

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION



SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Eighth Edition 2017.

DESIGN LOADING

Live Load ..... HL - 93 Modified for Strength I

TRAFFIC DATA

Current (2020) AADT ..... 7610  
Future (2040) AADT ..... 8540  
DHV - % of AADT ..... 10  
Design Hour Volume ..... 854  
Heavy Trucks (% of AADT) ..... 8  
Heavy Trucks (% of DHV) ..... 5  
Directional Distribution (% of DHV) ..... 54  
18 kip Equivalent P 2.0 ..... 571  
18 kip Equivalent P 2.5 ..... 544  
Design Speed (mph) ..... 50

HYDROLOGIC DATA

Drainage Area ..... 0.68 sq mi  
Design Discharge (Q50) ..... 122.1 cfs  
Check Discharge (Q100) ..... 145.0 cfs  
Headwater Elevation (Q1.1) ..... 145.1 ft  
Headwater Elevation (Q25) ..... 146.3 ft  
Headwater Elevation (Q50) ..... 146.5 ft  
Headwater Elevation (Q100) ..... 146.7 ft  
Discharge Velocity (Q1.1) ..... 5.7 fps  
Discharge Velocity (Q50) ..... 12.2 fps  
Discharge Velocity (Q100) ..... 12.9 fps

MATERIALS

Concrete:  
Precast ..... Class "P"  
Fill ..... "Fill"  
All Other ..... Class "A"  
Reinforcing Steel ..... ASTM A 615/A 615M, Grade 60  
Welded Wire Reinforcement ..... ASTM A1064/A1064M

BASIC DESIGN STRESSES

Concrete ..... f 'c = 4,000 psi  
Precast Concrete ..... f 'c = 5,000 psi  
Reinforcing Steel ..... f y = 60,000 psi  
Welded Wire Reinforcement ..... f y = 65,000 psi

LIST OF DRAWINGS

Title Sheet ..... B1  
Estimated Quantities and General Construction Notes ..... B2  
General Plan and Profile ..... B3  
Boring Location Plan and Interpretive Subsurface Profile ..... B4  
Boring Logs ..... B5  
Bridge Details ..... B6-B8

CAMDEN  
KNOX COUNTY  
GREAT BROOK BRIDGE  
OVER  
GREAT BROOK  
US ROUTE 1  
PROJECT NO. NHPP-2261(000)  
PROJECT LENGTH 1.54 mi.  
BRIDGE NO. 2326

UTILITIES

Central Maine Power Company  
Consolidated Communications  
Lincolnville Telephone  
Time Warner/Spectrum  
Maine Fiber Company

MAINTENANCE OF TRAFFIC

Traffic wil be maintained with staged construction using one lane of alternating one - way traffic.

PROJECT LOCATION	U.S. Route 1 in Camden, approx. 0.1 miles southerly of the Lincolnville T/L Lat./Long. 44° 15' 02" N, 69° 01' 57" W
PROGRAM AREA	Highway Bridges - Traditional
OUTLINE OF WORK	Bridge replacement coinciding with 1.54 miles of roadway rehabilitation.

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

APPROVED

DATE

1/30/2020

COMMISSIONER

CHIEF ENGINEER

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

APPROVED

DATE

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DEPARTMENT OF TRANSPORTATION

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DATE

1/30/2020

COMMISSIONER

CHIEF ENGINEER

PROJECT INFORMATION

PROGRAM

BRIDGE PROGRAM

PROJECT MANAGER

ANDREW LATHE

DESIGNER

KENDRA NASH

CONSULTANT

PROJECT RESIDENT

CONTRACTOR

PROJECT COMPLETION DATE

CAMDEN  
GREAT BROOK BRIDGE

TITLE SHEET

NHPP-2261(000)

