Updated 9/6/2024

FEDERAL PROJECT

Effective May 15, 2020
Supersedes April 22, 2020

BIDDING INSTRUCTIONS

FOR ALL PROJECTS:

1. Use pen and ink to complete all paper Bids.
2. As a minimum, the following must be received prior to the time of Bid opening:

For a Paper Bid:

a) a copy of the Notice to Contractors, b) the completed Acknowledgement of Bid Amendments form, c) the completed Schedule of Items, d) two copies of the completed and signed Contract Offer, Agreement & Award form, e) a Bid Guaranty, (if required), and f) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

For an Electronic Bid:

NOTE: Not all projects accept Electronic Bids. Please review the Notice to Contractors and see if it specifically states that Electronic Bids will be accepted.

a) a completed Bid using Expedite® software and submitted via the Bid Express™ web-based service, b) an electronic Bid Guaranty (if required) or a faxed copy of a Bid Bond (with original to be delivered within 72 hours), and c) any other Certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

3. Include prices for all items in the Schedule of Items (excluding non-selected alternates).
4. Bid Guaranty acceptable forms are:
   a) a properly completed and signed Bid Bond on the Department's prescribed form (or on a form that does not contain any significant variations from the Department's form as determined by the Department) for 5% of the Bid Amount or
   b) an Official Bank Check, Cashier's Check, Certified Check, U.S. Postal Money Order or Negotiable Certificate of Deposit in the amount stated in the Notice to Contractors or
   c) an electronic bid bond submitted with an electronic bid.

5. If a paper Bid is to be sent, "FedEx First Overnight" delivery is suggested as the package is delivered directly to the DOT Headquarters Building located at 16 Child Street in Augusta. Other means, such as U.S. Postal Service's Express Mail has proven not to be reliable.

IN ADDITION, FOR FEDERAL AID PROJECTS:

6. Complete the DBE Proposed Utilization form, and submit with your bid. If you are submitting your bid electronically, you must FAX the form to (207) 624-3431. This is a curable defect.

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207) 624-3410.

For complete bidding requirements, refer to Section 102 of the Maine Department of Transportation, Standard Specifications, March 2020 Edition.

April 28, 2017
Supersedes November 05, 2014

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled and allow for an electronic downloading of bid packages from our website, while continuing to maintain an optional plan holders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments must fill out the on-line plan holder registration form and provide an email address to the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

The downloading of bid packages from the MDOT website is not the same as providing an electronic bid to the Department. Electronic bids must be submitted via http://www.BIDX.com. For information on electronic bidding contact David Oakes at david.oakes@maine.gov, or Guy Berthiaume at guy.berthiaume@maine.gov.

NOTICE

For security and other reasons, all Bid Packages which are mailed, shall be provided in double (one envelope inside the other) envelopes. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open
PIN:
Town:
Date of Bid Opening:
Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed
PIN:
Town:
Date of Bid Opening:
Name of Contractor:
This should not be much of a change for those of you who use Federal Express or similar services.

Hand-carried Bids may be in one envelope as before, and should be marked with the following information:

Bid Enclosed: Do Not Open
PIN:
Town:
Name of Contractor:

October 16, 2001

STATE OF MAINE DEPARTMENT OF TRANSPORTATION

Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT_____

_____, of the City/Town of_____and State of_____

as Principal, and_____as Surety, a

Corporation duly organized under the laws of the State of_____and having a usual place of

Business in_____and hereby held and firmly bound unto the Treasurer of

the State of Maine in the sum of_____,for payment which Principal and Surety bind

themselves, their heirs, executers, administrators, successors and assigns, jointly and severally.

The condition of this obligation is that the Principal has submitted to the Maine Department of Transportation, hereafter Department, a certain bid, attached hereto and incorporated as a part herein, to enter into a written contract for the construction of _____

_____

_____and if the Department shall accept said bid and the Principal shall execute and deliver a contract in the form attached hereto (properly completed in accordance with said bid) and shall furnish bonds for this faithful performance of said contract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be null and void; otherwise it shall remain in full force, and effect.

Signed and sealed this_____day of_____20_____

WITNESS:

_____

_____

_____

WITNESS

_____

_____

_____

PRINCIPAL:

By_____

By:_____

By:_____

SURETY:

By_____

By:_____

Name of Local Agency: _____

SAMPLE

NOTICE

Bidders:

Please use the attached "Request for Information" form when submitting questions concerning specific Contracts that have been advertised for Bid, include additional numbered pages as required. RFI's may be faxed to 207-624-3431, submitted electronically through the Departments web page of advertised projects by selecting the RFI tab on the project details page or via e-mail to RFI-Contracts.MDOT@maine.gov.

These are the only allowable mechanisms for answering Project specific questions. Maine DOT will not be bound to any answers to Project specific questions received during the Bidding phase through other processes.

When submitting RFIs by Email please follow the same guidelines as stated on the "Request for Information" form and include the word "RFI" along with the Project name and Identification number in the subject line.

State of Maine
Department of Transportation

RFI No: _____

REQUEST FOR INFORMATION

Date _____ Time _____

Information Requested for:

WIN(S): _____ Town(s):_____Bid Date: _____

Question(s):_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Request by:

Company Name:_____**Phone:(_____)**_____

Email:_____**Fax: (_____)**_____

Complete this form and fax to 207-624-3431, Attn: Project Manager (name listed on the "Notice to Contractors"), or Email questions to RFI-Contracts.MDOT@maine.gov. Please include the word "RFI" along with the Project Name and Identification Number in the Subject line, or electronically by using the RFI Tab located on the Individual Projects Detail page.

NOTICE

Disadvantaged Business Enterprise Commitment Confirmation

All Bidders must submit the Commitment Confirmation form with their bid.

The Commitment Confirmation form contains information required by USDOT.

The Commitment Confirmation form must be completed by each Prime Contractor.

A copy of the new Commitment Confirmation form and instructions for completing it are attached.

The DBE Directory can be found on the MaineDOT Website at: https://www.maine.gov/mdot/civilrights/dbe/

Questions about the Directory or this form should be sent to the Civil Rights Office at mary.bryant@maine.gov or by calling 207-624-3056.

Revised: 6/2024

INSTRUCTIONS FOR PREPARING THE MAINEDOT BIDDER'S LIST FORM

The Contractor shall extend equal opportunity to MaineDOT certified DBE firms (as listed in MaineDOT's DBE Directory of Certified Businesses) in the selection and utilization of subcontractors and suppliers.

Each prime contractor submitting a bid on a federally funded project must complete each section of the Bidder's List Form in its entirety for itself and each subcontractor on that project.

SPECIFIC INSTRUCTIONS FOR COMPLETING THE FORM:

Section A:

1. Insert Prime Contractor Name
2. Insert WIN for the Federal Project bidding on
3. Insert Bid Date
4. Insert Project Location
5. Insert Email address of Contact Person

Section B:

A. Enter each Contractor's and Sub-Contractor's name and address (including zip code) – Prime Contractor's name should be listed in first box of this section; then each additional line would be proposed subcontractors – DBE and NonDBE
B. Enter each Contractor's and Sub-Contractor's annual gross receipts bracket (see the legend on the form)
C. Enter DBE status (DBE or non-DBE) for each contractor/sub-contractor
D. Enter each Contractor's and Sub-Contractor's NAICS (North Amer. Industry Classification System) code (may be more than one) and Scope of Work
E. For each Contractor and Sub-Contractor enter the Race and Gender of the firm's majority owner
F. Enter the Age of each firm for every Contractor and Sub-Contractor
G. Enter the Proposed amount of payment (Bid amount) for each Contractor/Sub-Contractor.

Maine Department of Transportation

BIDDER'S LIST FORM

Section A. Bidder/Prime Contractor Information.
This section must be completed by the Bidder/Prime Contractor.

1. Prime Contractor Name:		2. Federal Project WIN:		3. Bid Date:	
4. Project Location:		5. Email Address:			

Section B. Commitment Details - Prime Contractor and all Proposed Subcontractor Information is Required in This Section

A. Firm's Name & Address, Including Zip Code Prime must be listed first	B. Annual Gross Receipt Bracket Select 1 to 7*	C. Status DBE or Non-DBE	D. NAICS Code(s) and Scope of Work	E. Race & Gender of each Firm's Majority Owner	F. Age of Each Firm	G. Proposed Amount

***1) Less Than $1M, 2) $1 - $3M, 3) $3 - $6M, 4) $6 - $10M, 5) $10 - $20M, 6) $20 - $50M, 7) Greater Than $50M - More than 5 Subs use a new form**

MaineDOT Use Only:

Form Received: ____/____/____ Verified by: _____

FHWA ☐ FTA ☐ FAA ☐

For a complete list of certified DBE firms please visit: http://www.maine.gov/dot/doing-business/civil-rights/dbe

Note: This information is required pursuant to 49 CFR §26.11 and is used to track data in all federally funded MaineDOT contracts.

DBE GOAL NOTICE

Maine Department of Transportation
Disadvantaged Business Enterprise Program

Notice is hereby given that in accordance with US DOT regulation 49 CFR Part 26, the Maine Department of Transportation (MaineDOT) has established a Disadvantaged Business Enterprise Program (DBE) for disadvantaged business participation in the federal-aid highway and bridge construction programs; MaineDOT contracts covered by the program include consulting, construction, supplies, manufacturing, and service contracts.

Beginning September 1, 2024, MaineDOT has established an annual DBE participation goal of **1.43%** to be achieved through race/gender neutral means. This goal has been approved by the Federal Highway Administration through August 31, 2027. MaineDOT must meet this goal each federal fiscal year. If the goal is not met, MaineDOT must provide a justification for not meeting the goal and provide a plan to ensure the goal is met, which may include contract goals on certain projects that contractors will be required to meet.

MaineDOT asks all contractors, consultants and subcontractors to seek certified DBE firms for projects and to work to meet the determined 1.43% goal without the need to impose contract goals. DBE firms are listed on the MaineDOT website at:

http://www.maine.gov/mdot/disadvantaged-business-enterprises/pdf/directory.pdf

Interested parties may view MaineDOT's DBE goal setting methodology, also posted on this website. If you have questions regarding this goal or the DBE program you may contact Sherry Tompkins at the Maine Department of Transportation, Civil Rights Office by telephone at (207) 624-3066 or by e-mail at: sherry.tompkins@maine.gov

Maine Department of Transportation Civil Rights Office

Directory of Certified Disadvantaged Business Enterprises

Listing can be found at:

https://www.maine.gov/mdot/civilrights/dbe/

For additional information and guidance contact:

Civil Rights Office at (207) 624-3066

It is the responsibility of the Contractor to access the DBE Directory at this site in order to have the most current listing.

Vendor Registration

Prospective Bidders must register as a vendor with the Department of Administrative & Financial Services if the vendor is awarded a contract. Vendors will not be able to receive payment without first being registered. Vendors/Contractors will find information and register through the following link –
http://www.maine.gov/purchases/venbid/index.shtml

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO CONTRACTORS

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper "Bids for **Highway Improvements** in the city of **Bangor"** will be received from contractors at the Reception Desk, MaineDOT Building, Capitol Street, Augusta, Maine, until 11:00 o'clock A.M. (prevailing time) on **January 14, 2026,** and at that time and place, publicly opened and read. Bids will be accepted from all bidders. The lowest responsive bidder must have completed, or successfully complete, a **Highway Construction, Bridge,** or project specific prequalification to be considered for the award of this contract. **We now accept electronic bids for bid packages posted on the bidx.com website. Electronic bids do not have to be accompanied by paper bids. Please note: The Department will accept a facsimile of the bid bond; however, the original bid bond must then be received at the MDOT Contract Section within 72 hours of the bid opening. Until further notice, dual bids (one paper, one electronic) will be accepted, with the paper copy taking precedence.**

Description: Maine Federal Aid Project No. 1859510 WIN 018595.11

Location: Diverging Diamond Interchange on Hogan Road/Interstate 95 Exit 187 and Hogan Road/Interstate 95 (Bridge #5823) over Interstate 95. Located 0.26 of a mile north of Haskell Road.

Outline of Work: Highway Improvements and other incidental work.

For general information regarding Bidding and Contracting procedures, contact George Macdougall at (207) 624-3410. Our webpage at http://www.maine.gov/mdot/contractors/ contains a copy of the Schedule of Items, Plan Holders List, written portions of bid amendments, drawings, bid results and an electronic form for RFI submittal. For Project-specific information fax all questions to **Laurie Rowe** at (207) 624-3431, use electronic RFI form or email questions to RFI-Contracts.MDOT@maine.gov, project name and identification number should be in the subject line. Questions received after 12:00 noon of Monday (or if that Monday is a state holiday, Friday) prior to bid date will not be answered. Bidders shall not contact any other Departmental staff for clarification of Contract provisions, and the Department will not be responsible for any interpretations so obtained. TTY users call Maine Relay 711.

Bid Documents, specifications and bid forms can be viewed and obtained digitally at no cost at http://www.maine.gov/mdot/contractors/ . They may be purchased from the Department between the hours of 7:00 a.m. to 3:30 p.m. by cash, credit card (Visa/Mastercard) or check payable to Treasurer, State of Maine sent to Maine Department of Transportation, Attn.: Mailroom, 24 Child Street, Augusta, Maine 04333-0016. They also may be purchased by telephone at (207) 624-3536 between the hours of 7:00 a.m. to 3:30 p.m. Full size plans **$485.00 ($500.00** by mail). Half size plans **$242.50 ($248.50** by mail), Bid Book $10 ($13 by mail), Single Sheets $2, payment in advance, all non-refundable.

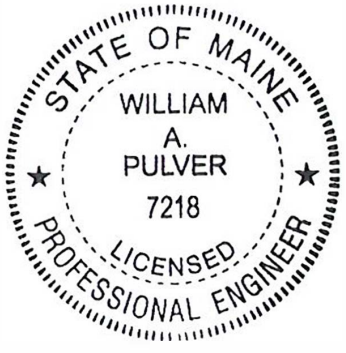
Each Bid must be made upon blank forms provided by the Department and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of 5% of the bid amount, payable to Treasurer, State of Maine as a Bid guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each in the amount of 100 percent of the Contract price, will be required of the successful Bidder.

This Contract is subject to all applicable Federal Laws. This contract is subject to compliance with the Disadvantaged Business Enterprise program requirements as set forth by the Maine Department of Transportation.

All work shall be governed *by State of Maine, Department of Transportation, Standard Specifications, March 2020 Edition,* price $10 [$15 by mail], and *Standard Details, March 2020 Edition*, price $10 [$15 by mail]. They also may be purchased by telephone at (207) 624-3536 between the hours of 7:00 a.m. to 3:30 p.m. *Standard Detail* updates can be found at http://www.maine.gov/mdot/contractors/publications/ .

The right is hereby reserved to the MaineDOT to reject any or all bids.

Augusta, Maine
December 10, 2025



WILLIAM A. PULVER P. E.
CHIEF ENGINEER

NOTICE

All bids for Federal Projects **shall** be accompanied by the DBE Proposed Utilization form. If you are submitting an electronic bid, the DBE Utilization Form may be faxed to 207-624-3431. Failure to submit the form with the bid will be considered a curable defect.

SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each Project under Advertisement, Amendments are located at http://www.maine.gov/mdot/contractors/ . It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. The Maine DOT will not post Bid Amendments any later than noon the day before Bid opening without individually notifying all the planholders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

_____ _____

Date Signature of authorized representative

_____

(Name and Title Printed)

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0010	107.51 PROSECUTION OF WORK - INITIAL SCHEDULE	LUMP SUM	LUMP SUM		_____	. ____
0020	107.531 BI-WEEKLY UPDATES	1.000 LS	_____	. ____	_____	. ____
0030	201.11 CLEARING	3.000 AC	_____	. ____	_____	. ____
0040	201.23 REMOVING SINGLE TREE TOP ONLY	5.000 EA	_____	. ____	_____	. ____
0050	201.24 REMOVING STUMP	5.000 EA	_____	. ____	_____	. ____
0060	202.12 REMOVING EXISTING STRUCTURAL CONCRETE	179.000 CY	_____	. ____	_____	. ____
0070	202.15 REMOVING EXISTING MANHOLE OR CATCH BASIN	10.000 EA	_____	. ____	_____	. ____
0080	202.19 REMOVING EXISTING BRIDGE 959 CY	LUMP SUM	LUMP SUM		_____	. ____
0090	202.202 REMOVING PAVEMENT SURFACE	24,010.000 SY	_____	. ____	_____	. ____
0100	202.21 REMOVING EXISTING SUBSTRUCTURE	265.000 CY	_____	. ____	_____	. ____
0110	202.30 REMOVING EXISTING CONCRETE WEARING SURFACE BRIDGE 5823 (1540 SY)	LUMP SUM	LUMP SUM		_____	. ____
0120	203.20 COMMON EXCAVATION	27,400.000 CY	_____	. ____	_____	. ____

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0130	203.24 COMMON BORROW	31,700.000 CY				
0140	203.25 GRANULAR BORROW	13,630.000 CY				
0150	203.4338 LIGHTWEIGHT FILL FOAMED GLASS AGGREGATE	19,600.000 CY				
0160	203.4340 ELASTIC INCLUSION	136.000 SY				
0170	206.082 STRUCTURAL EARTH EXCAVATION - MAJOR STRUCTURES	2,490.000 CY				
0180	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	26,600.000 CY				
0190	403.2081 12.5 MM POLYMER MODIFIED HOT MIX ASPHALT	5,500.000 T				
0200	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	420.000 T				
0210	403.2111 9.5 MM POLYMER MODIFIED HMA (SHIM)	720.000 T				
0220	403.2131 12.5 MM POLYMER MODIFIED HMA BASE	10,370.000 T				
0230	409.15 BITUMINOUS TACK COAT - APPLIED	4,960.000 G				
0240	461.131 TEMPORARY PAVEMENT	2,500.000 T				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0250	501.231 DYNAMIC LOADING TEST	10.000 EA				
0260	501.50 STEEL H-BEAM PILES 89 LBS/FT, DELIVERED	4,950.000 LF				
0270	501.501 STEEL H-BEAM PILES 89 LBS/FT, IN PLACE	2,920.000 LF				
0280	501.502 ROCK SOCKETED H-PILES	1,460.000 LF				
0290	501.804 DRILLING EQUIPMENT MOBILIZATION BRIDGE 5823	LUMP SUM	LUMP SUM			
0300	501.804 DRILLING EQUIPMENT MOBILIZATION BRIDGE 6787	LUMP SUM	LUMP SUM			
0310	501.90 PILE TIPS	86.000 EA				
0320	501.91 PILE SPLICES	10.000 EA				
0330	501.92 PILE DRIVING EQUIPMENT MOBILIZATION BRIDGE 5823	LUMP SUM	LUMP SUM			
0340	501.92 PILE DRIVING EQUIPMENT MOBILIZATION BRIDGE 6787	LUMP SUM	LUMP SUM			
0350	502.219 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS BRIDGE 5823	LUMP SUM	LUMP SUM			

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
0360	502.219 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0370	502.239 STRUCTURAL CONCRETE PIERS BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0380	502.239 STRUCTURAL CONCRETE PIERS BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0390	502.26 STRUCTURAL CONCRETE ROADWAY AND SIDEWALK SLABS ON STEEL BRIDGES BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0400	502.26 STRUCTURAL CONCRETE ROADWAY AND SIDEWALK SLABS ON STEEL BRIDGES BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0410	502.31 STRUCTURAL CONCRETE APPROACH SLABS BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0420	502.31 STRUCTURAL CONCRETE APPROACH SLABS BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0430	502.453 STRUCTURAL CONCRETE MOMENT SLAB	LUMP SUM	LUMP SUM	_____.____
0440	502.454 STRUCTURAL CONCRETE SLEEPER SLAB BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0450	502.454 STRUCTURAL CONCRETE SLEEPER SLAB BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
0460	502.49 STRUCTURAL CONCRETE CURBS AND SIDEWALKS BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0470	502.49 STRUCTURAL CONCRETE CURBS AND SIDEWALKS BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0480	502.77 FIBER REINFORCED POLYMER BRIDGE DRAIN - TYPE: A MODIFIED	4.000 EA	_____.____	_____.____
0490	502.77 FIBER REINFORCED POLYMER BRIDGE DRAIN - TYPE: E	5.000 EA	_____.____	_____.____
0500	502.77 FIBER REINFORCED POLYMER BRIDGE DRAIN - TYPE: F	8.000 EA	_____.____	_____.____
0510	503.12 REINFORCING STEEL, FABRICATED AND DELIVERED	250,300.000 LB	_____.____	_____.____
0520	503.13 REINFORCING STEEL, PLACING	250,300.000 LB	_____.____	_____.____
0530	503.19 LOW-CARBON, CHROMIUM REINFORCEMENT - FABRICATED & DELIVERED	331,800.000 LB	_____.____	_____.____
0540	503.20 LOW-CARBON, CHROMIUM REINFORCEMENT - PLACING	331,800.000 LB	_____.____	_____.____
0550	504.70 STRUCTURAL STEEL FABRICATED AND DELIVERED	LUMP SUM	LUMP SUM	_____.____
0560	504.702 STRUCTURAL STEEL FABRICATED AND DELIVERED, WELDED	LUMP SUM	LUMP SUM	_____.____

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
0570	504.71 STRUCTURAL STEEL ERECTION	LUMP SUM	LUMP SUM	_____.____
0580	504.73 REMOVING, MODIFYING, AND RESETTING EXISTING STRUCTURAL STEEL	LUMP SUM	LUMP SUM	_____.____
0590	505.08 SHEAR CONNECTORS	LUMP SUM	LUMP SUM	_____.____
0600	506.144 FIELD PAINTING NEW AND EXISTING STRUCTURAL STEEL	LUMP SUM	LUMP SUM	_____.____
0610	506.17 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	LUMP SUM	LUMP SUM	_____.____
0620	506.18 CONTAINMENT AND POLLUTION CONTROL	LUMP SUM	LUMP SUM	_____.____
0630	506.191 DISPOSAL OF SPECIAL WASTE OR HAZARDOUS WASTE MATERIAL	LUMP SUM	LUMP SUM	_____.____
0640	506.9104 THERMAL SPRAY COATING - SHOP APPLIED	LUMP SUM	LUMP SUM	_____.____
0650	507.0821 STEEL BRIDGE RAILING, 3 BAR BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0660	507.0821 STEEL BRIDGE RAILING, 3 BAR BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0670	507.0822 STEEL APPROACH RAILING, 3-BAR	1.000 EA	_____.____	_____.____

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
0680	507.0822 STEEL APPROACH RAILING, 3-BAR MODIFIED	7.000 EA	_____.____	_____.____
0690	508.14 HIGH PERFORMANCE WATERPROOFING MEMBRANE BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0700	508.14 HIGH PERFORMANCE WATERPROOFING MEMBRANE BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0710	512.081 FRENCH DRAINS BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0720	512.081 FRENCH DRAINS BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0730	515.21 PROTECTIVE COATING FOR CONCRETE SURFACES BRIDGE 5823	LUMP SUM	LUMP SUM	_____.____
0740	515.21 PROTECTIVE COATING FOR CONCRETE SURFACES BRIDGE 6787	LUMP SUM	LUMP SUM	_____.____
0750	518.50 REPAIR OF UPWARD FACING SURFACES - TO REINFORCING STEEL < 8 IN.	670.000 SF	_____.____	_____.____
0760	518.70 REPAIR OF OVERHEAD SURFACES < 8 IN.	220.000 SF	_____.____	_____.____
0770	522.06 MODULAR EXPANSION DEVICE	4.000 EA	_____.____	_____.____
0780	523.52 BEARING INSTALLATION	84.000 EA	_____.____	_____.____

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0790	523.5402 LAMINATED ELASTOMERIC BEARINGS, EXPANSION	84.000 EA				
0800	524.301 TEMPORARY STRUCTURAL SUPPORT APPROACHES	LUMP SUM	LUMP SUM			
0810	524.301 TEMPORARY STRUCTURAL SUPPORT SUPERSTRUCTURE	LUMP SUM	LUMP SUM			
0820	524.40 PROTECTIVE SHIELD BRIDGE 5823 (780 SY)	LUMP SUM	LUMP SUM			
0830	524.40 PROTECTIVE SHIELD BRIDGE 6787 (1600 SY)	LUMP SUM	LUMP SUM			
0840	526.302 PORTABLE CONCRETE BARRIER	2,800.000 LF				
0850	526.322 PERMANENT CONCRETE BARRIER TYPE III MODIFIED	756.000 LF				
0860	526.502 PRECAST CONCRETE MEDIAN BARRIER	LUMP SUM	LUMP SUM			
0870	527.305 QUADGUARD CRASH CUSHION	1.000 UN				
0880	527.34 WORK ZONE CRASH CUSHIONS	10.000 UN				
0890	530.30 GFRP, REINFORCEMENT BARS, FABRICATED & DELIVERED	187,400.000 LF				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0900	530.31 GFRP, REINFORCEMENT BARS, PLACING	187,400.000 LF				
0910	603.04 4" PVC DRAIN SERVICE	4.000 LF				
0920	603.155 12 INCH REINFORCED CONCRETE PIPE CLASS III	430.000 LF				
0930	603.159 12 INCH CULVERT PIPE OPTION III	680.000 LF				
0940	603.165 15 INCH REINFORCED CONCRETE PIPE CLASS III	120.000 LF				
0950	603.169 15 INCH CULVERT PIPE OPTION III	20.000 LF				
0960	603.175 18 INCH REINFORCED CONCRETE PIPE CLASS III	230.000 LF				
0970	603.179 18 INCH CULVERT PIPE OPTION III	400.000 LF				
0980	603.195 24 INCH REINFORCED CONCRETE PIPE CLASS III	420.000 LF				
0990	603.55 CONCRETE PIPE TIES	9.000 GP				
1000	603.93 DIRECTIONAL BORE STA 1005+35	170.000 LF				
1010	604.072 CATCH BASIN TYPE A1-C	11.000 EA				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
1020	604.09 CATCH BASIN TYPE B1	3.000 EA				
1030	604.092 CATCH BASIN TYPE B1-C	35.000 EA				
1040	604.247 CATCH BASIN TYPE F5-C	10.000 EA				
1050	604.249 CATCH BASIN TYPE F6-C	1.000 EA				
1060	605.09 6 INCH UNDERDRAIN TYPE B	2,000.000 LF				
1070	605.11 12 INCH UNDERDRAIN TYPE C	2,100.000 LF				
1080	605.12 15 INCH UNDERDRAIN TYPE C	350.000 LF				
1090	605.13 18 INCH UNDERDRAIN TYPE C	78.000 LF				
1100	606.1301 31" W-BM GR, MID-WAY SPLICE-SGL FACED	5,100.000 LF				
1110	606.1304 31" W-BM GR, MID-WAY SPLICE-OVER 15' RAD	190.000 LF				
1120	606.1305 31" W-BM GR, MID-WAY SPLICE FLARED TERMINAL	4.000 EA				
1130	606.1307 BRIDGE TRANSITION (ASYMMETRICAL) - TYPE 1A	8.000 EA				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
1140	606.1721 BRIDGE TRANSITION - TYPE 1	8.000 EA				
1150	606.259 ANCHORAGE ASSEMBLY	4.000 EA				
1160	606.353 REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	12.000 EA				
1170	606.356 UNDERDRAIN DELINEATOR POST	19.000 EA				
1180	607.09 WOVEN WIRE FENCE - METAL POSTS	180.000 LF				
1190	607.16 CHAIN LINK FENCE - 4 FOOT	1,900.000 LF				
1200	607.183 CHAIN LINK SNOW FENCE 33 INCH BRIDGE 5823	LUMP SUM	LUMP SUM			
1210	607.183 CHAIN LINK SNOW FENCE 33 INCH BRIDGE 6787	LUMP SUM	LUMP SUM			
1220	607.33 BRACING ASSEMBLY TYPE II - METAL POSTS	2.000 EA				
1230	608.07 PLAIN CONCRETE SIDEWALK	44.000 SY				
1240	608.26 CURB RAMP DETECTABLE WARNING FIELD	420.000 SF				
1250	609.11 VERTICAL CURB TYPE 1	2,500.000 LF				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
1260	609.12 VERTICAL CURB TYPE 1 - CIRCULAR	120.000 LF				
1270	609.221 TERMINAL CURB TYPE 1	160.000 LF				
1280	609.222 TERMINAL CURB TYPE 1 - CIRCULAR	88.000 LF				
1290	609.312 SPECIAL CURB WHEEL STOP	77.000 LF				
1300	609.34 CURB TYPE 5	5,400.000 LF				
1310	609.35 CURB TYPE 5 - CIRCULAR	150.000 LF				
1320	610.08 PLAIN RIPRAP	1,602.000 CY				
1330	610.16 HEAVY RIPRAP	440.000 CY				
1340	613.319 EROSION CONTROL BLANKET	2,190.000 SY				
1350	615.07 LOAM	6,400.000 CY				
1360	615.081 COMPOST BLANKET	110.000 CY				
1370	615.27 UNDERDRAIN SOIL FILTER 5 EACH	LUMP SUM	LUMP SUM			
1380	617.35 COMPOST	40.000 CY				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1390	618.13 SEEDING METHOD NUMBER 1	58.000 UN				
1400	618.14 SEEDING METHOD NUMBER 2	370.000 UN				
1410	618.143 SPECIAL SEED MIX: A LOW GROWTH MEADOW MIX	85.000 UN				
1420	618.146 HGM BIOTIC SOIL HYDROMULCH MEDIA	21.000 UN				
1430	619.12 MULCH	520.000 UN				
1440	619.13 BARK MULCH	40.000 CY				
1450	620.58 EROSION CONTROL GEOTEXTILE	2,950.000 SY				
1460	621.031 EVERGREEN TREES (4 FOOT - 5 FOOT) GROUP A	40.000 EA				
1470	621.401 EVERGREENS (2 FOOT - 2.50 FOOT) GROUP A	30.000 EA				
1480	621.54 DECIDUOUS SHRUBS (18 INCH - 24 INCH) GROUP A	80.000 EA				
1490	621.546 DECIDUOUS SHRUBS (2 FOOT - 3 FOOT) GROUP A	50.000 EA				
1500	621.552 DECIDUOUS SHRUBS (3 FOOT - 4 FOOT) GROUP A	60.000 EA				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1510	626.11 PRECAST CONCRETE JUNCTION BOX	121.000 EA				
1520	626.21 METALLIC CONDUIT	1,000.000 LF				
1530	626.22 NON-METALLIC CONDUIT 2-INCH, LIGHTING	11,000.000 LF				
1540	626.22 NON-METALLIC CONDUIT 3-INCH, SIGNALS	3,400.000 LF				
1550	626.221 NON-METALLIC CONDUIT CONCRETE ENCASED	455.000 LF				
1560	626.251 NON-METALLIC UNDER PAVEMENT CONDUIT (SCHEDULE 80 OR GREATER RATING)	1,500.000 LF				
1570	626.35 CONTROLLER CABINET FOUNDATION	4.000 EA				
1580	626.36 REMOVE OR MODIFY CONCRETE FOUNDATION	28.000 EA				
1590	626.421 24 INCH DIAMETER FOUNDATION	168.000 LF				
1600	626.46 48 INCH DIAMETER FOUNDATION	158.000 LF				
1610	626.48 60 INCH DIAMETER FOUNDATION	45.000 LF				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars . Cents	Bid Amount Dollars . Cents
1620	626.49 GREATER THAN 60-INCH DIAMETER FOUNDATION 72 INCH	20.000 LF	_____.____	_____.____
1630	627.311 8 INCH WHITE PAVEMENT MARKING LINE	2,300.000 LF	_____.____	_____.____
1640	627.407 REFLECTORIZED PLASTIC WHITE OR YELLOW PAVEMENT MARKING	60.000 SF	_____.____	_____.____
1650	627.511 TEMPORARY PAVEMENT LINE TAPE, YELLOW OR WHITE	1,775.000 SF	_____.____	_____.____
1660	627.512 REMOVABLE BLACK LINE MASKING TAPE	2,500.000 SF	_____.____	_____.____
1670	627.55 12" TEMPORARY PAVEMENT TAPE, WHITE	250.000 LF	_____.____	_____.____
1680	627.733 4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	28,000.000 LF	_____.____	_____.____
1690	627.744 6" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	15,500.000 LF	_____.____	_____.____
1700	627.75 WHITE OR YELLOW PAVEMENT & CURB MARKING	5,600.000 SF	_____.____	_____.____
1710	627.752 TEMPORARY WHITE OR YELLOW PAVEMENT & CURB MARKING	1,125.000 SF	_____.____	_____.____
1720	627.77 REMOVING PAVEMENT MARKINGS	5,200.000 SF	_____.____	_____.____

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1730	627.78 TEMPORARY 4 INCH PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW	96,000.000 LF				
1740	627.781 TEMPORARY 6 INCH PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW	39,000.000 LF				
1750	629.05 HAND LABOR, STRAIGHT TIME	50.000 HR				
1760	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	100.000 HR				
1770	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	200.000 HR				
1780	631.32 CULVERT CLEANER (INCLUDING OPERATOR)	10.000 HR				
1790	634.160 HIGHWAY LIGHTING	 LUMP SUM	LUMP SUM			
1800	634.2042 LED LUMINARIES	7.000 EA				
1810	634.206 LIGHT STANDARD FOR POST TOP LUMINAIRE	58.000 EA				
1820	634.25 SERVICE POLE COMPLETE WITH CABINET AND CONTROLS	2.000 EA				
1830	639.18 FIELD OFFICE TYPE A	1.000 EA				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
1840	643.21 NON-INVASIVE DETECTION - STOP LINE: HOGAN RD & I-95 SOUTHBOUND RAMPS	LUMP SUM	LUMP SUM	_____.____
1850	643.21 NON-INVASIVE DETECTION - STOP LINE: HOGAN RD & HASKELL RD / SYLVAN RD	LUMP SUM	LUMP SUM	_____.____
1860	643.21 NON-INVASIVE DETECTION - STOP LINE: HOGAN RD & I-95 NORTHBOUND RAMPS	LUMP SUM	LUMP SUM	_____.____
1870	643.21 NON-INVASIVE DETECTION - STOP LINE: HOGAN RD & SPRINGER DR / BANGOR MALL BLVD	LUMP SUM	LUMP SUM	_____.____
1880	643.22 NON-INVASIVE DETECTION - ADVANCE: HOGAN RD & I-95 SOUTHBOUND RAMPS	LUMP SUM	LUMP SUM	_____.____
1890	643.22 NON-INVASIVE DETECTION - ADVANCE: HOGAN RD & HASKELL RD / SYLVAN RD	LUMP SUM	LUMP SUM	_____.____
1900	643.22 NON-INVASIVE DETECTION - ADVANCE: HOGAN RD & I-95 NORTHBOUND RAMPS	LUMP SUM	LUMP SUM	_____.____
1910	643.22 NON-INVASIVE DETECTION - ADVANCE: HOGAN RD & SPRINGER DR / BANGOR MALL BLVD	LUMP SUM	LUMP SUM	_____.____
1920	643.621 RECTANGULAR RAPID FLASHING BEACON ASSEMBLY	2.000 EA	_____.____	_____.____

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
1930	643.71 TRAFFIC SIGNAL MODIFICATION HOGAN RD & MT HOPE AVE	LUMP SUM	LUMP SUM	_____.____
1940	643.71 TRAFFIC SIGNAL MODIFICATION HOGAN RD & EMCC / DRIVEWAY	LUMP SUM	LUMP SUM	_____.____
1950	643.71 TRAFFIC SIGNAL MODIFICATION HOGAN RD & HASKELL RD / SYLVAN RD	LUMP SUM	LUMP SUM	_____.____
1960	643.71 TRAFFIC SIGNAL MODIFICATION HOGAN RD & SPRINGER DR / BANGOR MALL RD	LUMP SUM	LUMP SUM	_____.____
1970	643.711 TRAFFIC SIGNAL MODIFICATION (TEMPORARY)	LUMP SUM	LUMP SUM	_____.____
1980	643.72 TEMPORARY TRAFFIC SIGNAL HOGAN RD & I-95 NORTHBOUND RAMPS	LUMP SUM	LUMP SUM	_____.____
1990	643.72 TEMPORARY TRAFFIC SIGNAL HOGAN RD & I-95 SOUTHBOUND RAMPS	LUMP SUM	LUMP SUM	_____.____
2000	643.80 TRAFFIC SIGNALS AT HOGAN RD & I-95 NORTHBOUND RAMPS	LUMP SUM	LUMP SUM	_____.____
2010	643.80 TRAFFIC SIGNALS AT HOGAN RD & I-95 SOUTHBOUND RAMPS	LUMP SUM	LUMP SUM	_____.____
2020	643.81 TRAFFIC SIGNAL CONTROL SYSTEM	LUMP SUM	LUMP SUM	_____.____

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
2030	643.90 INTERCONNECT WIRE	LUMP SUM	LUMP SUM			
2040	643.91 MAST ARM POLE W/15' ARM	2.000 EA				
2050	643.91 MAST ARM POLE W/35' ARM	1.000 EA				
2060	643.91 MAST ARM POLE W/40' ARM	1.000 EA				
2070	643.91 MAST ARM POLE W/55' ARM	1.000 EA				
2080	643.92 PEDESTAL POLE	20.000 EA				
2090	643.93 STRAIN POLE	4.000 EA				
2100	643.94 DUAL PURPOSE POLE W/30' ARM	1.000 EA				
2110	643.94 DUAL PURPOSE POLE W/45' ARM	1.000 EA				
2120	643.94 DUAL PURPOSE POLE W/50' ARM	1.000 EA				
2130	643.94 DUAL PURPOSE POLE W/55' ARM	1.000 EA				
2140	643.94 DUAL PURPOSE POLE W/60' ARM	3.000 EA				
2150	645.103 DEMOUNT GUIDE SIGN	5.000 EA				

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
2160	645.106 DEMOUNT REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	79.000 EA				
2170	645.109 REMOVE AND SALVAGE HIGHWAY SIGNS	5.000 EA				
2180	645.1095 REMOVE OVERHEAD SPAN WIRE SYSTEM WITH SIGNS STA 14+60	LUMP SUM	LUMP SUM			
2190	645.1095 REMOVE OVERHEAD SPAN WIRE SYSTEM WITH SIGNS STA 220+10	LUMP SUM	LUMP SUM			
2200	645.1096 REMOVE MAST ARM POLE WITH SIGNS STA 21+05	LUMP SUM	LUMP SUM			
2210	645.1096 REMOVE MAST ARM POLE WITH SIGNS STA 27+15	LUMP SUM	LUMP SUM			
2220	645.116 REINSTALL REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	6.000 EA				
2230	645.12 OVERHEAD GUIDE SIGN: STA 219+25	LUMP SUM	LUMP SUM			
2240	645.121 OVERHEAD LANE USE SIGN ASSEMBLY	2.000 EA				
2250	645.15 CANTILEVER GUIDE SIGN STA 17+40	LUMP SUM	LUMP SUM			
2260	645.15 CANTILEVER GUIDE SIGN STA 900+15	LUMP SUM	LUMP SUM			

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
2270	645.251 ROADSIDE GUIDE SIGNS, TYPE I	815.000 SF				
2280	645.271 REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGNS, TYPE I	400.000 SF				
2290	652.35 CONSTRUCTION SIGNS	1,730.000 SF				
2300	652.361 MAINTENANCE OF TRAFFIC CONTROL DEVICES 1400 CD	LUMP SUM	LUMP SUM			
2310	652.38 FLAGGER	9,750.000 HR				
2320	652.41 PORTABLE CHANGEABLE MESSAGE SIGN	8.000 EA				
2330	652.61 STAGED CONSTRUCTION AND TRAFFIC CONTROL	LUMP SUM	LUMP SUM			
2340	654.351 CONNECTED ROADSIDE UNIT (RSU)	4.000 EA				
2350	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM	LUMP SUM			
2360	658.20 ACRYLIC LATEX COLOR FINISH, GREEN	560.000 SY				
2370	659.10 MOBILIZATION	LUMP SUM	LUMP SUM			

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 018595.11 **Project(s):** 018595.11

SECTION: 1 PROJECT ITEMS

Alt Set ID: **Alt Mbr ID:**

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
2380	660.21 ON-THE-JOB TRAINING (BID)	3,000.000 HR				
		Section: 1	**Total:**			
			Total Bid:			

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____

a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

_____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WIN 022950.00** for **Highway Improvements** in the city of **Bangor** County of **Penobscot, Maine**. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work; performing construction quality control including inspection, testing and documentation; providing all required documentation at the conclusion of the project; warrantying its work; and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract. Payment shall be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **September 28, 2029.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is _____

_____

$_____ Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Federal Contract Provisions Supplement, and the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

WIN 022950.00 - Highway Improvements - in the city of Bangor

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items."

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items," which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the *Standard Specifications March 2020 Edition* and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

_____	_____
Date	(Signature of Legally Authorized Representative of the Contractor)
_____	_____
Witness	(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: Dale F. Doughty, Acting Commissioner
_____	
Witness	

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____

a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

_____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WIN 022950.00** for **Highway Improvements** in the city of **Bangor** County of **Penobscot, Maine**. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work; performing construction quality control including inspection, testing and documentation; providing all required documentation at the conclusion of the project; warrantying its work; and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract. Payment shall be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **September 28, 2029.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is _____

_____

$_____ Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Federal Contract Provisions Supplement, and the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

WIN 022950.00 - Highway Improvements - in the city of Bangor

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items."

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items," which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the *Standard Specifications March 2020 Edition* and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

_____	_____
Date	(Signature of Legally Authorized Representative of the Contractor)
_____	_____
Witness	(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: Dale F. Doughty, Acting Commissioner
_____	
Witness	

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and **(Name of the firm bidding the job)** a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at **(address of the firm bidding the job)**

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

SAMPLE

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No.01**12345.00**, for the **Hot Mix Asphalt Overlay** in the town/city of **South Nowhere,** County of **Washington**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **November 15, 2006.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is **(Place bid here in alphabetical form such as One Hundred and Two dollars and 10 cents)** **$ (repeat bid here in numerical terms, such as $102.10)** Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition*, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to Division 100 of the *Standard Specifications March 2020 Edition* (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

SAMPLE

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition*, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PIN 012345.00 South Nowhere, Hot Mix Asphalt Overlay ,

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items."

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

SAMPLE

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items," which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the *Standard Specifications March 2020 Edition* and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

_____	**(Sign Here)**
Date	(Signature of Legally Authorized Representative of the Contractor)
(Witness Sign Here)	**(Print Name Here)**
Witness	(Name and Title Printed)

SAMPLE

G. Award.

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: Dale F. Doughty, Acting Commissioner
_____	
(Witness)	

BOND # _____

CONTRACT PERFORMANCE BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____ _____ **in the State of** _____, as principal, and……....., a corporation duly organized under the laws of the State of ..... and having a usual place of business ...., as Surety, are held and firmly bound unto the Treasurer of the State of Maine in the sum of _____ **and 00/100 Dollars ($),** to be paid said Treasurer of the State of Maine or his successors in office, for which payment well and truly to be made, Principal and Surety bind themselves, their heirs, executors and administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in the Contract to construct Project Number _____ in the Municipality of _____ promptly and faithfully performs the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the State of Maine.

Signed and sealed this ..... day of ....., 20….. .

WITNESSES:	SIGNATURES:
	CONTRACTOR:
Signature.....	.....….....
Print Name Legibly	Print Name Legibly ...……....
	SURETY:
Signature	....……....
Print Name Legibly	Print Name Legibly .....
SURETY ADDRESS:	NAME OF LOCAL AGENCY:
.....	ADDRESS .....
.....	...…….....
.....	.....…….....
TELEPHONE.....	.....…….....

SAMPLE

BOND # _____

CONTRACT PAYMENT BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____ _____ **in the State of** _____, as principal, and.....…..... a corporation duly organized under the laws of the State of ..... and having a usual place of business in .....……., as Surety, are held and firmly bound unto the Treasurer of the State of Maine for the use and benefit of claimants as herein below defined, in the sum of _____ **and 00/100 Dollars ($)** for the payment whereof Principal and Surety bind themselves, their heirs, executors and administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in the Contract to construct Project Number _____ in the Municipality of _____ promptly satisfies all claims and demands incurred for all labor and material, used or required by him in connection with the work contemplated by said Contract, and fully reimburses the obligee for all outlay and expense which the obligee may incur in making good any default of said Principal, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material or both, used or reasonably required for use in the performance of the contract.

Signed and sealed this ..... day of ...…….....…., 20 ... .

WITNESS:	SIGNATURES:
	CONTRACTOR:
Signature…….....	.....….....
Print Name Legibly .....……..	Print Name Legibly ….….....
	SURETY:
Signature.....	...….....
Print Name Legibly	Print Name Legibly ….….....
SURETY ADDRESS:	NAME OF LOCAL AGENCY:
...….....….....…	ADDRESS ….….....…
.....	…….....
TELEPHONE	…….....

SAMPLE

"General Decision Number: ME20250047 06/06/2025

Superseded General Decision Number: ME20240047

State: Maine

Construction Type: Highway

County: Penobscot County in Maine.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2025
1	01/17/2025
2	06/06/2025

* ENGI0004-004 04/01/2025

	Rates	Fringes
POWER EQUIPMENT OPERATOR: Grader/Blade, Mechanic, Paver (Asphalt, Aggregate, and Concrete), Roller Asphalt	$ 30.17	13.80

TEAM0340-003 01/01/2025

	Rates	Fringes
TRUCK DRIVER (Vacuum Truck)	$ 25.53	17.02

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* SUME2014-042 06/23/2017

	Rates	Fringes
CARPENTER, Includes Form Work	$ 18.95	3.23
CEMENT MASON/CONCRETE FINISHER	$ 19.27	1.13
ELECTRICIAN	$ 25.78	6.83
IRONWORKER, REINFORCING	$ 21.85	0.00
IRONWORKER, STRUCTURAL	$ 22.33	4.50
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor	$ 17.08 **	2.48
LABORER: Common or General	$ 12.83 **	2.20
LABORER: Landscape	$ 17.03 **	2.81
OPERATOR: Backhoe/Excavator/Trackhoe	$ 16.33 **	2.78
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 19.26	5.57
OPERATOR: Broom/Sweeper	$ 18.77	0.00
OPERATOR: Bulldozer	$ 21.71	5.67
OPERATOR: Loader	$ 18.94	7.66
OPERATOR: Milling Machine	$ 26.83	7.05
OPERATOR: Roller (Earth)	$ 17.61 **	2.97
TRAFFIC CONTROL: Flagger	$ 9.00 **	0.00
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper	$ 17.02 **	5.37
TRUCK DRIVER: Dump Truck	$ 14.56 **	6.32

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.75) or 13658 ($13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

December 17, 2010
Supersedes December 30, 2009

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Electronic Payroll Submission)
(Payment Tracking)

104.3.8.1 Electronic Payroll Submission The prime contractor and all subcontractors and lower-tier subcontractors will submit their certified payrolls electronically on this contract utilizing the Elation System web based reporting. There is no charge to the contracting community for the use of this service. The submission of paper payrolls will not be allowed or accepted. Additional information can be found at http://www.maine.gov/mdot/contractors/ under the first "Notice".

104.3.8.2 Payment Tracking The prime contractor and all subcontractors and lower-tier subcontractors will track and confirm the delivery and receipt of all payments through the Elation System

Town: **Bangor**
Project: **18595.11**
Date: **November 21, 2025**

SPECIAL PROVISIONS
SECTION 104
Utilities

UTILITY COORDINATION

The contractor has primary responsibility for coordinating their work with utilities and/or railroad after contract award. The contractor shall communicate directly with the utilities regarding any utility work necessary to maintain the contractor's schedule and prevent project construction delays. The contractor shall notify the resident of any issues.

THE CONTRACTOR SHALL PLAN AND CONDUCT WORK ACCORDINGLY.

MEETING

A Preconstruction Utility Conference, as defined in Subsection 104.4.6 of the Standard Specifications **IS REQUIRED**.

GENERAL INFORMATION

These Special Provisions outline the arrangements that have been made by the Department for utility a to be undertaken in conjunction with this project. The following list identifies all known utilities having facilities presently located within the limits of this project or intending to install facilities during project construction.

Utilities have been notified and will be furnished a project specification.

Overview & Utility/Railroad Contact Information:

Utility/Railroad	Aerial	Underground	Contact Name	Contact Number
Bangor Gas Company		X	Ryan Rancourt	949-4546
Bangor Sewer Department		X	Tyler Barrall	944-8254
Bangor Water District		X	Vaughan Littlefield	299-6309
Charter Communications	X		Craig Coolidge or Rob Knapp	877-1165 745-7653
City of Bangor	X	X	Jefferson Davis	992-4244
Consolidated Communications	X	X	Brian Smith or Travis Roberts	712-8604 944-2361
FirstLight	X		Jarrod Smith	(603)396-1100
GoNetspeed	X		Jim Knight	590-5111
Mainecom Services	X		Sunni Woolsey	(303)910-8285
MaineDOT Electrical	X	X	Harold Tower	592-0763
Northern Light Health	X		Ryan Paradis	951-4101
Versant Power	X	X	Dave Perkins or Andrew Otis	949-3918 356-1536

Temporary utility adjustments **ARE NOT** anticipated. If any unexpected utility relocations become necessary, they shall be scheduled in accordance with Section 104 of the Standard Specifications and shall be performed by the appropriate utility company in conjunction with the work by the Contractor. Should the Contractor choose to have any poles temporarily relocated, all work shall be done at the Contractor's request and expense, with no additional cost or schedule impacts to the Department.

Unless otherwise specified, any underground utility/railroad facilities shown on the project plans represent approximate locations gathered from available information. The Department cannot certify the level of accuracy of this data. Underground facilities indicated on the topographic sheets (plan views) have been collected from historical records and/or on-site designations provided by the respective utility/railroad companies. Underground facilities indicated on the cross-sections have been carried over from the plan view data and may also include further approximations of the elevations (depths) based upon straight-line interpolation from the nearest manholes, gate valves, or test pits.

All adjustments are to be made by the respective utility unless otherwise specified herein.

Fire hydrants shall not be disturbed until all necessary work has been accomplished to provide proper fire protection.

All clearing and tree removal in areas where utilities are involved must be completed before the utilities are able to relocate their facilities.

It is the responsibility of the Contractor with the Utility Pole owner, to layout all of the proposed pole locations in the field prior to the start of utility relocations. Should any adjustments be needed, the Utility will document adjustments and inform the Department prior to utility relocations.

The Contractor shall provide the utilities access to the new pole locations. Construction of any spot cuts or fills in excess of 2 feet must be completed prior to utility relocations. All cut/fill depths listed on the pole list are approximate and will need to be verified by the contractor prior to poles being set. The Contractor shall prepare a plan for how access and the spot cuts and fills will be accomplished and what the schedule will be for performing the work. This plan will be discussed at the pre-construction utility meeting. Some of the proposed poles are located in significant fills and are off alignment, these will need to be accounted for in this plan.

***** Specific information regarding the line voltage can be requested from Versant Power*****

Utility/railroad working days are Monday through Friday. Times are estimated on the basis of a single crew for each utility/railroad. Any times and dates mentioned are **estimates only** and are dependent upon favorable weather, working conditions, and freedom from emergencies.

AERIAL

Summary:

Utility	Pole Set	Run New/ Trans. Wires/ Cables	Remove Poles	Estimated Working Days
Versant Power	**X**	**X**	**X**	**40**
City of Bangor - Traffic		**X**		**-**
Charter Communications		**X**		**30**
Northern Light Health		**X**		**5**
Mainecom Services		**X**		**5**
GoNetspeed		**X**		**5**
Consolidated Communications		**X**		**15**
FirstLight		**X**		**15**
			Total:	**115**

Utility Specific Issues:

Versant Power

Versant Power has approximately **23 poles** to set as per the pole list included in this specification and has cables to run/transfer to the new pole locations. The contractor shall notify Versant once all poles are staked, pole access is provided, and the clearing and spot cuts/fills are completed. **Versant will require two weeks to schedule their work after notice is received that the prep work is completed.** Once work is scheduled Versant estimates **40 working days to complete their work.** Versant will remove the old poles once all transfers are complete.

City of Bangor - Traffic

City of Bangor - Traffic has signal interconnect cables to transfer to the new pole locations. After Versant has completed their work the signal interconnect cables can be transferred. The Contractor shall perform the transfer work as part of the contract under item 643.81. The work shall be completed in accordance with the plans and special provisions included in the contract documents and shall be completed in a manner that the system remains fully functional at all times unless otherwise approved by the resident. Versant shall notify the contractor once all of Versant's work is completed.

Charter Communications

Charter Communications has cables to run/transfer to the new pole locations. After City of Bangor - Traffic has completed their work, Charter shall begin their work. The contractor and/or City of Bangor - Traffic shall notify Charter once all of City of Bangor - Traffic's work is completed. **Charter will require two weeks to schedule their work after notice is received.** Once work is scheduled Charter estimates **30 working days to complete their work**.

Northern Light Health

Northern Light Health has cables to run/transfer to the new pole locations. Northern Light Health is only attached to approx. 3 poles within the project limits. After Charter has completed their work, Northern Light Health shall begin their work. The contractor and/or Charter shall notify Northern Light Health once all of Charter's work is completed. **Northern Light Health will require two weeks to schedule their work after notice is received.** Once work is scheduled Northern Light Health estimates **5 working days to complete their transfer work**.

Mainecom Services

Mainecom Services has cables to run/transfer to the new pole locations. Mainecom is only attached to approx. 3 poles within the project limits. After Northern Light Health has completed their work, Mainecom shall begin their work. The contractor and/or Northern Light Health shall notify Mainecom once all of Northern Light Health's work is completed. **Mainecom will require two weeks to schedule their work after notice is received.** Once work is scheduled Mainecom estimates **5 working days to complete their transfer work**.

GoNetspeed

GoNetspeed has cables to run/transfer to the new pole locations. GoNetspeed is only attached to approx. 1 pole within the project limits. After Mainecom has completed their work, FirstLight shall begin their work. The contractor and/or Mainecom shall notify FirstLight once all of CCI's work is completed. **FirstLight will require two weeks to schedule their work after notice is received.** Once work is scheduled FirstLight estimates **5 working days to complete their transfer work**.

Consolidated Communications
Consolidated Communications (CCI) cables to run/transfer to the new pole locations. After GoNetspeed has completed their work, CCI shall begin their work. The contractor and/or GoNetspeed shall notify CCI once all of GoNetspeed's work is completed. **CCI will require two weeks to schedule their work after notice is received.** Once work is scheduled CCI estimates **15 working days to complete their transfer work**.

FirstLight
FirstLight has cables to run/transfer to the new pole locations. After CCI has completed their work, FirstLight shall begin their work. The contractor and/or CCI shall notify FirstLight once all of CCI's work is completed. **FirstLight will require two weeks to schedule their work after notice is received.** Once work is scheduled FirstLight estimates **15 working days to complete their transfer work**.

Pole List:

Existing Pole #	Existing Station	Left/ Right		Existing Offset	Proposed Station	Left/ Right		Proposed Offset	Comments	Cut/ Fill
		LT	RT			LT	RT			
8/116	11+03.22		X	40.73					**OK**	-
	11+33.51		X	45.05					**OK, .55' BEHIND S.W.**	-
	12+31.41	X		314.06					**OK, ON SPRINGER DR**	-
SIGNAL	12+38.15		X	44.3					**REMOVE**	-
1	12+50.60	X		96.06					**OK**	-
	12+51.60	X		89.73					**OK**	-
104/9	12+64.05		X	40.88					**OK, .1' BEHIND S.W.**	-
	14+53.96	X		79.64					**OK, BEHIND CURB**	-
104/10	14+57.63	X		80.37					**TRANSFER & REMOVE**	-
					15+18	**X**		**100'**	**NEW STUB POLE**	-
11	15+40.29	X		81.46					**OK**	-
49B2	16+39.93	X		86.86					**OK, UNLESS REPLACED**	-
W/CAMERA?	16+88.40	X		313.13					**OK, SB OFFRAMP**	-
	17+23.58		X	48.13	**17+40**		**X**	**59.5'**	**MOVE, IN SIDEWALK**	**6'**
#122920	18+20.11		X	115.1					**OK**	-
#122919	18+40.59		X	128.49					**OK**	-
LIGHTING	18+51.10		X	37.44					**REMOVE**	-
LIGHTING	18+51.70	X		98.06					**REMOVE**	-
#122918	18+59.61		X	143.91					**OK**	-
SIGNAL	18+67.77	X		76.98					**REMOVE**	-
111	18+69.02	X		89.6	**18+66**	**X**		**98'**	**OK, IN NEW ISLAND**	**4'**
	20+77.59	X		121.09	**20+72**	**X**		**126'**	**REPLACE**	-
	23+11.55	X		143.5	**23+06**	**X**		**147'**	**REPLACE**	-
	25+15.62	X		145.33	**25+10**	**X**		**148'**	**REPLACE**	-
#224217	26+69.33		X	593.74					**OK, SB ONRAMP**	-
107	26+83.13	X		148.17	**26+78**	**X**		**149'**	**REPLACE**	**4'**
	27+04.69	X		140.02					**REMOVE**	**4'**
49H2 W/LIGHT	27+47.49	X		9.86					**REMOVE**	-
#224218	27+79.13		X	701.45					**OK, SB ONRAMP**	-
49D2 W/LIGHT	28+50.72	X		143.51					**REMOVE**	-
106	28+99.27	X		152.55	**28+95**	**X**		**152'**	**REPLACE**	**5'**
49C3 W/ LIGHT	29+11.53	X		11.9					**REMOVE**	-
49D1 W/LIGHT	29+54.39	X		110.28					**REMOVE**	-

	30+20.20		X	172.34					**REMOVE**	-
	30+71.56		X	366.01					**REMOVE**	-
	30+86.74	X		157.71					**OK**	-
L26/105	30+87.80	X		152.62					**OK**	-
	30+94.96	X		151.44	**31+00**	**X**		**152'**	**REPLACE**	-
	31+05.36	X		166.15					**OK**	-
34	31+45.14		X	58.53	**31+55**		**X**	**79'**	**REPLACE, LARGE FILL**	**15'**
34	31+59.14		X	55.32	**31+73**		**X**	**75'**	**REPLACE, LARGE FILL**	**17'**
	31+81.29		X	80.62	**31+85**		**X**	**68'**	**REPLACE**	**18'**
	32+12.60		X	434.23					**OK**	-
#180605	32+13.22		X	233.55					**OK**	-
					32+18	**X**		**116.5'**	**NEW MIDSPAN POLE**	-
	32+18.19		X	433.07					**OK**	-
	32+23.49		X	431.2					**OK**	-
	32+31.55		X	429.06					**OK**	-
	32+36.80		X	427.56					**OK**	-
	32+42.60		X	425.98					**OK**	-
	32+62.49		X	428.56					**OK**	-
38S	33+15.02		X	32.59	**33+02**		**X**	**61'**	**MOVE, IN ROAD**	**17'**
102-38/26/104	33+55.67	X		62.12	**33+55**	**X**		**70'**	**MOVE, IN SIDEWALK**	**3'**
	34+19.09		X	45.63	**33+70**		**X**	**76'**	**MOVE, IN SHOULDER**	**10'**
262/1	34+48.29		X	75.27	**34+50**		**X**	**82'**	**REPLACE**	-
37/103	35+38.49	X		38.14	**35+43**	**X**		**47.5'**	**MOVE, IN SIDEWALK**	-
172200 W/METER	36+84.93	X		74.65					**OK**	-
36/102	36+94.60	X		38.25	**37+27**	**X**		**50'**	**MOVE, IN SIDEWALK**	-
1025FP1/261/1	37+44.55	X		242.34					**OK**	-
	37+80.37		X	229.36					**OK**	-
	38+27.65	X		267.66					**OK**	-
	38+32.54	X		186.31					**OK**	-
1024/102/35/101	38+46.04	X		38.73	**38+49**	**X**		**38'**	**REPLACE, MAST ARM**	-
	38+88.03		X	53.85	**38+96**		**X**	**54'**	**REPLACE, MAST ARM**	-
	40+24.25		X	50.87					**OK**	-
34/26/100	40+25.13	X		37.46					**OK**	-
Reverse Direction Loop/Sweets Driveway										
DRIVEWAY	1+02.44	X		26.28'	**1+04**	**X**		**28'**	**REPLACE**	-
ACCESS RD					**3+04**		**X**	**28'**	**NEW SERVCE POLE**	**3'**

Aerial utility lines are located near the bridge and will remain in place throughout the duration of the project and OSHA aerial working clearances will need to be adhered to when using equipment around power lines. The contractor will be required to work around this line configuration and shall plan and conduct their work accordingly.

UNDERGROUND

Summary:

Utility	Summary of Work	Estimated Working Days
Bangor Gas Company	-	**-**
Bangor Sewer Department	Adjust sewer facilities	**2**
Bangor Water District	Replace, relocate and adjust water facilities	**12**
City of Bangor	Traffic signal power service connections	**-**
	Total:	**14**

Utility Specific Issues:

Bangor Gas Company

Bangor Gas Company has gas mains and gate valves located within the project limits. Nothing is located within the projects paving limits. **Impacts are not anticipated.**

The Contractor shall notify Bangor Gas Company for additional information on the location of the Gas main prior to beginning any excavation. Bangor Gas MUST be notified prior to any/all subsurface work in the vicinity of the Bangor Gas main. **One-week initial notification and 48 hours' notification for subsequent work** is requested so they may have a representative present.

Bangor Sewer Department

Bangor Sewer Department has approximately **2 sewer manholes** to adjust to grade. The Sewer Department intends to lower their manholes prior to milling/excavating. The Sewer Department intends to adjust the manholes prior to paving surface and estimates a total of **2 working days** to complete the work. The contractor shall provide **two weeks notification** to the Sewer Department for any and all work to be performed by the Sewer Department.

Bangor Water District

Bangor Water District has approximately **7 water gate valves and 2 service boxes** to adjust to grade. The District also has a hydrant that will be relocated at station 34+48 Rt. The District intends to lower their gate valves prior to milling/excavating, where needed. The District intends to loosen and raise the gate valves prior to paving surface and estimates **12 working days** to complete the adjustments and hydrant relocation. **The Contractor will be responsible to make final grade adjustments in conjunction with the paving operations.** The contractor shall provide **two weeks' notification** to the District for any and all work to be performed by the District.

City of Bangor

City of Bangor has aerial signals and cables for traffic signals within the project limits.

In general, all 120/240-volt upgrade projects will require a new electric service order with Versant Power. The Contractor shall provide the following information with the new electric service order request:

- Electrician's name performing the work
- Voltage
- Amperage

- Pole number of the existing power supply
- Distance from the pole to the control box
- The 7 digit meter number of the closest meter to the pole associated with each traffic signal location

The contractor shall allow at least 4 weeks for the Municipality to establish the account.

MaineDOT Electrical
MaineDOT Electrical has aerial signals and cables for interstate lighting within the project limits.

In general, all 120/240-volt upgrade projects will require a new electric service order with Versant Power. The Contractor shall provide the following information with the new electric service order request:

- Electrician's name performing the work
- Voltage
- Amperage
- Pole number of the existing power supply
- Distance from the pole to the control box
- The 7 digit meter number of the closest meter to the pole associated with each service location

The contractor shall allow at least 4 weeks for the MaineDOT to establish the account.

PLEASE NOTE
Some of the utilities have underground service facilities located within the project limits. Underground service transfers have been included in the aerial working days estimates. No impacts are anticipated to their service facilities.

All underground utilities require **3 working days' notice** for any/all excavation or any other subsurface work around any underground facilities to schedule an on-site representative to be present. The contractor shall hand dig around all the underground facilities.

MAINTAINING UTILITY LOCATION MARKINGS
The Contractor will be responsible for maintaining the buried utility location markings following the initial locating by the appropriate utility or their designated representative.

UTILITY SIGNING
Any utility working within the construction limits of this project shall ensure that the traveling public is adequately protected at all times. All work areas shall be signed, lighted, and traffic flaggers employed as determined by field conditions. All traffic controls shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, as issued by the Federal Highway Administration.

Any utility working on lines that run over the I-95 corridor shall comply with all requirements of the MaineDOT Utility Accommodation Rules when completing the utility work.

SPECIAL PROVISION 105
CONSTRUCTION AREA

Construction Areas located in the City of Bangor have been established by the Maine Department of Transportation (MDOT) in accordance with provisions of 29-A § 2382 Maine Revised Statutes Annotated (MRSA).

The sections of highway under construction in Penobscot County:

***Project 018595.11** is located in the City of Bangor on Hogan Road/Interstate 95 Exit 187 and Hogan Road/Interstate 95 (Bridge #5823) over Interstate 95. Located 0.26 of a mile north of Haskell Road.*

Per 29-A § 2382 (7) MRSA, the MDOT may "*issue permits for stated periods of time for loads and equipment employed on public way construction projects, United States Government projects or construction of private ways, when within construction areas established by the Department of Transportation. The permit:*

A. Must be procured from the municipal officers for a construction area within that municipality;

B. May require the contractor to be responsible for damage to ways used in the construction areas and may provide for:

(1) Withholding by the agency contracting the work of final payment under contract; or

(2) The furnishing of a bond by the contractor to guarantee suitable repair or payment of damages.

The suitability of repairs or the amount of damage is to be determined by the Department of Transportation on state-maintained ways and bridges, otherwise by the municipal officers;

C. May be granted by the Department of Transportation or by the state engineer in charge of the construction contract; and

D. For construction areas, carries no fee and does not come within the scope of this section."

The Municipal Officers for the City of Bangor agreed that an Overlimit Permit will be issued to the Contractor for the purpose of using loads and equipment on municipal ways in excess of the limits as specified in 29-A MRSA, on the municipal ways as described in the "Construction Area."

As noted above, a bond may be required by the municipality, the exact amount of said bond to be determined prior to use of any municipal way. The MDOT will assist in determining the bond amount if requested by the municipality.

The maximum speed limits for trucks on any City way will be 25 mph (40 km per hour) unless a higher legal limit is specifically agreed upon in writing by the Municipal Officers concerned.

SPECIAL PROVISION
SECTION 105
General Scope of Work
(Environmental Requirements)

I. Work within streams ("In Stream Work", see MaineDOT Standard Specifications 101.2 – Definitions) requires special conditions to minimize impacts. The following special conditions apply to this project.

A. In Stream Work applies to the following locations and is shown on permit documents:

1. Station 123+60 to 124+77 Right.

2. Station 1004+90 to 1005+25 Right.

B. The following special conditions shall apply to In Stream Work.

1. In stream work shall occur between July 15 and April 15. This is an in water work window. No work in stream is allowed from April 16 – July 14.

2. All areas of temporary waterway or wetland fill shall be restored to their original contour and character upon completion of the project. Temporary fill includes fill that received authorization and fill that mistakenly enters a resource (i.e., from slope failures, accidental broken sandbag cofferdams

3. All in-water excavation, including excavation to place rip rap shall be conducted within a sealed cofferdam.

4. All areas of disturbed soil shall be mulched and seeded with an approved native or non-invasive herbaceous seed mix following construction and/or planted with native woody vegetation and trees appropriate during the first available planting season. In areas where there is little to no slope, and erosion and invasive species establishment is unlikely, the native woody vegetation on the site shall be allowed to regenerate naturally.

5. All off-road equipment working within 25-feet of a stream (RUS/OHWM) shall be cleaned to remove all soil, seeds, vegetation, or other debris that could contain seeds or reproductive portions of plants prior to entering the area to minimize the spread of noxious weeds. All equipment shall be inspected prior to offloading to ensure they are clean.

6. The Contractor shall hold a pre-construction meeting with appropriate MaineDOT Environmental Office staff, other MaineDOT staff, and the Contractor(s) to review all procedures and requirements for avoiding and minimizing effects to ATS. The following individuals/agencies shall be invited: U.S. Fish and Wildlife Service (Sarah Rubenstein, sarah_rubenstein@fws.gov), USACE (Rachel Antieau, Rachel.H.Antieau@usace.army.mil)

7. Heavy construction equipment shall travel only over non-erodible substrate (e.g., ledge, cobble) and when approved by the MaineDOT Environmental Field Contact.

8. The contractor shall fully remove all cofferdams from the stream immediately following completion of in-stream work using techniques to minimize turbidity releases. The contractor shall restore all areas of temporary stream bottom disturbance to their original contour and character upon completion of the project.

9. The Contractor shall notify the Resident no less than 3 days prior to the placement of cofferdams. After cofferdams are placed and before the work area is dewatered, a fish evacuation will be performed as directed by the ENV Staff.

10. When utilizing pumps to dewater cofferdams, in order to prevent ATS juvenile entrapment related to dewatering diversions, the Contractor will use a screen on each pump intake designed such that the approach velocity does not exceed 0.20 feet/second. Square or round screen face openings are not to exceed 3/32 inches (2.38 millimeters) measured on a diagonal. Criteria for slotted face openings shall not exceed 1/16 inches (approximately 1.75 millimeters) in the narrow direction. These screen criteria follow National Marine Fisheries Service (NMFS) guidance (NMFS 2008). Intake hoses shall be regularly monitored while pumping to minimize adverse effects to Atlantic salmon or other species.

11. Permanent rip-rap placed in a stream below the bank full elevation (Q1) shall be covered by coarse material to fill the voids between the rocks in coordination with the ENV Staff.

12. All rip-rap placed outside of a cofferdam shall be cleaned prior to installation

II. Work within wetlands (see MaineDOT Standard Specifications 101.2 – Definitions) requires permit authorization and conditions. General conditions are included in permit documents. The following special conditions apply to this project.

A. To minimize the spread of invasive species, straw mulch shall be utilized for soil stabilization in disturbed wetland areas (hay mulch may be used in other areas). Wetland impact areas are shown in the permit documents

B. Grubbing (removal) of roots and stumps shall only occur in those areas subject to permanent impacts.

C. Conditions of the Maine Army Corps of Engineers General Permit 2020-2025 shall apply to this project (see permit and conditions in the contract documents).

D. All wetland fill authorized by the permit must be placed prior to October 15, 2026. Finish grade and other work may continue.

III. Approvals:

A. Permitted Protected Natural Resource Impacts

1. Maine Department of Environmental Protection Natural Resources Protection Act Permit By Rule: PBR_ID-0100546-0001

2. Army Corps of Engineers Pre-Construction Notification: NAE-2025-01386 Authorized wetland fill:

	Permanent (SF)	**Temporary (SF)**
Wetland Fill		
PEM	28,314	25
PSS	445	445
Stream Fill	675	180

3. Soil Erosion and Water Pollution Control Plan (SEWPCP)

IV. Conditions for presence of standing or flowing water at the above identified In Stream Work locations:

A. If standing or flowing water is present at the above identified In Stream Work locations, In Stream Work shall be conducted within a cofferdam constructed according to the Contractor's approved "Soil Erosion and Water Pollution Control Plan" for this project.

