.8

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303001** Boring No./Sample No. **HB-FRV-207/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **641+00** Offset, ft: **13.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	100.0
¾ in. [19.0 mm]	97.7
½ in. [12.5 mm]	92.1
⅜ in. [9.5 mm]	91.2
¼ in. [6.3 mm]	86.1
No. 4 [4.75 mm]	81.7
No. 10 [2.00 mm]	66.9
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	41.5
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	25.3
[0.0328 mm]	18.9
[0.0217 mm]	14.2
[0.0120 mm]	11.8
[0.0087 mm]	9.4
[0.0062 mm]	8.3
[0.0033 mm]	5.9
[0.0014 mm]	2.3

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.68
Loss on Ignition, % (T 267)	
Water Content (T 265), %	5.3

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **3/1/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303002** Boring No./Sample No. **HB-FRV-208/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **641+85.5** Offset, ft: **14.0** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	97.5
¾ in. [19.0 mm]	94.7
½ in. [12.5 mm]	91.4
⅜ in. [9.5 mm]	88.8
¼ in. [6.3 mm]	82.4
No. 4 [4.75 mm]	77.3
No. 10 [2.00 mm]	59.2
No. 20 [0.850 mm]	41.6
No. 40 [0.425 mm]	31.5
No. 60 [0.250 mm]	25.3
No. 100 [0.150 mm]	21.3
No. 200 [0.075 mm]	16.2

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)	
Water Content (T 265), %	5.5

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303003** Boring No./Sample No. **HB-FRV-208/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **641+85.5** Offset, ft: **14.0** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	100.0
¾ in. [19.0 mm]	91.3
½ in. [12.5 mm]	83.2
⅜ in. [9.5 mm]	78.5
¼ in. [6.3 mm]	71.5
No. 4 [4.75 mm]	66.3
No. 10 [2.00 mm]	50.7
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	34.8
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	24.1
[0.0305 mm]	16.7
[0.0198 mm]	14.9
[0.0118 mm]	12.1
[0.0086 mm]	9.3
[0.0062 mm]	7.5
[0.0031 mm]	5.6
[0.0013 mm]	3.7

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)	
Water Content (T 265), %	11.0

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/23/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303004** Boring No./Sample No. **HB-FRV-208/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **641+85.5** Offset, ft: **14.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	100.0
½ in. [12.5 mm]	95.5
⅜ in. [9.5 mm]	93.7
¼ in. [6.3 mm]	87.1
No. 4 [4.75 mm]	80.9
No. 10 [2.00 mm]	63.7
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	44.0
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	31.0
[0.0305 mm]	22.6
[0.0198 mm]	20.1
[0.0117 mm]	17.6
[0.0085 mm]	15.1
[0.0061 mm]	12.5
[0.0031 mm]	8.8
[0.0013 mm]	5.0

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.66
Loss on Ignition, % (T 267)	
Water Content (T 265), %	7.6

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/26/2018**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303005** Boring No./Sample No. **HB-FRV-209/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **642+71** Offset, ft: **14.0** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	96.4
¾ in. [19.0 mm]	92.3
½ in. [12.5 mm]	91.8
⅜ in. [9.5 mm]	88.1
¼ in. [6.3 mm]	80.5
No. 4 [4.75 mm]	75.3
No. 10 [2.00 mm]	57.6
No. 20 [0.850 mm]	41.7
No. 40 [0.425 mm]	31.9
No. 60 [0.250 mm]	25.8
No. 100 [0.150 mm]	21.8
No. 200 [0.075 mm]	16.6

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)	
Water Content (T 265), %	4.7

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **2/14/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303006** Boring No./Sample No. **HB-FRV-209/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **642+71** Offset, ft: **14.0** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	100.0
¾ in. [19.0 mm]	97.5
½ in. [12.5 mm]	94.8
⅜ in. [9.5 mm]	91.4
¼ in. [6.3 mm]	85.4
No. 4 [4.75 mm]	80.1
No. 10 [2.00 mm]	63.6
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	47.7
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	36.7
[0.0289 mm]	26.6
[0.0195 mm]	20.6
[0.0114 mm]	19.4
[0.0085 mm]	14.5
[0.0060 mm]	13.3
[0.0030 mm]	9.7
[0.0013 mm]	4.8

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)	
Water Content (T 265), %	21.3

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/26/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303007** Boring No./Sample No. **HB-FRV-209/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **642+71** Offset, ft: **14.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	100.0
½ in. [12.5 mm]	96.3
⅜ in. [9.5 mm]	89.9
¼ in. [6.3 mm]	81.9
No. 4 [4.75 mm]	74.4
No. 10 [2.00 mm]	55.8
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	37.3
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	25.0
[0.0305 mm]	18.2
[0.0198 mm]	16.2
[0.0118 mm]	13.2
[0.0086 mm]	10.1
[0.0062 mm]	9.1
[0.0031 mm]	6.1
[0.0013 mm]	4.0

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.65
Loss on Ignition, % (T 267)	
Water Content (T 265), %	7.0

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303008** Boring No./Sample No. **HB-FRV-210/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/14/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **747+50** Offset, ft: **13.7** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	96.3
½ in. [12.5 mm]	93.3
⅜ in. [9.5 mm]	89.0
¼ in. [6.3 mm]	79.0
No. 4 [4.75 mm]	72.1
No. 10 [2.00 mm]	51.1
No. 20 [0.850 mm]	34.7
No. 40 [0.425 mm]	26.0
No. 60 [0.250 mm]	20.8
No. 100 [0.150 mm]	17.2
No. 200 [0.075 mm]	12.6

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)	
Water Content (T 265), %	5.5

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303009** Boring No./Sample No. **HB-FRV-210/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **747+50** Offset, ft: **13.7** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	98.4
½ in. [12.5 mm]	90.5
⅜ in. [9.5 mm]	83.5
¼ in. [6.3 mm]	74.1
No. 4 [4.75 mm]	66.1
No. 10 [2.00 mm]	45.5
No. 20 [0.850 mm]	29.3
No. 40 [0.425 mm]	20.1
No. 60 [0.250 mm]	15.8
No. 100 [0.150 mm]	12.4
No. 200 [0.075 mm]	9.1

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)	
Water Content (T 265), %	3.2

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

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SAMPLE INFORMATION

Reference No. **303010** Boring No./Sample No. **HB-FRV-210/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **747+50** Offset, ft: **13.7** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	100.0
¼ in. [6.3 mm]	99.8
No. 4 [4.75 mm]	99.6
No. 10 [2.00 mm]	99.0
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	97.8
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	72.8
[0.0312 mm]	28.9
[0.0209 mm]	19.9
[0.0126 mm]	12.7
[0.0090 mm]	10.8
[0.0065 mm]	7.2
[0.0032 mm]	3.6
[0.0013 mm]	3.6

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.63
Loss on Ignition, % (T 267)	
Water Content (T 265), %	13.8

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

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SAMPLE INFORMATION

Reference No. **303011** Boring No./Sample No. **HB-FRV-211/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **748+64** Offset, ft: **14.0** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	94.8
¼ in. [6.3 mm]	89.6
No. 4 [4.75 mm]	84.9
No. 10 [2.00 mm]	63.4
No. 20 [0.850 mm]	44.4
No. 40 [0.425 mm]	33.6
No. 60 [0.250 mm]	27.1
No. 100 [0.150 mm]	23.1
No. 200 [0.075 mm]	18.0

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)	
Water Content (T 265), %	7.0

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

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SAMPLE INFORMATION

Reference No. **303012** Boring No./Sample No. **HB-FRV-211/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **748+64** Offset, ft: **14.0** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	100.0
¾ in. [19.0 mm]	96.4
½ in. [12.5 mm]	93.0
⅜ in. [9.5 mm]	88.6
¼ in. [6.3 mm]	80.8
No. 4 [4.75 mm]	74.8
No. 10 [2.00 mm]	58.4
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	42.3
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	15.4
[0.0329 mm]	10.4
[0.0215 mm]	7.3
[0.0125 mm]	6.2
[0.0089 mm]	5.2
[0.0064 mm]	4.1
[0.0034 mm]	3.1
[0.0014 mm]	1.1

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.69
Loss on Ignition, % (T 267)	
Water Content (T 265), %	4.5

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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Date Reported: **3/1/2018**

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GEOTECHNICAL TEST REPORT

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SAMPLE INFORMATION

Reference No. **303013** Boring No./Sample No. **HB-FRV-211/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **748+64** Offset, ft: **14.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	
No. 10 [2.00 mm]	100.0
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	99.9
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	62.7
[0.0333 mm]	16.5
[0.0217 mm]	11.0
[0.0126 mm]	9.2
[0.0090 mm]	7.4
[0.0064 mm]	5.5
[0.0032 mm]	3.7
[0.0013 mm]	1.8

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.68
Loss on Ignition, % (T 267)	
Water Content (T 265), %	9.9

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

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SAMPLE INFORMATION

Reference No. **303014** Boring No./Sample No. **HB-FRV-212/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **749+50** Offset, ft: **14.5** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	97.9
⅜ in. [9.5 mm]	94.7
¼ in. [6.3 mm]	84.8
No. 4 [4.75 mm]	77.5
No. 10 [2.00 mm]	58.2
No. 20 [0.850 mm]	41.7
No. 40 [0.425 mm]	31.3
No. 60 [0.250 mm]	25.3
No. 100 [0.150 mm]	20.3
No. 200 [0.075 mm]	15.1

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)	
Water Content (T 265), %	5.7

Consolidation (T 216)

Trimmings, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303015** Boring No./Sample No. **HB-FRV-212/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **749+50** Offset, ft: **14.5** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	100.0
½ in. [12.5 mm]	89.3
⅜ in. [9.5 mm]	84.2
¼ in. [6.3 mm]	77.4
No. 4 [4.75 mm]	70.8
No. 10 [2.00 mm]	57.8
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	42.5
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	20.5
[0.0328 mm]	13.1
[0.0214 mm]	10.9
[0.0124 mm]	8.7
[0.0090 mm]	6.5
[0.0064 mm]	5.4
[0.0032 mm]	4.3
[0.0013 mm]	2.2

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.64
Loss on Ignition, % (T 267)	
Water Content (T 265), %	6.6

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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Date Reported: **2/22/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303016** Boring No./Sample No. **HB-FRV-212/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **749+50** Offset, ft: **14.5** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	100.0
¾ in. [19.0 mm]	97.3
½ in. [12.5 mm]	84.9
⅜ in. [9.5 mm]	76.7
¼ in. [6.3 mm]	68.4
No. 4 [4.75 mm]	61.7
No. 10 [2.00 mm]	47.3
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	33.3
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	15.3
[0.0323 mm]	9.4
[0.0208 mm]	7.9
[0.0123 mm]	6.3
[0.0089 mm]	4.7
[0.0063 mm]	3.9
[0.0031 mm]	3.1
[0.0013 mm]	1.6

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.71
Loss on Ignition, % (T 267)	
Water Content (T 265), %	8.0

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/23/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303017** Boring No./Sample No. **HB-FRV-213/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **750+50** Offset, ft: **13.5** RT Dbfg, ft: **0.0-2.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	92.3
⅜ in. [9.5 mm]	87.9
¼ in. [6.3 mm]	79.8
No. 4 [4.75 mm]	73.5
No. 10 [2.00 mm]	53.9
No. 20 [0.850 mm]	37.9
No. 40 [0.425 mm]	29.1
No. 60 [0.250 mm]	23.7
No. 100 [0.150 mm]	20.1
No. 200 [0.075 mm]	15.5

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)	
Water Content (T 265), %	5.0

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **2/16/2018**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303018** Boring No./Sample No. **HB-FRV-213/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **750+50** Offset, ft: **13.5** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	100.0
½ in. [12.5 mm]	99.0
⅜ in. [9.5 mm]	98.0
¼ in. [6.3 mm]	96.4
No. 4 [4.75 mm]	95.3
No. 10 [2.00 mm]	93.6
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	91.0
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	72.1
[0.0263 mm]	48.1
[0.0181 mm]	39.4
[0.0111 mm]	30.9
[0.0082 mm]	24.0
[0.0061 mm]	17.2
[0.0031 mm]	12.0
[0.0013 mm]	6.8

