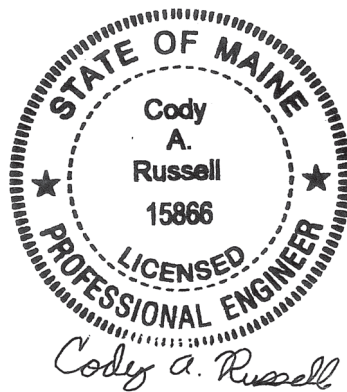


**MAINE DEPARTMENT OF TRANSPORTATION  
HIGHWAY PROGRAM  
GEOTECHNICAL SECTION  
AUGUSTA, MAINE**

**GEOTECHNICAL DATA REPORT**

*For the Rehabilitation of a Portion of*  
**ROUTE 6  
LAGRANGE, MAINE**

*Prepared by:*  
Cody Russell, P.E.  
Geotechnical Engineer



*Reviewed by:*  
Kathleen Maguire, P.E.  
Senior Geotechnical Engineer

Penobscot County  
WIN 18786.00

October 19, 2023

Soils Report 2023-29  
Federal Project No. STP-1878(600)

## **INTRODUCTION**

The purpose of this data report is to document subsurface information collected for the rehabilitation of a portion of Route 6 in Lagrange beginning 0.11 of a mile west of Medford Road and extending southerly 0.93 of a mile as shown on the attached Location Map. The project is needed to address deficiencies in the road width, geometry, and drainage. This report presents the results of a limited geotechnical investigation performed along the proposed highway rehabilitation project. Route 6 is a Highway Corridor Priority 2 road.

## **SUBSURFACE INVESTIGATION**

Ten (10) borings and one (1) probe were drilled along the roadway by the MaineDOT drill crew using a trailer mounted drill rig. Exploration locations are presented in the attached Boring Location Plans. The details and sampling methods used, field data obtained, soil conditions encountered, and exploration locations are presented in the attached Boring Logs.

An experienced geotechnical engineer logged the subsurface conditions encountered. The MaineDOT geotechnical engineer selected the boring and probe locations and drilling methods, designated type and depth of sampling techniques, reviewed boring and probe logs and identified field testing requirements. The borings were located in the field by taping to site features after completion of the drilling program.

## **LABORATORY TESTING**

A laboratory testing program was conducted on select soil samples obtained in the borings to assist in soil classification. Laboratory testing consisted of eighteen (18) standard grain size analyses with natural water content. The results of the laboratory tests are summarized in the attached Laboratory Testing Summary Sheet and Grain Size Distribution Curves. Laboratory test results for the samples obtained in the borings are also summarized on the attached Boring Logs.

## **CLOSURE**

This Geotechnical Data Report has been prepared for the use of the MaineDOT Highway Program for specific application to the proposed Route 6 rehabilitation in Lagrange in accordance with generally accepted geotechnical and foundation engineering practices. No other intended use or warranty is expressed or implied.

MaineDOT conducted a limited number of soil explorations at discrete locations along the project alignment. No interpretations or conclusions have been derived from this geotechnical information. MaineDOT shall not be responsible for the Bidder's or Contractor's interpretations, estimates, or conclusions derived from the geotechnical information. Data provided may not be representative of the subsurface conditions between exploration locations.

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 information presented and to modify the information as appropriate to reflect the changes in design. The information presented is 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 information presented in this report.

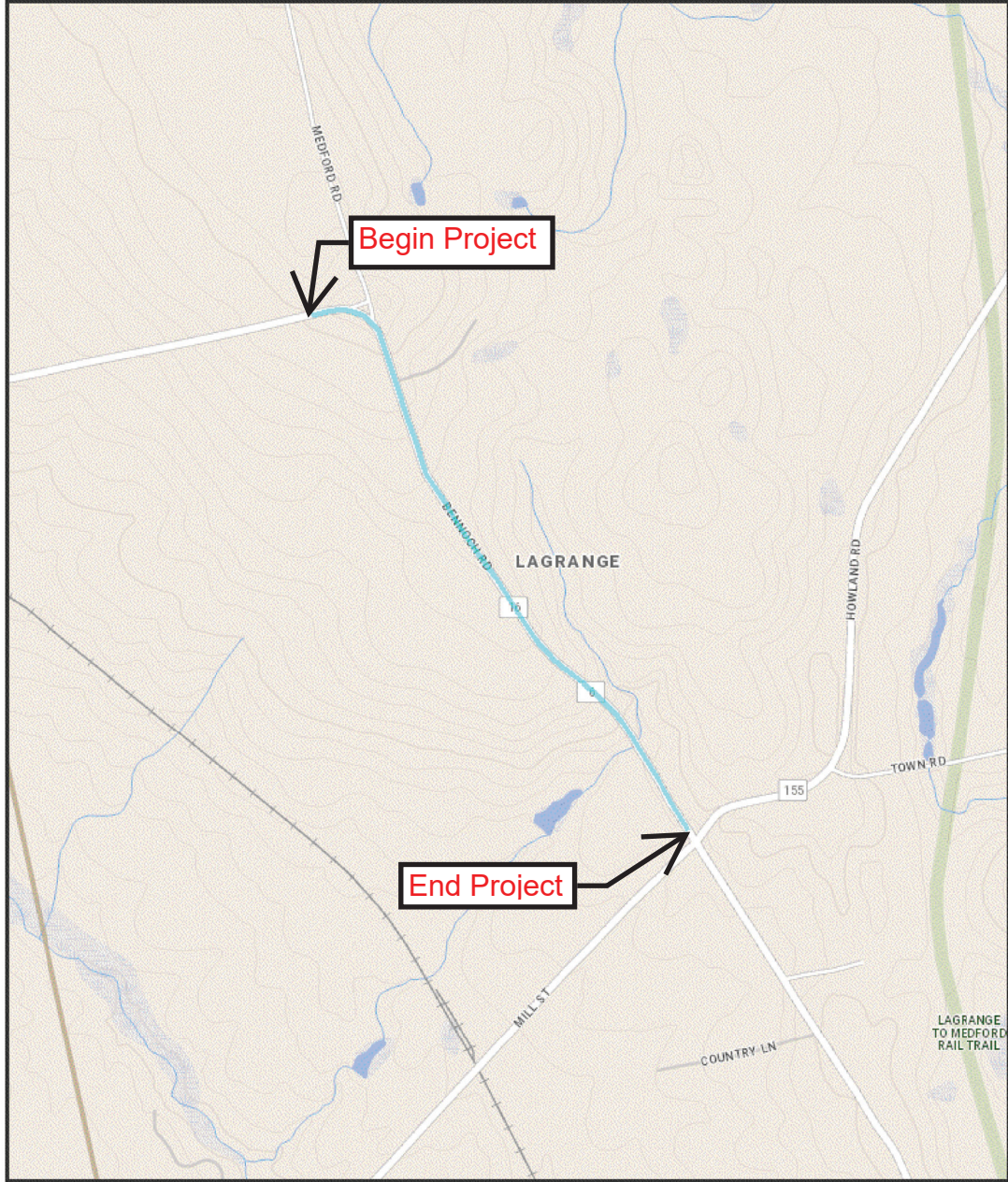
It is recommended that a geotechnical engineer be provided the opportunity for a review of the design and specifications in order that information presented in this report is properly implemented in the design and specifications.