V. No work shall be allowed that completely blocks a stream without providing downstream flow.

Bangor
Exit 187 DDI
Highway Improvements
WIN 18595.10

GENERAL NOTE

A review of the Maine Department of Environmental Protection (MDEP) File Room Databases specific to Bangor, ME indicates historical and current petroleum product storage/use - current retail sale of gasoline, and documented spills/releases associated with specific properties adjacent to the project area. Subsequent on-site subsurface exploration in the vicinity of these properties failed to unearth any soil and/or groundwater contamination issues adjacent to the areas of concern. Specifically, borings were advanced adjacent to Swett's Citgo (451 Hogan Road) retail gas station, approximately between MaineDOT Station 221+50 and Station 224+00 – Left of Centerline (LOC) and adjacent to the Irving Retail Gas Station (633 Hogan Road – northeast corner of the intersection of the Hogan Road and Springer Drive) – approximately between MaineDOT Station 11+00 and Station 12+50 – left and right of centerline. Environmental borings did not encounter any indicators of subsurface petroleum impacts. However, in consideration of the existing environmental data, the Contractor shall remain alert for evidence of petroleum product contamination. In the event the Contractor encounters evidence of soil and/or groundwater contamination, the Contractor shall immediately stop work in the impacted area, secure the excavation, and notify the Resident. In addition, the Contractor shall employ appropriate health and safety measures to protect its workers against hazards associated with working near petroleum / hazardous materials impacted soil and/or groundwater. The Resident shall contact the Senior Geologist in MaineDOT's Environmental Office at 207-624-3000, and the MDEP at 800-482-0777. Work may only continue with authorization from the Resident.

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(NDAA Telecommunication Equipment)

The provisions of Section 105 of the Standard Specifications shall apply with the following additions:

105.11 Other Federal Requirements Add the following as final paragraphs:

To comply with the FY 2019 National Defense Authorization Act (NDAA), Section 889(b), in accordance with 2 CFR 200.216 and 2 CFR 200.471 regulations, as amended, the Contractor shall provide a written certification from the vendor/manufacturer/ producer and signed by the Contractor for all telecommunication and/or video surveillance equipment, services, or systems. Such certification shall include a statement that none of the equipment, parts, or systems of the identified telecommunication and/or video surveillance equipment, parts, services or systems provided by the Contractor have been produced by the following entities:

- Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities), and
- Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company or Dahua Technology Company (or any subsidiary or affiliate of such entities).

SPECIAL PROVISION
SECTION 105
CONTROL OF WORK
(Cooperation Between Contractors- -Periodic Progress Coordination Meeting)

It is hereby brought to the Contractor's attention that the Department has awarded and/or plans to award other contracts near the limits of this contract, which may be in progress simultaneously.

The Contractor shall attend periodic meetings for the projects in the Bangor area. The projects in the Bangor area may include, but not limited to, the following project(s):

Bangor Design-Build I-95 Bridge Replacements Project, WINS 026095.00 (Bridge #5798, Kenduskeag Avenue over I-95) & 27176.00 (Bridges #1427 & 5800, I-95 NB & SB over Stillwater Avenue)

Project Manager: Jerry Dostie, MaineDOT Bridge Program
(207) 441-1312
Gerald.P.Dostie@maine.gov

Bangor I-95/Broadway Bridge Replacement and Intersection Improvements Project, WINS 022276.01 & 021663.00 (Bridge #5789, I-95 over Broadway/Route 15)

Project Manager: Jerry Dostie, MaineDOT Bridge Program
(207) 441-1312
Gerald.P.Dostie@maine.gov

Bangor Stillwater Avenue Signal Replacements Project, WIN 027484.00

Project Manager: Dan Loring, MaineDOT Multimodal Program
(207) 592-4757
Daniel.M.Loring@maine.gov

In addition, there may be other projects such as those initiated by the MaineDOT Maintenance and Operations, the City of Bangor, and others. The periodic meetings will be scheduled and led by the MaineDOT and held in the Bangor area. The intent of these meetings is to ensure the traffic control measures for the different projects are well coordinated and incidents are coordinated between the above referenced projects in accordance with incident management plan/emergency plan that is being developed for the projects.

The Contractor shall cooperate with other Contractors at all times and provide project access as necessary and as directed by the Resident.

SPECIAL PROVISION
SECTION 105
General Scope of Work
(Traffic Control and Management)

1. For all non-Interstate locations, the Contractor shall maintain not less than one 12-foot wide lane of alternating traffic and all lane closures shall be limited to 1,000 feet in length. Where there are multiple lanes in the same direction, the minimum lane widths shall be 11 feet.

2. For all Interstate locations, the Contractor shall maintain not less than one 14-foot wide lane for directional travel and all lane closures shall be limited to 1,000 feet in length.

3. When the Contractor begins operations on the project, the Contractor will be responsible for managing the traffic signal operations, including phasing and timing adjustments, on all traffic signals along Stillwater Avenue from the Exit 186 intersection to Hogan Road as well as the Hogan Road traffic signals from Stillwater Avenue to Mt Hope Avenue.

4. The Contractor shall coordinate traffic control activities with the Design-Build contractor throughout the region. The Contractor shall be responsible for traffic signal timing, phasing, and maintenance along Stillwater Avenue and along Hogan Road within the project limits of both projects.

5. Ramp limitations:
    a. Unless otherwise authorized by the Resident, no more than one ramp may be closed on any given night. The exception will be that the Southbound Off-Ramp and the Northbound On-Ramp may be closed concurrently during TCP Phase 3 for an extended period of time.
    b. Left turns from the Southbound Off-Ramp onto Hogan Road may be closed during TCP Phase 2. Left turns onto the Northbound On-Ramp may be closed during TCP Phase 2.

6. I-95 limitations:
    a. Contractor laydown/staging areas in the I-95 median or in Ramp infields shall be described and included in the Contractor's TCP and will be approved by the Department. The Contractor's TCP shall include construction vehicle access for all TCP phases. Any repair work beyond the limits shown in the plans shall be at the Contractor's expense.

7. Bridge limitations:
    a. Except for nighttime lane closures, traffic on the existing bridges shall not be impacted until all traffic is shifted to the new bridge in Phase 2.
    b. After all traffic has been shifted to the new Hogan Road No. 2 bridge in TCP Phase 2, the Contractor may use the 1960 bridge for staging and routing construction traffic across I-95.

December 5, 2011
Supersedes December 1, 2010

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Buy America Certification)

105.11 Federal Requirements Add the following as the third and subsequent paragraphs:

"Prior to payment by the Department, the Contractor shall provide a certification from the producer of steel or iron, or any product containing steel or iron as a component, stating that all steel or iron furnished or incorporated into the furnished product was manufactured in the United States in accordance with the requirements of the Buy America provisions of 23 CFR 635.410, as amended. Such certification shall also include (1) a statement that the iron or steel product or component was produced entirely within the United States, or (2) a statement that the iron or steel product or component was produced within the United States except for minimal quantities of foreign steel and iron valued at $ (actual value).

All manufacturing processes must take place domestically. Manufacturing begins with the initial melting and mixing, and continues through the coating stage. Any process which modifies the chemical content, the physical size and shape, or the final finish is considered a manufacturing process. These processes include rolling, extruding, machining, bending, grinding, drilling, and coating. "Coating" includes epoxy coating, galvanizing, painting, or any other coating that protects or enhances the value of the material.

A Buy America Certification is required from each manufacturer, fabricator, supplier, subcontractor, etc. that meets the "manufacturing" definition above.

Buy America does not apply to raw materials (iron ore and alloys), scrap, pig iron, or processed, pelletized, and reduced iron ore."

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Build America, Buy America)

105.11 Other Federal Requirements Amend this section by adding the following:

This special provision was created for the Build America, Buy America Act (BABA) to expand the list of construction materials required to be manufactured in the United States beyond what is currently only required for steel/iron products. The Infrastructure Investment and Jobs Act (IIJA), Public Law No. 117-58 includes the Build America, Buy America Act. The Office of Management and Budget issued memorandum M-22-11 to provide guidance on the law which can be found here:

https://www.whitehouse.gov/wp-content/uploads/2022/04/M-22-11.pdf

All iron/steel, including the iron/steel in construction materials and manufactured products, must satisfy Buy America 23 CFR 635.410 requirements.

All construction materials, as defined in the following, that are permanently incorporated into federal-aid projects shall meet Build America, Buy America requirements.

For the purpose of this Specification, construction materials shall include an article, material, or supply that is or consists primarily of the following.

- Non-ferrous metals,
- Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables),
- Glass (including optic glass),
- Lumber, or
- Drywall.

All manufacturing processes for construction materials shall occur within the United States. The category of construction materials excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

Due to a nationwide waiver, BABA requirements do not apply to manufactured products for FHWA funded projects. Manufactured products are items that consist of two or more of the listed construction materials that have been combined through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed (including steel/iron) through a manufacturing process.

The Contractor shall certify in writing that all permanently incorporated Construction Materials for this contract meet the BABA requirements.

MaineDOT DBE Project Attainment Target (PAT)

for this Project is **0**%

The MaineDOT seeks to meet the specified annual Disadvantaged Business Enterprise (DBE) usage goal set out by 49 CFR 26.45 through the efforts of contractors seeking to employ qualified DBE subcontractors. We seek to meet this goal by race neutral means and do not, at this time, use contract specific requirements for each project. We do however, understand the capacity of Maine's DBE community and the unique characteristics a project may have that would differ from the broad annual goal.

Taking this into consideration, the MaineDOT will review each project and develop an anticipated attainment or Project Attainment Target (PAT) based on several factors that are project specific. Those factors include:

- ☐ Scope of Work
- ☐ DBE availability according to Specification Item
- ☐ Geographic location
- ☐ DBE capacity

This PAT is developed to assist contractors to better understand the DBE participation that the MaineDOT can reasonably expect for a specific project. The PAT is NOT a mandate but an assessment of the DBE opportunities that this project could meet or exceed. MaineDOT anticipates that each contractor will make the best effort to reach or exceed the PAT for this project.

SPECIAL PROVISION
SECTION 107
TIME
(Contract Time)

1. The Contractor shall be allowed to commence Work provided that the Contract has been awarded, all required plans/submittals have been received and determined to be acceptable by the Department, and a preconstruction meeting has been held.

2. The specified Contract Completion Date is **September 28, 2029**. The Contractor shall complete all work on or before this date.

SPECIAL PROVISION
SECTION 107
TIME
(Prosecution of Work – Initial Schedule)
(Prosecution of Work - Biweekly Updates)

Standard Specification 107 shall be amended as follows:

Method of Measurement Prosecution of Work – Initial Schedule will be measured by the lump sum.

Basis of Payment The accepted quantity of Prosecution of Work – Initial Schedule will be paid for at the contract unit price per lump sum at the completion of work.

Add the following to Paragraph 107.4.4 Schedule Revisions:
The Contractor shall provide an updated construction schedule every two weeks to reflect the current progress of work and anticipated time for all portions of the work as indicated in Section 107.4.2.

Method of Measurement Prosecution of Work – Biweekly Updates will be measured by the lump sum.

Basis of Payment The accepted quantity of Prosecution of Work – Biweekly Updates will be paid for at the contract unit price per lump sum at the completion of work. Interim payments will be made as a percent complete of the total lump sum commensurate with portion of project completed based upon contract time. Such payment will be full compensation for all work to respond to comments, revise, and submit the updated CPW schedule on a biweekly basis.

Pay Item	Description	Pay Unit
107.51	Prosecution of Work – Initial Schedule	LS
107.531	Prosecution of Work – Bi-Weekly Updates	LS

SPECIAL PROVISION
SECTION 107
Time
(Allowable Work Times)

1. The Contractor shall provide a work schedule and plan operations so that the Resident will have sufficient advance notification of at least 48 hours prior to a work day to provide the necessary inspection and oversight.

2. The Contractor shall provide the Resident with a 48-hour written notice before beginning night work. After receiving this notice, no work is allowed for 48 hours. Once work has been completed, the Contractor shall provide the same notice to return to day work.

3. The Contractor shall not schedule both day work and night work within the same 24-hour period without prior approval by the Resident and 48-hour notice.

4. Ramp limitations:
    a. After the construction of the Jug Handle, Exit 187 ramps may be closed at night between the hours of 7:00 p.m. and 5:00 a.m..
    b. The Southbound On-Ramp may be closed for not more than two extended weekend periods. The closure shall not begin before 8:00 p.m. on a Friday evening and the ramp shall be fully open to traffic by 5:00 a.m. on the following Monday morning. Proposed weekend ramp closures shall require approval from the Resident at least two weeks prior to the closure weekend and will require an approved detour plan.
    c. Timing of all ramp closures shall be coordinated with the Design-Build contractor for the Stillwater Avenue bridges project.

5. I-95 limitations:
    a. I-95 Northbound traffic under the Exit 187 bridges shall provide two through lanes between 5am and 8pm from July 1st to September 12th throughout construction.

SPECIAL PROVISIONS
SECTION 202
REMOVING STRUCTURES AND OBSTRUCTIONS
(Removing Pavement Surface)

The March 2020 Revision of the Standard Specifications, Section 202-Removing Structures and Obstructions, subsection 202.061-Removing Pavement Surface, has been removed and replaced in its entirety by the following:

202.061 - Removing Pavement Surface The equipment for removing the bituminous surface shall be a power operated milling machine or grinder capable of removing bituminous concrete pavement to the required depth, transverse cross slope, and profile grade using an automated grade and slope control system. The controls shall automatically increase or decrease the pavement removal depth as required, and readily maintain desired cross slope, to compensate for surface irregularities in the existing pavement course. The equipment shall be capable of accurately establishing profile grades by referencing from a fixed reference such as a 30 foot minimum contact ski (floating beam), 24 foot non-contact ski (floating beam) with 3 or more sensors; or 3 non-contact sensors directly affixed at the fore, mid, and aft points of the milling machine. Systems designed to incorporate a contact sensor located at the mid-point of the milling machine in lieu of the non-contact sensor will be permitted. Grade control sensors shall all be located on the same side. A single sensor, contact or otherwise, shall not be permitted unless otherwise approved by the Department.

The rotary drum shall be a minimum of 7 feet in width and utilize carbide tip tools at a minimum triple wrap configuration. The difference in height from the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed ¼ inch. The forward speed of the milling machine shall be adjusted to produce a milled surface meeting the groove spacing, groove depth, and surface tolerance requirements of this specification. The tools on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture. The Department may evaluate the texture of the milled surface for information purposes by performing the Sand Patch test according to ASTM E 965.

The Contractor shall locate and remove all objects in the pavement through the work area that would be detrimental to the milling or grinding machine. Any structures or obstructions left within the travel lane or shoulders shall have tapers installed according to Standard Detail 202(01). The finished milled surface will be inspected before being accepted, and any deviations in the profile exceeding ½ inch under a 16 foot string line or straightedge placed parallel to the centerline will be corrected. Any deviations in the cross-slope that exceed $^{3}/_{8}$ inch under a 10 foot string line or straightedge placed transversely to centerline will be corrected. All corrections will be made with approved methods and materials. Any areas that require corrective measures will be subject to the same acceptance tolerances. Excess material that becomes bonded to the milled surface will be removed to the Resident's satisfaction before the area is accepted.

On roadways with adjoining lanes carrying traffic, the Contractor shall remove the pavement surface in each lane per the conditions in Table 1, unless otherwise noted by the Department in Special Provision, Section 105 – Limitations of Operations.

TABLE 1: MILLING CONDITIONS FOR ADJOINING LANES

Depth (At Centerline)	Milling Conditions
Vertical Longitudinal Joint	
2” and less	The Contractor may remove the pavement on a single travel lane width for each production day and will be required to mill the adjacent section of travel lane before the end of the following calendar day.
Greater than 2”	The Contractor shall remove the pavement over the full width of the traveled way section being paved that day.
12:1 Tapered Centerline Joint	
1 ½” to 2”	The Contractor may remove the pavement on a single travel lane width for each production day and will be required to mill the adjacent section of travel lane before weekend or holiday suspension. A maximum unmatched centerline joint length of 0.5 miles will be permitted over the weekend.
Greater than 2”	The Contractor shall remove the pavement on a single travel lane width for each production day and will be required to mill the adjacent section of travel lane before the end of the following calendar day.

The Contractor will be required to remove the pavement over the full width of the mainline traveled way, regardless of highway type, cut depth, or longitudinal joint type prior to Memorial Day, July 4th, Labor Day, suspensions exceeding three days, or other dates as specified by Special Provision, Section 105 – Limitations of Operations.

The Contractor will also be responsible for installing additional warning signage that clearly defines the centerline elevation differential hazard. Unless otherwise addressed in the contract, the Contractor shall install additional centerline delineation such as a double RPM application, or temporary painted line. The Traffic Control Plan shall be amended to include this option and the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of 0.50 mile for the entire length of effected roadway section. If this option is utilized, all additional signing, labor, traffic control devices, or incidentals will not be paid for directly, will be considered incidental to the appropriate 652 items.

On roadways with immediately adjacent shoulders, the Contractor shall remove the pavement surface in each lane per the conditions in Table 2, unless otherwise noted by the Department in Special Provision, Section 105 – Limitations of Operations.

TABLE 2: MILLING CONDITIONS FOR THE EDGE OF TRAVELED WAY

Depth (At Edge of Traveled Way)	Conditions
2” and less	The Contractor may leave a vertical edge joint exposed for up to **21 days** after milling is performed. The Contractor shall treat vertical edge joints exposed beyond 21 days per the criteria below.
Greater than 2”	The Contractor shall treat vertical edge joints exposed per the criteria below.

When required by Table 2, the Contractor shall treat vertical edge joints through one of the options below:

1. The vertical edge shall be tapered to a zero edge by means of milling a 12:1 transition from the edge of traveled way onto the shoulder before opening the lane to traffic. Tapers shall be removed to form a vertical edge prior to the placement of the new pavement course. No additional payment will be made for tapers, or taper removal.
2. An additional 2 feet of pavement shall be removed from the shoulder to eliminate the vertical edge at the edge of travelway before opening the lane to traffic. Unless otherwise authorized by the Department, no additional payment will be made for the additional milling.
3. A pavement layer shall be placed to reduce the vertical edge to 1 inch or less before opening the lane to traffic.

As a minimum, the use of temporary painted line, or RPMs placed along the edge of traveled way at 200 foot intervals is required for all elevation differentials. When pavement milling is extended into the shoulder (including milled tapers), appropriate channelization devices shall be placed 2 feet outside the edge of the vertical face at intervals not exceeding 600 feet, and RPMs shall be placed on the remaining pavement surface along the vertical edge at 200 foot intervals. Uneven pavement signs shall be placed at a maximum spacing of ½ mile when any pavement milling operations leaves an exposed uneven pavement surface.

Weepers shall be ground across the full width sections adjacent shoulders or remaining pavement surface matching the milled travel way or shoulder milled depth to minimize water ponding in any lanes carrying traffic. Weepers shall typically be 18 - 24” inches in width, installed along each lane, at a frequency of approximately one per half mile at locations as directed by the Resident or in areas that will provide drainage for the milled areas. Installation of weepers will not be paid for directly but will be considered incidental to the contracts pavement removal item. The replacement of mix in the weeper locations shall be performed concurrently within the pavement placement operation closure using the appropriate HMA item produced for the Contract or a MaineDOT approved 9.5mm HMA. There will be no separate payment for repaving the weeper locations as they are considered incidental to the square yard price of the contracts pavement removal item.

The milled surface shall be cleaned of all material resulting from the pavement removal operation. Loaders, skid steers, motorized side cast brooms, sweeper pick up brooms, vacuum pick up machines and hand labor may be used in any number or sequence as determined by the Contractor in order to clean the milled surfaces to the satisfaction of the Department before acceptance and opening the area up to traffic. The use of compressed air may be required to loosen any bonded materials from the surface to aid in cleaning.

Any areas of concern, such as de-lamination or pot-holing shall be identified on a continuous basis as milling progresses. Proper corrective action will be determined by the Resident and paid for under the appropriate contract items, and if required, completed prior to opening lane to traffic. Any issues that arise up to 7 calendar days after being milled will be the responsibility of the MaineDOT unless otherwise noted in Special Provision Section 105 – Limitations Of Operations.

Contractor Quality Control

Quality Control The Contractor shall develop and submit a Quality Control Plan (QCP) that addresses the methods to be used, equipment to be used, work accomplished (quantity measurements and tracking) as well as methods of cleaning and protection of the work as it is completed. The Contractor shall control the work and operate in accordance with the approved QCP in order to complete work meeting the contract requirements. The Contractor shall not begin pavement removal operations until the Department approves the QCP in writing.

Quality Control The QCP shall meet the requirements of Section 106.6 – Acceptance and this Section. The QCP shall address any items that affect the quality of the operation, and shall include the following personnel meeting these minimum requirements:

a. QCP Administrator – The QCP Administrator must be a full-time employee of or a consultant engaged by the prime contractor or pavement removal subcontractor. The QCP Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the QCP. The QCP Administrator (or their designee in the QCP Administrator's absence) may not be required to be onsite during all work activities but shall be available to communicate with the Department as needed.

b. Onsite Representative - The Onsite Representative (OR) shall be onsite and work directly with the crew as needed. The OR shall perform quality control inspections or measurements at the job site to assure that layout, pavement removal depth, width, profile and final surface tolerance meet the requirements of the contract.

The QCP shall detail the coordination of the activities of the Plan Administrator, and the OR. The Superintendent shall be named in the QCP if different than the OR, and the responsibilities for successful implementation of the QCP within the companies' activities shall be outlined.

The QCP shall address any items that may impact the quality of pavement removal activities and final milled pavement surface including, but not limited to, the following:

a. General Requirements:

- Name of QCP Administrator
- Description of corrective action processes
- Remediation of defective work

b. Quality Control Plan requirements

- Name of Onsite Representative(s)
- Equipment make and model (including product sheet)
- Width of cutting drum
- Automation make, model and series (including product sheet)

- Describe automation set up, including methods to ensure pavement removal operations meet the requirements of the contract using control points, reference points, and cut points as well as any slope or cut depth transitions.
- Describe project layout, including centerline and any edge cut control, any off-set control layout to maintain or recreate centerline or edge cut control, cross slope transitions, or variable depth transitions required to perform the work
- Procedures to remove pavement surface to the required depth, width and profile
- Procedures to monitor pavement removal activities to ensure the final milled surfaces meet surface tolerance and texture requirements
- General cleaning operation activities including equipment to be used to sweep, vacuum and prepare surfaces for traffic use
- Procedures to ensure that traffic can transition from the milled to non-milled surfaces safely.
- Procedures to protect the milled surfaces from deterioration from construction activities, traffic or weather impacts

A summary of the day's results including a quantity report, equipment used, and environmental conditions will be recorded and signed by the OR and presented to the Department's representative by 1 PM the following working day.

Failure to adhere to the QCP, replace or repair defective or non-conforming equipment, or adjust material or installation procedures in an effort to produce work that meets the contract requirements will result in a notification of a quality control violation resulting in monetary penalties.

A letter describing the violation shall be provided to the Contractor which will result in a mandatory work suspension and a reduction in payment as shown in Table 106.4A below. The Contractor shall submit a letter to the Department that details the corrective action made to address the violation(s) in its Quality Control Plan. Work may resume when the Department is satisfied the corrective action will result in adherence to the Quality Control Plan.

Table 106.4 A - Quality Control Pay Reduction

Quality Control Plan Value*		Pay Reduction		
From More Than	To and Including	1st	2nd	3rd & Subsequent
$0	$500,000	$1,000	$2,000	$4,000
$500,000	$1,000,000	$2,000	$4,000	$8,000
$1,000,000	$3,000,000	$5,000	$10,000	$20,000
$3,000,000	and more	$10,000	$20,000	$40,000

* The Quality Control Plan Value is the total Bid value of all items covered by a Quality Control Plan, as detailed in the applicable specification or Special Provision.

Pay reductions for failure to comply with the approved QCP are cumulative, and the Department will deduct any pay reductions from amounts otherwise due the Contractor. These pay reductions are intended to encourage the Contractor to comply with its approved QCP, and are not necessarily related to the quality of the work provided.

Basis of Payment

The square yard or hourly rental contract price will be full compensation for development and submittal of the QCP, mobilizing to the site, de-mobilizing from the site, labor, supervision, cleaning of the milled surface, management of the items covered by the QCP, and all other incidentals required to complete the work. Hauling and stockpiling of the material will not be paid for directly, but will be considered incidental to the milling items.

Square Yard: Payment will be made at the contract unit price for the number of square yards removed.

Hourly: Payment will be made at the contract unit price for the number of hours of operation removing pavement surface as directed by the Resident. The equipment used for pavement removal shall be operated at the minimum speed of 50 fpm, unless the Resident directs otherwise for milled surface quality reasons, or traffic control limitations impact pavement removal operations, or site conditions make operations at the prescribed rate unreasonable. Trimming to create a vertical face along curb line, guardrail, or around structures will be considered incidental to the 202.202 items. Additional trimming beyond the incidental work described will be paid under the appropriate rental items as listed in the Contract.

Pay Item	Pay Unit
202.202 Removing Pavement Surface	S.Y.
202.20201 Removing Pavement Surface (Hourly)	Hour

SPECIAL PROVISION
SECTION 202
REMOVING STRUCTURES AND OBSTRUCTIONS
(Removing Existing Substructure)

Add the following subsection:

202.032 Removing Existing Substructure
Removing existing substructure shall consist of removing and disposing of both abutments (including wingwalls) that support the superstructure constructed in 1983 including the piles to the limits shown on the plans.

Add the following paragraph to Subsection 202.07 Method of Measurement:

Removing existing substructure will be measured by the cubic yard in place before the work starts.

Add the following to Subsection 202.08 Basis of Payment:

The quantity of removing existing substructure will be paid for at the contract unit price per cubic yard, which shall be full compensation for removing and disposing of the substructures.

Pay Item		Pay Unit
202.21	Removing Existing Substructure	Cubic Yard

SPECIAL PROVISION
SECTION 202
REMOVING STRUCTURES AND OBSTRUCTIONS
(Removing Existing Railings – Retained by Department)

The following items on the existing bridge shall be removed by the Contractor and remain property of the Department:

Two bar aluminum bridge rail, including posts.

The Contractor shall use great care during removal of the existing bridge rail and rail posts. The bridge rail and rail posts shall be transported by the Contractor from the project site to the following location:

Maine Department of Transportation
Carmel Lot
991 Fuller Road
Carmel, Maine

The Contractor shall contact the Resident and the Region Bridge Maintenance Manager, (207) 712-6604, a minimum of 72 hours in advance of delivery of the metal railing and posts. The railing and posts will be unloaded by the Department.

The aluminum rail and post shall be adequately secured to wooden pallets before being returned to the Department. Base plates, rail caps, splice bars, clamp bars and miscellaneous hardware shall be placed in wooden boxes on wooden pallets. The wooden boxes shall have wooden covers attached with two hinges and a clasp. The clasp shall be secured in the closed position by a method approved by the Resident. The size of the pallets and boxes shall be approved by the Resident. The weight limit on the pallets shall be such that no damage will occur to the pallets or the materials stored on the pallets.

SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT
(Ultra-Lightweight Foamed Glass Aggregate)

203.01 Description

The following is added to Subsection 203.01 of the Standard Specifications:

The work shall consist of furnishing all labor, equipment and materials, including supplying the Ultra-Lightweight Foamed Glass Aggregate (ULFGA), and performing all operations required to install ULFGA fill to the limits shown on the Plans or as approved by the Resident (for the work of this section the term Resident will include the Geotechnical Engineer). All work performed under this Special Provision shall be coordinated with the Resident. The work shall include complete encapsulation of the ULFGA from surrounding materials using a separation geotextile and as outlined herein, including:

1. Separating pavement subbase materials (above) from the ULFGA.
2. Separating the soils present at embankment subgrade (below) from the ULFGA.
3. Separating the fill materials or underdrain material alongside the ULFGA section from the ULFGA

The Contractor shall furnish all labor, materials, equipment, tools, and appurtenances required to complete the Work specified in this Section, including:

1. Preparation of subgrade.
2. Storage and handling of ULFGA.
3. Protection of all existing utilities and structures.
4. Placement and compaction of ULFGA fill to the limits shown on the Plans.
5. Placement of separation geotextile as specified herein and to the limits shown on the Plans.
6. Protection of placed ULFGA from damage or disturbance.

203.02 Materials

The following is added to Subsection 203.02 of the Standard Specifications:

The Contractor shall supply and install ULFGA fills that conforms to the following requirements:

1. ULFGA shall be made from a minimum of 95% recycled glass.
2. ULFGA shall meet the gradation specifications presented below upon delivery per when tested in accordance with ASTM C136/136M-19 (AASHTO T27-23).

Sieve Designation	Percentage by Weight Passing Square Mesh Sieve
4-in.	100
2 ½-in.	85-100
3/8-in.	0-15

3. The as-manufactured ULFGA shall have a maximum dry bulk density of 15 pounds per cubic foot (pcf) per ASTM C29/29M-17a. The as-delivered ULFGA shall have a maximum compacted moist bulk density of 20 pcf per ASTM C29/29M-17a.
4. The manufacturing process shall produce a closed cell ULFGA material, which is non-leaching. The ULFGA material may be manufactured using either a dry-process or wet-process provided it meets the requirements specified herein.
5. The ULFGA shall have a minimum peak friction angle of 35 degrees at 10% to 15% strain for normal stresses between 500 and 1,000 psf per ASTM D3080/D3080M-11. ASTM D3080/D3080M-11 testing shall be completed using a large-scale direct shear device (LSDS) where ULFGA samples shall be prepared using the parallel gradation approach.
   Refer to FHWA Publication No.: FHWA-HRT-13-068 (https://highways.dot.gov/media/1651) pertaining to Friction Angles of Open-Graded Aggregates From Large-Scale Direct Shear Testing for information on LSDS testing.
   Refer to Ooi, P. and Selvarajah, P. (2010). Use of the Parallel Gradation Technique to Assess the Shear Strength of Reclaimed Asphalt Pavement in Direct Shear. Proceedings of the International Conference on the Built Environment (ICSBE-2010), pp. 219-226. for information on the parallel gradation approach.
6. The ULFGA shall have a compressive minimum strength at 20 percent strain of 15,000 psf per modified EN-1097 (no precompression of material).
7. The ULFGA (subjected to precompression at a 1.3:1 ratio) shall have minimum compressive strengths per EN 826 (modified) according to table below.

Deformation	Minimum Compressive Strength (psf)
1%	18,000
5%	20,000
10%	24,000

8. The ULFGA manufacturer must demonstrate experience of manufacturing a minimum of 100,000 cubic yards of ULFGA meeting the requirements of this Section.

Geotextile fabric shall be completely encapsulate the placed ULFGA and separate if from adjacent prepared subgrades below, topsoil/fill on embankment slopes, and granular fills on top.

The geotextile fabric shall be a non-woven, stable fiber, needle-punched, polypropylene geotextile with a minimum grab tensile strength of 160 lbs per ASTM D4632 and shall meet the

requirements of Subsection 722.04 for Separation Geotextile.

203.021 Submittals

The following subsection is added to Standard Specification 203:

The Contractor shall submit an Installation Plan to the Resident for approval a minimum of 30 calendar days prior to the first scheduled delivery of ULFGA material to the site. The Installation Plan shall include but may not be limited to the following:

1. The name and address of the ULFGA supplier(s).
2. Manufacturer's specifications, catalog cut sheets, laboratory testing results, and other product data needed to demonstrate compliance with the requirements specified herein.
3. Written certification from manufacturer's quality control testing laboratory indicating that the product meets or exceeds the gradation, strength, compacted unit weight, and internal friction angle requirements specified herein. The laboratory test results shall be completed within 60 calendar days of submitting the Installation Plan to the Resident.
   The Contractor shall submit additional laboratory testing results to the Resident for each 1000 cy delivered to the site, prior to delivery of the UFLGA material to the site.
4. Two (2) bulk samples of ULFGA.
5. Proposed means of delivery to the site and stockpiling (if proposed).
6. Proposed equipment specifications and procedures for placing separation geotextile and placing and compacting ULFGA.
7. Proposed plan for protecting exposed ULFGA.
8. Description of methodology to provide a continuous ULFGA fill layer in accordance with the Plans considering phased bridge and embankment construction.
9. Description of the type, size, and ground pressure limitations of all equipment intended for compaction operations.

The Installation Plan shall meet, at a minimum, the ULFGA Installation requirements described in Section 203.04 of this Special Provision. If portions of the ULFGA manufacturer's recommendation for installation are more strict than the requirements described herein, the relevant manufacturer's recommendations shall be included in the Installation Plan for review and acceptance by the Resident.

203.04 General

The following is added to Subsection 203.04 of the Standard Specifications: ULFGA

Product Delivery, Storage and Handling

1. Deliver, store, and handle materials in accordance with manufacturer's

recommendations.

2. During all stages of manufacture, shipment, storage, and construction, the Contractor shall minimize the amount that the ULFGA material moves on site to prevent physical damage. Construction equipment other than for placement and compaction of ULFGA shall not operate on the exposed ULFGA surface until a geotextile and a minimum 12-in. thickness of aggregate subbase material (i.e., cover material) is placed over the ULFGA. The cover material shall be placed and compacted within 48 hours of placing and compacting the final lift(s) of ULFGA in an area. Until that time, operation of construction equipment directly on the ULFGA shall be limited to light- duty equipment with rubber tires.
3. During delivery, storage and handling, the Contractor shall not contaminate the ULFGA with earth material or any other debris or aggregate materials.
4. The Contractor shall protect the ULFGA before, during, and after construction as recommended by the material manufacturer.

ULFGA Installation

1. The Contractor shall provide a minimum of five (5) working days' notice to the Resident prior to the placement of any ULFGA fill.
2. The Contractor shall place the ULFGA fill to the plan and vertical limits shown on the Plans. Preparation of the subgrade shall include excavation with a smooth-edged bucket to minimize disturbance of the subgrade materials.
3. If deemed necessary by the Resident, the Contractor shall proof compact soil subgrades prior to placement of ULFGA fill to the satisfaction of the Resident at no additional cost to the Department.
4. Compaction shall be performed in the presence of the Resident who will observe performance of the selected equipment and compactive effort and will modify requirements for the number of passes and lift thickness stated herein if needed for specific compaction equipment.
5. The areas to be filled using ULFGA shall not have standing water, ice, organic or otherwise unsuitable materials present prior to placement. If unsuitable materials are encountered, as determined by the Contractor or the Resident, the Contractor shall excavate these materials and replace them with compacted fill meeting the requirements of Subsection 703.18 Common Borrow.
6. Adjacent panels of geotextile used for separation of ULFGA from surrounding materials shall be either sewn together or overlapped a minimum of 12 inches. The Contractor shall not place geotextile fabric until the subgrades have been inspected and approved by the Resident.
7. To limit possible degradation, the geotextile shall not be exposed to the elements for more than 14 days after placement.
8. Care shall be taken during placement of topsoil/loam on embankment side slopes and aggregate fills above the ULFGA to prevent damage to ULFGA. A minimum of 6-inches of compacted materials shall be placed above ULFGA in areas where concrete

structures, roadway materials, or riprap are to be installed, unless additional thickness is required per the Contract Plans,

9. The Contractor shall prevent submergence of compacted ULFGA until the material is ballasted in its final position by overlying layers, as shown on the contract documents. Previously placed material which shifts due to buoyancy forces shall be removed and recompacted in lifts.
10. ULFGA may be dumped and spread in place. Construction equipment other than for placement and compaction shall not operate on the exposed ULFGA. If equipment is anticipated to travel or be positioned over exposed material, the Contractor shall bridge the exposed material using either 12 inches of capping materials (e.g., fill), crane mats, or similar materials.
11. In open areas, ULFGA fill shall be placed using tracked equipment (excavator and dozer) in uncompacted lifts not less than 12 inches and not exceeding 24 inches in loose thickness.
12. Compaction in open areas shall be performed with a pneumatic rubber tired static roller with maximum ground pressures not exceeding1,100 psf. Sufficient compaction has been achieved when, in the judgment of the Resident, the material ceases to densify further with additional passes of the roller. Excessive compaction shall be avoided to minimize crushing of the ULFGA particles.
13. In areas not accessible by larger equipment (e.g., adjacent to bridge abutments and wingwalls, near utilities, etc.), ULFGA fill shall be placed using smaller tracked equipment in uncompacted lifts not less than 6 inches and exceeding 12 inches in loose thickness.
14. Compaction in these areas shall be performed using a small vibratory plate compactor with a maximum operating weight of 250 lbs. Sufficient compaction has been achieved when, in the judgement of the Resident, the material ceases to densify further with additional passes of the plate compactor. Excessive compaction shall be avoided to minimize crushing of the ULFGA particles.
15. Permanent foundations for guard rail or drilled shafts that are installed within an area where ULFGA is specified shall have a minimum of 1-foot thickness below the base and a minimum of 2-feet around the perimeter of compacted Granular Borrow (703.19).
16. Where temporary support poles for lighting, traffic signals, or sign supports are to be installed within ULFGA, the portion of the pole embedded in ULFGA shall be cased. The casing shall be a minimum 30 inch inside diameter, corrugated plastic pipe installed vertically and extend to the top of temporary grade. ULFGA shall be compacted around the perimeter of the corrugated plastic pipe in lifts per this special provision. The temporary support poles shall be installed within the corrugated plastic pipe such that the annular space can be backfilled with Backfill Type C (703.22) and compacted by rodding. Upon removal of the temporary pole, the CPP casing shall remain in place and the perimeter ULFGA. The void within the casing following removal of the pole shall be filled with compacted ULFGA.
17. Where back-guys and anchors are required for temporary support poles, back-guy anchors shall not be installed through, or founded in, ULFGA.

ULFGA Testing

1. The Contractor shall measure the compacted bulk density at the site per the requirements of ASTM C29/29M-17a and shall submit documentation of the results to the Resident. A minimum of one (1) test shall be performed for every 1000 cubic yards of ULFGA delivered to the site. All bulk density testing shall be performed in the presence of the Resident.
2. The Resident shall visually observe compaction of each lift of ULFGA for sufficient compaction. The Contractor shall not place additional lifts of ULFGA until the previous lift has been inspected and approved by the Resident.
3. Compaction shall be performed in the presence of the Resident who will observe performance of the selected equipment and the compactive effort, and establish requirements for the number of passes, and lift thickness for each piece of specific compaction equipment that the Contractor intends to use.

203.18 Method of Measurement

The following is added to Subsection 203.18 of the Standard Specifications:

Lightweight Fill (ULFGA) will be measured by the Cubic Yard in place to the limits shown on the Plans.

203.19 Basis of Payment

The following subsection is added to Section 203 of the Standard Specifications:

Lightweight Fill (ULFGA) will be paid for at the contract unit price per in place Cubic Yard, which shall be full compensation for all labor, materials, equipment, and incidentals required to supply, deliver, protect, place, and compact the ULFGA, including separation geotextile and temporary pole casing and backfill as described herein and shown on the Plans, and the creation of an Installation Plan. Removal and replacement of ULFGA material that has been damaged by the Contractor, in the opinion of the Resident, shall be incidental to the work, as directed by the Resident. No additional compensation shall be provided for separation geotextile, or corrugated plastic pipe and Backfill Type C (703.22) for temporary poles.

Payment will be made under:

Pay Item		Pay Unit
203.4338	Lightweight Fill – Ultra-Lightweight Foamed Glass Aggregate	Cubic Yard

SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT
(Elastic Inclusion)

203.01 Description - The following sentence is added:

This work shall consist of furnishing all submittals, material and equipment, disposal of material, providing independent laboratory testing, and placing elastic inclusion, complete, as specified herein, or as directed by the Resident. Provide all labor, materials and equipment necessary to complete the work of this Section.

The following subsection is added:

203.02 Materials

a. Elastic Inclusion consists of Elasticized Expanded Polystyrene (EEPS): EEPS shall have a size tolerance of 1/8 inch for each dimension and conform to the following:

Physical Property	ASTM Test Method	Requirements
Compressive strength	D1621	720 psf +/-60 psf @ 10% strain
Water absorption	C272	Max. 3% by volume

The EEPS shall be elasticized, with a linear-elastic stress-strain behavior up to 10 percent strain and linear proportional stress-strain behavior up to 30 percent strain.

The EEPS blocks shall have a height of at least 24 inches, a width of at least 24 inches, and a length of at least 24 inches.

The material shall be produced by a manufacturer with an in-place quality control program which is monitored and certified by an accredited, independent third-party testing organization.

The EEPS shall contain no chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs) or formaldehyde. It shall be chemically and biologically inert when in contact with acidic and alkaline soils. EEPS shall be treated to prevent insect attack for below grade applications in accordance with the ICC ES EG239 – Evaluation Guidance for Termite-Resistant Foam Plastics and shall be protected from burrowing animals. The treatment shall be EPA registered agent for use with plastic foam. The EEPS Supplier shall present proposed treatment methods to the Resident for review and approval prior to the first shipment of EPS to the site. The EEPS shall contain a flame-retardant additive.

Materials shall withstand temperature variations from 0º F to 140º F without deforming and shall maintain their original dimensions and placement without chipping, spalling, or cracking. Material shall not deteriorate because of contact with sodium chloride, calcium chloride, mild alkalis and acids, or other ice control materials.

An available product that meets the specifications above is TerraFlex™ manufactured by

Universal Construction Foam in Hunt Valley, Maryland (410-498-0000).

b. Backfill Material: A minimum of 3 inches of Aggregate for Sand Leveling (Standard Specification Item 703.05) shall be placed between the EPS and the underlying Ultra-Lightweight Foamed Glass Aggregate (Special Provision Item 203.4338).

203.021 EPS Submittals

At least ten working days prior to the first delivery of EEPS to the site, the Contractor shall provide certification, in the form of a letter prepared by the EEPS Supplier, that the EEPS will be, or has been, manufactured in accordance with these Specifications and that the specified minimum physical property requirements will be, or have been, met. The Contractor shall also provide laboratory test results specified in Section 203.044. No EEPS shall be shipped to the site until such time as all qualification related submittals have been reviewed and approved by the Department.

At least twenty working days prior to first delivery of material to the site, the Contractor shall submit a step by step procedure for, and description of, the anticipated installation and construction of the EEPS at each bridge abutment in this Contract, including complete, accurate, full-size shop drawings to scale for each bridge abutment. In general, the submitted drawings shall include the plans, elevations, and cross-sections that clearly show the layout and limits of the EEPS blocks.

203.04 General - The following Subsections are added:

203.043 Shipment, Storage, and Protection

Each EEPS block delivered to site shall be labeled with the manufacturer's name, product type, lot number, date of manufacture and compressive resistance at the relevant elastic strain. Unlabeled blocks will be rejected.

Care shall be exercised to prevent damage to the material during delivery, storage and construction. No methods of lifting or transporting the blocks that create dents or holes in the block surfaces or losses of portions of the block shall be allowed. The material shall be protected from (1) Organic solvents such as acetone, benzene, and paint thinner; (2) Petroleum based solvents such as gasoline and diesel fuel; (3) Open flames and (4) Prolonged exposure to sunlight (more than 30 days).

Heavy machinery or concentrated loads shall not be operated or placed directly on the elastic inclusion material. Material damaged due to the Contractor's operations shall be removed and replaced at no additional cost to the Department.

203.044 Testing

EEPS shall be tested by an independent commercial laboratory, to verify the material requirements specified herein. The Contractor shall provide written documentation of all tests specified. Documentation shall include style, lot, roll numbers, and actual results of each test. In addition, the name, address, phone number of the testing laboratory, and date of testing shall be provided. Each EEPS block shall be labeled with the manufacturer's name, product type, lot number,

date of manufacture and compressive resistance at the relevant elastic strain. Unlabeled blocks will be rejected.

The required testing shall be performed on:

- At least one (1) sample of EEPS by the manufacturer within 3 months of the date the material is delivered to the site, and
- One (1) additional specimen per bridge selected by both the Resident and Engineer from material delivered to site during construction, where the testing will be the responsibility of the Engineer.

The Department reserves the right to take random samples from the project site for additional quality assurance testing. If testing yields unsatisfactory results the Contractor may be directed to remove and replace potentially defective material at no additional cost to the Department.

203.045 Placement

Installation of Material: The EEPS shall be placed on a minimum of 3 inches of Aggregate for Sand Leveling (Standard Specification Item 703.05) above the Ultra-Lightweight Foamed Glass Aggregate (Special Provision Item 203.4338).

The 10 mil Polyethylene Sheeting shown on the plans shall be installed between the abutment and the EEPS and directly on top of the EEPS after the EEPS has been installed.

After the EEPS has been installed and before the work has been accepted, the Contractor and Inspector shall perform a visual inspection of EEPS coverage. Any area deemed unacceptable and questionable as to remaining in position during the placement of the backfill material shall be replaced or repaired, as required.

203.18 Method of Measurement - The following sentence is added:

Elastic Inclusion for Abutment furnished and placed in accordance with the Plans and Specifications shall be measured in square yards behind the abutments (thickness is incidental), complete-in-place.

203.19 Basis of Payment - The following paragraph is added:

Elastic Inclusion for Abutment will be paid for at the Contract unit price per square yard which shall be full compensation for cleaning surfaces, furnishing and installing the EPS material according to these Specifications and the manufacturer's recommendations including Aggregate for Sand Leveling, testing, and all material, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
203.4340	Elastic Inclusion	Square Yard

SECTION 401 - HOT MIX ASPHALT PAVEMENT

401.01 Description The Contractor shall furnish a uniformly blended, homogeneous mixture placed as one or more courses of Hot Mix Asphalt Pavement (HMA) on an approved base in accordance with the contract documents and in reasonably close conformity with the lines, grades, thickness, and typical cross sections shown on the plans or established by the Resident. The Department will accept this work under Quality Assurance provisions, in accordance with these specifications and the requirements of Section 106 – Quality, the provisions of AASHTO M 323 except where otherwise noted in sections 401 and 703 of these specifications, and the MaineDOT Policies and Procedures for HMA Sampling and Testing.

401.02 Materials Materials shall meet the requirements specified in Section 700 - Materials:

Asphalt Cement	702.01
Aggregates for HMA Pavement	703.07
RAP for HMA Pavement	703.08
HMA Mixture Composition	703.09

401.03 Composition of Mixtures The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), approved antistrip, warm mix additive, and/or mineral filler if required. HMA shall be designed and tested according to AASHTO R 35 and the volumetric criteria in Table 1. The Contractor shall size, uniformly grade, and combine the aggregate fractions in proportions that provide a mixture meeting the grading requirements of the Job Mix Formula (JMF). Unless otherwise noted in Special Provision 403 - Hot Mix Asphalt Pavement, the design, verification, Quality Control, and Acceptance tests for this mix will be performed at 65 gyrations.

TABLE 1: VOLUMETRIC DESIGN CRITERIA

Design ESAL's (Millions)	**Required Density (Percent of G_{mm})**			**Voids in the Mineral Aggregate (VMA) (Minimum Percent)**					**Voids Filled with Binder (VFB) (Minimum %)**	**Fines/Eff. Binder Ratio**
				Nominal Maximum Aggregate Size (mm)						
	$N_{initial}$	**N_{design}**	**N_{max}**	**25.0**	**19.0**	**12.5**	**9.5**	**4.75**		
< 3.0	≤90.5	96.0	≤98.0	13.0	14.0	15.0	16.0	16.0	65-80*	0.6-1.2
3 to <10	≤89.0									
≥ 10										

*For 9.5 mm nominal maximum aggregate size mixtures, the maximum VFB is 82. For 4.75 mm nominal maximum aggregate size mixtures, the maximum VFB is 84.

The Contractor shall submit a JMF to the Department for each mixture to be supplied. The JMF will be approved by the Department in accordance with the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual. At the time of JMF submittal, the Contractor shall identify and make available the stockpiles of all proposed aggregates at the plant site. There must be a minimum of 150 ton for coarse aggregate stockpiles and 75 ton for fine aggregate stockpiles before the JMF may be submitted. The Contractor shall provide aggregate samples to the Department unless otherwise required. The Contractor shall also make available to the Department the PGAB proposed for use in the mix in sufficient quantity to test the properties of the asphalt and to produce

samples for testing of the mixture. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement. The Contractor shall be allowed to submit aim changes for a JMF as outlined in the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual: Mix Design Approval Section.

The Contractor shall submit a new JMF for approval each time a change in material source or materials properties is proposed. The same approval process shall be followed. The cold feed percentage of any aggregate may be adjusted up to 10 percentage points from the amount listed on the JMF, however no aggregate listed on the JMF shall be eliminated. The cold feed percentage for RAP may be reduced up to 10 percentage points from the amount listed on the JMF and shall not exceed the percentage of RAP approved in the JMF or for the specific application under any circumstances.

401.031 Warm Mix Technology The Contractor may place Hot Mix Asphalt Pavement produced with an accepted WMA technology if approved by the Department. Methods or technologies shall generally be at the Contractors option, but will be limited to proven, Agency and Industry accepted practice. Mixture production, placement and volumetric testing details, including temperatures, shall be included in the project specific QCP, and submitted to the Department for approval prior to any work.

401.04 Temperature Requirements The temperature of the mixture shall conform to the tolerances in Table 2 as measured at the truck at the mixing plant and at the paver unless otherwise authorized by the Department.

TABLE 2: ALLOWABLE TEMPERATURE RANGES

PGAB Grade(s)	**Temperature Range (°F)**
PG58-28 / PG64-28	275-325
PG64E-28 / PG70E-28	285-335

401.05 Performance Graded Asphalt Binder The Contractor shall utilize either a PG58-28, PG64-28, PG64E-28, PG70E-28, or other grade as specified in the 403 Special Provision. The Contractor shall utilize a PG64-28 if no liquid grade is specified within the 403 Special Provision.

401.06 Weather and Seasonal Limitations The State is divided into two paving zones as follows:

a. Zone 1 Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais.
b. Zone 2 Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.

TABLE 3: SEASONAL AND TEMPERATURE LIMITATIONS

Use	Minimum Ambient Air Temperature	Zone 1 Allowable Placement Dates	Zone 2 Allowable Placement Dates
Surface course (travelway & adjacent shoulders*) less than 1 in. thick placed during conditions defined as "night work"	50°F	June 1 to Saturday following September 1	
Surface course (travelway & adjacent shoulders*) less than 1 in. thick	50°F	May 15 to Saturday following September 15	
Travelway surface course greater than or equal to 1 in. thick	50°F	May 1 to Saturday following October 1	April 15 to Saturday following October 15
HMA for surface course on bridge decks	50°F	May 1 to Saturday following October 1	April 15 to Saturday following October 15
HMA for base or shim course on bridge decks	50°F	April 15 to November 15	
HMA for use other than travelway surface course	40°F	April 15 to November 15	
HMA for curb, driveways, sidewalks, islands, or other incidentals	40°F	N/A	N/A
HMA produced with an approved WMA technology for base or shim course	35°F	April 15 to November 15	
*Adjacent shoulders shall be considered shoulders paved in the same operation as the travelway.			

The ambient air temperature shall be determined by an approved thermometer placed in the shade at the paving location. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface regardless of the ambient air temperature. The Hot Mix Asphalt Pavement produced with an approved WMA technology shall meet the requirements of section 401.04 - Temperature Requirements, unless otherwise approved by the Department. For the purposes of this Section, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes.

401.07 Hot Mix Asphalt Plant

401.071 General Requirements HMA plants shall conform to AASHTO M 156, Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures with exception of Section 4.2.1, 4.2.2, 4.3.4, 4.3.5, and 4.12.2.

All HMA plants will be inspected annually by the Department prior to producing HMA for Department projects. The Contractor shall provide the Department at least 72 hours' notice that the plant is ready for inspection. The Contractor shall equip the plant with ladders and platforms that are accessible and safe to obtain samples of PGAB, aggregate and mix from the relevant tanks, collector belts and haul units. Silo storage time of mixtures shall not exceed 36 hours.

401.072 Stockpiles The Contractor shall provide sufficient space for stockpiles and maintain a minimum of supply for 2 days production of all aggregate products used in MaineDOT approved mix designs currently under production. A minimum stockpile supply of 100 ton (70 yards) shall be

maintained at all times. The Contractor shall construct stockpiles to prevent intermingling and to minimize segregation. All stockpiles used in MaineDOT mixes shall be identified with weatherproof signs at least 12" high and 24" wide, with reflective lettering at least 2" high.

401.073 Cold Feeds Cold Feed Bins will have bin dividers to keep aggregate products separated. Adequate means must be provided for obtaining samples of the combined flow of all Cold feed bins.

401.074 Dryer Dryer shall be capable of heating aggregate to required mixing temperature and shall be in good operation and condition. Dryer shall be subject to annual inspection prior to start-up. The Contractor shall dry and heat the aggregates for the HMA to the required temperature, adjusting flames to avoid damaging the aggregates. The Contractor shall provide the Department a minimum period of 72 hours to inspect the dryer and provide at least 24 hours' notice that the dryer is ready for inspection.

401.075 Asphalt Binder The plant shall include a heating system and insulation to maintain the asphalt binder at a uniform temperature for proper mixing and compaction. A thermometer shall be provided in the asphalt binder line. No direct flame may come in contact with tank. A sampling valve shall be provided in the circulation line downstream of any binder additive used unless otherwise approved by the Department. The Contractor shall drain down the asphalt as low as safely possible in any tank that will be switched to a new source or grade prior to adding the new PGAB.

401.076 Additives Additives (WMA, anti-strip, etc.) introduced into the binder at the HMA plant shall be introduced per the supplier's recommendations and shall be approved by the Department. The system for introducing additives shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all production rates and batch sizes. Additive introduction systems shall be controlled by a proportioning device to the amount required on the JMF plus or minus 0.1% of the target. Additive introduction systems shall
be interlocked with the plant and the recordation (batch tickets or drum recordation) shall display the additive and the weight and percentage added. A means for sampling the PG binder with additive introduced will be provided. The sampling point shall be after the additive is mixed with the PGAB before entering the drum or mixer unit.

401.077 Batch Plants

Hot Bins Hot bins shall provide uniform continuous operation and be in good working condition. The plant shall be able to provide samples of hot bins upon request. Overflow shall be provided for each hot bin. Hot bin gates shall close without leaking. Bin walls must prevent intermingling between bins. Each hot bin shall have low level indicators which will alert the operator when the bin is empty.

Mixer Unit Clearance between blades and liner shall be 1" maximum, unless the aggregate exceeds 1 ¼" then the clearance shall be 1 ½". The spray bar length shall be at least 75% of the mixer length. The mixer unit shall be a twin pug mill-type mixer capable of mixing continuously for at least 45 seconds after all materials have been introduced into the mixer. The blades in the mixer shall be capable of producing a homogenous mixture. If the mixer is not enclosed, it shall be equipped with an adjustable hood to prevent loss of dust by dispersion. The mixer unit shall be subject to annual inspection prior to removal of safety features and being readied for service. The Contractor shall provide the Department the opportunity to inspect the mixer unit prior to the

annual inspection. The Contractor shall provide the Department a minimum period of 72 hours to inspect the mixer unit and provide at least 24 hours' notice that the mixer unit is ready for inspection.

Mineral Filler Mineral filler and fiber shall utilize separate bins and feed systems to store and proportion the required quantity into the mixture. The feed systems shall be accurate to no more than 10% of the required weight with a convenient and accurate means of calibration. Mineral filler and fiber shall be introduced in the weigh hopper and uniformly distributed prior to the injection of the asphalt binder.

Automation The HMA batch plant shall automatically batch, mix and discharges mixes. The batch plant shall accurately proportion the various materials in the proper order by weight. The entire batching and mixing cycle shall be continuous and shall not require any manual operations. The batch plant shall use auxiliary interlock circuits to trigger an audible alarm whenever an error exceeding the acceptable tolerance occurs. Along with the alarm, the printer shall print an asterisk on the delivery slip in the same row containing the out-of-tolerance weight. The automatic proportioning system shall be capable of consistently delivering material within the full range of batch sizes. When RAP is being used, the plant must be capable of automatically compensating for the moisture content of the RAP.

The HMA batch plant shall be operated within the following tolerances:

Each aggregate component	+/- 1.5% cumulative, per bin
Mineral Filler	+/- 0.5%
Bituminous Material	+/- 0.1%
Zero return (aggregate)	+/- 0.5%
Zero Return (AC)	+/- 0.1%
Additives	+/- 0.1%

Recordation All plants shall be equipped with an approved digital recording device. The printer shall mark any weight on the ticket that exceeds tolerance. The delivery slip shall contain information required under Section 108.1.3 - Provisions Relating to Certain Measurements, Mass and paragraphs a, b, and c of Section 401.078.

401.078 Drum Plants

Cold Feeds and Delivery System A scalper screen shall be used to remove oversize material. The accuracy of the belt scale shall be within +/- 1.0% of the actual weight being measured. The plant shall be capable of correcting for aggregate moisture. Mineral filler and fiber shall utilize separate bin(s) and feeder systems to store and proportion the required quantity into the mixture. The feed systems shall be accurate to no more than +/- 10% of the required weight with a convenient and accurate means of calibration. The plant shall be equipped with a single control to change all feed rates. Mineral filler and fiber shall be introduced such that dry mixing is accomplished no less than 18 inches prior to the injection of the asphalt binder. The Contractor shall ensure that the mineral filler does not become entrained in the exhaust stream of the dryer.

Binder System The flow of asphalt binder shall adjust automatically with dry aggregate weights. The Department will conduct an asphalt flow meter check annually and after each change of plant location. The flow meter check must be performed prior to producing mix for Department projects. The plant must be configured to provide a convenient means to check accuracy of the flow meter. The flow meter will be considered accurate if the measured weight is within 1% of actual weight.

Drum Mixer The plant shall be equipped with a diversion system where mix can be diverted at startup/shutdown and any time. The drum mixer shall be subject to annual inspection prior to removal of safety features and being readied for service. The Contractor shall provide the Department a minimum period of 72 hours to inspect the drum mixer while providing at least 72 hours' notice that the drum mixer is ready for inspection.

Recordation An approved automatic ticket printer system shall be used to print delivery slips. The requirements for delivery slips for payment of materials measured by weight, as given in the following Sections, shall be waived: 108.1.3 a., 108.1.3 b., 108.1.3 c., and 108.1.3 d. The automatic printed ticket will be considered as the Weight Certificate. The dry aggregate weights and binder flow shall be recorded as well as mineral filler and all binder additives. The recordation of materials shall be printed a minimum of every ten minutes while in production.

The requirements of Section 108.1.3 f. - Delivery Slips, shall be met by the delivery slip printed by the automatic system, which accompanies each truckload, except for the following changes:

a. The quantity information required shall be individual weights of each batch or total net weigh of each truckload.
b. Signatures (legible initials acceptable) of Weighmaster (required only in the event of a malfunction as described in 401.074 c.).
c. The MaineDOT designation for the JMF.

401.079 Scales and Weight Checks Scales shall meeting the requirements of Section 108 - Payment. The scales shall be inspected and sealed by the State Sealer (or approved alternative) as often as the Department deems necessary to verify their accuracy. Plant scales shall be checked prior to the start of the paving season, and each time a plant is moved to a new location. Subsequent checks will be made as determined by the Resident. The Contractor will have at least ten 50 pound masses for scale testing at batch plants. At Contractor's option, the Contractor can use one single test weight that has been checked on sealed scales. This weight shall be 1,000 lbs. or greater. At least twice during each 5 days of production either of the following checks will be performed:

a. A loaded truck may be intercepted and weighed on a platform scale that has been sealed by the State Sealer of Weights and Measures within the past 12 months. The inspector will notify the producer to take corrective action on any discrepancy over 1.0%. The producer may continue to operate for 48 hours under the following conditions.
    1. If the discrepancy does not exceed 1.5%; payment will still be governed by the printed ticket.
    2. If the discrepancy exceeds 1.5%, the plant will be allowed to operate as long as payment is determined by truck platform scale net weight.

    If, after 48 hours the discrepancy has not been addressed and reduced below 1.0%, then plant operations will cease. Plant operation may resume after the discrepancy has been brought within 1.0%.
b. Where platform scales are not readily available, a check will be made to verify the accuracy and sensitivity of each scale within the normal weighing range and to assure that the interlocking devices and automatic printer system are functioning properly. If platform scales are not readily available, a weight with a known mass-verified and sealed annually by a licensed scale company, may be used by hanging weight from silo or surge hopper, at lower middle and upper third levels upon request to verify scale accuracy.
c. In the event of a malfunction of the automatic printer system, production may be continued without the use of platform truck scales for a period not to exceed the next two working

days, providing total weights of each batch are recorded on weight tickets and certified by a Licensed Public Weighmaster.

401.08 Hauling Equipment Units hauling HMA shall have tight, clean, and smooth metal bodies, which have been thinly coated with a small amount of approved release agent to prevent the mixture from adhering to the bodies. Release agents that dissolve or strip asphalts, including diesel fuel, will not be allowed.

All mix haul units shall have a cover of water repellent material capable of heat retention, which completely covers the mixture. The cover shall be securely fastened on the truck, unless unloading. Haul units shall have an opening on both sides near the midpoint of the body, at least 12 in above the bed, which will accommodate a thermometer stem.

401.09 Pavers The Contractor shall use pavers meeting the requirements of this section unless otherwise authorized by the Department. Pavers shall meet the requirements of Table 4: Paver Requirements.

TABLE 4: PAVER REQUIREMENTS

Use	Paver Requirement
Traveled Way & Auxiliary Lanes	Equipped with a 10 ft minimum main screed with activated extensions. The minimum tractor weight shall be 30,000 pounds.
	Equipped with automatic grade and slope controls that automatically adjust the screed and increase or decrease the layer thickness to compensate for irregularities in the preceding course. The controls shall maintain the proper transverse slope and be readily adjustable so that transitions and superelevated curves can be properly paved. The controls shall operate from a fixed or moving reference such as a grade wire or ski type device (floating beam) with a minimum length of 30 ft, a non-contact grade control with a minimum span of 24 ft, except that a 40 ft reference shall be used on interstate and divided highway projects.
All HMA Placement	Self-contained, self-propelled units of sufficient class and size to place Hot Mix Asphalt Pavement in full lane widths specified in the contract on the main line, shoulder, or similar construction.
	Equipped with a free-floating activated heated main screed with activated extensions. Pavers with extendible screeds shall have auger extensions and tunnel extenders as per the manufacturer's recommendations, a copy of which shall be available if requested.
	Equipped with a receiving hopper with sufficient capacity for a uniform spreading operation and a distribution system to place the mixture uniformly, without segregation in front of the screed.
	Operated in such a manner as to produce a visually uniform surface texture and a thickness within the requirements of Section 401.11 - Surface Tolerances. The screed assembly shall produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

The Contractor shall have the paver at the project site sufficiently before the start of paving operations to be inspected and approved by the Department. The Contractor shall repair or replace any paver found worn or defective, either before or during placement, to the satisfaction of the Department. Pavers that produce an unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA on MaineDOT projects. On a daily basis, the Contractor shall perform density testing across that mat as detailed in Section 401.191 Quality Control - Method A, B & C.

401.10 Rollers Rollers shall be static steel, pneumatic tire, oscillatory, or approved vibrator type. Rollers shall be in good mechanical condition, capable of starting and stopping smoothly, and be free from backlash when reversing direction. Rollers shall be equipped and operated in such a way as to prevent the picking up of hot mixed material by the roller drums or tires. Crushing of the aggregate or displacement of the HMA during rolling will not be permitted. Any HMA Pavement that becomes loose, broken, contaminated, shows an excess or deficiency of PGAB, or is in any other way defective shall be removed and replaced at no additional cost with fresh material which shall be immediately compacted to conform to the adjacent area.

The Contractor shall repair or replace any roller found to be worn or defective, either before or during placement, to the satisfaction of the Department. Rollers that produce grooved, unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA. The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option unless otherwise specified in the contract, provided specified density is attained and with the following requirements:

a. On variable-depth courses, the first lift of pavement over gravel, reclaimed pavement, on irregular or milled surfaces, or on bridges, at least one roller shall be 16 ton pneumatic-tired. Pneumatic-tired rollers shall be equipped with skirting to minimize the pickup of HMA materials from the paved surface. When required by the Resident, the roller shall be ballasted to 20 ton.
b. Compaction with a vibratory or steel wheel roller shall precede pneumatic-tired rolling, unless otherwise authorized by the Department.
c. Vibratory rollers shall not be operated in the vibratory mode on bridge decks.
d. Any method, which results in cracking or checking of the mat, will be discontinued and corrective action taken.
e. The use of an oscillating steel roller shall be required to compact all mixtures placed on bridge decks.

The maximum operating speed for a steel wheel or pneumatic roller shall not exceed the manufacturer's recommendations, a copy of which shall be available if requested.

401.11 Surface Tolerances The Department will check the following surface tolerances:

a. Longitudinally: The pavement surface profile shall be free of deviations in excess of +/- ¼ inches from the required pavement surface profile grade. To verify the surface tolerance a straight plane shall be established using 16 foot straight edge or a taught string line placed parallel to the direction of travel and checked continuously across the width of the lane.
b. Transversely: The pavement surface profile shall be free of deviations in excess of 0 inches below and ¼ inches above the required cross-sectional profile grade. To verify the surface tolerance a straight plane shall be established using a 10 foot straight edge or taught string line placed perpendicular to the direction of travel and checked continuously along the length of the lane.

The Contractor shall correct defective areas by removing defective work and replacing it with new material as directed by the Department. The Contractor shall furnish a 10 foot straightedge for the Department's use.

401.12 Preparation of Existing Surface The Contractor shall thoroughly clean the surface upon which Hot Mix Asphalt Pavement is to be placed of all objectionable material. When the surface of the existing base or pavement is irregular, the Contractor shall bring it to uniform grade and cross section. All surfaces shall have a tack coat applied prior to placing any new HMA course. Tack coat shall conform to the requirements of Section 409 – Bituminous Tack Coat, Section 702 – Bituminous Material, and all applicable sections of the contract.

401.13 Spreading and Finishing On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the Contractor shall spread, rake, and lute the HMA with hand tools to provide the required compacted thickness. Release agents that dissolve or strip asphalts, including diesel fuel, will not be allowed. On roadways with adjoining lanes carrying traffic, the Contractor shall place each course per the conditions in Table 5, unless otherwise noted by the Department in Section 403 - Hot Mix Asphalt Pavement.

TABLE 5: PLACEMENT CONDITIONS FOR ADJOINING LANES

Depth (at centerline)	Placement Conditions
Vertical Longitudinal Joint	
¾" and less (incl. shim)	The Contractor may place the HMA course over the full single travel lane width for each production day.
1" to 1 ¼"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension.
1 ½" to 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day.
Greater than 2"	The Contractor shall place each course over the full width of the traveled way section being paved that day.
Notched-Wedge Longitudinal Joint	
1 ½" to 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension. A maximum unmatched centerline joint length of 0.5 miles will be permitted over the weekend.
Greater than 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day.

The Contractor shall place the specified course over the full width of the mainline traveled way being paved, regardless of use, depth, or longitudinal joint type prior to Memorial Day, July 4th, Labor Day, paving suspensions exceeding three days, or other dates as specified by special provision.

The Contractor shall install additional warning signage that clearly defines the centerline elevation differential hazard. Unless otherwise addressed in the contract, the Contractor shall install additional centerline delineation such as a double application of raised pavement markers at 100 foot intervals, or temporary painted line. For any exposed vertical edge between the shoulder and traveled way, at a minimum, the use of temporary painted line, or RPMs placed along the edge of traveled way at 200 foot intervals is required. The Traffic Control Plan shall be amended to include this option and the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of

0.50 mile for the entire length of effected roadway section. If this option is utilized, all additional signing, labor, traffic control devices, or incidentals will not be paid for directly, will be considered incidental to the appropriate 652 items.

401.14 Hot Mix Asphalt Placement on Bridge Decks Hot mix asphalt pavement placed on bridges shall also conform to Section 508.04 and the following requirements.

a. The minimum production and placement temperature for the Hot Mix Asphalt placed over membrane shall conform to the manufacturer's recommendations.
b. The bottom course shall be placed with an approved rubber mounted paver of such type and operated in such a manner that the membrane waterproofing will not be damaged in any way.
c. The top course shall not be placed until the bottom course has cooled sufficiently to provide stability.
d. The Contractor will not be required to cut sample cores from the compacted pavement on the bridge deck, unless otherwise directed by Special Provision.
e. After the top course has been placed, the shoulder areas shall be sealed 3 ft wide with two applications of an emulsified bituminous sealer meeting the requirements of Section 612.03 - Sealing and Section 702.12 - Emulsified Bituminous Sealing Compound. The first application shall be pre-mixed with fine, sharp sand, similar to mortar sand, as needed to fill all voids in the mix in the area being sealed. The second application may be applied without sand. The sealer shall be carried to the curb at the gutter line in sufficient quantity to leave a bead or fillet of material at the face of the curb. The area to be sealed shall be clean, dry and the surface shall be at ambient temperature. The furnishing and applying of the required quantity of sealer for the bridge shoulder areas shall be incidental to placing the hot mix asphalt pavement.
f. The area between the edge of the membrane and the vertical surface shall be completely sealed with hot-applied rubberized asphalt material, meeting the requirements of Type 4 crack seal; shall be applied to form a complete seal between the membrane and the vertical surface and shall extend up the vertical surface to within ½ inch of the top of the HMA wearing surface. This work shall be considered incidental to the contract pavement items unless 508 membrane items are included in the contract.

401.15 Compaction Immediately after the Hot Mix Asphalt Pavement has been spread, struck off, and any surface irregularities adjusted, the Contractor shall thoroughly and uniformly compact the HMA by rolling.

The Contractor shall roll the surface when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving. The Contractor shall prevent adhesion of the HMA to the rollers or vibrating compactors without the use of fuel oil or other petroleum-based release agents. Solvents designed to strip asphalt binders from aggregates will not be permitted as release agents on equipment, tools, or pavement surfaces.

The Contractor shall immediately correct any displacement occurring as a result of the reversing of the direction of a roller or from other causes to the satisfaction of the Department. Any operation other than placement of variable depth shim course that results in breakdown of the aggregate shall be discontinued. Any new pavement that shows obvious cracking, checking, or displacement shall be removed and replaced for the full lane width as directed by the Resident at no cost to the Department.

Along forms, curbs, headers, walls, and other places not accessible to the rollers, the Contractor shall thoroughly compact the HMA with mechanical vibrating compactors. The Contractor shall only use hand tamping in areas inaccessible to all other compaction equipment. On depressed areas, the Contractor may use a trench roller or cleated compression strips under a roller to transmit compression to the depressed area.

Any HMA that becomes unacceptable due to cooling, cracking, checking, segregation or deformation as a result of an interruption in mix delivery shall be removed and replaced with material that meets contract specifications at no cost to the Department.

For all items requiring pavement density testing, the Contractor shall cut 6-inch diameter cores at no additional cost to the Department by the end of the working day following paving. Cores shall be cut such that the nearest edge at least 9 inches from any joint. Pre-testing of the cores will not be allowed. If the Contractor and the Department mutually determine that a core is damaged, the Contractor shall cut new core(s) at the same offset and within 3 ft of the initial sample. The Contractor and the Department will mutually determine if underlying material is adhered to the core and if so will mark the core at the point where sawing is needed. The Department will place the cores in a secure container and the Contractor shall transport the cores to the designated MaineDOT lab. The cores will be saw cut by the Department to remove underlying layers. No recuts are allowed at a test location after the core has been tested.