WIN 22610.00

SHEET NUMBER

B1

OF B8

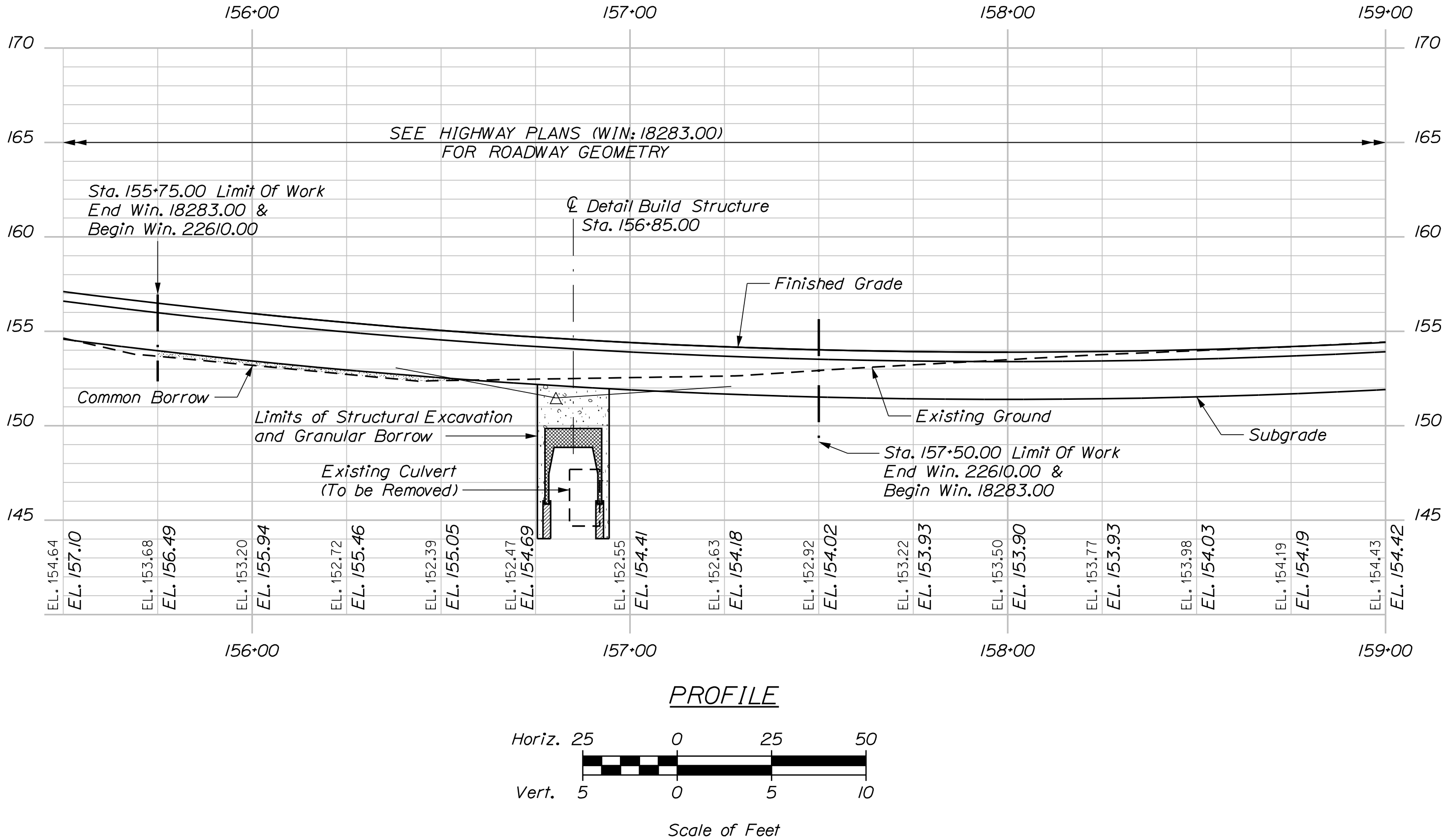
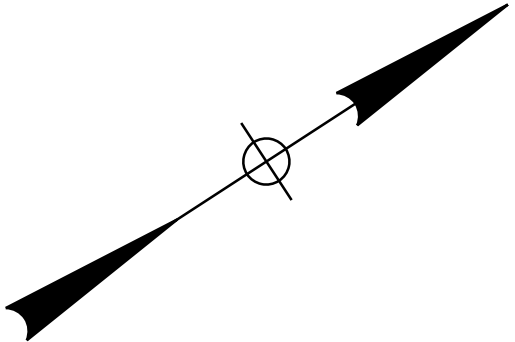
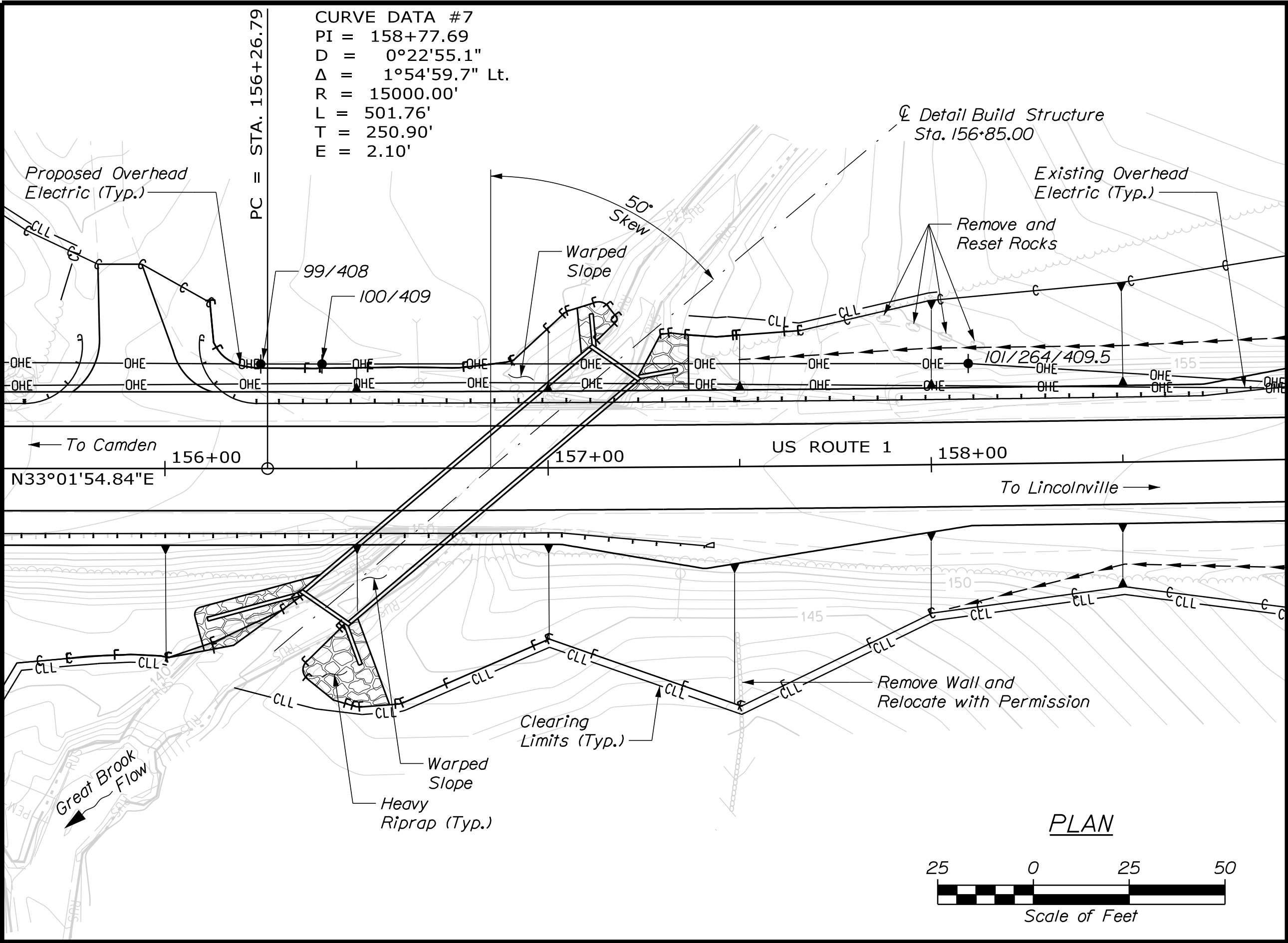