**Attachments:**

Location Map  
Boring Location Plans  
Key to Soil and Rock Descriptions and Terms  
Boring Logs  
Laboratory Testing Summary Sheet  
Grain Size Distribution Curves



## LAGRANGE, MAINE



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.2 Miles  
1 inch = 0.25 miles

Date: 10/12/2023  
Time: 7:03:43 AM

SHEET NUMBER

1

OF 9

LAGRANGE  
ROUTE 6

LOCATION MAP

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

STP-1878(600)

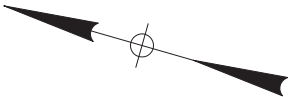
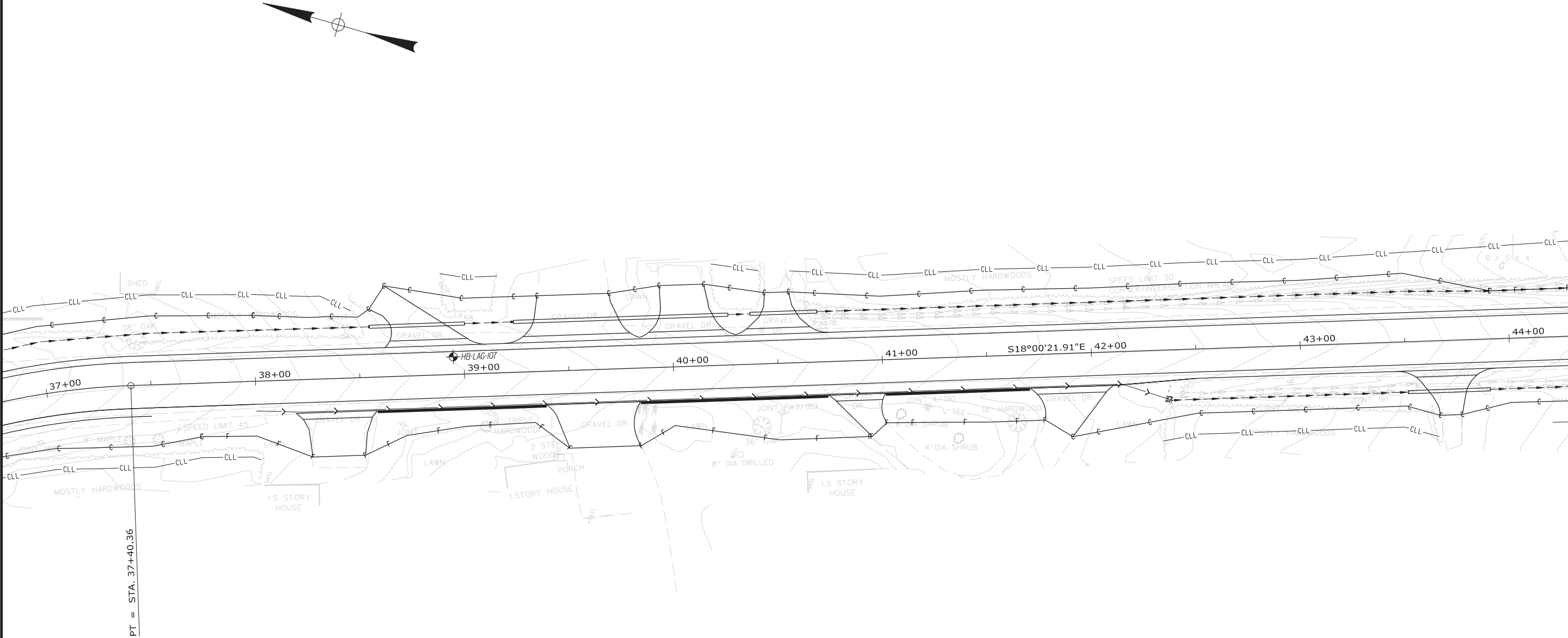
WIN

18786.00

HIGHWAY PLANS

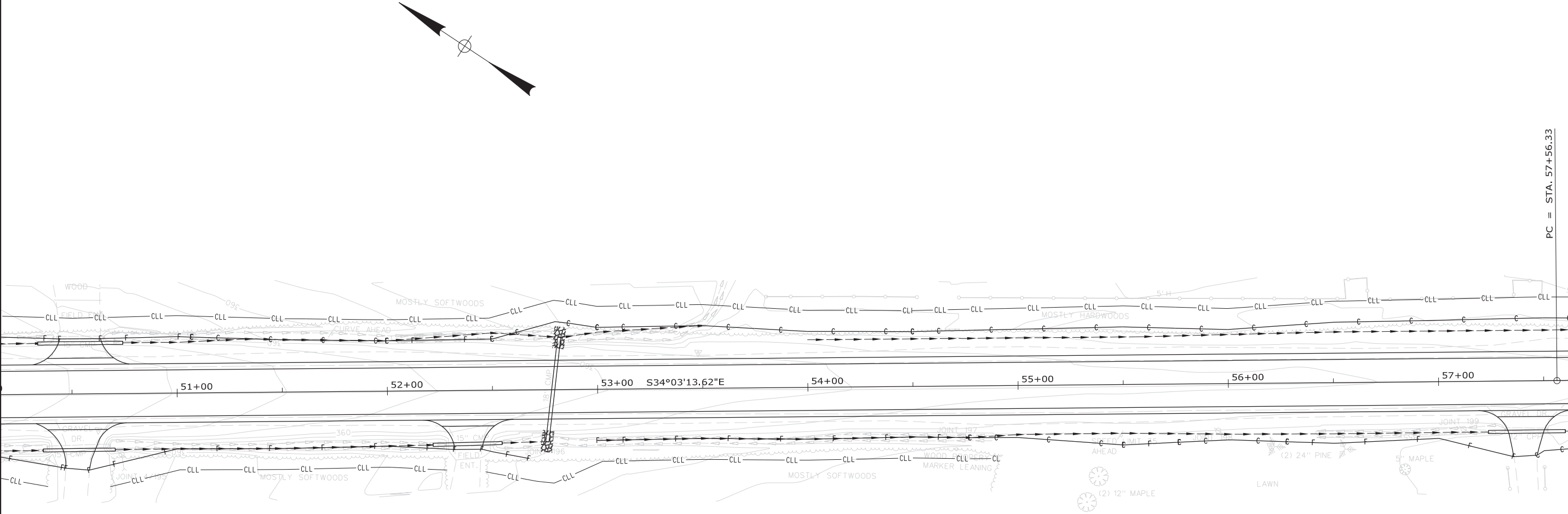






SHEET NUMBER	3	OF 9	LAGRANGE ROUTE 6	BORING LOCATION PLAN	PROJ. MANAGER	BY	DATE	STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
					DESIGN-DETAILED				
					CHECKED-REVIEWED				
					DESIGN2-DETAILED2	C. RUSSELL	OCT 2023		
					DESIGN3-DETAILED3				
					REVISIONS 1		P.E. NUMBER		
					REVISIONS 2				
					REVISIONS 3				
					REVISIONS 4		DATE		
					FIELD CHANGES				
					STP-1878(600)			WIN 018786.00	HIGHWAY PLANS