On all sections of overlay with wearing courses designed to be 1 in or less in thickness, there shall be no pay adjustment for density otherwise noted in Section 403 - Hot Mix Asphalt Pavement. For overlays designed to be 1 in or less in thickness, density shall be obtained by the same rolling train and methods as used on mainline travelway surface courses with a pay adjustment for density, unless otherwise directed by the Department.

There shall be no pay adjustment for density on shoulders unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement. Density for shoulders shall be obtained by the same rolling train and methods as used on mainline travelway, unless otherwise directed by the Department. Efforts to obtain optimum compaction will not be waived by the Department unless it is apparent during construction that local conditions make densification to this point detrimental to the finished pavement surface course.

401.16 Joints The Contractor shall construct wearing course transverse and longitudinal joints in such a manner that minimum tolerances shown in Section 401.11 - Surface Tolerances are met when measured with a straightedge. The paver screed shall maintain a uniform head of HMA during transverse and longitudinal joint construction. The HMA shall be free of segregation and meet temperature requirements outlined in Section 401.04. Transverse joints of the wearing course shall be straight and neatly trimmed. The Contractor may form a vertical face exposing the full depth of the course by inserting a header, by breaking the bond with the underlying course, or by cutting back with hand tools. The Contractor shall apply a coating of emulsified asphalt immediately before paving all joints to the vertical face and 3 in of the adjacent portion of any pavement being overlaid except those formed by pavers operating in echelon. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Department may approve application by a brush for small surfaces, or in the event of a malfunction of the spray apparatus, but for a period of not more than one working day.

Where pavement under this contract joins an existing pavement, or when the Department directs, the Contractor shall cut the existing pavement along a smooth line, producing a neat, even, vertical joint. The Department will not permit broken or raveled edges. The cost of all work necessary for the preparation of joints is incidental to related contract pay items. Longitudinal joints shall be generally straight to the line of travel and constructed in a manner that best ensure joint integrity. Methods or activities that prove detrimental to the construction of straight, sound longitudinal joints will be discontinued.

The Contractor may utilize an approved notched wedge joint device on all HMA layers 1 ½ inches in depth or greater. A notched wedge joint shall be constructed as shown in Figure 1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches.

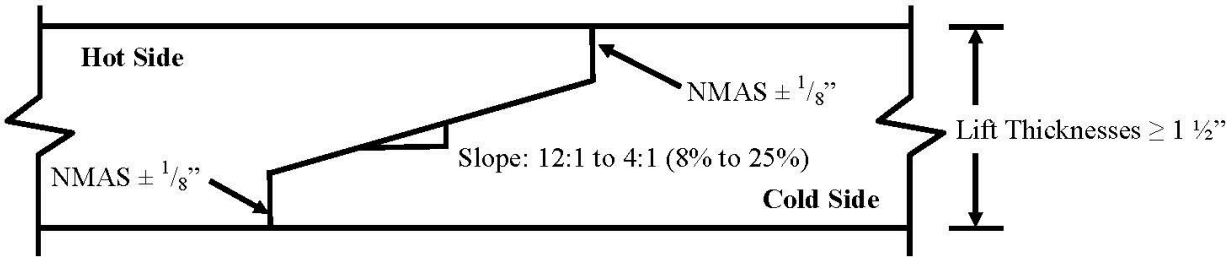


FIGURE 1: Notched Wedge Joint

Notes
1. An emulsified tack coat shall be applied to the vertical edges and the wedge surface so that the total rate is 0.05 G/SY plus the normal specified rate prior to placing the adjacent layer. The Contractor may elect to apply the emulsified tack coat in one or multiple passes.
2. Dimensions shown are compacted depths (after rolling is complete).

The Department reserves the right to have centerline cores cut by the Contractor's QC personnel for informational purposes to monitor the density along the joint. Informational cores at the centerline joint will be taken centered over the tapered part of the wedge joint.

Any notched wedge joint constructed areas that become cracked or broken shall be trimmed back to the limits affected prior to placing the adjoining lane. Any materials that become unbound or separated from the wedge or tapered joint section, or contaminated by materials determined by the Department as being detrimental to the construction of a sound construction joint, shall be removed by sweeping, compressed air and lance, or by hand tools as required. This work, if necessary, will not be paid for directly, but shall be considered incidental to the related contract items.

The Contractor shall apply a coating of emulsified asphalt on the vertical and tapered surface of the longitudinal centerline joint immediately before paving if the notched wedge joint device is used.

The total rate of application shall be 0.050 G/SY plus the normal specified tack coat rate. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Department may approve application by a brush for small surfaces.

401.17 Hot Mix Asphalt Documentation The Contractor and the Department shall agree on the amount of Hot Mix Asphalt Pavement that has been placed each day. All delivery slips shall conform to the requirements of 401.078.

401.18 Prepave Meeting Prior to placing any mix, the Department and the Contractor shall hold a Pre-paving conference to discuss the paving schedule, source of mix, type and amount of equipment to be used, sequence of paving pattern, rate of mix supply, random sampling, project lots and sublots and traffic control. A copy of the density QC random numbers to be used on the project shall be provided to the Resident. The Departments' random numbers for Acceptance testing shall be generated and on file with the Resident and the Project Manager. All personnel of the Department and the Contractor who have significant information relevant to the paving items shall attend, including the responsible onsite paving supervisor for the Contractor. The Resident will prepare minutes of the conference and distribute them to all attendees. Any requests to revise the minutes must be made to the Resident within 7 Days of Receipt. These minutes will constitute the final record of the Pre-paving conference. On the first day of paving and whenever there is a change in the onsite paving foreman or paving inspector, the Department and the Contractor shall hold an informal onsite meeting to review the minutes of the Pre-paving conference, Project Specific QCP, Plans, Typicals, Special Provisions and communication process. This meeting shall be held prior to placing any mix and, at minimum, shall occur yearly for multi-year contracts. The onsite paving supervisor, QCT, Superintendent, Resident and/or paving inspector shall attend.

401.19 Contractor Quality Control – Method A, B, C & D
The Contractor shall operate in accordance with the approved Quality Control Plan (QCP) to assure a product meeting the contract requirements. The Contractor shall not begin paving operations until the Department approves the QCP in writing.

401.191 Quality Control The QCP shall meet the requirements of Section 106.6 – Acceptance and this Section. The QCP shall address any items that affect the quality of the Hot Mix Asphalt Pavement, and shall include the following personnel meeting these minimum requirements:

a. QCP Administrator – The QCP Administrator must be a full-time employee of or a consultant engaged by the Contractor or paving subcontractor. The QCP Administrator shall have full authority to institute any and all actions necessary for the successful operation of the QCP. The QCP Administrator (or their designee in the QCP Administrator's absence) shall be available to communicate with the Department at all times.
    - For items accepted under Methods A and B, the QCP Administrator shall be certified as a Quality Assurance Technologist (QAT) by NETTCP.
    - For items accepted under Methods C and D, the QCP Administrator shall be certified by NETTCP as a Quality Assurance Technologist (QAT), Plant Technician, or Paving Inspector.
b. Process Control Technician(s) (PCT) shall utilize test results and other quality control practices to assure the quality of aggregates and other mix components and control proportioning to meet the JMF(s). The PCT shall inspect all equipment used in mixing to assure it is operating properly and that mixing conforms to the mix design(s) and other Contract requirements, and that delivery slips and plant recordation accurately reflects the mix being produced with all the required information. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one PCT is required. The Plan shall include the criteria to be utilized by the PCT to correct or reject unsatisfactory materials. The PCT shall be certified as a Plant Technician by the NETTCP.
c. Quality Control Technician(s) (QCT) shall perform and utilize quality control tests at the job site to assure that delivered materials meet the requirements of the JMF(s). The QCT

shall inspect all equipment utilized in transporting, laydown, and compacting to assure it is operating properly and that all laydown and compaction conform to the Contract requirements. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one QCT is required. The QCP shall include the criteria utilized by the QCT to correct or reject unsatisfactory materials. The QCT shall be certified as a Paving Inspector by the NETTCP.

The QCP shall detail the coordination of the activities of the Plan Administrator, the PCT and the QCT. The Project Superintendent shall be named in the QCP, and the responsibilities for successful implementation of the QCP shall be outlined.

The QCP shall address any items that affect the quality of the Hot Mix Asphalt Pavement including, but not limited to, the following:

a. General Requirements:
    - Job Mix Formulas (JMFs)
    - Name of QCP Administrator, and certification number
    - Description of corrective action process
    - Disposition of defective material
    - A procedure to take immediate possession of acceptance samples once released by MaineDOT and deliver said samples to the designated acceptance laboratory.
b. Process Control Requirements: Each Hot Mix Asphalt plant shall have a Plant Specific Process Control Plan. At minimum the plan shall include:
    - Name of Plant Specific Process Control Technician(s) and certification number(s)
    - Hot mix asphalt plant details
    - Stockpile Management
    - Mixing & transportation
    - Silo management and details
    - A detailed description of RAP processing, stockpiling and introduction into the plant
    - PG Binder management:
        - Tanks and storage (including polymer modified binders if applicable)
        - Binder temperature
        - Sample points
        - Method to ensure mixture contains the specified binder grade
        - Additive introduction details if introduced at the plant
    - Testing and inspection plan for control of aggregates and RAP
    - Mix Testing and inspection plan
c. Quality Control Requirements – Method A & B:
    - Name of Quality Control Technicians(s) and certification number(s)
    - Laydown operations
    - Longitudinal joint construction including the tacking of all joints.
    - Procedures for avoiding paving in inclement weather
    - Compaction of shoulders
    - Methods to ensure that segregation is minimized
    - Procedures to determine the maximum rolling and paving speeds based on best engineering practices and past experience in achieving acceptable pavement smoothness.

- Sequence for paving around drainage structures, under guard rail, around curb, at bridges, intersections, drives and minor approaches to ensure proper compaction, finish, and drainage.
- Type of release agent to be used on haul units, tools and rollers.

d. Quality Control Requirements – Method C and D:
   - Name of QCP Administrator and certification number(s) as specified in Section 401.19.
   - Name of Process Control Technicians(s) and certification number(s).
   - Name of Quality Control Technicians(s) and certification number(s).
   - Anticipated Compaction Temperature Zones for each roller pass during placement.
   - Mix TMD to be used for density gauge setting for method spec density work
   - Procedures for avoiding paving in inclement weather.
   - Type of release agent to be used on haul units, tools and rollers.
   - A note stating that the use of petroleum-based fuel oils, such as diesel or kerosene, or asphalt stripping solvents will not be permitted.

The Contractor shall also supply a Laydown Operation Plan that addresses sequence of work, layout of work, longitudinal joint construction, compaction of shoulders, methods to minimize segregation, and procedures to achieve acceptable pavement smoothness.

For each production day, a summary of each day's results, including a daily paving report, summarizing the mixture type, mixture temperature, equipment used, environmental conditions, and the number of roller passes, shall be recorded and signed by the QCT and presented to the Department's representative by 1 PM the following working day.

Unless otherwise noted in Section 403 – Hot Mix Asphalt Pavement, the Contractor shall submit a modified QC Plan every year detailing, how the mix is to be placed, what equipment is to be used, and what HMA plant is to be used for Items covered under the Plan. All mix designs (JMF) shall be approved and verified by MaineDOT prior to use.

A QCP, certified QC personnel, and a Prepave Meeting shall not be required for Item 403.209 - Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals) accepted under visual or Method D. An approved JMF shall be provided to the Resident prior to placement.

The Contractor shall certify the mix and the test results for each item by a Certificate of Compliance.

The Contractor shall have a testing lab at the plant site, equipped with all testing equipment necessary to complete the tests in Table 6. The Contractor shall generate QC sampling random numbers for each approved mix design every year. A copy of the random numbers shall be emailed to the QC.mainedot@maine.gov email address and remain on-file (in print) and be available for inspection at the QC laboratory. The Contractor shall sample, test, and evaluate Hot Mix Asphalt Pavement in accordance with the minimum frequencies per each approved mix design.

TABLE 6: MINIMUM QUALITY CONTROL FREQUENCIES

Test or Action	Frequency	Test Method
Temperature of mix	6 per day at street and plant	-
Temperature of mat	4 per day	-
%TMD (In-Place Density - Surface)	1 per 125 ton	AASHTO T 355 or AASHTO T 343
%TMD (In-Place Density - Base)	1 per 250 ton	AASHTO T 355 or AASHTO T 343
Fines / Effective Binder	1 per 500 ton	AASHTO T 312*
Gradation	1 per 500 ton	AASHTO T 30
PGAB Content	1 per 500 ton	AASHTO T 164 or AASHTO T 308
Voids at N_{design}	1 per 500 ton	AASHTO T 312*
VMA at N_{design}	1 per 500 ton	AASHTO T 312*
Rice Specific Gravity	1 per 500 ton	AASHTO T 209
Percent Fractured Particles	1 per 5,000 ton	AASHTO T 335
Flat and Elongated Particles	1 Per 5,000 ton	ASTM D4791
Fine Aggregate Angularity	1 Per 5,000 ton	AASHTO T 304

*Method A and B only

The Contractor shall monitor plant production on each approved mix design using running average of three control charts as specified in Section 106 - Quality. Control limits shall be as noted in Table 7 below. The UCL and LCL, shall not exceed the allowable gradation control points for the particular type of mixture as outlined in Table 1 of Section 703.09.

TABLE 7: CONTROL LIMITS

Property	UCL and LCL
Percent Passing 4.75 mm and larger sieves	Target +/- 4.0
Percent Passing 2.36 mm sieve	Target +/- 2.5
Percent Passing 0.075 mm sieve	Target +/- 1.0
PGAB Content	Target +/- 0.25
VMA at N_{design}	LCL = LSL + 0.2
Voids at N_{design}	JMF Target +/- 1.2
Theoretical Maximum Specific Gravity	JMF Target +/- 0.020

The Contractor shall submit all QC test and inspection reports and updated control charts to the Resident and QC.mainedot@maine.gov by email. The reports and updated control charts shall be signed by the appropriate technician and be submitted to the Department by 1:00 P.M. on the next working day, except when otherwise noted in the QCP and approved by the Department.

The Contractor shall also retain splits of the previous 5 QC tests, with QC results enclosed for random selection and testing by the Department. Test results of splits that do not meet the Dispute Resolution

Variance Limits in Table 18 shall trigger an investigation by the MaineDOT Independent Assurance Unit and may result in that lab losing NETTCP certification and the ability to request a dispute [Section 401.50 - Process for Dispute Resolution].

The Contractor shall make density test results, including randomly sampled densities, available to the Department onsite. Summaries of each day's results, including a daily paving report summarizing the mixture type, mixture temperature, equipment used, environmental conditions, and the number of

roller passes, shall be recorded and signed by the QCT and provided to the QC.mainedot@maine.gov email address and Resident in writing by 1:00 p.m. the next working day. The Contractor shall fill all holes in the pavement resulting from cutting cores by the Contractor or the Department with a properly compacted, acceptable mixture no later than the following working day. Before filling, the Contractor shall carefully clean the holes and apply a coating of emulsified asphalt. The Contractor may only cut additional cores for verification of the densometer, at a rate not to exceed 3 per day or 2 per 1000 ton placed.

If the Contractor's control chart shows the process for a given mix design to be out of control (defined as a single point outside of the control limits on the running average of three chart) on any property listed in Table 7: Control Limits, the Contractor shall notify the Resident of all affected projects in writing of the corrective action by 1:00 PM the next working day. The written description shall detail what action is being taken by the Contractor to bring the property in question back within control limits. Subsequent quality control results are expected to demonstrate an improvement and regression towards the aim. The Department reserves the right to take action, to include cessation of production, in the case of repeated results outside the Table 7 control chart control limits.

On a daily basis, or whenever equipment type or sequence is modified, the Contractor shall perform density testing across the mat being placed, prior to being compacted by equipment at 12 in intervals. If the density values vary by more than 2.0% from the mean, the Contractor shall make adjustments to the screed until the inconsistencies are remedied. Failure to replace or repair defective placement equipment may result in a letter of suspension of work and notification of a quality control violation resulting in possible monetary penalties as governed by Section 106 – Quality.

The Contractor shall cease paving operations whenever one of the following occurs:

a. The quality level for density using all quality control tests for the current Lot is less than 60 PWL.
b. The Coarse Aggregate Angularity or Fine Aggregate Angularity value falls below the requirements of Section 703.07, Table 3: Aggregate Consensus Properties Criteria for the design traffic level.
c. The Flat and Elongated Particles value exceeds 10% by ASTM D4791.
d. There is any visible damage to the aggregate due to over-densification other than on variable depth shim courses.
e. The Contractor fails to follow the approved QCP.

The Contractor shall notify the Resident in writing as to the reason for shutdown, as well as the corrective action, by the end of the workday. Failure to do so will be treated as a second incident under 106.4.6 QCP Non-compliance. The Department will only allow the continuation of paving operations when it is satisfied the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production. The Department

retains the exclusive right, with the exception of the first day's production of a new JMF, to determine whether the resumption of production involves a significant change to the production process. If the Department so determines, then the current lot will be terminated, a pay factor established, and a new lot will begin.

The Contractor may utilize innovative equipment or techniques not addressed by the Contract documents to produce or monitor the production of the mix, subject to approval by the Department.

401.192 Quality Control for Method D, (sidewalks, drives, islands & incidentals) and visual acceptance items A QCP, certified QC personnel, or Prepave Meeting shall not be required for Item 403.209 - Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals) accepted under visual or Method D. An approved JMF shall be provided to the Resident prior to placement.

401.20 Acceptance Method A & C These methods utilize Quality Level Analysis and pay factor specifications. For Hot Mix Asphalt Pavement designated for acceptance under Quality Assurance provisions, the Department will sample once per sublot on a statistically random basis, test, and evaluate in accordance with the Acceptance Properties as outlined in Table 8:

TABLE 8: ACCEPTANCE PROPERTIES – METHOD A & C

Properties	**Point of Sampling**	**Test Method**
Gradation	Paver Hopper	AASHTO T 30
PGAB Content	Paver Hopper	AASHTO T 308
% TMD (In-Place Density)	Mat behind all Rollers	AASHTO T 269
Voids at N_{design}	Paver Hopper	AASHTO T 312
VMA at N_{design}	Paver Hopper	AASHTO T 312
Fines to Effective Binder	Paver Hopper	AASHTO T 312
VFB	Paver Hopper	AASHTO T 312

The Department will obtain samples of Hot Mix Asphalt Pavement in conformance with AASHTO R 97, Sampling Asphalt Mixtures, and the MaineDOT Policies and Procedures for HMA Sampling and Testing. The Contractor shall transport the samples in containers provided by the Department to the designated MaineDOT Laboratory within 48 hours except when otherwise noted in the project specific QCP or as directed by the Resident. Failure to deliver an acceptance sample to the designated acceptance laboratory will be considered the second incident under 106.4.6–QCP Non-Compliance.

Target values shall be as specified in the JMF. The Department will withhold reporting of the test results for the Acceptance sample until 7:00 AM, on the second working day of receipt of the sample, or after receipt of the Contractors results of the Acceptance sample split. Upon conclusion of each lot being evaluated under quality level analysis, where there is a minimum of four sublots, results shall be examined for statistical outliers, as stated in Section 106.7.2 - Statistical Outliers.

Lot sizes and sublot sizes shall be determined as outlined in Table 9.

TABLE 9: LOT AND SUBLOT SIZES – METHOD A & C

Lot Size*	Entire production per item per contract per year up to 6000 ton
Maximum Sublot Size – Mix	750 ton
Maximum Sublot Size – Density	Surface Layers – 250 ton Base / Intermediate Layers – 500 ton
Minimum Number of Samples – Mix	Four
Minimum Number of Samples – Density	Five

*General – Lot and Sublot size may be adjusted to accommodate the work scope and schedule, or as otherwise agreed upon at the Prepave Meeting

If there is less than one-half of a sublot remaining at the end of production for the year, then it shall be combined with the previous sublot. If there is more than one-half sublot remaining at the end of production for the year, then it shall constitute the last sublot and shall be represented by test results. If it becomes apparent partway through a Lot that, due to an underrun, there will be insufficient mix quantity to obtain the minimum number of sublots needed, the Resident may adjust the size of the remaining sublots and select new sample locations based on the estimated quantity of material remaining in the Lot. Unanticipated over-runs of up to 1500 ton shall be rolled into the last lot. Cases where the lot is terminated prior to reaching completion shall be handled in accordance with Section 106.7.3 Early Termination of Lots. In cases where density incentive/disincentive provision apply, additional cores shall be taken to attain a minimum of three for the Lot.

Isolated Areas During the course of inspection, should it appear that there is an isolated area that is not representative of the lot based on a lack of observed compactive effort, excessive segregation, a change in process or any other questionable practice, that area may be isolated and tested separately. An area so isolated that has a calculated pay factor below 0.80 for Method A, based on three random tests shall be removed and replaced at the expense of the Contractor for the full lane width and a length not to be less than 150 ft.

TABLE 10: ACCEPTANCE LIMITS – METHOD A & C

Property	**USL and LSL**	
	Method A	**Method C**
Percent Passing 4.75 mm and larger sieves	Target +/- 7%	Target +/- 7%
Percent Passing 2.36 mm to 1.18 mm sieves	Target +/- 4%	Target +/- 5%
Percent Passing 0.60 mm sieve	Target +/- 3%	Target +/- 4%
Percent Passing 0.30 mm to 0.075 mm sieve	Target +/- 2%	Target +/- 2%
PGAB Content	Target +/- 0.4%	Target +/- 0.4%
Voids at N_{design}	4.0% +/- 1.5%	N/A
Fines to Effective Binder	0.9 +/- 0.3	N/A
VMA at N_{design}	LSL from Table 1	N/A
VFB	Table 1 plus a 4% production tolerance for USL	N/A
% TMD (In-place Density)	94.5% +/- 2.5%	94.5% +/- 2.5%

Cease Production The Contractor shall cease paving operations whenever one of the following occurs on a lot in progress:

TABLE 11: CEASE PRODUCTION – METHOD A & C

Property	Percent Within Limits (PWL)	
	Method A	**Method C**
Percent Passing NMAS sieve*	<60 PWL	<60 PWL
Percent Passing 2.36 mm sieve*		
Percent Passing 0.30 mm sieve*		
Percent Passing 0.075 mm sieve*		
PGAB Content		
Voids at N_{design}		N/A
Fines to Effective Binder*		
VMA at N_{design}		
VFB		
% TMD (In-place Density)		<60 PWL

*Paving operations shall not be required to cease if the mean test value is equal to the LSL or USL and s = 0.

In cases where the Contractor is to cease paving operations based upon an Acceptance result or payfactor, the Contractor will submit a corrective action plan to the Department. The Department will only allow the continuation of paving operations when it is satisfied the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production.

401.201 Pay Adjustment - Method A & C The Department will use the following criteria for pay adjustment at the completion of the Lot using the pay adjustment factors under Section 106.7 - Quality Level Analysis.

Density Upon conclusion of each lot, density results shall be examined for statistical outliers as stated in Section 106.7.2. If the pay factor for Density falls below 0.80, all of the cores will be randomly re-cut by Sublot. A new pay factor will be calculated that combines all initial and retest results. If the resulting pay factor is below 0.80 , the entire Lot shall be removed and replaced with material meeting the specifications at no additional cost to the Department, except that the Department may, when it appears that there is a distinct pattern of defective material, isolate any defective material by investigating each mix sample sublot and require removal of defective mix sample sublots only, leaving any acceptable material in place if it is found to be free of defective material. Pay factors equal to or greater than the reject level will be paid accordingly.

Mix Properties The Department will determine a pay factor (PF) using the applicable Acceptance Limits. If all three pay factors for PGAB Content, VMA at N_{design}, and Voids at N_{design} fall below 0.80 for Method A, then the composite pay factor for PGAB Content, VMA at N_{design}, and Voids at N_{design} shall be 0.50.

The following variables will be used for pay adjustment:

PA = Pay Adjustment
Q = Quantity represented by PF in ton
P = Contract price per ton
PF = Pay Factor

The Department will determine a pay adjustment using Table 12: Pay Adjustment Calculations as follows:

TABLE 12: PAY ADJUSTMENT CALCULATIONS – METHOD A & C

Acceptance Method	Mix Properties / Gradation	Density
Method A	PA = (Voids @ N_d PF - 1.0)(Q)(P)x0.20 + (VMA @ N_d -1.0)(Q)(P)x0.20 + (PGAB Content PF- 1.0)(Q)(P)x0.10	PA = (density PF-1.0)(Q)(P)x0.50
Method C	PA = (% Passing Nom. Max PF-1.0)(Q)(P)x0.05+(% passing 2.36 mm PF-1.0)(Q)(P)x0.05+(%passing 0.30 mm PF-1.0)(Q)(P)x0.05+(%passing 0.075 mm PF-1.0)(Q)(P)x0.10+(PGAB Content PF-1.0)(Q)(P)x0.25	PA = (density PF-1.0)(Q)(P)x0.50

In addition, for 9.5 mm NMAS mixtures the following pay adjustment shall also apply:

The average percent passing for the 0.075 mm sieve shall be evaluated for each Lot. If the average is greater than 6.5%, a pay adjustment according to Table 13 below shall apply in addition to the other pay adjustments for the given method of testing.

TABLE 13: 0.075 MM SIEVE PAY ADJUSTMENT

Average Percent Passing 0.075 mm Sieve	Pay Adjustment
6.6% - 7.0%	-5%
> 7.0%	-10%

The Department shall notify the Contractor whenever the average of at least three samples in a given Lot is greater than 6.5%.

401.21 Acceptance Method B & D Unless otherwise stated in the 403 special provision, the Lot shall be the entire mix quantity per item per contract per year. The Department will sample once per sublot per pay item on a statistically random basis, test, and evaluate in accordance with the Acceptance Properties in Table 14. The Department will obtain samples of Hot Mix Asphalt Pavement in conformance with AASHTO R 97, Sampling Asphalt Mixtures, and the MaineDOT Policies and Procedures for HMA Sampling and Testing. The Contractor shall transport the samples in containers provided by the Department to the designated MaineDOT Laboratory within 48 hours except when otherwise noted in the project specific QCP or as directed by the Resident. Failure to deliver an acceptance sample to the designated acceptance laboratory will be considered the second incident under 106.4.6–QCP Non-Compliance. Target values shall be as specified in the JMF. The Department will withhold reporting of the test results for the Acceptance sample until 7:00 AM, on the second working day of receipt of the sample, or after receipt of the Contractors results of the Acceptance sample split.

TABLE 14: ACCEPTANCE PROPERTIES – METHOD B & D

Properties	Point of Sampling		Test Method
	Method B	Method D	
Gradation	Paver Hopper	Paver Hopper or Truck	AASHTO T 30
PGAB Content	Paver Hopper	Paver Hopper or Truck	AASHTO T 308
% TMD (In-Place Density)	Mat behind all Rollers	Mat behind all Rollers	AASHTO T 269
Voids at N_{design}	Paver Hopper	N/A	AASHTO T 312
VMA at N_{design}	Paver Hopper	N/A	AASHTO T 312
Fines to Effective Binder	Paver Hopper	N/A	AASHTO T 312
VFB	Paver Hopper	N/A	AASHTO T 312

TABLE 15: LOT AND SUBLOT SIZES – METHOD B & D

Lot Size*	Entire mix quantity per item per contract per year	
Maximum Sublot Size – Mix	(Lot size ≤ 1000 tons)	(Lot size > 1000 tons)
	250 ton	750 ton
Sublot Size – Density	125 ton (Max 5 Sublots)	250 ton

*General – Lot and Sublot size may be adjusted to accommodate the work scope and schedule, or as otherwise agreed upon at the Prepave Meeting

If there is less than one-half of a sublot remaining at the end of production for the year, then it shall be combined with the previous sublot. If there is more than one-half sublot remaining at the end of production for the year, then it shall constitute the last sublot.

TABLE 16: ACCEPTANCE LIMITS – METHOD B & D

Property	USL and LSL	
	Method B	Method D
Percent Passing 4.75 mm and larger	Target +/- 7%	Target +/- 7%
Percent Passing 2.36 mm sieve	Target +/- 5%	Target +/- 7%
Percent Passing 1.18 mm sieve	Target +/- 5%	Target +/- 5%
Percent Passing 0.60 mm sieve	Target +/- 4%	Target +/- 4%
Percent Passing 0.30 mm sieve	Target +/- 3%	Target +/- 3%
Percent Passing 0.075 mm sieve	Target +/- 3%	Target +/- 3%
PGAB Content	Target +/- 0.5%	Target +/- 0.5%
Voids at N_{design}	4.0% +/- 2.0%	N/A
Fines to Effective Binder	0.9 +/- 0.3	N/A
VMA at N_{design}	LSL from Table 1	N/A
VFB	Table 1 plus a 4% production tolerance for USL	N/A
% TMD (In-place Density)	94.5% +/- 2.5%	LSL of 92.0%

The Contractor shall cease paving operations whenever two consecutive Method B or D tests fall outside specification limits on the same property. The Contractor will submit a corrective action plan to the Department. The Department will only allow the continuation of paving operations when it is satisfied the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production.

401.211 Pay Adjustment - Method B & D For items accepted under Method B or D, if the mix is within the tolerances listed in Table 16, the Department will pay the contract unit price, otherwise pay adjustments as shown in Table 17 shall be applied to the quantity of mix represented by the test. The Contractor shall cut one 6 in core per sublot unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement. If the density result is not within the specified limits the disincentive shall apply. If the sublot density is less than 88.5 percent or greater than 99.0 percent of the sublot TMD, two additional cores shall be cut at random locations determined by the Department. If either of the additional cores has a density less than 88.5 percent or greater than 99.0 percent of the sublot TMD, the sublot shall be removed and replaced at no cost to the Department; otherwise, the average of the three cores will be used to determine the sublot pay adjustment.

TABLE 17: PAY ADJUSTMENTS – METHOD B & D

Property	**Method B**		**Method D**	
Percent Passing 2.36 mm sieve	N/A		-2.0%	
Percent Passing 0.30 mm sieve	N/A		-1.0%	
Percent Passing 0.075 mm sieve	-2.0%		-2.0%	
PGAB Content	-5.0%		-5.0%	
Voids at N_{design}	-3.0%		N/A	
% TMD (In-place Density)	91.5% - 91.9% or 97.1% - 97.5%	-5.0%	91.5% - 91.9%	-5.0%
	90.5% - 91.4% or 97.6% - 98.5%	-10.0%	90.5% - 91.4%	-10.0%
	89.5% - 90.4% or 98.6% - 99.0%	-20.0%	89.5% - 90.4%	-20.0%
	88.5% - 89.4%	-30.0%	88.5% - 89.4%	-30.0%
	<88.5% or >99.0%	Reject	<88.5% or >99.0%	Reject

401.30 Method of Measurement The Department will measure Hot Mix Asphalt Pavement by the ton in accordance with Section 108.1 - Measurement of Quantities for Payment.

401.40 Basis of Payment The Department will pay for the work, in place and accepted, in accordance with the applicable sections of this Section, for each type of HMA specified.

The Department will pay for the work specified in Section 401.12, for the HMA used, except that cleaning objectionable material from the pavement and furnishing and applying bituminous material to joints and contact surfaces is incidental.-Payment for this work under the appropriate pay items shall be full compensation for all labor, equipment, materials, and incidentals necessary to meet all related contract requirements, including design of the JMF, implementation of the QCP, obtaining core samples, transporting cores and samples, filling core holes, applying emulsified asphalt to joints, and providing testing facilities and equipment. The Department will make a pay adjustment for quality as specified in Section 401.20 Acceptance Method A & B or 401.21 Acceptance Method C & D.

401.50 Process for Dispute Resolution At the time of Hot-Mix Asphalt sampling, the Department will obtain a split sample of each Acceptance test random sample for possible dispute resolution testing. The Contractor shall also obtain a split sample of the HMA at this same time. If the

Contractor wishes to retain the option of requesting dispute testing of the initial Acceptance sample, the Contractor will test their split of the Acceptance sample in accordance with applicable AASHTO procedure and accepted supplemental practice as described in the Department's HMA Sampling and Testing Policies and Procedures manual. The Contractor shall report their results to the Resident, with a copy to Contractor.mainedot@maine.gov by 7:00 AM, on the second working day from time of QA sampling, otherwise dispute resolution will not be initiated. The Department's dispute resolution split sample will be properly labeled and stored for a period of at least two weeks after it has been reported, or until the sample is tested. The properties eligible for dispute and the respective variances are shown in Table 18.

The Contractor may dispute the Department's Acceptance results and request that the dispute resolution split sample be tested by notifying the Department's Resident and QA Engineer in writing within two working days after the results of the Acceptance test are reported. The following shall be provided in the request:

- Acceptance sample reference number
- The specific test result(s) or property(ies) being disputed, and
- The complete, signed report of the Contractor's testing (In a lab certified by the NETTCP and MaineDOT) of their split of the Acceptance sample indicating that the variances in Table 18 for the specific test result(s) or property(ies) were exceeded.

TABLE 18: DISPUTE RESOLUTION VARIANCE LIMITS

Property	Method A & B	Method C & D*	Variance Limits
PGAB Content	Yes	Yes	+/- 0.4%
G_{mb}	Yes	No	+/- 0.030
G_{mm}	Yes	Only if referenced to a Core	+/- 0.020
Voids at N_{design}	Only if G_{mb} or G_{mm} is not disputable	No	+/- 0.8%
VMA at N_{design}	Only if G_{mb} or G_{mm} is not disputable	No	+/- 0.8%
Percent Passing 4.75 mm and larger sieves	No	Yes^	+/- 4.0%
Percent Passing 2.36 mm to 0.60 mm sieves	No	Yes^	+/- 3.0%
Percent Passing 0.30 mm to 0.15 mm sieves	No	Yes^	+/- 2.0 %
0.075 mm sieve	Only for 9.5 mm NMAS mixes	Yes	+/- 0.8%

*Disputes will not be allowed on Item 403.209

^Disputes will only be allowed on Sieve Sizes used for pay adjustment calculations

The value of any disputed result or property reported for the initial Acceptance sample shall stand if the value reported for the dispute resolution sample is not closer to the value the Contractor reported for their split sample than to the value reported for the initial Acceptance sample. If the value reported for the dispute resolution falls precisely half-way between the other two values the value reported for the dispute resolution will replace the original acceptance value. Otherwise, the

value reported for the dispute resolution sample will replace the value reported for the initial Acceptance sample and will be used to re-calculate any other affected results or properties.

SECTION 402 - PAVEMENT SMOOTHNESS

402.00 Smoothness Projects Projects to have their pavement smoothness analyzed in accordance with this Specification will be so noted in Special Provision 403 - Hot Mix Asphalt Pavement.

402.01 Pavement Smoothness The final pavement surface shall be evaluated for smoothness using a Class I or Class II profiler as defined by ASTM E950 (94). Smoothness measurements will be expressed in terms of the International Roughness Index (IRI) as defined by the World Bank, in units of inches/mile.

402.02 Lot Size Lot size for smoothness will be 3000 lane-feet. A sublot will consist of 50 lane-feet. Partial lots will be included in the previous lot if less than one-half the size of a normal lot. If equal to or greater than one-half the normal lot size, it will be tested as a separate lot.

402.03 Acceptance Testing The Department will conduct Acceptance testing following completion of the surface course. Sections to be excluded from testing include the following:

- Bridge decks and joints (no smoothness measurements will be taken within 100 ft of bridge joints)
- Acceleration and deceleration lanes
- Shoulders and ramps
- Side streets and roads
- Within 100 ft of transverse joints at the beginning and end of the project
- Within 100 ft of railroad crossings
- Urban areas with speed limits of 30 mph or lower

Each lot shall have 2 measurements made in each wheel path. The average of the 4 measurements will determine the smoothness for that lot. The smoothness measurements will be statistically evaluated for pay factors as described in Subsection 106.7 - Quality Level Analysis, using the specification limits shown below.

TABLE 1: ACCEPTANCE LIMITS

Level	USL
I	55 in/mile
II	65 in/mile
III	75 in/mile

Computation of Smoothness Pay Adjustment:

PA = (PF-1.0)(Q)(P) where:
Q = Quantity of surface course in the Lot (excluding shoulders, side streets, bridge decks, ramps, acceleration and deceleration lanes)
PF = smoothness pay factor for the Lot
P = Contract unit price for surface pavement
PA = pay adjustment

402.04 Unacceptable Work In the event that any Lot is found to have a pay factor less than 0.80, the Contractor shall take whatever remedial action is required to correct the pavement surface in that Lot at no additional expense to the Department. Such remedial action may include but is not limited to removal and replacement of the unacceptable pavement. In the event remedial action is necessary, the Contractor shall submit a written plan to the Resident outlining the scope of the remedial work. The Resident must approve this plan before the remedial work can begin. Following remedial work, the Lot shall be retested, and will be subject to the specification limits listed above. The resulting pay factor, if within the acceptable range, will be used in the final pay adjustment. The Contractor shall pay the cost of retesting the pavement following corrective action.

Localized surface tolerance defects will be subject to the provisions outlined in Section 401.11 Surface Tolerances.

Payment will be made under:

Pay Item	Pay Unit
402.10 Incentive/Disincentive - Pavement Smoothness	Lump Sum

SECTION 403 - HOT MIX ASPHALT PAVEMENT

403.01 Description This work shall consist of constructing one or more courses of Hot Mix Asphalt pavement on an approved base in accordance with these specifications, and in reasonably close conformity with the lines, grades, thickness and typical cross sections shown on the plans or established. The HMA pavement shall be composed of a mixture of aggregate, filler if required, and asphalt material.

403.02 General The materials and their use shall conform to the requirements of Section 401 - Hot Mix Asphalt Pavement.

403.03 Construction The construction requirements shall be as specified in Section 401 - Hot Mix Asphalt Pavement.

403.04 Method of Measurement Hot mix asphalt pavement will be measured as specified in Section 401.21- Method of Measurement.

403.05 Basis of Payment The accepted quantities of hot mix asphalt pavement will be paid for at the contract unit price per ton for the mixtures, including hot mix asphalt material complete in place. Method A, Method B, Method C and Method D shall be used for acceptance as specified in Section 401 - Hot Mix Asphalt Pavements. (See Complementary Notes, Section 403 - Hot Mix Asphalt Pavement, for Method location).

Payment will be made under:

Pay Item		Pay Unit
403.102	Hot Mix Asphalt Pavement for Special Areas	Ton
403.206	Hot Mix Asphalt, 25 mm Nominal Maximum Size	Ton
403.207	Hot Mix Asphalt, 19.0 mm Nominal Maximum Size	Ton
403.2071	Hot Mix Asphalt, 19.0 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2072	Asphalt Rich Hot Mix Asphalt, 19.0 mm Nominal Maximum Size (Asphalt Rich Base and Intermediate course)	Ton
403.208	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size	Ton
403.2081	Hot Mix Asphalt - 12.5 mm Nominal Maximum Size (Polymer Modified)	Ton
403.209	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Sidewalks, Drives, Islands & Incidentals)	Ton
403.210	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size	Ton
403.2101	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2104	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Thin Lift Surface Treatment)	Ton
403.211	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming)	Ton
403.2111	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming, Polymer Modified))	Ton
403.212	Hot Mix Asphalt, 4.75 mm Nominal Maximum Size	Ton
403.213	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.2131	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course, Polymer Modified)	Ton
403.2132	Asphalt Rich Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.214	Hot Mix Asphalt, 4.75 Nominal Maximum Size (5/8” Surface Treatment)	Ton

SECTION 400
HOT MIX ASPHALT PAVEMENT
(Weather and Seasonal Limitations)

The following section of Special Provision Section 400 – Weather and Seasonal Limitations Table3: SEASONAL AND TEMPERATURE LIMITATIONS has been replaced by the following Table 3: SEASONAL AND TEMPERATURE LIMITATIONS. All other requirements not amended or replaced by Table3 by this special provision shall be considered unchanged.

401.06 Weather and Seasonal Limitations The State is divided into two paving zones as follows:

a. Zone 1 Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais.
b. Zone 2 Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.

TABLE 3: SEASONAL AND TEMPERATURE LIMITATIONS

Description	**Zone 1 Allowable Placement Dates**	**Zone 2 Allowable Placement Dates**	**Minimum Ambient Air Temperature**
HMA Surface Course greater than or equal to 1” (Travelway)	May 1 to Saturday following October 1	April 15 to Saturday following October 15	50°F
HMA Surface Course less than 1” (Travelway)	May 15 to Saturday following September 15	May 15 to Saturday following October 1	
HMA Surface Course less than 1” considered to be “**Night Work**” (Travelway)	June 1 to the Saturday following September 1		
HMA Surface Course less than 1” (Shoulders)	May 15 to the Saturday following October 15		
HMA for Surface Course on **Bridge Decks**	May 1 to Saturday following October 1	April 15 to Saturday following October 15	
HMA for Base or Shim Course on **Bridge Decks**	April 15 to November 15		
HMA for use other than Travelway Surface Course (Shoulders greater than or equal to 1”, Intermediate, Base, Shim)	April 15 to November 15		40°F
HMA for curb, driveways, sidewalks, islands, or other incidentals	N/A		

With Use of Approved Warm Mix Technology as Compaction Aid (Surface Course Ambient Air Temperature Allowances)			
HMA Surface Course greater than or equal to 1” (Travelway)	May 1 to Saturday following October 1	April 15 to Saturday following October 15	Begin at 50°F and pave **down to** 45°F
HMA Surface Course less than 1” (Travelway)	May 15 to Saturday following October 1	May 15 to Saturday following October 15	
HMA Surface Course less than 1” considered to be “**Night Work**” (Travelway)	June 1 to the Saturday following September 15		
HMA Surface Course less than 1” (Shoulders)	May 15 to the Saturday following October 15		
With Use of Approved Warm Mix Technology as Compaction Aid (Seasonal Limitation Extensions)			
HMA Surface Course greater than or equal to 1” (Travelway)	Saturday following October 1 to Saturday following October 15	Saturday following October 15 to Saturday following October 29	50°F
HMA Surface Course less than 1” (Shoulders)	Saturday following October 15 to Saturday following October 29		50°F
HMA for use other than Travelway Surface Course (Shoulders greater than or equal to 1”, Intermediate, Base, Shim)	April 15 to Saturday following November 15		35°F

1. Shoulders paved with the travelway pass shall meet travelway ambient air temperatures
2. Refer to the 461 SP for UTBWC for seasonal and temperature requirements.

The ambient air temperature shall be determined by an approved thermometer placed in the shade at the paving location. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface regardless of the ambient air temperature. The Hot Mix Asphalt Pavement produced with an approved WMA technology shall meet the requirements of section 401.04 - Temperature Requirements, unless otherwise approved by the Department. For the purposes of this Section, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes.

SPECIAL PROVISION
SECTION 401
HOT MIX ASPHALT PAVEMENT

401 HOT MIX ASPHALT LONGITUDINAL JOINT DENSITY

401.30 Description The Department will measure the pavement density of longitudinal joints constructed between adjoining travel lanes; turn lanes, truck (climbing) lanes, and passing lanes will be considered travel lanes for longitudinal join density testing unless otherwise noted in Section 403 – Hot Mix Asphalt Pavement. Core samples shall be tested according to AASHTO T-166. The Contractor shall cut 6-inch diameter cores at no additional cost to the Department by the end of the working day following paving. Pre-testing of the acceptance cores will not be allowed. If the Contractor and the Department mutually determine that a core is damaged, the Contractor shall cut new core(s) at the same offset and within 3 ft of the initial sample. The Contractor and the Department will mutually determine if underlying material is adhered to the core and if so will mark the core at the point where sawing is needed. The Department will place the cores in a secure container and the Contractor shall transport the cores to the designated MaineDOT lab. The cores will be saw cut by the Department to remove underlying layers. No recuts are allowed at a test location after the core has been tested.

For vertical longitudinal joints, cores shall be taken directly centered over the construction joint. For notch-wedge longitudinal joints , the cores shall be cut directly over the center of the tapered portion of the wedge.

As part of the project specific QCP, the Contractor shall include details as to methods of construction, rolling and compaction efforts, and action plan to adjust methods or equipment should the Quality level fall below 50 percent within limits. The Contractor shall be required to measure the joint density at randomly selected locations with a minimum frequency of one measurement per 750 linear feet. The Contractor shall have the option to cut calibration/verification cores at a rate not to exceed 1 per day.

If the Quality level for density falls below 50 percent within limits, the Contractor shall cease placement operations and submit a corrective action letter to the Department before proceeding with the Lot or before starting a new Lot. The Department will respond and either accept or reject the Contractor's proposed corrective action. If the Department accepts the corrective action, three stratified verification cores will be taken from the first 1500 foot section of longitudinal joint constructed for the purpose of evaluating the corrective action. These cores will be in addition to any Acceptance cores that may be designated in this area. The results from these cores shall be combined with the cores from the Lot in progress. Should the combined Quality level for density show an improvement, the Department will accept the corrective action and normal Acceptance sampling frequency shall resume. If an improvement has not been made to the combined Quality level for density, the Contractor shall cease production and submit an additional corrective action letter for consideration.

401.31 Acceptance This method utilizes Quality Level Analysis and pay factor specifications as described in Section 106. For Hot Mix Asphalt Pavement designated for acceptance under

Quality Assurance provisions, the Department will sample once per sublot on a statistically random basis, test, and evaluate in accordance with the following Acceptance Properties:

Lot size will be the entire length of longitudinal joint for the given HMA layer for the project, or equal Lots of a size agreed upon at the Pre-paving conference. The maximum sublot size shall be 2000 linear feet of longitudinal joint for density and the minimum number of sublots for any Lot shall be five. The Lot will be divided up into sublots of equal length. There shall be a separate Lot for each lift of HMA pavement, and Lots shall not be comprised of results from more than one HMA layer.

The Department will determine a pay factor using acceptance limits from Table 1.

TABLE 1: LONGITUDNAL JOINT DENSITY ACCEPTANCE LIMITS

PROPERTY	LSL
% TMD (In-Place Density)*	91.0%

* The Theoretical Maximum Density will be determined from the average of the G_{mm} values used to determine the percent compaction of the nearest acceptance cores on either side of the Longitudinal Joint Core from each adjacent mat.

The Department will calculate the Pay Adjustment for Longitudinal Joint Density as follows:

PA = (joint density PF- 1.0)(Q)(P) x0.40

Where

PA = Pay Adjustment
Q = Quantity of traveled way pavement represented by PF in tons
P = Contract price per ton
PF = Pay Factor

If the joint density Pay Factor is less than 0.88, the Pay Adjustment shall be:

PA = (-0.05)(Q)(P)

SPECIAL PROVISION
DIVISION 400
PAVEMENTS

SECTION 401 - HOT MIX ASPHALT PAVEMENT
(HMA Hamburg Wheel Tracker Specification)

401.03 Composition of Mixtures The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), and mineral filler if required. HMA shall be designed and tested according to AASHTO R35 and the volumetric criteria in Table 1. The Contractor shall size, uniformly grade, and combine the aggregate fractions in proportions that provide a mixture meeting the grading requirements of the Job Mix Formula (JMF). Unless otherwise noted in Special Provision 403 - Hot Mix Asphalt Pavement, the design, verification, Quality Control, and Acceptance tests for this mix will be performed at 65 gyrations.

TABLE 1: VOLUMETRIC DESIGN CRITERIA

Design ESAL's (Millions)	Required Density (Percent of G_{mm})			Voids in the Mineral Aggregate (VMA)(Minimum Percent) Nominal Maximum Aggregate Size (mm)					Voids Filled with Binder (VFB) (Minimum %)	Fines/Eff. Binder Ratio
	$N_{initial}$	N_{design}	N_{max}	25	19	12.5	9.5	4.75		
<3	≤90.5	96.0	≤98.0	13.0	14.0	15.0	16.0	16.0	65-80*	0.6-1.2
3 to <10	≤89.0									
≥ 10										

*For 9.5 mm nominal maximum aggregate size mixtures, the maximum VFB is 82.
*For 4.75 mm nominal maximum aggregate size mixtures, the maximum VFB is 84.

The Contractor shall submit for Department approval a JMF to the Asphalt Pavement Engineer for each mixture to be supplied. The JMF will be approved by the Department in accordance with the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual. At the time of JMF submittal, the Contractor shall identify and make available the stockpiles of all proposed aggregates at the plant site. There must be a minimum of 150 ton for coarse aggregate stockpiles and 75 ton for fine aggregate stockpiles before the JMF may be submitted. The Contractor shall provide aggregate samples to the Department unless otherwise required. The Contractor shall also make available to the Department the PGAB proposed for use in the mix in sufficient quantity to test the properties of the asphalt and to produce samples for testing of the mixture. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement. The Contractor shall be allowed to submit aim changes for a JMF as outlined in the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual: Mix Design Approval Section.

The Contractor shall submit a new JMF for approval each time a change in material source or materials properties is proposed. The same approval process shall be followed. The cold feed percentage of any aggregate may be adjusted up to 10 percentage points from the amount listed on the JMF, however no aggregate listed on the JMF shall be eliminated. The cold feed percentage for RAP may be reduced up to 10 percentage points from the amount listed on the

JMF and shall not exceed the percentage of RAP approved in the JMF or for the specific application under any circumstances.

Before the start of paving, the Contractor shall provide the Department with eight boxes of plant produced HMA. The Contractor shall test its split of the sample and determine if the results meet the requirements of the Department's written policy for mix design verification (See MaineDOT Policies and Procedures for HMA Sampling and Testing). If the results are found to be acceptable, the Contractor will forward their results to the Department's Lab, which will test the Department's split of the sample. The results of the two split samples will be compared and shared between the Department and the Contractor. If the HMA meets the requirements for mix design verification, the mixture will be tested for rutting and moisture sensitivity in the Hamburg Wheel Tracker according to AASHTO T324, "Hamburg Wheel-Track Testing of Hot Mix Asphalt (HMA)." The sample will be required to meet the applicable requirements of Table 1A below for approval, depending on the PG binder grade required by the 403 Special Provision. If the sample meets the requirements of Table 1A, an approved JMF will be forwarded to the Contractor and paving may commence. The Department will have five business days from receipt of the sample at the Central Laboratory to process, test, and report the Hamburg Wheel Tracker sample. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement.

TABLE 1A: HAMBURG WHEEL TRACKER REQUIREMENTS

Specified PG Binder Grade	Test Temperature (°C)	Maximum Rut Depth (mm)	Minimum Number of Passes	Minimum Allowable SIP*
PG 64-28	45	12.5	20,000	15,000
PG 64E-28	48	12.5	20,000	15,000
PG 70E-28	50	12.5	20,000	15,000

* As calculated by the most recently published version of the MaineDOT HWT worksheet, which is available online at http://www.maine.gov/mdot/contractors/publications/

401.19 Contractor Quality Control - Method A, B, C & D The following language has been added to Section 401.19:

The project specific QCP shall address the sampling, transport, and testing of Hamburg Wheel Tracker QC samples and what potential steps will be taken if QC samples do not meet the requirements in Table 1A. The project-specific QCP shall also contain a sample Hamburg Wheel Tracker test report for approval. The Contractor shall sample and test HMA Pavement in the Hamburg Wheel Tracker according to AASHTO T324 in accordance with the following minimum frequencies:

TABLE 2A: MINIMUM QUALITY CONTROL FREQUENCIES

Test or Action	Frequency	Test Method
Hamburg Wheel Tracker	1 per 4,000 ton and at least once per Acceptance Lot	AASHTO T 324

The Contractor shall sample the HMA on the first day of production and test the sample in the Hamburg Wheel Tracker according to AASHTO T324. This sample will not count towards the

minimum quality control frequency specified in Table 2A. The Contractor shall submit all Hamburg Wheel Tracker test reports in writing, signed by the appropriate technician and present them to the Department within ten working days of initial sampling, except when otherwise noted in the project specific QCP due to local restrictions. The Contractor shall make the raw Hamburg Wheel Tracker data from QC samples available to the Department upon request. If a QC sample fails to meet the criteria in Table 1A, the Contractor will be required to submit a corrective action letter to the Resident, Materials Engineer, Pavement Quality Manager, and Pavement Quality Engineer by the end of the following working day with the proposed changes to bring the mixture back into compliance. The Department will respond and either accept or reject the Contractor's proposed corrective action by the end of the following working day from when the letter was received.

401.20 & 401.21 Acceptance Method(s) A, B, C & D The following language has been added to Section(s) 401.20 & 401.21

The Department will sample the HMA on the first day of production and at the acceptance frequencies specified in Table 3 to verify the compliance with the Hamburg Wheel Tracker Requirements. If an acceptance sample fails to meet the criteria in Table 1A, the Contractor shall cease paving operations and submit a corrective action letter to the Resident, Materials Engineer, Pavement Quality Manager, and Pavement Quality Engineer by the end of the work day with the proposed changes to bring the mixture back into compliance. Failure to do so will be treated as a second incident under 106.4.6 QCP Non-compliance. The Department will only allow the continuation of paving operations when it is satisfied that the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production.

TABLE 3: MINIMUM ACCEPTANCE FREQUENCIES

Test or Action	Frequency
Hamburg Wheel Tracker	1 per 4,000 ton or at least once per Acceptance Lot

The Department may take additional informational samples and test the HMA to verify compliance with the Hamburg Wheel Tracker Requirements. If an informational sample fails to meet the criteria in Table 1A, the Contractor will be required to submit a corrective action letter to the Resident, Asphalt Pavement Engineer, Pavement Quality Manager, and Pavement Quality Engineer by the end of the following working day with the proposed changes to bring the mixture back into compliance. The Department will respond and either accept or reject the Contractor's proposed corrective action by the end of the following working day from when the letter was received.

401.201 & 401.211 Pay Adjustments Method(s) A, B, C & D The following language has been added to Section(s) 401.201 & 401.211

For items accepted under Method(s) A, B, C &D, if the mix is within the tolerances listed in Table 1A, the Department will pay the contract unit price, otherwise pay adjustments as shown in Table 4 shall be applied to the quantity of mix represented by the test.

TABLE 4: HWT PAY ADJUSTMENT

Number of Passes	Pay Adjustment
< 20,000	-1.0% for every 1000 passes below target

A pay adjustment will not be applied to the acceptance sample taken on the first day of production per JMF.

SPECIAL PROVISION
SECTION 401 - HOT MIX ASPHALT PAVEMENT
(HMA with Fine Micro-Deval Requirement)

The following subsections of the most current version of Specification 401 – Hot Mix Asphalt Pavements have been revised and amended by the following:

401.01 Description The Contractor shall compose Hot Mix Asphalt (HMA) Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), and mineral filler if required. If denoted in Special Provision 403 - Hot Mix Asphalt Pavement, the mixtures shall meet the additional aggregate requirements of this special provision.

401.02 Materials Materials shall meet the requirements specified in Section 700 – Materials, unless otherwise revised in this special provision:

Aggregates for HMA Pavement	703.07
HMA Mixture Composition	703.09

The HMA blend, minus any RAP used, shall have a Fine Micro-Deval value of 15.0 or less as determined by weighted average of individual fine aggregate source values determined through ASTM D7428.

SPECIAL PROVISION
SECTION 401
HOT MIX ASPHALT PAVEMENT
(Material Transfer Vehicle Option)

Description The Contractor may elect to use a material transfer vehicle at their option to transfer hot mix asphalt to the paver on mainline travelways, shoulders, and ramps as denoted in Special Provision 403 - Hot Mix Asphalt Pavement.

Material transfer vehicles shall operate as an independent unit not attached to the paver. It shall be a commercially manufactured unit specifically designed to transfer the hot mix from haul trucks to the paver without depositing the mix on the roadway. A separate hopper with a capacity of 14 ton shall be inserted into the regular paver hopper. The material transfer vehicle or the hopper insert shall be designed so that the mix receives additional internal mixing action either in the material transfer vehicle or the paver hopper.

Method of Measurement Hot mix asphalt pavement transferred by the material transfer vehicle and hopper insert will be measured by the ton.

Basis of Payment The accepted quantities of hot mix asphalt pavement transferred by the material transfer vehicle and hopper insert will be paid for at a price of $2.00 per ton.

Payments will be made under:

Pay Item:		Pay Unit:
403.40	Material Transfer Vehicle (MTV)	Ton

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT

Desc. Of Course	Grad Design.	Item Number	Total Thick	No. Of Layers	Comp. Notes
Hogan Road & Ramps - 6" HMA - Full Construction Areas					
Travelway, Auxiliary Lanes & Shoulders (As Indicated)					
Wearing	12.5 mm	403.2081	1 ½"	1	2,5,7,22,23,24,26,42,43,55
Intermediate	12.5 mm	403.2131	2"	1	1,4,7,22,23,24,41,42,43,55
Base	12.5 mm	403.2131	2 ½"	1	1,4,7,23,24,25,41,42,55
3" HMA - Bridge Deck					
Travelway & Shoulders (As Indicated)					
Wearing	12.5 mm	403.2081	1 ½"	1	2,5,7,23,24,26,30,42
Base	12.5 mm	403.2131	1 ½"	1	1,4,7,23,24,25,30,42,50
I-95 NB & SB - 2" Mill & 1 ½" HMA Overlay w/ Variable Depth Shim					
Travelway & Shoulders (As Indicated)					
Wearing	12.5 mm	403.2081	1 ½"	1	2,5,7,22,23,24,26,27,42,52
Shim	9.5 mm	403.2111	variable	1/more	1,4,7,20,27,30,42
Reverse Direction Loop & Parking Lot - 4" HMA - Full Construction Areas					
Travelway & Shoulders (As Indicated)					
Wearing	12.5 mm	403.2081	1 ½"	1	2,5,8,23,24,26,42
Base	12.5 mm	403.2131	2 ½"	1	1,4,8,23,42
4" HMA - Temporary Pavement (As Indicated)					
Temporary	12.5 mm	461.131	4"	2	28
Drives, Islands, Sidewalk, Misc. (As Indicated or Directed)					
Wearing	9.5 mm	403.209	2-3"	1/more	3,20,30,32

COMPLEMENTARY NOTES

1. The required PGAB shall be a storage-stable, homogeneous, polymer modified asphalt binder that meets or exceeds **PG 64E-28** grading requirements in AASHTO M 332. All polymer modified asphalt grades utilized on the Project shall be treated with an approved liquid anti-strip. PG binders shall be treated either at the asphalt source terminal with the required dose rate on the delivery documentation, or at the hot mix asphalt plant utilizing a system integrated with the plants controls that will introduce a minimum 0.50 percent anti-strip by weight of asphalt binder used unless a rate is otherwise recommended by the anti-strip manufacturer. The PGAB and anti-strip blend shall meet or exceed the **PG 64E-28** requirements. The Contractor shall provide supporting test data showing the PGAB and anti-strip blend meet the required criteria.
2. The required PGAB shall be a storage-stable, homogeneous, polymer modified asphalt binder that meets or exceeds **PG 76E-28** grading requirements in AASHTO M 332. All polymer modified asphalt grades utilized on the Project shall be treated with an approved liquid anti-strip. PG binders shall be treated either at the asphalt source terminal with the required dose rate on the delivery documentation, or at the hot mix asphalt plant utilizing a system integrated with the plants controls that will introduce a minimum 0.50 percent anti-strip by weight of asphalt binder used unless a rate is otherwise recommended by the anti-strip manufacturer. The PGAB and anti-strip blend shall meet or exceed the **PG 76E-28** requirements. The Contractor shall provide supporting test data showing the PGAB and anti-strip blend meet the required criteria.

3. The aggregate qualities shall meet the design traffic level of <3 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
4. The aggregate qualities shall meet the design traffic level of 3 to <10 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
5. The aggregate qualities shall meet the design traffic level of >10 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
7. Section 106.6 Acceptance, (1) **Method A** as specified Section 401.20 - Quality Assurance Methods A and C.
8. Section 106.6 Acceptance, (2) **Method B** as specified Section 401.21 - Quality Assurance Methods B and D.
20. The combined aggregate gradation required for this item shall be classified as a 9.5mm Thin Lift Mixture (TLM) mixture, using the Aggregate Gradation Control Points as defined in 703.09.
22. Longitudinal joint density testing shall be applied to the specified HMA layer. See Special Provision 401 – Hot Mix Asphalt Longitudinal Joint Density for project specifics.
23. The mixture shall meet the minimum requirements of Special Provision 401 - HMA Hamburg Wheel Tracker Specification.
24. See Special Provision 401 - HMA with Fine Micro-Deval Requirement for project specifics.
25. A notch wedge apparatus as per section 401.16 shall be required on all joints between travel lanes. Longitudinal Joint Density incentive/disincentives will not apply, however the Department may require cores for informational purposes.
26. See Special Provision 401 - HMA with High Polymer 76E for project specifics. A test strip is required and may be performed in the Reverse Direction Loop area.
27. The use of a Material Transfer Vehicle (MTV) shall be required on this layer. See Special Provision 401 – Material Transfer Vehicle for specifics.
28. See Special Provision 461 - Temporary Pavement for project specifics
30. The incentive/disincentive provisions for density shall not apply. Rollers shall meet the requirements of this special provision. The use of an oscillating steel roller shall be required to compact all mixtures pavements placed on bridge decks.
32. In areas inaccessible to a **10 ton** roller, compaction of the new Hot Mix Asphalt Pavement will be obtained using a minimal roller train consisting of a **3-5 ton** vibratory roller. Areas less than 2 feet wide shall be compacted with a minimum of a **150 pound** plate compactor. An approved release agent is required to ensure the mixture does not adhere to hand tools, rollers, pavers, and truck bodies. The use of petroleum based fuel oils, or asphalt stripping solvents will not be permitted.
41. The entire HMA pavement section (consisting of **2 inches intermediate** and **2 ½ inches base** layers) shall be completed before winter suspension. Any surface or base HMA placed after the seasonal limitations shall be considered temporary and removed and replaced the following construction season. The Department will not be responsible for costs or time related to the placement, removal or replacement of temporary pavement
42. The Contractor shall plan its construction sequencing so that no longitudinal joints fall within the mainline travelway lanes (excluding center turn lanes)

43. The contractor shall mill a stepped butt joint into the existing pavement at both the beginning and end joints for each pavement layer excluding the bottom base layer. For each layer, the stepped joint shall be cut to the depth and width of the pavement layer being placed and extend 5 feet beyond the immediate underlying layer**.** The **butt joint** for the overlying layer shall be **completed prior** to placing the adjacent layer**.** The Resident may extend this length as determined by the condition of the match point. No additional payment will be made for the milling of the butt joints but will instead be considered incidental to associated paving items.
50. The depth of the HMA 403.2131 base layer shall be at least **2 ½ inches for winter suspension**, or as thick as necessary to match the scupper elevation to insure proper drainage during winter suspension. Before paving the HMA 403.2081 surface course, the HMA 403.2131 base layer shall be **milled an average depth of 1 inch** to reestablish the intended **1 ½ inch** layer thickness. Any surface or base HMA placed after the seasonal limitations shall be considered temporary and removed and replaced the following construction season. The Department will not be responsible for costs or time related to the placement, removal or replacement of temporary pavement.
52. A tack coat of a RS-1, Item #409.15 shall be applied along the longitudinal centerline construction joint, on the horizontal surface immediately adjacent to the construction joint, and in a minimum width of one foot. The rate of application shall be approximately 0.050 to 0.075 G/SY. This application shall be in addition to the normal application of tack coats to the construction joint face and horizontal surfaces prior to placing a new lift.
55. The vertical surface of the longitudinal joint between the edge of the existing I-95 HMA and the proposed HMA on ramps shall be completely sealed with hot-applied asphalt sealant material, meeting the requirements of Type 4 or mastic crack seal. Sealant shall be applied to form a complete seal between the existing and proposed HMA and shall extend up the vertical surface to within ½ inch of the top of the HMA base layers **(5.5 inches)**. This work shall be considered incidental to the contract pavement items.

Tack Coat

A tack coat of emulsified asphalt, RS-1, RS-1h, CRS-1 or CRS-1h, Item 409.15 shall be applied to any existing pavement at a rate of approximately 0.030 gal/yd², and on milled pavement approximately 0.050 gal/yd² prior to placing a new course. A fog coat of emulsified asphalt shall be applied between shim /base courses and surface course as well as to any bridge membrane prior to the placement of HMA layers at a rate not to exceed 0.030 gal/yd². Tack used will be paid for at the contract unit price for Item 409.15 Bituminous Tack Coat.

SPECIAL PROVISION
SECTION 461.131
TEMPORARY PAVEMENT

Description:

This work shall consist of furnishing all labor, materials and equipment, for the manufacturing, installation and removal of all Temporary Pavement in accordance with these specifications, Special Provision 403 Hot Mix Asphalt, and the Plans. Temporary pavement shall meet the gradation and asphalt requirements of a current MaineDOT approved 12.5 mm JMF. The mixture will not be evaluated for PGAB content, gradation, or volumetrics. The Department will accept the mixture based upon visual acceptance. All mixtures placed as temporary pavement will be removed in its entirety and replaced as required with mixtures that meet the permanent pavement contract requirements. Any temporary pavement placed within the roadway limits shall have a minimum depth of 3". Temporary pavement placed outside the roadway limits will be at depths directed by the Resident.

Method of Measurement:

This work will be measured for payment by the Ton, complete in place, and accepted.

Basis of Payment:

The work shall be paid for at the contract unit price per Ton. The price will include the manufacturing, hauling, installation, finishing, and removal of all Temporary Pavement, and any incidentals required to complete the work.

Payment will be made under:

Pay Item		Pay Unit
461.131	Temporary Pavement	Ton

SPECIAL PROVISION
SECTION 501
FOUNDATION PILES
(Rock-Socketed H-Pile Foundations)

501.01 Description Add the following to Subsection 501.01:

This work shall consist of providing all materials, equipment, and labor necessary for construction of rock-socketed H-pile foundations as shown on the Plans, or as directed or authorized by the Resident. Construction of rock-socketed H-Pile foundations shall be as specified in Section 501 of the Standard Specifications, except as amended herein.

501.02 Materials Add the following to Subsection 501.02:

H-pile bearing plate material shall be ASTM A572 Grade 50 minimum. Bearing plate to pile fastening shall occur by welding the bearing plate to the pile tip web and flanges as shown on the Plans.

The Contractor shall select grout material supplied from a MaineDOT approved ready mixed concrete batch plant. Ready mixed grout shall achieve a minimum design compressive strength of 6,000 psi at 7 days, be non-shrink, flowable, and contain a shrinkage compensating admixture listed on the MaineDOT Qualified Products List (QPL) or an expansive cement meeting ASTM C845. Air entrainment will not be required. At least 30 working days prior to beginning construction of the rock-socketed H-pile foundation, the Contractor shall submit the proposed grout mix design to the Resident for review. Grout mix design shall contain **ONLY** sand and cement. In the same timeframe, the Contractor shall also submit to the Resident for review the name and contact information of the independent testing laboratory that will be used to sample and test the grout cubes throughout the course of work at a frequency of no less than once during each continuous grout placing operation. A minimum of six “sets” of 2-in. square grout cubes shall be taken during each grouting operation. One “set” of grout cubes shall consist of a minimum of three individual cubes (i.e., a minimum of 18 individual cubes per each grouting operation). Grout cubes shall be molded, cured and tested in accordance with ASTM C-109. MaineDOT will collect grout samples for Acceptance in accordance with AASHTO R 64 and ASTM C109 and MaineDOT Policies and Procedures for Structural Portland Cement Concrete (PCC). Acceptance grout samples will be taken at a minimum of once per substructure element (e.g. Abutment, Pier). In the event a QC or Acceptance grout sample fails to meet the minimum design compressive strength, the Contractor may be required to supplement the foundation with additional piles or replace piles at no additional cost to the Department. Grout testing will not be measured and paid for separately, but will be considered incidental to related Pay Item No. 501.502. Standard Specification 105.7 shall govern the review process.

The tremie grout tube shall be filled with a non-shrink grout listed on the MaineDOT QPL.

Aggregate for filling the annular space between the H-pile and bedrock (above the top of the grout zone) and the H-pile and the casing shall meet the requirements of Subsection 703.22, Underdrain Backfill Material, Type C. The material requirements for the casings are shown on the Plans.

501.03 Quality Control Plan

The following is added to Subsection 501.03 of the Standard Specifications:

At least 30 working days prior to beginning construction of the rock-socketed H-pile foundation, the Contractor shall submit an Installation and Quality Control Plan for review by the Resident. Standard Specification 105.7 shall govern the review process.

The Installation and Quality Control Plan shall, at a minimum, include the following:

A. List of proposed equipment to be used including but not limited to the following: drilling equipment, drills, drill bits, augers, buckets, drill casing, final cleaning and bottom inspection equipment, water recovery and treatment equipment, rock coring equipment, and tremies or grout pumps.
B. Details, methods and procedures for welding the bearing plate to the pile tip.
C. Details of the overall rock-socketed H-Pile foundation construction sequence.
D. Details of excavation methods in soils and bedrock, including methods of removing any obstructions such as boulders or cobbles.
E. Details of equipment and methods that will be used to clean bedrock-sockets after they have been advanced to the minimum required depth below top of bedrock as shown on the Plans and prior to H-pile and grout placement.
F. Material and dimensions of drill casings.
G. Details of installing H-piles and supporting H-piles vertically and laterally in their final positions until laboratory test results have been submitted that indicate that the minimum required compressive strength of the grout has been achieved and the abutment is complete and in place.
H. Details of the grout mix design, placement methods, and grout placement quantity control.
I. Sample daily construction records.
J. Sample drilling and grout logs.
K. Details of how verticality of drill casing and rock-socket will be determined.

501.042 Equipment

The following is added to Subsection 501.042 of the Standard Specifications:

Rock Sockets - Drilling of bedrock-sockets for rock-socketed H-Pile foundation shall use cased-hole drilling methods. The Contractor shall select excavation equipment and rock core tooling that achieves a near planar horizontal surface at the bottom of the rock-socket.

The excavation and drilling equipment shall have adequate capacity, including power, torque, and down thrust to excavate a socket at least 20 percent greater than the minimum socket length and diameter indicated on the Plans. When the material encountered cannot be drilled using conventional earth augers with soil or rock teeth and drill buckets, as agreed upon with the Resident, the Contractor shall provide drilling equipment including, but not limited to, rock core barrels, rock tools, air tools, and other equipment as necessary to construct the excavation to the minimum sizes (diameters) and depth below top of rock as shown on the Plans.

Failure by the Contractor to demonstrate adequate methods and equipment resulting in work not meeting this special provision will require the Contractor to propose alterations in equipment and/or methods to achieve satisfactory results. Any altered methods or construction equipment shall be at the Contractor's expense and incidental to Pay Item No. 501.502.

The Contractor shall perform the excavations required for bedrock-sockets as shown on the Plans, through all materials encountered, to the minimum dimensions and minimum depths below top of rock shown on the Plans, or otherwise required by the Contract Documents.

501.043 Location and Alignment Tolerances.

The following is added to Subsection 501.043 of the Standard Specifications:

The Contractor shall secure the H-piles in place within the required horizontal and vertical tolerances prior to and after grout placement and backfilling. H-Piles shall be braced or suspended, or both, to ensure vertical and horizontal alignment tolerances are achieved.

The maximum vertical deviation between the bottom surface of each quadrant of a bedrock-socket shall be 0.5 inches. The highest point of the bedrock at the bottom of a rock socket after all residual material is removed from within the bedrock-socket footprint shall be considered the bedrock-socket bottom and shall not be above the minimum depth below top of rock as shown on the Plans.