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Division: BRIDGE

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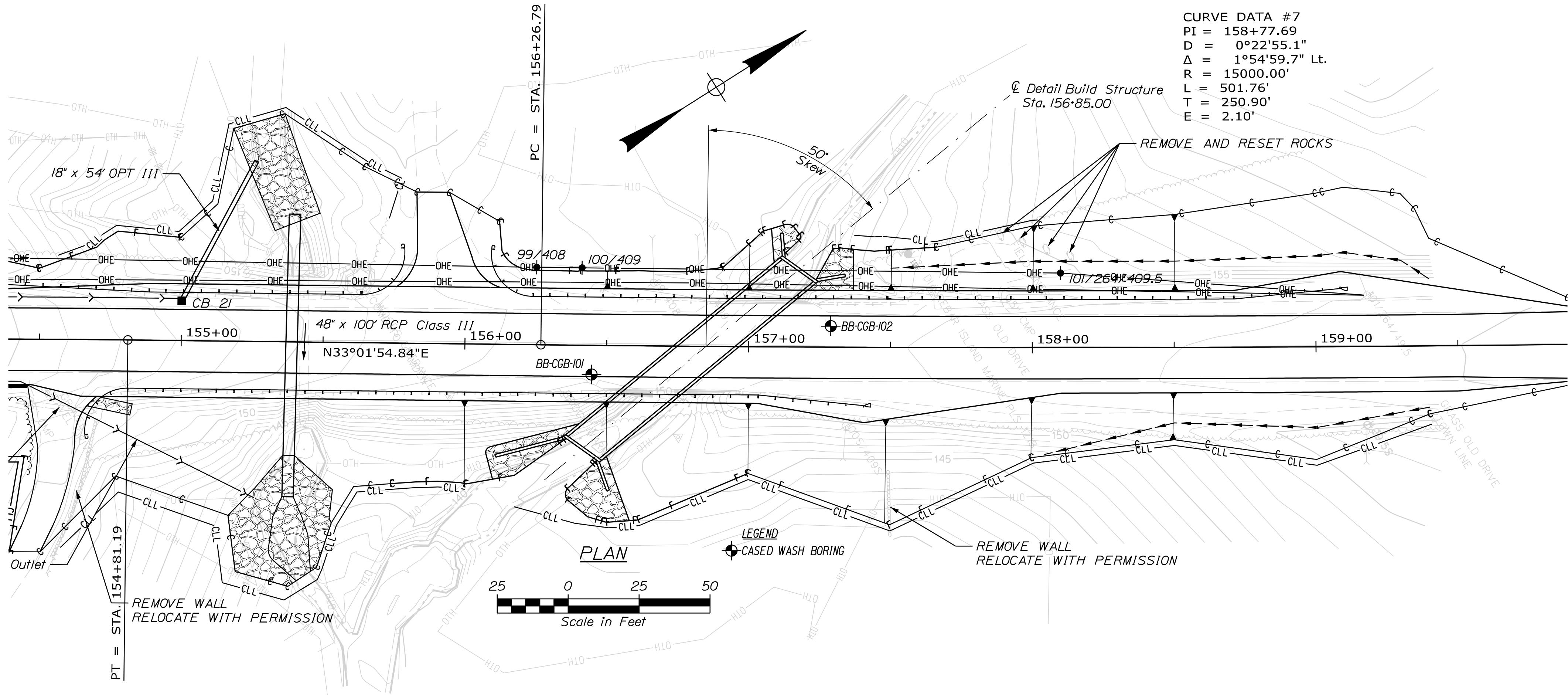


STATE OF MAINE DEPARTMENT OF TRANSPORTATION	NHP-2261(000)			
	BRIDGE NO. 2326			
	WIN 22610.00			
	BRIDGE PLANS			
GREAT BROOK BRIDGE GREAT BROOK KNOX COUNTY CAMDEN	PROJ. MANAGER	A. LATHE	BY	DATE
	DESIGN-DETAILED	KON	MAC	11/2018
	CHECKED-REVIEWED		MRP	11/2018
	DESIGN-DETAILED			SIGNATURE
	REVISIONS 1			P.E. NUMBER
SHEET NUMBER  B3  OF B8	REVISIONS 2			DATE
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

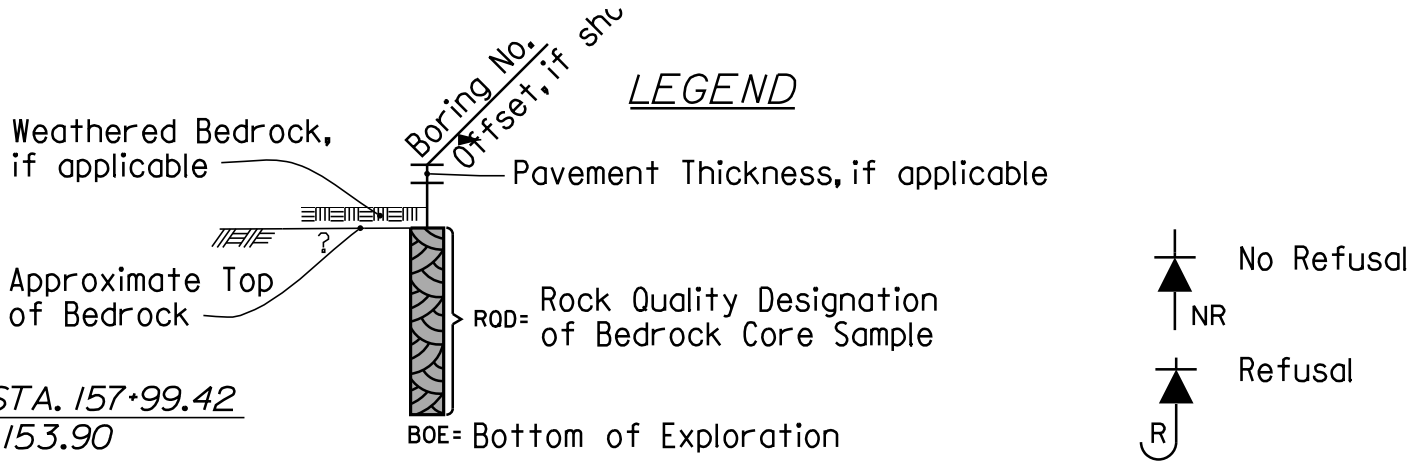
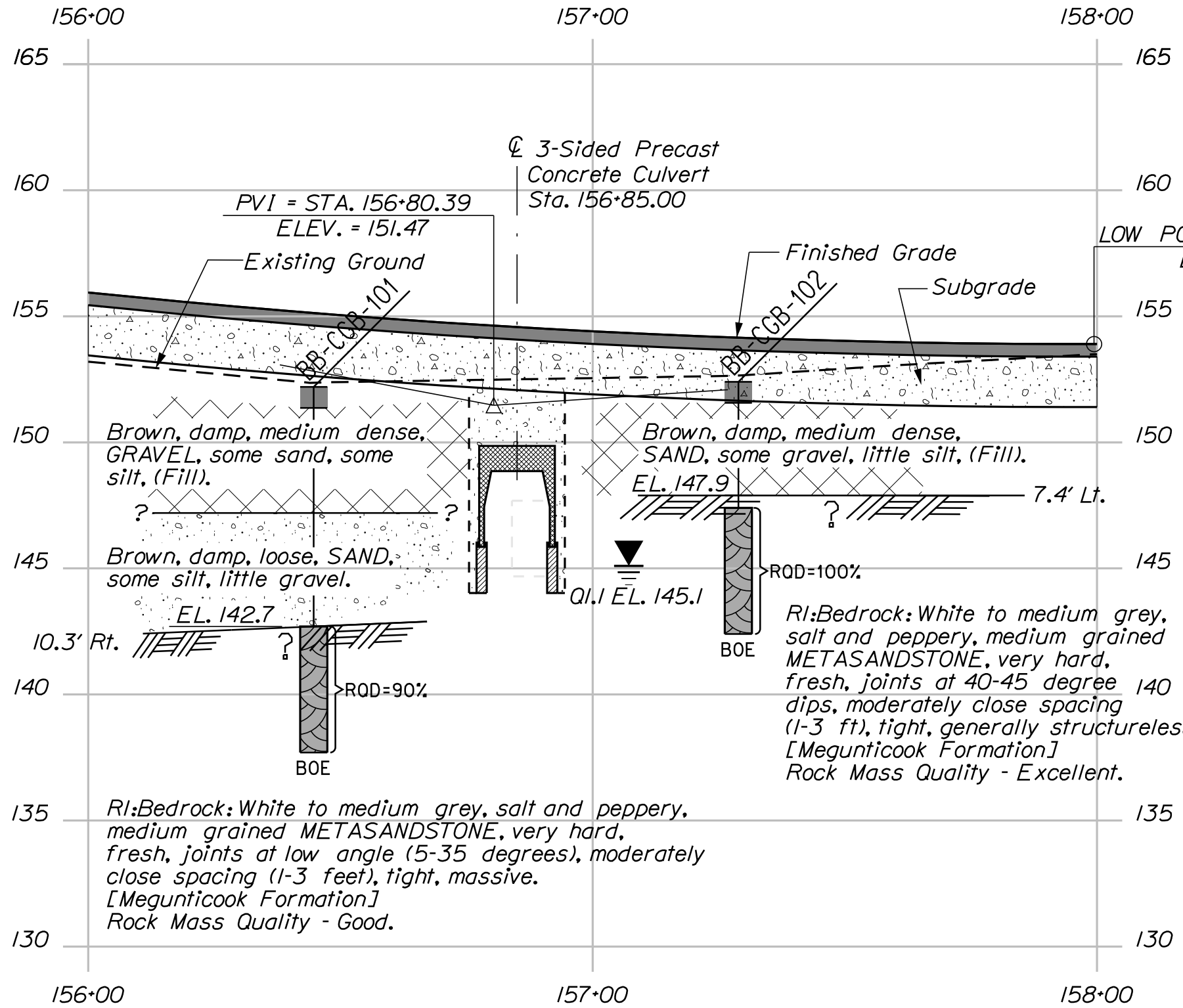