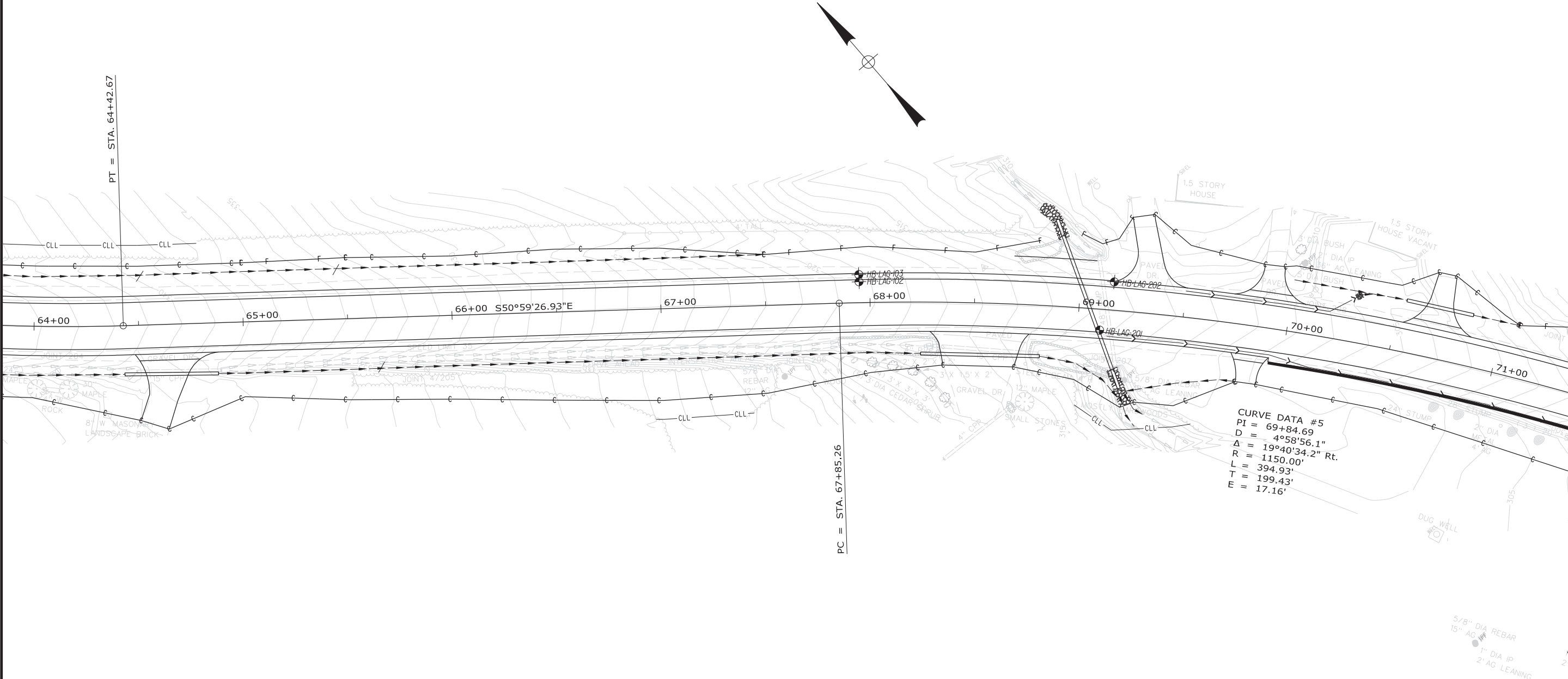




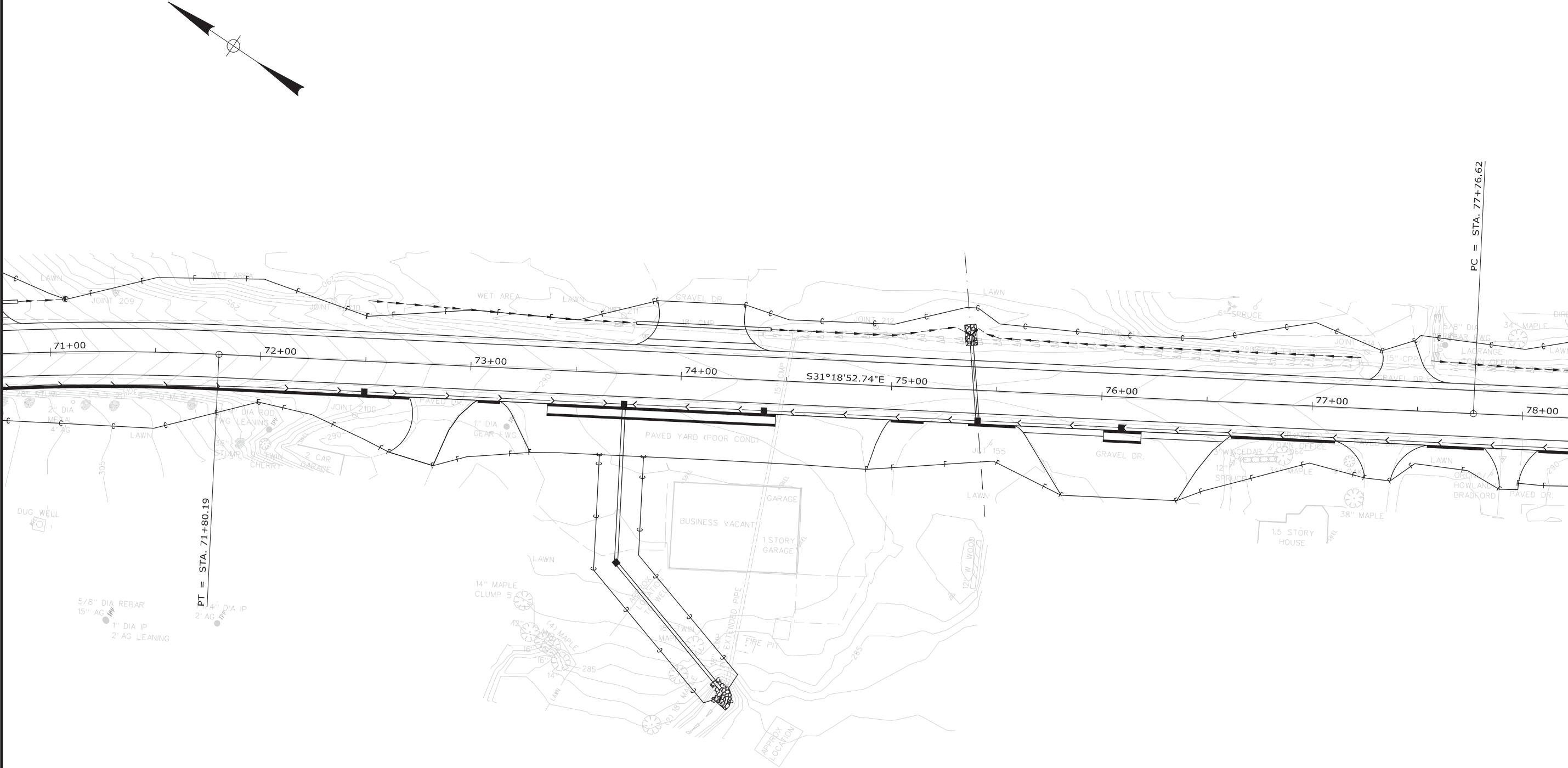
SHEET NUMBER	STATE OF MAINE DEPARTMENT OF TRANSPORTATION			
	STP-1878(600)			
BORING LOCATION PLAN	PROJ. MANAGER	BY	DATE	SIGNATURE
	CHECKED-REVIEWED DESIGN-DETAILED DESIGNS-DETAILED DESIGNS-DETAILED	C. RUSSELL T. WHITE	OCT 2023	P.E. NUMBER
OF 9	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4
	FIELD CHANGES			DATE
WIN		018786.00		
HIGHWAY PLANS				







LAGRANGE ROUTE 6		PROJ. MANAGER		BY	DATE	
		DESIGN-DETAILED	CHECKED-REVIEWED			
BORING LOCATION PLAN		DESIGN2-DETAILED2	C.RUSSELL	T.WHITE	OCT 2023	
		DESIGN3-DETAILED3				
		REVISIONS 1				
		REVISIONS 2				
		REVISIONS 3				
		REVISIONS 4				
		REVISIONS 5				
		REVISIONS 6				
SHEET NUMBER		7				
OF 9						
STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE				
		P.E. NUMBER				
		DATE				
STP-1878(600)						
WIN 018786.00		HIGHWAY PLANS				