The Contractor shall demonstrate to the Resident that a minimum of 50 percent of the bottom of each rock-socket shall have less than 0.5 inches of sediment at the time of grout placement. The use of a weighted tape, a solid rod, downhole video camera, or other suitable methods detailed in the Installation and Quality Control Plan and accepted by the Resident shall be used to determine the presence of sediment and the sediment thickness across the entire bottom of the rock-socket prior to placement of the H-piles.

The vertical distance between the bottom of the abutment and the top of the grout in a rock-socket shall not be less than that shown on the Plans. At the Contractor's option and at no additional cost to the Department, the socket may be drilled deeper, and the vertical distance from abutment to grout increased and/or the grout column height increased for constructability purposes.

501.047 Splicing Piles.

The following is added to Subsection 501.047 of the Standard Specifications:

Splicing of H-piles for rock-socketed H-Pile foundation is prohibited.

501.049 Drilling and Rock-Socket Excavation.

The following Subsection is added to the Standard Specifications:

The Contractor shall complete bedrock excavations at the plan locations, to the minimum depths below top of rock, and to the minimum dimensions shown on the Plans. Bedrock-socket bottom depths may be adjusted with approval of the Resident but shall not be shallower than the bottom depths shown on the Plans. Top of bedrock at each rock socket location will be determined in the field by the Resident.

The Contractor shall advance the drill casing into bedrock as necessary to create a positive seal at the bottom of the casing to prevent entry of soil and groundwater into the rock-socket. The use of vertically split-seamed, break-away style casing is prohibited. After a positive seal at the bottom of the casing is established, the excavation shall then continue into bedrock as an uncased or cased rock-socket to the minimum length and diameter indicated on the Plans. The rock-socket shall not be constructed until the casing is sealed in bedrock and until the casing is checked for plumbness. Rock-socket excavation shall create a cylindrical opening no less than the minimum diameter indicated and to the full-depth shown on the Plans, or to the depth directed by the Resident. The Contractor shall avoid over-breakage of the rock surface to preserve the seal at the bottom of the drill casing. The constructed rock-socket bottom shall meet the specified tolerances and have a planar, or nearly planar horizontal surface.

The Contractor shall maintain a construction method log during drilling, excavation and cleaning of each rock socket shown on the Plans. At a minimum, the log shall contain information such as the: project name and WIN, date(s) the rock-socket is drilled and excavated, drilling and excavation start and stop time(s), personnel, weather, pile identification number, drilling and excavation equipment and methods, drilling resistance, rock-socket bottom cleaning method(s), number, type and vertical extent of obstructions, and measurements and estimation of seepage rate of groundwater through drill casing/bedrock seal.

The Contractor shall maintain a grout placement log during each grout placement operation. At a minimum, the log shall contain information such as the: project name and WIN, date of grout placement, bottom depth of grout tube prior to start of grouting, grout placement start and stop times, grout placement equipment and methods, personnel, and weather. Grout placement logs for each pile or placement shall also include the pile identification, quantity of grout placed, final elevation of the top of the grout placement, and grout flow or placement rate.

The Contractor shall dispose of excavated materials removed from socket excavations in accordance with the applicable specifications for disposal of excavated materials. Cleaning of the bedrock-socket may be performed by cleanout auger or bucket, reverse circulation, air-lifting, or vacuum excavation methods or other suitable methods detailed in the Installation and Quality Control Plan and accepted by the Resident.

The Contractor shall perform any necessary excavation for the rock-socketed H-pile foundation under this item. No separate payment will be made for excavation of materials of different densities or employment of special tools and procedures necessary to accomplish the excavation. Blasting is prohibited.

The Contractor shall provide access and equipment to the Resident for checking the alignment of the drill casing and for checking the dimension, alignment, and cleanliness of the rock socket. A weighted tape or other method(s) approved by the Resident shall determine final pile and socket depths after final cleaning. The Contractor shall demonstrate acceptable socket cleanliness to the Resident and Geotechnical Engineer prior to grout placement. H-pile placement and grout placement operations shall not begin until the Resident's approval is obtained.

501.050 Obstructions

The following Subsection is added to the Standard Specifications:

The Contractor shall remove surface and subsurface obstructions at the pile locations. Obstructions may include but are not limited to manmade materials and natural materials such as cobbles and boulders. The Contractor shall clear obstructions by conventional excavation methods, special procedures and/or tools after it is determined that the drill casing cannot be advanced using conventional augers fitted with soil teeth, rock teeth, or drilling buckets. Such special procedures/tools include, but are not limited to: chisels, boulder breakers, core barrels, and air tools. Compacted suitable backfill, as determined by the Resident, shall replace materials removed by excavation methods. The removal of obstructions to construct rock-socketed H-pile foundations will be considered incidental to this item.

Drilling tools that are lost in the excavation shall not be considered obstructions. The Contractor shall promptly remove lost drilling tools without compensation. There will not be additional payment for costs incurred because of loss and recovery of drill tools.

501.051 H-Pile and Grout Installation

The following Subsection is added to of the Standard Specifications:

Standoffs shall be used to keep the bottom of H-pile the minimum distance above bottom of socket shown on the Plans. The socket shall then be filled with grout using tremie methods. "Wet sticking" or placing the pile into wet grout, is prohibited. The Contractor shall support the H-Piles vertically and laterally in their final positions until laboratory test results have been

submitted that indicate that the minimum required compressive strength of the grout has been achieved and the abutment is complete and in place.

Rock-socketed H-Pile foundation grout and the grout mix shall conform to the materials portion of this Special Provision. Grout placement shall utilize tremie methods by introducing the grout below the bottom of the bearing plate in a continuous stream until the grout has filled the rock-socket to the level indicated on the Plans. The bottom of the tremie tube shall remain either at the bottom of the grout column or a minimum of 5 ft below the top of the grout column at all times during grouting operations. Displaced groundwater exiting the top of the drill casing shall be controlled and treated as necessary to protect adjacent water resources.

The cased holes, between the top of the grout and the bottom of the concrete abutments, shall be backfilled with aggregate that meets the requirements of Subsection 703.22, Underdrain Backfill Material, Type C. The aggregate shall be dropped. The Contractor shall place the material to the limits shown on the Plans. The casing may be withdrawn as aggregate is placed provided no damage to the grout column or pile occurs. The grout shall achieve the design unconfined compressive strength before the casing is removed. The Contractor shall maintain the bottom elevation of the casing a minimum of 24 inches below the aggregate as the aggregate is dropped and the casing is withdrawn. At a minimum, the Contractor shall place aggregate to the bottom elevation of the concrete pile jacket.

After installation of H-piles, the Contractor shall protect the H-piles from impact or other disturbance during subsequent construction operations. Additional length of H-pile, bracing, and other incidentals associated with protecting the installed H-piles and maintaining the vertical and lateral positions of the piles, will be considered incidental to related items.

501.05 Method of Measurement.

The following is added to subsection 501.05 of the Standard Specifications:

A. Drilling Equipment Mobilization Rock-Socketed H-Piles. Mobilization of drilling equipment shall be as outlined in subsection 501.05(a), Equipment Mobilization.
B. Piles Furnished. Furnishing of H-piles for rock-socketed H-Pile foundation shall be as outlined in subsection 501.05 (b), Piles Furnished.
C. Piles in Place. Method of measurement for constructing rock-socketed H-pile foundation as described in this Section shall be measured by the linear foot of piles in place.

501.06 Basis of Payment.

The following is added to subsection 501.06 of the Standard Specifications:

The accepted quantity of Rock Socketed H-Piles, In Place, will be paid for at the Contract Unit Price per linear foot, complete and in place. Such payment will be full compensation for all materials, equipment, testing, and labor to install the piles, including the shoe plate assembly,

excavation, installing the drill casing, drilling out rock sockets, grouting, backfilling, and all incidentals necessary to complete the work specified in the Contract Documents.

Payment will be made as follows:

Pay Item		Pay Unit
501.502	Rock-Socketed H-Piles 89 lb/ft, in place	Linear foot
501.804	Drilling Equipment Mobilization, Rock-Socketed H-pile	Lump Sum

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Moment Slab)

502.18 Method of Measurement The following paragraph is added to paragraph B.:

The structural concrete moment slab will be the entire moment slabs, as shown on the Plans.

502.19 Basis of Payment The following paragraph is added:

The Structural Concrete Moment Slab will be paid for at the Contract lump sum price.

Payment will be made under:

Pay Item	Pay Unit
502.453 Structural Concrete Moment Slab	Lump Sum

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Sleeper Slab)

502.15 Loading Structures and Opening to Traffic The fifth paragraph is revised to read as follows:

Concrete approach slabs and sleeper slabs at the end of structures may be opened to traffic or backfilled if buried, when the design strength has been reached.

502.18 Method of Measurement Subsection B is amended by the addition of the following paragraph:

10. Structural Concrete, Sleeper Slabs The limit will be the entire sleeper slab or slabs, as shown on the Plans.

502.19 Basis of Payment The following pay item is added to the end of this subsection:

Pay Item		Pay Unit
502.454	Structural Concrete Sleeper Slab	LS

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Fiber Reinforced Polymer Bridge Drains)

Description

This work shall consist of design, fabrication and delivery of bridge drains using FRP (Fiber Reinforced Polymer) composite materials in accordance with the plans and this specification.

Specifications

Work shall be done in general accordance with the following specifications:

a. AASHTO LRFD Guide Specifications for Design of Concrete-Filled FRP Tubes for Flexural and Axial Members, 2012.
b. American Composites Manufacturing Association, ACMA Code of Standard Practice, First Edition, 2011.
c. ISO/IEC Guide 58, Calibration and Testing Laboratory Accreditation Systems - General Requirements for Operation and Recognition.
d. ISO/IEC 17025 General Requirements for the Competence of testing and Calibration Laboratories.
e. MaineDOT Standard Specifications.

2.3 Standards

A.) ASTM D 2584. *Standard Test Method for Ignition Loss of Cured Reinforced Resins.* American Society for Testing and Materials, West Conshohocken, PA.

B.) ASTM D 3039. *Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials.* American Society for Testing and Materials, West Conshohocken, PA.

C.) ASTM D 3171. *Standard Test Methods for Constituent Content of Composite Materials.* American Society for Testing and Materials, West Conshohocken, PA.

D.) ASTM D 4385. *Standard Practice for Classifying Visual Defects in Thermosetting Reinforced Plastic Pultruded Products.* American Society for Testing and Materials, West Conshohocken, PA.

E.) ASTM D 570. *Test Method for Water Absorption of Plastics.* American Society for Testing and Materials, West Conshohocken, PA.

F.) ASTM E 1356. *Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry.* American Society for Testing and Materials, West Conshohocken, PA.

G.) ASTM E 1640. *Standard Test Method for Assignment of the Glass Transition Temperature by Dynamic Mechanical Analysis.* American Society for Testing and Materials, West Conshohocken, PA.

H.) ASTM C 582. *Standard Specification for Contact-Mold Reinforced Thermosetting Plastic (RTP) Laminates for Corrosion-Resistant Equipment.* American Society for Testing and Materials, West Conshohocken, PA.

Material

Materials shall conform to the following requirements:

1. FRP composite drain and pipe material shall meet the requirements of Appendix A.

2. All material and workmanship will meet or exceed the requirements of the ASTM Specifications above.

3. Drain support assembly shall meet the material and protective coating requirements specified in the Standard Details.

Construction Requirements

FRP Drain Manufacturers

The FRP bridge drains shall be supplied by one of the following companies:

1. Kenway Corporation
2. FRP Bridge Drain Pipe-Westfall Company
3. ACO USA

The above suppliers have been pre-certified by providing materials samples that have been tested in accordance with Appendix A. Other suppliers/manufacturers may become certified if FRP bridge drain samples are tested in accordance with the requirements in Appendix A along with meeting the following requirements.

All manufacturers or fabricators of FRP bridge drain systems/components are required to have a minimum of 3 years of experience in providing FRP composite structural grade products to the general market. Manufacturers need to provide documentation that personnel involved in manufacture/fabrication hold and maintain American Composites Manufactures Association (ACMA) certifications in a minimum of one of the following disciplines; 1) Open Molding, 2) Corrosion, 3) Vacuum Infusion, 4) Closed Molding and that the Manufacturer/Fabricator have an

ISO 9001:(current year) or other independent certification to ensure that the Manufacturer's process has been independently audited for conformance.

Design Guide for FRP Composite Scupper Bodies/Drain Inlets

General

The bridge shall use a drain size specified on the plans. See Appendix B for additional details. The bottom of the downspout shall extend a minimum of 12 inches below the bottom of the beams. For bridge decks with an integral concrete wearing surface, the drain pan depth shall be reduced to provide adequate concrete cover.

Deck/interface drain holes.

For bridge decks with pavement and waterproofing membrane, drain holes are required on both sides of the scupper to capture moisture at the interface between the top of the deck and bottom of the asphalt pavement. Three holes one half inch in diameter spaced at 6 inches on center and three and one quarter inches on center below the top of the grate, or pavement thickness, shall be placed on both sides of the scupper. If the holes are created after the molding process by punching, drilling or other mechanical means, the holes shall be sealed using a compatible epoxy compound.

Grates

Grates shall be bicycle friendly and designed for HL-93 Live Load unless otherwise specified. Any gaps in grates shall have a maximum clear width of two inches. The minimum clear opening size in any grating shall be 1 1/8” by 1 1/8”. Grates shall be stainless steel (ASTM A955) or FRP specifically designed and meet the HL-93 Live Load requirements.

- Steel grating shall be commercial heavy - duty grating with 1 1/2" x 5/16" bearing bars spaced at 2 3/8” and 3/8" diameter cross bars spaced at 2”. The grating shall be centered in the drain top. The bearing bars shall run parallel to traffic.
- FRP grating if used shall provide an opening area at least 75% of steel grating noted above. FRP gratings that do not meet this requirement are not acceptable and shall not be used.

Grates shall be designed so that they can be removed by mechanical means. Fasteners for grates shall be stainless. Where selected grates require orientation to flow, the grates will have orienting features included as required, i.e. for orders of paired drains one drain would have left hand orientation and the other right-hand orientation.

See Plans for opening requirements and specific details for pedestrian friendly grates on the shared use path on the bridge.

Grate Frames
Grate frames may be either integrated FRP composite or of stainless steel construction attached to the scupper/inlet body in a matter consistent with the physical design parameters.

Anchoring provisions
Scupper/inlet anchoring shall be bonded to the grate framing in a manner that provides a load path into the concrete decking. Anchor details to be specified as part of the shop drawings for the bridge drains and be a non-corrosive material.

Cross and Longitudinal Slope Compensation
The scupper/inlet designs shall provide a means to match the grate to the deck angles while maintaining the downspout in a plumb orientation. If purchased in pairs, one left handed version will be required for each right handed version. This may be achieved when a down spout portion is bonded to the scupper body, through the frame attachment to the scupper body.

FRP Composite Drain Sections
Bridge deck downspouts, bridge drain deck extensions, elbows and pipe for under drains shall be constructed using a circular cross section; however other cross sections are allowed with approval of the Fabrication Engineer or if required in the Plans. Drain sections shall comply with the material requirements set forth in Appendix A and maintain wall thickness of no less than 1/4 inch.

FRP Composite Deck Drain Extensions.
Down spout drain extensions shall be integrated and bonded directly to the scupper bodies.

Transitions through Connections and Components.
All transitions and joints to be manufactured through the use of smooth radius molds. Miter joint and edged transitions are not allowed. All internal joint connections are to be smooth and continuous.

Pigmented FRP Composite Drain Components
Pipes, fittings, bodies and all FRP composite drain system components shall be pigmented through the wall. The color used shall match the color of the beams unless otherwise allowed by the Fabrication Engineer. Paint, gelcoat or any other exterior coating shall not be accepted.

Joint Connections
Joints may be welded using manufacturer recommended adhesives in accordance to the adhesive manufacturer's application procedures. Adhesives must be compatible with the FRP resins, applied in a way that ensures complete bonding and liquid tight sealing of the resins, and be compatible with the environmental conditions such as temperature, freeze thaw conditions, and wet alkaline environments.

Shop Drawings/Inspection

Drawings The Contractor shall prepare shop detail, erection and other necessary working drawings in accordance with Section 105.7 - Working Drawings. Drawings shall include dimensions and tolerances necessary for manufacture and installation, all hardware, orienting features, anchor details, fastener details, gasket details, cross and longitudinal matching features, joint details, transition details, and material lay-up/composition

Notice of Beginning Work The Contractor shall give the Fabrication Engineer a minimum of two weeks notice before the beginning of work. No work shall be performed before the Fabrication Engineer has been notified. Before beginning work, a pre-fabrication meeting may be held at the discretion of the Fabrication Engineer or, if requested, by the Contractor.

The Contractor shall advise the Fabrication Engineer of the production schedule and any changes to it. If the Contractor suspends work on a project, the Fabrication Engineer will require 48 hours notice prior to the resumption of work.

Inspection Quality Control (Q.C.) is the responsibility of the Contractor. The Quality Control Inspector (Q.C.I.) shall inspect all aspects of the work and shall supervise all nondestructive examination (NDE). The Q.C.I. shall record measurements and test results in a clear and legible manner. The Q.C.I. shall reject materials and workmanship that do not meet contract requirements. The Contractor may perform NDE in addition to the minimum required. The results of all measurements and testing shall be made available to the Quality Assurance Inspector (Q.A.I.).

Quality Assurance (Q.A.) is the prerogative of the Fabrication Engineer. The Q.A.I. will ensure that the Q.C. Department is performing properly, verify documentation, periodically inspect workmanship and witness NDE. Q.A. testing deemed necessary by the Fabrication Engineer in addition to the minimum testing requirements shall be scheduled to minimize interference with the production schedule.

Inspector's Authority The Q.A.I. will have the authority to reject material or workmanship that does not meet the contract requirements. The acceptance of material or workmanship by the Q.A.I. will not prevent subsequent rejection, if found unacceptable.

Rejections Rejected material and workmanship shall be corrected or replaced by the Contractor.

Bill of Materials The Contractor shall provide the Fabrication Engineer with copies of all bills of materials used in the fabrication of the FRP bridge drains.

Packaging, Storage and Shipping of Components
FRP drains shall be stored and handled in accordance with the manufacturer's recommendation. The drains shall be stored above the ground and not be allowed to come into contact with seawater, mud, grease, dirt or other deleterious materials that may be present on the job site.

Installation
The Contractor shall install the FRP drains in accordance with the manufacturer's installation procedures, Contract Plans, and in accordance with the Contractor's installation drawings. FRP bridge drains will be accurately placed at the locations shown on the Plans or as authorized by the Resident. Adequate means shall be provided for securely holding the drains in place during placement of concrete. Any damaged drain shall be repaired or replaced at the Resident's discretion and at no additional cost to the Department.

Method of Measurement
FRP Bridge Drains will be measured by the number of units, for fabrication and delivery. Installation for the drains will be incidental to the Structural Concrete Superstructure item.

Basis of Payment
FRP Bridge Drains will be paid for at the contract unit price. Such payment will include compensation for the fabrication and delivery of the drains in accordance with this specification.

Payment will be under:

Pay Item		Pay Unit
502.77	FRP Bridge Drain –Type X	Each

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Fiber Reinforced Polymer Bridge Drains)

APPENDIX A

A.1 Scope
This section specifies the material composition, properties, test requirements and reports that shall be submitted and approved prior to and after product certification of each FRP composite drain component type, e.g. scupper body or pipe component. The manufacturer is responsible for testing using an approved independent lab per section A.5.3. Once certified the approved product may be manufactured with only internal testing provided the manufacturing process and laminate composition do not change. Changes to process and or composition do require additional testing and product certification. The manufacturer shall report the individual test results per section A.5.3. If the strength is less than the required properties certification will not be granted.

A.2 Material/Laminate Composition

A.2.1 Fibers
Fiber sizings and coupling agents shall be compatible with the resin system used to impregnate them.

A.2.2 Matrix Resins
Commercial grades of vinyl ester and epoxy resin systems are permitted provided the finished product meets the material property requirements before and after durability conditioning as set forth in Section A. Styrene is permitted to be added to the polymer resin during processing. Added styrene shall be less than 10 percent by mass of the polymer resin. The amount of styrene, as a mass percentage of the polymer resin, added during processing shall be reported per Section A.5.3.

A.2.3 Fillers and Additives
Commercial grade inorganic fillers such as kaolin clay, calcium carbonate, and alumina tri-hydrate shall not exceed 20 percent by mass of the polymer resin constituent. Commercial grade additives and process-aids, such as release agents, low profile shrink additives, initiators, promoters, hardeners, catalysts, pigments, fire-retardants, and ultra-violet inhibitors are permitted and depend on the processing method. Shrink additives, if used, shall be less than 20 percent by mass of the polymer resin. Commercial grade inorganic or organic non-woven surfacing mats or veils are permitted.

A.2.4 Fiber Content
Fiber content shall be measured by ASTM D 3171 or ASTM D 2584. Fiber content shall be high enough to meet the mechanical property requirements of the FRP system laminate. The manufacturer shall report the fiber content of the end product by volume or by mass in accordance to the method used. If fiber content is not provided by the manufacturer, then the manufacturer shall provide material data sheets with the weight per unit area of the fiber reinforcement used to manufacture the part.

A.2.5 Glass Transition Temperature
The characteristic value of the glass transition temperature of the composite system, determined in accordance with ASTM E1640, shall be at least 40 degrees Fahrenheit higher than the maximum design temperature, $T_{MaxDesign}$, defined in section 3.12.2.2 of the AASHTO LRFD Guide Specifications for Design of Concrete-Filled FRP Tubes for Flexural and Axial Members, 2012. FRP drain systems may not be used in environments with a service temperature higher than the glass transition temperature of the resin used for their manufacturing.

A.2.6 Longitudinal and Transverse Coefficients of Thermal Expansion (CTE)
The coefficient of Thermal Expansion (CTE) of the tube may vary in the longitudinal and circumferential directions of the component depending on the laminate architecture and type of fibers and resins.

A.3 Mechanical Properties

A.3.1 Tensile Properties
The tensile strength, tensile modulus of elasticity, and ultimate tensile strain shall be determined for both the axial and hoop directions of the tubular components or in transverse and longitudinal directions of inlet bodies, see Section A.5.1 Test Samples. The tensile strength as reported by the manufacturer for product certification shall be measured according to ASTM Test Method D 3039, or other tension test method designed to determine tensile properties of composite laminates at the approved frequency and number of specimens as specified in section A.5.

A.3.4 Compressive Properties
The compressive strength and ultimate compressive strain shall be determined for the longitudinal directions of the tube laminate. The compressive strength and ultimate compressive strains shall be derived from specimens tested in accordance with ASTM Test Method D 6641, or other approved compression test method designed to determine compressive properties of the composite.

A.4 Durability Properties
Material properties shall retain 85% of their baseline values for the material properties listed in Section 2.3 after conditioning for all the durability tests listed below. Durability test methods are adopted from AASHTO Guide Specifications for Design of Bonded FRP Systems for Repair and Strengthening of Concrete Bridge Elements.

Durability property testing is only required for initial product certification and not required for subsequent production orders. The testing is the responsibility of the manufacturer and shall be conducted by an approved independent testing lab per section A.5.2.

A.4.1 Moisture Absorption
Samples will be immersed in distilled water having a temperature of 100 +/-3 degrees Fahrenheit and tested after 1,000 hours of exposure.

A.4.2 Resistance to Alkaline Environment
Samples will be immersed in a saturated solution of calcium hydroxide (pH-11) at ambient temperature of 73 +/-3 degrees Fahrenheit for 1,000 hours prior to testing. The pH level will be monitored, and the solution will be maintained as needed.

A.4.3 Alternating Ultraviolet Light and Condensation Humidity
Samples will be conditioned in an apparatus under Cycle I-UV exposure condition according to ASTM G154 Standard Practice. Samples will be tested within two hours after removal from the apparatus.

A.4.4 Freeze-Thaw
Samples will be exposed to 100 repeated cycles of freezing and thawing in an apparatus meeting the requirements of ASTM C666.

A.5 Sampling, Testing & Results.

A.5.1 Test Samples.
The manufacturer is responsible for testing and may use samples in accordance to the test methods and needs of test equipment available. Test coupons may be cut from manufactured products or prepared using identical processes e.g. wet lay-up, vacuum infusion, etc. in a flat sheet, or witness plate, in which test coupons may be cut. Approval of the Fabrication Engineer shall be required for acceptance of test specimens produced by a different manufacturing method. Samples derived from special coupon test sheets shall be taken interior to edge sections 1.5x the width of the required coupon width. Samples shall be prepared from samples oriented with the directions illustrated in figures 1 and 2 for scupper body and drainpipes. For samples from filament wound pipes, samples shall be constructed over polygon mandrels allowing for flat panels to be removed for test purposes. Each test shall use a quantity of three samples. See Tables A.5.4 for tests, material requirements and sample breakdown.

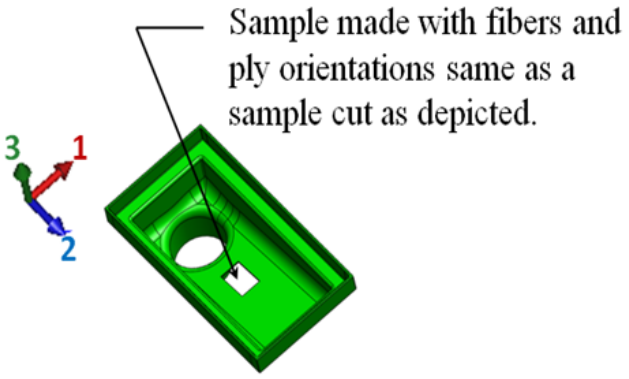


Figure 1.) Scupper Body Sample Orientations.

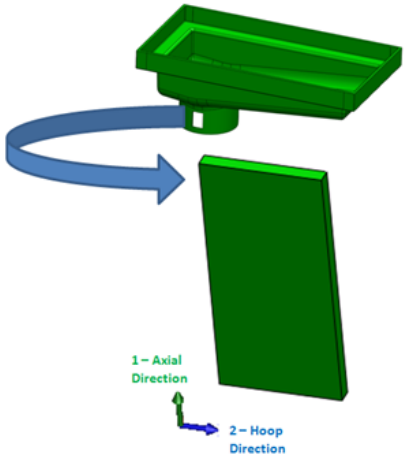


Figure 2.) Drain Pipe Sample Orientations.

A.5.2 Test Lab Requirements.
All testing of FRP material properties is being conducted in accordance to specified standards. Internal or external testing is to be conducted through laboratory facilities in accordance to ISO/IEC Guide 58, *Calibration and Testing Laboratory Accreditation Systems - General Requirements for Operation and Recognition* and ISO/IEC 17025 *General Requirements for the Competence of testing and Calibration Laboratories* as related by AASHTO document R18 "Recommended Practice for Establishing and Implementing a Quality System for Construction Materials Testing Laboratories."

A.5.3 Production Validation (PV) Testing.
Certification of materials used in FRP drain products must undergo PV testing of the specified material properties before and after environmental conditioning as set forth in Section A.5.4 by an independent lab. PV tests may be conducted internally by the manufacturer for development but are not acceptable for certification. Reported values for the material composition is be recorded and reported by the manufacturer, no independent audit is required.

A.5.4 Production Validation Sample Quantities, Minimum Material Properties and Reported Values
The following data shall be reported for material certification. Note that the tables shown use orientations related to FRP scupper or inlet bodies as set forth in Figure 1 of Section A.5.1. When evaluating tubular sections, orientation direction 2 as shown in Figure 2 of Section A.5.1 shall be substituted for orientation direction 3. The required number of samples have been reduced from ASTM requirements.

Table A.5.4.a PV reported material composition data. (Recorded by the manufacturer during the manufacturing process)

Section No.	Characteristic	Applicable Test Standard	Number of Samples	Tolerance	Reported
A.2.2	Styrene, mass percentage of polymer resin	per tolerance	N/A	10% max	
A.2.3	Inorganic fillers, mass percentage of polymer resin.	per tolerance	N/A	20% max	
	Shrink additives, mass percentage of polymer resin.	per tolerance	N/A	20% max	
A.2.4	Fiber Content	ASTM D3171 or ASTM D2584	3	Sufficient to meet mechanical properties	
A.2.5	Glass Transition Temperature	ASTM E1640	3	> Max Design Temperature	

Table A.5.4.b PV Reported Baseline Mechanical Properties

(Conducted by an independent laboratory. Samples as Manufactured w/o additional conditioning per Section A.3)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	10000 (psi)				
		Tensile Modulas of Elasticity			800000 (psi)				
		Ultimate Tensile Strain			0.003 in/ in				
	2	Tensile Strength		3	10000 (psi)				
		Tensile Modulas of Elasticity			800000 (psi)				
		Ultimate Tensile Strain			0.003 in/ in				
A.3.4	1	Compressive Strength	ASTM D6641	3	22000 (psi)				
		Ultimate Compressive Strain			0.003 in/ in				
	3	Compressive Strength		3	22000 (psi)				
		Ultimate Compressive Strain			0.003 in/ in				

Table A.5.4c PV Reported Mechanical Properties after 1000 hr. Moisture Immersion Condidtioning per Section A.4.1

(Conducted by an independent laboratory)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
	2	Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
A.3.4	1	Compressive Strength	ASTM D6641	3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				
	3	Compressive Strength		3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				

Table A.5.4d PV Reported Mechanical Properties after 1000 hr. of Alkaline Environment Conditioning per Section A.4.2

(Conducted by an independent laboratory)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
	2	Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
A.3.4	1	Compressive Strength	ASTM D6641	3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				
	3	Compressive Strength		3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				

Table A.5.4e PV Reported Mechanical Properties after UV Light Conditioning per Section A.4.3 (ASTM G154).

(Conducted by an independent laboratory)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
	2	Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
A.3.4	1	Compressive Strength	ASTM D6641	3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				
	3	Compressive Strength		3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				

Table A.5.4f PV Reported Mechanical Properties after 100 Freeze-Thaw Cycle Conditioning per Section A.4.4 (ASTM C666).

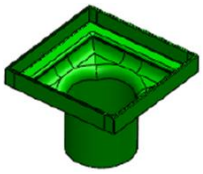
(Conducted by an independent laboratory)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
	2	Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
A.3.4	1	Compressive Strength	ASTM D6641	3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				
	3	Compressive Strength		3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Fiber Reinforced Polymer Bridge Drains)

APPENDIX B

Standard Details



Bridge Drain – Symmetric Inlet

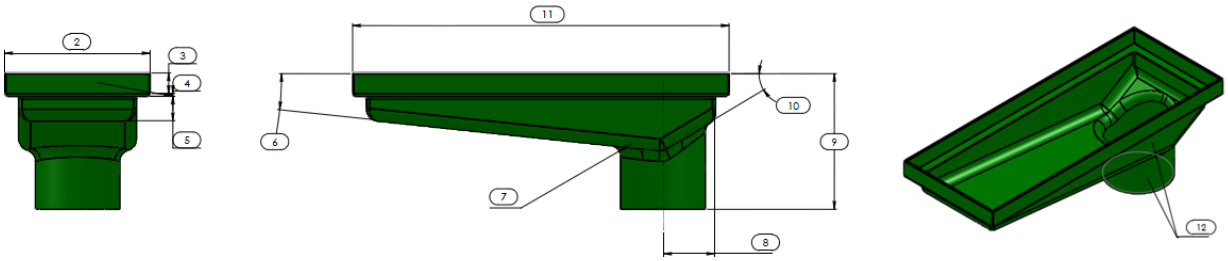
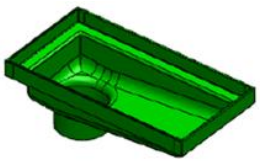


Table B1 Preferred Symmetric FRP Composite Inlet Bodies

	Size Designation	A	B	C		
	Size Dimensions (Grate Length x Width, Down Spout Diameter)	12x12xØ8	14x14xØ10	18x18xØ12		
Dimension		Nominal Dimensions			Nominal Design Tolerance	Manufacturing Tolerance
Number	Name					
1	Down Spout Inner Diameter	8"	10"	12"	min	+/- 0.015"
2	Grate Frame Width	12"	14"	18"	+/- 1"	+/- 0.025"
3	Grate Frame Height	As required to contain grate and recessed from deck surface				
4	Grate Frame Flange & Wall Thickness	0.25"	0.25"	0.25"	min	+/- 0.025"
5	Scupper Toe Depth	4"	4"	4"	+1"/-0"	+/- 0.1"
6	Scupper Toe Slope	1:10	1:10	1:10	min	+ 1 degree
7	Scupper Body Radii	2"	2"	2"	min	+0.1"
8	Down Spout Position to Heel	6"	6"	6"	+/- 0.5"	
9	Height	18"	18"	18"	Open	+/- 0.25"
10	Scupper Heel Slope	1:10	1:10	1:10	min	+0.1"
11	Grate Frame Length	12"	14"	18"	+/- 1"	+/- 0.025"
12	Scupper and Down Spout Wall Thickness	0.25"	0.25"	0.25"	min	+0.015"



Bridge Drain-Offset Scupper

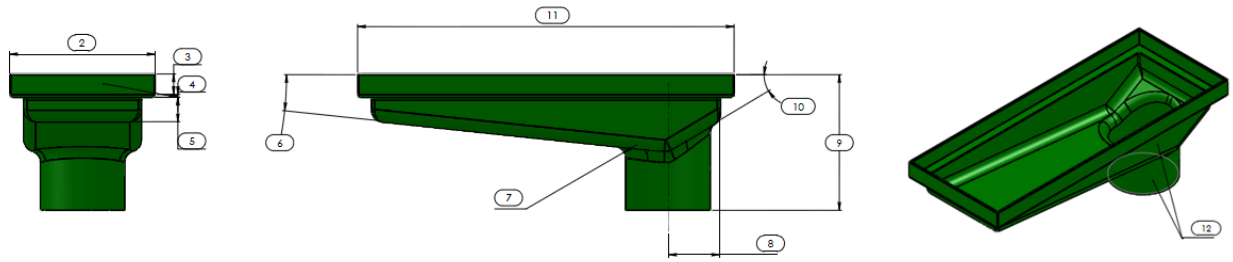


Table B2 Preferred Offset FRP Composite Scupper Bodies

	Size Designation	D	E	F	G		
	Size Dimensions (Grate Length x Width, Down Spout Diameter)	24x12xØ8	30x12xØ10	36x12xØ10	42x12xØ12		
Dimension		Nominal Dimensions				Nominal Design Tolerance	Manufacturing Tolerance
Number	Name						
1	Down Spout Inner Diameter	8"	10"	10"	12"	min	+/- 0.015"
2	Grate Frame Width	12"	12"	12"	12"	+ 2"/-0"	+/- 0.025"
3	Grate Frame Height	As required to contain grate and recessed from deck surface					
4	Grate Frame Flange & Wall Thickness	0.25"	0.25"	0.25"	0.25"	min	+/- 0.025"
5	Scupper Toe Depth	4"	4"	4"	4"	+1"/-0"	+/- 0.1"
6	Scupper Toe Slope	1:10	1:10	1:10	1:10	min	+ 1 degree
7	Scupper Body Radii	2"	2"	2"	2"	min	+0.1"
8	Down Spout Position to Heel	6"	6"	6"	6"	+/- 0.5"	
9	Height	13.5"	16"	18"	18"	Open	+/- 0.25"
10	Scupper Heel Slope	1:10	1:10	1:10	1:10	min	+0.1"
11	Grate Frame Length	24"	30"	36"	42"	+ 2"/-0"	+/- 0.025"
12	Scupper and Down Spout Wall Thickness	0.25"	0.25"	0.25"	0.25"	min	+0.015"

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(QC/QA Acceptance Methods)

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
A	502.219	Structural Conc. Abut. and Retaining Walls	$400	A
A	502.23	Structural Concrete Piers	$400	A
A1	502.26	Structural Conc. Roadway & Sidewalk on Steel Bridges	$400	A
A1	502.31	Structural Concrete Approach Slab	N/A	C
A	502.453	Structural Concrete Moment Slab	N/A	C
A1	502.454	Structural Concrete Sleeper Slab	N/A	C
A1	502.49	Structural Concrete Curbs & Sidewalks	N/A	C
A1	526.322	Perm. Conc. Barrier, Type III Modified	N/A	C

P values listed above reflect the price per cubic yard (CY) for all pay adjustment purposes.

The quantity used for Pay Adjustment purposes shall be the actual quantity of cast in place concrete placed and accepted. This quantity shall be computed by the Contractor and submitted to the Resident for approval.

SPECIAL PROVISION
SECTION 504
STRUCTURAL STEEL
(Girder Ends)

The provisions of this specification pertain specifically and only to the portion of Bridge #5823 carrying Hogan Road over I-95 that is to remain. These provisions are in addition to those of section 504 of the standard specifications:

504.01 Description This subsection is amended by the addition of the following paragraphs:

This work shall consist of field cutting the girder ends as indicated on plans and in these specifications, field drilling holes in the existing girder ends for new splice plates, and the coping/clipping of the girder ends. In addition, the work shall include the removal and proper containment of protective coatings and localized application of new, shop applied protective paint coatings at the end regions of the girders that are embedded in concrete or to receive new bolted field splices.

Construction Requirements: Field cutting and removal of the existing girders shall not proceed until temporary structural support is in place and approved. Field cutting shall be accomplished with a mechanically guided torch to ensure a precise and uniform cut. All work shall conform to the applicable subsections of Section 504, Structural Steel and Section 506, Shop Applied Protective Coating-Steel.

The Contractor shall take care not to damage existing stud connectors. Any studs that need to be replaced due to condition or damage shall be installed in accordance with Section 505. Payment for stud removal and replacement shall be incidental to the Remove, Modify, and Reset Existing Structural Steel item.

Care shall be taken to ensure proper removal and containment of existing paint coatings that may contain lead.

504.65 Method of Measurement Remove, Modify, and Reset Existing Structural Steel will be measured as one lump sum complete and accepted. Such price includes all labor, equipment, materials, and consumables required to successfully complete the work. Fabrication, delivery and installation of new splice plates will be measured separately for payment.

In lieu of refurbishing the ends of the girders, the Contractor may replace the existing structural steel in-kind (or equivalent weldment). All work required for this substitution shall be incidental.

504.66 Basis of Payment Remove, Modify, and Reset Existing Structural Steel will be paid for at the contract lump sum price.

Pay Item		Pay Unit
504.73	Remove, Modify, and Reset Existing Structural Steel	LS

SPECIAL PROVISION
SECTION 506
Lead Abatement and Coating Application

ALL REQUIREMENTS IN THIS SPECIFICATION ARE THE RESPONSIBILITY OF THE CONTRACTOR UNLESS NOTED OTHERWISE.

506.01 Description This specification covers the field cleaning of and application of a protective coating system at the ends of the existing girders and where girders are to be cut and re-spliced. The work shall consist of furnishing all supervisory personnel, including competent person(s), labor, tools, equipment, containment, scaffolding, protection of property, Quality Control activities, materials, and incidentals necessary for satisfactory completion of the Work.

Existing steel coatings shall be removed from the girder ends to 2'-6" minimum beyond the location of the field cut and bolted field splice in the end spans of the bridge as shown in the Plans.

506.02 General All existing structural steel requires the complete removal of existing rust, mill scale and coatings which may contain lead and hexavalent chromium by abrasive blast cleaning or vacum–shrouded power tool cleaning. It is the responsibility of the Contractor to test the existing coating to determine the toxic metal content and, based on those results, design and implement the appropriate plans for containment, environmental protection, waste disposal and worker safety.

Apply a coating system to the cleaned surfaces. The coating system shall be selected from the Northeast Protective Coating Committee (NEPCOAT) Qualified Products List B. Organic Zinc Rich Primer, Three Coat System. The list may be found through NEPCOAT's web page: http://www.nepcoat.org.

Contractors and Subcontractors involved with the removal of lead based paint and the field application and touch-up of the coating systems shall be qualified in accordance with SSPC QUALIFICATION PROCEDURE NO. 1, Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures) and SSPC QUALIFICATION PROCEDURE NO. 2, Standard Procedure for the Qualification of Painting Contractors (Field Removal of Hazardous Coatings from Complex Structures) prior to Bid opening and shall remain qualified throughout the duration of the Contract. Copies of current certificates issued by the Qualifying Agency shall be submitted with the Bid package.

Perform lead abatement in compliance with all applicable federal, state and local regulations, including the current version of 29 CFR 1926, OSHA Construction Industry Health and Safety Standards, and in particular, the OSHA Lead in Construction Standard (29 CFR 1926.62).

Assure that the latest copies of the following documents are on site and available at all times. Applicable parts of the documents are enforceable as part of the Contract:

- SSPC 05-03 Surface Preparation Specifications and Practices
- SSPC VIS 1, Visual Standard for Abrasive Blast Cleaned Steel.
- SSPC VIS 3, Visual Standard for Power and Hand-Tool Cleaned Steel.
- SSPC Guide 6, Guide for Containing Surface Preparation Debris Generated During Paint Removal.
- SSPC Guide 7, Guide to the Disposal of Lead-Contaminated Surface Preparation Debris.
- Maine Department of Environmental Protection's *Hazardous Waste Management Rules.*
- 40 CFR 60, Appendix A, Method 22, Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Fires.
- 40 CFR Part 50 Appendix B, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method).
- 40 CFR Part 50 Appendix G, Reference Method for the Determination of Lead in Suspended Particulate Matter Collected from Ambient Air.
- SSPC Guide 16, Guide to Specifying and Selecting Dust Collectors.
- SSPC Technical Update TU-7, Conducting Ambient Air, Soil, and Water Sampling During Surface Preparation and Paint Disturbance Activities.
- 29 CFR 1926, OSHA Construction Industry Health Standards.
- Maine Department of Environmental Protection's *Hazardous Waste Management Rules*.
- SW 846, Test Methods for Evaluating Solid Waste – Physical/Chemical Methods
- Method 1311, Toxicity Characteristic Leaching Procedure (TCLP)
- Department of Environmental Protection's *Handbook for Hazardous Waste Generators*.

Supply the Resident with the applicable product data sheets and safety data sheets (SDS) before any coating work is performed. Also obtain from the manufacturer written procedures for touch-up including acceptable coating materials. If the coating manufacturer recommends a coating material for touch-up that is different from the coating material chosen by the Contractor, it will be supplied at no additional cost to the Department. Obtain in writing from the coating manufacturer, and provide to the Resident, a chart or table listing minimum and maximum recoat times for the primer and intermediate coat over the expected range of temperatures and relative humidity.

The primer color and the blasted steel shall be contrasting colors, and the primer and intermediate color shall be contrasting colors. Stripe coating shall be a contrasting color to the previous coat. The finish topcoat color shall be green and match the following Federal Standard 595C, light green, color number: **14272**.

506.03 Quality Control The Contractor is responsible for all aspects of the quality of the Work, including labor, equipment, materials, incidentals, processes, construction methods and Quality Control. Quality Control (QC) is the planned and specified actions or operations necessary to produce an end product that Conforms to the requirements of the Contract and includes inspections and testing for process control to the extent determined necessary by the Contractor. All costs associated with QC activities shall be considered incidental to related Pay Items.

506.031 Submittals The Schedule of Work shall be in conformance with Standard Specification Section 107.4, Scheduling of Work, unless there is a Special Provision which supersedes the Standard Specification.

All Plans and submittals from the Contractor will be reviewed by the Department in accordance with Section 105.7, Working Drawings, of the Standard Specifications.

506.032 Quality Control Qualifications Provide QC personnel trained and certified by: The National Association of Corrosion Engineers (NACE) – International: Coating Inspector Program Level 1 (minimum); SSPC BCI Coatings Inspection Training and Certification for the Bridge Industry (Level I without certification), or Level II; or other training that is acceptable to the Department.

506.033 Quality Control Plan Submit a QC Plan to the Department for review at least 21 days prior to the beginning of any removal of paint. The QC plan shall include: The names of all the Contractor's on-site representatives, including the NACE/SSPC BCI certified inspector, who will be responsible for the inspection and the acceptance of the Contractor's work; the definition of hold points, from pre-surface preparation inspection to final inspection; the format and submittal process for daily work reports and coating/DFT reports; and the process for rework.

Develop a Job Control Record (JCR) to systematically organize all reports, tests, test locations, test results, Non-Conformance Reports, final acceptance and other documents deemed necessary by the Resident.

Violation of the QC Plan may result in a suspension of work. If the Department orders a suspension, in writing, work shall not resume until the Contractor provides a plan, which is acceptable to the Department, describing how compliance will be restored and maintained. A suspension resulting from the Contractor's failure to adhere to the QC Plan shall be considered an Inexcusable Delay.

506.034 Surface Preparation/Coating Plan Provide written procedures (preparation plan) for the surface preparation, the remediation of soluble salts, and coating application and repair. The plan shall include a description of the equipment that will be used for surface preparation and coating. The plan shall also identify the type and brand name of abrasive proposed for use; provide Safety Data Sheets (SDS) for proposed abrasive.

The preparation plan shall identify the methods of protection or work isolation procedures that will be followed to protect surrounding structures, concrete surfaces, equipment, galvanized bridge members, utility cables, etc. and property from exposure to surface preparation and paint debris. The Contractor is responsible for any damage caused by surface preparation.

All grease, oil, chlorides, salts and any other foreign matter must be removed prior to removal of any existing paint.

506.035 Containment Plan Provide a containment plan to the Department for review. Do not begin the erection of containment system(s), or paint disturbance activities until review by the Department has been completed and aproved.

Install the containment in accordance with the approved Plan. Perform all surface preparation and painting in the approved containment system, conforming to the latest SSPC Guide 6, Guide for Containing Surface Preparation Debris Generated During Paint Removal Operations, for the specified level of cleaning, as applicable.

The Contractor is responsible for ensuring the containment meets all OSHA, federal and state regulations. Throughout the entire Project, work shall only be conducted within approved containment enclosures. The plan shall be sufficiently detailed to show conformance with the requirements of SSPC Guide 6, Class 1A containment specifications. The Containment Plan shall also describe, in detail, the Contractor's methods of protecting galvanized bridge members, existing utilities, etc. The Contractor shall be responsible for all damage incurred. The Containment Plan shall include the following information and requirements, at a minimum:

A. A plan for staging, installing, moving, and removing the containment and the methods of attachment that will be used. Attachment points to main framing members only will be allowed.

B. Plans for lighting the inside of the containment for surface preparation, painting, and inspection.

C. Detailed plans for maintaining the environmental conditions required during coating application and curing, including monitoring, measuring and documenting environmental conditions.

D. Detailed plans for the collection and removal of accidental spills or discharges.

E. Technical data sheets, specification sheets and any other information needed to thoroughly describe the containment plan, materials, and containment and ventilation equipment proposed for use. Only use containment materials that are flame resistant.

506.036 Environmental Protection Plan Thirty days prior to the initiation of on site work, submit to the Department for review and acceptance an Environmental Protection Plan that establishes programs for the monitoring activities that will be undertaken on the Project. The plan shall reference and utilize the applicable sampling procedures established in the most recent version of SSPC-TU 7.

506.037 Pre-Production Meeting Coordinate a pre-production meeting with the Department's Resident at least two weeks prior to the beginning of the removal of the existing coating. Provide two weeks notice to the Department prior to the meeting. The meeting agenda will include procedures to be used for all lead abatement, the coating application, the inspection hold points, the

responsibilities and documentation methods of each party involved, all safety methods to be used, contingency plans, and all other areas relating to the adequate completion of the painting of this Contract. Present at this pre-production meeting shall be all parties directly involved in the lead abatement, paint application, and inspection of this Project including the Department, the Contractor and any Subcontractors, all Quality Control personnel, coating technical representatives, the Department's hazardous waste representative, a representative from the Contractor's hazardous waste transporter and any additional stakeholders who may have a direct impact on the completion of this Project. The Contractor shall be responsible for ensuring that all applicable personnel working directly, or indirectly, for the Contractor be present at this meeting.

506.04 Quality Assurance The Department will perform Quality Assurance (QA). QA may be accomplished by reviewing QC reports provided by the Contractor, by performing random inspections of work previously inspected by the Contractor and/or by randomly accompanying the Contractor's inspector during QC inspections and testing.

Provide the Department with the opportunity to perform QA inspections of the Work at the following hold points, as a minimum:

A. Prior to start of work.
B. Immediately prior to application of the first coat.
C. After final coat is applied and cured.

QA inspections are the prerogative of the Department. As such, the Department may, or may not, choose to perform inspections at hold points. Consequently, if any QA inspections performed at hold points result in no rework being identified or, if no QA inspections are performed at any hold points, this does not constitute Acceptance of the Work by the Department. If the Department discovers Unacceptable Work at any time prior to Final Acceptance, the Contractor shall repair, replace, or otherwise bring the Unacceptable Work into conformance with the Contract, at no additional cost to the Department. Refer to Standard Specification Section 107.9, Project Closeout, for procedures leading up to Final Acceptance.

Facilitate QA as required, by providing ample notice to the Department of availability for QA (minimum of ½ hour notice), adequate time for QA and by providing access to the work, along with all necessary safety equipment needed by the Department to perform the QA.

Provide all the inspection and testing equipment needed to verify the quality of the surface preparation and coating process, including, but not limited to mirrors, flashlights and wet film thickness gauges. This equipment shall be made available for use by the Department at all times. All equipment shall be properly maintained and kept in working order by the Contractor.

Provide access and railing in compliance with OSHA standards for representatives of the Department to all work locations where cleaning or coating application may be in progress, for the purpose of QA. The Contractor is also responsible for providing adequate lighting for QA purposes, at no additional cost to the Department.

If the Contractor is dissatisfied in any way with the Department's management of its QA program, the Contractor shall bring this issue immediately to the attention of the Resident or, at the latest, to the next scheduled Progress Meeting.

506.05 Protective Measures During surface preparation and field painting of the existing structural steel, provide adequate safety measures for the protection of the public and surrounding area against damage due to paint drippings, paint spatter, over-spray, falling objects, etc. The Contractor is fully responsible for property damage or personal injury which may result from operations incidental to surface preparation of the structural steel and the field application of the coating system. The coating system shall be protected at all times during application and curing to prevent contamination caused by construction or traffic activities. No coating material shall be stored on the bridge structure, or under the bridge structure.

506.06 Surface Preparation Chloride and salts should be expected to be present, especially at corrosion sites. The Maximum chloride threshold allowed is 7ug/cm^2. Test for chlorides and soluble salts using a Bresle Test kit, or equal, as approved by the Resident. After initial blast if chlorides are too high reduce chlorides and soluble salts to acceptable levels by waterjetting, solvent cleaning or other methods acceptable to the Resident prior to coating application and primer.

Test for soluble salts at a minimum of five locations per bridge span or as directed by the Resident. If after the initial testing has been done, it appears that no unacceptable levels of chlorides and soluble salts are present, the Resident may require a diminished number of tests. The Resident is not obligated to require less testing.

Remove all oil and grease present on bare steel or rusted surfaces in acordance with SSPC-SP 1, solvent cleaning, before blast cleaning.

The abrasive blast media shall meet the requirements *of SSPC-AB 1, AB 2 or AB 3.* The anchor profile shall be angular and meet the requirements of the coating manufacturer's published data sheet.

Abrasive blast clean the steel in accordance with *SSPC-SP 10, Near-White Blast Cleaning* except that inaccessible areas and sensitive areas as designated by the Resident shall be cleaned in accordance with *SSPC-SP 11, Power Tool Cleaning to Bare Metal*. After abrasive blast cleaning visually inspect the substrate for fins, tears, delaminations and other unacceptable discontinuities. Remove unacceptable discontinuities with a grinder or other suitable power tool. Reblast the affected area(s) to develop an acceptable anchor profile. The Contractor may propose an alternative method of developing an acceptable anchor profile on repair areas to the Resident.

Exercise care to avoid any nicking or gouging of the steel during rust removal. Nicks and gouges are cause for a suspension of activities until appropriate adjustments are made to prevent a reoccurrence. Repair damage to steel caused by surface preparation.

Double blow down or vacuum residual dust on the blasted substrate. Solvent clean any visible contamination that may result from handling, inspection or other activities that may inadvertently leave contaminants on the surface of the steel.

The allowable time between abrasive blast cleaning and primer application shall not exceed the Manufacturer's Product Data Sheet or 12 hours, whichever is less. If rust-back occurs, re-blast the entire prepared substrate prior to application of primer.

Newly fabricated steel members shall be cleaned in accordance with SSPC-SP 10.

Use *SSPC-VIS.1* for abrasive blast cleaned substrate and *SSPC-VIS.3* for hand or power tool cleaned substrate to determine acceptable surface cleanliness.

Measure the anchor profile in accordance with ASTM D 4417 Method C (replica tape). If the anchor profile fails to meet the minimum requirements, re-blast the substrate until the minimum required anchor profile is achieved. If the anchor profile exceeds the maximum allowed, generate a Non Conformance Report (NCR) describing the condition of the substrate and a proposed solution and submit it to the Resident for review.

If compressed air is used for abrasive blast cleaning, perform a blotter test ASTM D 4285 at the beginning of each shift and at any time requested by the QAI. Notify the QAI prior to performing the test so that the QA Inspector can witness the test.

506.062 Removal of Existing Debris Remove and properly dispose of accumulated winter sand/salt, bird droppings, dirt, grease, and debris from all areas to be prepared and painted prior to undertaking any paint removal or surface preparation operations.

506.063 Sharp Edges and Steel Defects Remove by grinding all fins, tears, slivers, scabs, laminations, etc., that are present on any steel member, or that become apparent during the blasting operation. Re-blast areas that have been ground to achieve the specified profile. Immediately report to the Department any cracks or significant metal loss found in the structural steel.

506.064 Removal of Pack Rust Remove all rust scale on any surface and loose pack rust that has formed between structural members. Remove tight pack rust until the highest point is a minimum of 3 mm (1/8 inch) below the surface of the surrounding steel.

Exercise care to avoid any nicking or gouging of the steel during rust removal. Nicks and gouges are cause for a suspension of activities until appropriate adjustments are made to prevent a reoccurrence. Damage to steel by the Contractor shall be repaired by the Contractor as approved by, and at no cost to, the Department and no additional time will be added.

506.065 Compressed Air Cleanliness Provide compressed air that is free from moisture and oil contamination. Conduct a white blotter test in accordance with ASTM D 4285 to verify the cleanliness of the compressed air. Conduct the test at least once per shift for each compressor

system. Sufficient freedom from oil and moisture is confirmed if soiling or discoloration is not visible on the paper.

If air contamination is identified, suspend operations and make adjustments as necessary to achieve clean, dry air.

506.07 Mixing Thoroughly mix the coating according to the manufacturer's recommendations. Thinning, if necessary, shall be per the manufacturer's recommendations.

506.08 Conditions for Coating Apply and cure all coatings in accordance with the manufacturer's recommendations.

506.09 Paint Application

Measure the environmental conditions in the immediate vicinity of the piece(s) being coated during the coating operation and the entire cure period. Provide two data loggers capable of measuring ambient humidity and temperature. The data will become part of the JCR. The data will be used by the Resident to determine that the cure/recoat time requirements for each coat have been met. Failure to comply will result in the coating being cured for the maximum time necessary to assure adequate cure as determined by the Resident.

Apply each coat in a neat and workmanlike manner. Apply the coating inside the approved containment. Apply the coating smoothly and uniformly without film defects, in conformance with these specifications and applicable provisions of *SSPC-PA 1, Shop, Field and Maintenance Coatin of Metals*. Correct skips, thin areas or other deficiencies before each succeeding coat is applied. The surface of the paint receiving additional coating shall be free from dust, grease, oil or any other contaminant that would prevent bonding.

Measure the DFT of each coat with a Type 2 Electronic Gauge in accordance with *SSPC-PA 2, Procedure for Determining Conformance to Dry Coating Thickness Requirements*. Record the following:

- Gauge type/manufacturer/model
- Serial number
- Coat/shim used for calibration (e.g. Primer Coat/5 mil. Shim, etc.)
- Measurements/spot average/location
- Cure time
- Non-conforming areas and determination for correction

Brushes, when used shall be of good quality so as not to leave bristles in the coating and have sufficient body and length of bristle to spread the coating in a uniform flow. Rollers, when used, shall be of a type which will not leave a stippled texture or roller particles on the coated surface.

Inform the Resident prior to mixing and thinning all coating. Record the batch and lot numbers of the coating, the type and amount of thinner used, the time and pot life of the coating in the JCR.

Mix and add thinner in conformance with the Manufacturer's Product Data Sheet. Measure the thinner with a graduated cup or other measuring device. Mix the paint using the method, equipment and for the amount of time recommended by the coating manufacturer. Coating that is not mixed and thinned in accordance with the Manufacturer's Product Data Sheet will be rejected.

Stripe coat the substrate with primer in accordance with *SSPC-PA 1*, Section 7.3. The stripe coat is to be applied to edges, welds, outside corners, bolt heads/threads and crevices as directed by the Resident. The stripe coat shall be brush and/or roller applied. Spray application of the stripe coat is only allowed upon prior approval of the Resident. If spray application is approved, the stripe coat shall be subsequintly worked into the surfaces by brush and/ or roller. Whenever possible apply the stripe coat prior to application of the primer coat, however, in order to save the blast the Contractor may apply the stripe coat after the application of primer with the prior concurrence of the Resident. The resident may allow the contractor to stripe coat with the Intermediat coat on a case by case baisas. Failure to notify the Resident will render the work Non-Conforming Work.

Measure and record the DFT readings in the JCR. Document that minimum cure time has been achieved in the JCR. Include the data logger printout. Maintain environmental conditions to assure acceptable cure time between coats and after the top coat is applied. Coating that has been improperly cured will be rejected, removed and re-coated. The Resident will determine that the coating has been properly cured based on QC tests, measurements and documentation.

Identify areas on Non-Conformance and generate and Non-Conformance Report (NCR). Present the NCR to the Resident with a proposed repair. Examples of Non-Conformance are, but not limited to:

- Overspray
- Sags, drips, runs
- Thin coating
- Excessive film build
- Orange peel, mud cracking
- Blisters
- Surface contamination
- Discontinuities that may be reasonably expected to cause premature coating failure

Repair damaged coating or defectively applied coating (runs, sags, skips, misses, etc.). Remove the affected coating layers and reapply. If all coating layers are damaged or defective, remove all coating layers to the specified degree of cleanliness. Feather the edges of the remaining coating to create a smooth transition from the repaired area to the remaining coating. Reapply all affected coating layers.

506.10 Samples for Testing The Department may require random coating material samples from the Contractor. If necessary, the samples will be sent to an independent certified laboratory to obtain infrared spectra to check the formulation compared to that on the approved coatings list.

Sampling and testing shall be at no additional cost to the Department. If the material fails the independent lab analysis, the Contractor shall remove and replace the coating to the Contract specified conditions, at no additional cost to the Department.

506.11 Waste Management. The Contractor shall collect, store and dispose of all hazardous, special and solid waste in compliance with relevant Federal, State and local laws and requirements. The procedures used for management and disposal of lead paint and related waste shall conform to the latest requirements of Steel Structures Painting Council Guide 7, Guide for the Disposal of Lead-Contaminated Surface Preparation Debris. Thirty days prior to generating any waste, the Contractor shall submit their Waste Management Plan which shall include the Spill Prevention Control and Countermeasure Plan (SPCCP), to the Department for review and comment. Work shall not proceed until the Department has reviewed and approved this plan.

The Contractor shall establish hazardous waste storage areas for this each bridge site. Hazardous waste shall be managed in US DOT approved containers and stored in an approved locking security structure which has a firm, impervious, floor surface and secondary containment that is either 110% of the largest container or 20% of all containers, whichever is larger. Waste containers must be labeled with the words "Hazardous Waste", the hazard (e.g., Toxic, flammable, etc.), the start date, full date, site location and generator information. The lockable security structure must be labeled "Danger-Unauthorized Personnel Keep Out" and shall be locked at all times when not being accessed. Waste containers in the waste storage security area must be inspected each operating day and a log must be maintained by the Contractor, and provided to the Department at the end of the Project. The Contractor shall store and manage all hazardous waste, in conformance with MDEP regulations as detailed in Chapters 850 – 857 and EPA regulations as defined in 40 CFR 260 – 268. All hazardous wastes are limited to an on-site storage time of 90 days based on the date of initial accumulation.

The Contractor shall test paint debris (including waste paint, personal protective equipment, gray water and spent solvents) to determine the appropriate disposal options. A minimum of Four composite sample representative of each waste type must be collected and tested for Toxicity Characteristic Leaching Process (TCLP), constituents in accordance with the procedures outlined in EPA SW846 Method 1311. The Department must be notified at least one week in advance of the date of sampling activities and provided with the proposed protocol for sample collection. The Department shall witness the sampling. Chain-of-custody must be adhered to for sample removal. Certified TCLP test results shall be provided to the Department upon receipt by the Contractor.

The Contractor shall inform the Department at least one week in advance of planned date(s) for removal of hazardous waste from the job site. The Contractor shall secure a MaineDOT pre-approved transporter licensed by the MDEP for transportation of hazardous waste. Preparation of all necessary transportation forms is the responsibility of the Contractor. The Hazardous Waste Manifest must be approved and signed by the Department. A six-part, pre-numbered Uniform Hazardous Waste Manifest (EPA Form 8700-22) shall be prepared when shipping hazardous waste. The appropriate original sheets of the multi-part hazardous waste manifest must be provided to the Department and must be sent to the Department's Environmental Office, State House Station #16, Augusta, Maine, 04333-0016.

The Contractor shall select a Treatment, Storage or Disposal (TSD) facility as soon as the waste has been tested and the results are known. The Contractor will submit the selected TDS for MaineDOT approval. Following approval by MaineDOT, the Contractor shall obtain approval for acceptance of the waste from the selected facility prior to transport.

Hazardous/special paint debris and other waste shall not be placed or accumulated on unprotected ground or released to waters of the State. Work areas shall be adequately shielded at all times to prevent dispersion of debris by wind or rain. The Contractor's equipment and storage areas used for the handling and storage of hazardous waste and hazardous materials shall have impervious tarps placed under them. Any evidence of improper storage and handling shall be cause for immediate suspension of work in progress, and work will not be allowed until corrective actions are taken. Emergency procedures to be taken in the event of a release of hazardous/special waste or hazardous matter to the environment shall be part of the Contractor's Spill Prevention, Control and Countermeasures Plan that is required as part of the Contractor's Waste Management Plan and by the Department's Supplemental Specifications and Supplemental Standard Details for Construction, Section 656.3.4, f. Spill Prevention.

The Contractor shall have Aid Agreements with the local fire department, police department, hospital and hazardous waste spill responder. Copies of these agreements shall be provided to the department prior to generating any waste, in conformance with the DEP Rules, Chapter 851, Section 13, Part C (7)(c)(ii) and 40 CFR 264.37.

506.111 Visible Emission Observations

A. Visible Emission Assessments

1. Conduct visible emissions assessments as defined in this Section and in accordance with 40 CFR 60, Appendix A, Method 22. This assessment is based on total visible emissions regardless of the opacity of the emission. SSPC Technical Update No. 7 provides guidance on conducting visible emission assessments.
2. Conduct the visible emissions assessments to account for all locations where emissions of lead dust might be generated, including but not limited to, the containment or work area, dust collection and waste recovery equipment as applicable, and waste containerizing areas.
3. In addition to assessing airborne emissions, conduct visual inspections for releases or spills of dust and debris that have become deposited on surrounding property, structures, equipment or vehicles.
4. State and local regulations regarding visible emissions:
    a) Note that State of Maine regulations regarding visible emissions, as well as any local requirements, are in addition to, but not in lieu of, the requirements of this Section.

B. Acceptance Criteria for Visible Emissions Assessments

1. For surface preparation activities, visible emissions in excess of SSPC Guide 6, Level 1 (1% of the workday) are unacceptable. This amounts to a maximum duration of 4 minutes and 48 seconds in an 8-hour workday, or 36 seconds per hour. This criterion applies to scattered, random emissions of short duration. Sustained emissions (e.g., 1 minute or longer) from a given location, regardless of the total length of emissions for the workday, are unacceptable. Immediately shut down the emission-producing operation, change work practices, extend the ground coverings, modify the containment, or take other appropriate corrective action to prevent similar releases from occurring in the future.
2. Visible emissions in excess of the above criteria are cause for immediate shutdown. Immediately stop the applicable operations if these criteria are violated. Correct and repair the deficiencies causing the emission, and undertake clean up with HEPA vacuums.
3. Violations of any high volume ambient air monitoring acceptance criteria is cause for immediate project shut down and the initiation of corrective action, even if the visible emissions results are acceptable.

C. Frequency and Location of Emissions Assessments

1. Conduct the specialized assessments as described in this Section at least four times (for a minimum of fifteen minutes each) during each shift in which paint disturbance operations are underway. Document all observations even if visible emissions are not observed.
2. Perform casual observations of emissions on an ongoing basis.

D. Assessment and Correction of Spills or Releases

1. Conduct all activities so that spills or releases of paint chips or spent abrasive do not occur.
2. On a daily basis, visually inspect the site for releases of dust, paint chips, and spent abrasive outside of the work area that have become deposited on surrounding property, structures, equipment, or vehicles and on the unprotected ground or in areas where rain water could carry the debris outside of the work area.
3. Clean up all visible paint chips and debris on a daily basis at the end of each shift, or more frequently if directed by the Department. Conduct the cleaning by manually removing paint chips or by HEPA vacuuming.
4. When releases are observed, in addition to cleaning the debris, immediately shut down the emission-producing operations, change work practices, extend the ground coverings, modify the containment, or take other appropriate corrective action to prevent similar releases from occurring in the future. Do not resume operations until the corrective measures have been inspected and approved by the Department.

E. Reporting of Visible Emissions and Releases

1. Document all visible emission observations and all cases where work has been halted due to unacceptable visible emissions or releases, the cleanup activities invoked, and the corrective action taken to avoid reoccurrence. Provide a report to the Department within 48 hours of the occurrence.
2. Maintain the results of the assessments in a log at the site. Identify the frequency of observations made, the methods of observation utilized, the name of the observer(s), and documentation completed. Include and summarize the documentation prepared for work stoppages due to unacceptable visible emissions or releases. Make the log available to the Department for review upon request.

506.112 High Volume Ambient Air Monitoring All ambient air monitoring shall be performed by the Contractor according to EPA regulations 40 CFR Part 50 Appendix B, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method), and 40 CFR Part 50 Appendix G, Reference Method for the Determination of Lead in Suspended Particulate Matter Collected from Ambient Air.

A. Conduct daily high volume ambient air monitoring for TSP-Lead during any dust producing operations (i.e., abrasive blast cleaning, containment movement, and/or vacuuming spent abrasive) to confirm that emissions do not impact the public.
B. Conduct ambient air monitoring at a minimum of three locations per jobsite or as directed by the Resident. The Contractor shall provide the monitors, and all necessary calibration and support equipment, power to operate the units, security (or arrangements to remove and replace the monitors daily), filters, and flow chart recorders. Provide operational high volume ambient air monitors for the duration of the project to account for each of the monitoring locations. Dust producing activities will not be permitted to begin if monitoring locations are not supported by the required number of monitors. Therefore, several back up monitors are recommended.
C. High volume ambient air sample results will be compared to the acceptance criteria of 1.5 micrograms per cubic meter over a 90-day period. Utilize the formulae of SSPC Guide 6 to extrapolate the acceptance criteria to an adjusted daily allowable concentration.
D. In the event that the TSP-Lead air monitoring results exceed the acceptance criteria on any one day of blasting, the Contractor shall suspend dust producing operations (e.g., paint removal and/or clean-up) and implement appropriate corrective action to control emissions.
E. Document all cases when work has been suspended due to emissions exceeding the ambient air monitoring criteria.
F. Background samples shall be collected for two days prior to the start of work while no dust producing operations are underway. The background monitoring shall be conducted on one weekday and one weekend day. The background monitoring shall coincide with the anticipated working hours for the paint removal operations, but shall last for a minimum of 8 hours each day.
G. Calibrate the monitors according to the manufacturer's written instructions upon mobilization to the site, following any repairs or maintenance to the units, and quarterly.
H. Filters shall be placed in monitors prior to start of dust-producing operations and the filters removed upon completion of dust producing activities for that day. Advise the Department

in advance when the filters will be removed and replaced. The monitor operator shall record the following information, at a minimum, on field data and laboratory chain-of-custody forms (or equivalent):

1. Monitor location and serial number
2. Flow rate, supported by flow charts
3. Start, stop times and duration of monitoring
4. Work activities and location of work during the monitoring period
5. Wind direction/speed

I. Ambient Air Monitoring Results. The laboratory shall provide the results directly to the Department with a copy to the Contractor within 3 days of the sampling. The results shall include:

1. Monitor identification and location
2. Work location and activities performed during monitoring period
3. Monitor flow rate, duration, and volume of air sampled
4. Laboratory methods used for filter digestion / analysis
5. Sample results for the actual duration of monitoring
6. Sample results expressed in micrograms per cubic meter of air
7. Comparison of the results with the the adjusted daily allowable concentration indicating whether the emissions are compliant
8. Field data and chain-of-custody records used to derive results

506.113 Regulated Areas Physically demarcated regulated area(s) shall be established around exposure producing operations at the OSHA Action Level for the toxic metal(s) present in the coating being removed or the abrasive being used. The Contractor shall provide all required protective clothing and equipment for personnel entering into a regulated area. Unprotected street clothing is not permitted within the regulated areas. Conduct air sampling at the boundaries of the regulated area for lead and any other toxic metals that may be present in the coating being removed or abrasive being used. Use a minimum of two low flow pumps located at points on the perimeter of the regulated area, one upwind and one downwind from the work area. Until monitoring results are available, establish the regulated area a minimum of 15 feet from any equipment or operations that might generate airborne emissions of toxic metals. If the monitoring confirms that emissions at the boundary do not exceed the OSHA Action Level as an 8-hour Time Weighted Average, discontinue monitoring. If the monitoring results exceed the OSHA Action Level, modify work practices and the containment to provide better controls over the emissions and repeat the monitoring until results are below the OSHA Action Level. Additional monitoring is not required unless directed by the Department, or if visible emissions occur or if there are changes to the work practices or equipment being used in the regulated area. Verify that cassettes are analyzed by an American Industrial Hygiene Association (AIHA) laboratory accredited for metals analysis. Have the laboratory provide results within 72 hours of the field sampling.

506.12 Method of Measurement Surface Preparation of Existing Structural Steel shall be measured for payment as one lump sum, complete and accepted.

Field Painting of Existing and New Structural Steel shall be measured for payment as one lump sum, complete and accepted.

Containment and Pollution Control Measures shall be measured for payment as one lump sum, complete and accepted.

Disposal of Special Waste or Hazardous Waste materials shall be measured for payment as one lump sum.

506.13 Basis of Payment The accepted quantity of Surface Preparation of Existing Structural Steel will be paid at the respective Contract lump sum price, which shall be full compensation for furnishing all materials, labor, tools, equipment, scaffolding, QC activities, and any other incidentals necessary for the satisfactory performance of the work.