Username: matthew.critchlow Date:1/17/2020

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CURVE DATA #7  
PI = 158+77.69  
D = 0°22'55.1"  
Δ = 1°54'59.7" Lt.  
R = 15000.00'  
L = 501.76'  
T = 250.90'  
E = 2.10'



Note: This generalized interpretive soil profile is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and have been developed by interpretations of widely spaced explorations and samples. Actual soil and bedrock transitions may vary and are probably more erratic. For more specific information refer to the exploration logs.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE		DATE	
NHP-2261(000)		P.E. NUMBER		DATE	
BRIDGE NO. 2326		WIN		22610.00	
BRIDGE PLANS					

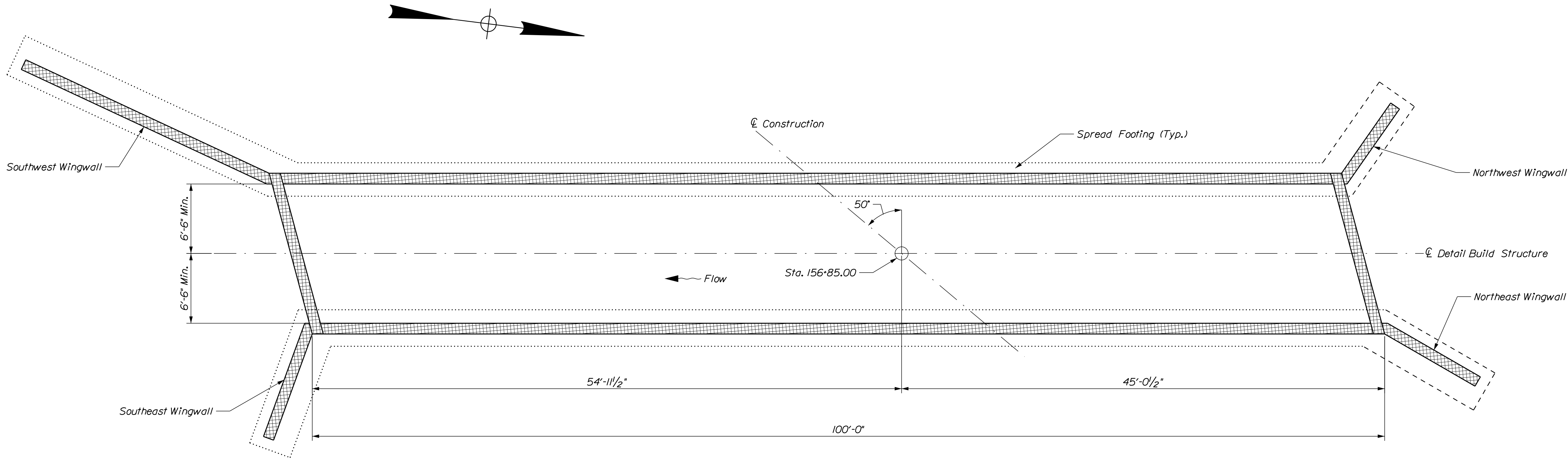
GREAT BROOK BRIDGE		BY		DATE	
GREAT BROOK		ALATHE			
CAMDEN		KNOX COUNTY			
BORING LOCATION PLAN & INTERPRETIVE SUBSURFACE PROFILE		DESIGN-DETAILED		CHECKED-REVIEWED	
		DESIGN-DETAILED 02		LAKOWSKI	
		REVISIONS 1		T.WITE	
		REVISIONS 2		DEC 2019	
		REVISIONS 3			
		REVISIONS 4			
		FIELD CHANGES			