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)	
Water Content (T 265), %	19.8

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **3/1/2018**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **303019** Boring No./Sample No. **HB-FRV-213/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **11/15/2017** Received **1/31/2018**

Sample Type: **GEOTECHNICAL** Location: Station: **750+50** Offset, ft: **13.5** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FRENCHVILLE, FORT KE** Sampler: **CODY RUSSELL**

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]	100.0
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	99.8
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	80.0
[0.0289 mm]	39.9
[0.0198 mm]	29.0
[0.0121 mm]	20.0
[0.0088 mm]	14.5
[0.0064 mm]	10.9
[0.0032 mm]	7.3
[0.0013 mm]	3.6

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)	
Water Content (T 265), %	16.2

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **2/26/2018**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380775** Boring No./Sample No. **HB-FRV-301/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/25/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **666+00** Offset, ft: **6.0** RT Dbfg, ft: **1.0-3.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	93.6
⅜ in. [9.5 mm]	90.5
¼ in. [6.3 mm]	81.5
No. 4 [4.75 mm]	75.1
No. 10 [2.00 mm]	56.5
No. 20 [0.850 mm]	42.3
No. 40 [0.425 mm]	32.9
No. 60 [0.250 mm]	27.2
No. 100 [0.150 mm]	23.2
No. 200 [0.075 mm]	17.8

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)	
Water Content (T 265), %	3.9

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380851** Boring No./Sample No. **HB-FRV-301/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/25/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **666+00** Offset, ft: **6.0** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	99.9
No. 4 [4.75 mm]	99.8
No. 10 [2.00 mm]	98.9
No. 20 [0.850 mm]	96.6
No. 40 [0.425 mm]	94.7
No. 60 [0.250 mm]	92.2
No. 100 [0.150 mm]	88.4
No. 200 [0.075 mm]	80.8

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)	
Water Content (T 265), %	18.5

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380852** Boring No./Sample No. **HB-FRV-301/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/25/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **666+00** Offset, ft: **6.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	99.9
No. 10 [2.00 mm]	99.6
No. 20 [0.850 mm]	98.4
No. 40 [0.425 mm]	96.2
No. 60 [0.250 mm]	88.3
No. 100 [0.150 mm]	64.9
No. 200 [0.075 mm]	30.5

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)	
Water Content (T 265), %	22.9

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380853** Boring No./Sample No. **HB-FRV-301/5D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/25/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **666+00** Offset, ft: **6.0** RT Dbfg, ft: **20.0-22.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	90.6
½ in. [12.5 mm]	82.4
⅜ in. [9.5 mm]	81.1
¼ in. [6.3 mm]	72.6
No. 4 [4.75 mm]	64.8
No. 10 [2.00 mm]	47.4
No. 20 [0.850 mm]	36.6
No. 40 [0.425 mm]	29.5
No. 60 [0.250 mm]	23.6
No. 100 [0.150 mm]	19.5
No. 200 [0.075 mm]	14.8

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)	
Water Content (T 265), %	11.1

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380854** Boring No./Sample No. **HB-FRV-301/6D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/25/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **666+00** Offset, ft: **6.0** RT Dbfg, ft: **25.0-27.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

TEST RESULTS

Sieve Analysis (T 88)

Wash Method

SIEVE SIZE U.S. [SI]	% Passing
3 in. [75.0 mm]	
1 in. [25.0 mm]	100.0
¾ in. [19.0 mm]	98.2
½ in. [12.5 mm]	94.1
⅜ in. [9.5 mm]	92.1
¼ in. [6.3 mm]	89.0
No. 4 [4.75 mm]	86.7
No. 10 [2.00 mm]	79.3
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	71.8
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	65.5
[0.0276 mm]	35.1
[0.0185 mm]	29.2
[0.0110 mm]	26.3
[0.0080 mm]	21.9
[0.0059 mm]	16.1
[0.0030 mm]	11.7
[0.0013 mm]	7.3

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.74
Loss on Ignition, % (T 267)	
Water Content (T 265), %	11.7

Consolidation (T 216)

Trimming, Water Content, %					
	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **1/6/2023**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380855** Boring No./Sample No. **HB-FRV-301/7D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/25/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **666+00** Offset, ft: **6.0** RT Dbfg, ft: **30.5-32.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	94.8
½ in. [12.5 mm]	83.3
⅜ in. [9.5 mm]	78.7
¼ in. [6.3 mm]	69.3
No. 4 [4.75 mm]	62.5
No. 10 [2.00 mm]	46.9
No. 20 [0.850 mm]	35.2
No. 40 [0.425 mm]	29.0
No. 60 [0.250 mm]	25.8
No. 100 [0.150 mm]	23.4
No. 200 [0.075 mm]	19.8

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)	
Water Content (T 265), %	10.5

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380856** Boring No./Sample No. **HB-FRV-301/8D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/25/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **666+00** Offset, ft: **6.0** RT Dbfg, ft: **35.0-37.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	96.0
½ in. [12.5 mm]	86.2
⅜ in. [9.5 mm]	83.2
¼ in. [6.3 mm]	74.8
No. 4 [4.75 mm]	70.6
No. 10 [2.00 mm]	58.5
No. 20 [0.850 mm]	49.3
No. 40 [0.425 mm]	44.1
No. 60 [0.250 mm]	41.0
No. 100 [0.150 mm]	38.6
No. 200 [0.075 mm]	34.7

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)	
Water Content (T 265), %	10.0

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380857** Boring No./Sample No. **HB-FRV-302/1D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **12/6/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **667+00** Offset, ft: **14.0** RT Dbfg, ft: **1.0-3.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	92.5
⅜ in. [9.5 mm]	90.0
¼ in. [6.3 mm]	81.0
No. 4 [4.75 mm]	74.8
No. 10 [2.00 mm]	54.7
No. 20 [0.850 mm]	39.9
No. 40 [0.425 mm]	30.7
No. 60 [0.250 mm]	25.2
No. 100 [0.150 mm]	21.6
No. 200 [0.075 mm]	16.0

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)	
Water Content (T 265), %	4.3

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

Paper Copy: Lab File; Project File; Geotech File



GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380858** Boring No./Sample No. **HB-FRV-302/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **12/6/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **667+00** Offset, ft: **14.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	98.5
⅜ in. [9.5 mm]	98.2
¼ in. [6.3 mm]	94.8
No. 4 [4.75 mm]	91.3
No. 10 [2.00 mm]	76.3
No. 20 [0.850 mm]	57.1
No. 40 [0.425 mm]	31.7
No. 60 [0.250 mm]	16.8
No. 100 [0.150 mm]	13.1
No. 200 [0.075 mm]	7.7

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)	
Water Content (T 265), %	6.4

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380859** Boring No./Sample No. **HB-FRV-302/5D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **12/6/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **667+00** Offset, ft: **14.0** RT Dbfg, ft: **20.0-22.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	97.4
⅜ in. [9.5 mm]	94.6
¼ in. [6.3 mm]	89.1
No. 4 [4.75 mm]	86.0
No. 10 [2.00 mm]	78.0
No. 20 [0.850 mm]	70.4
No. 40 [0.425 mm]	59.4
No. 60 [0.250 mm]	35.1
No. 100 [0.150 mm]	25.9
No. 200 [0.075 mm]	19.5

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)	
Water Content (T 265), %	8.4

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380860** Boring No./Sample No. **HB-FRV-302/6D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **12/6/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **667+00** Offset, ft: **14.0** RT Dbfg, ft: **25.0-27.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	100.0
No. 4 [4.75 mm]	100.0
No. 10 [2.00 mm]	99.8
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	99.0
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	97.4
[0.0250 mm]	76.6
[0.0170 mm]	66.5
[0.0107 mm]	51.1
[0.0079 mm]	40.9
[0.0059 mm]	28.1
[0.0030 mm]	20.5
[0.0013 mm]	12.8

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.75
Loss on Ignition, % (T 267)	
Water Content (T 265), %	24.9

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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Date Reported: **1/6/2023**

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GEOTECHNICAL TEST REPORT

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SAMPLE INFORMATION

Reference No. **380861** Boring No./Sample No. **HB-FRV-302/8D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **12/6/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **667+00** Offset, ft: **14.0** RT Dbfg, ft: **35.0-37.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	100.0
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	99.8
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	99.1
[0.0258 mm]	85.5
[0.0168 mm]	79.8
[0.0106 mm]	65.6
[0.0078 mm]	57.0
[0.0058 mm]	45.6
[0.0030 mm]	34.2
[0.0013 mm]	25.7

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.65
Loss on Ignition, % (T 267)	
Water Content (T 265), %	25.1

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

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Date Reported: **1/6/2023**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380862** Boring No./Sample No. **HB-FRV-302/10D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **12/6/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **667+00** Offset, ft: **14.0** RT Dbfg, ft: **45.0-47.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	90.4
½ in. [12.5 mm]	78.6
⅜ in. [9.5 mm]	75.8
¼ in. [6.3 mm]	69.2
No. 4 [4.75 mm]	64.1
No. 10 [2.00 mm]	51.9
No. 20 [0.850 mm]	43.4
No. 40 [0.425 mm]	38.5
No. 60 [0.250 mm]	36.0
No. 100 [0.150 mm]	34.1
No. 200 [0.075 mm]	31.2

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)	
Water Content (T 265), %	11.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380863** Boring No./Sample No. **HB-FRV-302/12D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **12/6/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **667+00** Offset, ft: **14.0** RT Dbfg, ft: **55.0-57.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	93.8
¾ in. [19.0 mm]	89.4
½ in. [12.5 mm]	81.9
⅜ in. [9.5 mm]	79.4
¼ in. [6.3 mm]	69.7
No. 4 [4.75 mm]	63.3
No. 10 [2.00 mm]	46.7
No. 20 [0.850 mm]	34.0
No. 40 [0.425 mm]	27.1
No. 60 [0.250 mm]	23.5
No. 100 [0.150 mm]	21.1
No. 200 [0.075 mm]	17.7

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)	
Water Content (T 265), %	9.3

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380864** Boring No./Sample No. **HB-FRV-302/13D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **12/6/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **667+00** Offset, ft: **14.0** RT Dbfg, ft: **60.0-62.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	93.4
¾ in. [19.0 mm]	87.7
½ in. [12.5 mm]	74.5
⅜ in. [9.5 mm]	71.0
¼ in. [6.3 mm]	63.4
No. 4 [4.75 mm]	58.8
No. 10 [2.00 mm]	46.3
No. 20 [0.850 mm]	36.4
No. 40 [0.425 mm]	30.3
No. 60 [0.250 mm]	26.3
No. 100 [0.150 mm]	23.0
No. 200 [0.075 mm]	18.4

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)	
Water Content (T 265), %	7.3

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

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SAMPLE INFORMATION

Reference No. **380865** Boring No./Sample No. **HB-FRV-303/2D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/26/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **668+00** Offset, ft: **15.0** RT Dbfg, ft: **5.0-7.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	99.0
¼ in. [6.3 mm]	99.0
No. 4 [4.75 mm]	99.0
No. 10 [2.00 mm]	98.7
No. 20 [0.850 mm]	97.3
No. 40 [0.425 mm]	93.5
No. 60 [0.250 mm]	84.5
No. 100 [0.150 mm]	70.1
No. 200 [0.075 mm]	39.6

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)	
Water Content (T 265), %	19.2

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380866** Boring No./Sample No. **HB-FRV-303/3D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/26/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **668+00** Offset, ft: **15.0** RT Dbfg, ft: **10.0-12.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	99.8
¼ in. [6.3 mm]	99.1
No. 4 [4.75 mm]	98.6
No. 10 [2.00 mm]	93.5
No. 20 [0.850 mm]	80.9
No. 40 [0.425 mm]	44.1
No. 60 [0.250 mm]	24.7
No. 100 [0.150 mm]	15.7
No. 200 [0.075 mm]	7.8

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)	
Water Content (T 265), %	9.5