The accepted quantity of Field Painting of Existing and New Structural Steel will be paid at the Contract lump sum price, which shall be full compensation for furnishing all material, labor, equipment, scaffolding, QC activities, and incidentals necessary for the satisfactory performance of the work.

Containment and pollution control will be paid for at the Contract lump sum price, which shall be full compensation for furnishing all materials, labor, equipment, and incidentals necessary for the satisfactory performance of the work.

Disposal of Special Waste or Hazardous Waste materials will be paid at the Contract lump sum price, which shall be full compensation for all permits, tests, transportation, disposal, tipping fees and incidentals necessary for the satisfactory performance of the work.

Payment will be made under:

Pay Item		Pay Unit
506.144	Field Painting of Existing and New Structural Steel	Lump Sum
506.17	Surface Preparation of Existing Structural Steel	Lump Sum
506.18	Containment and Pollution Control Measures	Lump Sum
506.191	Disposal of Special Waste or Hazardous Waste	Lump Sum

SPECIAL PROVISION
SECTION 507
RAILINGS
(Steel Approach Railing)

Description

This work consists of furnishing and installing steel approach railing and its attachment to a steel bridge railing system and guardrail transition.

Materials

All materials shall conform to the requirements of the Standard Specifications, Standard Details, and Contract Plans as applicable.

Construction Requirements

All components shall be fabricated and installed in accordance with the Standard Specifications, Standard Details, and Contract Plans at locations shown on the Plans or as directed by the Resident. The steel approach railing shall be positioned so as to provide a neat and smooth transition from the bridge railing to the highway guardrail, without kinks or abrupt change in orientation.

Embankment material around the rail posts shall be thoroughly compacted. Curbing shall be set flush with the face of the bridge curb.

Method of Measurement

Each installation will be measured for payment as one unit, complete in place and accepted.

Basis of Payment

Steel Approach Railing will be paid for at the Contract unit price for each installation. Such payment includes fabrication and installation of the railing components and attachment to the bridge railing system, bottom tube rail for 4-bar approach railing, and any related connection hardware in accordance with the Plans, Specifications, and Standard Details.

Payment will be made under:

Pay Item		Pay Unit
507.0812	Steel Approach Railing, 2-Bar	Each
507.0822	Steel Approach Railing, 3-Bar	Each
507.08161	Steel Approach Railing, 4-Bar	Each

SPECIAL PROVISION
SECTION 524
TEMPORARY STRUCTURAL SUPPORTS
(Approaches)

524.01 Description This subsection is amended by the addition of the following paragraph:

This work shall consist of designing, fabricating, installing, maintaining, and dismantling of temporary structural support systems for the purpose of supporting the I-95 roadway during construction of the new piers (and foundations) for the Hogan Road No. 2 Bridge.

524.03 Design The last sentence of the first paragraph is revised to read as follows:

Temporary support(s) shall be designed by a licensed Professional Engineer; all plans, computations, and working drawings shall be signed by that Engineer, and shall be submitted to the Resident for approval at least thirty (30) business days prior to construction for approval.

This subsection is amended by the addition of the following:

Temporary structural support(s) and approaches shall achieve the following minimum factors of safety: For approach embankment slope stability 1.3; 1.5 for embankment slopes that contain or support structures; and 1.3 for sliding or overturning.

524.05 Method of Measurement This subsection is revised to read as follows:

Temporary structural supports will be measured as one lump sum satisfactorily designed, installed, maintained, and dismantled. Temporary supports used by the Contractor for their convenience will not be measured for payment. The work associated with embankment excavation, removal and reinstallation of existing highway appurtenances (e.g. riprap, guardrails, sign supports, etc.) to facilitate the installation or removal of the temporary roadway supports will not be measured for payment, but will be considered incidental.

524.06 Basis of Payment This subsection is revised to read as follows:

Temporary Structural Support - Approaches will be paid for at the Contract lump sum price that shall be full compensation for all materials, equipment, labor, and incidentals necessary for the design, installation, maintenance, and dismantling of such supports in accordance with these specifications.

Payment will be made under:

Pay Item		Pay Unit
524.301	Temporary Structural Support – Approaches	Lump Sum

SPECIAL PROVISION
SECTION 524
TEMPORARY STRUCTURAL SUPPORTS
(Superstructure)

The following is added to Standard Specification section 524:

524.01 Description
This subsection is revised to read as follows:

This work shall consist of designing, fabricating, erecting, maintaining and dismantling temporary structural support(s) and jacking system(s) for the purpose of supporting the superstructure of the portion of Bridge No. 5823 that is to remain to facilitate raising the bridge seats as called for on the Contract Plans, and in conformity with these specifications.

524.03 Materials
This subsection is revised to read as follows:

Materials used may be structural grade sawn timber, structural steel, or a combination of both, at the Contractor's option, and, whether new or used, shall be sound and of adequate cross section for the intended loads as specified by the design. All structural steel shall have a minimum yield strength of 36,000 psi. Blocking needed below the temporary supports to accommodate differences in elevation, and/or pads required to distribute loads to the soil may additionally incorporate plain and reinforced concrete.

524.03 Design
The last sentence of the first paragraph is revised to read as follows:

Temporary structural support(s), jacking system(s), and bracing shall be designed by a licensed Professional Engineer; all plans, computations, and working drawings shall be signed by that Engineer, and shall be submitted to the Resident for approval at least thirty (30) business days prior to construction for approval.

This subsection is amended by the addition of the following:

The temporary structural support and jacking system plan shall outline the methods, material and equipment to be used to support the bridge during raising the bridge seats work, what live load may be present, and the safety risks associated with the work. Any support systems requiring attachment to existing concrete shall be subject to approval by the Department. Design and load requirements shall conform to the most current edition of the AASHTO LRFD Bridge Design Specifications, applicable Interim Specifications, and these Specifications, unless otherwise noted on the Plans.

Approximate Bridge No. 5823 unfactored maximum Dead Load (DC) (excluding DW) per girder, based on existing bridge load rating report is as follows:

Abutments (kips)	Piers (kips)
30/girder	90/girder

The designer of the temporary support system shall calculate anticipated loads and allowances for other loads and forces that may be required.

The temporary structural support and jacking system shall provide a capacity of at least 150% of the unfactored, vertical, jacking loads. If loads are found in excess of these limits, the jacking operations shall cease, and the Resident shall be notified. Jacking operations may not resume until the Engineer responsible for the design provides guidance.

Existing diaphragms may require replacement or modification to provide jacking points. Modified or replaced cross-frame elements designed and installed by the Contractor may remain, if approved in writing by the Department during the submittal review process.

The Contractor shall make provisions to prevent longitudinal and transverse movement of the superstructure as well as twisting of the beams/girders during the jacking operations and while the beams are temporarily supported. These provisions shall be submitted to the Resident for review. Design computations, plans, details, working drawings, and other documentation necessary to complete the work and certify conformance with these provisions shall be submitted to the Department prior to beginning this work.

The Contractor shall ensure that the jacking and shoring system is stable and make provisions to remove, reset, or modify the jacks and/or supports before any storm event with wind speeds that could pose stability risks to the temporary support system.

524.04 Erection and Removal

This subsection is amended by the addition of the following:

It shall be the Contractor's responsibility to prevent any damage to the structure from the temporary structural support and jacking system. Should any damage result from this work, the Contractor shall make repairs at no additional cost to the Department. Any such repair work is subject to the review of and acceptance by the Resident. The temporary structural support and jacking system shall not be supported primarily from the existing substructure unless this is shown to be acceptable per structural analysis and computations stamped by a licensed professional engineer. Bracing shall be provided to maintain the superstructure in a stable condition during the jacking operations and while temporarily supported. The jacking shall be synchronized so that all portions of the

girders are raised simultaneously. A maximum of 1/4 inch differential movement between adjacent girders will be permitted during jacking operations. The process of temporary structural support removal and the jacking operation to lower the superstructure onto the bearings shall be completed in a manner similar to that of the erection process.

All fabrication of structural steel shall be done in conformance with the latest AASHTO, American Welding Society, and MaineDOT specifications.

524.05 Method of Measurement
This subsection is revised to read as follows:

Temporary Structural Supports will be measured by the lump sum, satisfactorily designed, erected, and dismantled. Temporary supports used by the Contractor for their convenience will not be measured for payment, but will be considered incidental. The work associated with excavation, removal and reinstallation of embankment and highway appurtenances (e.g. riprap, guardrails, sign supports, etc.) to facilitate the erection of temporary supports will not be measured for payment, but will be considered incidental to the Temporary Structural Support pay item.

524.06 Basis of Payment

Temporary structural supports will be paid for at the Contract lump sum price, which shall be full compensation for all material, equipment, labor, and incidentals necessary to design, erect, maintain, and dismantling of such supports in accordance with these specifications.

Payment will be made under:

Pay Item		Pay Unit
524.301	Temporary Structural Support - Superstructure	Lump Sum

SPECIAL PROVISION
SECTION 524
TEMPORARY STRUCTURAL SUPPORTS
(Protective Shield)

524.01 Description The following paragraph is added:

This work shall also consist of furnishing all labor, equipment and materials required to provide protection for the public during demolition and construction. Use of protective shielding shall be required on all existing and new bridge structures over roadways to prevent debris or other deleterious materials from falling while performing activities such as, but not necessarily limited to, demolition, concrete removal, installation of temporary deck support systems and concrete placements.

The following Subsections are added:

524.031 Protective Shield Design

Prior to the start of work, the Contractor shall submit plans for review and comment indicating the sizes and dimensions of protective shielding. The proposed methods of protective shielding, including connections and fasteners, shall be in accordance with the following criteria:

The protective shield shall be designed for safely supporting all construction and dead loads, but not less than 100 pounds per square foot with a load duration of seven (7) days. Protective shield shall be stiff enough to limit deflection to 1/2 inch under maximum loads and to be tightly sealed at all joints. The protective shield shall be placed on the tops of the bottom flanges of the steel girders, with edges and laps made tight to protect the I-95 motorists from dust, debris, water, slurry and falling objects. The protective shield shall be designed by a Licensed Professional Engineer of the State of Maine.

The Protective shield shall be designed to safely support all anticipated loads from small pieces of concrete falling from the existing deck during saw cutting or initial handling operations while the existing deck is being removed, and to protect against small tools falling onto traffic below.

524.041 Protective Shield Erection and Removal

No portion of the protective shield installed over a roadway shall project below a plane connecting the bottoms of the bottom flanges of the steel girders. During demolition operations and constructing/placing the new deck, the protective shield shall be covered with sheet plastic made tight at edges and laps to prevent water used in the saw cutting operation or placement of concrete from falling onto the facilities under the bridge.

The protective shield on existing and new structures shall extend horizontally three feet beyond the fascia lines and vertically to a point one foot minimum above the top of new rail or parapet. Shielding shall extend 10 feet beyond the edge of pavement on the roadway below or as approved by the Resident.

Shielding shall be approved and installed prior to the start of any demolition work and shall remain in position during all demolition work. Shielding shall also be approved and installed prior to the start of any deck forming for the new bridge and shall remain in position during all deck work. The protective shield shall be covered with sheet plastic made tight at edges and laps to prevent leakage from new concrete or from water used for water curing from falling onto the facilities under the bridge. The protective shielding shall be relocated or removed only as directed by the Resident.

524.05 Method of Measurement The following paragraph is added:

The protective shield shall be measured for payment by the lump sum for shielding, design, installation, removal, and disposal.

524.06 Basis of Payment

Protective Shielding will be paid for at the Contract lump sum price. Payment shall be full compensation for all materials, equipment, labor, and incidentals including but not necessarily limited to: Working Drawings; design; transportation and stacking; installation; removal, onsite storage, and reinstallation as required; and periodic removal of concrete rubble and other materials necessary to perform the work as in accordance with the Plans and these Specifications or as approved by the Resident.

Payment will be made under:

Pay Item	Pay Unit
524.40 Protective Shield	Lump Sum

SPECIAL PROVISION
SECTION 526
CONCRETE BARRIER
(Type III Modified)

526.01 Description: The following paragraph is added after "the types of concrete barrier are designated as follows:".

Permanent Concrete Barrier Type III Modified Vertical barrier as shown on the Plans.

526.02 Materials:

subsection a. Concrete paragraphs one and two are revised as follows:

a. Concrete Concrete or permanent barriers shall have a design strength of 4,000 psi and portable barriers shall have a minimum design strength of 4,000 psi.

For cast-in-place barrier: The concrete shall be Class A, in accordance with Standard Specification Section 502, Structural Concrete.

526.04 Method of Measurement: The following paragraph is added:

Concrete Barrier Type III (Modified) will be measured for payment by lump sum, complete in place.

526.05 Basis of Payment - The following paragraph is added:

The accepted quantity of Concrete Barrier Type III (Modified) will be paid for at the Contract lump sum price, complete in place.

Payment will be made under:

Pay Item		Pay Unit
526.322	Permanent Concrete Barrier Type III Modified	LS

SPECIAL PROVISION
SECTION 527
ENERGY ABSORBING UNIT
(QuadGuard System)

Description This work consists of furnishing and installing a new QuadGuard M Wide crash cushion system with a Tension Strut Backup, thrie beam panels, thrie beam transitions, and deflector assemblies including the concrete base as a permanent energy absorbing system in accordance with these specifications and as directed by the Resident at location shown on the plans or established by the Resident.

Materials The energy absorbing system shall be the QuadGuard System as manufactured by Energy Absorption Systems, Inc. of Chicago, IL as approved, and crash tested by the Federal Highway Administration. The QuadGuard System shall be model QM10069 Test Level 3, MaineDOT ID ME-1502, and FHWA CC-112. The QuadGuard System shall be placed on a concrete pad as shown on the plans and in accordance with the manufactures' recommendations.

All work involving the concrete pad shall be done in general accordance with section 502 standard specifications. The Portland Cement Concrete for the concrete pad shall be Class A.

Installation A set of installation drawings will be provided to the Resident for the system installed in accordance with the manufacturer's recommendations and the installation drawings.

The Quad end shoe transition panel (i.e. thrie beam, thrie beam transition, and other associated hardware) between the QuadGuard Tension Strut Backup and the mid-way spice guardrail shall be installed and attached per the manufacturer's recommendations and as directed by the Resident.

The deflector assembly shall be attached per the manufacturer's recommendations and as directed by the Resident.

Method of Measurement Energy absorbing system will be measured by each unit, complete in place and accepted.

Basis of Payment The accepted quantity of Energy Absorbing System will be paid for at the contract unit price which shall include furnishing and installing a new QuadGuard System Crash Cushion including furnishing and placing a concrete pad excluding reinforcing steel, all common and granular borrow, all common and structural excavation, all aggregate subbase course gravel, removal of existing curbing and guardrail, resetting of any curbing, placement of new pavement and any attachments to the transition barrier and any equipment, labor, tools, and incidentals necessary to complete the work.

Reinforcing steel shall be paid for under items 503.12 and 503.13 respectively.

Thrie beam to w-beam transitions shall be installed per the manufacturer's recommendations and paid for under Item 606.1307 – Bridge Transition (Asymmetrical) – Type 1A.d

Payment will be made under:

Pay Item		Pay Unit
527.305	QuadGuard Crash Cushion	UN

SPECIAL PROVISION
SECTION 530
GLASS FIBER REINFORCED POLYMER
(Reinforcement Bars)

The following is added to the Standard Specifications as Section 530, Glass Fiber Reinforced Polymer, Reinforcement Bars:

530.01 Description This work shall consist of furnishing and placing Glass Fiber Reinforced Polymer (GFRP) reinforcement bars, in accordance with the Plans and as specified herein.

530.02 Materials GFRP reinforcement shall meet the requirements shown in the AASHTO Bridge Design Guide Specifications for GFRP-Reinforced Concrete Bridge Decks and Traffic Railings, including interim revisions, except as shown on the Plans and as stated herein. All GFRP reinforcement shall be deformed or sand coated.

GFRP reinforcement bars shall be one of the approved products listed on the MaineDOT Qualified Products List.

All GFRP reinforcement in the same structural component shall be supplied by the same manufacturer; there shall be no mixing of products from different manufacturers in a component unless permitted in the Contract Documents.

530.021 Documentation The GFRP reinforcement manufacturer shall submit two (2) copies of a Material Certification stating that the GFRP reinforcement incorporated into the Project meets the requirements of this specification to the Resident. The certification shall include the test values and test procedures used to determine the physical properties of the GFRP reinforcement. The certification shall bear the notarized signature of a responsible authorized representative of the GFRP reinforcement manufacturer. Each bundle of GFRP reinforcement shall be identified with the lot number affixed to each bundle by means of a durable tag.

530.03 Schedule of Material When the Plans do not include GFRP reinforcement bar schedules, the Contractor shall submit order lists, shape diagrams and bar layout drawings in accordance with Subsection 105.7 to the Resident for approval. The GFRP reinforcement shall not be ordered until these lists and drawings are approved. Approval shall not relieve the Contractor of full responsibility for the satisfactory completion of the Work specified herein. When the Department allows the use of precast concrete deck panels, or any other significant changes that affect the quantity of GFRP reinforcement, the Contractor shall be responsible for revising the reinforcement bar schedule; the revised schedule shall be submitted to the Resident for approval. Substitution of different size GFRP reinforcement shall not be permitted except with the written authorization of the Engineer of Record.

530.04 Fabrication Forming and fabrication tolerances of GFRP reinforcement shall be in conformance with the latest edition of the "Manual of Standard Practice of the Concrete Reinforcing Steel Institute" and the "Detailing Manual of the American Concrete Institute."

530.05 Protection of Material Delivery, storage, and handling of GFRP reinforcement shall be in accordance with the manufacturer's recommendations. The Contractor shall prevent bending, coating the bars with soil, oil, or other material, or other damage to the GFRP reinforcement.

All handling of GFRP reinforcement by mechanical means shall be done by equipment having padded contact areas, or using nylon webbing slings. The use of chains or wire rope slings will not be allowed, even when used with padding. All bundles of GFRP reinforcement shall be lifted with a strong back, spreader bar, multiple supports, or a platform bridge to prevent bar-to-bar abrasion from sags in the bundles. Support points during lifting or transporting of bundled GFRP reinforcement shall be spaced at a maximum of 15 feet, or as required by the manufacturer, whichever is more restrictive. Bundled bars shall be strapped together with non-metallic or padded straps in a manner to prevent bar-to-bar abrasion due to relative movement between bars.

Individual bars shall be handled in a manner that prevents damage to the coating due to abrasion or impact, and at no time shall any bar be moved by dragging over any surface, including other reinforcement bars. Sufficient personnel shall be assigned to assure compliance with the provisions above.

Bars loaded for transport shall be loaded and strapped down in a manner that will prevent damage from motion and vibration, to the greatest extent possible. Bundles of bent bars shall be transported strapped to wooden platforms or shall be crated. All individual bundles and layers of bundles shall be separated, and supported by dunnage.

GFRP reinforcement shall be stored on skids or other supports a minimum of 12 inches above the ground surface and protected at all times from damage and surface contamination. The storage supports shall be constructed of wood or other material that will not damage the surface of the GFRP reinforcement or sand coating. Bundles of bars shall be stored on supports in a single layer. Each bundle shall be placed on the supports out of contact with adjacent bundles. If it is expected that GFRP bars will be required to be stored outdoors for a period in excess of two months, then the GFRP reinforcement shall be protected from ultraviolet radiation. Prevent exposure of GFRP to temperatures above 120 degrees Fahrenheit.

All damaged bars shall be repaired in accordance with manufacturer recommendations and inspected and accepted by the Resident prior to placing concrete. All bars with total damage greater than 2 percent of the bar surface area, including previously repaired areas, will be rejected. All cuts, scratches, cracks, abrasions, or other damage, visible to the naked eye, shall be repaired. All bars damaged prior to placement within the formwork shall be repaired prior to GFRP reinforcement placement.

530.06 Placing and Fastening GFRP reinforcement shall be accurately placed in the positions shown on the Plans. Support and firmly tie or otherwise secure GFRP reinforcement in place to prevent settlement, floating upward, or movement in any direction during the placing and setting of the concrete.

Field bending of GFRP reinforcement is not allowed.

Field cutting of GFRP reinforcement will only be permitted with the approval of the Resident. Field cutting shall be with a high-speed cutter, fine blade saw, diamond blade or masonry saw. The GFRP reinforcement shall not be shear cut. The ends of all field cut GFRP reinforcement shall be treated in accordance with the manufacturer's recommendations.

GFRP reinforcement supported on formwork shall rest on stays, blocks, ties, hangers, GFRP or plastic chairs, bar supports made of dielectric material, or other approved materials. Blocks used for this purpose shall be precast Portland cement mortar blocks of approved shape and dimensions. Blocks shall not be used in cases where the blocks will be visible in the finished product. Reinforcement bars used as support bars shall be GFRP, stainless steel, or non-metallic. The use of pebbles, stone, brick, metal pipe, wood, or metal chairs will not be allowed. Wire bar supports will not be allowed. Layers of bars may be separated by precast Portland cement mortar blocks or other approved devices.

Bars shall be fastened together at all intersections except where spacing is less than 1 foot in either direction, in which case, fastening at alternate intersections of each bar with other bars will be permitted providing this will hold all the bars securely in position. Ties shall be soft annealed wire that has been nylon, epoxy or plastic coated. Plastic ties will also be allowed. Placing reinforcement as concrete placement progresses, without definite and secure means of holding the GFRP reinforcement in its correct position, will not be allowed.

When specified on the Plans, GFRP reinforcement shall be anchored into drilled holes. The anchoring material shall be one of the products listed on the Maine Department of Transportation's Qualified Products List and the Contractor shall submit a selected material to the Resident for approval. Installation shall be in accordance with the manufacturer's recommendations.

At each anchor location, existing reinforcement will be located to avoid drilling through existing bars. Where interferences exist, location adjustments will be determined by the Resident. Minimum embedment lengths of reinforcement shall comply with the manufacturer's recommendations for the anchoring material selected. The embedment lengths will be verified by the Resident before installation of the reinforcement.

Termination of GFRP reinforcement shall be as shown on the Plans. Any exceptions or modifications shall be approved, in writing, by the Engineer of Record.

Immediately before placing concrete, GFRP reinforcement shall be free from all foreign material. Foreign material includes, but is not limited to, dirt, paint, oil, bitumen and dried concrete mortar. Reinforcement shall be inspected and approved by the Resident prior to concrete placement.

530.07 Splicing GFRP Reinforcement shall be spliced as shown on the Plans and as specified herein. No modifications of, or additions to, the splice arrangements shown on the Plans will be allowed without the prior approval of the Resident.

Any additional splices authorized shall be staggered as much as possible. All splices shall be

made in a manner that will ensure that not less than 75% of the clear concrete cover and not less than 75% of the minimum clear distance to other reinforcement will be maintained, as compared to the cover and clear distance requirements for the un-spliced reinforcement.

Lapped splices shall be made by placing the bars in contact and tying them together. Ties shall meet the requirements specified herein.

530.08 Method of Measurement GFRP reinforcement will be measured by the linear foot based on the authorized quantity in the Contract or in the approved reinforcement bar schedule submitted by the Contractor. No adjustments to the quantity will be made except to account for changes at the direction of the Resident.

Lap splices that are authorized at the Contractor's request will not be measured for payment.

530.09 Basis of Payment Payment for Glass Fiber Reinforced Polymer, Fabricated and Delivered, shall be considered full compensation for detailing, furnishing, and proper storage of GFRP reinforcement.

Payment for Glass Fiber Reinforced Polymer, Placing, shall be full compensation for installation, adjustment, and supplies related to placing GFRP reinforcement.

Payment for work associated with furnishing and revising the GFRP reinforcement bar schedule, and all expenses incurred by the Contractor and their suppliers to fulfill the requirements specified will be considered incidental to related Contract items. No separate payment will be made.

Payment will not be made for any materials used to hold reinforcement in place or for extra GFRP reinforcement due to substitutions and splices made for the Contractor's convenience.

When GFRP is specified to be anchored into drilled holes, no additional payment will be made for drilling and anchoring GFRP reinforcement or cutting GFRP reinforcement.

Payment will be made under:

Pay Item		Pay Unit
530.30	GFRP, Reinforcement Bars, Fabricated & Delivered	Linear Foot
530.31	GFRP, Reinforcement Bars, Placing	Linear Foot

SPECIAL PROVISION
SECTION 603
PIPE CULVERTS AND STORM DRAINS

603.12 Basis of Payment: This section shall be amended with the addition of the following:

Payment will be made under:

Pay Item		Pay Unit
603.04	4” PVC Drain Service	Linear Foot

SPECIAL PROVISION
SECTION 603
PIPE CULVERTS AND STORM DRAINS

603.12 Basis of Payment: This section shall be amended with the addition of the following:

Payment will be made under:

Pay Item		Pay Unit
603.155	12-inch Reinforced Concrete Pipe Class III	Linear Foot
603.165	15-inch Reinforced Concrete Pipe Class III	Linear Foot
603.175	18-inch Reinforced Concrete Pipe Class III	Linear Foot
603.195	24-inch Reinforced Concrete Pipe Class III	Linear Foot
603.205	30-inch Reinforced Concrete Pipe Class III	Linear Foot
603.215	36-inch Reinforced Concrete Pipe Class III	Linear Foot
603.225	42-inch Reinforced Concrete Pipe Class III	Linear Foot

SPECIAL PROVISION
SECTION 603
PIPE CULVERTS AND STORM DRAINS
(Directional Bore)

603.01 Basis of Payment:

This work shall consist of using Directional Bore method to furnish and install an underground utility/facility/product/pipe/conduit (referred to as product pipe in the rest of this section). The installation is according to the sizes and limits shown on the plans and specified by this Special Provision. The work includes all services, equipment, materials, tools, and labor for a complete and proper installation, and testing.

603.02 Materials:

Select the product pipe material according to the type of product indicated on the plans. The product pipe must comply with all applicable specification sections and ASTM standards depending on the purpose and material of the product pipe. Join the pipe sections so that the joined pipe sections are installable using directional bore. Ensure that the joined product pipes have adequate strength and flexibility to withstand the installation stresses, overburden pressures, and operating pressures without compromising the structural stability of the pipe wall. Ensure that the product pipe meets the bend radius required for the proposed installation. Join the pipe sections so that the inner surfaces are flush and even.

The following material standards are the minimum in place standards.

Material Standards for Directional Bore Installation		
Material Type	Non-Pressure	Pressure
Polyethylene (PE)	ASTM D 2447	ASTM D 2513 ASTM D 2447
High Density Polyethylene (HDPE)	ASTM D 2447 ASTM D 3350 ASTM F714	ASTM D 2447 ASTM D 3350 ASTM F714 ASTM 2513
Polyvinyl-Chloride (PVC)	ASTM F 789	ASTM D1785 ASTM D2241
Steel	ASTM A139 Grade B(1)	AWWA C200 API 2B(2)

(1) No hydrostatic test required
(2) Dimensional tolerances only

Detection Wire shall be electronic detection material for non-conductive piping products. Select tracer wire designed for directional bore to conductively locate underground utility lines according to ASTM D-1248. Use either a continuous green sheathed solid conductor copper wire line (minimum #12 AWG for external placement) or a coated conductive tape. Select a minimum 12-gauge copper clad steel wire and able to withstand the installation tension along the entire length of

the line.

603.033 Submittals

Work Plan: Prior to beginning work, submit to the Resident a Work Plan detailing the procedure and schedule to execute the project. The work plan will be comprehensive, realistic, and based on actual working conditions for this particular project. The work plan documents the planning required to successfully complete the project. The work plan includes complete descriptions of proposed plans, procedures, equipment, personnel, and if applicable, supporting material, for the following:

1. Drilling operations: describe the pilot hole drilling procedure, the reaming operation, the pullback procedure, and illustrate the plan
2. Profile of the bore plotted at a scale appropriate for the crossing and acceptable to the Resident.
3. Directional bore site layout including entry and exit points.
4. Directional drilling equipment list includes: drilling rig, drill bit, back-reamer, mud mixing and pumping systems, down-hole tools, guidance system, and rig safety system. Provide calibration records for guidance equipment.
5. Drilling fluid management plan: drilling fluid types and specifications, cleaning and recycling equipment, estimated flow rates, procedures for minimizing drilling fluid escape, and the method/location for final disposal of waste drilling fluids. Provide the MSDS for all drilling fluid additives that will be used.
6. Pipe storage and handling details.
7. Pipeline assembly and installation procedures.
8. MSDS of any potentially hazardous substances to be used.
9. Documentation of training and relevant experience of personnel shall be submitted. Indicate the number of years and/or projects that each individual has completed.
10. The Contractor shall indicate the environmental control devices that will be employed to ensure that no slurry or hydraulic fluids enter the drainage ditches on either side of the turnpike mainline or the interchange roadways. The manner by which slurry will be introduced and captured for proper disposal shall be outlined.
11. Contingency plans for possible problems.

Submit supporting calculations, certifications, or material demonstrating the strength of the product pipes for acceptance before the beginning of the installation.

If site conditions change and require modification to the work plan, resubmit revised drilling plans to achieve successful installation. Explain, in the revised submittal, the anticipated and encountered conditions that mandated the change in plans.

Warranty: A five-year warranty shall be provided on the work.

603.051 Installation

Have a representative who is thoroughly knowledgeable of the equipment, boring and the MTA procedures, present at the job site during the entire installation and available to address

immediate concerns and emergency operations. Do not begin installation until the Resident has reviewed the job site and agrees that proper preparations have been made.

603.052 Equipment

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the conduit; a drilling fluid mixing & delivery system of sufficient capacity to successfully complete the crossing; a guidance system to accurately guide boring operations; and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this Project.

Drilling Rig: The directional drilling machine shall consist of a hydraulically powered system to rotate, push, and pull conduit into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) bead. The machine shall be anchored or secured to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations.

Drill Head: The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets. The drill bit shall be equipped with a signal generator providing constant output for continuous path monitoring.

Mud Motors (if required): Mud motors shall be of adequate power to turn the required drilling tools.

Drill Pipe: Drill pipe shall be constructed of high-quality tubing with threaded box and pins.

603.053 Guidance System

The guidance system shall be of a proven type and shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

603.061 Drilling Slurry

Mixing System: A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The drilling fluid reservoir tank shall be sized for adequate storage of the mud. Mixing system shall continually agitate the drilling fluid during drilling operations.

Drilling Fluids: Contractor shall supply and/or arrange for connection to supply water for mixing drilling fluid. Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5 – 10 and/or as per mixing requirements of the

Manufacturer. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. A bentonite based drilling slurry shall be utilized which may include polymer extenders. The slurry shall be a mixture that will harden into a stable clay substance around the outside of the product pipe, leaving no voids and allowing no settlement of ground after installation. No hazardous additives may be used. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall. The slurry shall be recycled to minimize material and water requirements.

Delivery System: The mud pumping system shall have a minimum capacity to supply mud in accordance with the drilling equipment pull-back rating at a constant required pressure. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. A berm, minimum of 12" high, shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage facilities.

603.062 Commencement of Work

The Submittal Package shall be approved by the Resident prior to starting work. The Resident must be notified seven (7) days in advance of starting work. All personnel shall be fully trained in their respective duties as part of the directional drilling crew and in safety.

Prior to any alterations to work-site, Contractor shall photograph or video tape entire work area, including entry and exit points. The Contractor shall also survey the cross-section of the roadway for a distance of 20 feet to each side of the proposed drilling operation. Obtain grade elevations across the roadway no less than 10 in number, which shall be taken at the edge of pavements and at accessible lane lines. One (1) copy of the elevations shall be given to the Resident and one (1) copy shall remain with the Contractor for a period of one year following the completion of the Project.

Work site as indicated on the drawings, within the right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas. No construction equipment shall be located within the 10 feet of the edge of pavement without approval from the Resident.

Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If Contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.

Contractor shall place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by Contract Documents, State, Federal and local regulations. Hydraulic fluid and slurry is not permitted to enter any drainage ditch or water feature on-site. Additional environmental protection necessary to contain any hydraulic or drilling slurry shall be put in place, including berms, liners, sump pumps, turbidity curtains, and other

measures. Contractor shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200 feet of any water-body or wetland. Contractor shall adhere to all applicable State, Federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to Resident.

603.063 Drilling Procedure

The drilling alignment shall conform to the lines and grades indicated on the Drawings or as directed by the Resident. Ground entry and exit points shall be as shown on the Drawings or as approved. The depth of the bore head shall be monitored every 12 feet to 20 feet as dictated by traffic control. No monitoring shall be allowed in an active traffic lane. Directional bore depths less than 10 feet in areas of bedrock may be allowed but shall be approved by the Resident prior to drilling.

Drill the pilot hole along the path shown on the plans and profile drawings within the allowable tolerance of the type of utility. Drainage pilot holes shall be at the line a grade shown on the plans or as approved by the Resident. In the event that pilot does deviate from bore path so much that the requirements of the contract can no longer be met, the Contractor will notify Resident and Resident may require Contractor to pullback and re-drill from the location along bore path before the deviation. Any alterations to the proposed plan to meet pilot hole deviations or re-drilling shall be done at no extra cost to the Department.

In the event that a drilling fluid fracture, inadvertent returns, or returns loss occurs during pilot hole drilling operations, Contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a March Funnel and then wait another 30 minutes. If mud fracture or returns loss continues, Contractor will cease operations and notify Resident. Resident and Contractor will discuss additional options and work will then proceed accordingly.

Upon successful completion of the pilot hole, Contractor will ream bore hole to no greater than 25 percent of the outside diameter of the product pipe using the appropriate tools. Contractor will not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle. After successfully reaming bore hole to the required diameter, Contractor will pull the product pipe through the bore hole. In front of the product pipe will be a swivel. Once pullback operations have commenced, operations must continue without interruption until product pipe is completely pulled into borehole. During pullback operations, Contractor will not apply more than the maximum safe product pipe pull pressure at any time. The Contractor shall not exceed the allowable bending radius of the product pipe as specified by the product pipe manufacturer. In the event that product pipe becomes stuck, Contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If product pipe remains stuck, Contractor will notify Resident. Resident and Contractor will discuss options and then work will proceed accordingly. In the event that the Contractor must abandon the drill hole before completion of the crossing, the Contractor will seal the hole and re-drill the crossing at no extra cost to the Department.

603.081 Site Restoration

Following drilling operations, Contractor will demobilize equipment and restore the work site to original condition. All excavations will be backfilled and compacted to 95 percent of original density. Landscaping will be restored to original condition. All mud, cuttings, and slurry shall be properly contained, collected, and disposed of by the Contractor.

603.082 Record Keeping and Close Out

As-Builts: Contractor shall maintain a daily project log of drilling operations and a guidance system log with a copy given to Resident at completion of the Project. A final survey of elevations shall be completed by the Contractor of the mainline and ramp cross-section which shall accompany the as-built drawings.

The Department shall have access at all times to any measuring or gauging devices used for the horizontal drilling operation, as well as any drilling logs maintained by the Contractor.

603.11 Method of Measurement

Directional drilling will be measured by the horizontal linear foot.

603.12 Basis of Payment

The accepted quantity of Directional Bore will be paid for at the Contract unit price per horizontal linear foot. No adjustment will be made for vertical depth or parabolic draping of the drilled hole or for encountering ledge. Payment shall be full compensation for product pipe, labor, equipment and materials to complete the surveying, excavations, pits, drilling, environmental controls, installation, and site restoration. Payment shall also include full compensation for disposing of unsuitable and surplus soils, slurry, and materials.

Pay Item		Pay Unit
603.93	Directional Bore	Linear Foot

SPECIAL PROVISION
SECTION 609
CURB
(Terminal Curb)

The provisions of Section 609 of the 2020 Standard Specifications with the following additions shall apply:

609.10 Basis of Payment

Payment will be made under:

Pay Item		Pay Unit
609.221	Terminal Curb Type 1	Linear Foot
609.222	Terminal Curb Type 1 – Circular	Linear Foot

SPECIAL PROVISION
SECTION 609
CURB
(Special Curb – Wheel Stop)

Description; This work shall consist of furnishing and installation of precast concrete wheel stops in accordance with these special provisions. Installation shall consist of proper placement and anchoring of wheel stops. For each type of product required for the work of this Section, provide products of one manufacturer and source for consistency.

Materials:

Precast concrete wheel stops shall be reinforced precast concrete units, fabricated of minimum 4,000 psi concrete.

1. Exposed surfaces shall be smooth form finish. Dimensions shall be as shown on Drawings.
2. Precast units shall be reinforced with a minimum of two reinforcing bars, or as shown on the Drawings.
3. Concrete wheel stop length shall be 6 ft.
4. Unless otherwise indicated on the Drawings, concrete wheel stop shall be nominally 6 in. x 10 in. with front bevel and ½" chamfer at edges.
5. Each wheel stop shall have two holes, one near each end to accept reinforcing steel type anchor.
6. Precast concrete wheel stop shall be anchored in position using No. 5 galvanized steel reinforcing bars that conform to ASTM A 615, of lengths indicated on Drawings.

Construction: The Contractor shall use all means necessary to protect the materials of this Section before, during and after installation. Cracked, badly chipped, or stained units will be rejected where deemed unsuitable by Resident and shall not be employed in the work. In the event of damage, make all repairs and replacements necessary to approval of the Resident and at no additional cost. The Contractor shall clean pavement and remove all debris, and waste material from areas within the limit of work prior to installation. All work shall be executed in such a manner as to prevent any damage to existing pavements, curbs, paving to remain, drainage and utility structures, or underground pipes or utilities. Any damages or repairs required resulting from installation of wheel stops shall be at Contractor's expense.

1. Establish location and line of precast concrete wheel stops before installation. Location and line shall be true and even and inspected and approved by the Resident before installation.

2. Precast concrete wheel stop shall be anchored in place with two reinforcing bars driven through top of wheel stop and penetrating subsurface a minimum of 18 in.

3. Bars shall be driven so that top of anchor is ½ inch below flush with top surface of wheel stop. Holes shall be filled with non-shrink grout to top of surface.

Method of Measurement: Wheel stops shall be measured per each.

Basis of Payment: Wheel stops shall be paid for per each, each properly aligned, installed, anchored and finished in accordance with these special provisions.

Payment will be made under:

Pay Item		Pay Unit
609.312	Special Curb - Wheel Stop	LF

SPECIAL PROVISION
SECTION 615
LOAM
(Compost Blanket)

Description

This work shall consist of furnishing and placing compost to create a uniform blanket (compost blanket) for seeding, in reasonably close conformity with the thicknesses and locations called for on the Plans or as authorized.

Materials

The recipe for the Compost Blanket shall be a one-to-one blend by volume of compost and loam meeting the following requirements:

The loam shall meet requirements of Section 615.02 Loam or as approved by the Resident.

The compost for the Compost Blanket shall meet the following requirements:

Compost shall be produced by the aerobic (biological) and biochemical decomposition of source separated organic materials.

Compost shall be derived from a mixture of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation, or clean processed recycled wood products (MDEP Type IA, IB)
2. Manure
3. Mixed food waste (MDEP Type IB, IC)
4. No biosolid products may be included in the compost materials.

Compost shall not be derived from mixed municipal solid waste and must be reasonably free of visible contaminates. Compost shall not contain paint, petroleum products, pesticides, industrial residuals or any other chemical residues harmful to animal life or plant growth. Compost shall not possess objectionable odors.

The compost shall be produced at a licensed facility as specified under the State of Maine Department of Environmental Protection Chapter 410: Composting Facilities that regulate Solid Waste Facilities. If exempt from State permitting requirements, the composting facility shall certify that it follows guidelines and procedures for production of compost meeting the environmental standards of Chapter 410.

Compost Parameters

Acidity range:	6.0 pH to 8.0 pH.
Moisture content:	30-60% wet weight basis
Organic content:	25-65% dry weight basis
Particle Size: (% dry weight basis)	
100% passing	2”
90-100% passing	1”
70-100% passing	1/2”
30-75% passing	1/4”
Physical Contaminant:	<1 % (man-made inerts, dry weight basis)
Soluble Salts:	5.0 max mmhos/cm.
Carbon: Nitrogen Ratio:	15-25:1
Total Nitrogen:	<1.7%
Organic N:	<1.5%
Total Phosphorous:	<1.0%
Total Potassium:	<0.5%
Stability	<8 mg CO2-C per g OM per day

Maturity Test: The finished compost must be tested and classified as “Very Mature” by one of the following methods, or another method as approved by the resident:

Method	**Units**	**Very Mature**	**Mature**	**Immature**
Oxygen Uptake Rate (OUR Test)	O_2 / unit TS / hr	< 0.4	0.4 - 1.3	> 1.3
Specific Oxygen Uptake Rate (SOUR Test)	O_2 / unit BVS / hr	< 0.5	0.5 - 1.5	> 1.5
Dewar Self-Heating Test	Temp. rise (ºC)	< 10	10 - 20	> 20

Submittal Requirements

The contractor shall provide MaineDOT with a 5-gallon compost sample and certification letter from the compost supplier of the following information:

1. The source(s) of compost.
2. Laboratory results that show that the compost delivered to the project meets the compost parameters listed above. An independent Seal of Testing Assurance (STA) Program certified laboratory (as certified by the US compost Council) shall perform the analysis.
3. Compost supplier references documenting that they are fully permitted by the Maine DEP to produce compost.

Compost shall conform to all applicable specification requirements prior to mixing with the loam. The practice of culling deleterious or out of specification material after placement and/or grading in place will not be allowed.

Batch Mix- Compost and Loam

Compost and Loam shall be combined in equal (1 to 1) portions, by volume and mixed to produce homogeneous product approved by the Resident.

Preconstruction Site Walk

The Contractor shall have a preconstruction site walk with the Resident and a representative from the MaineDOT Environmental Office Surface Water Resources Unit to review the installation area and to answer questions in regard to layout and installation. The final locations and limits of compost blanket shall be laid out by the Contractor prior to installation for review and approval by the Resident.

Preparing Areas

All slopes and other areas where compost is to be placed shall be shaped to the required grade as shown in the Plans. The area shall be uniformly graded and be free of obstructions, rocks, clods, roots and soft or low density pockets of material that could result in the concentration of surface water drainage. Prior to placing the compost blanket, the slopes shall be roughened by track-walking or rolling with a sheepsfoot roller.

Placing Compost Blanket

The compost blanket shall be placed in the locations as shown in the Plans. Compost blanket shall be placed by the Contractor using conventional earthmoving equipment, distributed by hand using a shovel, by mechanical means such as a spreader unit (e.g., bulldozer, excavator, or manure spreader), or pneumatic blower. It shall be spread to the uniform final depth of 3" and 6" as shown in the Plans. The Compost blanket shall be spread in a manner as to establish a loose, friable seed bed.

Seeding

The finished compost blanket shall be seeded with Method 2 seed according to Section 618 Seeding except no fertilizer, humic acid, agricultural ground limestone nor liquid lime shall be applied to the areas receiving the compost blanket. Areas shall be seeded the same Working Day as the placement of the compost blanket and before stabilization.

Stabilization

The Contractor shall maintain the compost blanket by repairing all damaged areas and by correcting all shifting of the blanket due to wind, water, or other causes. Erosion Control Blanket shall be installed over the compost blanket and seed prior to the end of each Working Day. Any additional disturbed soil stabilization shall be considered incidental to, and be completed in accordance with, Section 656.

Method of Measurement

Compost blankets will be measured by the cubic yard complete in place after finishing to the required depths as shown on the plans or directed. Lateral measurements will be parallel with the slope of the ground. No additional payment shall be made for the disruption or replacement of any signage, utilities, or similar manmade items during compost blanket construction.

Compost blankets have been designed to be in the following locations:

Station	To	Station	O/S	Length (ft)	Area(sf)
403+50		406+50	RT	300	8,823

Basis of Payment

Compost blankets shall be paid for at the contract unit price per cubic yard, in place and accepted. No extra payment will be made for scarifying existing surface. Payment for Seeding Method 2 shall be made under Pay Item 618.14. Payment for Erosion Control Blanket shall be made under Pay Item 613.319. Payment for additional erosion control measures not explicitly mentioned in this special provision shall be considered incidental to the Temporary Erosion and Sediment Control item

Payment will be made under:

Pay Item		Pay Unit
615.081	Compost Blanket	Cubic Yard

SPECIAL PROVISION
SECTION 615
UNDERDRAIN SOIL FILTER

Amend Standard Specifications 615 – Loam to include the following:

615.01 Description. This work shall consist of constructing Underdrain Soil Filters to provide stormwater quality treatment. The Underdrained Soil Filters are centered at approximately Sta. 410+25 RT, 410+50 RT, 407+50 LT, 311+75 RT and 820+50 RT. All work beyond that edge shall generally be considered part of the Underdrained Soil Filter pay item. The layout, grading, drainage, seeding and related details for the Underdrain Soil Filters are indicated on the Contract Drawings.

615.02 Materials. Materials for the Underdrain Soil Filters shall meet the requirements of the following sections of the Standard Specifications except as provided below:

Crushed Stone Fill	203.35
Low Permeability Fill - Clay	203.52
Dense Graded Crushed Aggregate Subbase	304.13
Aggregate Base Course – Type C	304.16
12” Culvert Pipe Option 1	603.15
Catch Basin Type B1-P	604.091
6” Underdrain Type B	605.09
Stone Ditch Protection	610.18
Seeding (Special Seeding)	Special Provision 618
Seeding (Method 1)	618.13
Seeding (Method 2)	618.14
Loam	615.07
Mulch	619.12
Erosion Control Geotextile	620.58
Separation Geotextile (Non-woven)	620.60
Fine Aggregate for Concrete	703.01
Crushed Stone ¾-Inch	703.13
Granular Borrow	703.19
Underdrain Backfill Material – Type B	703.22
Underdrain Backfill Material – Type C	703.22
Plain Riprap	703.26
Corrugated Polyethylene Pipe	706.06
Erosion Control Blanket	603.319
Drainage Geotextile	620.56
Compost	Special Provision 615 - Compost
Soil Filter Media	See Below
Granite Masonry Forebay	See Below
Concrete Keyway	See Below
Low Permeability Fill - Clay	See Below

Outlet Control Structure	See Below
Sediment Forebay	See Below
Void Filled Riprap	610.213

Compost – Compost shall consist of a compost/loam blend according to Special Provision 615 – Compost. Components shall not contain biosolids. Manufacturer/product information shall be submitted to and approved by the Resident.

Seeding – The Underdrained Soil Filter side slopes and bottom shall be seeded according to the method and seed mix indicated in Special Provision 618 (Special Seed Mix for Underdrain Soil Filter). USF maintenance access roads and berms as shown on Contract Plans, shall be seeded using Method #2 – Roadside Mixture #2. All seeding shall be completed between April 1st and June 15th or between August 15th and September 15th to ensure adequate time for establishment. Note: USF side slopes and bottom use a different seeding mix and method than the surrounding maintenance access roads and berms.

Fine Aggregate for Concrete – Only the first paragraph and gradation table in Specification 703.01 apply. The remaining paragraphs do not apply.

Granular Borrow – Modified to have 100% passing the 6" sieve.

Corrugated Polyethylene Pipe – Both perforated and unperforated underdrain pipe shall be constructed as indicated on the Contract Drawings. This work shall be in accordance with Section 605.

Soil Filter Media – Soil Filter Media shall be a well-mixed batch containing the following components and proportions, measured by volume:

50% - Fine Aggregate for Concrete (703.01)
35% - Loam (615.02)
15% - Compost (Special Provision 615 – Compost)

The Soil Filter Media shall have 8% to 12% by weight passing the #200 sieve, a clay content of less than 2% (determined hydrometer grain size analysis) and 5-10% dry weight of organic matter.

The infiltration rate of the soil filter media shall be between 0.5 in/hr and 2 in/hr. The contractor shall test the soil in conformance with the MaineDEP Stormwater Management Design Manual, using in-place well or permeameter testing, or by conducting analyses of soil gradation.in the presence of the Engineer to ensure infiltration rate of soil media is within the desired range. Materials not meeting these specifications shall not be placed.

Concrete Keyway – A concrete keyway shall be constructed in the riprap emergency spillway as indicated on the Contract Drawings. This work shall be in accordance with Section 502.

Low Permeability Fill - Clay – Low permeability fill shall be natural, inorganic soil that is free from

foreign matter such as construction debris, trash, wood, roots, leaves, and other organic matter.

An example of soil that may be considered acceptable for low permeability fill is a well graded, granular soil with high silt content. Low permeability fill shall be as follows when tested in accordance with AASHTO T 27:

Sieve Size		Percentage by Weight Passing
3 in	(75 mm)	100
No. 4	(4.75 mm)	80 - 100
No. 40	(0.425 mm)	60 – 90
No. 100	(0.150 mm)	40 – 60
No. 200	(0.075 mm) in total	25 – 45

For a preliminary determination of compliance with the specification for grading and for determination of the maximum dry density, the Contractor shall submit to the Engineer samples of materials to be used for low permeability fill prior to its placement. Samples may be taken from the pit or from stockpiles. Sampling and testing shall conform to AASHTO T 27, R 13, and T 99. Materials not meeting these specifications shall not be placed.

Outlet Control Structure – An outlet control structure comprised of an Outlet Control Structure and Option-1 12" pipe shall be constructed as indicated on the Contract Drawings. This work shall be in accordance with Section 603 and 604.

Granite Forebay – This work shall consist of furnishing and placing granite blocks in accordance with Section 525 and as shown on the Plans. Granite blocks shall be dressed and cut to exact dimensions, so as to form a continuous and stable forebay edge. Each block shall be embedded a minimum of 6 inches, the typical depth of a granite block, below finished grade on a compacted crushed stone or equivalent bedding layer to provide stability and prevent displacement. The blocks shall be aligned straight and true, with uniform top elevations to ensure proper hydraulic function of the forebay. Backfill shall be placed and compacted behind the granite edging to provide lateral support. Instead of joint mortar, washed crushed stone chips meeting Section 703.13, sized to readily enter the joints and fill. Material shall be clean, free of fines and organics.

Void Filled Riprap – Void filled riprap shall be pre-mixed in the proportions listed in the following table:

Stone:	**Void-fill material:**	
Plain Riprap	Crushed Stone 5-inch	Aggregate
3 parts	1 part	1 part

615.04 Construction Requirements. The Underdrain Soil Filter shall be constructed according to the location, layout, grading, drainage, and seeding indicated on the Contract Drawings. The Contractor shall have a preconstruction site walk with the Resident and a representative from the MaineDOT Environmental Office Surface Water Resources Unit to review the proposed locations and to answer questions regarding layout and construction. Any modifications to the elevation,

location, and components of the Underdrain Soil Filters shall be at the direction of and approved by the Resident.

The footprint for embankment shall be cleared of trash/debris and any rocks greater than 6 inches, be free of any standing water, be graded to be no steeper than 1:1, be scarified prior to embankment fill placement, and be inspected and approved by the Resident before fill placement. Compact fill to 95% of Modified Proctor.

The following sequence of phases shall be observed during the construction of an Underdrained Soil Filter from the bottom up:

All water, excluding direct precipitation, shall be diverted from the Underdrained Soil Filter prior to the placement of the Impervious Liner and remain diverted until the basin and contributing drainage area reaches final stabilization (90% vegetation cover or paved).

Elevations in the Underdrained Soil Filter Contract Plans shall be surveyed as-built and recorded by the Resident.

After basin and spillway excavation and grading, the Impervious Liner and Geotextile Filter Fabric shall be installed on USF basin sides and bottom as shown in the Contract Drawings. The Impervious Liner shall not be placed during the presence of excessive winds as directed by the Resident. The Impervious Liner shall be laid in one continuous piece with all components internal to the USF placed on top of the liner. Unplanned punctures in the Impervious Liner shall be repaired in accordance with the manufacturer's specifications and approved by the Resident. Punctures in the Impervious Liner that are necessary according to the Contract Drawings shall be sealed to minimize the infiltration of water into the USF basin according to manufacturer's specifications and approved by the Resident. The Impervious Liner shall be anchored to the sidewalls of the excavation using a method approved by the Resident. The method of anchoring and relevant as-built elevations shall be submitted to the Environmental Office.

The Underdrain Backfill Material -Type B & Type C (703.22) and the underdrain pipes (706.06) shall be installed as indicated on the Contract Drawings. A underdrain cleanout shall be located at the upstream end of the underdrain network. Relevant as-built elevations, as appear in the Contract Plans, shall be recorded by the Resident before any media is placed over the underdrain. Underdrain Backfill Material (703.22) shall be compacted to between 90% and 92% standard proctor (AASHTO T180).

Install the 6-inch granular borrow (703.19) layer in a single lift and compact to between 90% and 92% standard proctor (AASHTO T180). A layer of non-woven drainage geotextile (722.02) shall be placed over the compacted gravel layer before Soil Filter Media is placed.

Install the 18-inch layer of Soil Filter Media in 6-inch lifts to prevent pockets of loose media. Compact to between 90 and 92% standard proctor (AASHTO T180). Over-compaction of the Soil Filter Media shall be avoided. Once compacted, relevant as-built elevations, as appear in the Contract Plans, shall be recorded by the resident prior to seeding.

Low permeability fill shall be placed in 6 in maximum lifts and shall be compacted to at least 95 percent of the maximum dry density. During compaction, the moisture content of the low permeability fill shall be between 1 percent below and 3 percent above the optimum moisture content. The maximum dry density and the optimum moisture content shall be as determined by AASHTO T 99 (Standard Proctor Test).

Once seeded, Erosion Control Blanket (717.061) shall be installed prior to the end of that Working Day.

615.041 General. Inspection and documentation of the Underdrain Soil Filters shall be provided for each phase of construction by the Resident and/or Third-Party Inspector. Documentation shall be provided upon request to the MaineDOT Environmental Office Surface Water Resources Unit.

615.042 Submittals. The following submittals are required:

- The Contractor shall identify the location of the source of each component of the Underdrain Soil Filters and provide documentation to the Resident. The Contractor shall submit samples of each material to be blended for the Soil Filter Media, the resulting Soil Filter Media, and Underdrain Backfill Material – Type B & Type C to a material testing firm at least 30 working days prior to delivery to the site. Representative samples shall be a composite of three different locations (grabs) from the stockpile or pit face. Sample size required will be determined by the material testing firm. All laboratory test results (see below) shall be submitted to the Resident at least 10 working days prior to the delivery of material to the site. The cost of material testing shall be considered incidental to the Pay Item.
- Submittals in accordance with individual material requirements set forth within the Standard Specifications.
- Method for anchoring of the impervious liner to the excavation walls.
- Records of surveyed as-built elevations for all pipe inverts, berms, outfalls, spillways, or other features as per those listed in the Underdrained Soil Filter Contract Plans.
- A complete layout plan of the granite masonry forebay shall be submitted to the Resident for approval prior to ordering or placing and stone.

615.043 Testing.

- Laboratory Testing - The Contractor's material testing firm shall conduct a sieve analysis conforming to AASHTO T88 on each of the Soil Filter Media components, the resulting Soil Filter Media, and Underdrain Backfill Material. The material testing laboratory shall test the organic content of the resulting Soil Filter Media and its components, the testing shall conform to AASHTO T267. The Soil Filter Media shall have 8% to 12% by weight passing the #200 sieve, a clay content of less than 2% and have 5-10% dry weight of organic matter.
- Permeability Testing – The Contractor's material testing firm shall perform a permeability test by constant-head method on the Soil Filter Media conforming to AASHTO T215. One test per Underdrained Soil Filter unit.

615.05 Method of Measurement. Underdrain Soil Filters will be measured for payment by the Lump Sum.

615.06 Basis of Payment. Underdrain Soil Filters will be paid for at the contract unit price as specified complete, in place, and accepted. The following are included in the Underdrain Soil Filter lump sum payment:

All construction materials, labor, and incidentals required for grading and construction of access roads, berms, spillways, USF basin with its internal components, and final stabilization as indicated in the Contract Drawings.

The following items will be measured for payment separately in accordance with the appliable specifications: Clearing (Section 201), Removal of Existing Catch Basins (Section 202), Guardrail (Section 606), Fencing (Section 607), Removal of Concrete Foundations (Section 626) and Lighting items (Section 634).

Payment will be made under:

Pay Item		Pay Unit
615.27	Underdrain Soil Filter	Lump Sum

SPECIAL PROVISION
SECTION 615
LOAM COMPOST MIX

Description

This work shall consist of furnishing compost as called for on the Underdrain Soil Filter Contract Plans or as authorized.

Materials

The recipe for the Compost shall be a one-to-one blend by volume of compost and loam meeting the following requirements:

The loam component shall meet requirements of Section 615.02 Loam or as approved by the Resident.

The compost component shall meet the following requirements:

Compost shall be produced by the aerobic (biological) and biochemical decomposition of source separated organic materials.

Compost shall be derived from a mixture of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation, or clean processed recycled wood products (Maine Department of Environmental Protection (MaineDEP) Type IA, IB)
2. Manure
3. Mixed food waste (MaineDEP Type IB, IC)

Compost shall not be derived from biosolids or mixed municipal solid waste and must be reasonably free of visible contaminants. Compost shall not contain paint, petroleum products, pesticides, industrial residuals or any other chemical residues harmful to animal life or plant growth. Compost shall not possess objectionable odors.

The compost shall be produced at a licensed facility as specified under MaineDEP Chapter 410: Composting Facilities that regulate Solid Waste Facilities. If exempt from State permitting requirements, the composting facility shall certify that it follows guidelines and procedures for production of compost meeting the environmental standards of Chapter 410.

Compost shall meet the following parameters:

Parameter	Requirement
Acidity Range	5.5 pH to 8.5 pH
Moisture Content	30-60% wet weight basis
Organic Content	25-65% dry weight basis
Particle Size	100% passing 3 inches 90-100% passing 1 inch 65-100% passing ¾ inch 0-75% passing ¼ inch
Physical Contaminant	<1% dry weight basis
Soluble Salts	< 5.0 mmhos/cm
Carbon: Nitrogen Ratio	15-25:1
Total Nitrogen	<1.7%
Organic N	<1.5%
Total Phosphorus	<1.0%
Total Potassium	<0.5%
Stability	<8 mg CO_2-C per g OM per day

Maturity Test: The finished compost must be tested and classified as "Very Mature" by one of the following methods, or another method as approved by the resident:

Method	Units	Very Mature	Mature	Immature
Oxygen Uptake Rate (OUR Test)	O2 / unit TS / hr	<0.4	0.4 - 1.3	>1.3
Specific Oxygen Uptake Rate (SOUR Test)	O2 / unit BVS / hr	<0.5	0.5 - 1.5	>1.5
Dewar Self-Heating Test	Temp. rise (°C)	<10	10 - 20	>20
Solvita Test	Index value	7-8	5-6	<5

Compost shall conform to all applicable specification requirements prior to its final placement on the project. The practice of culling deleterious or out-of-specification material after placement and/or grading in place will not be allowed.

Submittal Requirements

The contractor shall provide MaineDOT with a 5-gallon compost sample at least 14 days prior to application for laboratory testing if deemed appropriate before use, and documentation from the compost supplier of the following information:

1. The source(s) of compost.
2. Laboratory results that show that the compost delivered to the project meets the compost parameters listed above. An independent Seal of Testing Assurance (STA) Program certified laboratory shall perform the analysis.
3. Compost supplier references documenting that they are fully permitted by MaineDEP to produce compost.
4. MaineDOT reserves the right to have an additional Soil Analysis Test to reject the material and request an alternative material that passes acceptable standards.

Batch Mix- Compost and Loam

Compost and Loam shall be combined in equal (1 to 1) portions, by volume and mixed to produce homogeneous product approved by the Resident.

Method of Measurement

Compost (50% compost / 50% loam mix) will be measured by the cubic yard.

Basis of Payment

Compost, as used in an Underdrain Soil Filter, shall be incidental to pay item 615.27 Underdrain Soil Filter.

SPECIAL PROVISION
SECTION 617
Compost/Humus

Description: This item shall consist of supplying material per item 717.09 Humus as specified in the Standard Specifications, to be incorporated in conjunction with item 615.07 Loam at the direction of the Resident.

717.09 Humus: Humus shall be an organic substance meeting the following:

Minimum organic matter shall be 35% as determined by loss on ignition.
Particle size shall be 100% less than 25 mm [1 inch].
Soluble salts shall be less than 4.0 mmhos/cm.
pH shall be between 4.5 and 8.0
Material shall be Stable (>5) as measured by the Dewar Self Heating Test

Organic humus may be a natural peat from sedge, sphagnum or reed origin, or a compost from source separated materials that may include leaf and yard trimmings, marine products, food scraps, food processing residues, manure and other agricultural residuals, or biosolids. Organic humus shall contain no visible admixture of refuse or other physical contaminates or any material toxic to plant growth.

Method of Measurement: Humus will be measured by the cubic yard upon delivery.

Basis of Payment: The accepted quantities of loam will be paid for at the contract unit price per cubic yard in place.

Payment will be made under:

Pay Item		Pay Unit
617.35	Compost/Humus	Cubic Yard

SPECIAL PROVISIONS
SECTION 618
SEEDING
(Special Seed Mix Underdrain Soil Filter)

The following list provides a Special Provision Seed Mix to be used on the UNDERDRAIN SOIL FILTER areas of this project as shown in the plans and as directed by the Resident.

The Underdrain Soil Filter side slopes and bottoms shall be seeded per the Standard Specification Section 618 with soil preparation for Seeding Method #2 replaced with the Special Seed Mix and supplemented with a Soil Enhancement and Growth Medium. The seeding shall be accomplished as soon as the structure is completed while the soil is still friable and before weeds emerge. Soil preparation shall be completed by hand raking and removing any rocks.

The Special Seed Mix shall be applied at the rate of ½ lb per unit [1,000 sq.ft.]

Underdrain Soil Filter Seed Mix

30.00	%	*Carex vulpinoidea*	Fox Sedge
20.00	%	*Elymus virginicus*	Virginia Wildrye
11.00	%	*Carex scoparia*	Blunt Broomsedge
10.70	%	*Carex lurida*	Lurid Sedge
4.20	%	*Asclepias incarnata*	Swamp Milkweed
4.00	%	*Verbena hastata*	Blue Vervain
3.00	%	*Bidens cernua*	Nodding Bur Marigold
2.90	%	*Zizia aurea*	Golden Alexanders
2.00	%	*Juncus effusus*	Soft Rush
1.60	%	*Asclepias syriaca*	Common Milkweed
1.20	%	*Sparganium eurycarpum*	Giant Bur-reed
1.00	%	*Carex lupulina*	Hop Sedge
1.00	%	*Solidago rugosa*	Wrinkleleaf Goldenrod
1.00	%	*Penthorum sedoides*	Ditch Stonecrop
1.00	%	*Aster novae-angliae*	New England Aster
0.80	%	*Aster puniceus*	Purple Stemmed Aster
0.80	%	*Aster umbellatus*	Flat-topped White Aster
0.70	%	*Eupatorium perfoliatum*	Boneset
0.70	%	*Monarda fistulosa*	Wild Bergamot
0.50	%	*Sparganium americanum*	Lesser Bur-reed
0.50	%	*Cinna arundinacea*	Wood Reedgrass
0.40	%	*Mimulus ringens*	Square Stemmed Monkeyflower
0.30	%	*Scirpus cyperinus*	Woolgrass
0.30	%	*Scirpus hattorianus*	Northern Bulrush
0.20	%	*Carex stricta*	Tussock Sedge
0.20	%	*Calamagrostis canadensis*	Canada Bluejoint

Apply this mix at 20 lbs/acre ½ lb per unit with a cover crop.

For a cover crop use Aroostook rye (1 Sep to 30 Apr; 30 lbs/acre (0.7 lbs/1,000 ft)) or Sideoats grama (1 May to 31 Aug; 7 lbs/acre (0.16 lbs/1,000 ft)).

Method of Measurement

Special Seed Mix shall be measured for payment per unit/1,000 square feet.

Basis of Payment

Special Seed Mix, as used in an Underdrain Soil Filter, shall be incidental to pay item 615.27 Underdrain Soil Filter.

SPECIAL PROVISIONS
SECTION 618
SEEDING
(Special Seed - Low Grow Meadow Mix)

Description:

This work shall consist of furnishing and sowing Special Seed in traffic islands and other areas as directed by the Resident. The contractor shall follow **MaineDOT Standard Specifications** (Section 618) Rev. March 2020 for seeding materials and installation procedures.

Materials:

The Special Seed shall be a uniform, fresh, supplier-labeled mixture of the following species proportionated to percent by weight as follows:

30.00	*Schizachyrium scoparium*	Little Bluestem
20.00	*Festuca rubra*	Creeping Red Fescue
20.00	*Agrostis perennans*	Autumn Bentgrass
20.00	*Panicum rigidulum*	Red Top Panicum
10.00	*Eragrostis spectabilis*	Purple Lovegrass
5.00	*Rudbeckia hirta*	Black-Eyed Susan
5.00	*Coreopsis lanceolata*	Lance Leaved Coreopsis
5.00	*Sporobolus cryptandrus*	Sand Dropseed
3.00	*Achillea milefolium*	Common Yarrow
3.00	*Juncas tenuis*	Path Rush
3.00	*Solidago nemoralis*	Gray Goldenrod
2.00	*Penstemon hirsutus*	Hairy Beardtongue
2.00	*Elymus virginicus*	Virginia Wildrye
1.00	*Bouteloua gracilis*	Blue Grama
0.25	*Pycnanthemum tenuifolium*	Slender Mountain Mint
0.25	*Aster laevis*	Smooth Aster
0.25	*Aster lateriflorus*	Calico Aster
0.25	*Symphyotrichum oblongifolium*	Aromatic Aster

Construction:

This mix shall be sown uniformly by either conventional or hydraulic methods at the application rate of 1/2 lb. per unit (1,000 sq. ft.).

Method of Measurement:

The special seed shall be measured by the pound prior to sowing.

Basis of Payment

Payment will be made under the following item:

Pay Item		Pay Unit
618.143	Special Seed - Low Grow Meadow Mix	Unit

SPECIAL PROVISION
SECTION 618 - SEEDING
(618.146 Seeding Hydromulch Medium)

Supplement SECTION 618 - SEEDING with the following:

Description

This work shall consist of installing Special Seeding – Stream Buffer (Item 618.143) and Special Seeding – Underdrain Soil Filters (Item 618.1452) per ***Standard Specifications*** with the substitution of Method 2 Seed and 717.04 Cellulose Fiber Mulch with a soil enhancement Biotic Soil Hydromulch Medium and Growth Medium Hydromulch material. An initial application of Proganics Biotic Soil Hydromulch Medium or equal shall be used as directed by the Resident, followed by two consecutive layers of seed following methodology for Flexterra Flexible Growth Medium with Seed.

Materials

Special Seeding Mix shall consist of the application of Special Seed Mix, lime or liquid lime, humic acid soil conditioner and fertilizer to loamed areas as directed by the Resident Engineer. Material shall meet the requirements of the following Sections of Division 700 – Materials:

Agricultural Lime Stone/Liquid Lime	717.02
Proganics 1,500 lb/acre	
Biotic Soil Hydromulch Medium	717.05
Flexterra 1,500 lb/acre	

A dual application of Biotic Soil Hydromulch Medium such [Soil Enhancement Product] as Biotic Soil Conditioner or equal; and Flexterra Flexible Growth medium shall be used as directed by the Resident.

Delivery, Storage, and Handling

Deliver materials and products in UV and weather-resistant factory-labeled packages. Store and handle in strict compliance with manufacturer’s instructions and recommendations. Protect from damage, weather, excessive temperatures, and construction operations.

Rates of Application

Rates of application shall be per ***Standard Specifications*** with the exception of Proganics Biotic Soil Hydromulch Medium which shall be applied at a starting base layer and a 50% seed layer, followed by applications of Flexterra with seed both at the rate of 2,500 lbs per acre/ 60 lbs/unit.

Time of Initial Seeding

Seeding dates shall be:
April 15 – July 15 (Spring) and August 15 - September 30 (Fall).

For seeding with Soil Amendment Product add 50% of seed, and apply seed Proganics seed layer; then apply Flexterra with balance of seed with dual applications from different angles for a final finished product layer.

Strictly comply with manufacturer’s mixing and installation instructions and recommendations.

A mechanically-agitated mixing device is recommended.

Use approved hydro-spraying machine with fan-type nozzle to achieve best soil coverage. Apply from opposing directions to ensure 100% surface coverage.

Apply in a 2-Step process as follows, to be completed in immediate succession such that the seed applied in Step 1 is not left unprotected, especially if precipitation is imminent:

- Step 1: apply an initial base layer of Soil Enhancement Medium with then apply a second layer with 50% of seed with the remaining amount of Proganics.
- Step 2: mix balance of seed with Flexterra Medium and apply to a finished product layer of 80s lb /Unit.

Maintenance and Acceptance Maintenance and acceptance of seeded areas shall be as set forth in Standard Specification Section 618

Method of Measurement Seeding shall be measured for payment as set forth in standard specification Section 618

Basis of Payment The Seeding Hydromulch Growth Medium will be paid for at the contract unit price per unit (1,000 square feet) complete in place and accepted. Payment for the Special Seed Mix will be made separately under Pay Item 618.143. All other materials will be considered incidental.

Payment will be made under:

Pay Item		Pay Unit
618.146	Seeding Hydromulch Growth Media Soil Enhancement Hydroseed Medium [Proganics or equal] Hydroseed Growth Mulch Medium [Flexterra or Equal]	Unit

Bangor
WIN 18595.11
October 23, 2025

SPECIAL PROVISIONS
SECTION 621
LANDSCAPE
Plant Species Specification and Quantities List

The following list of landscape items provides the estimated quantities for use on this project. The scientific name of the plant material is provided along with the common name in parenthesis.

The MaineDOT Resident, Landscape Architect or their appointed designee will be available to inspect plant materials and stake plant locations at the time of planting. Any plant species substitutions shall be authorized by the MaineDOT project landscape architect.

Plants shall be located within the large traffic islands according to the project plans or as directed by the Resident or Landscape Architect. Final selection of plant species and quantities are subject to change based site conditions and necessary modifications during construction.

The contractor shall follow **MaineDOT Standard Specifications** (Section 621) Rev. March 2020 for landscape materials and installation procedures.

PLANT MATERIALS

ITEM	Description	Unit	Quant.	Total
621.031	Evergreen Trees 4' – 5' Group A, B&B or Cont.			40
	Juniperus virginiana (Eastern Red Cedar)	Ea.	20	
	Juniperus v. 'Brodie' (Eastern Red Cedar)	Ea.	20	
621.401	Evergreen Shrubs 2'- 2 ½' Group A, Container			30
	Juniperus v. 'Grey Owl' (Grey Owl Juniper)	Ea.	30	
621.54	Deciduous Shrub 18- 24" Group A, Container			80
	Cornus sericea 'Isanti' (Dwf. Red-twig Dogwood)	Ea.	10	
	Diervilla lonicera (Bush Honeysuckle)	Ea.	30	
	Spiraea latifolia (White Meadowsweet)	Ea.	40	
621.546	Deciduous Shrub 2'- 3' Group A, Container			50
	Cornus sericea Isanti (Isanti Red Twig Dogwood)	Ea.	10	
	Aronia melanocarpa 'Low Scape Hedger'	Ea.	30	
	Aronia a. 'Brilliantissima' (Red Chokeberry)	Ea.	10	
621.552	Deciduous Shrub 3'- 4' Group A, Container or B&B			60
	Myrica pensylvanica (Bayberry)	Ea.	30	
	Viburnum dentatum (Arrowwood)	Ea.	20	
	Aronia a. 'Brilliantissima' (Red Chokeberry)	Ea.	10	

SPECIAL PROVISION
SECTION 626
HIGHWAY SIGNING

Amend Standard Specification 626 – FOUNDATIONS, CONDUIT, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS to include the following:

	Pay Item	Pay Unit
626.49	Greater Than 60-inch Diameter Foundation	Linear Foot

SPECIAL PROVISION
SECTION 627
PAVEMENT MARKINGS
(8 Inch Pavement Marking Line)
(Temporary Pavement Markings)

The provisions of Section 627 of the Standard Specifications shall apply with the following additions and modifications:

627.01 Description

The following paragraph is added:

This work shall consist of furnishing, placing, and removing reflectorized pavement lines and markings intended for temporary use throughout the project and in conformance with the approved traffic control plans (TCP) and Staged Construction and Traffic Control Plan (SCTCP).