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS										Project: Great Brook Bridge #2326 carries US Route 1 over Great Brook Location: Camden, Maine										Boring No.: BB-CGB-101 WIN: 22610.00											
Driller: MaineDOT					Elevation (ft.): 152.2					Auger ID/OD: 5" Solid Stem																					
Operator: Giles/Daggett/Giles					Datum: NAVD88					Sampler: Standard Split Spoon																					
Logged By: B. Wilder					Rig Type: CME 45C					Hammer Wt./Fall: 140#/30"																					
Date Start/Finish: 6/24-25/2015: 5.0 hrs					Drilling Method: Cased Wash Boring					Core Barrel: NO-2"																					
Boring Location: 156+44.7, 10.3 ft Rt.					Casing ID/OD: NW					Water Level*: None Observed																					
Hammer Efficiency Factor: 0.908					Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>																										
<div>Definitions: D = Split Spoon Sample MB = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test MV = Unsuccessful Field Vane Shear Test Attempt</div> <div>R = Rock Core Sample SSA = Solid Stem Auger NSA = Hollow Stem Auger RC = Roller Cone NOR = Weight of 140lb. Hammer NWC = Weight of Rod or Casing WOP = Weight of One Person</div> <div>S<sub>u</sub> = Peak/Retained Field Vane Undrained Shear Strength (psf) S<sub>u(100)</sub> = Lab Vane Undrained Shear Strength (psf) q<sub>p</sub> = Uncorrected Compressive Strength (ksf) N<sub>uncorrected</sub> = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N<sub>eq</sub> = SPT N-uncorrected Corrected for Hammer Efficiency N<sub>eq</sub> = (Hammer Efficiency Factor/60%)N<sub>uncorrected</sub></div> <div>WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>																															
Sample Information																															
Depth (ft.)		Sample No.		Pen./Rec. (in)		Sample Depth (ft.)		Blows (1/6 in. Shear Depth) (ksf) or ROD (%)		N-uncorrected		N <sub>eq</sub>		Casing ID/OD		Elevation (ft.)		Graphic Log		Visual Description and Remarks										Laboratory Testing Results/ AASHTO and Unified Class	
0																151.4				10" Pavement											
		10	24/14	1.00 - 3.00		9/11/9/10		20		30						SSA				Brown, damp, medium dense, GRAVEL, some sand, some silt, (Fill).										G#264794 A-2-4, GM WC=6.2%	
5																147.2				Brown, damp, loose, SAND, some silt, little gravel.										G#264795 A-2-4, SM WC=13.0%	
		20	24/9	5.00 - 7.00		4/2/2/2		4		6		11																			
10		R1	60/60	9.50 - 14.50		ROD = 90%										142.7		0125 blows for 0.5 ft. Top of Bedrock at Elev. 142.7 ft. R1: Bedrock: White to medium grey, salt and peppery, medium grained, METASANDSTONE, very hard, fresh, joints at low angle (5-35 degrees), moderately close spacing (1-3 feet), tight, massive. [Megunticook Formation] Rock Mass Quality = Good. R1: Core Times (min:sec) 9.5-10.5 ft (3:54) 10.5-11.5 ft (4:09) 11.5-12.5 ft (3:57) 12.5-13.5 ft (5:13) 13.5-14.5 ft (4:14) 100% Recovery Bottom of Exploration at 14.5 feet below ground surface.													
15																137.7															
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.: BB-CGB-101											

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS										Project: Great Brook Bridge #2326 carries US Route 1 over Great Brook Location: Camden, Maine										Boring No.: BB-CGB-102 WIN: 22610.00											
Driller: MaineDOT					Elevation (ft.): 152.4					Auger ID/OD: 5" Solid Stem																					
Operator: Giles/Daggett/Giles					Datum: NAVD88					Sampler: Standard Split Spoon																					
Logged By: B. Wilder					Rig Type: CME 45C					Hammer Wt./Fall: 140#/30"																					
Date Start/Finish: 6/25/2015: 08:00-10:00					Drilling Method: Cased Wash Boring					Core Barrel: NO-2"																					
Boring Location: 157+28.9, 7.4 ft Lt.					Casing ID/OD: NW					Water Level*: None Observed																					
Hammer Efficiency Factor: 0.908					Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>																										
<div>Definitions: D = Split Spoon Sample MB = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test MV = Unsuccessful Field Vane Shear Test Attempt</div> <div>R = Rock Core Sample SSA = Solid Stem Auger NSA = Hollow Stem Auger RC = Roller Cone NOR = Weight of 140lb. Hammer NWC = Weight of Rod or Casing WOP = Weight of One Person</div> <div>S<sub>u</sub> = Peak/Retained Field Vane Undrained Shear Strength (psf) S<sub>u(100)</sub> = Lab Vane Undrained Shear Strength (psf) q<sub>p</sub> = Uncorrected Compressive Strength (ksf) N<sub>uncorrected</sub> = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N<sub>eq</sub> = SPT N-uncorrected Corrected for Hammer Efficiency N<sub>eq</sub> = (Hammer Efficiency Factor/60%)N<sub>uncorrected</sub></div> <div>WC = Water Content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test</div>																															
Sample Information																															
Depth (ft.)		Sample No.		Pen./Rec. (in)		Sample Depth (ft.)		Blows (1/6 in. Shear Depth) (ksf) or ROD (%)		N-uncorrected		N <sub>eq</sub>		Casing ID/OD		Elevation (ft.)		Graphic Log		Visual Description and Remarks										Laboratory Testing Results/ AASHTO and Unified Class	
0																151.6				10" Pavement											
		10	24/12	1.00 - 3.00		9/12/10/10		22		33						SSA				Brown, damp, dense, SAND, some gravel, little silt, (Fill).										G#264796 A-1-b, SM WC=3.3%	
5																147.9				Top of Bedrock at Elev. 147.9 ft. Augered to 5.0 ft bgs and set NW casing. R1: Bedrock: White to medium grey, salt and peppery, medium grained, METASANDSTONE, very hard, fresh, joints at 10-45 degree dips, moderately close spacing (1-3 ft), tight, generally structureless. [Megunticook Formation] Rock Mass Quality = Excellent. R1: Core Times (min:sec) 5.0-6.0 ft (3:17) 6.0-7.0 ft (3:27) 7.0-8.0 ft (3:28) 8.0-9.0 ft (2:47) 9.0-10.0 ft (2:56) 100% Recovery Bottom of Exploration at 10.0 feet below ground surface.											
		R1	60/60	5.00 - 10.00		ROD = 100%										NO-2															
10																142.4															
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.: BB-CGB-102											

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	SIGNATURE										P.E. NUMBER										DATE									
GREAT BROOK BRIDGE GREAT BROOK										KNOX COUNTY										BORING LOGS										
CAMDEN																														
SHEET NUMBER																														
B5																														
OF B8																														