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

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Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380867** Boring No./Sample No. **HB-FRV-303/5D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/26/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **668+00** Offset, ft: **15.0** RT Dbfg, ft: **20.0-22.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	94.9
⅜ in. [9.5 mm]	93.3
¼ in. [6.3 mm]	89.0
No. 4 [4.75 mm]	85.5
No. 10 [2.00 mm]	71.6
No. 20 [0.850 mm]	52.2
No. 40 [0.425 mm]	36.2
No. 60 [0.250 mm]	22.7
No. 100 [0.150 mm]	16.7
No. 200 [0.075 mm]	11.7

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)	
Water Content (T 265), %	10.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

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Date Reported: **12/20/2022**

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GEOTECHNICAL TEST REPORT

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SAMPLE INFORMATION

Reference No. **380868** Boring No./Sample No. **HB-FRV-303/7D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/26/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **668+00** Offset, ft: **15.0** RT Dbfg, ft: **30.0-32.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	100.0
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	99.8
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	96.6
[0.0295 mm]	62.7
[0.0195 mm]	54.9
[0.0126 mm]	31.4
[0.0091 mm]	26.1
[0.0066 mm]	18.3
[0.0033 mm]	10.5
[0.0013 mm]	13.1

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	
Plastic Limit (T 90), %	
Plasticity Index (T 90), %	
Specific Gravity, Corrected to 20°C (T 100)	2.69
Loss on Ignition, % (T 267)	
Water Content (T 265), %	25.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

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Date Reported: **1/6/2023**

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GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380869** Boring No./Sample No. **HB-FRV-303/10D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/26/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **668+00** Offset, ft: **15.0** RT Dbfg, ft: **45.0-47.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	
No. 10 [2.00 mm]	100.0
No. 20 [0.850 mm]	
No. 40 [0.425 mm]	99.8
No. 60 [0.250 mm]	
No. 100 [0.150 mm]	
No. 200 [0.075 mm]	99.0
[0.0236 mm]	82.4
[0.0155 mm]	77.4
[0.0098 mm]	64.9
[0.0071 mm]	59.9
[0.0054 mm]	47.5
[0.0028 mm]	35.0
[0.0012 mm]	22.5

Miscellaneous Tests

Liquid Limit @ 25 blows (T 89), %	24
Plastic Limit (T 90), %	18
Plasticity Index (T 90), %	6
Specific Gravity, Corrected to 20°C (T 100)	2.75
Loss on Ignition, % (T 267)	
Water Content (T 265), %	24.3

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear tons/ft²	Remold tons/ft²	U. Shear tons/ft²	Remold tons/ft²		

Comments:

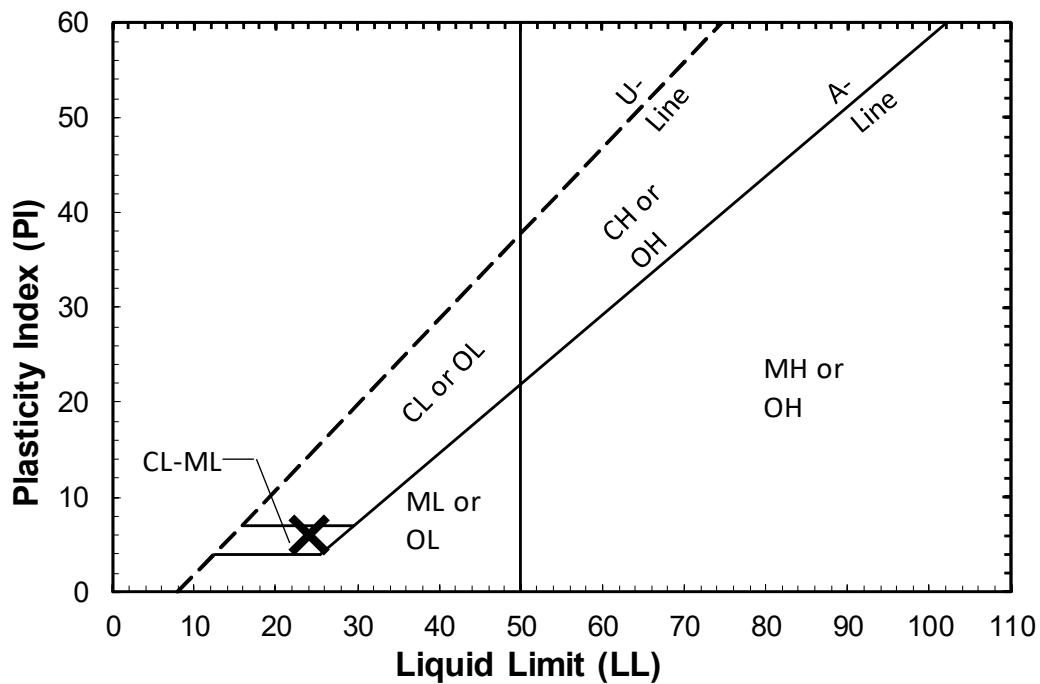
AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**

Date Reported: **1/10/2023**

Paper Copy: Lab File; Project File; Geotech File

TOWN	Fort Kent, Frenchville	Reference No.	380869
WIN	022656.00	Water Content, %	24.3
Sampled	10/26/2022	Liquid Limit @ 25 blows (T 89), %	24
Boring No./Sample No.	HB-FRV-303/10D	Plastic Limit (T 90), %	18
Station	668+00	Plasticity Index (T 90), %	6
Depth	45.0-47.0	Tested By	BBURR





GEOTECHNICAL TEST REPORT

Central Laboratory

SAMPLE INFORMATION

Reference No. **380870** Boring No./Sample No. **HB-FRV-303/13D** Sample Description **GEOTECHNICAL (DISTURBED)** Sampled **10/26/2022** Received **12/14/2022**

Sample Type: **GEOTECHNICAL** Location: Station: **668+00** Offset, ft: **15.0** RT Dbfg, ft: **60.0-62.0**

WIN/Town **022656.00 - FORT KENT, FRENCHVIL** Sampler: **BRUCE WILDER**

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]	96.9
¾ in. [19.0 mm]	92.3
½ in. [12.5 mm]	84.2
⅜ in. [9.5 mm]	81.8
¼ in. [6.3 mm]	74.2
No. 4 [4.75 mm]	69.5
No. 10 [2.00 mm]	57.7
No. 20 [0.850 mm]	49.5
No. 40 [0.425 mm]	44.7
No. 60 [0.250 mm]	42.1
No. 100 [0.150 mm]	40.2
No. 200 [0.075 mm]	37.3

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)	
Water Content (T 265), %	10.6

Consolidation (T 216)

Trimming, Water Content, %

	Initial	Final		Void Ratio	% Strain
Water Content, %			Pmin		
Dry Density, lbs/ft³			Pp		
Void Ratio			Pmax		
Saturation, %			Cc/C'c		

Vane Shear Test on Shelby Tubes (Maine DOT)

Depth taken in tube, ft	3 In.		6 In.		Water Content, %	Description of Material Sampled at the Various Tube Depths
	U. Shear	Remold	U. Shear	Remold		
	tons/ft²	tons/ft²	tons/ft²	tons/ft²		

Comments:

AUTHORIZATION AND DISTRIBUTION

Reported by: **GREGORY LIDSTONE**Date Reported: **12/20/2022**

Paper Copy: Lab File; Project File; Geotech File

Appendix C

Calculations

Liquidity Index

Liquidity Index

$$LI := \frac{WC - PL}{LL - PL}$$

Das, Principles of Engineering, 7th Edition,
Equation 4.16

HB-FRV-303, 10D

$$WC := 24.3$$

$$LL := 24$$

$$PL := 18$$

$$LI := \frac{WC - PL}{LL - PL} = 1.05$$

Bowles, Foundation Design and Analysis, 5th Ed.

ratio is smaller than in the soil remolded for the Atterberg limit tests. If the soil is located below the groundwater table (GWT) where it is saturated, one would therefore expect that smaller void ratios would have less water space and the w_N value would be smaller. From this we might deduce the following:

If w_N is close to w_L ,	soil is normally consolidated.
If w_N is close to w_P ,	soil is some- to heavily overconsolidated.
If w_N is intermediate,	soil is somewhat overconsolidated.
If w_N is greater than w_L ,	soil is on verge of being a viscous liquid.

Although the foregoing gives a qualitative indication of overconsolidation, other methods must be used if a quantitative value of OCR is required.

We note that w_N can be larger than w_L , which simply indicates the in situ water content is above the liquid limit. Since the soil is existing in this state, it would seem that overburden pressure and interparticle cementation are providing stability (unless visual inspection indicates a liquid mass). It should be evident, however, that the slightest remolding disturbance has the potential to convert this type of deposit into a viscous fluid. Conversion may be localized, as for pile driving, or involve a large area. The larger w_N is with respect to w_L , the greater the potential for problems. The *liquidity index* has been proposed as a means of quantifying this problem and is defined as

$$I_L = \frac{w_N - w_P}{w_L - w_P} = \frac{w_N - w_P}{I_P} \quad (2-14)$$

where, by inspection, values of $I_L \geq 1$ are indicative of a liquefaction or “quick” potential. Another computed index that is sometimes used is the *relative consistency*,² defined as

$$I_C = \frac{w_L - w_N}{I_P} \quad (2-14a)$$

Here it is evident that if the natural water content $w_N \leq w_L$, the relative consistency is $I_C \geq 0$; and if $w_N > w_L$, the relative consistency or consistency index $I_C < 0$.

Where site evidence indicates that the soil may be stable even where $w_N \geq w_L$, other testing may be necessary. For example (and typical of highly conflicting site results reported in geotechnical literature) Ladd and Foott (1974) and Koutsoftas (1980) both noted near-surface marine deposits underlying marsh areas that exhibited large OCRs in the upper zones with w_N near or even exceeding w_L . This is, of course, contradictory to the previously given general statements that if w_N is close to w_L the soil is “normally consolidated” or is about to become a “viscous liquid.”

Grain Size

The grain size distribution test is used for soil classification and has value in designing soil filters. A soil filter is used to allow drainage of pore water under a hydraulic gradient with

²This is the definition given by ASTM D 653, but it is more commonly termed the *consistency index*, particularly outside the United States.

Precast Concrete Block Gravity Wall

Earth Pressure:

Soil Type 4 Properties from MaineDOT Bridge Design Guide (BDG)

Unit weight: $\gamma_{\text{type4}} := 125 \cdot \text{pcf}$

Internal Friction Angle: $\phi_{\text{type4}} := 32 \cdot \text{deg}$

Cohesion: $c_{\text{sand}} := 0 \cdot \text{psf}$

At-Rest Earth Pressure, K_o :

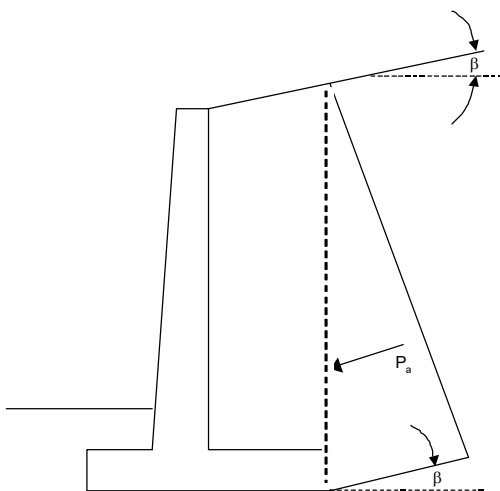
$\phi := 32 \cdot \text{deg}$

$K_o := 1 - \sin(\phi)$ LRFD Equation 3.11.5.2-1

$$K_o = 0.4701$$

Active Earth Pressure - Rankine Theory

from MaineDOT Bridge Design Guide Section 3.6.5.2 pg 3-7



Generally use Rankine for long heeled cantilever walls where the failure surface is un interrupted by the top of the wall system. The earth pressure is applied to a plane extending vertically up from the heel of the wall base and the weight of the soil on the inside of the vertical plane is considered as part of the wall weight. The failure sliding surface is not restricted by the top of the wall or the backface of the wall.

For cantilever walls with sloped backfill surface:

β = Angle of fill slope to the horizontal

$\beta := 0 \cdot \text{deg}$ assume horizontal backfill surface

$$K_{a_rankine_slope} := \frac{\cos(\beta) - \sqrt{\cos(\beta)^2 - \cos(\phi_{\text{type4}})^2}}{\cos(\beta) + \sqrt{\cos(\beta)^2 - \cos(\phi_{\text{type4}})^2}}$$

$$K_{a_rankine_slope} = 0.31$$

P_a is oriented at an angle of β to the vertical plane.