627.02 Materials

The following paragraphs are added:

Temporary pavement marking tape shall be a product listed in the Department's Qualified Products List (QPL) designated as Temporary Tape. Where indicated, black mask tape shall be 3M Stamark Removable Black Line Mast Tape Series 715 or Swarco Director 2 – Blackout Tape or an approved equivalent.

627.04 General

The following paragraphs are added:

The pavement markings shall be applied mechanically to clean dry pavement as recommended by the manufacturer and as approved by the Resident.

Temporary pavement marking tape that loses reflectivity, becomes broken, dislodged or missing during the life of the Contract shall be replaced by the Contractor at no additional cost to MaineDOT.

Temporary pavement marking tape applied to I-95 shall be a minimum of 6 inches wide. Temporary pavement marking tape applied to ramps and Hogan Road shall be a minimum of 4 inches wide.

627.06 Application

The following paragraphs are added:

For application of the tape, when the pavement temperature is below 50°F, heat shall be applied to the pavement surface, if deemed necessary by the factory representative or as directed by the Resident, at no additional cost. Proper primer for the temperatures shall be used as directed by the manufacture.

The temporary pavement marking tape shall be rolled over with a vehicle at least twice when application is complete and then scored every 20 feet when placed in long runs to prevent full length unraveling.

627.09 Method of Measurement

The following paragraphs are added:

The accepted quantity of 8" White Pavement Marking Line and 12" Temporary Pavement Tape, White will be measured by the linear foot for the actual length of tape furnished, applied, and removed, of the color specified in the traffic control plans or as directed by the Resident.

The accepted quantity of Temporary Pavement Line Tape, Yellow or White and Removable Black Line Masking Tape will be measured by the square foot for the temporary tape line or shape furnished, applied and removed.

The accepted quantity of Temporary White or Yellow Pavement & Curb Marking will be measured by the square foot for the temporary painted pavement marking applied and removed, of the color specified in the traffic control plans or as directed by the Resident.

643.09 Basis of Payment

The following paragraphs are added:

The quantity of 8" White Pavement Marking Line and 12" Temporary Pavement Tape, White will be paid for by the linear foot of tape furnished, applied, and removed. This price shall be full compensation for furnishing, installing, scoring, maintaining, and removing the temporary tape and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

The quantity of Temporary Pavement Line Tape, Yellow or White and Removable Black Line Masking Tape will be paid for by the square foot of lines and shapes furnished, applied and removed. This price shall be full compensation for furnishing, installing, reapplying as required to maintain coverage, maintaining, and removing the temporary tape and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

The quantity of Temporary White or Yellow Pavement & Curb Marking, will be paid for by the square foot of painted symbols and lines applied and removed. This price shall be full compensation for installing, reapplying as required, maintaining, and removing the temporary

paint and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under the following:

Pay Item		Pay Unit
627.311	8” White Pavement Marking Line	LF
627.511	Temporary Pavement Line Tape, Yellow or White	SF
627.512	Removable Black Line Masking Tape	SF
627.55	12” Temporary Pavement Tape, White	LF
627.752	Temporary White or Yellow Pavement & Curb Marking	SF

SPECIAL PROVISION
SECTION 634
HIGHWAY LIGHTING
(Luminaires-LED)

634.093 Basis of Payment: This section shall be amended with the addition of the following:

Pay Item		Pay Unit
634.2042	LED Luminaires	Each

SPECIAL PROVISION
SECTION 634
HIGHWAY LIGHTING
(Service Pole and Cabinet)

Add to 634.01 Description

This work shall consist of furnishing and installing a wood utility pole, complete with cabinet and controls.

Add Section 634.028 Service Pole Complete with Cabinet and Controller

The Service Pole with Cabinet and Controller installation shall be in accordance with Standard Detail 634(01) and circuited in accordance with Standard Detail 634(02).

The service pole shall be installed in undisturbed soil, set plumb with the butt end not less than six and one-half feet below finish grade at point of installation. Provide a helical ground anchor and guy wire with the guy attached to pole directly opposite the point of attachment and in line with utility company service drop cable. The pole length shall be 30-feet to comply with utility company requirements for the minimum clearance above ground at lowest point of service drop cable sag and shall meet the material requirements of Section 720.10.

The cabinet shall be in accordance with Section 715.11 Service Equipment and include a single photo cell (715.10).

The maximum size for main breaker shall be a 2-pole, 50 -ampere, 240 volt, 1 phase, 3 wire service wired with #8 AWG.

Replace Paragraph 2 of 634.08 Service

The lighting system will be supplied with electrical power by the local power company. The type of service will be single phase, three wire, 120/240 volt, 60 hertz, alternating current. The power company will make all connections of the roadway lighting system cables at the power company's service pole. The Contractor shall notify the power company at least two weeks in advance of the time they intend to start construction at each of the sites and shall make all necessary arrangements with the power company for the required installation.

All meter mounting devices shall be installed so that the meters will be upright (plumb). They shall be installed with the top of the meter not less than 48 inches or more than 60 inches from the floor to the final grade. Exceptions to this height requirement will be made where special permission has been given to install group or modular metering, overall metering enclosures, or pole-mounted meters. Level grade shall be maintained for a minimum of 3 feet in front of the meter enclosure to provide a safe working space. In order to meet this requirement on uneven terrain, as an option, the Contractor may install a pressure-treated wood platform.

For any non-residential (industrial or commercial) self-contained meter socket the bypass requirements are single phase, 100 or 150 amp, single handle lever operated.

** The pass is particularly important for use during the Utility Company's normal business hours. Therefore, the following types of non-residential services (200A or less) are exempt from these by-pass requirements, and the residential socket (non by-pass) may be utilized: Outdoor lighting (ball field, tennis court, etc.).

Add to 634.093 Basis of Payment

Service pole with cabinet and controller will be paid for at the respective Contract unit price per each, complete, operational, tested, and accepted in place, which prices shall include full compensation for all electrical components, mounting brackets, ground rods, ground wire and ground wire connections, enclosure, wiring, conduit, circuit breakers, load center, meter socket, control wiring, receptacle, device boxes, wire troughs, contactors, pull wire, photo cell and control, locks, delivery of keys to MaineDOT and the Town of Damariscotta, time clocks, wood utility pole, and all labor, materials, equipment, and incidental costs required to complete the work, including all service coordination with the Emera.

Payment will be made under:

Pay Item		Pay Unit
634.25	Service Pole Complete with Cabinet and Controls	Each

Highway Lighting Quality Control Checklist

Subsection 634.09 Field Testing

Project Pin # _____

Location (if multiple services, please be specific)- _____

Grounding Electrode Resistance at service _____

Number of Circuits _____

Hand-Off-Auto Switch? _____

Circuit #1

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

Circuit #2

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.

(YEAR)

Electrician's Signature _____

Electrician's License # _____

Highway Lighting Quality Control Checklist

Subsection 634.09 Field Testing

Project Pin # _____

Location (if multiple services, please be specific)- _____

Grounding Electrode Resistance at service _____

Number of Circuits _____

Hand-Off-Auto Switch? _____

Circuit #3

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

Circuit #4

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.

(YEAR)

Electrician's Signature _____

Electrician's License # _____

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Non-Invasive Detection – Stop Bar)

Description. This item shall consist of furnishing and installing a non-invasive stop bar vehicle detection including all necessary fittings and mounting hardware at the locations shown on the plans or as indicated by the Maine Department of Transportation (MaineDOT).

Materials. The Contractor shall furnish and install a Stop Bar Vehicle Detection (SBVD) system that detect vehicles on a roadway by processing images sent from an IP based sensor to an interface board with detector outputs that can be received by the traffic signal controller. The SBVD shall include equipment meeting the following requirements as defined under item 718.13. These IP based traffic sensors shall be installed at the locations shown on the plans and in accordance with these specifications. All remote communications for the Non-Invasive – SBVD shall be routed electronically, and IP based to the Field Monitoring Unit (FMU) or the Fiber Ethernet Switch; the use of a separate cellular modem/data connection shall not be allowed. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to satisfy the requirements as defined in these specifications. All Non-Invasive SBVD units supplied by the Contractor as part of this project shall be from the same manufacturer and be the identical make/model and firmware revision. The SBVD shall be Miovision Detection Plus + Streaming.

The SBVD system shall be non-intrusive (i.e. above ground) and shall consist of:

a. Mounting brackets.
b. IP based Traffic sensor and detection module (radar shall provide IP cabinet interface device), including at least two (2) 360-degree traffic sensors or at least one directional sensor per approach.
c. Communications cable.

The SBVD system, at a minimum, shall:

- Collect and store volume, of all vehicle types as well as bicycles and pedestrians;
- Provide stop bar detection;
- Be ATC 5201 v06 compatible;
- Provide Turning Movement counts through either manufactures software or as inputs into the MaineDOT Central Management Software (CMS);
- Provide remote access to digital video stream;
- Support remote configuration;
- Shall be connected to FMU switchable power outlet.

The SBVD system shall be connected, via Ethernet, to the Field Monitoring Unit (FMU) in each control cabinet and to the cloud-based video management server over the cellular modem.

Components of the SBVD system shall all be the same make and model. As a minimum, the

SBVD system shall be supplied and installed with the following functionality:

- Shall have the capability of remotely displaying live video streams and/or live radar telemetry from all IP video/radar detection units installed at the intersections. The setup of detection zones shall be available via remote access. The system shall log which user made any changes to the detection zone configurations.
- Shall support communication of Telemetry Data, Video Data, Alert Data, and Vehicle Identification Data to the Server via the Communication Service.
- Shall be connected to the Ethernet Switch and/or the FMU in each control cabinet.
- Shall acquire and record phase, channel, detector, pedestrian detector, pre-emption, alarm and overlap statuses at a frequency of no less than 10 times per second including whether a phase is next or has a call for service on it.
- Shall consist of an SBVD system at all project intersections, as shown in the Plans.
- Video detection shall consist of an IP based camera assembly and a digital video detection system. Analog cameras with separate video encoders shall not be allowed.
- Radar detection shall consist of a radar sensor and IP cabinet interface device.
- Every vehicular approach at every project intersection shall be included in the vehicle detection system, as shown in the Plans.
- Shall be capable of automatically collecting and storing signal performance data, including at a minimum classification of vehicles and turning movement counts, with 95% accuracy.
- Shall allow for the retrieval of signal performance data through an Ethernet based connection to the detection module or cabinet interface device at no additional costs to MaineDOT for the life of the product.
- Shall be connected to the in-cabinet high speed communications bus (SIU) within the controller cabinet.
- Shall transmit detector data to the controller unit via the in-cabinet high speed communications bus (SIU) within the controller cabinet.
- Shall be installed in the control cabinet such that SBVD is electrically powered via one of the switchable duplex outlets provided on the FMU. This configuration shall allow MaineDOT to power cycle and reset the SBVD, via remote FMU control (outlet power), in the event that the detection unit locks up.

Construction Requirements. The Contractor shall be responsible for furnishing all training, labor, materials, cables, connectors, tools, equipment, shipping and incidental items necessary to complete the installation and make the non-invasive stop bar vehicle detection system fully operational.

Installation of the non-invasive stop bar vehicle detection system shall include the installation of any and all associated equipment including, but not limited to, the following:

a. Detector Assembly with integrated machine vision processor. The Contractor shall furnish one assembly per applicable approach and/or a signal device for all approaches, the minimum needed to provide detection for all vehicle approaches

b. Detector Communications Interface Panel. The Contractor shall furnish one detector communications interface panel per cabinet.

c. Detector Cable. The Contractor shall furnish the specified cable type, all connectors, sealing tape and incidental work necessary to complete the installation of the connector cable between the detector assembly and the interface panel.

d. Mounting Brackets and Ancillary Equipment and Labor. The Contractor shall furnish detector mounting brackets and all associated equipment labor, materials and incidental work necessary to attach the detector assemblies to a mast arm or extension bracket, complete the installation and make the non-invasive stop bar vehicle detection system fully operational.

The Contractor shall install the SBVD system software on any number of computers/systems as required by MaineDOT to allow visual confirmation of the detection zones as shown on the plans. All equipment shall be installed and wired in a neat and orderly manner in conformance with the manufacturer's instructions. The detector assembly(s) shall be affixed to the support structure in accordance with the manufacturer's instructions to provide the optimal field of detection.

The non-invasive stop bar vehicle detection locations shown on the Plans are for illustrative purposes only. Final locations shall be located in the field and shall be approved by MaineDOT and/or the Engineer. The Contractor may be required to adjust and readjust the location of existing and proposed vehicle detection zones in the presence of the Engineer, at no additional cost, to properly set the detection areas

Installation will be considered complete when the Contractor shows the system successfully and consistently places a request to the controller to call and extend the appropriate phase based on a vehicle detected in the detection zone; and remote access to the SBVD via MaineDOT control and or the cloud-based CMS.

Method of Measurement. The non-invasive stop bar vehicle detection system will be measured for payment as a lump sum system fully installed and operational. All items, equipment, labor and incidentals required to create a fully functional system will be considered incidental to the cost of this item. Units shall be pre-approved or unconditionally warranted for at least 3 years from factory purchase and certified to comply with the product's published specification by an independent laboratory.

Basis of Payment. Payment will be full compensation for furnishing, transporting, handling, installing and testing the materials and equipment specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Pay Item		Pay Unit
643.21	Non-Invasive Detection - Stop Bar: Hogan Road at Springer Dr/Bangor Mall Blvd	Lump Sum
643.21	Non-Invasive Detection - Stop Bar: Hogan Road at I-95 Southbound Ramps	Lump Sum
643.21	Non-Invasive Detection - Stop Bar: Hogan Road at I-95 Northbound Ramps	Lump Sum
643.21	Non-Invasive Detection - Stop Bar: Hogan Road at Haskell Rd/Sylvan Rd	Lump Sum

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Non-Invasive Detection - Advance)

Description. This item shall consist of furnishing and installing a non-invasive advance vehicle detection system including all necessary fittings, mounting hardware and appurtenances necessary to provide for a fully operational system at the locations shown on the plans or as indicated by the Maine Department of Transportation (MaineDOT).

Materials. The non-invasive advance vehicle detection system shall include a stand-alone, radar-based detector and an integrated machine processor, Microsoft Windows based configuration software that provides for configuring the non-invasive advance vehicle detection system. The interface provided shall provide for the viewing of real time detection data and updating the memory of the non-invasive advance vehicle detection system. All mounting hardware, Ethernet communications interface panel, Advanced Transportation Controller Cabinet (ATCC) detector interface panel, detector cabling, all associated equipment, software and licenses and miscellaneous fittings, cabinet wiring, and all labor, materials and equipment required to complete the installation shall be included. The non-invasive detection system shall be integrated into the ATCC cabinet and made fully functional. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to satisfy the requirements as defined in these specifications. The non-invasive advanced vehicle detector shall be the Wavetronix Smart Sensor Advance or approved equal.

All non-invasive advance vehicle detection system components shall be current production equipment produced by the same manufacturer as otherwise noted herein or approved in advance by MaineDOT. The non-invasive advance vehicle detection system hardware shall operate without degradation over a temperature range of -40 to 165 degrees Fahrenheit at a relative humidity up to 95% non-condensing.

The non-invasive advance vehicle detection system must meet the National Electrical Manufacturers Association (NEMA) 250 Standards for the enclosure, be able to detect vehicles at a minimum of 600 ft distance from the detector and the ability to detect multiple vehicles at the same time. The non-invasive advance vehicle detection system's hardware and software used to setup, configure and communicate must be compatible with the vehicle detection's operating system.

Construction Requirements. The Contractor shall be responsible for furnishing all training, labor, materials, cables, connectors, tools, equipment, shipping and incidental items necessary to complete the installation and make the non-invasive advance vehicle detection system fully operational.

Installation of the non-invasive advance vehicle detection system shall include the installation of any and all associated equipment including, but not limited to, the following:

a. Detector assembly with integrated machine vision processor. The Contractor shall furnish one assembly per designated approach as indicated in the plans.

b. Detector Ethernet communications interface panel. The Contractor shall furnish one detector communications interface panel per cabinet.

c. ATCC detector interface panel. The Contractor shall furnish one detector ATCC detector interface panel per cabinet.

d. Detector Cable. The Contractor shall furnish the specified cable type, all connectors, sealing tape and incidental work necessary to complete the installation of the connector cable between the detector assembly and the interface panel.

e. Mounting Brackets and Ancillary Equipment and Labor. The Contractor shall furnish detector mounting brackets and all associated equipment labor, materials and incidental work necessary to attach the detector assemblies to a mast arm or extension bracket, complete the installation and make the non-invasive advance vehicle detection system fully operational.

The Contractor shall install the processor system on the cloud-based Central Management System (CMS) and any number of laptop computers as required by MaineDOT to allow visual confirmation of the detection zones as shown on the plans. All equipment shall be installed and wired in a neat and orderly manner in conformance with the manufacturer's instructions. The detector assembly(s) shall be affixed to a support structure in accordance with the manufacturer's instructions to provide the optimal field of detection as directed by MaineDOT and/or the Engineer.

The non-invasive advance vehicle detection zones shown on the plans are for illustrative purposes only. Final detection zones shall be located in the field and approved by MaineDOT and/or Engineer.

The installation will be considered complete when the Contractor shows that the non-invasive advance detection system has successfully and consistently placed a call to the Advanced Transportation Controller (ATC) when a vehicle has been detected in the dilemma zone.

Method of Measurement. The non-invasive advance vehicle detection system will be measured for payment as a lump sum system fully installed and operational. All items, equipment, labor and incidentals required to create a fully functional system will be considered incidental to the cost of this item. Units shall be pre-approved or unconditionally warranted for at least 3 years from factory purchase and certified to comply with the product's published specification by an independent laboratory.

Basis of Payment. Payment will be full compensation for furnishing, transporting, handling, and installing the materials and equipment specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Pay Item		Pay Unit
643.22	Non-Invasive Detection - Advance: Hogan Road at Springer Dr/Bangor Mall Blvd	Lump Sum
643.22	Non-Invasive Detection - Advance: Hogan Road at I-95 Southbound Ramps	Lump Sum
643.22	Non-Invasive Detection - Advance: Hogan Road at I-95 Northbound Ramps	Lump Sum
643.22	Non-Invasive Detection - Advance: Hogan Road at Haskell Rd/Sylvan Rd	Lump Sum

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Rectangular Rapid Flashing Beacon Assembly)

Amend Standard Specification Section 643 – Traffic Signals as follows:

Add the following to the end of Section 643.01, Description:

This work shall consist of furnishing and installing Rectangular Rapid Flashing Beacons (RRFBs), signage, and associated equipment and appurtenances, in accordance with these specifications and in conformity with the lines, grades, and dimensions shown on the Plans or established herein.

Add the following Section 643.025 Assembly:

RRFBs and signs for each crosswalk shall meet the latest version of the Manual on Uniform Traffic Control Devices (MUTCD) Chapter 4L – Rectangular Rapid-Flashing Beacons.

The following are also required in addition to:

1. Each RRFB Assembly shall include equipment visible for each direction of vehicular traffic unless otherwise shown on the plans. Said equipment shall include two W11-2 signs (one to be a mirrored image for the left side of the road), two W16.7P signs, and two RRFB units.
2. A small light directed at and visible to pedestrians in the crosswalk shall be installed integral to the RRFB to give confirmation that the RRFB is in operation.
3. RRFB must operate between the temperatures of -40°F to +176°F.
4. W11-2 and W16-7P signs shall be MUTCD compliant and fluorescent yellow-green
    a. Signs shall be sheet aluminum and meet requirements of Section 645 for Type II regulatory, warning, and route marker assembly signage.
5. Pedestrian activated pushbuttons shall be used.
    a. Speech message for APS shall be “Warning Lights are on”
6. Communication between the devices shall be Spread Spectrum Wireless or direct wire as shown on plans.
7. Each assembly shall have two LED lights mounted to each pole for pedestrian vertical illuminance. One light shall be aimed at the detectable warning field and the other toward the center of the travel lane. Additional requirements for the pedestrian lights are as follows:
    a. They shall activate in conjunction with the RRFB.
    b. They shall activate when less than 10 lux of ambient light is present and shall not illuminate wen the ambient light is equal to or greater than 10 lux.
    c. They shall provide vertical illuminance of 20 lux across the entire crosswalk, measured at a height of 5 feet from the road surface.
    d. They shall be housed in their own IP66 minimum rated enclosures.

e. They shall be adjustable for 120 degrees horizontally and vertically.

8. One pole shall be outfitted with a NEMA 4X aluminum pole mount cabinet.
9. The pole shall be a 4-inch inner diameter ASTM A53 Schedule 40 galvanized steel. A cap to make the pole watertight shall be provided at the top of the pole.
10. Each support pole shall be installed with a square aluminum pedestal base with grounding lug.
11. The pole and pedestal base shall conform to the latest edition of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and National Cooperative Highway Research Program Report 350.
12. All equipment shall be securely attached to the pole with sufficient banding or fasteners.
13. All wiring shall be located inside the pole to the maximum extent possible.

Add the following to the end of Section 643.18 Method of Measurement:

Rectangular Rapid Flashing Beacon Assembly will be measured for payment by each installation complete in place.

Add the following to the end of Section 643.19, Basis of Payment:

Rectangular Rapid Flashing Beacon Assembly will be paid for at the Contract unit price by each. Payment will be full compensation for furnishing all materials including, but not limited to, the RRFB LED-arrays, LED vertical illuminance, controller cabinet, pole and breakaway device, wiring, fasteners, pedestrian push button, signs, battery, wireless spread spectrum communication, and all appurtenances and incidentals required for a complete and function system. Wiring, grounding, and associated electrical work and materials shall be incidental. Foundations shall be paid for under applicable Section 626 pay items.

Payment will be made under:

Pay Item		Pay Unit
643.621	Rectangular Rapid Flashing Beacon Assembly	Each

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS

The provisions of Section 643 of the Standard Specifications shall apply with the following additions and modifications:

643.01 Description The project will result in the modernization of traffic control signals at four intersections in the City of Bangor: Hogan Road at Springer Drive/Bangor Mall Boulevard, Hogan Road at I-95 southbound ramps, Hogan Road at I-95 northbound ramps and Hogan Road at Haskell Road/Sylvan Road. Equipment includes, but is not limited to Advanced Transportation Controller Cabinets (ATCC) on a new ground mount foundation with rack mounted Advanced Transportation Controllers (ATC), mast arm poles, overhead masts for lighting, pedestal poles, vehicular and pedestrian signal heads with countdown timers, new light-emitting diode (LED) indications, retroreflective backplates on vehicle signal heads, wiring, signal cable, overhead span wire mounted signs, non-invasive stop bar vehicle detection, non-invasive advance vehicle detection, emergency vehicle preemption, and all appurtenances and incidentals required for complete functioning installation. In addition, the project will connect the intersections to the MaineDOT Central Management System primarily by means of cellular communications through an in-cabinet Field Monitoring Unit (FMU) while maintaining the connection of the other two intersections.

This work shall also consist of maintaining, transferring, reconnecting, and disposing of the existing copper signal interconnect cable installed along Hogan Road from Bangor Mall Blvd to Mt. Hope Avenue.

Pedestrian equipment is to be installed under the guidelines of the Americans with Disabilities Act (ADA) having work integrated with curb ramp and detectable warning field improvements also being provided with this project

Backplates will be provided for all new vehicle signal heads. The backplates shall be a minimum of 5-inches with 3-inch fluorescent yellow retroreflective strips. New backplates shall provide louvers for one-way, three- and four-section 12-inch signal heads.

This project will also provide dual mode Dedicated Short Range Communications (DSRC)/4GLTE-5G Road-Side Unit (RSU) providing select Connected Vehicle (CV) applications integrated into the ATCC. See Special Provision 654 for RSU specification.

All traffic signal controller timing parameters shall be programmed to provide free and coordinated operations.

643.211 Additional Materials Materials shall also meet the requirements in the following Special Provision to Section of Division 700 - Materials:

Traffic Control System	718.13
Field Monitoring Unit	718.14

Emergency Vehicle Preemption System	718.15
Single Mode Fiber Optic Cable	718.16
Twelve (12) Position Fiber Optic Patch Panel	718.17
Ethernet Switch with Fiber Optic Interfaces	718.18
Pedestrian Crossing System	718.19

643.03 General Add the following:

The Contractor shall maintain the existing aerial copper interconnect cable associated with the traffic signal control system along Hogan Road. The copper interconnect cable connects the following traffic signals to the on-street master controller:

Bangor Mall Blvd at Retail Driveway
Bangor Mall Blvd at Bangor Mall Blvd (full-time flashing)
Hogan Road at Springer Drive/Bangor Mall Blvd. (location of on-street master controller)
Hogan Road at the I-95 Southbound ramps (to be replaced by a temporary traffic signal)
Hogan Road at the I-95 Northbound ramps (to be replaced by a temporary traffic signal)
Hogan Road at Haskell Road/Sylvan Road
Hogan Road at EMCC/driveway
Hogan Road at Mt. Hope Avenue
Hogan Road at State Street

When the existing utility poles that carry the copper interconnect cable are replaced, removed or relocated, the Contractor shall be responsible for relocating the copper cables to the new utility poles, reconnecting the copper cables to the intersections listed above, and maintaining the existing closed loop traffic signal system.

When the new fiber optic communication system is installed connecting the project intersections, the Contractor shall ensure that the copper interconnect between Hogan Road at Haskell Road/Sylvan Road and Hogan Road at Mt. Hope Avenue remains intact and allows communications. All other copper interconnect cable along Hogan Road shall be removed and disposed by the Contractor.

643.9 Service Connection Add the following:

A total of 4, 10’ service ground rods shall be installed and properly connected together in the cabinet foundation.

The Contractor shall be responsible for grounding the system to 5 ohms or less tested without an electrical connection to the utility neutral or ground conductor. The grounding shall be performed using a ground meter with reference grounds. In the event that a 5-ohm reading is not achieved, the Contractor shall install a chem-rod grounding electrode in close proximity to the cabinet. The chem-rod shall be properly connected to the four rod, grounding system in the cabinet. The chem-rod shall consist of a 10’ copper rod (vertical or horizontal orientation) filled with common salt and desiccant, back filled with natural earth bentonite clay ground enhancement material. The chem-rod shall be installed per manufacturer’s instructions. The location and

orientation for the chem-rod installation shall be approved by the Resident. All testing shall be done in the presence of the Resident.

643.12 Painting Unless otherwise directed by MaineDOT or through the Resident Engineer, all exterior parts of the listed equipment shall be delivered to the project finished as follows:

Vehicular Signal Heads – all parts **federal yellow with black doors**.
Pedestrian Signal Heads – all parts **federal yellow with black doors**.
Accessible Pedestrian Signals (APS) – **yellow.**
Signal Backplates – **black** and louvered w/ fluorescent yellow retroreflective strip.
Controller Cabinet – **bare metal /** aluminum.
Mast Arms, Uprights, and Bases – **bare metal** / galvanized steel.
Pedestal Post and Base – **bare metal** / aluminum.

643.19 Basis of Payment The traffic signal modifications (Item 643.71) will be paid for at the contract lump sum price for the intersection, which payment will be full compensation for furnishing and installing all materials, including, but not limited to ATCC complete with rack mount ATC controllers, FMU, generator transfer switch, risers, vehicular signal heads, pedestrian signal heads, retroreflective backplates, mast arm mounted signs, aerial disconnects, signal cable, light emitting diode (LED) lamps, LED overhead lighting, emergency vehicle preemption, and all appurtenances and incidentals required for complete functioning installations and for furnishing all tools and labor necessary for completing the installations.

The on-street, light-based emergency vehicle pre-emption system (see Special Provision 718.15 of Division 700 – Materials for more information) will be paid for under pay items 643.71, which price will be full compensation for furnishing and installing all materials, appurtenances, and incidentals required for a complete functioning installation and for furnishing all tools and labor necessary for completing the installation.

The traffic signal control system (Item 643.81) will be paid for at the contract lump sum price, which payment will be full compensation for furnishing and installing all materials, including, but not limited to 10-year licensing of Centracs Mobility to the intersection with cloud-based CMS integration of CV/SPM system and all appurtenances and incidentals required for a complete functioning installation with secure VPN remote access. Payment for signal system start-up, system loading and acceptance testing shall be considered incidental to the traffic signal control system. Payment for maintaining, transferring, reconnecting, and disposing of the existing copper interconnect cable shall be considered incidental to the traffic signal control system.

The accepted quantity for 12-strand interconnect wire (Item 643.90) will be paid for at the contract lump sum price, which payment will be full compensation for furnishing and placing all materials between the termination points and within the controller cabinets at the locations shown on the plans including mounting hardware, performing and testing splices, splice enclosures, and incidentals including fiber optic related messenger wire required for a complete function installation. See Special Provision 718.16 to 718.18 of Division 700 – Materials for more

information. The cost for risers on utility poles shall be incidental to the cost of the interconnect wire for 12-strand cable.

Mast Arms (Item 643.91) will be paid for at the contract unit price each for the required mast arm length, which payment shall be full compensation for furnishing and installing all mast arms, uprights, bases, anchor bolts to be supplied by the manufacturer of the mast arm poles, ancillary materials, tools and labor necessary to erect and install the structures.

Pedestal pole (Item 643.92) will be paid for at the contract unit price each which payment shall be full compensation for furnishing and installing all pedestal post, bases, anchor bolts, ancillary materials, tools and labor necessary to erect and install the structure.

Strain Poles (Item 643.93) will be paid for at the contract unit price each which payment shall be full compensation for furnishing and installing all strain poles, bases, anchor bolts to be supplied by the manufacturer of the strain poles, ancillary materials, tools and labor necessary to erect and install the structures.

Dual Purpose Poles (Item 643.94) will be paid for at the contract unit price each for the required mast arm length, which payment shall be full compensation for furnishing and installing all mast arms, uprights with overhead extensions for lighting to match existing pole lighting heights, providing or resetting existing luminaires, bases, anchor bolts to be supplied by the manufacturer of the mast arm poles, ancillary materials, tools and labor necessary to erect and install the structures.

Payment will be made under the following:

Pay Item	Pay Unit
643.71 Traffic Signal Modifications: Hogan Road & Springer Dr/Bangor Mall Blvd	Lump Sum
643.71 Traffic Signal Modifications: Hogan Road & Haskell Rd/Sylvan Rd	Lump Sum
643.71 Traffic Signal Modifications: Hogan Road & EMCC/driveway	Lump Sum
643.71 Traffic Signal Modifications: Hogan Road & Mt Hope Ave	Lump Sum
643.80 Traffic Signal at Hogan Road at I-95 Southbound ramps	Lump Sum
643.80 Traffic Signal at Hogan Road at I-95 Northbound ramps	Lump Sum
643.81 Traffic Signal Control System	Lump Sum
643.90 Interconnect Wire: 12-Strand (4,000 LF)	Lump Sum
643.91 Mast Arm Pole, w/15’ Arm	Each
643.91 Mast Arm Pole, w/35’ Arm	Each
643.91 Mast Arm Pole, w/40’ Arm	Each
643.91 Mast Arm Pole, w/55’ Arm	Each
643.92 Pedestal Pole	Each
643.93 Strain Pole	Each
643.94 Dual Purpose Pole, w/30’ Arm	Each
643.94 Dual Purpose Pole, w/45’ Arm	Each
643.94 Dual Purpose Pole, w/50’ Arm	Each
643.94 Dual Purpose Pole, w/55’ Arm	Each
643.94 Dual Purpose Pole, w/60’ Arm	Each

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Temporary Traffic Signals)

The provisions of Section 643 of the Standard Specifications shall apply with the following additions and modifications:

643.01 Description

The following paragraphs are added:

The Contractor shall install and maintain temporary traffic signals at all times in all phases required by the Traffic Control Plans. Two temporary signal systems will be installed; Hogan Road with the Southbound On-Ramp intersection and Hogan Road with the Northbound Off-ramp intersection in the City of Bangor.

The Contractor shall adjust and modify the existing traffic signal controllers (timing at the following intersections as required by the Traffic Control Plans or at the direction of the Resident:

- Stillwater Avenue at Drew Lane/Hobby Lobby Plaza
- Stillwater Avenue at Exit 186 Ramps/Kohl's Plaza
- Stillwater Avenue at Bangor Mall South Entrance/Verizon Plaza
- Stillwater Avenue at Home Depot Entrance
- Stillwater Avenue at Bangor Mall Northwest Entrance
- Stillwater Avenue at Hannaford/Penn Plaza
- Stillwater Avenue at Walmart South/US Cellular
- Stillwater Avenue at Hogan Road/Walmart North
- Hogan Road at Longview Drive/Hotel Entrance
- Hogan Road at Bangor Mall Blvd/Springer Drive
- Hogan Road at Haskell Road/Sylvan Road
- Hogan Road at Eastern Maine Community College/Mercedes-Benz Driveway
- Hogan Road at Mt. Hope Avenue

643.03 General

The following paragraphs are added:

Prior to the start of construction, the Contractor shall inventory each of the existing traffic signal controllers, including Master controllers, included in this specification for timing, phasing, time-of-day operations, action plans, and cycle-split-offset programs. A record of the pre-existing conditions shall be submitted to the Resident as part of the proposed Traffic Control Plans. Upon

approval of the Traffic Control Plans, the Contractor shall be responsible for operating and maintaining all of the existing traffic signals indicated in this specification until project completion.

Throughout the project, from the approval of the Traffic Control Plans through final inspection of the project, the Contractor shall maintain the system time clocks for all traffic signal controllers (existing and temporary) on a monthly basis, at minimum.

Temporary traffic signal equipment includes, but is not limited to pole mounted controller cabinets with rack mounted controllers, vehicular signal heads, light-emitting diode (LED) indications, retroreflective backplates on vehicle signal heads, wood poles with back guys, wiring, signal cable, non-invasive stop bar vehicle detection, and all appurtenances and incidentals required for complete functioning installation.

Temporary stop lines shall be provided for all approaches. The Contractor shall locate the stop lines based on the proposed lane geometry and the locations shall be approved by the Resident (minimum of 40 feet from the approaches' signal heads).

Non-invasive stop bar detection shall be provided on each approach. The Contractor shall determine the method of detection with the Resident's approval.

All traffic signal controller timing parameters shall be programmed to provide the operations as shown on the temporary signal plans. The specified signal timings shall be adjusted by a Licensed Professional Engineer as operations, temporary traffic control adjustments, and coordination with the Stillwater Avenue bridge contractor require with approval of the Resident.

At the completion of the project, all temporary traffic signals shall be removed and disposed by the Contractor. All temporary traffic signal timing and phasing modifications to the existing intersections made during construction shall be removed and the traffic signal controllers shall be reverted to their pre-existing conditions unless modified by the Engineer.

643.18 Method of Measurement

Replace the third paragraph with the following:

Each non-invasive stop bar detection system, installed, connected to appropriate phases in the controller cabinet, complete and operational will not be measured for payment but will be considered incidental to the Temporary Traffic Signal Pay Item.

The following paragraph is added:

Temporary Traffic Signal Modifications will be measured for payment by the lump sum for all existing traffic signals identified in this specification.

643.19 Basis of Payment

The following paragraphs are added:

The temporary traffic signals (Item 643.72) will be paid for at the contract lump sum price for each intersection, which payment will be full compensation for furnishing and installing all materials, including, but not limited to pole mounted cabinet complete with controllers, FMU, risers, vehicular signal heads, retroreflective backplates, aerial disconnects, signal cable, temporary conduit and temporary pull boxes, light emitting diode (LED) lamps, and all appurtenances and incidentals required for complete functioning installations and for furnishing all tools and labor necessary for completing the temporary installations.

The stop bar detection system will be considered incidental to the Temporary Traffic Signal, which will be full compensation for materials, labor, and equipment for each detection system installed, fully operational, and removed.

The wood poles with guys and span wire will be considered incidental to the Temporary Traffic Signal which payment shall be full compensation for furnishing and installing all materials, tools and labor necessary to erect the poles and remove them once they are no longer necessary.

Traffic Signal Modifications (Temporary) will be paid for at the contract lump sum price, which payment will be full compensation for the maintenance of the indicated existing traffic signals as directed by the Resident, initial inventory of the existing traffic signal controllers, coordination with the Stillwater Avenue bridge contractor, adjustment to traffic signal timing at the direction of the Resident, maintenance of signal coordinated phasing, coordination, and operations throughout construction, implementation of controller adjustments as directed by the Resident, monthly maintenance of the controller time clocks, removal of temporary timing and phasing programming at the completion of work, and for all re-programming of the controllers to re-enable the pre-existing timing and phasing, unless overridden by proposed programming included in the project. This pay item shall be all inclusive for all indicated intersections throughout the life of the project.

Payment will be made under the following:

Pay Item	Pay Unit
643.711 Traffic Signal Modification (Temporary)	Lump Sum
643.72 Temporary Traffic Signal: Hogan Road at I-95 Southbound On-Ramp	Lump Sum
643.72 Temporary Traffic Signal: Hogan Road at I-95 Northbound Ramps	Lump Sum

SPECIAL PROVISION
SECTION 645
HIGHWAY SIGNING
(Remove Signs and Structures)

The provisions of Section 645 of the Standard Specifications shall apply with the following additions and modifications:

643.01 Description

The following paragraphs are added:

This work shall consist of the removal and disposal of overhead sign supports and signs. This work shall also consist of removing signs to be salvaged to MaineDOT or to others.

645.07 Demounting and Reinstalling Existing Signs and Poles

The following paragraphs are added:

Where existing overhead sign supports consisting of span wire systems or mast arm systems are designated to be demounted, the Contractor shall remove and dispose of the entire above ground structure, mounting brackets, and signs.

645.071 Demounting and Salvaging Existing Signs

Signs and supports designated to be removed and salvaged to the Owner or to another owner shall be delivered to a location designated by the Resident. Signs to be salvaged to the Owner shall be delivered to the MaineDOT Region office in Bangor. Signs to be salvaged to another owner shall be delivered to a location not more than 20 miles from the project site.

Signs designed to be salvaged shall be carefully removed and protected from damage during storage and transport. If the signs are damaged during removal, storage or transport, the Contractor shall furnish an equivalent replacement sign at no additional cost to the State. Sign supports for salvaged signs shall be removed and disposed of by the Contractor.

643.08 Method of Measurement

The following paragraphs are added:

Remove and Salvage Highway Sign will be measured by each sign removed, salvaged, and delivered to the appropriate owner.

Remove Overhead Span Wire System with Signs will be measured by each unit. A unit shall include all vertical supports, span and tether wire, and signs at a single location.

Remove Mast Arm Pole with Signs will be measured by each unit.

643.09 Basis of Payment

The following paragraphs are added:

The accepted removed and salvaged signs will be paid for at the contract unit price each. Such price will be full compensation for the careful removal and storage of the salvaged sign, removal and disposal of the existing sign supports, transportation and delivery to the owner's location as directed by the Resident, and for all labor, tools, equipment, backfill, and incidentals necessary to complete the work.

The accepted removed Overhead Span Wire system and Mast Arm Pole with attached signs will be paid for at the contract lump sum price for the respective items. Such price will be full compensation for the removal and disposal of the existing sign supports, mast arm, span wire, tether wire, sign attachment hardware, all attached signs, and for all labor, tools, equipment, backfill, and incidentals necessary to complete with work.

Foundations for signs and structures removed will be paid for under Item 626.36 Remove or Modify Concrete Foundation for each foundation removed.

Payment will be made under the following:

Pay Item		Pay Unit
645.109	Remove and Salvage Highway Sign	Each
645.1095	Remove Overhead Span Wire System with Signs: (STA 220+10)	Lump Sum
645.1095	Remove Overhead Span Wire System with Signs: (STA 14+60)	Lump Sum
645.1096	Remove Mast Arm Pole with Signs: (STA 21+05)	Lump Sum
645.1096	Remove Mast Arm Pole with Signs: (STA 27+15)	Lump Sum

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC

Approaches. Approach signing shall include the following signs at a minimum. Field conditions may warrant the use of additional signs as determined by the Resident.

Road Work Next X* Miles
Road Work 500 Feet (Ahead)
End Road Work

Work Areas. At each work site, signs and channelizing devices shall be used as directed by the Resident.

Signs include:

Road Work XXXX[1].
One Lane Road Ahead
Flagger Sign

Other typical signs include:

Be Prepared to Stop
Low Shoulder
Bump
Pavement Ends

The above lists of Approach signs and Work Area signs are representative of the contract requirements. Other sign legends may be required.

Unless otherwise defined in Special Provision 105/107 or submitted and approved in the Traffic Control Plan, the following shall apply:

- The Contractor shall conduct their operations in such a manner that the roadway will not be restricted to one lane for more than 2,500 feet at each work area and no more than 4,000 feet for paving, milling, and crack seal/repair work areas.
- Where more than one work area restricts traffic to one lane operation, these work areas shall be separated by at least 1 mile of two-way operation.

Temporary Centerline A temporary centerline shall be placed each day on all new pavement to be used by traffic. The temporary centerline, when specified of reflectorized traffic paint, shall conform to the standard marking patterns used for permanent markings. Failure to apply a temporary centerline daily will result in a Traffic Control Violation and suspension of paving operations until temporary markers are applied to all previously placed pavement.

[1] "Road Work Ahead" to be used in short duration operations and "Road Work xx feet" to be used in stationary operations as directed by the Resident.

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC

The provisions of Section 652 of the Standard Specifications shall apply with the following additions and modifications:

652.1 Description

The following paragraphs are added:

The Contractor is required to design, develop, deploy, and maintain a Traffic Control Plan (TCP) in accordance with Subsection 105.7. The TCP shall incorporate all features of the Staged Construction and Traffic Control Plan (SCTCP) and include temporary traffic control for the I-95 mainline.

The Contractor shall provide a Traffic Control Supervisor who will be responsible for providing traffic control management in compliance with the Contract and the Manual on Uniform Traffic Control Devices (MUTCD), latest edition. This individual will be responsible for the installation, inspection, maintenance, adjustments, and removal of all temporary traffic control devices on the project.

652.2.4 Other Devices

The following paragraphs are added:

652.2.4.1 Automated Trailer Mounted Speed Limit Sign

Trailer mounted speed limit signs shall be self-contained units including sign assembly, flashing lights, directional radar to measure speed limits, a regulatory speed limit sign, and power supply specifically constructed to operate as a trailer-mounted sign. The preferred color of the unit shall be “construction orange”.

Base material for the regulatory speed limit signs shall be weather proof, rigid substrate specifically manufactured for highway signing and meet the retro-reflective sheeting application requirements of the sheeting manufacturer.

Sign text shall consist of the letters, digits and symbols either applied by stick-on or silk screen, to conform to the dimensions and designs indicated in the Contract, MUTCD and/or FHWA Standard Highway Signs. The materials and methods shall be in accordance with standard commercial processes.

"Work Zone" construction signs shall be mounted on the trailer unit above the regulatory speed limit sign. (see Appendix).

Signs and secondary signs shall follow the MUTCD for minimum mounting heights.

The power supply shall be either full battery power with solar panel charging (capable of maintaining a charged battery level) and 135 ampere, 12 volt deep cycle batteries, or diesel powered generator with a fuel capacity sufficient for 10 hours of continuous operation.

Each unit shall be equipped with two mono-directional flashing lights, placed in accordance with the MUTCD, with amber lenses and reflectors, which are visible through a range of 120 degrees when viewed facing the sign. The lights, either strobe, halogen, or incandescent lamps, shall be visible for a minimum distance of one mile under daylight conditions and shall have a minimum flash rate of 40 flashes per minute. An "On" indicator light shall be mounted on the back of the signs, which is visible for at least 500 feet to provide confirmation that the flashing lights are operating.

The directional radar shall monitor approaching traffic only. The radar shall be capable of measuring speeds from 5 to 70 MPH at a distance of up to 1500 feet and shall have a high speed cut off thresh hold.

All existing speed limit signs, which conflict with the construction zone trailer mounted speed limit signs shall be covered completely when the work zone speed limit is in place.

652.2.4.2 Truck Mounted Attenuator

Truck mounted attenuators (TMA) may be included in the Contractor's TCP as a shadow or barrier truck. A qualified TMA shall be from the Department's Qualified Products List (QPL). The truck and attached TMA shall conform to NCHRP Report 350, at Test Level 3, or MASH criteria if manufactured after 2019.

The TMA shall be mounted in accordance with the manufacturer's specifications to a truck with a gross vehicle weight of at least 10,000 pounds.

The chart below identifies the distance from the work zone or hazard where the TMA shall be deployed. If the work zone is within a marked lane closure, the barrier truck distances shall apply and if the work zone is mobile, then the shadow truck distances shall apply. When used as a barrier truck, the truck shall be pared in low gear with the brakes applied and the front wheels turned away from the work zone and away from the adjacent travel lane. For placement details, refer to the MUTCD.

Weight of Truck	Barrier Truck Distance from Work Zone or Hazard	Shadow Truck Distance from Work Vehicle or Work Zone
10,000 lbs	250 ft	300 ft
15,000 lbs	200 ft	250 ft
>24,000 lbs	150 ft	200 ft

Note: The minimum weight of the truck shall be 24,000 lbs when deployed along I-95

652.2.4.3 Sequential Flashing Warning Lights

Sequential Flashing Warning Lights on drums should be used for merging tapers and shifting tapers during nighttime operation along I-95 and may be used for merging tapers and shifting tapers during nighttime operations along Hogan Road and the ramps. The purpose of these lights is to assist the motorist in determining which direction to merge or shift. The successive flashing of the lights shall occur from the upstream end of the taper to the downstream end of the taper in order to identify the desired vehicle path.

The Sequential Flashing Warning Lights shall meet all of the requirements for warning lights within the current edition of the MUTCD. Each light unit shall be capable of operating fully and continuously for a minimum of 500 hours when equipped with a standard battery set. Each light in sequence shall be flashed at a rate of not less than 55 times per minute and not more than 75 times per minute. The flash rate and flash duration shall be consistent throughout the sequence.

Sequential Flashing Warning lights are to be used for merging and shifting tapers that are in place during the nighttime hours (when ambient light is dimmed). These lights shall flash sequentially beginning with the first light and continuing until the final light at the beginning of a tangent section. The Sequential Flashing Warning Lights shall automatically flash in sequence when placed on the drums that form the merging or shifting tapers. The Sequential Flashing Warning Lights shall automatically sequence when placed in line in an open area with a distance between lights of 25 to 150 feet. A 10-foot stagger in the line of lights shall have no adverse effect on the operation of the lights. If one light fails, the flashing sequence shall continue. Non-sequential flashing is prohibited.

The number of lights used in the drum taper shall equal one half the number of drums used in the taper. Drums are the only channelizing device permitted for mounting the Sequential Flashing Warning Lights.

The Sequential Flashing Warning Lights shall be weather independent and visual obstruction shall not interfere with the operation of the lights.

652.3.2 Responsibility of the Contractor

The following paragraph is added:

The TCS and appropriate designees shall be available for coordination and attend meetings as required by the Resident and the Contract Documents.

652.3.6 Traffic Control

Delete the first paragraph and replace with the following:

The Contractor shall provide a minimum travel way width of 22 feet for two-way traffic and 12 feet for one-way traffic along Hogan Road. The Contractor shall maintain a minimum travel way width of 14 feet clear at all times along I-95 and a minimum travel way width of 12 feet clear at all times along open interchange ramps. The existing travel way width shall be maintained to the maximum extent practical. Vertical panel markers, drums, cones, and temporary pavement markings shall be used to clearly delineate the roadway through the construction area. Two-way traffic operation shall be provided at all times that the Contractor is not working on the project. One-way traffic shall be controlled through the work area by flaggers, using radios, field telephones, or other means of direct communication.

652.7 Method of Measurement

Delete all paragraphs in this section and replace with the following paragraphs:

Maintenance of Traffic Control Devices will be measured for payment by the lump sum for the project.

Portable Changeable Message Signs will be measured for payment by each unit authorized and installed on the project.

The accepted quantity of flagger time will be the number of hours the designated station is occupied. The number of hours authorized for payment will be measured to the nearest ¼ hour.

Construction signs, barricades, channelizing devices (panel markers, tubular markers, drums, cones), flashing arrow boards, flashing and steady burn lighting, automated trailer mounted speed limit signs, truck mounted attenuators, sequential flashing warning lights, temporary guardrail, temporary lighting, and all other temporary traffic control devices necessary to maintain traffic will not be measured but shall be considered incidental to Maintenance of Traffic Control Devices.

652.08 Basis of Payment

Delete the first and second paragraphs in this section.

652.8.1.2 Payment by Lump Sum

Delete the second paragraph and replace with the following paragraphs:

The contract lump sum price for Maintenance of Traffic Control Devices shall be full compensation for all days for such maintenance, encompassing all areas of the contract, regardless of whether or not the work areas or projects are geographically separated. This price shall also be full compensation for the design, development, deployment, and maintenance of the project TCP and for the work of the TCS, including all coordination with cooperating contractors and local officials.

The contract lump sum price for Maintenance of Traffic Control Devices shall be full compensation for all construction signs, sign supports, barricades, channelizing devices (panel markers, tubular markers, drums, cones), flashing arrow boards, flashing and steady burn lights with their necessary power supplies, automated trailer mounted speed limit signs, truck mounted attenuators, sequential flashing warning lights, temporary guardrail, temporary lighting with its necessary power supply, and all other temporary traffic control devices necessary to maintain traffic along the I-95 mainline.

Temporary pavement markings will be paid separately under the appropriate Section 627 items.

Portable-Changeable Message Signs will be paid separately under Item 652.41.

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC
(Portable-Changeable Message Signs)

The provisions of Section 652 of the Standard Specifications shall apply with the following additions and modifications:

652.2.5 Portable Changeable Message Sign

Delete the first paragraph and replace with the following:

The Contractor shall incorporate the use of Portable Changeable Message Signs (PCMS) as part of the Staged Construction and Traffic Control Plan (SCTCP). Trailer mounted PCMS must be of a type that has been submitted to AASHTO's National Transportation Product Evaluation Program (NTPEP) for evaluation. The PCMS unit shall meet or exceed the current requirements in the FHWA Manual on Uniform Traffic Control Devices (MUTCD), latest edition, Section 6L.05. All PCMS included in the project shall include remote communications and control that is accessible to MaineDOT through the Transportation Management Center (TMC).

Add the following paragraphs:

1. Unless specifically excluded in these specifications, the signs shall conform to all standards within the *NEMA TS 4-2010 Hardware Standards for Dynamic Message Signs (DMS) with NTCIP Requirements, NTCIP Standards*.
2. All parts of the PCMS will work normally in sustained ambient temperatures from -20 degrees F to +120 degrees F.

652.2.5.1 PCMS - Display

1. The display shall be a matrix of LED pixels to form a display of at least 72 inches high and 144 inches wide. Center-to-center pixel spacing shall be the same horizontally and vertically and shall be 2.6 inches or less. If the spacing is 2.6 inches, the display shall be at least 50 pixels wide and 27 pixels high. If the spacing is less, the number of pixels shall be proportionally larger.
2. The LEDs shall be amber and have a viewing angle of 30 degrees in the horizontal plane. That is, brightness at 15 degrees off axis shall be at least 50 percent of the on-axis brightness.
3. When all pixels are illuminated at maximum brightness, the display shall have an on-axis luminance intensity of at least 3,720 candelas per square meter. The sign shall have an automatic intensity control feature in order to keep the LED lamp matrix intensity constant with a reduction in voltage and adjust the brightness for the ambient light level.
4. The pixels shall be arranged as a "full matrix" display capable of multiple fonts and justifications, with equal horizontal and vertical spacing.

5. The display shall be capable of displaying three lines of 18-inch tall characters, with a normal font style for a minimum of 8 characters on each line.
6. The display enclosure shall be weatherproof and designed to completely protect the display modules from moisture and wind driven rain.
7. The housing shall include a sighting device to facilitate proper directional alignment of the message board. This device shall be securely mounted so that a 20-pound force in any direction will not misalign the sighting device.

652.2.5.2 PCMS - Support Post

1. The message board shall be mounted on a mast that is raised and lowered by an electrically powered hydraulic pump (with attached fluid reservoir).
2. The hydraulic system shall include an auxiliary manual pump with release for emergency use.
3. When fully raised in the display position, the message board shall be able to rotate 360º so the sign can be aimed at traffic. Solar panels must be fully rotatable and tiltable, up to 60°, independently from the sign for maximum solar exposure.
4. The sign's rotation-locking device shall be independent from the sign's raise/lower-locking device. Such rotation-locking device will be secure enough to prevent rotation with wind gusts up to 50 mph.
5. The hydraulic system shall be inside a locked housing.

652.2.5.3 PCMS – Power System

1. The sign shall be powered by batteries that can be recharged by 120VAC power when available and by solar power (DC) at all other times. The charger shall be enclosed within the battery containers with an external power inlet.
2. The system shall automatically switch between solar (DC) and 120-volt power (AC, when available) for battery charging with no operator intervention.
3. If the batteries have been disconnected, the sign and controller shall operate using 120 VAC.
4. The solar panels shall be mounted so the panels can be rotated independently from the display for 360 degrees; at the same time, the panels can be tilted from flat to 60 degrees from horizontal (for snow shedding and maximum winter solar collection). This structure shall be rugged enough to prevent rotation with wind gusts up to 50 mph from any direction while tilted and support a snow load of 80 pounds per square foot.
5. Solar panel frame work shall include a locking device to lock solar panels down while in the transport position or while not in use.
6. All electrical systems, surge protectors, antenna grounds, and the trailer shall connect to a common ground that also connects to a grounding lug on the outside of the trailer. The grounding lug shall include a label: "EARTH GROUND".

652.2.5.4 PCMS - Trailer

1. The trailer shall be no more than 22 feet long with the tongue in place, and no more than eight feet wide.

2. The trailer shall have lockable, weatherproof compartments for the controller and batteries. The battery compartment shall be centrally positioned to promote stability of the trailer.
3. The face and sides of the trailer shall be delineated on a permanent basis by affixing retro-reflective material (conspicuity tape) in a continuous line as seen by oncoming drivers.
4. The main frame and cross members shall be constructed of tubular steel and meet all federal standards and industry standards.
5. The trailer shall have dual combination reflective LED lights with stop, tail, turn signal and corner clearance lights. The lights connector shall be the standard 4-pin connector.
6. Trailer shall include a license plate light and bracket.

652.2.5.5 PCMS – Sign Controller

1. The controller shall be in a lockable weather proof enclosure with a hasp for a padlock.
2. The sign controller shall be supported by the current MaineDOT Transportation Management Center (TMC) ATMS system known as New England Compass, developed by the Southwest Research Institute (SwRI) ("Compass ATMS").
3. The sign shall support both types of control architecture described in Section 8.10 of Standard TS 4. The controller shall be able to store at least 30 messages in non-volatile memory.
4. Default fonts shall consist of characters 18-inches tall. One shall be comparable to that shown in Figure 7-1 of Federal Highway Administration publication # FHWA-TS-90-043. The other shall be a similar, compressed font. Both fonts shall include:
    a. All upper case letters
    b. The following punctuation marks . , / ? ‘ : and “.
    c. All numerals 0 to 9
    d. The following special characters # & * + < > ← → ↑ ↓ ↖ ↗ ↙ ↘
5. The sign controller shall automatically notify (via automated alarm) the central sign control system (Compass ATMS) when the battery voltage is low.
6. The controller shall have at least two communications ports that can be used for remote control. The controller shall accept commands via either port and respond via the same port that received the command, so that each port automatically functions as a backup communication link for the other port.
7. The Contractor shall establish and pay for a data cellular account so that the signs may be accessed and programmed remotely and shall provide to the Department all sign manufacturer's technical support that may be necessary to integrate the signs into the MaineDOT TMC.
8. The controller communications shall include cell phone modems for U.S. Cellular, GPS and web server service.
    a. One port shall be equipped with a cellular modem. This modem shall be a current model of SierraWireless modem which is at least equivalent to the GX450 modem and should be set to use the U.S. Cellular cell service. The antenna installation shall also include a GPS antenna connected directly to the cellular modem to be able to always locate the PCMS. The Department will supply the SIM card for the modem.

b. The cell modem shall be wired to be always ON; it will be necessary to pull a fuse or disconnect the power plug to recycle the power.
c. The second port shall be an RJ-45 Ethernet port, which may be used for a wireless data communication service. The Ethernet port shall also be suitable for connecting a notebook computer for local control and maintenance. It shall operate in accordance with the latest version of NTCIP 2104, Ethernet Subnetwork Profile. The medium shall be 10Base-T.

9. An antenna suitable for cellular telephone or data service shall be installed on top of the message board. Install the antenna in a way that does not permit water to enter the message board. A 50 ohm coaxial cable, 100 percent shielded and designed for outdoor use, shall run from the antenna to the controller compartment. The cable may not pass through the top of the compartment and the hole where the cable enters must be sealed watertight. Immediately upon entering the controller compartment, the cable shall terminate on a grounded lightning protector.
10. The antenna shall be omnidirectional, for bandwidth(s) that are compatible with the modem. It shall have a built-in ground plane and vertical polarization. The antenna gain shall be at least 5 dBi. The GPS antenna for the cellular modem may be included in this antenna.

652.2.5.6 PCMS – Remote Control

1. The PCMS shall be compatible with the MaineDOT ATMS system known as New England Compass, developed by the Southwest Research Institute (SwRI). The Compass ATMS enables traffic management staff to control and monitor the signs. It is also to enable a maintenance technician at a sign to exercise all sign features, examine event logs, and run diagnostic tests.
2. The Contractor shall supply any PCMS manufacturer-specific software that can provide more advanced tasks, such as diagnostic testing. It is expected that the software will be the PCMS manufacturer's standard product, with minimal customization necessary to integrate with Compass ATMS. The software for use by maintenance technicians need not be identical to that used by the traffic management staff, although it must have equivalent capabilities.
3. The Contractor shall provide (and install as needed) a licensed copy of the manufacturer's software for the PCMS sign controller. The installation shall occur at the MaineDOT Transportation Management Center (TMC) in Augusta, Maine. If MaineDOT already has the PCMS vendor software integrated with Compass, the Contractor shall integrate the new PCMS into the existing software application, including providing any device licenses required. It is noted that MaineDOT already has JamLogic software integrated with Compass; therefore, if the manufacturer's software uses JamLogic, the Contractor will be required to integrate the new PCMS locations into the existing JamLogic application.
4. The user shall enter commands by selecting from menus. The user shall make selections from menus and from lists of signs, messages, and options using a mouse. The interface shall be easy to use, minimizing memorization and opportunities for errors. The interface shall automatically check commands for out-of-range values and other errors. When it checks an error, it shall beep, reject the command or data, and provide the user

with a clear explanation. The software shall have the complete text of the software operator's manual stored on a USB thumb drive or CD, readily available to the user.

5. The software shall be capable of remote communication with field equipment via IP addressing over a cellular or Ethernet network. It shall use the appropriate communication method for each sign, based on information stored in the computer's database.
6. Only users, who have proper authorization, as indicated by their passwords, shall be able to undertake the following actions:
    a. Place equipment on standby.
    b. Change sign messages, blank signs, and change message priority.
    c. Replace or delete messages stored in a PCMS controller's memory.
    d. Display test patterns on a sign.
    e. Change or delete the sign computer's schedule.
    f. Modify the message library on the sign computer's hard disk.
    g. Change sign configuration parameters.
    h. Delete the event log.
    i. View passwords (restricted to Administrator authorization).
    j. Change passwords and privileges (restricted to Administrator authorization).
    k. Each user shall have a different password. Users may be granted or denied permission to use each protected command independently. Via an encrypted lookup table, the computer shall determine which of the protected commands a user may use.
    l. The software shall ask the user for his password at the time the protected command is entered. The computer shall not carry out these commands unless the user has the proper privileges.

652.08 Basis of Payment

The following paragraphs are added:

The accepted quantities of Portable Changeable Message Sign will be paid for at the contract unit price each, complete in place. Payment shall be full compensation for the changeable message sign system, deployment, relocations, removal, modem and communications, configuration, integration, software and licenses, and for all labor, equipment, tools, transportation, and incidentals to place and level the PCMS for each time it is deployed.

Failure of any PCMS to operate as required, including failures of communication and remote operations, will result in a violation letter and may result in a reduction of pavement.

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC
(Staged Construction and Traffic Control)

Description This work shall consist of furnishing, installing, coordinating, maintaining, and removing traffic control devices and staged construction items necessary to maintain the temporary arterial and ramp travelways as specified in the Contract Documents and Standard Specifications. This work shall also include designing, constructing, grading, maintaining, and dismantling of temporary slopes for the purpose of supporting the ramps and roadways during staged construction.

Use of staged construction and traffic control is anticipated to construct the diverging diamond interchange while maintaining traffic Hogan Road and the existing interchange ramps. This work excludes the temporary traffic control along I-95, which will be paid for under Item 652.361 Maintenance of Traffic Control Devices.

Submission Requirements A minimum of two weeks prior to the Pre-Construction Conference, the Contractor shall submit a Staged Construction and Traffic Control Plan (SCTCP) to the Department. The Contractor shall be prepared to describe the proposed SCTCP during the Pre-Construction Conference. The Department will review the SCTCP for completeness and conformity with Federal requirements, Contract provisions, the current edition of the FHWA Manual on Uniform Traffic Control Devices (MUTCD), latest edition, the AASHTO Policy on Geometric Design on Highways and Streets, latest edition ("Green Book"), and Department policies and procedures. No disruptions to traffic will be allowed before the SCTCP has been reviewed and approved by the Department.

The SCTCP shall include all the requirements of a Traffic Control Plan as described in Subsection 105.7 and Subsection 652.3.3. Additionally, the Contractor's SCTCP shall include a narrative to describe the proposed staged construction and a traffic control plan to demonstrate the maintenance of traffic throughout all phases, including phase transitions. The staged construction plan shall include a description of any excavation, fill, drainage, and shoring necessary to maintain roadways. The traffic control plan shall show the placement of all flashing arrows, barricades, channelizing devices, sequential flashing warning lights, panel markers, tubular markers, construction signs, temporary pavement markings, portable changeable message signs (PCMS), arterial radar speed trailers, temporary concrete barrier, work zone crash cushions, temporary guardrail, temporary traffic signals, temporary lighting, and all other temporary traffic control devices necessary to maintain traffic throughout all phases of staged construction. The traffic control plans shall also include detour signing plans for ramp closures and diversions with a preliminary schedule for when detours are anticipated. The SCTCP shall be signed and sealed by a Professional Engineer licensed in the State of Maine.

The Contractor shall allow for the review times described in Subsection 105.7.2 for MaineDOT to review and respond to the SCTCP submissions. No review or comment by the Department, or any failure to review or comment, will absolve the Contractor of its

responsibility to design and implement the plan in accordance with the Contract, or to shift any responsibility to the Department. If the SCTCP is determined by the Department to be operationally ineffective, the Contractor shall submit modifications of the SCTCP to the Department for review for the life of the project, and shall implement these changes at no additional cost to the Contract. Nothing in this Section shall negate the Contractor's obligations set forth in Section 110 - Indemnification, Bonding, and Insurance.

Revisions to Subsection 652.3.3 for the SCTCP:

a) In addition to the name, phone number, and contact information for the Traffic Control Supervisor (TCS), the SCTCP shall include a list of five previous MaineDOT and/or Maine Turnpike projects where the proposed TCS has experience as the TCS on the project.

e) In addition to any certified flaggers employed by the Contractor, any proposed flagging Subcontractor shall submit a list of certified flaggers that will be used for each flagging operation described in the SCTCP.

f) The SCTCP shall include an emergency communication plan for 24/7 notification to the Resident, local emergency officials, and local government officials.

o) The SCTCP shall designate a qualified individual or subcontractor responsible for the maintenance of traffic signals for the project. This individual or subcontractor shall demonstrate experience working with traffic signals, controller programming, and coordinated traffic signal systems. Submit any training certifications demonstrating experience with traffic signal equipment and controllers.

Materials All materials utilized shall meet the appropriate requirements of the Standard Specification and the Contract Documents.

Geometric and Approach Requirements The design of horizontal and vertical geometry shall conform to the AASHTO Policy on Geometric Design of Highways and Streets, latest edition ("Green Book"). The assumed design speed along Hogan Road shall be not less than 40 mph while the design speed along I-95 shall not be less than 65 mph.

Construction Requirements

The Contractor shall hold a meeting with the Resident and invite any relevant cooperating contractors (see Special Provision 105, Cooperation Between Contractors) and City of Bangor officials for each traffic control phase transition a minimum of 14 days prior to the proposed phase transition. The intent of these meetings is to ensure that traffic control and construction changes are coordinated between the several projects and inform local officials of the proposed traffic controls.

Where temporary pavement markings are proposed, the Contractor shall provide a layout for review by the Resident.

The Contractor shall provide positive protection of the work area at all times.

Appropriate traffic control devices shall be deployed to maintain traffic in the approved travelway and prohibit traffic from entering the work areas.

All ramp closures shall be preceded by posting PCMS a minimum of 7 days prior to the closure of the ramp and throughout the duration of the ramp closure. The location and messages displayed on the PCMS shall be approved by the Resident.

Upon completion of the project, the Contractor shall removal all temporary pavement markings and provide the final permanent striping in accordance with the Contract Documents, or restore the pavement markings to their original configuration in areas with no new pavement.

Method of Measurement Staged Construction and Traffic Control will be measured as one lump sum for the approved SCTCP and for all authorized, installed, maintained, and removed traffic control devices included in the SCTCP.

Basis of Payment Staged Construction and Traffic Control will be paid for at the contract lump sum price. Such payment will be full compensation for the design, development, implementation, and maintenance of the SCTCP, and for furnishing, installing, maintaining, relocating, and removing all flashing arrows, barricades, channelizing devices, panel markers, tubular markers, construction signs, arterial automated trailer mounted speed limit signs, truck mounted attenuators, sequential flashing warning lights, temporary guardrail, temporary lighting, temporary concrete barriers and work zone crash cushions, and all other temporary traffic control devices necessary to maintain traffic along Hogan Road and the interchange ramps. Payment shall also be full compensation for all coordination and meetings with local officials, cooperating contractors, and the Resident. All shoring, excavating, placement of fill, temporary drainage and any other work associated with this item shall be considered incidental.

Temporary pavement will be paid separately under Item 461.131.

Temporary pavement markings will be paid separately under the appropriate Section 627 items.

Temporary signals will be paid separately under the appropriate Section 643 items.

Flaggers used for traffic control will be paid separately under Item 652.38.

Portable-Changeable Message Signs will be paid separately under Item 652.41.

All traffic control associated with the I-95 mainline will be paid separately under the appropriate Section 652 items.

Incremental payment will be made for Staged Construction and Traffic Control on the following schedule:

a. 20% of the bid amount will be paid upon MaineDOT's written approval of the initial SCTCP.

b. 50% of the bid amount will be paid in monthly installments throughout the project construction.
c. 15% of the bid amount will be paid when traffic is shifted onto the new Hogan Road Bridge No. 2.
d. The remaining balance of the bid amount, minus any traffic control violation penalties, will be paid at the completion of the entire project.
e. There will be no payment for work done under this pay item after the expiration of contract time.

Payment will be made under:

Pay Item		Pay Unit
652.61	Staged Construction and Traffic Control	Lump Sum

SPECIAL PROVISION
SECTION 654
INTELLIGENT TRANSPORTATION SYSTEMS
(Connected Roadside Unit)

Description. This item shall consist of furnishing and installing for connected vehicle (CV) roadside unit(s) (RSU) including all necessary fittings and mounting hardware at the locations shown on the plans or as indicated by MaineDOT.

Materials. The RSU system shall include equipment meeting the following General, CV Device Interoperability, Wireless Communication, RSU Configuration and Management, Device Interfaces, Systems Communications, Ports and Connectors, Mechanical, Electrical, Environment, Operating System, and Federal Communications Commission (FCC) requirements:

a. General. CV equipment includes all hardware and materials, software, and any necessary ancillary equipment for a complete assembly necessary to enable wireless vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) communication. The CV equipment shall also fully support Dual Mode C-V2X at the same time as fully supporting DSRC V2X operations. Only new equipment and materials, except as specified in the contract shall be allowed. The CV equipment shall integrate into the ATC traffic signal controller and provide connected vehicle applications to mobile devices through a hybrid system using cellular vehicle-to-everything (C-V2X) and dedicated short-range radio communications (DSRC).

   CV equipment must be compatible with existing traffic controller assemblies unless otherwise shown on the Plans. The CV equipment must create a system that provides the minimum required functions and applications as shown on the Plans.

   Ensure the CV equipment is permanently and legibly marked with a serial number, date of manufacture, and part number.

   Connected vehicle equipment and systems must support the project goals and applications described in the contract.

   CV equipment must be compatible with a Security Credential Management System for V2V, V2I and C-V2X communication and meet the applicable industry standards listed in Table 1.

   CV equipment must be capable of remote firmware updates. Device manufacturers must make firmware updates available to the Department and maintaining agency at no cost.

Table 1
CV Roadside Unit (RSU) Requirements and Standards

Document Identifier	Description
USDOT RSU, Version 4.1	DSRC Roadside Unit (RSU) Specifications Document
SAE J2735, released 2016.03.30	Dedicated Short Range Communications (DSRC) Message Set Dictionary
SAE J2945, released 2017.12.07	On-Board System Requirements for V2V Safety Communications
C-V2X 3GPP Rel.14	LTE support for V2x services, eLAA, 4 band Carrier Aggregation, inter-band Carrier Aggregation
IEEE 802.11p	IEEE Standard for Information Technology– Telecommunications and information exchange between systems local and metropolitan area networks – Specific Requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications
IEEE 1609.0	IEEE Guide for Wireless Access in Vehicular Environments (WAVE) - Architecture
IEEE 1609.2	IEEE Standard for WAVE – Security Services for Applications and Management Messages
IEEE 1609.3	IEEE Standard for WAVE – Networking Services
IEEE 1609.4	IEEE Standard for WAVE – Multi-Channel Operation
IEEE 1609.12	IEEE Standard for WAVE – Identifier Allocations
IEEE 802.3at	Standard for Power over Ethernet
ASTM E2213-03	Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems — 5-GHz Band Dedicated Short-Range Communications (DSRC), Medium Access Control (MAC), and Physical Layer (PHY) Specifications
Federal Communications Commission (FCC) Title 47, Parts 0, 1, 2, 15, 90, and 95	FCC Code of Federal Regulations

b. CV Device Interoperability. Provide standards-based CV devices that are interoperable with CV devices from other manufacturers. Ensure that RSUs and Onboard Units (OBUs) are compatible and interoperable. All proposed CV equipment, consisting of a complete engineered solution meeting the contract requirements must be provided to the Department, at no additional cost, within 45 days of contract execution for testing.

c. Wireless Communications. Ensure wireless communications are secure and compatible with the carrier used by the agency responsible for system operation and maintenance.

d. Roadside Unit (RSU). The RSU must be a commercially available product that provides information and supports public safety operations in a V2I/V2V and C-V2X communication environment. RSUs must be successfully demonstrated to the Department and shown to support the functional features and CV applications identified in the contract.