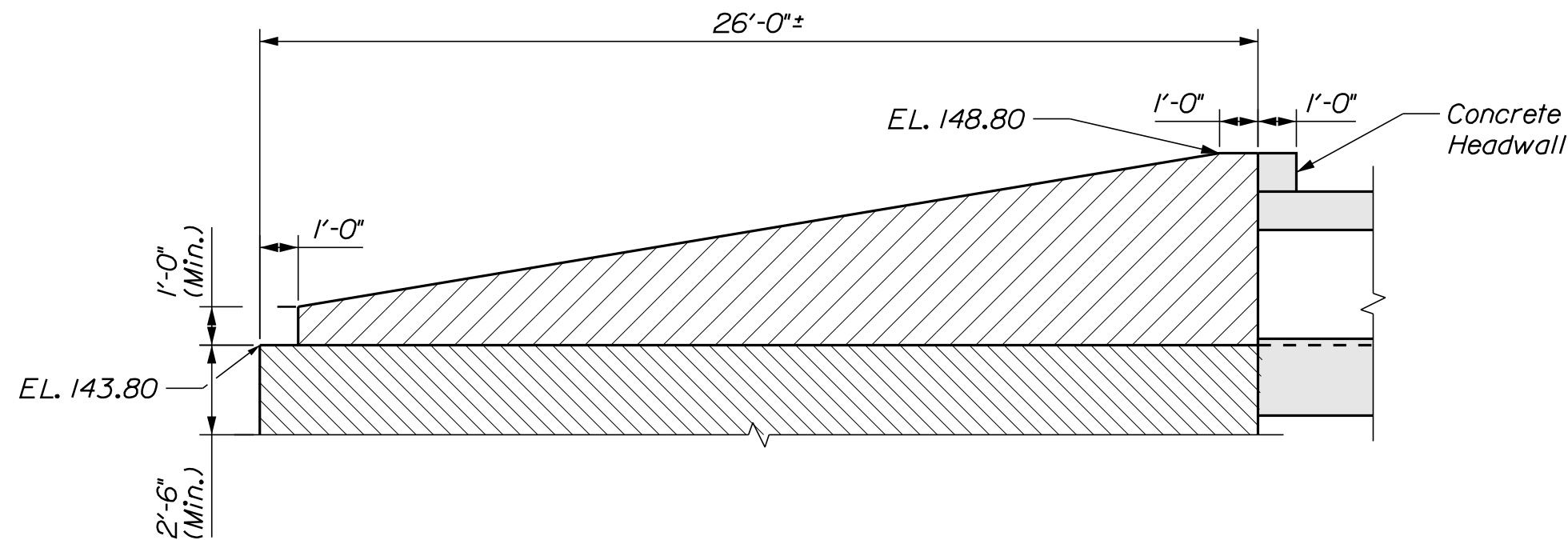
DETAIL BUILD STRUCTURE - PLAN

DETAIL BUILD BRIDGE STRUCTURE NOTES

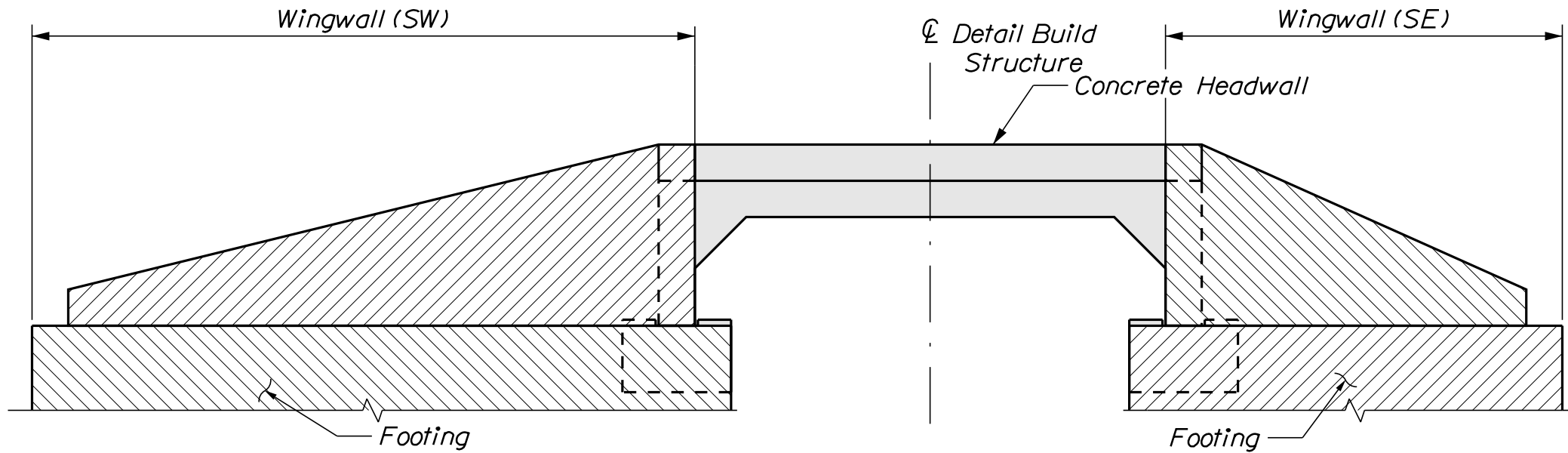
1. Construct French Drains behind each base of the Structure Detail Build and wingwalls in accordance with Standard Specification Section 512, French Drains. Daylight french drains through weepholes in the wingwalls. Coordinate daylight locations with Resident in field.
2. Structure and Foundation for detail build structure are shown for illustrative purposes only. Actual dimensions will vary based on the Contractor's proposed design concept. See Special Provision 531 and Project Geotechnical Report for additional information and design requirements
3. Foundation concrete shall be placed on bedrock, cleaned of all loose fractured rock and soil. The bedrock subgrade shall be confirmed to be relatively level. Where the bedrock slope exceeds 4H:1V, the bedrock shall be benched to make level steps or made completely level. The Resident shall approve the bedrock subgrade prior to placing footing concrete. When prepared bedrock surface is below the bottom of the footing, concrete fill may be placed to fill the void. Concrete fill to be paid under Item 502.565.
4. Prior to placing footing concrete, the bedrock subgrade shall be washed with high pressure water and air.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		SIGNATURE		DATE
		NHP-2261(000)		P.E. NUMBER
		WIN		DATE
BRIDGE NO. 2326		22610.00		BRIDGE PLANS
GREAT BROOK BRIDGE GREAT BROOK CAMDEN		KNOX COUNTY		
		BRIDGE DETAIL		
		SHEET NUMBER		
		B7		
		OF B8		