Bearing Resistance - Native Granular Soils:

Part 1 - Service Limit State

Nominal and factored Bearing Resistance - block wall on sand

Presumptive Bearing Resistance for Service Limit State ONLY

Reference: AASHTO LRFD Bridge Design Specifications 10th Edition 2024
Table C10.6.2.6.1-1 Presumptive Bearing Resistances for Spread Footings at the Service Limit State Modified after US Department of Navy (1982)

Type of Bearing Material: Sand (SM)

Density In Place: medium dense to dense

Bearing Resistance: Ordinary Range (ksf) 4 to 8

Recommended Value of Use:

$$q_{nom} := 5 \cdot \text{ksf}$$

Resistance factor at the **service limit state** = 1.0 (LRFD Article 10.5.5.1)

$$\phi_{service_bc} := 1.0$$

$$q_{factored_service_bc} := q_{nom} \cdot \phi_{service_bc}$$

$$q_{factored_service_bc} = 5 \cdot \text{ksf}$$

Part 2 - Strength Limit State

Nominal and factored Bearing Resistance - block wall on sand

Reference: Foundation Engineering and Design by JE Bowles Fifth Edition

Assumptions:

- The walls will be founded between ~ Elev 510 feet to 512 feet
Bottom of Construction will be 2 feet below grade for. $D_{footing} := 2.0 \cdot \text{ft}$
- Assumed parameters for fill soils: (Ref: Bowles 5th Ed Table 3-4)
Saturated unit weight: $\gamma_s := 125 \cdot \text{pcf}$
Dry unit weight: $\gamma_d := 120 \cdot \text{pcf}$
Internal friction angle: $\phi_{ns} := 32 \cdot \text{deg}$
Undrained shear strength: $c_{ns} := 0 \cdot \text{psf}$
- Use Terzaghi strip equations as $L > B$
- Effective stress analysis footing on ϕ -c soil (Bowles 5th Ed. Example 4-1 pg 231)

Depth to the water table: $D_w := 15 \cdot \text{ft}$ assumed Unit Weight of water: $\gamma_w := 62.4 \cdot \text{pcf}$

Effective stress at bearing level:

$$q_{eff} := (D_{footing}) \cdot (\gamma_s) \quad q_{eff} = 0.25 \cdot \text{ksf}$$

Maximum block width is 43.5 inches

$$B := 43.5 \cdot \text{in}$$

Terzaghi Shape factors - Bowles 5th Ed. table 4-1 pg 220

For a strip footing: $s_c := 1.0$ $s_\gamma := 1.0$

Meyerhof Bearing Capacity Factors - Bowles 5th Ed. table 4-4 pg 223

$$\text{For } \phi=32 \text{ deg} \quad N_c := 35.47 \quad N_q := 23.2 \quad N_\gamma := 22$$

Nominal Bearing Resistance per Terzaghi equation - Bowles 5th Ed. Table 4-1 pg 220

$$q_{\text{nominal}} := c_{ns} \cdot N_c \cdot s_c + q_{\text{eff}} \cdot N_q + 0.5(\gamma_s)B \cdot N_\gamma \cdot s_\gamma \quad q_{\text{nominal}} = 10.8 \cdot \text{ksf}$$

Factored Bearing Resistance for Strength Limit State

Resistance Factor: $\phi_b := 0.45$ AASHTO LRFD Table 10.5.5.2.2-1

$$q_{\text{factored}} := q_{\text{nominal}} \cdot \phi_b$$

$$q_{\text{factored}} = 4.9 \cdot \text{ksf}$$

$$B = 43.5 \cdot \text{in}$$

Recommend a limiting factored bearing resistance of 4.5 ksf for the Strength Limit State.

3.4 Construction Loads

The construction live load to be used for constructibility checks is 50 psf applied over the entire deck area. Consideration should be given to slab placement sequence for calculation of maximum force effects.

3.5 Railroad Loads

Railroad bridges should be designed according to the latest American Railroad Engineering and Maintenance-of-Way Association specifications (AREMA, 2002), with the Cooper live loading as determined by the railroad company.

3.6 Earth Loads

3.6.1 General

Earth pressures considered for wall and substructure design must use the appropriate soil weight shown in Table 3-3.

Table 3-3 Material Classification

Soil Type	Soil Description	Internal Angle of Friction of Soil, ϕ	Soil Total Unit Weight (pcf)	Coeff. of Friction, $\tan \delta$, Concrete to Soil	Interface Friction, Angle, Concrete to Soil δ
1	Very loose to loose silty sand and gravel Very loose to loose sand Very loose to medium density sandy silt Stiff to very stiff clay or clayey silt	29°*	100	0.35	19°
2	Medium density silty sand and gravel Medium density to dense sand Dense to very dense sandy silt	33°	120	0.40	22°
3	Dense to very dense silty sand and gravel Very dense sand	36°	130	0.45	24°
4	Granular underwater backfill Granular borrow	32°	125	0.45	24°
5	Gravel Borrow	36°	135	0.50	27°

* The value given for the internal angle of friction (ϕ) for stiff to very stiff silty clay or clayey silt should be used with caution due to the large possible variation with different moisture contents.

Table C10.6.2.5.1-1—Presumptive Bearing Resistance for Spread Footing Foundations at the Service Limit State Modified after U.S. Department of the Navy (1982)

Type of Bearing Material	Consistency in Place	Bearing Resistance (ksf)	
		Ordinary Range	Recommended Value of Use
Massive crystalline igneous and metamorphic rock: granite, diorite, basalt, gneiss, thoroughly cemented conglomerate (sound condition allows minor cracks)	Very hard, sound rock	120–200	160
Foliated metamorphic rock: slate, schist (sound condition allows minor cracks)	Hard sound rock	60–80	70
Sedimentary rock: hard cemented shales, siltstone, sandstone, limestone without cavities	Hard sound rock	30–50	40
Weathered or broken bedrock of any kind, except highly argillaceous rock (shale)	Medium hard rock	16–24	20
Compaction shale or other highly argillaceous rock in sound condition	Medium hard rock	16–24	20
Well-graded mixture of fine- and coarse-grained soil: glacial till, hardpan, boulder clay (GW-GC, GC, SC)	Very dense	16–24	20
Gravel, gravel-sand mixture, boulder-gravel mixtures (GW, GP, SW, SP)	Very dense	12–20	14
	Medium dense to dense	8–14	10
	Loose	4–12	6
Coarse to medium sand, and with little gravel (SW, SP)	Very dense	8–12	8
	Medium dense to dense	4–8	6
	Loose	2–6	3
Fine to medium sand, silty or clayey medium to coarse sand (SW, SM, SC)	Very dense	6–10	6
	Medium dense to dense	4–8	5
	Loose	2–4	3
Fine sand, silty or clayey medium to fine sand (SP, SM, SC)	Very dense	6–10	6
	Medium dense to dense	4–8	5
	Loose	2–4	3
Homogeneous inorganic clay, sandy or silty clay (CL, CH)	Very dense	6–12	8
	Medium dense to dense	2–6	4
	Loose	1–2	1
Inorganic silt, sandy or clayey silt, varved silt-clay-fine sand (ML, MH)	Very stiff to hard	4–8	6
	Medium stiff to stiff	2–6	3
	Soft	1–2	1

10.6.2.5.2—Semiempirical Procedures for Bearing Resistance

Bearing resistance on rock shall be determined using empirical correlation to the RMR. Local experience should be considered in the use of these semi-empirical procedures.

If the recommended value of presumptive bearing resistance exceeds either the unconfined compressive strength of the rock or the nominal resistance of the concrete, the presumptive bearing resistance shall be taken as the lesser of the unconfined compressive strength of the rock or the nominal resistance of the concrete. The nominal resistance of concrete shall be taken as $0.3f'_c$.

The Terzaghi Bearing-Capacity Equation

One of the early sets of bearing-capacity equations was proposed by Terzaghi (1943) as shown in Table 4-1. These equations are similar to Eq. (k) derived in the previous section, but Terzaghi used shape factors noted when the limitations of the equation were discussed. Terzaghi's equations were produced from a slightly modified bearing-capacity theory devel-

TABLE 4-1

Bearing-capacity equations by the several authors indicated

Terzaghi (1943). See Table 4-2 for typical values and for K_{py} values.

$$q_{ult} = cN_c s_c + \bar{q}N_q + 0.5\gamma B N_\gamma s_\gamma$$

$$N_q = \frac{a^2}{a \cos^2(45 + \phi/2)}$$

$$a = e^{(0.75\pi - \phi/2) \tan \phi}$$

$$N_c = (N_q - 1) \cot \phi$$

$$N_\gamma = \frac{\tan \phi}{2} \left(\frac{K_{py}}{\cos^2 \phi} - 1 \right)$$

For:	strip	round	square
$s_c = 1.0$	1.3	1.3	
$s_\gamma = 1.0$	0.6	0.8	

Meyerhof (1963).* See Table 4-3 for shape, depth, and inclination factors.

$$\text{Vertical load: } q_{ult} = cN_c s_c d_c + \bar{q}N_q s_q d_q + 0.5\gamma B' N_\gamma s_\gamma d_\gamma$$

$$\text{Inclined load: } q_{ult} = cN_c d_c i_c + \bar{q}N_q d_q i_q + 0.5\gamma B' N_\gamma d_\gamma i_\gamma$$

$$N_q = e^{\pi \tan \phi} \tan^2 \left(45 + \frac{\phi}{2} \right)$$

$$N_c = (N_q - 1) \cot \phi$$

$$N_\gamma = (N_q - 1) \tan (1.4\phi)$$

Hansen (1970).* See Table 4-5 for shape, depth, and other factors.

$$\text{General:}^\dagger \quad q_{ult} = cN_c s_c d_c i_c g_c b_c + \bar{q}N_q s_q d_q i_q g_q b_q + 0.5\gamma B' N_\gamma s_\gamma d_\gamma i_\gamma g_\gamma b_\gamma$$

$$\text{when } \phi = 0$$

$$\text{use } q_{ult} = 5.14s_u(1 + s'_c + d'_c - i'_c - b'_c - g'_c) + \bar{q}$$

$$N_q = \text{same as Meyerhof above}$$

$$N_c = \text{same as Meyerhof above}$$

$$N_\gamma = 1.5(N_q - 1) \tan \phi$$

Vesic (1973, 1975).* See Table 4-5 for shape, depth, and other factors.

Use Hansen's equations above.

$$N_q = \text{same as Meyerhof above}$$

$$N_c = \text{same as Meyerhof above}$$

$$N_\gamma = 2(N_q + 1) \tan \phi$$

*These methods require a trial process to obtain design base dimensions since width B and length L are needed to compute shape, depth, and influence factors.

†See Sec. 4-6 when $i_i < 1$.

N_γ values shows the following:

ϕ	Terzaghi* (1943)	Bolton and Lau (1993)	Kumbhojkar (1993)	Table 4-2 (this text)
34°	36	43.5	32	36
48	780	638	650.7	780.1

*See Terzaghi (1943), Fig. 38 and page 128.

Fortunately the N_γ term does not make a significant contribution to the computed bearing capacity, so any of the values from Tables 4-2 or 4-4 can be used (or perhaps an average).

Bolton and Lau (1993) produced new N_q and N_γ values for strip and circular footings for both smooth and rough ground interfacings. Their N_q values for either smooth or rough strips are little different from the Hansen values for rough strips. The N_q values for circular footings range to more than two times the strip values. The N_γ values for rough footings compare well with the Vesić values in Table 4-4. Since the Table 4-4 values have shape s_i and depth d_i factors to be applied, it appears that these “new” values offer little advantage and are certainly more difficult to compute (see comparison with Terzaghi values in preceding table).