STATE OF MAINE DEPARTMENT OF TRANSPORTATION					SIGNATURE
STP-1878(600)				P.E. NUMBER	
WIN 018786.00				DATE	
HIGHWAY PLANS					

LAGRANGE ROUTE 6	PROJ. MANAGER				BY	DATE
	DESIGN-DETAILED					
	CHECKED-REVIEWED					
	DESIGN2-DETAILED2					
	C.RUSSELL					
	DESIGN3-DETAILED3					
	REVISED 1					
	REVISED 2					
	REVISED 3					
	REVISED 4					
FIELD CHANGES						
BORING LOCATION PLAN						
SHEET NUMBER						
8						
OF 9						





UNIFIED SOIL CLASSIFICATION 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	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
		(little or no fines)	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.
		GC	Clayey gravels, gravel-sand-clay mixtures.	
		SANDS  (more than half of coarse fraction is smaller than No. 4 sieve size)	CLEAN SANDS	SW
	(little or no fines)	SP	Poorly-graded sands, Gravelly sand, little or no fines.	
	SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures	
	SC	Clayey sands, sand-clay mixtures.		
	FINE-GRAINED SOILS  (more than half of material is smaller than No. 200 sieve size)	SILTS AND CLAYS  (liquid limit less than 50)	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.		

MODIFIED BURMISTER SYSTEM			
<u>Descriptive Term</u>		<u>Portion of Total (%)</u>	
trace		0 - 10	
little		11 - 20	
some		21 - 35	
adjective (e.g. Sandy, Clayey)		36 - 50	
TERMS DESCRIBING DENSITY/CONSISTENCY			
<u>Coarse-grained soils</u> (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).			
<u>Density of Cohesionless Soils</u>		<u>Standard Penetration Resistance N-Value (blows per foot)</u>	
Very loose		0 - 4	
Loose		5 - 10	
Medium Dense		11 - 30	
Dense		31 - 50	
Very Dense		> 50	
<u>Fine-grained soils</u> (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.			
<u>Consistency of Cohesive soils</u>		<u>SPT N-Value (blows per foot)</u>	<u>Approximate Undrained Shear Strength (psf)</u>
Very Soft		WOH, WOR, WOP, <2	0 - 250
Soft		2 - 4	250 - 500
Medium Stiff		5 - 8	500 - 1000
Stiff		9 - 15	1000 - 2000
Very Stiff		16 - 30	2000 - 4000
Hard		>30	over 4000
<u>Field Guidelines</u>			
Fist easily penetrates			
Thumb easily penetrates			
Thumb penetrates with moderate effort			
Indented by thumb with great effort			
Indented by thumbnail			
Indented by thumbnail with difficulty			
<u>Rock Quality Designation (RQD):</u>			
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)			
<u>Rock Quality Based on RQD</u>			
<u>Rock Quality</u>	<u>RQD (%)</u>		
Very Poor	≤25		
Poor	26 - 50		
Fair	51 - 75		
Good	76 - 90		
Excellent	91 - 100		
<u>Desired Rock Observations (in this order, if applicable):</u>			
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>Sample Container Labeling Requirements:</u>			
WIN	Blow Counts		
Bridge Name / Town	Sample Recovery		
Boring Number	Date		
Sample Number	Personnel Initials		
Sample Depth			

<p><b>Maine Department of Transportation</b> <b>Geotechnical Section</b> <b>Key to Soil and Rock Descriptions and Terms</b> Field Identification Information</p>
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<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> A 0.93 mile portion of Route 6  <b>Location:</b> Lagrange, Maine				<b>Boring No.:</b> HB-LAG-101  <b>WIN:</b> 18786.00			
<b>Drilling Contractor:</b> MaineDOT				<b>Elevation (ft.):</b> 290.3				<b>Auger ID/OD:</b> 10" Dia.			
<b>Operator:</b> Daggett/Burpee				<b>Datum:</b> NAVD88				<b>Sampler:</b> Off Flights			
<b>Logged By:</b> B. Wilder				<b>Rig Type:</b> CME 45C				<b>Hammer Wt./Fall:</b> N/A			
<b>Date Start/Finish:</b> 10/26/2016-10/26/2016				<b>Drilling Method:</b> Solid Stem Auger				<b>Core Barrel:</b> N/A			
<b>Boring Location:</b> 78+57, 7.0 ft Rt.				<b>Casing ID/OD:</b> N/A				<b>Water Level*:</b> None Observed			
Definitions: D = Split Spoon Sample MU = Unsuccessful Thin Wall Tube Sample Attempt WO1P = Weight of 1 Person S = Sample off Auger Flights R = Rock Core Sample S <sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) B = Bucket Sample off Auger Flights SSA = Solid Stem Auger S <sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf) LL = Liquid Limit MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q <sub>p</sub> = Unconfined Compressive Strength (ksf) PL = Plastic Limit U = Thin Wall Tube Sample RC = Roller Cone N-value = Raw Field SPT N-value PI = Plasticity Index MV = Unsuccessful Field Vane Shear Test Attempt WOH = Weight of 140lb. Hammer T <sub>v</sub> = Pocket Torvane Shear Strength (psf) G = Grain Size Analysis V = Field Vane Shear Test, PP = Pocket Penetrometer WOR/C = Weight of Rods or Casing WC = Water Content, percent ≡ = Similar or Equal too 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	B1		0.75 - 2.20			SSA	289.6		9" HMA.	G#270788 A-1-b, SW-SM WC=2.6% G#270789 A-4, CL WC=17.0%	
									0.8		
	S1		2.20 - 5.00				288.1		2.2		
5							285.3		Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL		
25											
<b>Remarks:</b>											
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.										<b>Boring No.:</b> HB-LAG-101	

[illegible]

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> A 0.93 mile portion of Route 6  <b>Location:</b> Lagrange, Maine		<b>Boring No.:</b> HB-LAG-103  <b>WIN:</b> 18786.00				
<b>Drilling Contractor:</b> MaineDOT			<b>Elevation (ft.):</b> 319.2		<b>Auger ID/OD:</b> 10" Dia.					
<b>Operator:</b> Daggett/Burpee			<b>Datum:</b> NAVD88		<b>Sampler:</b> Off Flights					
<b>Logged By:</b> B. Wilder			<b>Rig Type:</b> CME 45C		<b>Hammer Wt./Fall:</b> N/A					
<b>Date Start/Finish:</b> 10/26/2016-10/26/2016			<b>Drilling Method:</b> Solid Stem Auger		<b>Core Barrel:</b> N/A					
<b>Boring Location:</b> 67+94.8, 13.4 ft Lt. Shoulder			<b>Casing ID/OD:</b> N/A		<b>Water Level*:</b> None Observed					
<div style="display: flex; justify-content: space-between; font-size: 0.8em;"> <div>           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         </div> <div>           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         </div> <div>           WO1P = Weight of 1 Person            S<sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf)            S<sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf)            q<sub>p</sub> = Unconfined Compressive Strength (ksf)            N-value = Raw Field SPT N-value            T<sub>v</sub> = Pocket Torvane Shear Strength (psf)            WC = Water Content, percent    ≡ = Similar or Equal too         </div> <div>           LL = Liquid Limit            PL = Plastic Limit            PI = Plasticity Index            G = Grain Size Analysis            C = Consolidation Test         </div> </div>										
Depth (ft.)	<b>Sample Information</b>								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		0.00 - 2.00			SSA	317.2		Brown, damp, fine to coarse Sandy GRAVEL, trace silt.	G#270792 A-1-a, GW-GM WC=3.2%
							2.0		Light brown, moist, SILT, some fine to coarse sand, trace gravel.	
5						314.2		<b>Bottom of Exploration at 5.0 feet below ground surface.</b> NO REFUSAL		
10										
15										
20										
25										
<b>Remarks:</b>										
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.										<b>Page 1 of 1</b>  <b>Boring No.:</b> HB-LAG-103

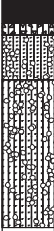
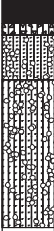
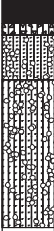
\* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.