The RSU must be preconfigured by the manufacturer or an authorized manufacturer's representative so that it is ready for installation and operation at the site(s) shown on the Plans. The Department will provide on-site data, such as MAP data. Upon receipt of the RSU(s), the Department will validate the configuration of the unit. The contractor will provide all required support, throughout the configuration process until approved by the Department. The RSU must include antennas for all radio frequency connectors, surge protection device(s) (SPDs), mounting hardware, all associated cabling, and any other equipment required for a fully functional and complete installation.

The RSU must automatically recover from a power failure once power is restored. The Contractor shall verify and document that all programmable settings are restored to their previous configurations and that the system resumes proper operation. Documentation shall be submitted to MaineDOT and the Engineer.

e. Configuration and Management. RSU must be provided with all hardware, software, configuration tools and software licenses required for local and remote configuration, operation, and management including access to all user-programmable features as well as health and status monitoring, event logging, and diagnostic utilities. Configuration and management functions must be password protected. Access to all user-programmable features, alarm monitoring, configuration parameters, event logging and diagnostic utilities must be through a vendor provided Graphical User Interface (GUI). The RSU must be provided with an open application programming interface (API) and software development kit available to the Department at no additional cost. This vendor provided GUI must be able to create Transportation Information Messages and send them to the RSU.

Alarm monitoring must include communication failure, power failure, GPS deviations, and time source lost. The RSU must include an event log that includes the date and time of the event(s). The RSU must be capable of storing a minimum of 500 events as defined by USDOT RSU specification.

All major components of the RSU shall be of a modular design to facilitate future CV frequency changes as set forth by the FCC.

f. Device Interfaces. The RSU must include wired (Ethernet) and wireless interfaces specified in the USDOT RSU specification. The RSU must provide cellular interfaces for system communication, as shown on the Plans. The

Contractor shall verify and document that all interfaces are protected by a configurable firewall with a default to be to inactive.

a) DSRC Interface. The RSU must include a commercial-grade radio that transmits and receives DSRC messages within the 5.855 – 5.925 GHz band per the USDOT RSU specification.

b) C-V2X. The RSU must include a commercial-grade radio that transmits and receives messages over C-V2X within the 5.855 – 5.925 GHz band.

c) Antennas. The RSU must use antennas that were tested with the device to obtain the FCC Grant of Equipment Authorization (or similar antennas with equal gain). Antennas must be removable to allow for the antennas to be installed at a distance from the RSU unit or replaced as needed. The Contractor shall not co-locate or operate RSU antennas with any other antenna or transmitter, except in accordance with the FCC multi-transmitter policy.

   i. DSRC radio characteristics:
      1. Protocol: IEEE 802.11p
      2. Freq. band: 5.855 – 5.925 GHz (LTE B47)
      3. 10 MHz channel spacing
      4. Output power: 20 dBm (power class 3)
      5. Sensitivity: typ. -95 dB
   ii. C-V2X radio characteristics:
      1. Protocol: 3GPP C-V2X Rel.14
      2. Freq. band: 5.855 – 5.925 GHz (LTE B47)
      3. 10 MHz channel spacing, PC5 side link
      4. Output power: 20 dBm (power class 3)
      5. Sensitivity: typ. -95 dB

g. Systems Communications. All Contractor supplied equipment, including connected vehicle equipment and roadside devices (ATC, FMU, Detection systems and Ethernet Switch), shall be compatible and interoperable. In addition, all IP based network equipment supplied by the Contractor shall be fully compatible with all existing MaineDOT and local agency data networks.

h. Ports and Connectors. The RSU must include all necessary ports and connectors for a complete assembly. All ports and connectors must be weather proof and inhibit the ingress of water, dirt, sand and other foreign materials from entering the enclosure. All ports must be legibly and permanently marked designating their intended use. All labels must be weather resistant.

a) Copper Ports. The RSU must include a minimum of one Type RJ-45 Ethernet port. The Type RJ-45 port must be capable of auto-negotiating speed (i.e., 10/100 Base) and duplex (i.e. full or half). All 10/100 Base TX connections must be compliant with the IEEE 802.3 standard pinouts.

b) Radio Frequency (RF) Connectors. The RSU must include at least three Type N weatherproof female RF ports.

c) Power over Ethernet (POE). The RSU must include at least one POE connector. The POE connector must be compliant with the Outdoor IP 66 rating.

i. Mechanical Specification. Ensure equipment is permanently marked with manufacturer name or trademark, part number, date of manufacture and serial number. All parts must be made of corrosion-resistant materials.

j. Electrical Specification. Ensure that all wiring complies with the latest edition of the National Electrical Code (NEC), National Electrical Safety Code (NESC), any local jurisdictional requirements, and IEEE 802.3.

Ensure that the RSU operates at a nominal voltage between 37 and 57 Voltage Direct Current (VDC).

Ensure that the POE injector used to power the RSU operates using a nominal input voltage of 120 Voltage Alternating Current (VAC). If any system device requires operating voltages other than 120 VAC, supply a voltage converter.

k. Environmental Specification. Ensure that the RSU complies with all environmental requirements of the latest edition of the Dedicated Short-Range Communications Roadside Unit Specifications published by the USDOT. Must be compliant with section 2 of the NEMA TS2 standard.

l. Operating System. The RSU's processor must run the latest version of the Linux operating system, at time of bid, and all applications must be written as Linux based applications. Additionally, the RSU must meet the minimum requirements for processing, memory, and storage as required in the USDOT RSU specification.

m. Applications. The RSU shall include software and business logic to support the following applications:
   a) Signal Phase and Timing (SPaT),
   b) Traveler Information Messages (TIM),
   c) Work Zone Alert,
   d) Emergency Vehicle Preemption (EVP),
   e) Snowplow Signal Priority,
   f) Freight Signal Priority,
   g) Pedestrian Warning (PedSafe),
   h) Queue Warning, and
   i) Curve Speed Warning,
   j) Data Pass Through

n. FCC License. Compile all information required to register RSU devices and locations with the FCC and provide this information to the Department for review in accordance with Section 7-2. Support the permitting effort until complete. The Contractor shall procure all FCC licenses on MaineDOT behalf. All fees associated with procuring the FCC licenses shall be included as part of the bid price.

o. Connected Vehicle Management Software. The Contractor shall provide, configure and install a Connected Vehicle Management Software (CVMS) system on the cloud-based server that contains the CMS systems. The CVMS shall provide for local and remote configuration of the RSU, diagnostics, alarms, retrieval and storage of data. The CVMS shall function locally as well as remotely over an Ethernet network using the FMU or existing City owned network connections. All fees associated with procuring the CVMS licenses shall be included as part of the bid price.

p. Storage, Logs, and Routing. The RSU must store and transmit periodic status messages, capture System Status Logs and Communication Message Logs as well as route and forward IPv6 traffic for connected mobile units.

Construction Requirements. The Contractor shall be responsible for furnishing all training, labor, materials, cables, connectors, tools, equipment, shipping and incidental items necessary to complete the installation and make the RSU system fully operational.

Installation of the RSU system shall include the installation of any and all associated equipment including, but not limited to, the following:

a. RSU Installation. Install RSUs on existing poles or sign structures, or on new poles, as shown on the Plans. The RSU, mounting hardware, and any other related material that is exposed to the environment must be designed for 150 mph wind speeds and meet the requirements of the Department's Structures Manual. Submit electronic configuration file backups to the Department following field testing. Backup files must include communication settings, firmware, and all other files and settings required to restore current operation and program a new replacement RSU.

The Contractor may mount the RSU in an alternate location than shown on the plans provided the antennae have a clear line of sight for all approaches. This (alternate location) provision is to better assist the Contractor to stay within the typical 100 meter limitation of CAT5 cable runs without having to purchase repeaters to match the proposed plan locations.

b. Cabling. Ensure that all device cabling is free from defects. Provide sufficient cabling slack within existing cabinets and pull boxes to facilitate future re-terminations and any required adjustments needed to shift the RSU along the mounting structure. Neatly bundle and coil all slack within storage areas and

prior to entering the RSU. Provide weatherproof cable tags at all storage points and at cable termination ends. All unshielded and shielded twisted pair Ethernet gel filled cabling shall be compliant with the EIA/TIA-568-B-2-1, CSA and ISO/IEC 11801 standards. Neatly coil and band all cable slack together using heavy duty cable locking ties. The use of standard zip-ties will not be permitted.

c. Testing. The following testing requirements shall be met.

a) General. CV equipment to field acceptance tests (FAT). The Department reserves the right to witness all FATs. Meet the requirements of T612.

b) Field Testing. Once the CV equipment has been installed, conduct local FATs at each field site according to the test plan(s). Perform the following:

1. Verify that physical construction has been completed as detailed on the Plans.
2. Inspect the installation of the CV Equipment and its associated cabling for a secure installation.
3. Inspect the quality and tightness of ground and surge protector connections.
4. Verify proper voltages for all power supplies and related power.
5. Connect devices to the power sources.
6. Verify all connections, including correct installation of communication and power cables.
7. Verify all wire and cable connections are correct and secure.
8. Verify the configuration of CV device network interfaces.
9. Verify that the CV equipment can be accessed and manipulated using the secured Shell from the remote computer.
10. Verify over the air that the RSU broadcasts using an approved multi-channel test tool (MCTT).
    i. Ensure data logging is active on all units under test and that data logs are sent to data repository per contract documents.
    ii. Test the DSRC with security on and off. With mismatched security certificates, ensure that messages are logged but payload is not decoded.
    iii. Scan all DSRC channels and document sources of potential interference.

d. Warranty. Ensure that CV equipment has a manufacturer's warranty covering defects for a minimum of 5 years from the date of final acceptance by the Department.

Ensure the warranty includes providing replacements within 10 calendar days of notification for defective parts and equipment during the warranty period at no cost to the Department.

Method of Measurement. The RSU for CV applications will be measured by each unit furnished and installed. All equipment, labor, training and incidentals required to create a fully functional system will be included in the bid price of this item.

Basis of Payment. Payment will be full compensation for furnishing, transporting, handling, and installing the materials and equipment specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under the following:

Pay Item		Pay Unit
654.351	Connected Roadside Unit (RSU)	Each

SPECIAL PROVISION
SECTION 718
TRAFFIC SIGNALS MATERIAL

The provisions of Section 718 of the Standard Specifications shall apply with the following additions and modifications:

718.13 Traffic Signal Control System The traffic signal control system shall be an expansion to MaineDOT's existing Centracs system meeting the following minimum performance standards:

a. General The expanded Central Management System (CMS) shall satisfy the following basic requirements:

1. The expanded CMS shall be installed on the MaineDOT furnished and configured cloud-based system. The Contractor shall supply all additional software and hardware accessories to provide a complete and functional cloud-based CMS system.

2. Provide Centracs Mobility (10-year license as part of the purchase price) to the project intersections.

3. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to satisfy the requirements as defined in these specifications.

4. All communication between the expanded CMS and the local controllers shall comply with NTCIP protocol consistent with other similar MaineDOT projects. Compatibility is required for all currently approved mandatory NTCIP standards and with the optional NTCIP consistent with similar MaineDOT projects. To help assure this compatibility, the system manufacturer shall certify and list what level of NTCIP compliance is supported for all current mandatory and optional NTCIP objects and standards. In addition, the list shall describe all manufacturer-specific NTCIP objects and functions available. The system supplier shall also list the non-approved NTCIP objects and standards in the system and furnish a description of the company's involvement in and input to the various NTICP standards committees, their degree of involvement, and present efforts including timetables for meeting proposed NTCIP standards under review. All communication between the local field controllers to the CMS shall be Ethernet based protocols. Serial of FSK communications shall not be allowed.

5. The expanded system and all system controllers shall be able to provide signal priority routing to support Snowplow CV Operations through different signal groups.

6. The expanded cloud-based CMS system shall be configured to provide remote access to the project intersections as well as system users as designated by MaineDOT and or the Engineer.

7. The expanded cloud-based CMS shall be configured to require multi-factor authentication to gain access to the system. The Contractor shall coordinate and submit for approval all proposed network security setting with MaineDOT IT and the Engineer.

8. The Contractor shall coordinate with MaineDOT IT to create a site-to-site VPN connection between Maine DOT internal network and the Contractor created cloud system for the CMS, SPM and the Connected Vehicle (CV) system. This site-to-site connection shall be in conjunction with Maine DOT IT and follow all network security protocols, permissions and procedures.

9. All access to the expanded cloud-based CMS shall be configured to utilize a secure VPN connection. No unsecured network access shall be allowed to access the cloud-based system. The Contractor shall reconfigure all manufacture default passwords on all supplied devices to custom, unique complex alpha numeric passwords comprised of special symbols, upper case, lower case and numbers that are a minimum of 8 characters in length. The Contractor shall generate a complete list of all proposed passwords. That list shall be submitted to MaineDOT and the Engineer for approval. No manufacture default passwords shall be allowed and no duplicate passwords shall be allowed.

10. The Contractor shall configure within the cloud based CSM the ability to remotely access, configure and view all detection.

11. All client and device based remote access operations to the CMS shall be performed via a secure VPN tunnel using encryption methods to ensure network security. The Contractor shall create a network security connection document to be submitted to MaineDOT and the Engineer for approval.

12. The expanded CMS, SPM and the Connected Vehicle (CV) system shall communicate directly to all ATC controllers, ATC cabinet assemblies and all in cabinet devices capable of supporting remote access; remote interface units are unacceptable. The system shall provide a continuous once per second, at a minimum, to all controllers and connected devices supplied under the project.

ADVANCED TRANSPORTATION CONTROLLER (ATC)

The work under this Item shall include the furnishing and installation of an Advanced Transportation Controller (ATC) at each project location as shown on the plans. The ATC controller shall be supplied and installed in a new MaineDOT Advanced Transportation Control Cabinet (ATCC) at each project intersection. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to fully comply with the requirements as defined in these specifications. The ATC supplied shall conform to the 2020 MaineDOT Standard Specifications sections 718.07 and as amended under the following requirements:

- All controller units supplied as part of the project, shall be ethernet equipped Econolite EOS Advanced Transportation Controllers.

SIGNAL PERFORMANCE MEASURES (SPM)

The system shall be furnished within the existing MaineDOT dashboard monitoring system. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to fully comply with the requirements as defined in these specifications. Intersections must be able to remotely report to the system:

i. Intersection Status
    1. Flash
    2. Door Status
    3. Temperature
    4. ATC Time
ii. Current Phase in operation
iii. Cycle Length
iv. Adaptive or non-adaptive operation
v. ATC alarms
vi. CV system alarms
vii. Detector faults
viii. SPM reports

<u>SPM Reports</u>

SPM reports shall be provided which can be used by MaineDOT for planning, operations and maintenance purposes. The reports shall be user definable as to format (hardcopy and/or electronic). The generation of reports shall be user definable and include manual and/or a time scheduled basis. These reports shall include the following:

Planning

1. Turning Movement Counts (TMC)
2. Approach Volumes
3. Pedestrian Delay
4. Purdue Coordination Diagrams

Operations

5. Arrival on Green (AOG)
6. Arrival on Red (AOR)
7. Split Monitoring
8. Preempt Service Requests
9. Approach Delay
10. Split Failure

Maintenance

11. Vehicle Detector Faults (Constant Call/No Call)
12. Pedestrian Detector Fault (Stuck Button)
13. Signal on Flash
14. Power Failure
15. Communications Failure
16. Manual Control Active

CONNECTED VEHICLE (CV) SYSTEM

The work under this Item shall include furnishing and installation of a Connected Vehicle (CV) system required to interface vehicles equipped with authorized CV devices with local controllers. This work includes all intersection controllers, software licenses, cloud-based costs, system testing, and all other equipment, materials, appurtenances and incidental costs necessary to provide a complete, fully operational Connected Vehicle (CV) system as specified herein and as shown on the plans. The Signal Phase and Timing (SPaT) Infrastructure System consists of all the hardware and software devices supplied under the project to support connected vehicle operations. The Contractor shall integrate the proposed Connected Vehicle (CV) system to be installed under this project on a Contractor created cloud-based system architecture. The Contractor shall furnish and install the means whereby MaineDOT and others shall be able to monitor and control the system remotely, as allowed by the system administrator. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to fully comply with the requirements as defined in these specifications. The CV system shall initially be programmed to support the following applications without the need for additional costs and/or subscription services:

1. Signal Phase and Timing (SPaT),
2. Traveler Information Messages (TIM),
3. Work Zone Alert,
4. Emergency Vehicle Preemption (EVP),
5. Snowplow Signal Priority,
6. Freight Signal Priority,
7. Pedestrian Warning (PedSafe),
8. Queue Warning, and
9. Curve Speed Warning,
10. User Data Pass through.

The CV system and the CMS shall operate as an integrated system allowing for the CMS to report on alarms generated by the CV system.

The CV system shall consist of Roadside Units (RSU) and On-Board Units (OBU). In addition, the CV system shall allow for the broadcast of SPAT, BSM and Personal Information Message (PIM) to mobile devices utilizing a mobile application for IOS and Android. The mobile application shall be branded with MaineDOT information for deployment to the general public. There shall not be any fees associated with the downloading or using the CV application.

The Contractor shall be responsible for all costs and fees associated with integration and maintenance of this CV system onto the cloud-based system during the construction and fine-tuning period. Additionally, the Contractor is responsible for all costs associated to support operations, ongoing access, maintenance and any other incidental fees related to the cloud-based system to maintain proper operation and remote system access for this CV system for a period of 120 months from the end of the fine-tuning period.

In addition to the requirements contained within the specification, the CV system shall be supplied and installed with the following functionality:

- Broadcast of SPAT, BSM, PIM messages to registered OBU and mobile device applications.
- Allow for the use of "GEO Fencing" to provide for "Pre-emption and Priority" calls to the ATC controller based on location of the OBU and mobile device application.
- Have the ability to support both DSRC and 5G communications.
- Shall receive traffic signal data from the Traffic Signal Controller that is compliant with the standard NTCIP 1202 v3.
- In locations where the SPaT Infrastructure System supports Signal Preemption, the SPaT Infrastructure System shall receive preemption status from the Traffic Signal System.
- In locations where the SPaT Infrastructure System supports signal priority applications, the system shall receive signal control and preemption/priority requests.
- Shall support Connected Vehicle enabled Pedestrian in Signalized Crosswalk Warning and/or Mobile Accessible Pedestrian Signal Systems (PED-SIG) applications.
- Shall synchronize an internal system clock with Coordinated Universal Time (UTC) and be accurate within 10 milliseconds (ms) of UTC at all times.
- Shall use a point in time – also referred to as time marks (i.e. minutes and seconds of the year) as opposed to countdowns (e.g. "for the next 12 seconds") to define start and end times.

- The SPaT Intersection status shall include whether the intersection is operating in failure flash.
- The SPaT message shall uniquely identify the intersection for which it applies.
- The SPaT message shall support the ECO Departure application as implemented, each SPaT message shall include maneuver assist data.
- The SPAT message shall show the intersection status including whether the intersection is operated as fixed time or actuated control.
- The SPAT message shall show the intersection status including whether the intersection is currently operating in preemption or priority.
- The SPaT message shall contain Movement States. The number of Movement States shall correspond to the number of controller traffic and pedestrian phases that are currently in use at the intersection.
    - Movement State shall describe the current interval for each movement.
    - Movement State shall indicate when the current interval will end for each movement.
    - Movement State shall indicate when that movement is estimated to next be green if it is not currently green.
- SPaT message shall include a minimum end time defined to be the earliest time mark when the current phase will end.
- SPaT message shall contain a maximum end time defined to be the latest time mark when the current phase will end.
- SPaT message shall contain a likely end time that is the most likely end time of the current phase.
- The SPaT Infrastructure System shall make the maximum end time equal to the minimum end time when maximum end time is included in the SPaT message for fixed signal time.
- The SPaT Infrastructure System shall assemble SPaT messages that conform to the SAE J2735 standard format.
- The SPaT Infrastructure System shall include an interface for users to manage the SPaT Infrastructure System and its data.
- The SPaT Infrastructure System User Interface shall be browser-based and provide access to authorized users for all management, configuration and support functionality as described in Groups 3 and 12.
- The SPaT Infrastructure System User Interface shall be accessible via remote portable devices through the Internet.
- The SPaT Infrastructure System shall comply with the agency’s security policy for remote access.

- The SPaT Infrastructure System User Interface shall include security compliant with agency policy to limit user access.
- The SPaT Infrastructure System User Interface shall only be accessible to authorized users.
- The SPaT Infrastructure System shall have a mechanism for an administrator to configure user roles such that different users are limited to different subsets of functionalities.
- The SPaT Infrastructure System User Interface shall display information to users.
- The SPaT Infrastructure System shall provide a GIS-based digital map to geographically view the System and manage data.
- The SPaT Infrastructure System User Interface shall display information to users on the operation, configuration and diagnostics of the System.
- The SPaT Infrastructure System User Interface shall provide information to users in text and graphical formats as appropriate.
- The SPaT Infrastructure System User Interface shall notify users of system alerts as defined in Group 12.
- The SPaT Infrastructure System shall manage a MAP database.
- The SPaT Infrastructure System shall include a database to store MAP data.
- The SPaT Infrastructure System shall have a mechanism to configure the MAP data to be applied to the intersection associated with the SPaT Infrastructure System.
- The SPaT Infrastructure System shall store a unique MAP message for each SPaT intersection.
- The SPaT Infrastructure System shall manage MAP dynamic features.
    - At intersections with reversible lanes, or movements restricted during selected periods (e.g. left turn not allowed during peak periods), the MAP messages shall designate these lanes as revocable.
    - In situations of reversible lanes, MAP messages shall define two lanes in the same location, one an ingress lane, and one an egress lane. Each lane shall be revocable.
    - In situations of turn restrictions (e.g. not permitting right turn on red or left turn allowed/not allowed), the MAP message shall define two lanes in the same location – one allowing the movement, the other not allowing the movement. Each lane shall be revocable.
- The SPaT Infrastructure System shall assemble the content for standard MAP messages.
    - The Intersection Geometry shall be changed if and only if the map information is updated.

  - Each MAP message shall uniquely identify the intersection for which it applies.

- The SPaT Infrastructure System shall increment the MAP message count whenever any data element in the message except the time stamp changes.
  - Each Map message shall identify each lane approaching and departing from the intersection and shall provide an intersection unique ID for the lane.
  - Each MAP message shall provide the directionality of each lane.
  - Each MAP messages shall identify all ingress and egress lanes.
  - Each ingress and egress lane shall be described by at least two node points that depict the center of the lane.
  - Each MAP message shall separately identify each possible connection between ingress and egress lanes and provide an intersection unique ID for the connection.
  - Each MAP message shall include, for each connection, the lane, maneuver and signal group associated with the connection.
  - Each ingress and egress lane shall be depicted by enough nodes such that the distance between the actual curved lane center line and the straight line connecting nodes shall not be more than half of the lane width.
  - When a single connection between an ingress lane and an egress lane is controlled by more than one signal group, such as a protected/permissive left turn movement, the MAP message shall separately identify each signal group that controls the movement on that connection.
  - In locations were PED-SIG or Pedestrian Warning applications are deployed, MAP messages shall include crosswalk lane types.
  - MAP message shall define ingress lanes from the stop bar to a minimum of 300 meters before the stop bar.
  - When connecting to another intersection, each MAP message shall identify the remote intersection to be connected.
- The SPaT Infrastructure System shall assemble MAP messages that conform to the SAE J2735 standard message format.
- The SPaT Infrastructure System shall assemble the MAP messages that adhere to the SAE J2735 March 2016 standard.
- The SPaT Infrastructure System shall assemble other standardized MAP messages, as needed.
- The SPaT Infrastructure System shall obtain position correction data.
- The SPaT Infrastructure System shall either calculate or obtain GPS position correction data in the RTCM 10403 Message Type 1001 format that corrects for the current atmospheric conditions in the area surrounding the intersection.

- The SPaT Infrastructure System shall either generate or obtain the coordinates of the antenna reference point in the RTCM 10403 Message Type 1005 format.
- The SPaT Infrastructure System shall assemble standard RTCM correction messages.
- The SPaT Infrastructure System shall assemble standard RTCM correction messages for the following RTCM version 3.0 message types:
    - Message Type 1001 – GPS L1 observations
    - Message Type 1005 – Antenna Reference Point coordinates.
- The SPaT Infrastructure System shall generate new RTCM Correction messages with the most current correction data at a minimum frequency of 5 Hz.
- The SPaT Infrastructure System shall assemble RTCM correction messages that conform to the SAE J2735 standard message format.
- The SPaT Infrastructure System shall assemble position correction messages that comply with additional standards, as needed.
- The SPaT Infrastructure System shall broadcast standard 5.9 GHz DSRC messages.
- The SPaT Infrastructure System broadcast of data shall be compliant with the USDOT's RSU Specification "DSRC Roadside Unit (RSU) Specification Document v4.1."
- The SPaT Infrastructure System shall broadcast SPaT, MAP, and RTCM messages using Dedicated Short Range Communications (DSRC) on channel 172.
- The SPaT Infrastructure shall broadcast the SPaT messages with a minimum frequency of 10 Hz.
- The SPaT Infrastructure system shall broadcast MAP messages with a minimum frequency of 1 HZ.
- The SPaT Infrastructure System shall broadcast RTCM Correction messages containing the most recent RTCM 10403 Message Type 1001 data with a minimum frequency of 5 Hz.
- The SPaT Infrastructure System shall broadcast RTCM Correction messages containing the most recent RTCM 10403 Message Type 1005 data with a minimum frequency of 2 Hz.
- In locations supporting preemption/priority applications, when there are active priority requests, the SPaT Infrastructure System shall broadcast Signal Status Messages (SSM) on Channel 182 with a minimum frequency of 10 Hz.
- The SPaT Infrastructure System shall broadcast messages such that they can be received by DSRC on-board units in each lane approaching the intersection.

- The SPaT Infrastructure System shall broadcast messages such that the data incurs no loss in fidelity to a distance of at least 300 meters upstream of the stop bar for each approaching lane.
- The SPaT Infrastructure System shall sign outgoing broadcast messages with a valid security key.
- The SPaT Infrastructure System shall validate received messages based on signed certificate associated with the messages.
- In locations where BSM data is collected, the SPaT Infrastructure System shall receive and process all valid DSRC broadcasts of the Basic Safety Message (BSM) received by the DSRC radio on Channel 172 at the SPaT Infrastructure System.
- In locations support signal priority and preemption, the SPaT Infrastructure System shall receive valid DSRC Signal Request Messages (SRM) received by the DSRC radio on Channel 182 at the SPaT Infrastructure System.
- In locations where vehicle data is received, the SPaT Infrastructure System shall receive and process security credentials and digital signatures to be used to validate message received.
- In locations where probe data is being collected by the SPaT Infrastructure System, the SPaT Infrastructure System shall receive and process valid Probe Vehicle Data (PVD) data broadcast received by the DSRC radio at the SPaT Infrastructure System.
- In locations supporting PED-SIG applications, the SPaT Infrastructure System shall receive valid Personal Safety Message (PSM) data broadcast by the Personal Information Device Systems within range of the SPaT Infrastructure System.
- The SPaT Infrastructure System shall publish data over alternate communication mediums.
- The SPaT Infrastructure System shall receive data over alternate communication mediums.
- The SPaT Infrastructure System shall monitor for signal preemption and priority requests.
- The SPaT Infrastructure System shall process Signal Request Messages (SRM) that adhere to the SAE J2735 March 2016 standard from SPaT Vehicle Systems as soon as they are received.
- The SPaT Infrastructure System shall process preemption/priority request cancellations received from SPaT Vehicle Systems.
- The SPaT Infrastructure System shall request preemption and priority.
- The SPaT Infrastructure System shall assemble Signal Status Messages in other standard formats with a maximum latency of 10 ms from the time the System receives information from the Traffic Signal System.

- The SPaT Infrastructure System shall monitor BSM, PVD, and PSM.
- The SPaT Infrastructure System shall receive BSM from vehicles.
- The SPaT Infrastructure System shall receive PVD from vehicles.
- The SPaT Infrastructure System shall receive PSM from Personal Information Devices (PIDs).
- The SPaT Infrastructure System shall convert BSM and PSM to detector calls.
- In locations where the intent is to convert BSMs to detector calls, the SPaT Infrastructure System shall have defined BSM geographic detection zones that define the geographic area assigned to each signal phase at each intersection detecting BSM.
- In locations where the intent is to convert PSMs into detector calls, the SPaT Infrastructure System shall have defined PSM geographic detection zones that define the geographic area assigned to each signal pedestrian phase at each intersection detecting PSM.
- The SPaT Infrastructure System shall convert the BSM and PSM messages received into detector calls for their corresponding detection zones.
- When the SPaT Infrastructure System receives a BSM located within the respective detection zone, the SPaT Infrastructure System shall generate detector calls for the appropriate signal phase.
- The SPaT Infrastructure System shall continue to generate detector calls whenever it receives BSM from one or more vehicles in a detection zone for BSM.
- When the SPaT Infrastructure System receives a PSM located within the respective detection zone, the SPaT Infrastructure System shall convert each PSM that is requesting a WALK signal into a pedestrian crossing detector call for the signal pedestrian phase assigned to the PSM detection zone.
- The SPaT Infrastructure System shall assemble pedestrian crossing detector calls to include the relevant crosswalk the pedestrian is requesting to access.
- When multiple PSM messages are received from more than one PID for a single WALK, the SPaT Infrastructure System shall generate no more than one detector call for a given phase within each cycle.
- The SPaT Infrastructure System shall prepare actuation reports to be sent to the Traffic Signal System in compliance with NTCIP 1202 v3, at a minimum.
- In locations where BSM and PVD data is collected, the SPaT Infrastructure System shall aggregate BSM and PVD data.
- The SPaT Infrastructure System shall exchange data with the Traffic Data System.
- In locations where the Traffic Data System utilizes data from the SPaT Infrastructure System, the SPaT Infrastructure System shall send traffic data messages to the Traffic Data System.

- The SPaT Infrastructure System shall exchange aggregated BSM data.
- The SPaT Infrastructure System shall exchange aggregated PVD data.
- The SPaT Infrastructure System shall obtain valid security credentials.
- The SPaT Infrastructure System shall comply with all security credentials, certification, and processes defined by the National Security Credentials Management System (SCMS), or another credential management system used by the SPaT Infrastructure System.
- The SPaT Infrastructure System certification shall include all of the security credentials necessary to support each application.
- The SPaT Infrastructure System shall have a mechanism for receiving updated security credential certification from the Security Back End System.
- The SPaT Infrastructure System shall store security credential certifications for use in broadcasting messages to SPaT Vehicle Systems for their validation purposes.
- The SPaT Infrastructure System shall request updated security credentials from the Security Back End System a configurable period of time in advance of when the current security credential expires.
- The SPaT Infrastructure System shall receive updates from the Security Back End System regarding revoked security credentials.
- The SPaT Infrastructure System shall store data regarding revoked security credentials.
- The SPaT Infrastructure System shall ignore data received from SPaT Vehicle Systems whose security credentials have been revoked.
- The SPaT Infrastructure System shall send data to the Security Back End System regarding invalid security credentials received from SPaT Vehicle Systems.
- The SPaT Infrastructure System shall verify the credentials it receives.
- The SPaT Infrastructure System shall have a mechanism for validating the security credentials received from SPaT Vehicle Systems.
- The SPaT Infrastructure System shall check the security credentials of messages that include security credential data received from SPaT Vehicle Systems.
- The SPaT Infrastructure System shall validate the security credentials of messages received from SPaT Vehicle Systems with valid credentials.
- The SPaT Infrastructure System shall identify as revoked the security credentials of messages received from SPaT Vehicle Systems that match a revoked security credential.
- The SPaT Infrastructure System shall ignore messages received from SPaT Vehicle Systems without a valid security credential.
- The SPaT Infrastructure System shall apply security credentials to broadcasts.

- The SPaT Infrastructure System shall broadcast valid security credentials in the form of digital certificates signed by a trusted certificate authority for those messages broadcast with security credential information.
- The SPaT Infrastructure System shall sign and validate DSRC messages using the IEEE 1609.2 security standard.
- The SPaT Infrastructure System shall manage access to the system network.
- The SPaT Infrastructure System shall comply with agency security policy to block malicious attempts, such as Distributed Denial of Service (DDOS) attacks, malware distribution, or other hacking efforts, to infiltrate the agency networks and systems.
- The SPaT Infrastructure System to provide a mechanism for users to configure data exchanges.
- The SPaT Infrastructure System shall provide a mechanism for users to configure data exchanges between the SPaT Infrastructure System and the Security Back-End System that are compliant with agency security and network policies.
- The SPaT Infrastructure System shall provide a mechanism for users to configure the Security Back-end System that are compliant with agency security and network policies.
- The SPaT Infrastructure System shall have a mechanism for managing logs of system activity.
- The SPaT Infrastructure System shall log and store records of data obtained by the System, including:
    - Traffic Signal System data.
    - GPS correction data.
    - MAP data.
    - Messages from SPaT Vehicle Systems and PIDs, including BSM, PVD, PSM and SRM.
- The SPaT Infrastructure System shall log and store the messages assembled by the System, including the content, time of generation and time of broadcast.
- The SPaT Infrastructure System shall log and store the SPaT messages assembled by the System.
- The SPaT Infrastructure System shall log and store the MAP messages assembled by the System.
- The SPaT Infrastructure System shall log and store the RCTM messages assembled by the System.
- The SPaT Infrastructure System shall log and store the SSM messages assembled by the System.

- The SPaT Infrastructure System shall log and store the location of origin for all stored data, such as the location/intersection for each message broadcast and received.
- The SPaT Infrastructure shall log and store user-initiated changes in System configuration, including the user, date and time, and configuration change.
- The SPaT Infrastructure System shall log and store system errors and alerts, such as for loss of power, loss of connection to other systems, failure to process data and messages.
- The SPaT Infrastructure System shall log and store user activity, including, at a minimum, the user and time of log in and log out for each session, and the time and location of failed login attempts.
- The SPaT Infrastructure System shall have a mechanism for selecting stored data for deletion and then deleting that data.
- The SPaT Infrastructure System shall have a mechanism for configuring multiple logs to reflect:
    - Log start and end times.
    - Data types and activities to be included in log.
    - Locations and/or devices to be included in log.
- The SPaT Infrastructure System shall provide a mechanism for users to configure the messages broadcast by the System.
- The SPaT Infrastructure System shall provide a mechanism for users to select the appropriate standardized format(s) for messages to be broadcast.
- The SPaT Infrastructure System shall have a mechanism for users to configure the data elements to include in:
    - SPaT Messages
    - MAP Messages
    - RTCM Messages
    - SSM
    - PSM
- The SPaT Infrastructure System shall have a mechanism for users to configure the frequency of broadcast for:
    - SPaT Messages
    - MAP Messages
    - RTCM Messages
    - SSM
    - PSM

- The SPaT Infrastructure System shall have a mechanism for managing MAP data.
- The SPaT Infrastructure System shall have a mechanism for the user to select the format of MAP data to be imported from the SPaT Infrastructure System's usable formats, including:
    - XML
- The SPaT Infrastructure System shall have a mechanism for the user to submit MAP data.
- The SPaT Infrastructure System shall notify the user of successful MAP data submissions.
- The SPaT Infrastructure System shall provide a mechanism for graphically displaying the location and layout of submitted MAP data.
- The SPaT Infrastructure System shall notify the user of errors in the structure of the submitted data, such as missing required data in the wrong format, or data outside the range of allowable values.
- The SPaT Infrastructure System shall have a mechanism for the user to create MAP data within the interface.
- The SPaT Infrastructure System shall include a "wizard" environment for data entry that describes the type of data expected in each field. For example, the User Interface may inform the user of the number of digits of precision required for latitudes and longitudes.
- The SPaT Infrastructure System shall have a mechanism for graphically displaying the location and layout of entered MAP data.
- The SPaT Infrastructure System shall allow the user to name, copy, modify and delete MAP data of one or more configurations for each intersection.
- The SPaT Infrastructure System shall have a mechanism for users to configure GPS correction.
- The SPaT Infrastructure System shall have a mechanism for users to configure the source of GPS position correction data (e.g. define the source, define the polling mechanism and approach).
    - In locations where the source of position correction data is a regional or national source of data (e.g. Internet accessible data), the configuration shall include the location of the intersection to enable the acquisition of GPS correction data to obtain the correct values.
    - At locations where messages are received from SPaT Vehicle Systems and PIDS, the SPaT Infrastructure System shall have a mechanism for the user to manage the detection zones defined for receiving data from SPaT Vehicle Systems and PIDs.

- The SPaT Infrastructure System shall have a mechanism for the user to create and modify detection zones and associate the detection zones to received message types and to vehicle and pedestrian movements at each intersection.
- The SPaT Infrastructure System shall have a mechanism for the user to graphically define detection zones within a digital map environment.
- The SPaT Infrastructure System shall have a mechanism to automatically identify when a vehicle or pedestrian movement does not have an associated detection zone and notify the user.
- The SPaT Infrastructure System User Interface shall be accessible via workstations on the agency network.
- The SPaT Infrastructure System User Interface shall be browser-based and provide access to authorized users for all management, configuration and support functionality.
- The SPaT Infrastructure System User Interface shall be accessible via the cloud-based system or via secure VPN connection.
- The SPaT Infrastructure System User Interface shall be accessible via remote Microsoft/Android/IOS devices through a secure internet connection.
- The SPaT Infrastructure System User Interface shall configured by the Contractor to be only be accessible by authorized users.
- The SPaT Infrastructure System shall comply with MaineDOT IT security policy for remote access.
- The SPaT Infrastructure System shall have a mechanism for an administrator to configure user roles such that different users are limited to different subsets of functionalities.
- The SPaT Infrastructure System shall provide a GIS-based digital map to geographically view the System and manage data
- The SPaT Infrastructure System User Interface shall display information to users on the operation, configuration and diagnostics of the System.
- The SPaT Infrastructure System User Interface shall provide information to users in text and graphical formats as appropriate.
- The SPaT Infrastructure System shall include a database to store MAP data.
- The SPaT Infrastructure System shall have a mechanism to configure the MAP data to be applied to the intersection associated with the SPaT Infrastructure System.
- The SPaT Infrastructure System shall store a unique MAP message for each intersection, that shall be stored locally within the intersection Road Side Unit (RSU) as well as the cloud based system.

- At intersections with reversible lanes, or movements restricted during selected periods (e.g. left turn not allowed during peak periods), the MAP messages shall designate these lanes as revocable.
- In situations of reversible lanes, MAP messages shall define two lanes in the same location, one an ingress lane, and one an egress lane. Each lane shall be revocable.
- In situations of turn restrictions (e.g. not permitting right turn on red or left turn allowed/not allowed), the MAP message shall define two lanes in the same location – one allowing the movement, the other not allowing the movement. Each lane shall be revocable.
- The Intersection Geometry shall be changed if and only if the map information is updated.
- Each MAP message shall uniquely identify the intersection for which it applies.
- The SPaT Infrastructure System shall increment the MAP message count whenever any data element in the message except the time stamp changes.
- Each Map message shall identify each lane approaching and departing from the intersection and shall provide an intersection unique ID for the lane.
- Each MAP message shall provide the directionality of each lane.
- Each MAP messages shall identify all ingress and egress lanes.
- Each ingress and egress lane shall be described by at least two node points that depict the center of the lane.
- Each MAP message shall separately identify each possible connection between ingress and egress lanes and provide an intersection unique ID for the connection.
- In locations were PED-SIG or Pedestrian Warning applications are deployed, MAP messages shall include crosswalk lane types.
- MAP message shall define ingress lanes from the stop bar to a minimum of 1000 feet before the stop bar.
- When connecting to another intersection, each MAP message shall identify the remote intersection to be connected.
- The SPaT Infrastructure System shall sign outgoing broadcast messages with a valid security key.
- In locations where BSM data is collected, the SPaT Infrastructure System shall receive and process all valid DSRC broadcasts of the Basic Safety Message (BSM) received by the DSRC radio on Channel 172 at the SPaT Infrastructure System
- In locations support signal priority and preemption, the SPaT Infrastructure System shall receive valid DSRC Signal Request Messages (SRM) received by the DSRC radio on Channel 182 at the SPaT Infrastructure System

- In locations where vehicle data is received, the SPaT Infrastructure System shall receive and process security credentials and digital signatures to be used to validate message received
- The SPaT Infrastructure System shall comply with all security credentials, certification, and processes defined by the National Security Credentials Management System (SCMS).

The Contractor shall configure the system to provide for the generation and broadcast of Signal Phasing and Timing (SPaT) data. This CV function shall be fully programed in all related CV devices to enable SPaT messages to be broadcast and received by properly equipped vehicles with the appropriate CV elements. The Contractor shall coordinate with MaineDOT and the Engineer to identify per intersection parameters needed to support the SPaT CV functions. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to enable the SPaT function as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence zones at maximum broadcast distance at all intersections as part of the project. The geo-fence zones shall initially be programed by the Contractor to broadcast the per phase/per lane SPaT message data to properly equipped vehicles containing authorized CV devices.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the SPaT system will operate.

Traveler Information Messages (TIM)

The Contractor shall configure the system to provide for the generation and broadcast of Traveler Information Message data. This CV function shall be fully programed in all related CV devices to enable TIM messages to be broadcast and received by properly equipped vehicles with the appropriate CV elements. The Contractor shall coordinate with MaineDOT and the Engineer to identify per intersection parameters needed to support the TIM CV functions. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to enable the TIM function as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence zones at maximum broadcast distance at all intersections as part of the project. The geo-fence zones shall initially be programed by the Contractor to broadcast the per phase/per lane TIM message data to properly equipped mobile CV systems, OBU and/or mobile devices.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the TIM system will operate.

Work Zone Alert

The Contractor shall configure the system to provide for the generation and broadcast of Work Zone Alert Message data. This CV function shall be fully programed in all related CV devices to enable Work Zone Alert messages to be broadcast and received by properly equipped vehicles with the appropriate CV elements. The Contractor shall coordinate with MaineDOT and the Engineer to identify per intersection parameters needed to support the Work Zone Alert CV functions. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to enable the Work Zone Alert function as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence zones at maximum broadcast distance at all intersections as part of the project. The geo-fence zones shall initially be programed by the Contractor to broadcast the per phase/per lane Work Zone Alert message data to properly equipped vehicles containing authorized CV devices.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the Work Zone Alert system will operate.

Emergency Vehicle Preemption (EVP)

The Contractor shall configure the system to provide for an Emergency Vehicle Preemption (EVP) system operation (see also 718.15). This CV function shall be fully programed in all related CV devices to enable EVP for properly equipped emergency vehicles with the appropriate CV elements to generate a preemption request. The Contractor shall coordinate

with MaineDOT and the Engineer to coordinate the installation of CV devices into emergency vehicles. The Contractor shall supply Dual Mode C-V2X OBU for five (5) emergency vehicles. No additional hardware or software costs and/or subscription fees/costs shall be allowed to enable the EVP as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence detection zone at maximum broadcast distance at all intersections as part of the project. A preemption request message shall be generated upon entry of an emergency vehicle into a defined geo-fence detection zone. The preemption request message shall be transmitted via the OBU installed in the emergency vehicle. The preemption message shall be received by the DSRC/CV interface at each of the project intersections. The Contractor shall configure all relevant devices to accept the preemption signal request and initiate EVP operation. Emergency vehicle preemption shall override freight vehicle priority. The CMS shall log all CV actions into a system searchable database.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the EVP system will operate.

Snowplow Signal Priority

The Contractor shall configure the system to provide for a snowplow priority system operation. This CV function shall be fully programed in all related CV devices to enable a snowplow vehicle, properly equipped with the appropriate CV elements to generate a priority request. The Contractor shall coordinate with MaineDOT maintenance operations to schedule a time to modify and install CV devices in MaineDOT designated snowplow vehicles. The installation of CV devices shall not have any adverse impact on the vehicle snowplow operations.

The Contractor shall define and create geo-fence detection zone at all intersections as part of the project. The geo-fence detection zone shall initially be programed by the Contractor at a four hundred (400’) foot distance from the intersection stop bar at each vehicle approach. A conditional priority request message shall be generated upon entry of a snowplow vehicle into a defined geo-fence detection zone and whenever the snowplow is in operation (i.e. snowplow blade down and/or spreader activated). The priority request message shall be transmitted via the OBU installed in the snowplow vehicle. The priority message shall be received by the DSRC/CV interface at each of the project intersections. The Contractor shall configure all relevant devices to accept the priority signal request and conditionally initiate snowplow vehicle priority operation. Emergency vehicle preemption shall override snowplow vehicle priority. Priority operation shall not cause the traffic controller to drop out of coordination. The CMS shall log all CV actions into a system searchable database.

When a priority request is received at the controller, a priority operation shall initiate. If the controller is active in the phase for the approach requesting priority operation the green display shall be extended. If the controller is active in a phase other than the one requested, that phase green time shall be reduced. The amount of time that a phase is extended or reduced shall be

determined on a location by location basis. Final settings shall be provided by MaineDOT and/or the Engineer.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the snowplow CV system will operate.

Freight Signal Priority

The Contractor shall configure the system to provide for a freight priority system operation. This CV function shall be fully programed in all related CV devices to enable a freight vehicle, properly equipped with the appropriate CV elements to generate a priority request. The Contractor shall coordinate with MaineDOT and freight companies identified by MaineDOT to coordinate the installation of CV devices into freight vehicles. The Contractor shall supply Dual Mode C-V2X OBU for twenty (20) freight and/or snowplow vehicles. No additional hardware or software costs and/or subscription fees/costs shall be allowed to enable the freight operations as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence detection zone at all intersections as part of the project. The geo-fence detection zone shall initially be programed by the Contractor at a four hundred (400') foot distance from the intersection stop bar at each vehicle approach. A priority request message shall be generated upon entry of a freight vehicle into a defined geo-fence detection zone. The priority request message shall be transmitted via the OBU installed in the freight vehicle. The priority message shall be received by the DSRC/CV interface at each of the project intersections. The Contractor shall configure all relevant devices to accept the priority signal request and conditionally initiate freight vehicle priority operation. Emergency vehicle preemption shall override freight vehicle priority. Priority operation shall not cause the traffic controller to drop out of coordination. The CMS shall log all CV actions into a system searchable database.

When a priority request is received at the controller, a priority operation shall initiate. If the controller is active in the phase for the approach requesting priority operation the green display shall be extended. If the controller is active in a phase other than the one requested, that phase green time shall be reduced. The amount of time that a phase is extended or reduced shall be determined on a location by location basis. Final settings shall be provided by MaineDOT and/or the Engineer.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the freight CV system will operate.

Pedestrian Warning (PedSafe)

The Contractor shall configure the system to provide for the generation and broadcast of Pedestrian Warning Message data. This CV function shall be fully programed in all related CV devices to enable Pedestrian Warning messages to be broadcast and received by properly

equipped vehicles with the appropriate CV elements. The Contractor shall coordinate with MaineDOT and the Engineer to identify per intersection parameters needed to support the Pedestrian Warning CV functions. No additional hardware or software costs and/or subscription fees/costs shall be allowed to enable the Pedestrian Warning function as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence zones at all intersections as part of the project. The geo-fence zones shall initially be programed per location by the Contractor, as approved by MaineDOT, to broadcast the per phase Pedestrian Warning message data to properly equipped vehicles containing authorized CV devices.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the Pedestrian Warning system will operate.

Queue Warning

The Contractor shall configure the system to provide for the generation and broadcast of Queue Warning Message data. This CV function shall be fully programed in all related CV devices to enable Queue Warning messages to be broadcast and received by properly equipped vehicles with the appropriate CV elements. The Contractor shall coordinate with MaineDOT and the Engineer to identify per intersection parameters needed to support the Queue Warning CV functions. No additional hardware or software costs and/or subscription fees/costs shall be allowed to enable the Queue Warning function as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence zones at all intersections as part of the project. The geo-fence zones shall initially be programed per location by the Contractor, as approved by MaineDOT, to broadcast the per phase Queue Warning message data to properly equipped vehicles containing authorized CV devices.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the Queue Warning system will operate.

Curve Speed Warning

The Contractor shall configure the system to provide for the generation and broadcast of Curve Speed Warning Message data. This CV function shall be fully programed in all related CV devices to enable Curve Speed Warning messages to be broadcast and received by properly equipped vehicles with the appropriate CV elements. The Contractor shall coordinate with MaineDOT and the Engineer to identify per intersection parameters needed to support the Curve Speed Warning CV functions. No additional hardware or software costs and/or subscription fees/costs shall be allowed to enable the Curve Speed Warning function as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence zones at all intersections as part of the project. The geo-fence zones shall initially be programed per location by the Contractor, as approved by MaineDOT, to broadcast the per phase Curve Speed Warning message data to properly equipped vehicles containing authorized CV devices.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the Curve Speed Warning system will operate.

User Data Pass-Through

The Contractor shall configure the system to provide for the ability to allow for User Data Pass-Through. This CV function shall be fully programed in all related CV devices to enable User Data Pass-Through to be broadcast and received by properly equipped vehicles with the appropriate CV elements. The Contractor shall coordinate with MaineDOT and the Engineer to identify per intersection parameters needed to support the User Data Pass-Through CV functions. No additional hardware or software costs and/or subscription fees/costs shall be allowed to enable the User Data Pass-Through function as described. Any hardware, software and subscription fees shall be considered incidental and included as part of the bid price.

The Contractor shall define and create geo-fence zones at all intersections as part of the project. The geo-fence zones shall initially be programed per location by the Contractor, as approved by MaineDOT, to broadcast the per approach User Data Pass-Through to properly equipped vehicles containing authorized CV devices.

The Contractor shall create and submit a text narrative for approval prior to installation describing how the User Data Pass-Through system will operate.

Technical Support

Telephone technical support shall be provided to MaineDOT for ten (10) years by the ATC, SPM, Stop line vehicle detection system, Advanced vehicle detection system, and CV system manufactures. The cost for this telephone technical support shall be included in the bid price

for the project. Telephone technical support shall be available to MaineDOT Monday through Friday, during normal business hours.

Local field technical support must be available for a period of 60 months after the "System Startup" project phase is completed.

Start-up and System Loading

The system supplier shall initiate complete system operation including ATC, SPM, Stop line vehicle detection system, Advanced vehicle detection system, CV system, Hosted cloud-based systems, FMU, the communications system, and remote monitoring and control of CMS operations as shown on the plans and/or directed by MaineDOT and the Engineer. After the supplier has initiated system operation, the system shall be run for a continuous 7-day initial operational testing period. If any major functions of the system fail to operate during this testing period, as determined by MaineDOT and/or the Engineer, the supplier shall correct or repair the system and the continuous 7-day testing period shall be restarted. At the completion of a successful 7-day testing period, the supplier shall advise MaineDOT and/or the Engineer that the system is ready for the Start-up Phase. Any major system malfunctions encountered during this testing period shall be corrected by the supplier, and the test restarted. During this period, MaineDOT and/or the Engineer may make modifications to the system timing parameters, but this will not cause restarting of the testing period. At the completion of the testing period, the system will be deemed ready for final acceptance testing as described in Acceptance Testing.

Manuals and Documentation

Operating manuals shall be supplied for all equipment and components of the system. Each set of operating manuals shall provide all necessary instructions for day-to-day use of the system by the end user. The manuals shall contain, as a minimum, the following information:

- Table of Contents
- System Overview (to include operation of all system features).
- Complete step-by-step instructions for performing each available function with sample screens, sample reports, and examples.
- Quick Start Guide with instructions for performing the basic and common functions.
- Updated manuals and system documentation must be provided as part of any system upgrade received by MaineDOT.

The cabinet shall additionally be provided with the following documentation:

- Operating and Maintenance manuals.
- ATC Database Printout

System Maintenance

Under this Item the Contactor, through their Vendor, shall provide operations and maintenance services of the ATC, SPM, CV system, and all system related field elements including communications and control devices for a 3-year period. This maintenance period shall begin once the project is accepted by MaineDOT. In addition to the requirements contained elsewhere within these specifications , the Contractor shall provide the following tasks:

- Provide software upgrades for the CV/SPM systems;
    - At any time that operating software updates are released by the manufacturer, whether routine enhancement updates, releases to fix software issues, or a combination of both, it shall be possible for personnel from MaineDOT to update the software in all its devices supplied as part of this project without any assistance or supervision from any other agency, firm, or persons. The device shall log which user installed the updates and provide a rollback feature to go back to the previous version in the event the update is not compatible with other system elements.
    - At any time that operating software updates are released by the manufacturer, they shall be made available to MaineDOT immediately upon release to the distributor by the manufacturer, including the release notes of the new firmware.
    - Software updates by the manufacturer shall be made available to the MaineDOT for the operating life of the devices at no additional cost to MaineDOT, except as expressly identified in the Contract documents.
    - At any time that operating software updates are released by the manufacturer, whether routine enhancement updates, releases to fix software issues, or a combination of both, it shall be possible for personnel from MaineDOT to update the software on all of its cloud-based systems without any assistance or supervision from any other agency, firm, or persons. The system supplier shall provide phone based technical support to MaineDOT personnel installing software updates.
    - The cloud-based system software shall operate under the Windows™ operating system, current version available at the time of installation. In addition, during the support period, the system supplier shall provide updates to the CMS/CV/SPM software to allow continued operation with a new windows version when the current Windows™ version no longer receives support from Microsoft.
- After system acceptance the manufacturer and supplier shall be responsible for all system operations and maintenance for a period of three years.
- Preserve the CMS/CV/SPM system to operate as designed or mitigate issues when anomalies occur.
- Signal performance measures shall be collected and retained based on a daily time schedule by MaineDOT.

- Respond to alarms, faults and communication issues.
- Prior to system acceptance, the Contractor shall be responsible for all maintenance on the systems.
- The manufacturer and supplier shall warrant the system to be free of defects for a period of one year, except that some system elements shall have a warranty of greater than one year, as shown in these specifications.
- If a unit is found to be defective during this warranty period, it will be the responsibility of the manufacturer and/or representative to assume the cost of shipping the unit to and from the factory, supplying parts and making repairs at no cost to the agencies.
- During the warranty period, the vendor shall provide a unit of the same type to make the intersection operational per the design plans.
- Each piece of equipment shall carry its own individual warranty from the equipment manufacturer and the supplier.
- Standard maintenance practices and standards compliance shall be adhered to as set forth in the contract documents.
- In the absence of a defining standard or code, all work shall be conducted using the highest standards of care and methodology normally associated with the specific activity.

The Contractor/Vendor shall conduct monitoring of the CMS/CV/SPM system operations throughout the length of the maintenance period. In addition to monitoring the Contractor/ Vendor shall implement changes to parameters associated with the CMS/CV/SPM system as approved by MaineDOT.

Note: The Contractor shall staff and provide resources to ensure a maximum twelve (12) hour response time to address signal operational issues identified and communicated by MaineDOT throughout the life on the maintenance period.

The Contractor shall be required to keep records of dates when parameter changes are implemented. These records shall be submitted by the Contractor/ Vendor to MaineDOT. A written copy shall be transmitted to MaineDOT by the first of each month.

The system must come with a minimum five (5) year software maintenance agreement to become effective when the proposed system has been accepted, in writing, by MaineDOT.

Software updates shall be provided free of charge for five (5) years from date of system acceptance. Software corrections or required modifications for proper system operation per these specifications shall be furnished to MaineDOT at no additional cost during the warranty period.

Hardware equipment shall be warrantied for three (3) years, effective when the proposed system has been accepted in writing by MaineDOT.

Third party hardware and software licenses and warranties shall be passed to MaineDOT.

License Agreement

The suppliers of the CV/SPM shall provide an unlimited software seat license to MaineDOT. If additional systems are installed and connected, any additional software licenses required shall be at the same cost as the remote licenses furnished for the initial project. Suppliers shall attach a copy of its standard Software License Agreement (SLA). The SLA, as negotiated, shall be made a part of the final equipment ordering contract. The licensing arrangement must address access to the system by agencies other than MaineDOT. The supplier shall carry out no work that will infringe on the licensing of third party hardware and software.

System Integration Testing Requirements

Upon completion of work, tests shall be conducted to ensure that the system integration has been performed properly and all requirements described and required as part of this project have been met. This includes all hardware and all software installed as part of this project. All tests shall be conducted in accordance with the approved test procedures developed by the Contractor. The Contractor shall submit test procedures and forms/checklists for review and approval to the Resident and Design Engineers. As part of the system integration testing, the Contractor will be required to verify all system and intersection dynamic graphic displays against observed field conditions. This will require that a person be in the field while another person is at central during this central to field verification of graphic displays and logging data to ensure that what the operator observes at central matches what is actually occurring in the field at each local intersection.

Verification confirms that a system meets all its specified requirements. Validation confirms that a system has achieved all of the operational needs identified in the Concept of Operations. The Contractor will be required to develop and submit a detailed system test plan. This test plan, when approved and executed, must demonstrate that the system achieves all of the operational needs identified in the Concept of Operations, all of the system requirements identified in the System Requirements document, and all of the requirements contained in the project Plans and Specifications. The successful execution of this test plan will therefore meet the requirements for system verification and validation.

The Contractor shall propose testing plans and submit the test plan(s) and procedures as detailed herein to the Resident and Design Engineers for approval prior to testing. Each of the test plans shall contain the following elements:

- Proposed date, time, and location of the testing
- Names of the Contractor personnel who will be conducting the testing
- Descriptive overview of the proposed test procedure
- List of test equipment required to perform the testing
- Test cases and test logging forms which detail every step of the test procedure:

Test logging forms shall be presented in tabular format, with separate columns for each of the following:

- Test case description detailing the test step to be performed.
- Expected result
- Actual result
- Pass/Fail
- Comments

The Contractor shall supply separate test logging forms at the time of testing for each test plan, and for each device location. The test logging forms shall show the device location, date, and the start and end times of the test.

At the end of each test logging form, there shall be signature and date locations for each of the following:

- Contractor personnel conducting the test
- MaineDOT representative witness
- Design Engineer witness

Signatures on the test logging form will signify only that the test was performed and witnessed, not that it passed or failed.

The detailed Test Plans shall be submitted to the Resident Engineer and Design Engineer no later than thirty (30) days prior to the beginning of each test phase.

The Contractor shall have approved test plans prior to submitting a request to schedule the start of any test activities. The Contractor shall notify the Resident and Design Engineers no less than fourteen (14) days prior to the beginning of any equipment or systems testing.

Testing shall provide verification and documentation that all requirements included in the Contract Documents are met. The Test Plans shall be developed by the Contractor to provide a mechanism that ensures that all contract requirements have been tested fully and verified.

If any deviations or changes to the approved Test Plans arise, it shall be resubmitted by the Contractor for review and approval by the Engineer at least fourteen (14) calendar days prior to any planned test activity stage. No tests shall be conducted until the Resident Engineer, Design Engineers have approved the test plan.

A summary of all tests shall be produced at the completion of each testing phase of the project to ensure that all requirements defined by the system are satisfied.

MaineDOT reserves the right to examine and test or retest any or all materials furnished by the Contractor for the project to determine if they meet the requirements specified within the Contract Documents.

If the MaineDOT decides that any material used in the construction of this project is defective or otherwise unsuitable, and the workmanship does not conform to the requirements of this Contract, the Contractor shall replace such defective parts and material at no cost to the Project. The times and dates of the tests shall be approved by the Resident and Design Engineers. The Contractor shall conduct all tests in the presence of the Resident and Design Engineers. Testing shall take place only on weekdays, which are official working days, unless the Resident and Design Engineers allows the test to be conducted and/or continued on weekends and non-working days. The Contractor shall make a request in writing at least fourteen (14) days prior to the proposed testing, and schedule tests only if permission is granted by MaineDOT in writing.

The Contractor shall be responsible for the conduct and documentation of the results of these tests that will be countersigned by the Resident and Design Engineers at the end of each test. The signature of the Engineers implies only proof of presence. Test results shall be packaged and submitted to the Engineers within one week of test completion. No test phase shall begin until all prior test phases have been completed, and test results have been approved by the Engineers.

The Contractor shall utilize vendor supplied or any test specific software for testing, as needed, at no additional cost.

Acceptance Testing

Upon completion of the 7-day testing period, MaineDOT and/or the Engineer shall evaluate system operations. It is expected that the complete system shall operate fully functional for a period of 30 consecutive days without malfunction. Minor malfunctions of inoperability not the fault of the Contractor, as judged by MaineDOT and/or the Engineer, are not included in the 30-day period. If the system fails to operate as intended by this specification the malfunction shall be corrected by the Contractor at its cost and a new 30- day testing period shall begin. This process shall continue until a completely operable system is demonstrated for a consecutive 30-day period.

Acceptance testing must demonstrate to MaineDOT and/or the Engineer’s reasonable satisfaction that the hardware and licensed software function in accordance with the specifications, requirements, functionalities, performance criteria or other benefits stated in documentation, proposals, and/or demonstrations given to MaineDOT.

718.14 Field Monitoring Unit (FMU) This item of work shall conform to this specification. This item shall consist of furnishing and installing a Field Monitoring Unit (FMU) and software, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and interface cables, as described herein.

For all intersections as part of the project, communications from the cloud-based system to the on-street traffic signal controllers shall be made through the Field Monitoring Unit (FMU) as shown on the plans. The Contractor shall furnish and install all materials necessary for a complete and operational connection to all project intersections as shown on the plans. All connections to the CMS cloud-based system shall be via a secure VPN network.

The FMU shall be the only remote connection device used by isolated intersections to connect to the cloud-based CMS/CV/SPM system. All connections shall be encrypted VPN tunnels. The Contractor shall coordinate all configuration settings with MaineDOT IT and the Engineer.

The FMU shall be Applied Information model AI-500-085-02 or approved equal with a documented history of meeting the following requirements while connected to the cloud-based CMS/CV/SPM system.

The Contractor shall be responsible for determining which compatible cellular provider can provide the best network coverage to the shelf mount FMU for remote communications to the CMS and provide the proper SIM card on a per site basis.

The FMU central web-based interface shall be a separate element from the CMS/CV/SPM.

The Contractor shall provide sufficient slack cable to the shelf mount FMU harness so the device can be rotated around without having to disconnect the harness.

The Contractor shall procure a high gain antenna for each project location in lieu of the standard FMU antenna.

MATERIALS: The materials for this work shall conform to the following requirements:

1. The work under this item specifies the requirements for the FMU. The FMU shall operate independent of the brand/type of intersection controller deployed in the traffic cabinet.

2. The FMU shall conform to the following requirements:
    2.1 The FMU shall function correctly between -34 degrees C and +74 degrees C.
    2.2 The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.
    2.3 The FMU shall monitor and log all Controller and cabinet faults and or alarms.
    2.4 The FMU shall be wired directly to the cabinet.

2.5 The FMU shall contain two individually switchable 120VAC outlets controlled via the cloud-based management software.

2.5.1 The following two devices shall be plugged into the outlets:

2.5.1.1 Non-Invasive detection system

2.5.1.2 C-V2X/DSRC unit

2.6 The FMU shall have an internal cellular modem running at 5G.

2.7 The FMU shall incorporate an integrated GPS and cell modem.

2.8 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.

2.9 The FMU shall be powered via a standard 120V input power.

2.10 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.

2.11 The FMU shall be configured to allow for the remote display and control of the connected traffic signal controller via the FMU manufacturer cloud hosted web-based software. This feature shall not require the end user to create a separate VPN connection to the FMU.

2.12 The FMU shall be configured to provide access to view the detection system, including the video image of each approach, via the FMU web-based software. This feature shall not require the end user to create a separate VPN connection to the FMU.

2.13 The FMU shall perform a load test of the connected Battery Backup System (BBS) batteries on a scheduled or on demand basis (if applicable).

2.14 The FMU shall include web services built into the FMU manufacturer cloud hosted web-based software to allow the installation of 3rd party software programs and the software programmed hosted at no additional charge.

2.15 The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.

2.16 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.

2.17 The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.

2.18 In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.

2.19 The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.

2.20 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.

2.21 The FMU shall include weather proof high gain antennas.

3. **Map Display FMU Management Software**

3.1 The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.

3.2 The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.

3.3 The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top of the list, followed by medium priority, low priority and then finally by intersections not in alarm.

3.4 The icons shall change to be able to clearly indicate if an intersection is offline.

3.5 Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.

3.6 The default map display position and zoom shall be configurable by user, so that the user’s view will default to show the intersections that the user is responsible for managing.

3.7 The map view shall have the ability to show Google traffic overlays on the map.

4. **Intersection Detail Display FMU Management Software**

4.1 It shall be possible to identify, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:

4.1.1 The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).

4.1.2 The time since the last communication with the device

4.1.3 The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)

4.1.3.1 The AC mains voltage (value)

4.1.3.2 The battery back-up voltage (value)

4.1.3.3 The cabinet temperature (value)

4.1.3.4 The cabinet humidity (value)

4.1.3.5 The presence of AC power (OK or Fail)

4.1.3.6 The flashing status of the intersection (OK or Flashing)

4.1.3.7 Stop Time status (OK or Stop Time Active)

4.1.3.8 The cabinet door status (Open or Closed)

4.1.3.9 The intersection fan status (Fan On or Fan off)

4.1.4 It shall be possible to view graphs of each of the value parameters in graphical form, over the recent two-week period. This includes real time graphs of:

4.1.4.1 The AC mains voltage

4.1.4.2 The battery back-up voltage

4.1.4.3 The cabinet temperature

4.1.4.4 The cabinet humidity

5. **Diagnostics and Log Display FMU Management Software**

5.1 From the device level detail within the FMU management software, it shall be possible to drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems.

5.2 It shall be possible to filter the logs by Device; by Device Type and/or by Group as well as between dates.

5.3 It shall be possible to print these selected logs to a local printer or a PDF file.

5.4 It shall be possible to export these logs to Excel on the local computer for further analysis.

6. **Alarms FMU Management Software**

6.1 The FMU management software shall have a comprehensive alarm generation capability

6.2 It shall be possible to configure alarms to be generated on any parameter becoming out of tolerance, including analog values, digital values and enumerated values.

6.3 Alarms shall be configurable to be of Low, High or Critical Priority.

6.4 The alarm priority shall be displayed throughout the FMU management software, on all displays, using color codes such as red-critical; yellow – high; and amber-low to indicate the priority of the alarm.

6.5 The current active alarms shall be accessible for view via an expandable window, to see which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

7. **Alerts FMU Management Software**

7.1 The FMU management software shall have comprehensive alerting capability, to enable the response personnel to be notified when an abnormal situation has occurred.

7.2 It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.

7.3 The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.

7.4 The intention is that the FMU management software provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

8. **Hosting and Connectivity and Service FMU / FMU Management Software**

8.1 The contractor shall supply the FMU with the FMU manufacturers 10 year options for Connectivity and Service, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:

8.1.1 Cellular Connectivity

8.1.2 No cellular overage charges

8.1.3 Extended warranty on the hardware for the period of the Connectivity and Service Agreement

8.1.4 Over-the-air software updates

8.1.5 Over-the-air security updates

8.1.6 Remote Front Panel of the connected traffic signal controller

8.1.7 SPaT message broadcast to mobile device application

8.1.8 The FMU shall be configured for SPaT data.

8.1.9 The FMU shall be supplied with the unlimited video/data streaming service.

8.1.10 The FMU shall be configured with Traffic Signal Controller remote front panel access.

8.1.11 The FMU shall be configured to supply streaming video from the detection system.

8.1.12 At the time of the shop drawing submittal, Contractor shall supply a detailed list of available FMU functions for the agency consideration

8.1.13 Future Connected Vehicles Service

718.15 Emergency Vehicle Preemption System The emergency vehicle preemption systems shall be installed in the same ATCC as the ATC.

The emergency vehicle preemption control systems shall consist of a data-encoded phase selector to be installed within the ATCC. Those units will serve to validate, identify, classify, and record the signal from the optical detectors located on support structures at the intersections. Upon receiving a valid signal from the detectors, the phase selectors shall generate a preempt call to the ATC initiating preemption operations as shown on the plans. The phase selectors shall have full ID and logging capabilities and be a rack-mounted plug-in four channel, dual priority devices. Programming the phase selectors shall be via a PC-based computer utilizing unit specific software as well as the cloud-based CMS. One copy of the software shall be supplied and licensed to MaineDOT. A hard copy of final programming data shall be left in the control cabinets. The Contractor shall supply a complete set of interface cables for phase selector to laptop connection in each controller cabinet. The phase selectors shall be connected to the Ethernet Switch and/or the FMU in each ATCC, as shown in the Plans, such that the phase selector event/system logs and unit/device configuration can be remotely accessed through the secure communications system. The Contractor shall supply and install any required converters, cables, device servers or other devices, to interface the phase selector to the Ethernet switch in each cabinet. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to satisfy the requirements as defined in these specifications.

The optical detectors shall be single input, single output units used to control one approach. All traffic signal installations shall be supplied with a single optical detector for each approach to the intersection unless otherwise noted in the major items list or as shown on the plans.

The Contractor shall install the quantity of confirmation strobes at each traffic signal location as shown in the plans or as directed by the Engineer. The confirmation strobe shall serve to validate to the driver of the emergency vehicle that the traffic signal has recognized the preemption call and will initiate the proper preemption sequence. The confirmation strobe shall be illuminated whenever any emergency vehicle preemption green is on. The confirmation strobe shall be a red lens Whelan model 1500 or approved equivalent.

The Contractor shall be responsible for the proper programming of the phase selector, orientation of the optical detectors, and all other work necessary to provide a complete and operating emergency vehicle preemption system. The Contractor may be required to field adjust the location of the optical detectors in the presence of the Engineer and the municipal Fire Department to properly detect preemption calls from approaching vehicles.

The emergency vehicle preemption installed under this project shall be functionally compatible with the proposed traffic signal control system and allow CMS based remote access to the phase selectors via FMU and/or Ethernet switch by secure VPN connection. In addition, the system shall be configured such that preemption or priority control can be initiated through the Dedicated Short-Range Communications (DSRC)/4GLTE – 5G Roadside Unit (RSU) by means of an approaching authorized vehicle with an On-Board Unit (OBU).

718.16 Single Mode Fiber Optic Cable This item of work shall conform to this specification, and with IMSA General Specification 70 for Single and Multi-Mode Fiber Optic Cable. This item shall consist of furnishing and installing 12 strand, single mode fiber optic cable, necessary splices, and appurtenances.