Meyerhof's Bearing-Capacity Equation

Meyerhof (1951, 1963) proposed a bearing-capacity equation similar to that of Terzaghi but included a shape factor s_q with the depth term N_q . He also included depth factors d_i and

TABLE 4-4

Bearing-capacity factors for the Meyerhof, Hansen, and Vesić bearing-capacity equations

Note that N_c and N_q are the same for all three methods; subscripts identify author for N_γ

ϕ	N_c	N_q	$N_{\gamma(H)}$	$N_{\gamma(M)}$	$N_{\gamma(V)}$	N_q/N_c	$2 \tan \phi (1 - \sin \phi)^2$
0	5.14*	1.0	0.0	0.0	0.0	0.195	0.000
5	6.49	1.6	0.1	0.1	0.4	0.242	0.146
10	8.34	2.5	0.4	0.4	1.2	0.296	0.241
15	10.97	3.9	1.2	1.1	2.6	0.359	0.294
20	14.83	6.4	2.9	2.9	5.4	0.431	0.315
25	20.71	10.7	6.8	6.8	10.9	0.514	0.311
26	22.25	11.8	7.9	8.0	12.5	0.533	0.308
28	25.79	14.7	10.9	11.2	16.7	0.570	0.299
30	30.13	18.4	15.1	15.7	22.4	0.610	0.289
32	35.47	23.2	20.8	22.0	30.2	0.653	0.276
34	42.14	29.4	28.7	31.1	41.0	0.698	0.262
36	50.55	37.7	40.0	44.4	56.2	0.746	0.247
38	61.31	48.9	56.1	64.0	77.9	0.797	0.231
40	75.25	64.1	79.4	93.6	109.3	0.852	0.214
45	133.73	134.7	200.5	262.3	271.3	1.007	0.172
50	266.50	318.5	567.4	871.7	761.3	1.195	0.131

* = $\pi + 2$ as limit when $\phi \rightarrow 0^\circ$.

Slight differences in above table can be obtained using program BEARING.EXE on diskette depending on computer used and whether or not it has floating point.

Table 10.5.5.2.2-1—Resistance Factors for Geotechnical Resistance of Shallow Foundations at the Strength Limit State

Method/Soil/Condition			Resistance Factor
Bearing Resistance	ϕ_b	Theoretical method (Munfakh et al., 2001), in clay	0.50
		Theoretical method (Munfakh et al., 2001), in sand, using CPT	0.50
		Theoretical method (Munfakh et al., 2001), in sand, using SPT	0.45
		Semi-empirical methods (Meyerhof, 1957), all soils	0.45
		Footings on rock	0.45
		Plate Load Test	0.55
Sliding	ϕ_τ	Precast concrete placed on sand	0.90
		Cast-in-place concrete on sand	0.80
		Cast-in-place or precast concrete on clay	0.85
		Soil on soil	0.90
	ϕ_{ep}	Passive earth pressure component of sliding resistance	0.50

The resistance factors in Table 10.5.5.2.2-1 were developed using both reliability theory and calibration by fitting to Allowable Stress Design (ASD). In general, ASD safety factors for footing bearing capacity range from 2.5 to 3.0, corresponding to a resistance factor of approximately 0.55 to 0.45, respectively, and for sliding, an ASD safety factor of 1.5, corresponding to a resistance factor of approximately 0.9. Calibration by fitting to ASD controlled the selection of the resistance factor in cases where statistical data were limited in quality or quantity.

The resistance factor for sliding of cast-in-place concrete on sand is slightly lower than the other sliding resistance factors based on reliability theory analysis (Barker et al., 1991). The higher interface friction coefficient used for sliding of cast-in-place concrete on sand relative to that used for precast concrete on sand causes the cast-in-place concrete sliding analysis to be less conservative, resulting in the need for the lower resistance factor. A more detailed explanation of the development of the resistance factors provided in Table 10.5.5.2.2-1 is provided in Allen (2005).

The resistance factors for plate load tests and passive resistance were based on engineering judgment and past ASD practice.

10.5.5.2.3—Driven Piles

Resistance factors shall be selected from Table 10.5.5.2.3-1 based on the method used for determining the driving criterion necessary to achieve the required nominal pile bearing resistance.

Regarding load tests, and dynamic tests with signal matching, the number of tests to be conducted to justify the design resistance factors selected should be based on the variability in the properties and geologic stratification of the site to which the test results are to be applied. A site shall be defined as a project site, or a portion of it, where the subsurface conditions can be characterized as geologically similar in terms of subsurface stratification, i.e., sequence, thickness, and geologic history of strata, the engineering properties of the strata, and groundwater conditions.

C10.5.5.2.3

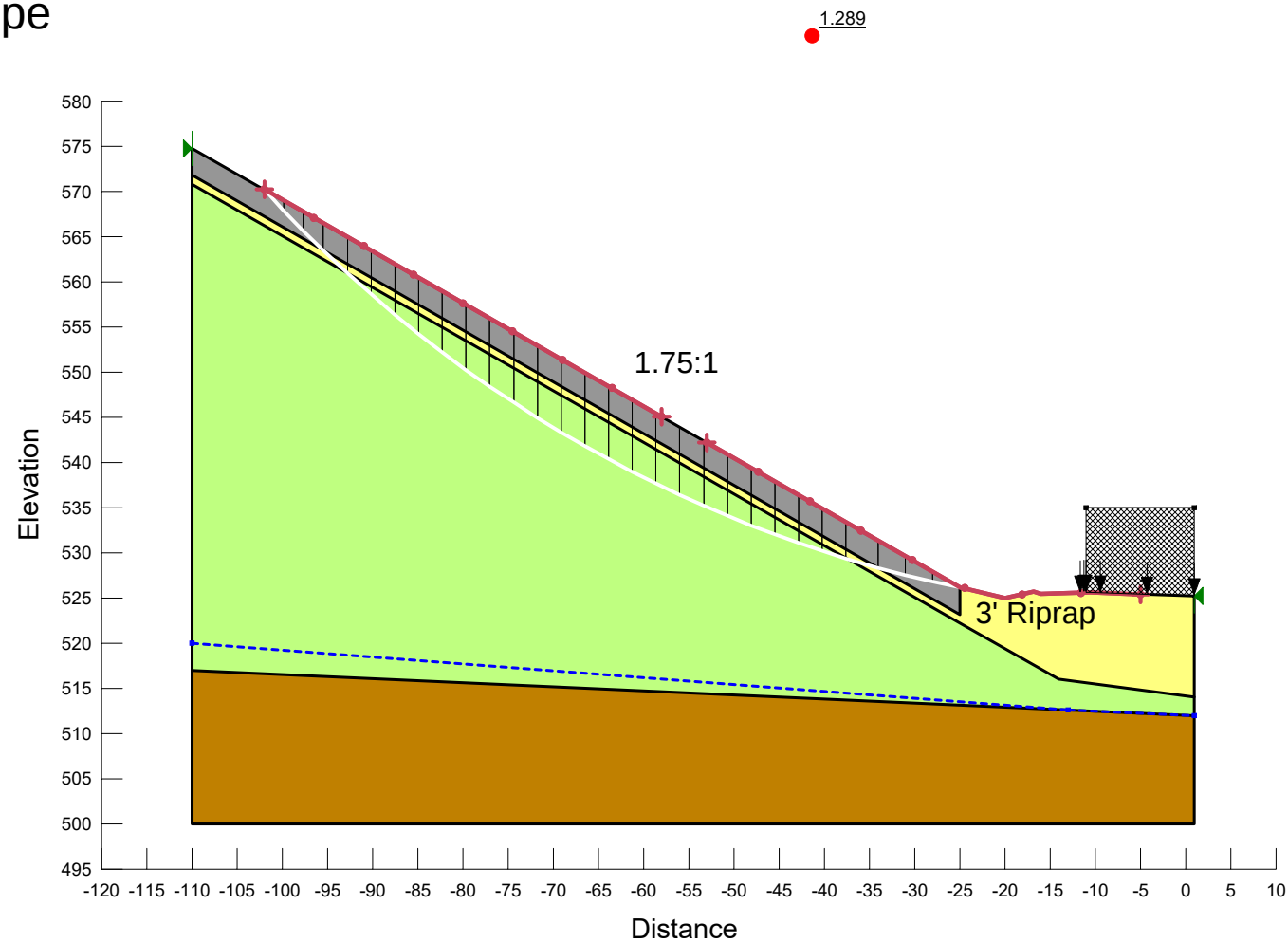
Where nominal pile bearing resistance is determined by static load test, dynamic testing, wave equation, or dynamic formulas, the uncertainty in the nominal resistance is strictly due to the reliability of the resistance determination method used in the field during pile installation.

In most cases, the nominal bearing resistance of each production pile is field-verified based on compliance with a driving criterion developed using a dynamic method (see Articles 10.7.3.8.2, 10.7.3.8.3, 10.7.3.8.4, or 10.7.3.8.5). The actual penetration depth where the pile is stopped using the driving criterion (e.g., a blow count measured during pile driving) will likely not be the same as the estimated depth from the static analysis. Hence, the reliability of the nominal pile bearing resistance is dependent on the reliability of the method used to verify the nominal resistance during pile installation (see Allen,