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<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> A 0.93 mile portion of Route 6  <b>Location:</b> Lagrange, Maine				<b>Boring No.:</b> HB-LAG-105  <b>WIN:</b> 18786.00			
<b>Drilling Contractor:</b> MaineDOT				<b>Elevation (ft.):</b> 371.3				<b>Auger ID/OD:</b> 10" Dia.			
<b>Operator:</b> Daggett/Burpee				<b>Datum:</b> NAVD88				<b>Sampler:</b> Off Flights			
<b>Logged By:</b> B. Wilder				<b>Rig Type:</b> CME 45C				<b>Hammer Wt./Fall:</b> N/A			
<b>Date Start/Finish:</b> 10/26/2016-10/26/2016				<b>Drilling Method:</b> Solid Stem Auger				<b>Core Barrel:</b> N/A			
<b>Boring Location:</b> 47+44.9, 10.1 ft Lt.				<b>Casing ID/OD:</b> N/A				<b>Water Level*:</b> None Observed			
Definitions: D = Split Spoon Sample MU = Unsuccessful Thin Wall Tube Sample Attempt WO1P = Weight of 1 Person S = Sample off Auger Flights R = Rock Core Sample S <sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) B = Bucket Sample off Auger Flights SSA = Solid Stem Auger S <sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf) LL = Liquid Limit MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q <sub>p</sub> = Unconfined Compressive Strength (ksf) PL = Plastic Limit U = Thin Wall Tube Sample RC = Roller Cone N-value = Raw Field SPT N-value PI = Plasticity Index MV = Unsuccessful Field Vane Shear Test Attempt WOH = Weight of 140lb. Hammer T <sub>v</sub> = Pocket Torvane Shear Strength (psf) G = Grain Size Analysis V = Field Vane Shear Test, PP = Pocket Penetrometer WOR/C = Weight of Rods or Casing WC = Water Content, percent ≡ = Similar or Equal too 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-value	Casing Blows					
0	B5		0.67 - 2.40			SSA	370.6		8" HMA.	G#270795 A-1-a, GW WC=2.3%  G#270796 A-2-4, SM WC=15.0%	
							368.9		Brown, damp, fine to coarse Sandy GRAVEL, trace silt, occasional cobble.		
	S4		2.40 - 5.00						Brown, wet, fine to coarse SAND, some silt, little gravel.		
5							366.3		Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL		
10											
15											
20											
25											
<b>Remarks:</b>											
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.										<b>Boring No.:</b> HB-LAG-105	

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS							<b>Project:</b> A 0.93 mile portion of Route 6 <b>Location:</b> Lagrange, Maine			<b>Boring No.:</b> HB-LAG-106 <b>WIN:</b> 18786.00		
<b>Drilling Contractor:</b> MaineDOT					<b>Elevation (ft.):</b> 371.0			<b>Auger ID/OD:</b> 10" Dia.				
<b>Operator:</b> Daggett/Burpee					<b>Datum:</b> NAVD88			<b>Sampler:</b> Off Flights				
<b>Logged By:</b> B. Wilder					<b>Rig Type:</b> CME 45C			<b>Hammer Wt./Fall:</b> N/A				
<b>Date Start/Finish:</b> 10/26/2016-10/26/2016					<b>Drilling Method:</b> Solid Stem Auger			<b>Core Barrel:</b> N/A				
<b>Boring Location:</b> 47+44.9, 13.5 ft Lt. Shoulder					<b>Casing ID/OD:</b> N/A			<b>Water Level*:</b> None Observed				
<div>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</div> <div>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</div> <div>WO1P = Weight of 1 Person S<sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) S<sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf) q<sub>p</sub> = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T<sub>v</sub> = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>												
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.)					
0	B6		0.00 - 1.00			SSA	370.0	Brown, damp, Gravelly fine to coarse SAND, trace silt.	G#270797 A-1-a, GW-GM WC=2.4%			
								Brown, wet, fine to coarse SAND, some silt, little gravel.				
5							366.0	Bottom of Exploration at 5.0 feet below ground surface. NO REFUSAL				
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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-LAG-106												