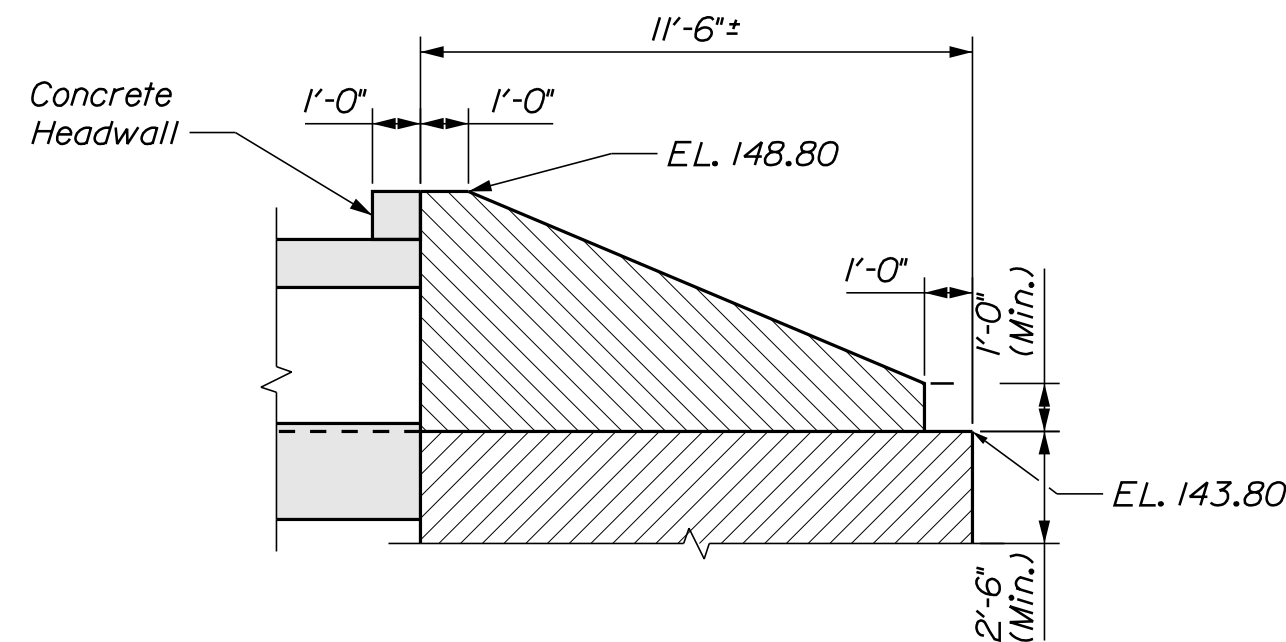




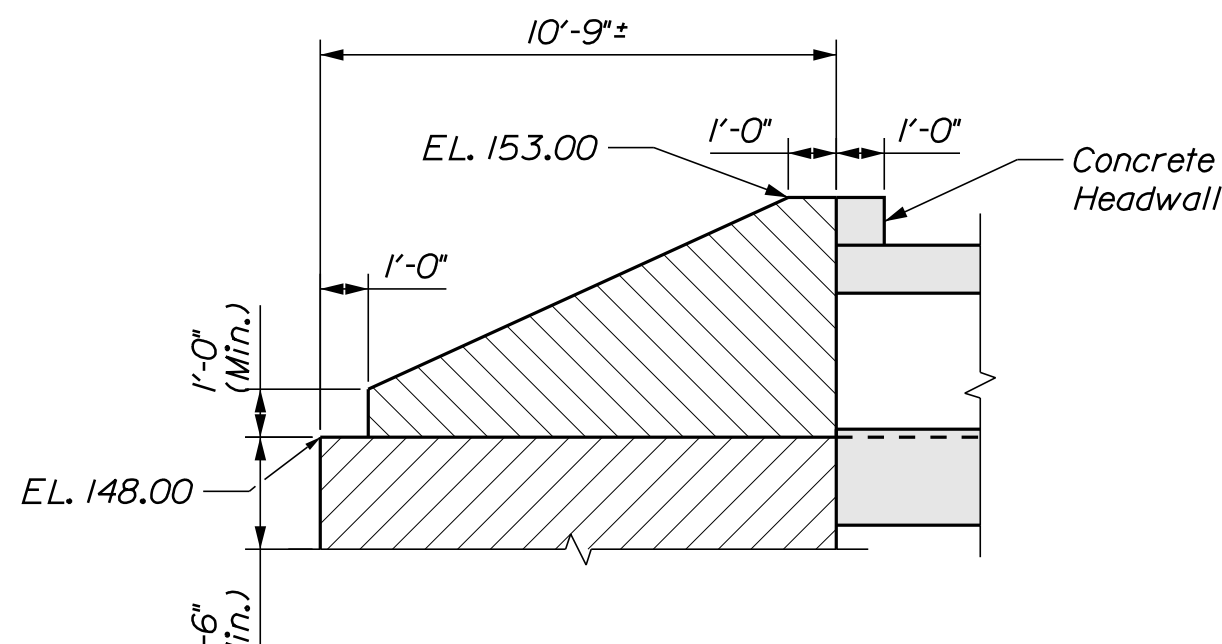
SOUTHWEST WINGWALL ELEVATION



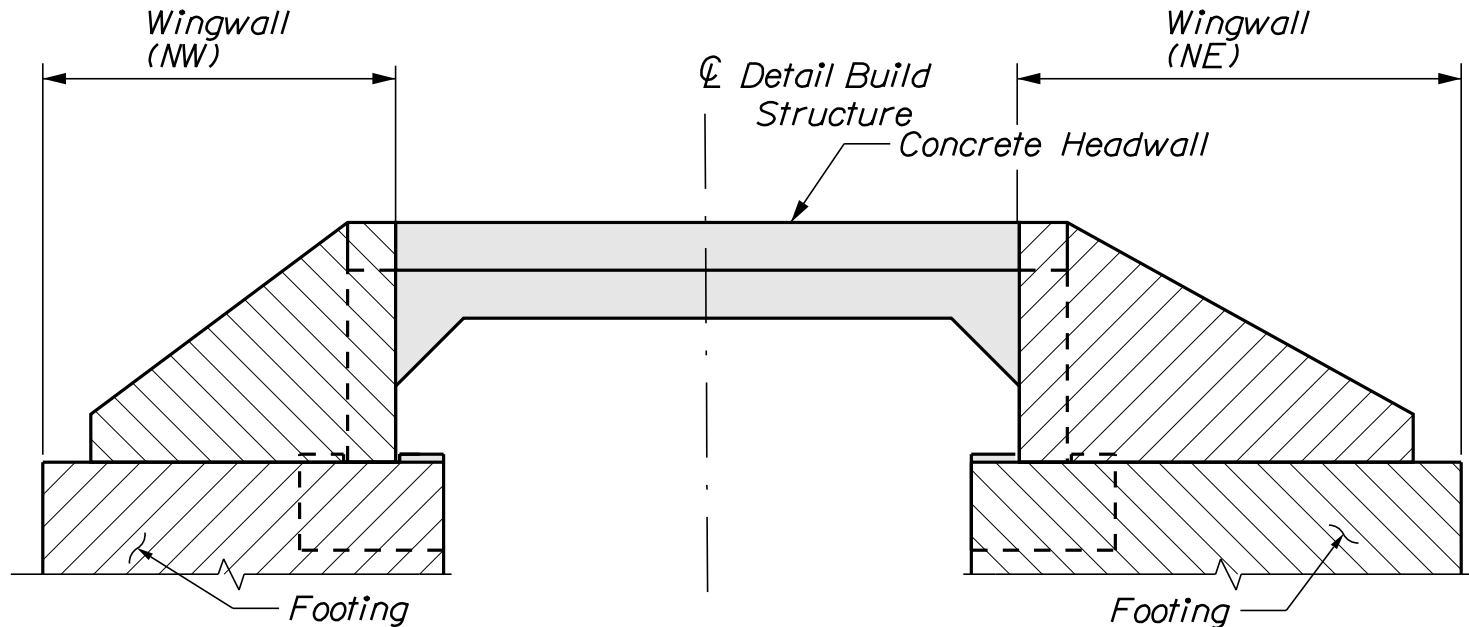
SOUTH HEADWALL ELEVATION



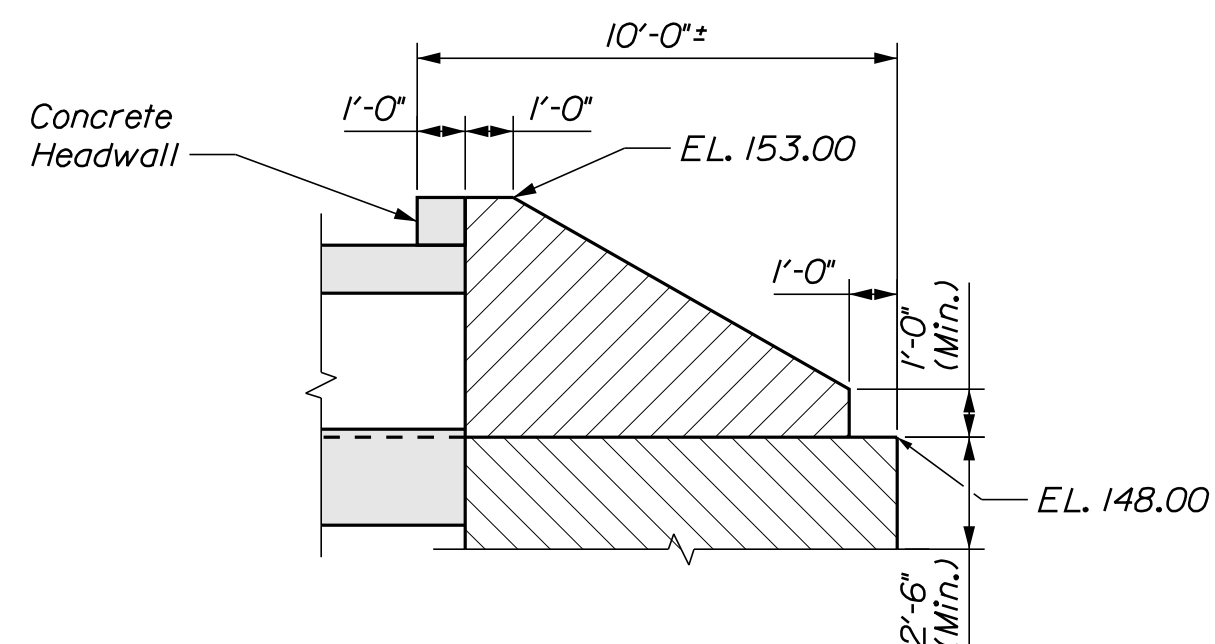
SOUTHEAST WINGWALL ELEVATION



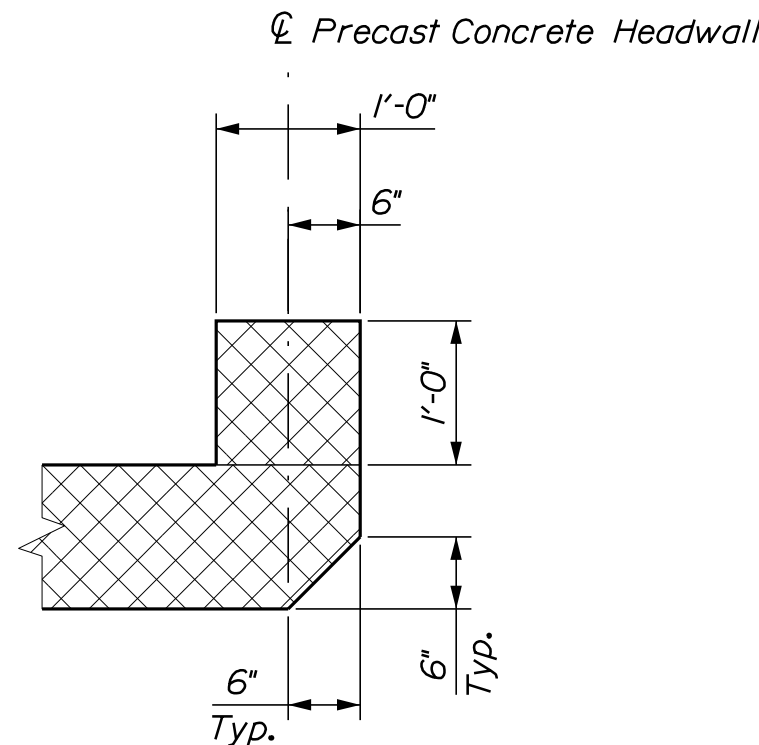
NORTHWEST WINGWALL ELEVATION



NORTH HEADWALL ELEVATION



NORTHEAST WINGWALL ELEVATION



PRECAST CONCRETE HEADWALL DETAIL

DETAIL BUILD STRUCTURE HEADWALL AND WINGWALL NOTES

1. Bottom of concrete seal is approximate. Top of bedrock is variable and shall be field verified.
2. Detail build headwall and wingwall structure shown is for illustrative purposes only. See Special Provision 531 and project Geotechnical Report.
3. Wingwalls and their footings shall be back filled with Granular Borrow. Back fill will not be measured for payment, but shall be included in the Detail Build Structure Pay Item.
4. Refer to the Project Geotechnical Report for detail build wingwall geotechnical design requirements.
5. Concrete spread footings shown for illustrative purposes. Actual height of spread footings will vary based on field bedrock elevations.

GREAT BROOK BRIDGE GREAT BROOK CAMDEN				KNOX COUNTY				PROJ. MANAGER		A. LATHE		BY		DATE		STATE OF MAINE DEPARTMENT OF TRANSPORTATION	
								DESIGN-DETAILED		KCN		MAC		12/2019			
								CHECKED-REVIEWED				MRP		1/2020		SIGNATURE	
								DESIGN2-DETAILED2									
								DESIGN3-DETAILED3								P.E. NUMBER	
								REVISIONS 1									
								REVISIONS 2									
								REVISIONS 3									
								REVISIONS 4									
								FIELD CHANGES						DATE		WIN 22610.00	
																BRIDGE NO. 2326	
																BRIDGE PLANS	