Appendix D

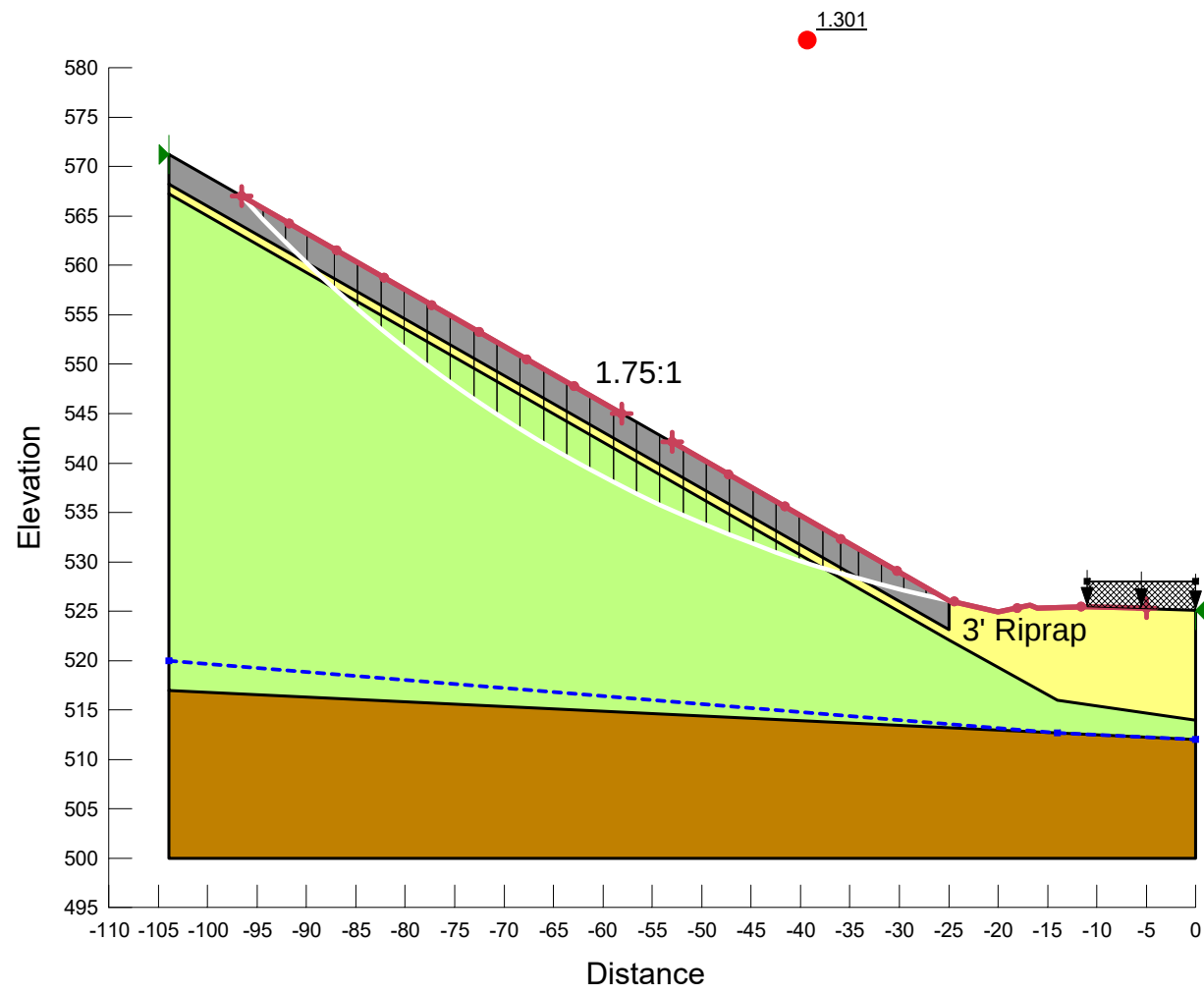
Slope Stability Analyses

640+00 Slope



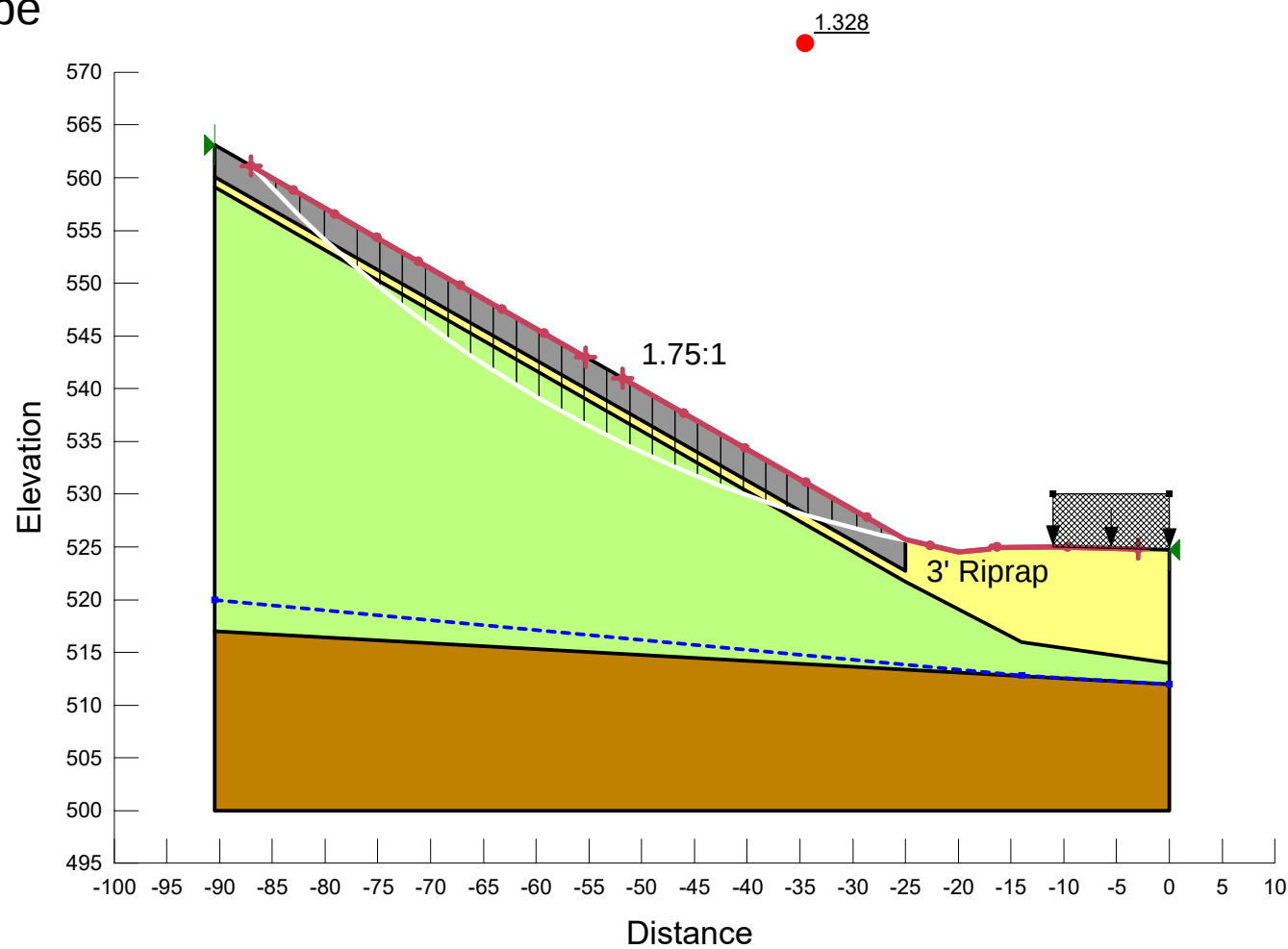
Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Dense Till	Mohr-Coulomb	135	35	36
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Till	Mohr-Coulomb	125	35	32

640+50 Slope



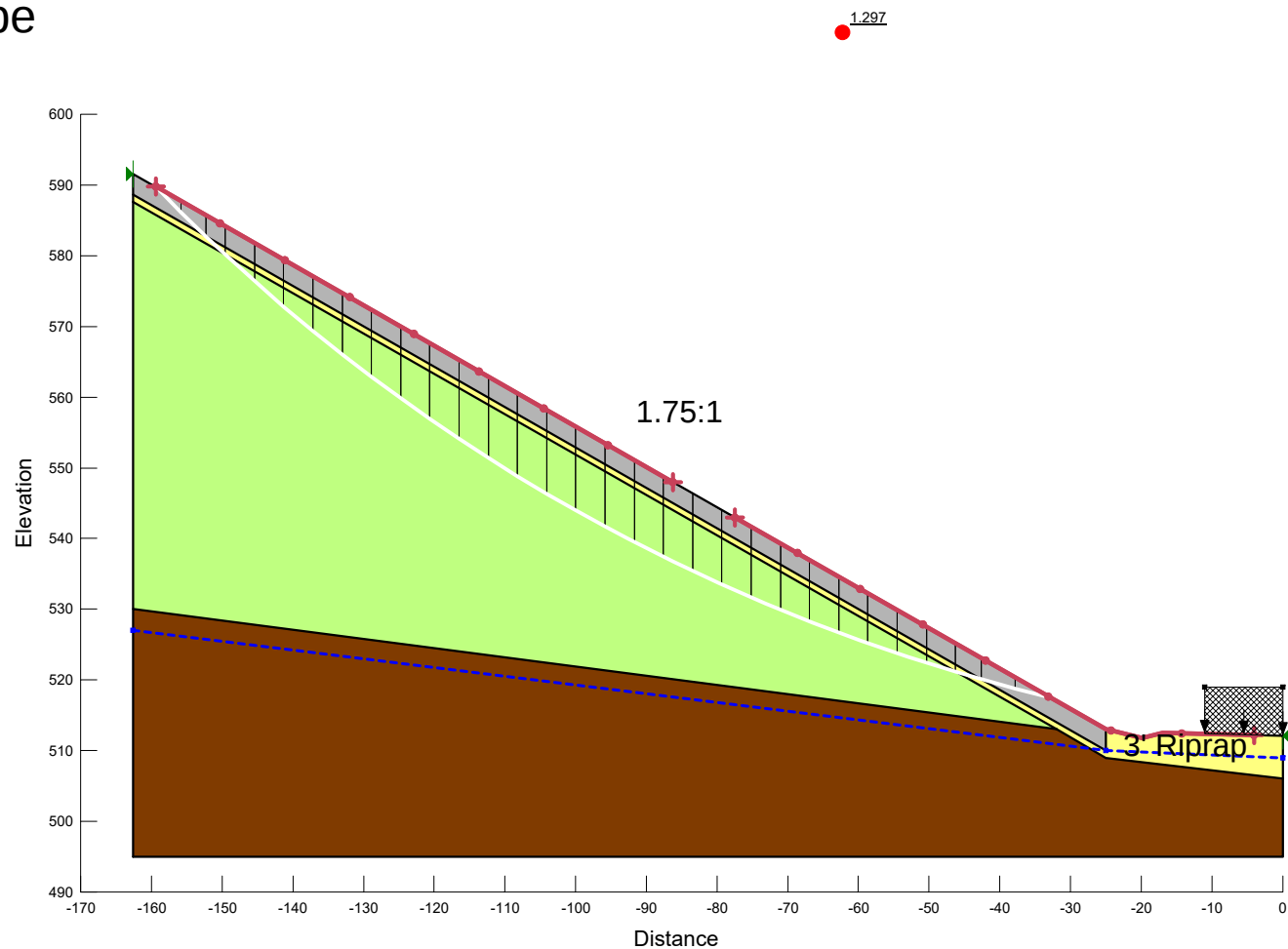
Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Dense Till	Mohr-Coulomb	135	35	36
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Till	Mohr-Coulomb	125	35	32

641+00 Slope



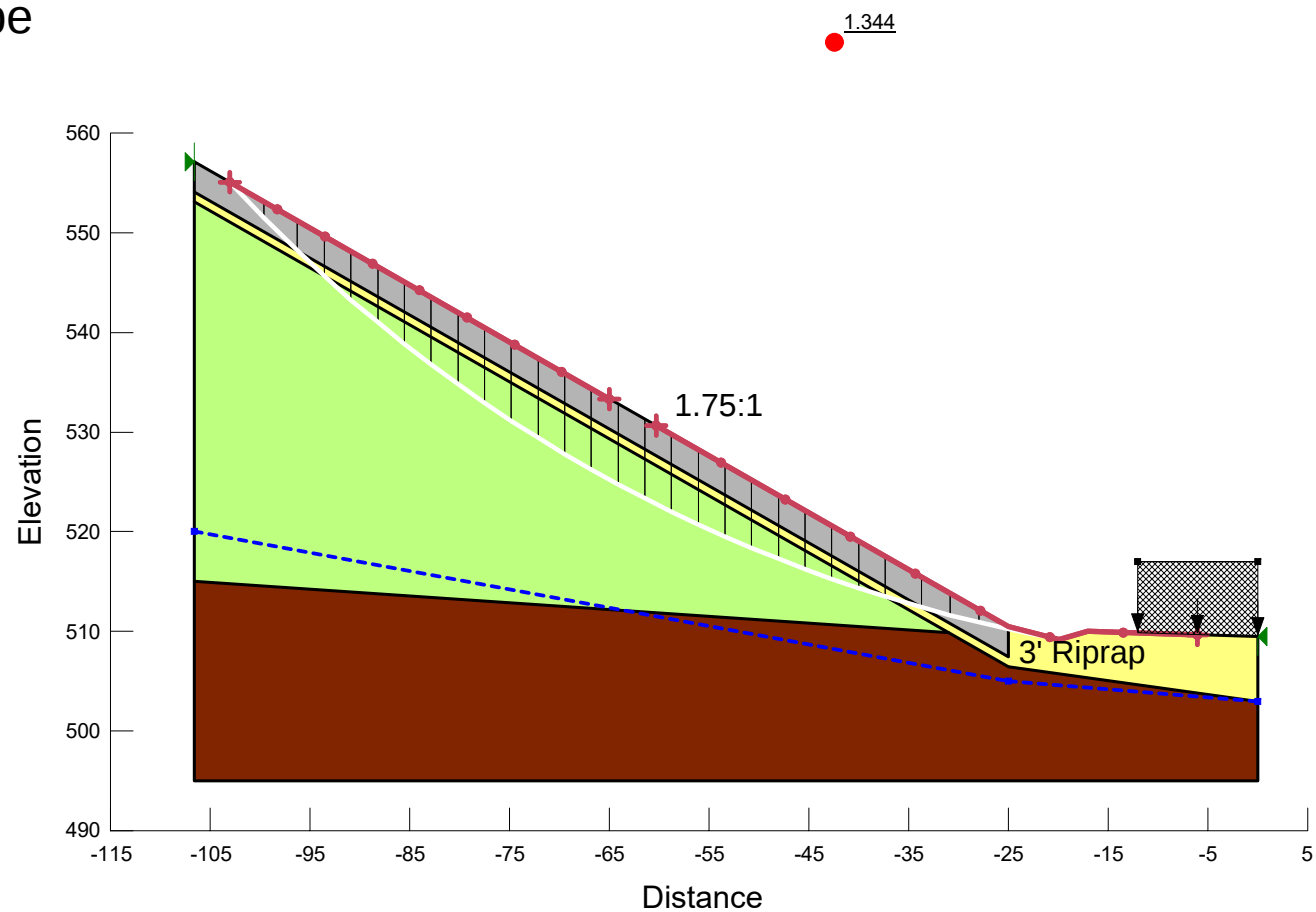
Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Dense Till	Mohr-Coulomb	135	35	36
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Till	Mohr-Coulomb	125	35	32