<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> A 0.93 mile portion of Route 6 <b>Location:</b> Lagrange, Maine				<b>Boring No.:</b> HB-LAG-107 <b>WIN:</b> 18786.00																																																																																																																																																				
<b>Drilling Contractor:</b> MaineDOT				<b>Elevation (ft.):</b> 400.9				<b>Auger ID/OD:</b> 10" Dia.																																																																																																																																																				
<b>Operator:</b> Daggett/Burpee				<b>Datum:</b> NAVD88				<b>Sampler:</b> Off Flights																																																																																																																																																				
<b>Logged By:</b> B. Wilder				<b>Rig Type:</b> CME 45C				<b>Hammer Wt./Fall:</b> N/A																																																																																																																																																				
<b>Date Start/Finish:</b> 10/26/2016-10/26/2016				<b>Drilling Method:</b> Solid Stem Auger				<b>Core Barrel:</b> N/A																																																																																																																																																				
<b>Boring Location:</b> 38+94.9, 8.5 ft Lt.				<b>Casing ID/OD:</b> N/A				<b>Water Level*:</b> None Observed																																																																																																																																																				
<div>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</div> <div>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</div> <div>WO1P = Weight of 1 Person S<sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) S<sub>u</sub>(lab) = Lab Vane Undrained Shear Strength (psf) q<sub>p</sub> = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T<sub>v</sub> = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≡ = Similar or Equal too</div> <div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>																																																																																																																																																												
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Brown, damp, GRAVEL, some fine to coarse sand, trace silt, occasional cobble.</td><td>-0.5</td><td>G#270800 A-1-a, GW WC=1.7%</td></tr><tr><td></td><td>S6</td><td></td><td>3.20 - 5.00</td><td></td><td></td><td></td><td>402.4</td><td>Grey-brown, wet, Silty fine to coarse SAND, some gravel.</td><td>-3.2</td><td>G#271076 A-4, SM WC=14.4%</td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td>400.6</td><td></td><td></td><td>-5.0</td><td></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 5.0 feet below ground surface. 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Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS						Project: A 0.93 mile portion of Route 6  Location: Lagrange, Maine				Boring No.: HB-LAG-109  WIN: 18786.00																																																																																																							
Drilling Contractor: MaineDOT						Elevation (ft.) 405.3				Auger ID/OD: 10" Dia.																																																																																																							
Operator: Daggett/Burpee						Datum: NAVD88				Sampler: Off Flights																																																																																																							
Logged By: B. Wilder						Rig Type: CME 45C				Hammer Wt./Fall: N/A																																																																																																							
Date Start/Finish: 10/26/2016-10/26/2016						Drilling Method: Solid Stem Auger				Core Barrel: N/A																																																																																																							
Boring Location: 30+50.1, 13.4 ft Rt. Shoulder						Casing ID/OD: N/A				Water Level*: None Observed																																																																																																							
<div>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</div>						<div>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</div>						<div>WO1P = Weight of 1 Person S<sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) S<sub>u(lab)</sub> = Lab Vane Undrained Shear Strength (psf) q<sub>p</sub> = Unconfined Compressive Strength (ksf) N-value = Raw Field SPT N-value T<sub>v</sub> = Pocket Torvane Shear Strength (psf) WC = Water Content, percent ≈ = Similar or Equal too</div>						<div>LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>																																																																																															
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<b>Maine Department of Transportation</b> <u>Soil/Rock Exploration Log</u> <u>US CUSTOMARY UNITS</u>				<b>Project:</b> A 0.93 mile portion of Route 6 <b>Location:</b> Lagrange, Maine				<b>Boring No.:</b> HB-LAG-201 <b>WIN:</b> 18786.00																																																																																																																																																																																																																																																																																																																																																						
<b>Drilling Contractor:</b> MaineDOT				<b>Elevation (ft.):</b> 312.3				<b>Auger ID/OD:</b> 5" Dia.																																																																																																																																																																																																																																																																																																																																																						
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<b>Maine Department of Transportation</b> Soil/Rock Exploration Log US CUSTOMARY UNITS				<b>Project:</b> A 0.93 mile portion of Route 6  <b>Location:</b> Lagrange, Maine		<b>Boring No.:</b> HB-LAG-202  <b>WIN:</b> 18786.00	
<b>Driller:</b> MaineDOT			<b>Elevation (ft.):</b> 312.1		<b>Auger ID/OD:</b> 5" Dia.		
<b>Operator:</b> Daggett/Westrack			<b>Datum:</b> NAVD88		<b>Sampler:</b> Standard Split Spoon		
<b>Logged By:</b> B. Wilder			<b>Rig Type:</b> CME 45C		<b>Hammer Wt./Fall:</b> 140#/30"		
<b>Date Start/Finish:</b> 2/24/2020-2/24/2020			<b>Drilling Method:</b> Solid Stem Auger		<b>Core Barrel:</b> N/A		
<b>Boring Location:</b> 69+15.9, 13.6 ft Lt.			<b>Casing ID/OD:</b> N/A		<b>Water Level*:</b> 6.6 ft bgs.		
<b>Hammer Efficiency Factor:</b> 0.886			<b>Hammer Type:</b> Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>				
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 <sub>u</sub> = Peak/Remolded Field Vane Undrained Shear Strength (psf) S <sub>u</sub> (lab) = Lab Vane Undrained Shear Strength (psf) q <sub>p</sub> = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N <sub>60</sub> = SPT N-uncorrected Corrected for Hammer Efficiency N <sub>60</sub> = (Hammer Efficiency Factor/60%)*N-uncorrected							
T <sub>v</sub> = 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 <sub>60</sub>	Casing	Blows				
0								SSA				
	1D	24/17	2.50 - 4.50	12/9/11/11	20	30					Frost Depth at 2.4 ft bgs. Brown, damp, medium dense, GRAVEL, some fine to coarse sand, trace silt, (Fill).	G#340702 A-1-a, GW-GM WC=2.8%
5	2D	24/15	5.00 - 7.00	9/9/14/15	23	34					Brown, moist, dense, GRAVEL, some fine to coarse sand, little silt, (Fill).	G#340703 A-1-b, GM WC=7.7%
									305.1			
											Cobble from 8.9-10.3 ft bgs.	
10	3D	24/18	10.30 - 12.30	10/35/21/25	56	83					Grey brown, wet, very dense, fine to coarse SAND, some gravel, some silt, occasional cobble.	G#340704 A-1-b, SM WC=11.5%
15	4D	24/15	15.00 - 17.00	29/30/26/31	56	83					Brown, wet, very dense, fine to coarse SAND, some silt, little gravel.	G#340705 A-2-4, SM WC=12.4%
									295.1			
											Bottom of Exploration at 17.0 feet below ground surface. NO REFUSAL	
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.

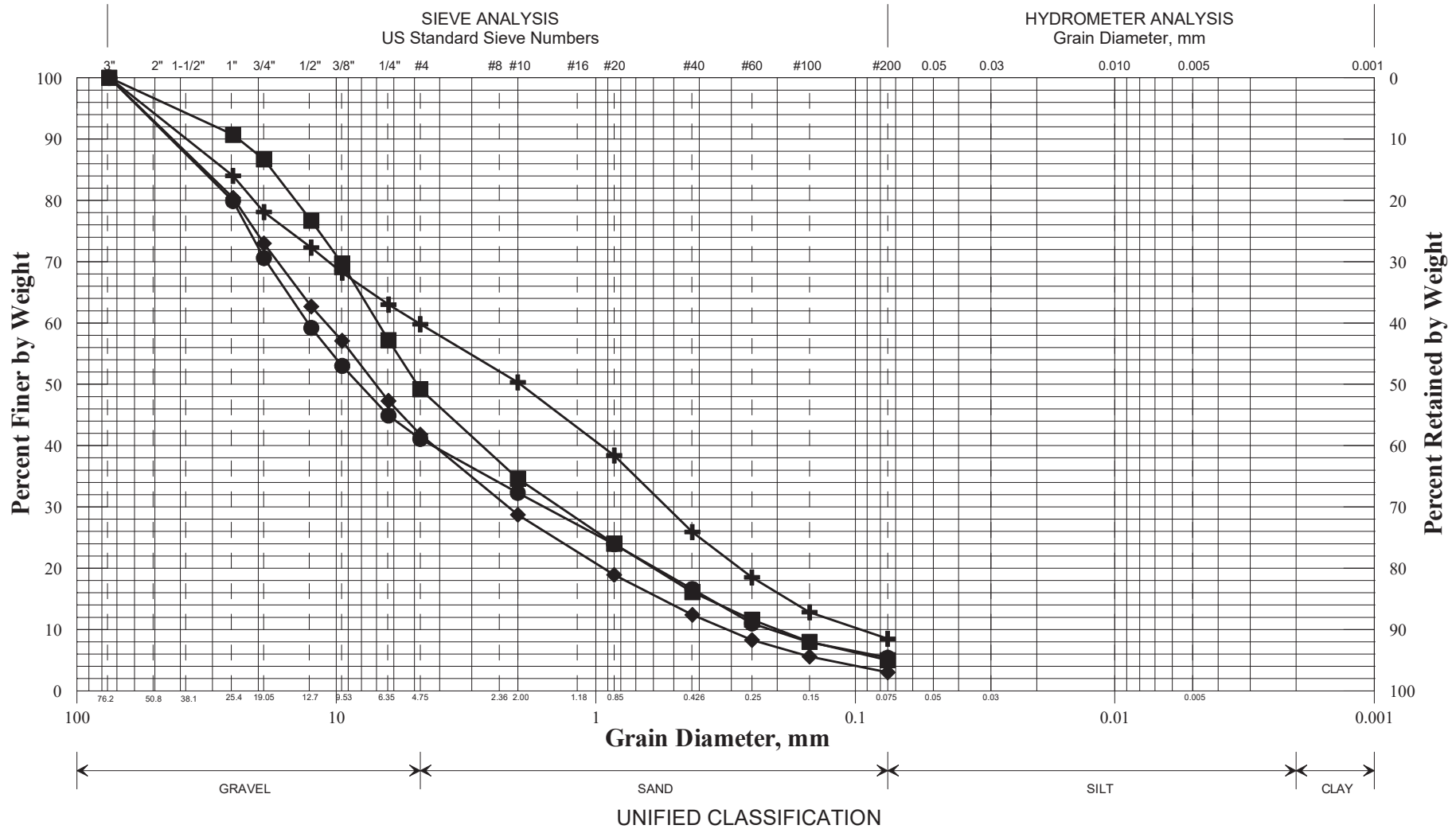
Page 1 of 1  
  
**Boring No.:** HB-LAG-202



**Work Number: 18786.00**

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

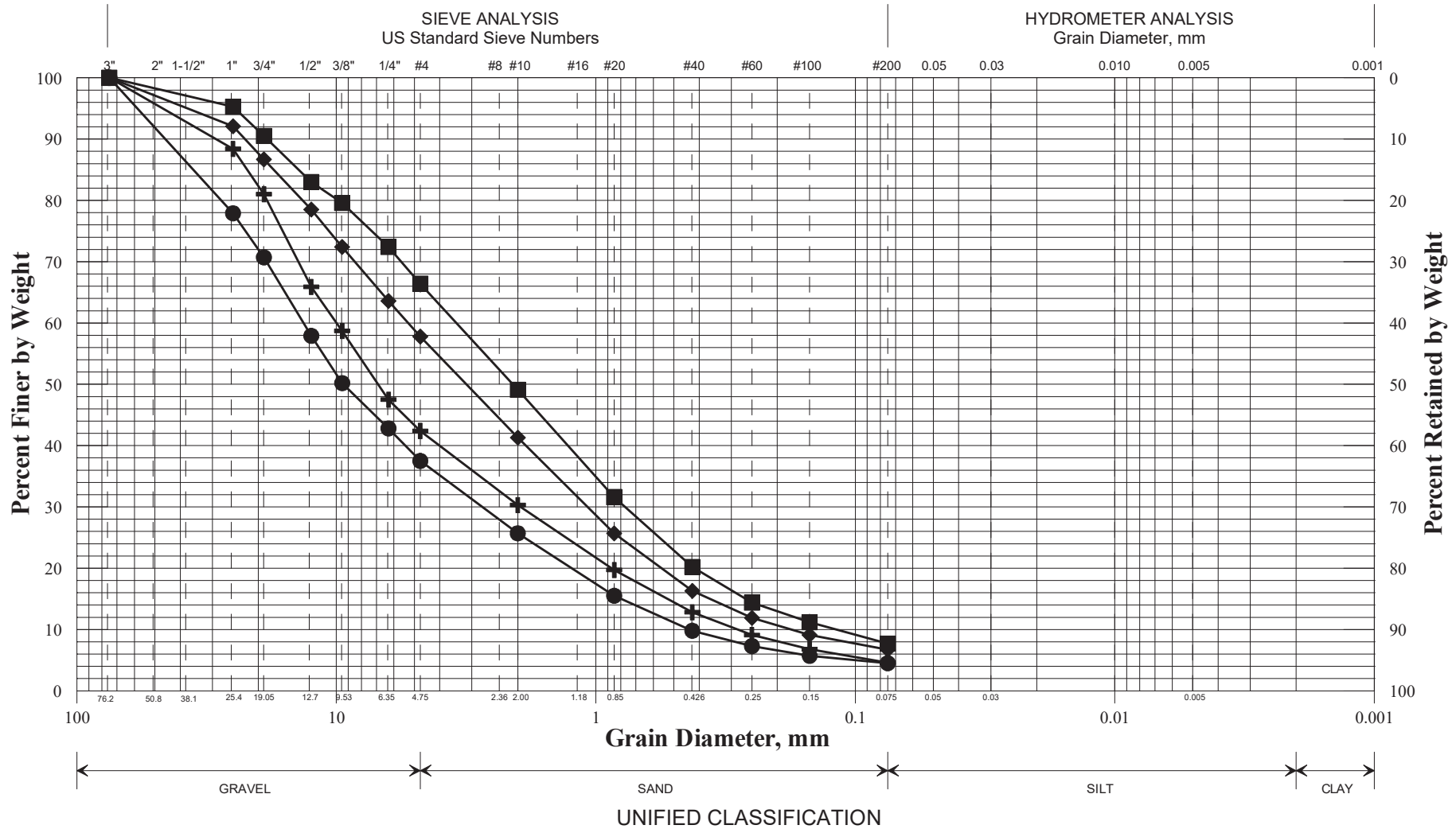
**State of Maine Department of Transportation**  
**GRAIN SIZE DISTRIBUTION CURVE**



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-LAG-101/B1	78+62	7.0 RT	0.75-2.2	Gravelly SAND, trace silt.	2.6			
◆	HB-LAG-102/B2	68+00	10.0 LT	0.83-2.2	Sandy GRAVEL, trace silt.	2.1			
■	HB-LAG-103/B3	68+00	13.5 LT	0.0-2.0	Sandy GRAVEL, trace silt.	3.2			
●	HB-LAG-104/B4	58+50	9.0 LT	0.42-3.3	Sandy GRAVEL, trace silt.	3.0			
▲									
×									

<b>WIN</b>	
018786.00	
<b>Town</b>	
Lagrange	
<b>Reported by/Date</b>	
WHITE, TERRY A	11/17/2016

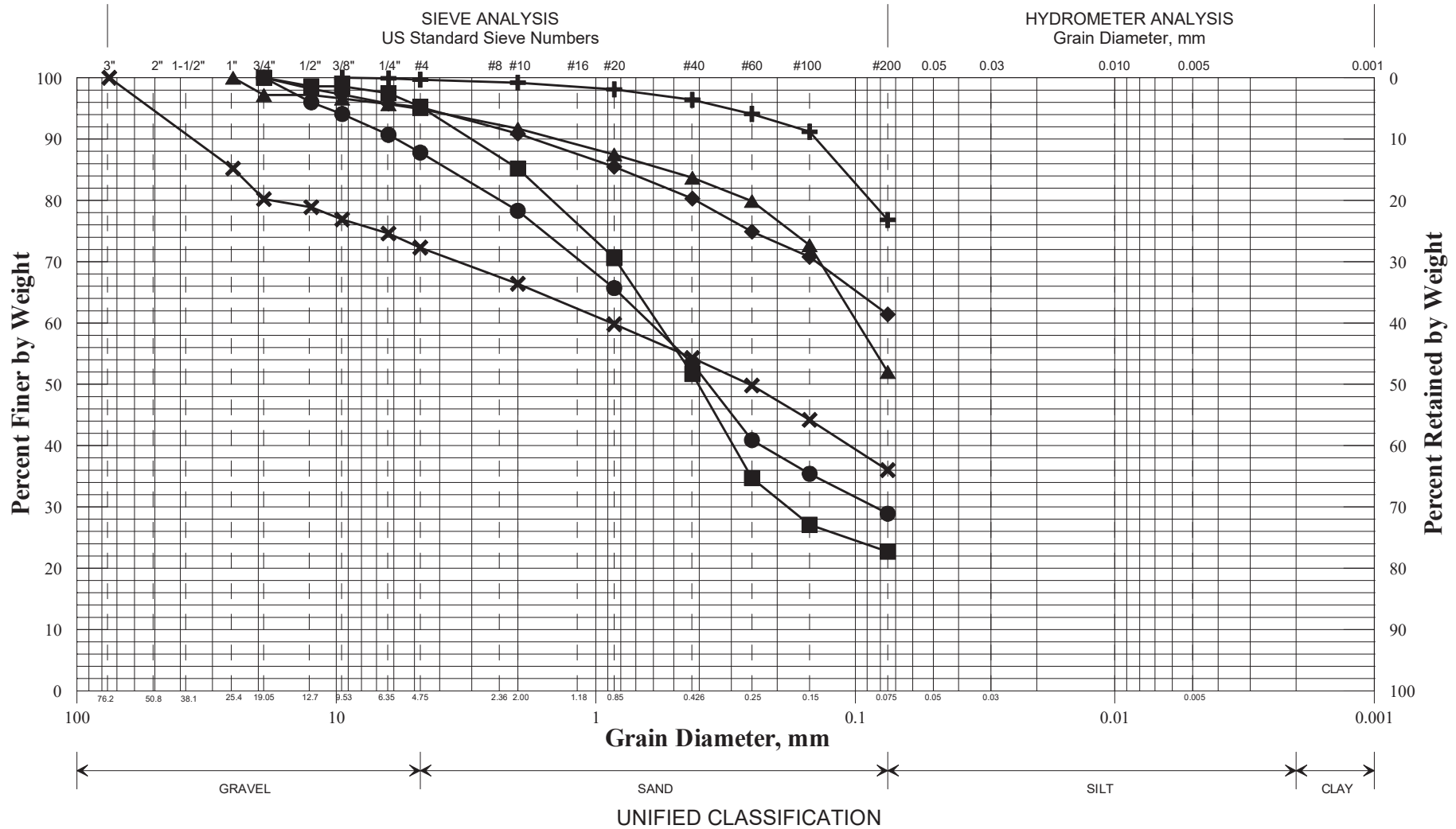
**State of Maine Department of Transportation**  
**GRAIN SIZE DISTRIBUTION CURVE**