647+50 Slope



Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Bedrock	Bedrock (Impenetrable)			
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Till	Mohr-Coulomb	125	25	34

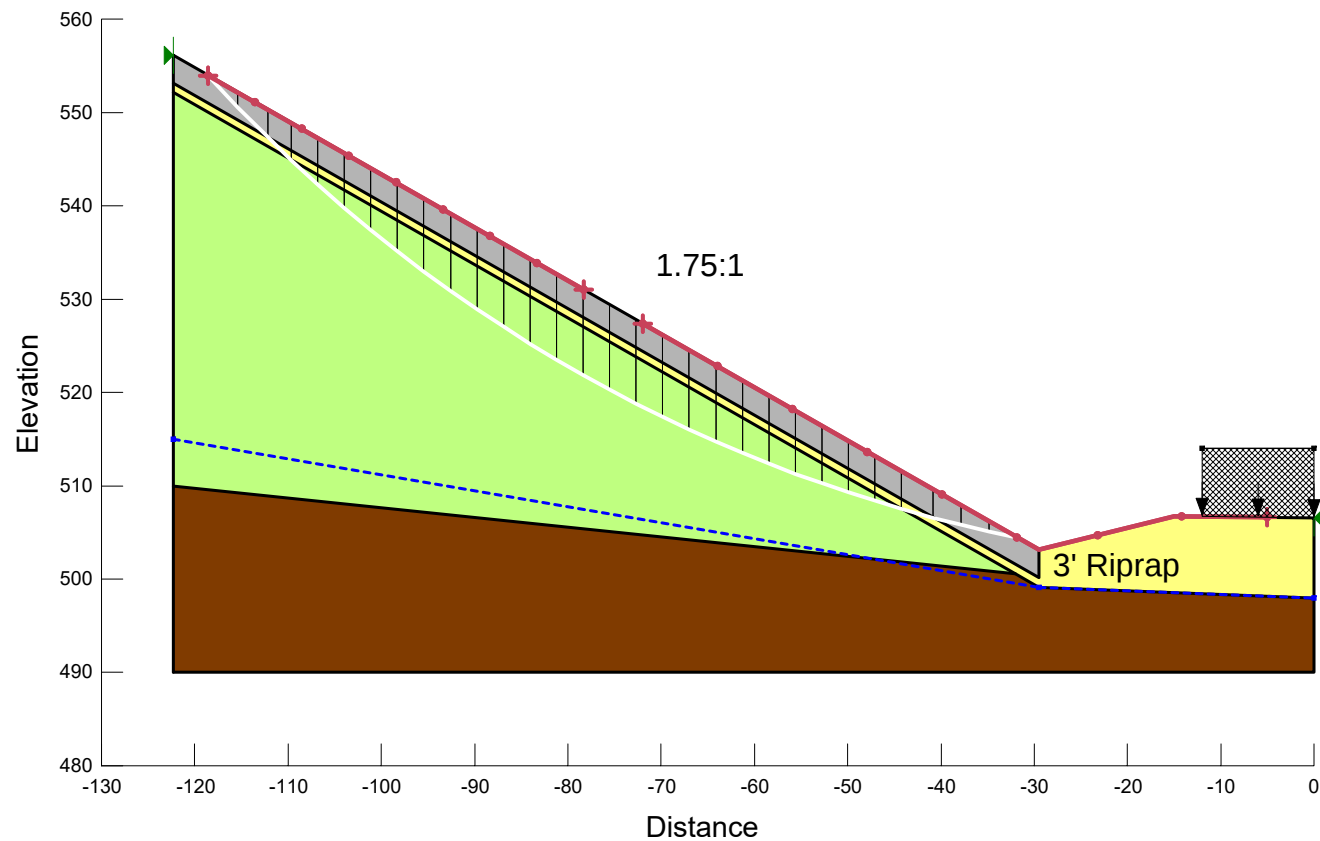
648+50 Slope



Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Bedrock	Bedrock (Impenetrable)			
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Till	Mohr-Coulomb	125	25	34

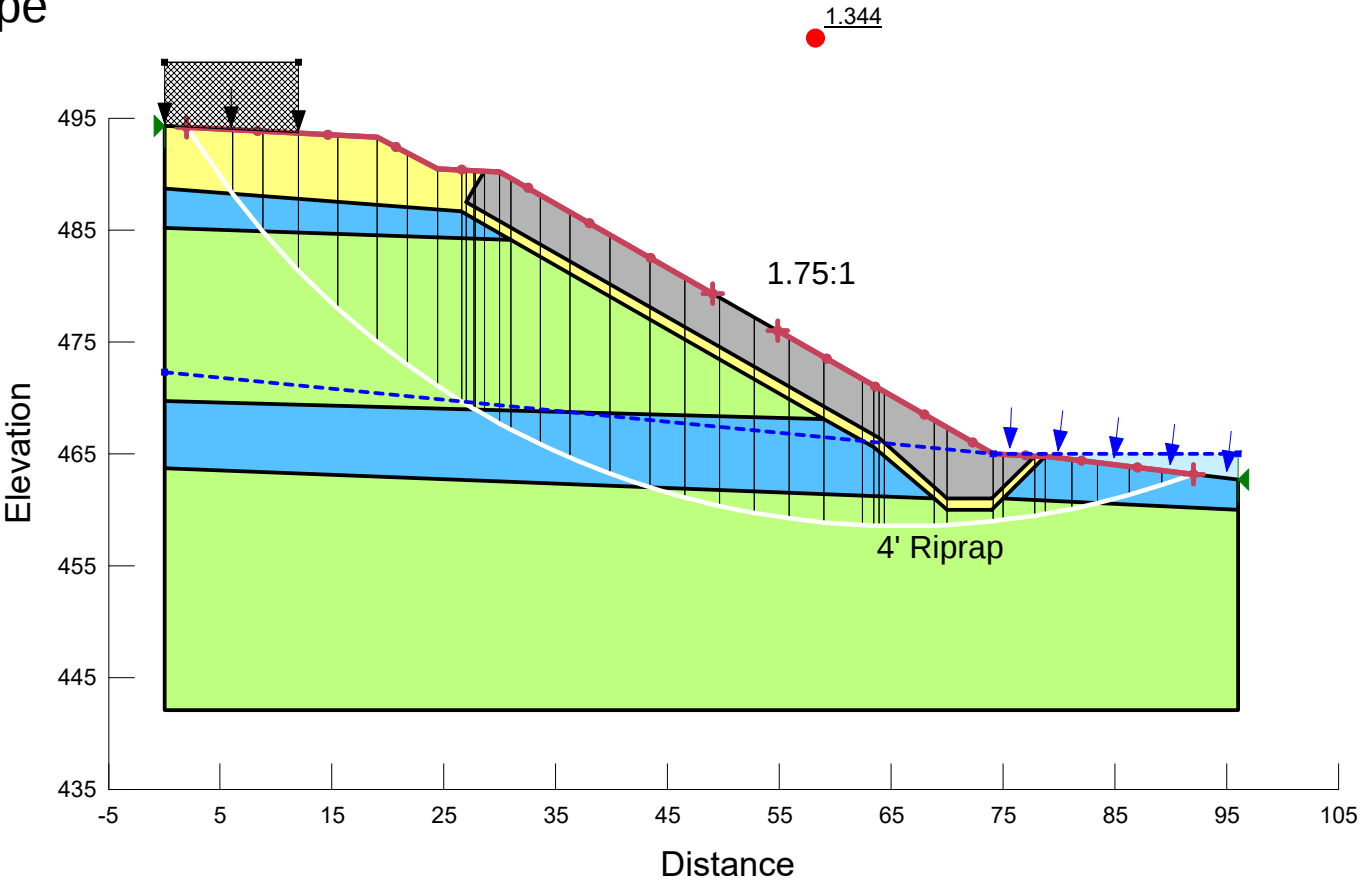
649+50 Slope

1.334



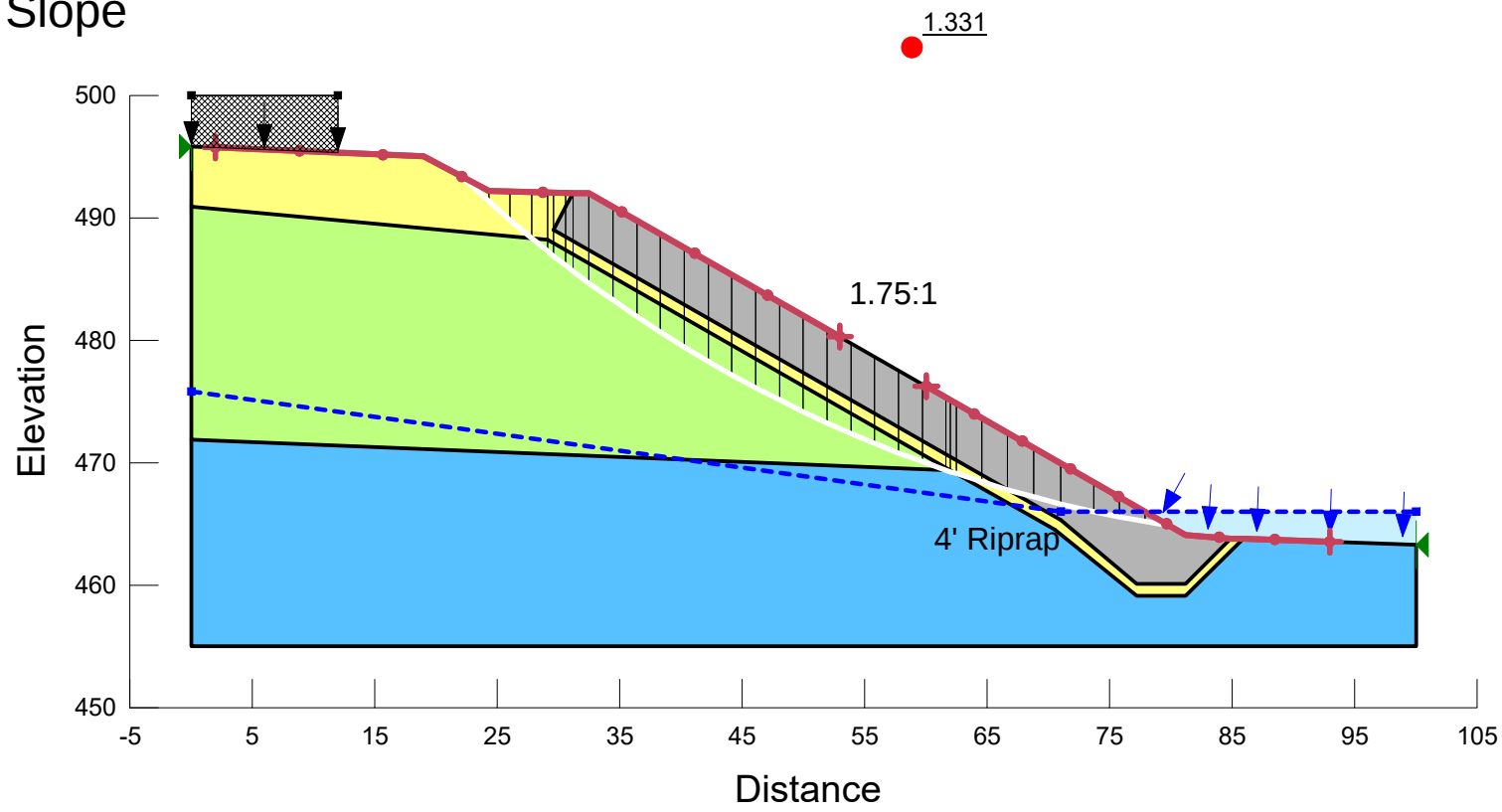
Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Bedrock	Bedrock (Impenetrable)			
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Till	Mohr-Coulomb	125	25	34

666+00 Slope



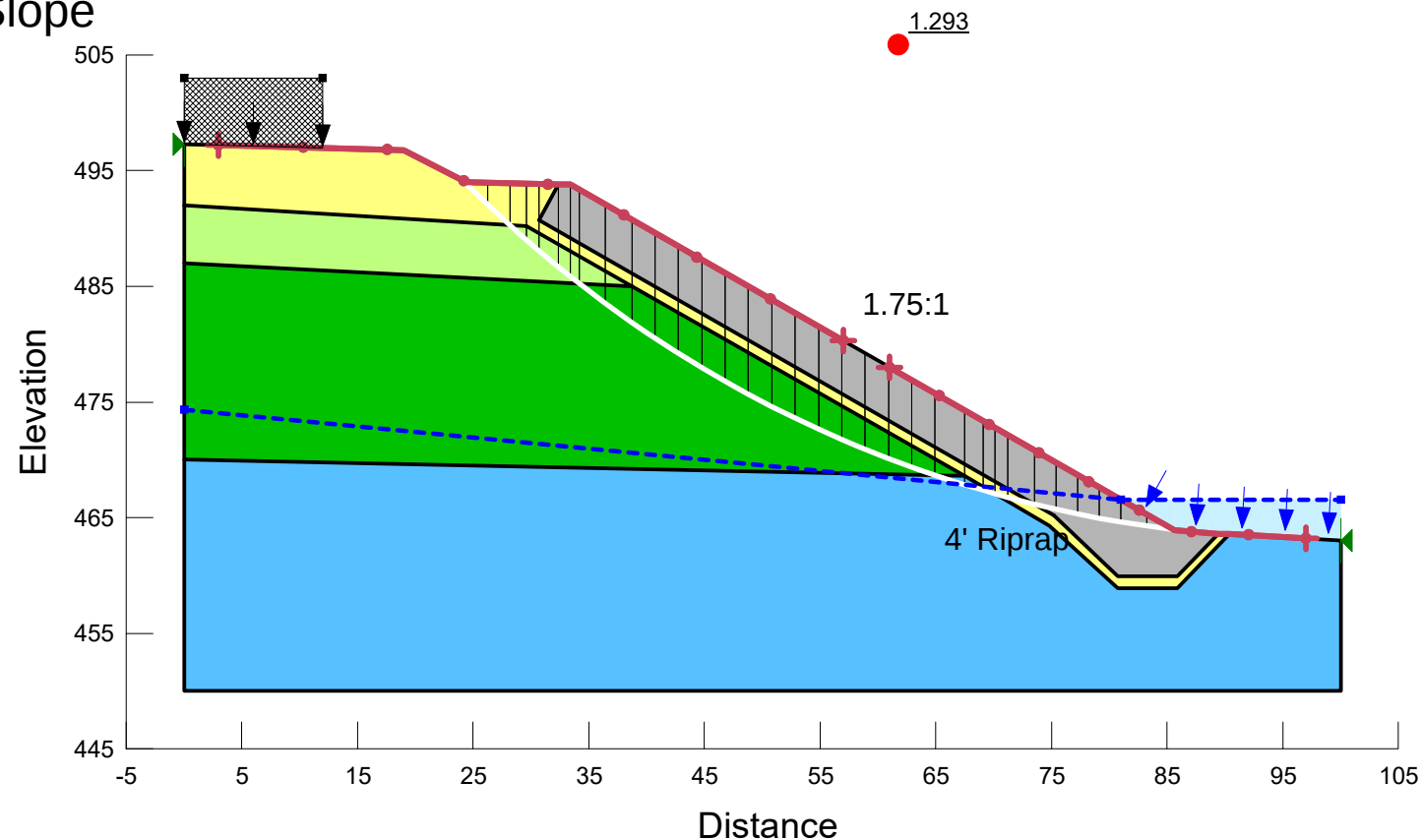
Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Sand	Mohr-Coulomb	125	0	30
	Silt	Mohr-Coulomb	115	150	28

667+00 Slope



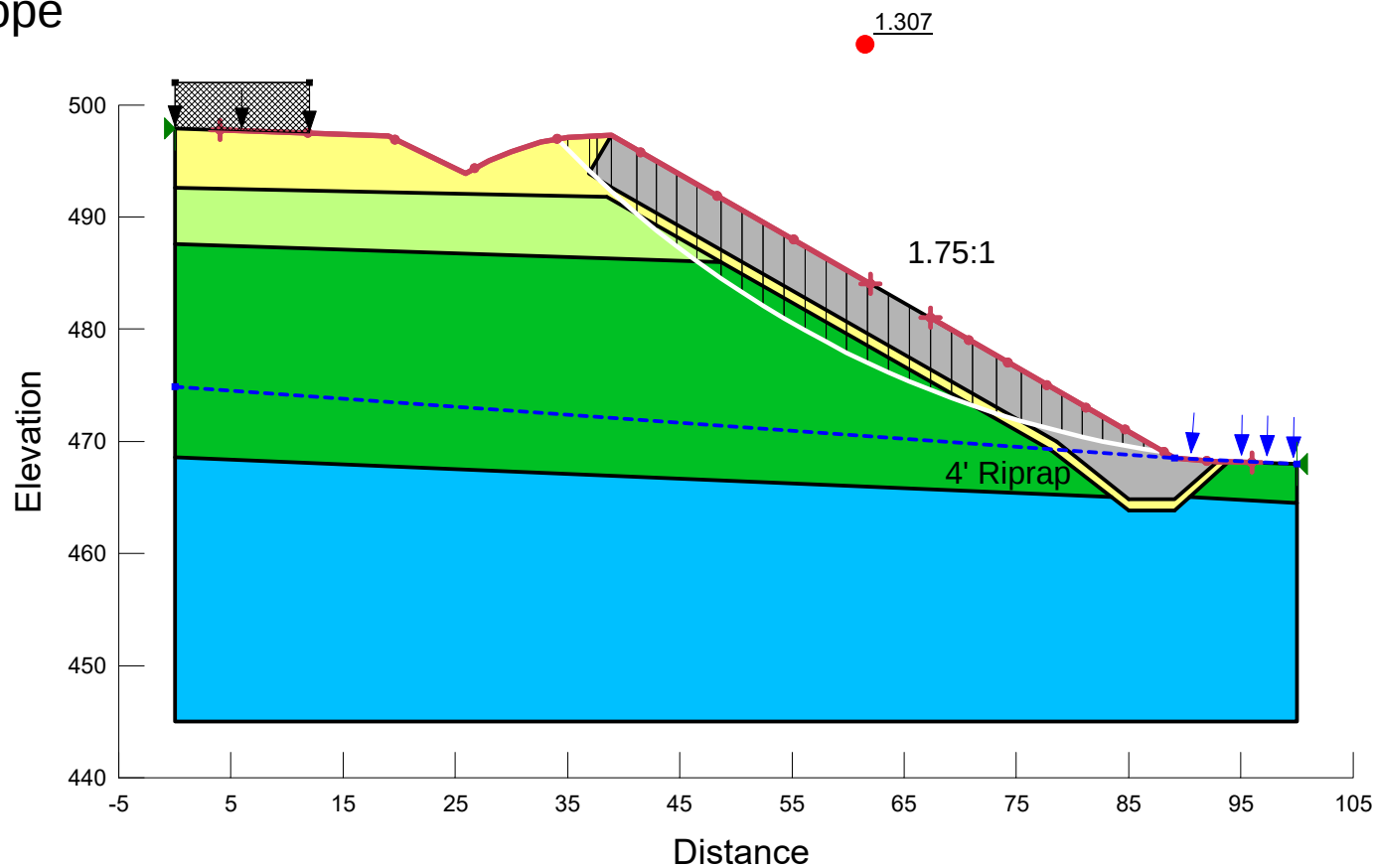
Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Sand	Mohr-Coulomb	125	0	30
	Silt	Mohr-Coulomb	115	150	28

668+00 Slope



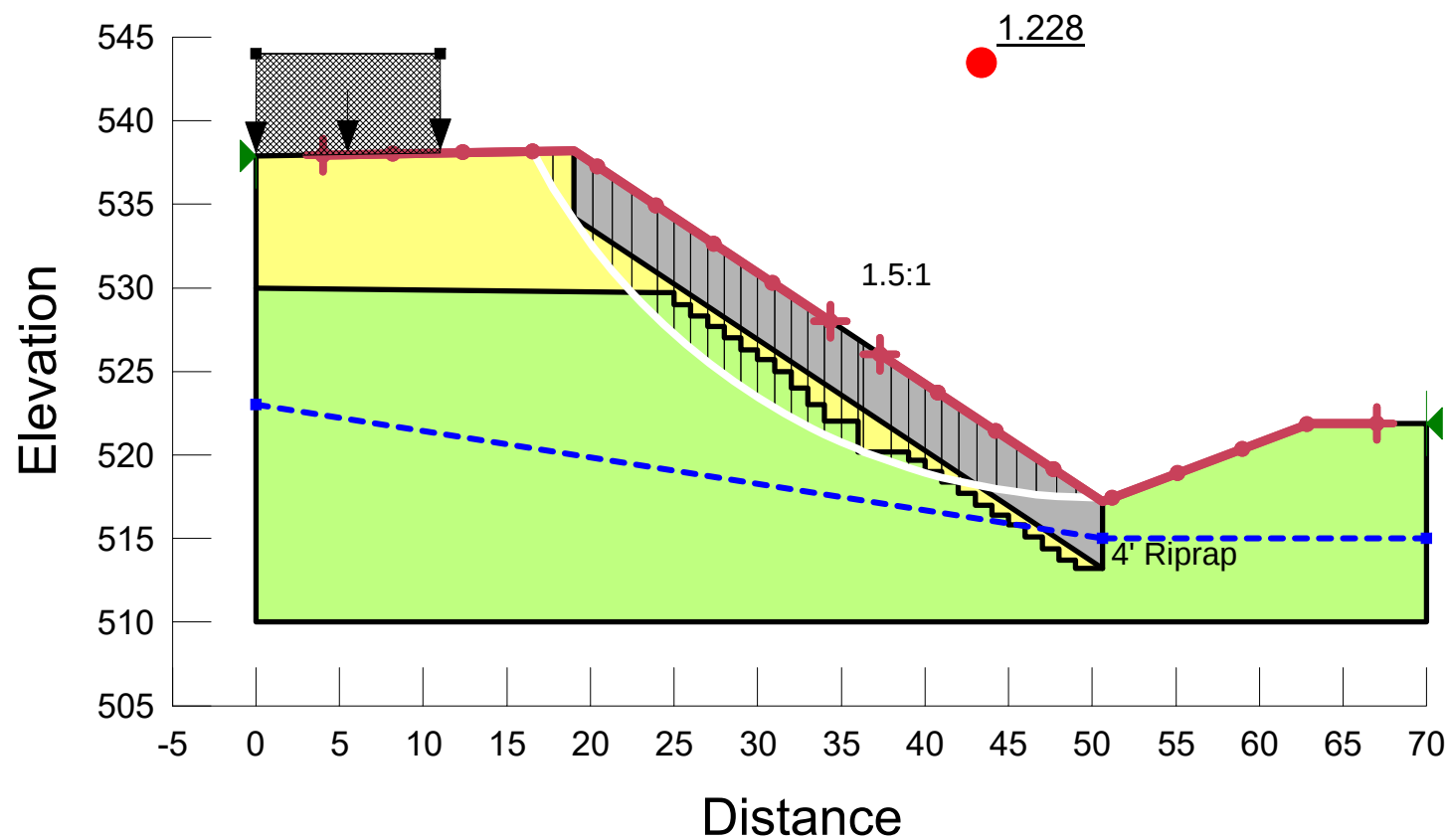
Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Sand	Mohr-Coulomb	125	0	30
	Silt	Mohr-Coulomb	115	150	28
	Silty Sand	Mohr-Coulomb	125	50	30

668+50 Slope



Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Sand	Mohr-Coulomb	125	0	30
	Silt	Mohr-Coulomb	115	150	28
	Silty Sand	Mohr-Coulomb	125	50	30

833+31 Slope



Color	Name	Slope Stability Material Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Fill	Mohr-Coulomb	125	0	34
	Riprap	Mohr-Coulomb	145	0	45
	Sand	Mohr-Coulomb	125	0	30