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-LAG-105/B5	47+50	10.0 LT	0.67-2.4	Sandy GRAVEL, trace silt.	2.3			
◆	HB-LAG-106/B6	47+50	13.5 LT	0.0-1.0	Gravelly SAND, trace silt.	2.4			
■	HB-LAG-107/B7	39+00	8.5 LT	0.83-1.8	SAND, some gravel, trace silt.	3.2			
●	HB-LAG-108/B8	30+50	8.0 RT	0.5-3.2	GRAVEL, some sand, trace silt.	1.7			
▲									
×									

WIN
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Reported by/Date
WHITE, TERRY A 11/17/2016

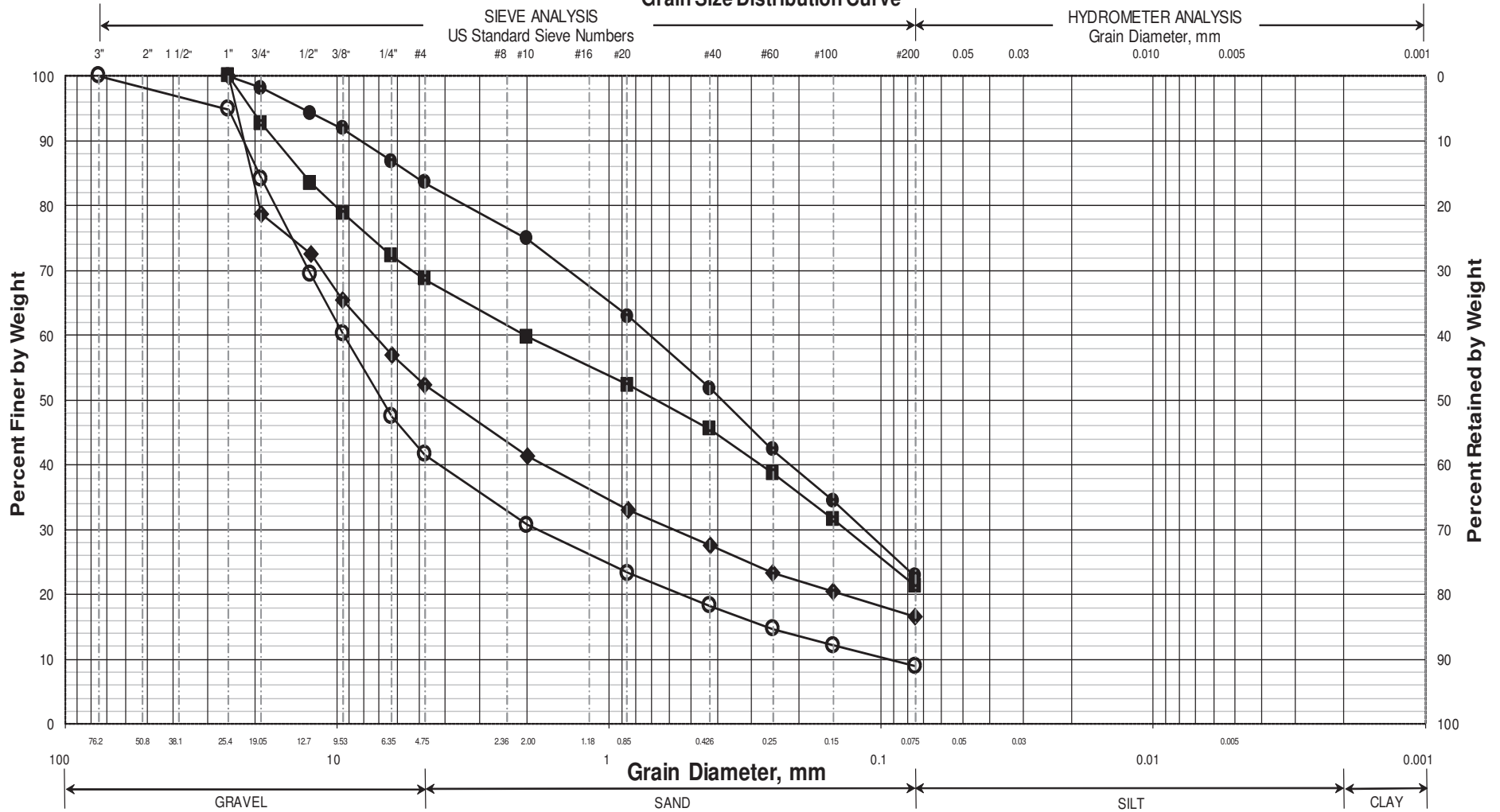
**State of Maine Department of Transportation**  
**GRAIN SIZE DISTRIBUTION CURVE**



	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	HB-LAG-101/S1	78+62	7.0 RT	2.2-5.0	SILT, some sand, trace gravel.	17.0			
◆	HB-LAG-102/S2	68+00	10.0 LT	2.2-5.0	SILT, some sand, trace gravel.	14.5			
■	HB-LAG-104/S3	58+50	9.0 LT	3.3-5.0	SAND, some silt, trace gravel.	7.5			
●	HB-LAG-105/S4	47+50	10.0 LT	2.4-5.0	SAND, some silt, little gravel.	15.0			
▲	HB-LAG-107/S5	39+00	8.5 LT	1.8-5.0	Sandy SILT, trace gravel.	17.9			
×	HB-LAG-108/S6	30+50	8.0 RT	3.2-5.0	Silty SAND, some gravel.	14.4			

WIN
018786.00
Town
Lagrange
Reported by/Date
WHITE, TERRY A 11/17/2016

# Maine Department of Transportation Grain Size Distribution Curve



UNIFIED CLASSIFICATION

	Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	WC, %	LL	PL	PI
○	HB-LAG-202/1D	69+15.9	13.6 LT	2.5-4.5	GRAVEL, some sand, trace silt.	2.8			
◆	HB-LAG-202/2D	69+15.9	13.6 LT	5.0-7.0	GRAVEL, some sand, little silt.	7.7			
■	HB-LAG-202/3D	69+15.9	13.6 LT	10.3-12.3	SAND, some gravel, some silt.	11.5			
●	HB-LAG-202/4D	69+15.9	13.6 LT	15.0-17.0	SAND, some silt, little gravel.	12.4			
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X									

WIN
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Town
Lagrange
Reported by/Date
WHITE, TERRY A 3/27/2020