MATERIALS: The materials for this work shall conform to the following requirements:

1. General Requirements: All of the fiber optic cable for this project shall be from the same manufacturer and shall be 12 strand, single-mode. The Fiber Optic Cable shall meet the following requirements:

1.1. The fiber optic cable shall be designed for both aerial and underground installations, and shall be recommended for these applications by the manufacturer.

1.2. The fiber optic cable shall operate over a temperature range of -40 to 74 degrees C at a relative humidity of 10% to 90% condensing.

1.3. All fiber optic strand materials shall be non-conductive to electricity.

1.4. The fiber optic cable shall meet or exceed the following performance characteristics when tested in accordance with the following fiber optic test procedures (FOTP) from EIA/TIA-455-B Series standards:

1.4.1. When tested in accordance with FOTP-3, "Procedure to Measure Temperature Cycling Effects on Optical Fibers, Optical Cable, and Other Passive Fiber Optic Components," the change in attenuation at extreme operational temperatures (-40^0C and $+70^0$C) shall not exceed 0.2 dB/km at 1550 nm.

1.4.2. When tested in accordance with FOTP-25, "Repeated Impact Testing of Fiber Optic Cables and Cable Assemblies," the cable shall withstand 25 impact cycles. The change in attenuation shall not exceed 0.2 dB at 1550 nm.

1.4.3. When tested in accordance with FOTP-33, "Fiber Optic Cable Tensile Loading and Bending Test," using a maximum mandrel and sheave diameter of 560 mm, the cable shall withstand a tensile load of 2700 N (608 lbs). The change in attenuation shall not exceed 0.2 dB during loading and 0.1 dB after loading at 1550 nm.

1.4.4. When tested in accordance with FOTP-37, "Low or High Temperature Bend Test for Fiber Optic Cable", the cable shall withstand four full turns around a mandrel of < 10 times the cable diameter for non-armored cables and < 20 times the cable diameter for armored cables after conditioning for four hours at test temperatures of -30^0C and $+60^0$C. Neither the inner or outer surfaces of the jacket shall exhibit visible cracks, splits, tears or other openings. Optical continuity shall be maintained throughout the test.

1.4.5. When tested in accordance with FOTP-41, "Compressive Loading Resistance of Fiber Optic Cables," the cable shall withstand a minimum compressive load

of 440 N/cm (250 lbf/in) for armored cables and 220 N/cm (125 lbf/in) for non-armored cables applied uniformly over the length of the sample. The load shall be applied at the rate of 3 mm to 20 mm per minute and maintained for ten minutes. The change in attenuation shall not exceed 0.4 dB during loading and 0.2 dB after loading at 1550 nm.

1.4.6. When tested in accordance with FOTP-81, "Compound Flow (Drip) Test for Filled Fiber Optic Cable", the cable shall exhibit no flow (drip or leak) of filling and/or flooding material at 80ºC.

1.4.7. When tested in accordance with FOTP-85, "Fiber Optic Cable Twist Test," a length of cable no greater than 4 meters shall withstand IO cycles of mechanical twisting. The change in attenuation shall not exceed 0.1 dB at 1550 nm.

1.4.8. When tested in accordance with FOTP-104, "Fiber Optic Cable Cyclic Flexing Test," the cable shall withstand 25 mechanical flexing cycles around a sheave diameter not greater than 20 times the cable diameter. The change in attenuation shall not exceed 0.1 dB at 1550 nm.

2. Cable Construction: The cable shall be composed of the following elements:

2.1. Anti-buckling central member which shall prevent the cable from buckling and stretching. The central member shall consist of a dielectric glass reinforced plastic rod. The central member expansion and contraction characteristics shall be similar to the optical fibers and the fiber tubes.

2.2. Loose Buffered Tubes in which multiple fibers strands are placed inside. Each Buffer Tube shall meet the following requirements:

2.2.1. Allowed buffered tube diameters shall be 3.0 mm or 1.9mm.

2.2.2. The number of fibers inside a Buffer Tube shall not exceed 12 strands.

2.2.3. Buffer Tube material shall prevent the fiber from adhering to the inside of the tube.

2.2.4. Buffer Tubes shall be colored in accordance with TIA/EIA-598-A, “Color Coding of Optical Fiber Cables”.

2.2.5. Fiber Optic strands shall be placed loosely inside the Buffer Tube to allow for fiber expansion and contraction due to temperature changes.

2.2.6. Buffer Tube shall be filled with a water blocking gel meeting the following requirements:

2.2.6.1. Filling compound in the buffer tubes shall be a homogeneous hydrocarbon based gel with anti-oxidant additives.

2.2.6.2. The filling shall prevent water intrusion, be nontoxic, and non-irritant to skin contact.

2.2.6.3. The filling shall be non-nutritive to fungus.

2.2.6.4. The filling shall be electrically non-conductive and readily removable with conventional non-toxic solvents.

2.3. Fiber Optic Strands, which shall consist of a doped-glass cylindrical core, surrounded by a concentric cladding. An acrylate coating shall cover the fiber to add protection and color. Each fiber optic strand shall meet the following requirements:

2.3.1. Core diameter shall be 8.3 μm ± 0.5μm.

2.3.2. Cladding diameter shall be 125 μm ± 1.0 μm.

2.3.3. Core to Cladding offset shall be less than 0.8 μm.

2.3.4. Cladding Non-Circularity shall be less than 1.0 %.

2.3.5. Total coating diameter shall be 245 ± 10 μm and shall be mechanically strippable.

2.3.6. Coating color shall be in accordance with TIA/EIA-598-A, “Optical Cable Color Coding”.

2.3.7. No point discontinuity along the fiber shall have attenuation greater than 0.10 dB at either 1310 or 1550 nm.

2.3.8. Attenuation at the Water Peak shall not exceed 2.1 dB/km at 1383 ± 3 nm.

2.3.9. Mode-Field Diameter shall be 9.30 ± 0.50 μm at 1310 nm, and 10.5 ± 1.0 μm at 1550 nm.

2.3.10. Zero Dispersion Wavelength shall be between 1301.5 nm and 1321.5 nm.

2.3.11. Zero Dispersion Slope shall be less than 0.092 ps/(nm^2 * km).

2.3.12. Cable loss shall not exceed 0.4dB/Km when measured at a light wavelength of 1310nm.

2.3.13. Cable loss shall not exceed 0.3dB/Km when measured at a light wavelength of 1550nm.

2.4. The cable casing shall be composed of a minimum of two protective layers. Each layer requirements are as follows:

2.4.1. The first casing layer shall be composed of high tensile strength dielectric yarns helically stranded evenly around the cable core.

2.4.2. The second and outer most layer shall be a polyethylene jacket. The jacket shall meet the following requirements:

2.4.2.1. The jacket shall be black medium or high density polyethylene in accordance with ASTM D1248, Type II or Type III, Class C, Category 3, 4, or 5 and contain a suitable antioxidant.

2.4.2.2. The jacket shall contain carbon black to provide ultraviolet light protection.

2.4.2.3. The jacket shall have a minimum thickness of 1.4 mm.

2.4.2.4. The jacket shall have permanent affixed markings every two feet or every one meter along the cable. These markings shall contain at a minimum the cable length (in feet if markings appear every two feet or in meters if markings appear every one meter) manufacturer's name, date of manufacturer, and fiber count.

2.4.3. A ripcord shall be provided between the first and second layer.

2.4.4. All casing layers shall be non-nutritive to fungus.

3. Construction Methods: The Contractor shall meet the following construction and installation procedure when installing the fiber optic cable:

3.1. Shipping Reels: The fiber optic cable shall be shipped in reels that meet the following requirements:

3.1.1. The reels shall be designed to prevent damage to the cable during shipment and installation.

3.1.2. Each reel shall contain an identification tag with the following minimum information:

3.1.2.1. Date of Manufacture

3.1.2.2. Manufacturer's Cable Code

3.1.2.3. Fiber Count

3.1.2.4. Length of Cable

3.1.2.5. Beginning and End length markings

3.1.3. Both ends of the cable shall be accessible to provide access for testing.

3.1.4. The cable ends shall be securely fastened and shall not protrude beyond any portion of the reel in an unprotected manner to prevent the cable from becoming loose in transport.

3.1.5. Cables ends shall be sealed to prevent the escape of the water blocking material and entry of moisture during shipping, handling, storage, and installation.

3.2. Testing and Certification:

3.2.1. The personnel involved and responsible for the installation, splicing, and termination of the cable shall meet the following minimum requirements:

3.2.1.1. Documented proof of three (3) years experience with the installation of single-mode fiber optic cable, including splicing, termination, and testing.

3.2.1.2. The installation experience should be applicable to the work required for this project and shall include projects of similar or larger scope, providing mid-span access points and fusion splicing in field conditions.

3.2.1.3. The Contractor shall provide the names and phone numbers of references to the Engineer.

3.2.1.4. At least thirty (30) days prior to the installation of the fiber optic cable, the Contractor shall submit to the Engineer, documentation outlining the information above. Permission for the Engineer to contact the owner must be authorized prior to submitting the information.

3.2.2. The Contractor shall provide the Engineer with four (4) copies of the cable manufacturer's recommendations and requirements, listed below, for each fiber optic cable type and size:

3.2.2.1. A list of the cable manufacturer's approved pulling lubricants for use on the cable. No other lubricants will be permitted.

3.2.2.2. The maximum pulling tensions of the cable, which shall specify both pulling from the cable's strength member(s) and for pulling from the outer jacket.

3.2.2.3. The minimum bending radius of the cable, which shall specify a radius for both the construction and for the long-term installation.

3.2.3. Testing of the fiber optic system shall include verification by means of inspection that all fiber optic equipment has been installed in accordance with the Contract Documents.

3.2.4. Except for the two tests on the fiber optic cable that are performed prior to completion of the installation, as described below, all fiber optic communications testing shall be performed after the field installation of all equipment is complete. The tests shall validate the functionality of the fiber optic components of the project, relative to the requirements as contained in the contract. Fiber optic communications testing shall be conducted using equipment supplied by the Contractor for this purpose. If a unit fails to pass its communications test, the Contractor shall correct the problem or replace the unit and retest it until satisfactory results are achieved.

3.2.5. Prior to shipping, the manufacturer of the cable shall conduct fiber loss tests on all strands of the entire length of cable to be delivered for this project. These tests shall be conducted at both 1310 nm and 1550 nm light wavelengths. Four (4) manufacturer-certified copies of the fiber loss tests shall be delivered with the cable for review by the Engineer. If an OTDR is used for this test, then the OTDR settings shall conform to the requirements described below for the final fiber optic tests, except that bidirectional OTDR testing is not required (only unidirectional is required).

3.2.6. Upon delivery of the cable to the project site, the Contractor shall conduct fiber loss tests on all strands of the entire length of cable in the presence of the Engineer. These tests shall be conducted at both 1310 nm and 1550 nm light wavelengths. The Contractor shall provide the Engineer with four (4) certified copies of the loss test results for comparison with the tests made on the cable prior to delivery. If an OTDR is used for this test, then the OTDR settings shall conform to the requirements described below for the final fiber optic tests, except that bidirectional OTDR testing is not required (only unidirectional is required).

3.2.7. After installation of the cable is complete, the Contractor shall conduct final fiber optic tests on all strands of the entire length of each installed cable demonstrating that all requirements of this specification are met. All strands shall be tested as specified herein, both used strands as well as unused (dark) strands. These tests shall be conducted at both 1310 nm and 1550 nm light wavelengths. All testing shall be performed with an Optical Time Domain Reflectometer (OTDR), as follows:

3.2.7.1. Testing shall be conducted on all components of the fiber optic cable plant, including all strands of all fiber cables, all splices, and all terminated patch panel positions, as shown in the Plans.

3.2.7.2. The OTDR testing shall be performed bidirectionally, i.e., testing shall be conducted from both ends of each fiber segment. The optical loss for all components of the fiber optic cable plant (i.e., spans, splices, and connectors) used by the Engineer for comparison against the specification requirements shall be the average of the two readings from the two ends of each fiber segment.

3.2.7.3. The OTDR used shall internally store all fiber optic cable signatures, and the signatures shall be downloadable to a computer. Signatures of all cables tested shall be supplied by the Contractor in electronic format. The Contractor shall supply OTDR emulation software manufactured by the OTDR manufacturer which is capable of reading the stored signatures and performing all measurement and analysis on the stored signatures as if the OTDR were connected live to the fiber optic cable.

3.2.7.4. The analysis shall include, but not be limited to, readout of fiber loss per unit length, splice loss measurement (amount of loss and distance from OTDR), connector loss measurement (amount of loss and distance from OTDR), total fiber optic cable length, and generation of event tables, as well as identification and measurement of any other reflective events or faults.

3.2.7.5. The pulse width setting of the OTDR shall be set to the lowest possible setting while allowing the full length of fiber optic cable to be measured for faults or reflective events; however in no event shall the pulse width be set to a value greater than 100 ns. Further, the pulse width shall be set to a value sufficiently small so that the optical dead zone shall not extend into the cable under test by any distance.

3.2.7.6. All OTDR testing shall be performed using a launch cable of 1500 feet in length, or greater.

3.2.7.7. The OTDR A and B markers shall be placed as follows: For terminated fiber strands, the A marker shall be placed upstream of the connection between the launch cable and the cable under test. For unterminated fiber strands, the A marker shall be placed downstream of the launch cable connection, but it shall not be placed downstream of this point by a distance exceeding two percent of the length of the cable under test. The B marker shall be placed upstream of the end of the cable, but it shall not be placed upstream of this point by a distance exceeding two percent of the length of the cable under test. All OTDR traces shall show the total optical loss between the A and B markers, in units of decibels per kilometer (dB/km).

3.2.7.8. The Contractor shall document the OTDR readings by supplying hard copies of the OTDR signatures for all fiber optic cables. The Contractor shall also supply hard copies of the reflective event table for all optical fibers which shall be directly printed out from the OTDR.

3.2.8. The Contractor shall supply fiber optic cable plant loss calculations for all installed components of the cable plant demonstrating that the total plant losses for each fiber are less than the minimum optical fiber optic modem power budget by a safety margin of at least 4dB.

3.3. Installation: The Contractor shall adhere to the following installation procedures during the placement of the fiber optic cable:

3.3.1. All fiber optic cables to be installed on aerial messenger or in a conduit or duct facility shall be pulled as a unit. The Contractor shall ensure the cable is not damaged during storage, delivery and installation.

3.3.2. The cable shall not be pulled along the ground or over or around obstructions. The cable shall not be stepped on by workmen, nor run over by vehicles or equipment. All cable shall be inspected and approved by the Engineer prior to installation.

3.3.3. All cables shall be lashed to or pulled on aerial messenger cable or in conduit with a cable grip designed to provide a firm hold on the exterior covering of the cable, with heat shrinkable end caps placed on the cable ends.

3.3.4. The maximum pulling tensions and minimum bending radius shall not be violated at any time during installation, and shall be monitored at all times during installation. Prior to any installation of cable, the Contractor shall clean existing conduit and aerial messengers (if applicable), per industry standards.

3.3.5. The Contractor shall establish adequate voice communications between the cable feeding location and the cable pulling equipment prior to commencing any pulling operation. The cable reels shall be placed on the same side of the pull box with the conduit where the cable is being installed. The reel shall be made level and brought into proper alignment with the conduit or messenger section, such that the cable will pass from the top of the reel. The cable shall be fed by manually rotating the reel.

3.3.6. For underground installations, the fiber optic cable shall not be pulled through an intermediate junction box, pull box, or any other opening in the conduit, unless approved by the Engineer. The necessary length of cable to be installed shall be pulled from pull box, or cabinet to the immediate next downstream pull box, or cabinet. The remaining length of cable to be installed in the next conduit or along aerial messenger shall be carefully stacked or stored in a manner that allows that length of cable to be safely pulled into the next conduit.

3.3.7. An approved cable feeder guide shall be used between the cable reel or the storage stack and the face of the conduit to protect the cable, and to guide the cable installation. The dimensions and set-up of the feeder guide shall be such that the cable does not bend at any location to a radius less than the cable's minimum

allowable bending radius. The cable shall not be pulled over edges or corners, over or around obstructions, or through unnecessary curves or bends. The cable shall be looped in and out to cabinets and pull boxes to provide adequate slack (as specified in Section 3.5 Cable Spare of this specification) and the least amount of stress on the fibers. The Contractor shall ensure that the cable is not damaged during storage or installation.

3.3.8. Fiber optic cable ends shall be kept sealed at all times during installation, using an approved cable end cap. Tape shall not be permitted to seal the cable end. The cable end shall remain sealed until the Contractor terminates the fiber cables. Cables that are not immediately terminated shall have a minimum of six feet of slack.

3.3.9. The allowable pulling tension shall be the lesser of either of the two values below:

3.3.9.1. The cable manufacturer's recommended pulling tension from the outer jacket for the cable.

3.3.9.2. Eighty percent of the cable manufacturer's maximum pulling tension from the outer jacket.

3.3.10. The Contractor shall monitor the tension on the fiber optic cable with the use of an approved tension gauge. The gauge shall be placed sufficient distance from the take up reel, such that the tension can be read throughout the entire pulling operation.

3.3.11. When using lubricants, the Contractor shall adhere to the cable manufacturer's requirements for the proper amount, application tools and method, and removal of the lubricant from the exposed cable.

3.3.12. All cable shall run continuously from termination point to termination point as indicated on the plans or the Engineer. The Contractor shall carefully determine the length of cable to reach from termination point to termination point. Cutting of fiber optic cables at any location other than those shown on the plans shall not be permitted.

3.3.13. The Contractor shall document the locations of all splices and connections for each strand of fiber optic cable. This documentation shall show the distance in feet of fiber optic cable from the end of the cable for every splice and connection, and shall also show the cable length marking as marked on the cable for every splice and connection. Four copies of the documentation shall be furnished to the Engineer prior to testing.

3.4. Cable Termination: The Contractor shall terminate fiber optic cables in the following manner:

3.4.1. All splice installations shall be performed using a fusion splicing technique. Splice insertion loss shall not exceed 0.1 dB.

3.4.2. The Contractor shall provide all equipment and consumable supplies necessary for performing the splices.

3.4.3. Each spliced fiber shall be packaged in a protective, waterproof sleeve.

3.4.4. Bare fibers shall be completely re-coated with a protective room temperature vulcanizing (RTV) coating gel, or similar approved substance, prior to the application of the sleeve so as to protect the fiber from scoring, dirt, or microbending.

3.5. Cable Spare: The Contractor shall install spare cable as follows and as indicated by the engineer:

3.5.1. A total of 50 feet shall be stored at all splice enclosure locations inside control cabinets unless otherwise noted on the Plans. A minimum of 20 feet of slack cable shall be located on each side of the splice enclosure.

3.5.2. Cable storage shall be performed in an industry standard manner that does not violate the minimum bending radius specification of the cable.

3.5.3. All spare cable shall be hung on cable racks where provided.

718.17 Twelve (12) Position Fiber Optic Patch Panel This item of work shall conform to this specification. This item shall consist of furnishing and installing 12 Position Fiber Optic Patch Panels at the locations shown on the plans or as indicated by the Engineer.

MATERIALS: The Fiber Optic Patch Panels shall meet the following requirements:

1. The Fiber Optic Patch Panel - 12 position shall be a stand-alone unit manufactured for outdoor field cabinets.

2. The Fiber Optic Patch Panel - 12 position shall include and be capable of accommodating a minimum of 12 SC type connector sleeves.

3. The Fiber Optic Patch Panel - 12 position shall include and be capable of terminating up to 12 connectorized pigtails.

4. The Fiber Optic Patch Panel shall incorporate a hinged access door.

5. The Fiber Optic Patch Panel shall be rack, wall, or shelf mountable as required by the specific location. The patch panel shall be securely fastened in place as recommended by the manufacturer.

6. The Fiber Optic Patch Panel shall include splice trays meeting the following requirements:

    6.1 The splice trays in the Fiber Optic Patch Panel - 12 position shall be capable of holding a minimum of 24 splices.

    6.2 The splice trays shall incorporate a system to retain and provide strain relief to the fiber optic buffers tubes and connector pigtails.

    6.3 The splice trays shall incorporate grooves where the fiber optic splice can be held in place.

    6.4 Each splice tray shall incorporate a clear snap on lid.

7. The Fiber Optic Patch Panel shall include a restraining system to hold the splice trays securely in place.

8. The Fiber Optic Patch Panel shall incorporate cable guides that maintain fiber strands and fiber buffer tubes bending radius greater than the minimum allowed by the manufacturer.

9. The Fiber Optic Patch Panel - 12 Position shall use 12 connectorized pigtails to connect the fiber optic cable to the Fiber Optic Patch Panel.

10. The number of pigtails to be furnished and spliced to the fiber optic cable are shown in the fiber optic splice tables in the plans. The connectorized pigtails shall meet the following requirements:

    10.1 All fiber optic connectors shall be SC type with a PC (physical contact) 2.5 mm ceramic ferrule.

    10.2 The connector mean insertion loss shall be 0.3 dB and maximum 0.5 dB.

    10.3 The connector mean return loss shall be ≤ -59 dB and maximum of ≤ -55 dB.

    10.4 All SC connectors shall have a durability rate of less than 0.2 dB change over 500 rematings.

    10.5 Connectors shall meet ANSI/TIA EIA-604-3A requirements.

    10.6 The fiber optic strand of the connectorized pigtail shall have matching optical properties as the fiber optic strand used on the fiber optic cable.

11. The Fiber Optic Patch Panel shall incorporate a restraining mechanism to hold the fiber optic cable central member and outside jacket.

718.18 Ethernet Switch With Fiber Optic Interfaces This item of work shall conform to this specification. This item shall consist of furnishing and installing an Ethernet Switch with fiber optic interfaces, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and fiber optic patch cords, as described herein.

MATERIALS: The materials for this work shall conform to the following requirements:

1. The work under this item specifies the requirements for the Ethernet Switch with single mode fiber optic interfaces. The Ethernet Switch shall accept both RJ-45 Ethernet connection as well as single mode SC fiber optic connections. The Ethernet Switch shall be installed within the field cabinets as shown on the plans. The Ethernet Switch shall be capable of shelf mounting or wall mounting with supplied wall mount brackets.

2. The Ethernet Switch specified herein shall be a self-contained unit capable of 24-hour per day unattended operation. The Ethernet Switch shall be supplied, assembled and tested by the Contractor. The Ethernet Switch shall be of rugged design and suitable for reliable operation when mounted in the configuration as specified in these Specifications and the Plans. The Ethernet Switch shall be configured for minimum maintenance and need for adjustment after initial set-up. The Ethernet Switch shall include all software required for monitoring and updating the Ethernet Switch from a computer within the Police Department.

3. The Ethernet Switch shall have the following connections:

    3.1 Minimum of Six (6) 10/100 Mbps Ethernet ports with RJ-45 connectors that shall support the following network standards:

        3.1.1 IEEE.802.3 10 Base-T

        3.1.2 IEEE.802.3u 100 Base-T

        3.1.3 IEEE.802.1d Spanning Tree

        3.1.4 IEEE.802.1w Rapid Spanning Tree

        3.1.5 IEEE.802.1q VLAN

        3.1.6 IEEE.802.1p Class of service (CoS)

    3.2 The Contractor shall supply, install, and test all Ethernet cables required to make all connections as shown in the Plans.

    3.3 The Contractor shall supply, install, and test all fiber optic patch cords required to make all connections as shown in the Plans. Fiber optic patch cords shall meet the following requirements:

3.3.1 Each patch cord shall contain one single mode fiber strand with a factory terminated SC type connector.

3.3.2 Each patch cord shall be 3 feet in length.

3.3.3 The patch cords shall operate without degradation over a temperature range of -34 to 74 degrees Celsius at a relative humidity of 10% to 90% condensing.

3.3.4 All fiber optic strands shall be nonconductive to electricity.

3.3.5 The Fiber Optic Patch Cord shall meet or exceed the following performance characteristics:

3.3.5.1 Fiber Optic Patch Cords shall consist of tight buffered optical fibers of the type used for interconnect cable with a 900 µm secondary buffer.

3.3.5.2 The fiber shall be surrounded by aramid fiber yarn strength members and a UL listed OFNR, UV resistant and fungus resistant yellow outer jacket 3mm in diameter.

3.3.5.3 The optical fibers shall be 100 kpsi proof tested and have an attenuation change no greater than .05 dB/km.

3.3.5.4 The attenuation of the Fiber Optic Patch Cord shall not exceed 1.0 dB/km at 1310 nm and 0.75 db/km at 1550 nm.

3.3.5.5 The SC type connector shall meet the following requirements:

3.3.5.5.1 All fiber optic connectors shall be SC type with a PC (physical contact) 2.5 mm ceramic ferrule.

3.3.5.5.2 The connector mean insertion loss shall be 0.3 dB and maximum 0.5 dB.

3.3.5.5.3 The connector mean return loss shall be -59 dB and maximum of -55 dB.

3.3.5.5.4 All SC connectors shall have a durability rate of less than 0.2 dB change over 500 rematings.

3.3.5.5.5 Connectors shall meet ANSI/TIA EIA-604-3A requirements.

3.4 Two single mode fiber optic ports, each containing two SC type connectors that shall support the following network standards:

3.4.1 IEEE.802.3u 100 Base-FX

3.4.2 IEEE.802.1d Spanning Tree

3.4.3 IEEE.802.1w Rapid Spanning Tree

3.4.4 IEEE.802.1q VLAN

3.4.5 IEEE.802.1p Class of Service (CoS)

3.5 The two single mode fiber optic ports shall meet the following optical requirements:

3.5.1 The two optical emitters shall be laser diode type.
3.5.2 The two single mode fiber optic ports shall have an operating wavelength of 1310 nm, single mode.
3.5.3 The two single mode fiber optic ports shall each have an optical power budget of 13dB, minimum.
3.5.4 The two optical emitters shall have a transmit power of -15dbM, minimum.
3.5.5 The two optical detectors shall have receive sensitivity of -28dbM, worst case.

4. The Ethernet Switch shall be a fully managed Ethernet layer 3 device.

5. The Ethernet Switch shall have a switching method of store and forward.

6. The Ethernet Switch shall support the following protocols:

6.1 RTP/ID

6.2 TCP/IP with full multicast support

6.3 DNS

6.4 DHCP

7. The Ethernet Switch shall support the following network management protocols:

7.1 SNMP V2c

7.2 RMON for Ethernet agent

7.3 Telnet/TFTP

8. The Ethernet Switch shall have an operating temperature range of -34°C to +74° C

9. The Ethernet Switch shall have a power usage of +12VDC to +24VDC at 1 amp or less. This shall be provided by an included plug-in type AC adapter.

718.19 Pedestrian Crossing System Pedestrian crossings must have 16-inch by 18-inch countdown pedestrian signals that count down during the pedestrian clearance interval. The pedestrian countdown modules shall be GE Lumination GT1 Series in 16 inch – McCain Model 1000 Series housings (exterior finish per Special Provision 643 color specification by municipality) or approved equal.

The Accessible Pedestrian Signal (APS) push buttons with locator tones shall be at a minimum Campbell Company Advisor Model A915 or approved equal. Signs shall be posted at each audible signal push button stating which street may be crossed based upon the related push button. Where APS are proposed to be separated by a distance of at least 10 feet and in accordance with Section 4E.11.07 of the Manual on Uniform Traffic Control Devices (MUTCD), the audible walk indication shall be a percussive tone. When using Campbell buttons, MaineDOT has selected "Perc EW 30" for east/west concurrent PED crossings and "Perc NS 70" for north/south PED crossings.

If field modifications dictate that buttons be moved to the same pole or are separated by less than 10 feet, audible walk interval messages should be used as follows:

- For locations with concurrent pedestrian phases – for example "Hogan Road, Walk sign is on to cross." The name of the street to cross at locations with concurrent pedestrian phases will change at each audible push button.

The audible push button identification information messages used during the non-walk phases should be as follows:

- For locations with concurrent pedestrian phases – for example "Wait to cross Hogan Road."

All controllers are be set so that a pedestrian actuation does not knock the intersection out of coordination.

2020 STANDARD DETAIL UPDATES

Standard Details and Standard Detail updates are available at:
http://maine.gov/mdot/contractors/publications/standarddetail/

Detail #	Description	Posted Date
502(06)	Concrete Sidewalk on Bridges	9/22/2025
502(19)	Bridge Drains	3/17/2023
502(15)	Bridge Drains	3/17/2023
502(20)	Bridge Drains	3/17/2023
502(23)	Bridge Drains	3/17/2023
502(24)	Bridge Drains	3/17/2023
502(25)	Bridge Drains	3/17/2023
502(26)	Bridge Drains	3/17/2023
504(07)	Diaphragm & Crossframe Notes	3/17/2023
507(04)	Steel Bridge Railing	9/22/2025
507(05)	Steel Bridge Railing	9/22/2025
507(06)	Steel Bridge Railing	9/22/2025
507(07)	Steel Bridge Railing	9/22/2025
507(14)	Steel Bridge Railing	9/22/2025
507(15)	Steel Bridge Railing	9/22/2025
507(20)	Steel Approach Railing 3-Bar	2/11/2021
507(21)	Steel Approach Railing 3-Bar	2/11/2021
507(22)	Steel Approach Railing, 3 Bar	9/22/2025
507(23)	Steel Approach Railing, 3 Bar	9/22/2025
507(26)	Steel Approach Railing, 3 Bar	9/22/2025
507(27)	Steel Approach Railing	9/22/2025
507(39)	Barrier – Mounted Steel Bridge Rail	9/22/2025
526(01)	Portable Concrete Barrier	1/14/2021
526(01A)	Portable Concrete Barrier	1/14/2021
526(01B)	Portable Concrete Barrier	1/14/2021
526(02)	Portable Concrete Barrier	1/14/2021
526(02A)	Portable Concrete Barrier	1/14/2021
526(03)	Portable Concrete Barrier	1/14/2021
526(04)	Portable Concrete Barrier	1/14/2021

526(04A)	Portable Concrete Barrier	1/14/2021
526(04B)	Portable Concrete Barrier	1/14/2021
526(05)	Permanent Concrete Barrier	3/17/2023
526(21)	Permanent Concrete Barrier	3/17/2023
526(22)	Concrete Transition Barrier	9/22/2025
526(23)	Concrete Transition Barrier	9/22/2025
526(23)A	Concrete Transition Barrier	9/22/2025
526(34)	Concrete Transition Barrier	9/22/2025
526(35)	Concrete Transition Barrier	9/22/2025
526(36)	Concrete Transition Barrier	9/22/2025
526(37)	Concrete Transition Barrier	9/22/2025
526(37) A	Concrete Transition Barrier	9/22/2025
526(38)	Concrete Transition Barrier	9/22/2025
526(39)	Texas Classic Rail	3/17/2023
526(55)	Texas Classic Rail	3/17/2023
603(10)	Concrete Pipe Ties	6/10/2021
605(01)	Underdrain	7/8/2022
605(01)	Underdrain Notes	7/8/2022
606(17)	Midway Splice Guardrail Transition	6/10/2022
606(21)	Guardrail Type 3 – Single Rail Bridge Mounted	9/22/2025
606(22)	Guardrail Treatment over Buried Structures	9/22/2025
606(23)	Standard Bridge Transition – Type “1”	2/11/2021
606(24)	Bridge Transition – Type “1A”	9/22/2025
606(25)	Bridge Transition – Type “2”	9/22/2025
607(10)	Snow Fence Details (New Detail)	9/22/2025
607(11)	Snow Fence Details (New Detail)	9/22/2025
607(12)	Snow Fence Details (New Detail)	9/22/2025
607(13)	Snow Fence Details (New Detail)	9/22/2025
607(14)	Snow Fence Details (New Detail)	9/22/2025
607(15)	Snow Fence Details (New Detail)	9/22/2025
607(16)	Snow Fence Details (New Detail)	9/22/2025
608(02)	Detectable Warnings	6/10/2021
609(08)	Precast Concrete Transition Curb	9/22/2025
609(09)	Precast Concrete Vertical Curb	9/22/2025
627(07)	Crosswalk	2/22/2022
627(08)	Crosswalk	2/22/2022

643(11)	ATCC Cabinet	12/14/2020
645(06)	H Beam Posts Highway Signing	12/17/2024
645(21)	Overpass Mounted Sign Support Highway Signing	9/22/2025
645 (22)	Overpass Mounted Sign Support Highway Signing	9/22/2025
801(10) Pavement Transition at Bridge	DISCONTINUE THIS STD DETAIL	9/22/2025
801(11)	Pedestrian Ramp Notes	11/20/2023
801(12)	Pedestrian Ramp Requirements	11/20/2023
801(13)	Ramp Length Table	11/20/2023
801(14)	Parallel Pedestrian Ramp	11/20/2023
801(15)	Perpendicular Pedestrian Ramp – Option 1	11/20/2023
801(16)	Parallel Pedestrian Ramp – Option 2A	11/20/2023
801(17)	Perpendicular Pedestrian Ramp – Option 2A	11/20/2023
801(18)	Parallel Pedestrian Ramp – Option 2B	11/20/2023
801(19)	Perpendicular Pedestrian Ramp – Option 2B	11/20/2023
801(20)	Parallel Pedestrian Ramp – Option 3	11/20/2023
801(21)	Perpendicular Pedestrian Ramp – Option 3	11/20/2023
801(22)	Side Street Pedestrian Ramp	11/20/2023
801(23)	Parallel Pedestrian Ramp – Esplanade	11/20/2023
801(24)	Perpendicular Pedestrian Ramp – Esplanade	11/20/2023
801(25)	Island Crossings	11/20/2023
801(26)	Blended Transition	11/20/2023
801(26)	Blended Transition	1/19/2024
801(27)	Pedestrian Ramp Adjacent to Driveway or Entrance	11/20/2023
802(05)	Roadway Culvert End Slope Treatment	1/03/2017
802(05)	Roadway Culvert End Slope Treatment	11/01/2024

SUPPLEMENTAL SPECIFICATIONS
(Corrections, Additions, & Revisions to Standard Specifications – March 2020)

SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions

Construction Easement revise this definition by removing it in its entirety and replace with; **"A right acquired by the Department for a specific use of private property outside of the established Right-of-Way. Examples include but are not limited to Drainage Easements, Construction and Maintenance Easements, and Slope Easements. Construction Easement areas, including Temporary Construction Limits and Temporary Road Limits, outside of the Right-of-Way remain private property. No use other than to access and perform the specified work activity is permitted without written permission of the owner."**

Construction Limit Line Remove this definition in its entirety.

Holidays Amend this paragraph by adding "**Juneteenth**" between 'Memorial Day' and 'Independence Day'.

Plans Revise this paragraph by removing "**Standard Details, Supplemental Standard Details**" from the first sentence.

Project Limits Revise this definition by removing it in its entirety and replacing it with: **"Areas within the Right-of-Way, Construction Easements, or Temporary Construction Limits shown on the Plans or otherwise indicated in the Contract. If no Project Limits are indicated in the Contract, the Project Limits shall be determined by the Department. For a related Maine statute, see 23 MRSA § 653. "**

Right-Of-Way Revise this definition by removing it in its entirety and replacing it with: **"The area of land, property, or interest therein, acquired for or devoted to the Project or other purposes. Portions of the Right-of-Way may be used for storage of materials and equipment and the location of engineering facilities, subject to written approval by the Department."**

Amend this Section by adding the following two definitions (that replace Construction Limit Line);

Temporary Construction Limits The area within which the Contractor may access and perform the Physical Work and outside of which Work may not be performed without written authorization by the property owner.

Temporary Road Limits The area within which the Contractor may construct and maintain a temporary detour for maintenance of traffic.

SECTION 102
BIDDING

102.11 Bid Responsiveness Revise the paragraph that states
"The Bid is not signed by a duly authorized representative of the Bidder." So that it reads:

"**The Bid is not signed by a duly authorized representative of the Bidder.**
- **Properly submitted electronic bids meet this requirement.**
- **Paper bids must include at least one signed copy of the Contract Agreement Offer & Award form**."

SECTION 103
AWARD AND CONTRACTING

103.3.1 Qualification Requirement for Award Revise this subsection so that it reads:

"**103.3.1 Qualification Requirement for Award If the Notice to Contractors lists a Prequalification requirement, the Apparent Successful Bidder must successfully complete the Prequalification process as a condition of Award. The Apparent Successful Bidder who does not already hold an Annual Prequalification shall have 21 days to provide the Department with their Prequal documents or the Department may move on to the next low bidder."**

SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES

104.2.1 Furnishing of Right-of-Way Revise this subsection by removing it in its entirety and replace with the new subsection:

"104.2.1 Furnishing of Property Rights The Department will secure all necessary rights to real property within the Project Limits shown on the Right-of-Way Plans that are provided with the Bid Documents. For related provisions, see Sections 104.3.2 – Furnishing of Other Property Rights, Licenses and Permits and 105.4.5 - Maintenance of Existing Structures. For related definitions, see Construction Easements and Right-of-Way."

104.3.2 Furnishing of Other Property Rights, Licenses and Permits Revise this subsection by replacing "104.2.1 Furnishing of Right-of-Way" with "**104.2.1 Furnishing of Property Rights".**

SECTION 105
GENERAL SCOPE OF WORK

Amend this Section by adding this new sub-section:
105.8.8 Protected Species If the Contractor witnesses a bat (dead or alive), any activities that may injure any live bats must cease immediately and the Contractor shall contact the

Resident. Dead and/or injured bats will be collected by the Department. Work in the vicinity of the live/dead bat sighting will not resume until the Department confirms it is acceptable to do so.

If the Contractor observes an active bird nest within the project limits, any activities that may disturb the nest or injure birds (i.e., nesting adults, chicks, eggs) must cease immediately, and the Contractor shall contact the Resident.

Amend this Section by adding this new sub-section to cover incidents in the field:
105.6.5 Survey Control Markers **If a survey control marker will be disturbed by Work on a project, the Resident shall be informed a minimum of 2 weeks prior to performing any Work that may disturb the marker. If a survey control marker is accidentally disturbed by Work on a project, the Resident shall be informed immediately. A disturbed marker will remain the property of the Department.**

105.10.1.4 Race-conscious Project Goals Revise the second paragraph of this section so it reads as follows:
*"***At the time of the bid opening, all Bidders shall submit with their bid a Disadvantaged Business Enterprise (DBE) Commitment Form provided by the Department. This form will list the DBE and non-DBE firms that are proposed to be used during the execution of the Work. This form must be filled out in its entirety. The dollar total of each commitment shall be totaled and a percentage determined.***"*

105.10.2 Requirements Applicable to All Contracts Under section A, number 2, in the first sentence of the first paragraph, revise this Section by replacing the word "handicap" in two places with the word "disability" so it now reads:

"2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, State that all qualified applicants will receive consideration for employment without regard to race, color, sexual orientation, religious creed, sex, national origin, ancestry, age, physical disability, or mental disability."

105.10.1.6 Bidders' List Survey This section shall be revised to meet the May 9, 2024 CFR changes as follows:
Revise the title of this Section to "**Bidders' List**" by removing the word "**Survey**".
Revise the current information required to:

(i) Firm name;
(ii) Firm address including ZIP code;
(iii) Firm's status as a DBE or non-DBE;
(iv) Race and gender information for the firm's majority owner;
(v) NAICS code applicable to each scope of work the firm sought to perform in its bid;
(vi) Age of the firm; and

(vii) The annual gross receipts of the firm. You may obtain this information by asking each firm to
indicate into what gross receipts bracket they fit (*e.g.*, less than $1 million; $1-3 million; $3-6 million; $6-10 million; etc.) rather than requesting an exact figure from the firm.

Revise this section by removing the paragraph beginning with "This information…" and replacing it with the following:
"This data is required from all bidders for federally assisted contracts to be submitted with their bids as this information is critical in determining the availability of DBE Businesses relative to other businesses that do similar work."

SECTION 106
QUALITY

106.6 Acceptance Revise this Subsection by replacing the paragraph beginning with "Acceptance of Hot Mix Asphalt Pavement will be based" with:

"Acceptance of Hot Mix Asphalt Pavement will be based on Method A or C Statistical Acceptance, or Method B or D Acceptance as specified. The method of acceptance for each item is defined in Special Provision, Section 403, Hot Mix Asphalt Pavement. When items of Hot Mix Asphalt Pavement are not so designated, Method A will be utilized whenever there are more than 1000 tons per Hot Mix Asphalt Pavement item, and Method B will be utilized when there are less than or equal to 1000 tons per Hot Mix Asphalt Pavement item."

Revise Subsection "B" by removing it and replacing it with:

"B. Items not designated for Statistical Acceptance will utilize Method B or D Acceptance testing to validate the quality of the material incorporated into the Project. For material paid under Item 403.209 – Method D, or designated to be visually accepted, the Contractor shall provide the Department with a Certification Letter that indicates that the material supplied complies with the Specifications. Test results representative of the certified material shall be attached to the letter.

The Department will randomly sample and test the certified Material for properties noted in Table 1 of Section 502 - Structural Concrete or Table 14 of Section –401.21 Acceptance Method B & D. Material will be subject to rejection as noted in Structural Concrete Section 502.195 - Quality Assurance Method C Concrete or Hot Mix Asphalt, Section 401.2022 Pay Adjustment – Method B & D."

106.7.1 Standard Deviation Method Revise 106.7.1, subsection H by removing the following from the first paragraph:

"Method B: PF = [70 + (Quality Level * 0.33)] * 0.01"
106.9.1 Warranty by Contractor Revise the third paragraph of this section so that it reads:

"**For a related provision regarding obligations regarding plantings, see section 621.36 – Maintenance Period.** "

SECTION 107
TIME

107.3.1 General Amend this paragraph by adding "**Juneteenth**" between 'Patriot's Day' and 'the Friday after Thanksgiving'.

SECTION 108
PAYMENT

108.2.3 Mobilization Payments Replace Standard Specification 108.2.3 – Mobilization Payments with the following:

"**108.2.3 Mobilization Payments "Mobilization" includes the mobilization and demobilization of all resources as many times as necessary during the Work.**

Percent Mobilization Bid will be determined by taking the amount Bid for Mobilization and dividing by the Total Contract Amount less Mobilization. Mob/(Total Contract – Mob).

Payment will be made at the following intervals:

% Mobilization Bid	% Mobilization Paid at Contract Award	% Mobilization Paid after the Department determines 50% of the work is Complete	% Mobilization Paid at Final Acceptance
10% or less	50%	50%	
More than 10% to 15%	33%	33%	34%
More than15% to 20%	25%	25%	50%
More than 20% to 30%	15%	15%	70%
Greater than 30%	10%	10%	80%

108.3 Retainage Revise the third paragraph of this section so that it reads:

"Upon Final Acceptance, and determination by the department that there are no claims either by or on the Contractor or Subcontractors; no over payments by the department; no LDs due; and no disincentives due, the Department will reduce Retent to 1% of the original Contract Award amount, or $100,000, whichever is less, as it deems desirable and prudent."

108.4.1 Price Adjustment for Hot Mix Asphalt Revise this section by removing it in its entirety and replacing it with the following:

"108.4.1 Price Adjustment for Hot Mix Asphalt: For each Contract, a price adjustment for performance graded binder will be made for the following pay items, when the total quantity of Hot Mix Asphalt included in these items is in excess of 500 tons, based on the estimated quantities of these items at the time of bid.

Item 403.102	**Hot Mix Asphalt – Special Areas**
Item 403.207	**Hot Mix Asphalt - 19 mm**
Item 403.2071	**Hot Mix Asphalt - 19 mm (Polymer Modified)**
Item 403.2072	**Hot Mix Asphalt - 19 mm (Asphalt Rich Base)**
Item 403.208	**Hot Mix Asphalt - 12.5 mm**
Item 403.2081	**Hot Mix Asphalt - 12.5 mm (Polymer Modified)**
Item 403.2084	**Hot Mix Asphalt - 12.5 mm (Highly Modified HiMAP)**
Item 403.209	**Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)**
Item 403.210	**Hot Mix Asphalt - 9.5 mm**
Item 403.2101	**Hot Mix Asphalt - 9.5 mm (Polymer Modified)**
Item 403.2104	**Hot Mix Asphalt - 9.5 mm (Thin Lift Surface Treatment)**
Item 403.21041	**Hot Mix Asphalt - 9.5 mm (Polymer Modified Thin Lift Surface Treatment)**
Item 403.211	**Hot Mix Asphalt – Shim**
Item 403.2111	**Hot Mix Asphalt – Shim (Polymer Modified)**
Item 403.212	**Hot Mix Asphalt - 4.75 mm (Shim)**
Item 403.213	**Hot Mix Asphalt - 12.5 mm (base and intermediate course)**
Item 403.2131	**Hot Mix Asphalt - 12.5 mm (base and intermediate course Polymer Modified)**
Item 403.2132	**Hot Mix Asphalt - 12.5 mm (Asphalt Rich Base and intermediate course)**
Item 403.301	**Hot Mix Asphalt (Asphalt Rubber Gap-Graded)**
Item 461.13	**Light Capital Pavement**
Item 461.210	**9.5 mm HMA - Paver Placed Surface**
Item 461.2101	**Hot Mix Asphalt - 9.5 mm (Polymer Modified)**
Item 461.216	**Hot Mix Asphalt (Shim)**
Item 462.30	**Ultra-Thin Bonded Wearing Course**
Item 462.301	**Polymer Modified Ultra-Thin Bonded Wearing Course**

Price adjustments will be based on the variance in costs for the performance graded binder component of hot mix asphalt. They will be determined as follows:

The quantity of hot mix asphalt for each pay item will be multiplied by the performance graded binder percentages given in the table below times the difference in price between the base price and the period price of asphalt cement. Adjustments will be made upward or downward, as prices increase or decrease.

Item 403.102–6.2%
Item 403.207–5.2%
Item 403.2071–5.2%
Item 403.2072–5.8%
Item 403.208–5.6%
Item 403.2081–5.6%
Item 403.2084 – 6.2%
Item 403.209–6.2%
Item 403.210–6.2%
Item 403.2101–6.2%
Item 403.2104–6.2%
Item 403.21041–6.2%
Item 403.211–6.2%
Item 403.2111–6.2%
Item 403.212–6.8%
Item 403.213–5.6%
Item 403.2131–5.6%
Item 403.2132–6.2%
Item 403.301–6.2%
Item 461.13–6.7%
Item 461.210 – 6.4%
Item 461.2101 – 6.4%
Item 461.216 – 6.7%
Item 462.30–0.0021 tons/SY
Item 462.301–0.0021 tons/SY"

SECTION 110
INDEMNIFICATION, BONDING, AND INSURANCE

110.3.2 Commercial General Liability Revise the last sentence in this Section that starts with "The coverage shall also…" and add a sentence to the end so that it reads:

"**The coverage shall also include protection against damage claims due to explosives, collapse, and underground coverage. No endorsement excluding damage caused by subsidence, earth movement, and/or earth pressure shall be permitted.**"

110.3.9 Administrative & General Provisions Amend this subsection by adding "**Automobile Liability**" under letter A) Additional Insured to the list of exceptions.

10. Assurance Required by 49 CFR: 26.13(a)(b) Revise this section by removing it in its entirety and replacing it with the following:

"a. MaineDOT shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT-assisted contract or in the administration of its DBE Program or the requirements of 49 CFR part 26. MaineDOT shall take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts. MaineDOT's DBE Program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. The implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the MaineDOT of its failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the MaineDOT of its failure to carry out its approved program, the Department may impose sanctions as provided for under 49 CFR Part 26, and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Remedies Act of 1986 (31 U.S.C. 3801 et seq.). This language will appear in financial assistance agreements with sub-recipients.

b. The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, including, but not limited to:

1. **Withholding monthly progress payments;**
2. **Assessing sanctions;**
3. **Liquidated damages; and/or**
4. **Disqualifying the contractor from future bidding as non-responsible."**

SECTION 206
STRUCTURAL EXCAVATION

206.01 Description – *Structural Earth Excavation, Below Grade* delete the entire sentence and replace with "**shall consist of the removal of excavation required for unknown or unanticipated subsurface condition. See 206.04 – Method of Measurement for pay limits**."

206.04 Method of Measurement – Drainage and Minor Structures Paragraph 1, sentence 2, delete the remainder of the sentence beginning with "….provided the maximum allowable…"And replace with: **"….in accordance with the following limits:"**

- **Vertical pay limits:**

- **Below a plane parallel with and 12 inches below the bottom of the drainage or minor structure or**
- **Below the excavation limits shown in the Bid Documents; whichever is greater.**

- **Horizontal pay limits – The maximum allowable horizontal dimensions shall not exceed those bounded by vertical surfaces 18 inches outside the base, or extreme limits of, the structure, and to the vertical neat lines of underdrain trenches, as shown in the Contract Documents.**

SECTION 401
HOT MIX ASPHALT PAVEMENT

401.19 Contractor Quality Control Amend this Section by adding the following to the end:
"Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all items covered by the QCP as identified in Special Provision 403."

SECTION 501
FOUNDATION PILES

501.044 Special Requirements for Steel Pipe Piles and Steel Casings Amend this section by deleting it in its entirety and replacing with:

Pipe piles shall be driven closed ended, unless otherwise specified. When open-ended pipe piles are specified or when the ends are not completely closed ended when driven, the inside of the pile shall be thoroughly cleaned out, and the inside walls cleaned by jetting or other means approved by the Resident. The sediment control required for the cleaning operations shall be covered in the Contractor's SEWPCP.

Pipe piles shall be inspected and approved by the Resident immediately before concrete is placed in them. They shall be free from rupture and undue deformation and shall be free from water unless the Resident determines that the concrete can be placed without damage to the pile and such that the discharged water will be contained. The Contractor shall provide lights and other equipment necessary to enable the Resident to inspect each pipe pile.

Portland cement concrete for filling the pipe piles shall be placed in one continuous operation to fill the pile completely without causing water contamination. An internal type vibrator shall be used in the top 25 feet. Pile heads shall be protected and cured in accordance with Section 502, Structural Concrete.

The placing of concrete and the driving of piles shall be scheduled so that fresh and setting concrete will not be injured by the pile driving.

Concrete shall not be placed in pipe piles until pile driving has progressed beyond a radius of 15 feet from the pile to be concreted. If pile heave is detected for pipe piles that have been filled with concrete, the piles shall be redriven to the original position after the concrete has attained sufficient strength and a proper hammer-pile cushion system, is in place and is satisfactory to the Resident.

When a reinforcing steel cage is specified, it shall be placed inside the piles to allow for a minimum of 2 inches of concrete cover and the piles shall be filled with concrete to the elevation shown on the Plans.

Full-length pipe piles and steel casings shall be used wherever practicable; however, splicing may be permitted when approved by the Resident. The method of splicing shall be as follows:

a. Steel pipe piles and steel casings shall be spliced by full penetration butt joint welds.

b. When the pipe piles and steel casings are to be spliced while in a vertical position, splicing shall be accomplished utilizing single-bevel groove welds with the use of back-up rings. When the pipe piles and steel casings are to be spliced while in a horizontal position, splicing shall be accomplished utilizing single-vee groove welds with the use of back-up rings.

c. Welded joints shall conform to the Standard Details.

501.047 Splicing Piles Amend this section by deleting it in its entirety and replacing it with:

Full-length piles shall always be used wherever practicable. When full-length piles cannot be used, the number of splices, locations, and details shall be noted in the QCP. Piles fabricated from multiple pieces will be acceptable only if they comply with the following:

H-Beam Piles [a]		Pipe Piles and Steel Casings [a,b]	
Lengths	**Maximum No. Field Splices**	**Lengths**	**Maximum No. Field Splices**
Less than 20 ft.	**0**	**Less than 20 ft.**	**0**
Over 20 – 35 ft.	**1**	**Over 20 – 40 ft.**	**1**
Over 35 – 79 ft.	**2**	**Over 40 – 60 ft.**	**2**
Over 79 ft.	**1 per 40 ft.**	**Over 60 – 80 ft.**	**3**
		Over 80 ft.	**1 per 20 ft.**
[a] Pile lengths less than 10 feet will not be spliced, except as the final (top) section of the pile. **[b] Where pipe piles are used for pile bent piers, no splices will be allowed in the length of pile from the cutoff elevation to 2 feet below the channel bottom.**			

When pre-planned splicing is approved, the pile piece of lesser length shall be placed at the tip of the pile (the first part of the pile that enters the ground).

When splicing is allowed, the work shall be done in accordance with the following:

A. Welding shall be done in accordance with the requirements of the AWS D1.1 welding code.
B. Qualify welders in accordance with the most recent edition of the AWS D1.5 code.
C. Submit a written Weld Procedure Specification (WPS) for each joint to be included as part of the QCP. The WPSs shall be provided to the Fabrication Engineer for review and approval prior to beginning welding. Provide copies of the approved WPSs to the welder, QC Inspector and Resident prior to beginning welding. Welding performed without an approved WPS and approved QCP will be considered Unacceptable Work.
D. Provide a list of qualified welders with copies of their AWS certifications to the Fabrication Engineer for review prior to beginning welding. Welders shall have in their possession, at the time of welding, a valid certification for the process and position to be used in production from the AWS. The welder shall show the Resident their credentials upon request.
E. The Contractor shall only use electrodes that are on the Department's Qualified Products List for Welding Electrodes or shall submit alternative electrodes for review and approval by the Fabrication Engineer. Electrodes used shall match those approved for use in the WPS.
F. Welding shall not be done: When the temperature in the immediate vicinity of the weld is below 0°F; when the surfaces are damp or exposed to rain, snow, or high wind; or when the welders or welding operators are exposed to inclement conditions.
G. The pile shall be preheated to and maintained at 150°F minimum, within 6 inches from the joint during welding.
H. Power sources for welders shall have meters indicating amperage/voltage that have been calibrated within 1 year at the time of welding.
I. The Contractor shall provide the Department with notice, a minimum of, 7 Days prior to the start of any welding.
J. The Contractor shall provide a QC Inspector to perform QC for the welds in accordance with the AWS D1.1 welding code. The QC Inspector shall be an AWS Certified Welding Inspector (CWI) in conformance with the requirements of AWS QC1, Standard for AWS Certifications of Welding Inspectors. The Contractor may submit, in lieu of a CWI, an alternative QC Inspector with documented training and experience in metals fabrication, inspection, and testing for approval by the Fabrication Engineer. The QC Inspector shall be someone other than the welder performing the welds to be inspected.
K. The QC Inspector shall inspect all production stages of the welded splice to ensure that workmanship and materials meet the requirements of the AWS D1.1 welding code and the Contract. The QC Inspector shall submit a signed record of all weld inspection documentation to the Resident after welding is completed.

Record of weld inspection shall include, but not be limited to, the following:

1. Name of QC Inspector
2. Project WIN and Location
3. Date
4. Weather conditions
5. Type, size, length, and location of welds.

6. **Confirmation of appropriate equipment and materials used, including proper handling of welding electrodes.**
7. **Confirmation that welder has approved WPS onsite, and welding is performed in accordance with approved WPS.**
8. **Confirmation that welder is qualified to perform work per approved WPS. Include name and certifications of qualified welder who performed the work.**
9. **Confirm that 100% visual testing, in accordance with AWS D1.1 Table 8.1, has been conducted and any subsequent repairs are made prior to non-destructive testing (NDT).**
10. **Document NDT testing including name of NDT technician, NDT personnel qualifications, type and extent of NDT testing performed, and include NDT testing reports provided by the NDT testing technician.**

L. Piles shall not be driven until all pile welding has been inspected and accepted by the Department.

501.0471 Specific Requirements for Splicing H-Beam Piles

A. Damaged material shall be removed from the end of the driven pile. Lifting holes shall be repaired or trimmed off. The ends of both pieces to be spliced shall be cut off square with the longitudinal axis of the pile and beveled per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. The Contractor shall use an approved mechanical splicer or a full penetration butt weld for the entire cross section of the pile. Mechanical splicers shall be installed per the manufacturer's recommendations, except that the flanges shall be welded using a complete joint penetration weld, per the AWS D1.1 welding code.

C. In addition to the 100% visual testing (VT) performed by the QC Inspector, the Contractor shall perform NDT on the first two welded splices of the same type/size. The welds shall be radiographically (RT) or ultrasonically (UT) tested for their full length for acceptance per Table 8.2 of AWS D1.1. If both RT/UT-tested splices are determined to be acceptable, no further NDT will be required. If either of the first two RT/UT-tested splices contain defects warranting rejection, RT/UT testing of splices shall continue until two consecutive splices are found to be acceptable.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.0472 Specific Requirements for Splicing Steel Pipe Piles and Steel Casings

A. Damaged material shall be removed from the end of the driven pile. Lifting holes shall be trimmed off. The ends of both pieces to be spliced shall be cut off square with the

longitudinal axis of the pile and beveled per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Splices shall be welded using an AWS D1.1 Complete Joint Penetration butt weld with a backer ring.

C. In addition to the 100% VT performed by the QC Inspector, the Contractor shall perform NDT on the first two welded splices of the same type/size. The welds shall be RT or UT tested for their full length for acceptance per Table 8.2 of AWS D1.1. If both RT/UT-tested splices are determined to be acceptable, no further NDT will be required. If either of the first two RT/UT-tested splices contain defects warranting rejection, RT/UT testing of splices shall continue until two consecutive splices are found to be acceptable.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.048 Prefabricated Pile Tips Amend this section by deleting it in its entirety and replacing it with:

Welding of pile tips shall be done in accordance with the following:

A. Welding shall be done in accordance with the requirements of the AWS D1.1 welding code.

B. Qualify welders in accordance with the most recent edition of the AWS D1.5 code.

C. Submit a written WPS for each tip to be included as part of the QCP. The WPSs shall be provided to the Fabrication Engineer for review and approval prior to beginning welding. Provide copies of the approved the WPS to the welder and Resident prior to beginning welding. Welding performed without an approved WPS and approved QCP will be considered Unacceptable Work.

D. Provide a list of qualified welders with copies of their AWS certifications to the Fabrication Engineer for review prior to beginning welding. Welders shall have in their possession, at the time of welding, a valid certification for the process and position to be used in production from the AWS or other organization acceptable to the Resident. The welder shall show the Resident their credentials upon request.

E. The Contractor shall only use electrodes that are on the Department's Qualified Products List for Welding Electrodes or shall submit alternative electrodes for review and approval by the Fabrication Engineer. Electrodes used shall match those approved for use in the WPS.

F. Pile tips shall be approved by the Resident.

G. Welding shall not be done: When the temperature in the immediate vicinity of the weld is below 0°F; when the surfaces are damp or exposed to rain, snow, or high wind; or when the welders or welding operators are exposed to inclement conditions.

H. The pile shall be preheated to and maintained at 150°F minimum within 6 inches from the joint during welding.

I. Power sources for welders shall have meters indicating amperage/voltage that have been calibrated within 1 year at the time of welding.

J. Pile tips may be welded to the piles by the pile supplier upon approval by the Department. Approval is contingent upon submission of the following: A welding QC Plan; proof that the proposed welder(s) is certified per AWS D1.5; and an AWS D1.1 WPS, with base metal preheated to a minimum of 150°F. The Contractor shall provide notice a minimum of 14 Days prior to the start of any welding by the pile supplier. At a minimum, welds shall be 100% visually inspected by the pile supplier's QC representative.

K. The Contractor shall provide a QC Inspector to perform QC for the welds in accordance with the AWS D1.1 welding code. The QC Inspector shall be an CWI in conformance with the requirements of AWS QC1, Standard for AWS Certifications of Welding Inspectors. The Contractor may submit, in lieu of a CWI, an alternative QC Inspector with documented training and experience in metals fabrication, inspection, and testing for approval by the Fabrication Engineer. The QC Inspector shall be someone other than the welder performing the welds to be inspected.

L. The QC Inspector shall inspect all production stages of the welded splice to ensure that workmanship and materials meet the requirements of the AWS D1.1 welding code and the Contract. The QC Inspector shall submit a signed record of all weld inspection documentation to the Resident after welding is completed.

M.

Record of weld inspection shall include, but not be limited to, the following:

1. **Name of QC Inspector**
2. **Project WIN and Location**
3. **Date**
4. **Weather conditions**
5. **Type, size, length, and location of welds.**
6. **Confirmation of appropriate equipment and materials used, including proper handling of welding electrodes.**
7. **Confirmation that welder has approved WPS onsite, and welding is performed in accordance with approved WPS.**
8. **Confirmation that welder is qualified to perform work per approved WPS. Include name and certifications of qualified welder who performed the work.**
9. **Confirm that 100% VT, in accordance with AWS D1.1 Table 8.1, has been conducted and any subsequent repairs are made prior to NDT.**
10. **Document NDT testing including name of NDT technician, NDT personnel qualifications, type and extent of NDT testing performed, and include NDT testing reports provided by the NDT testing technician.**

N. The Contractor shall provide notice a minimum of 7 Days prior to the start of any field welding.

O. Piles shall not be driven until all pile welding has been inspected and accepted by the Department.

501.0481 Specific Requirements for Installing H-Beam Pile Tips

A. Damaged material shall be removed from the end of the driven pile, as applicable. Lifting holes shall be trimmed off. The end of the pile to which the tip is to be attached shall be cut off square with the longitudinal axis of the pile and prepared per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Regarding weld size, prefabricated pile tips shall be attached to H-beam piles with 5/16-inch groove welds along each flange, or as recommended by the manufacturer of the pile tips, whichever weld size is larger.

C. The QC Inspector shall, at a minimum, perform 100% VT on each pile tip weld.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.0482 Specific Requirements for Installing Steel Pipe Pile Tips

A. Damaged material shall be removed from the end of the driven pile, as applicable. Lifting holes shall be trimmed off. The end of the pile to which the tip is to be attached shall be cut off square with the longitudinal axis of the pile and prepared per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Unless otherwise shown on the Plans, steel pipe piles shall have pointed cast steel pile tips.

C. Regarding weld size, prefabricated pile tips shall be attached to steel pipe piles with a continuous 5/16-inch groove weld along the full perimeter of the pile, or as recommended by the manufacturer of the pile tips, whichever weld size is larger.

D. The QC Inspector shall, at a minimum, perform 100% VT on each pile tip weld.

E. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.05 Method of Measurement
c. Piles in Place Revise the third paragraph by replacing the "10" with "20" so that it reads:

Unused pile cutoffs **20** feet or more in length, except those required to accommodate the Contractor's construction method, as discussed herein, will remain the property of the Department and will be stored at a bridge maintenance yard nearest the project. Hauling and unloading of piles will be done by the Contractor or by the Department, depending upon availability of services.

SECTION 502
STRUCTURAL CONCRETE

502.03 Materi**al**s Amend this section by adding the following to the list of materials:

Combined Aggregate Grading for Concrete 703.03

502.07 Mixing and Delivery Remove the last sentence in Paragraph A that starts with "With prior approval… and replace with the following:

"An approved hydration stabilizing admixture may be used to increase the discharge time. Justification for the need for a hydration stabilizing admixture shall be provided in the QC Plan. When a hydration stabilizing admixture is used, the manufacturer, dosage rate and discharge time, from the time cement is added to the aggregate, shall be documented in the approved QC Plan. The proposed discharge time(s) shall be based on the manufacturer's written recommendations, the anticipated concrete temperatures and anticipated ambient conditions at the time of placement(s). Discharge time(s) shall be adjusted when conditions change or are not as anticipated as outlined in the approved QC Plan. The discharge time(s) approved by the Department shall be subject to change at any time, and discharge of concrete into the permanent work shall cease immediately if the concrete is determined to have attained Accelerated Hydration Gain. Accelerated Hydration Gain being the condition where the fresh concrete has hydrated to the point where the workability and finishability is detrimental to the quality of the final product. Determination of when concrete has attained Accelerated Hydration Gain shall be made by the Contractor's Quality Control Technician(s) and shall be based on parameters proposed by the Contractor in the QC Plan, such as, but not limited to, loss of slump, plasticity, or workability, an increase in concrete temperature, or a change in the percentage of entrained air."

502.09 Forms and Falsework Amend this subsection by adding the subsection title "**502.10 Placing Concrete**" after section "D" Removal of Forms and False work" and after the paragraph beginning with "2. Forms and False work, including blocking…". So that a new subsection starts and reads:

"**502.10 Placing Concrete**

A. **General Concrete shall not be placed until forms** …."

502.1701 Quality Control, Method A and B Revise this Section so that the first paragraph and the first sentence of the second paragraph read:

"**502.17 Quality Control The Contractor shall control the quality of the concrete through testing, inspection, and practices which shall be described in the QCP, sufficient to assure a product meeting the Contract requirements. The QCP shall meet the requirements of Section 106, Quality, and this specification. No work under this item shall proceed until the QCP is submitted to and approved by the Department. Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all cast-in-place items covered by the QCP, using the P value listed in Special Provision 502. If no P value is listed, a value of $350, or bid value per cubic yard, whichever is less, shall be used.**

502.1701 Quality Control, Method A and B The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following: "

Under the list with the heading, "The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following:":

Replace "F" to read: "**Mix and Transportation, including Time from Batching to Completion of Delivery, as well as manufacturer, product name, proposed dosage(s) and discharge time(s) if a hydration stabilizing admixture is used**."

Replace "H" to read: "**Process QC Testing, including monitoring for attainment of Accelerated Hydration Gain when a hydration stabilizing admixture is used**."

Revise this section by replacing the paragraph before Table 4 that starts out "The Contractor shall maintain…"to read:

"**The Contractor shall maintain records of all QC tests and calculations. All QC test data shall be signed by the person who performed the test. The representative gradation test results shall be reported to the Department before the placement they represent. This initial representative gradation test shall be sampled a maximum of 30 days prior to the production day. The Contractor or supplier shall retain split samples of the most recent QC gradations for possible testing by the Department. In addition, the Department will sample the aggregates at the plant monthly to determine compliance with 703.03 Combined Aggregate Grading for Concrete. The Combined Aggregate Grading will be calculated by mathematically blending the individual aggregate gradations using the batch percentages from the approved mix design. If the Department's gradation tests determine that the aggregate does not meet the specified gradation limits, the current procedure mentioned in MaineDOT PCC Policies and Procedures Manual shall be followed. The compressive strength test results shall be reported to the Department by 10:00 A.M. of the first working day following the test. The Contractor shall record all onsite QC test data and calculations at the time of the placement and present this information, on a form acceptable to the Department, to the Department by 10:00 A.M. of the first working day following the concrete placement. Batch tickets shall be representative of that day's total moisture in aggregate value, QC test data for total moisture in aggregate shall be provided to the**

Department by 10:00 A.M. of the first working day following the concrete placement. All Method A and B QC testing shall meet the minimum requirements found in Table 4."

Section 502.1701, Quality Control, Revise Table 4 of this Subsection by removing it in its entirety and replacing it with:

TABLE 4
METHOD A & B MINIMUM QUALITY CONTROL TESTING REQUIREMENTS*

TEST	TEST METHOD	SAMPLING LOCATION	FREQUENCY
Gradation	AASHTO T 27 & T 11	Stockpile	One representative set per proposed grading before production One set every 100 yd^3 (Min. 1 set per month)
Organic Impurities	AASHTO T 21	Stockpile	Once per fine aggregate per year**
% Absorption	AASHTO T 84 & T 85	Stockpile	Once per aggregate per year
Specific Gravity	AASHTO T 84 & T 85	Stockpile	Once per aggregate per year
Total Moisture in Aggregate	AASHTO T 255	Stockpile	One set per day's production
Free Water and Aggregate Wt.	N/A		One per day's production
% Entrained Air	AASHTO T 152	On Project	On first two loads and every third load thereafter provided consistent results are achieved
Compressive Strength	AASHTO T 22	On Project	One set per sublot
Compressive Strength	AASHTO T 22	On Project	One set per sublot

***Additional QC testing will be required any time a process change occurs during a placement, including changes in type or dosage of admixture. Additional testing shall include, but is not limited to, entrained air testing.**
****If the color produced is a laboratory designation Plate III, then the fine aggregate shall be tested once per month**

502.1702 Quality Control, Method C Remove this sub section and replace it with:

"**The Contractor shall submit a QCP listing the mix design(s) to be used, the name and location of the production facility, a brief description of the placement and curing process and the name and qualifications of any QCT to be used. When a hydration stabilizing admixture is proposed for use, the manufacturer, product name, dosage rate and discharge time, from the time cement is added to the aggregate, shall be included, as well as procedures for monitoring attainment of Accelerated Hydration Gain. A QCT will be required. The Contractor shall provide a Certificate of Compliance for each truckload of concrete to the Department at the time of the load placement**."

502.18, Method of Measurement, Revise Subsection 'F' by removing the word 'transverse' so that it reads: "**Saw cut grooving of concrete wearing surfaces, complete and accepted, will be measured for payment as one lump sum**."

502.19, Basis of Payment, Revise the third paragraph by removing the word 'transverse' so that it reads: "**Saw cut grooving of concrete wearing surfaces will be paid for at the Contract Lump Sum Price, which shall be payment for furnishing all materials, labor, and equipment, including depth gauges and all incidentals, to satisfactorily complete the work."**
(Also see 535.24 and 535.25 for related changes)

SECTION 503
REINFORCING STEEL

Section 503.07 Splicing Revise this section by removing the table and following footnote and replacing them with:

Minimum Lap Splice Length (inches)									
	Bar Size								
Bar Type	#3	#4	#5	#6	#7	#8	#9	#10	#11
Plain or Galvanized	16	20	24	29	38	47	59	72	85
Epoxy or Dual Coated	17	24	36	43	56	71	88	107	128
Stainless	19	24	30	36	47	59	73	89	107
Low-carbon Chromium	24	32	39	47	63	78	97	119	142

"**The minimum lap splice lengths in the table above are based on the parameters below. When any of these parameters are altered, appropriate minimum lap splice lengths will be as shown on the Plans.**

- **Normal weight concrete**
- **Minimum 28-day concrete compressive strength from 4,000 psi to 10,000 psi**

- **Class B tension lap splice**
- **Minimum center-to-center spacing between bars of 6 inches**
- **Minimum clear cover of 2 inches**
- **Nominal reinforcing steel yield strengths**
  - **Low-carbon Chromium = 100 ksi**
  - **Stainless = 75 ksi**
  - **All others = 60 ksi**
- **Reinforcement with yield strengths greater than 75 ksi shall have beam transverse reinforcement and column ties provided over the required lap splice length in accordancewith the current edition of the AASHTO LRFD Bridge Design Specifications**

When lap splices are placed horizontally in an element where the concrete depth below the splice will be 12 inches, or more, the indicated lap splice lengths shall be multiplied by a factor of 1.3."

Amend the Paragraph starting with Welded Splices may be made…" by adding to the last sentence beginning so that it reads **"The Contractor shall submit complete details of their proposed method of making welded splices for the Resident's approval at least 10 days prior to use."**

504.12 Protective Coatings Revise this subsection by removing the paragraph beginning with "When galvanizing is specified" and replacing it with:

"**When galvanizing is specified, clean the steel in accordance with SSPC-SP 6 prior to galvanizing. Galvanize in accordance with AASHTO M 111 (ASTM A123). Galvanize fasteners in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Galvanized nuts shall be lubricated with a water-soluble lubricant containing a dye that contrasts with the color of the galvanizing.**"

SECTION 506
SHOP APPLIED PROTECTIVE COATING – STEEL

506.10 Description Revise this subsection by removing the entire paragraph in its entirety and replacing it with:

"This work shall consist of surface preparation and application of coating systems in accordance with the Plans and this Specification. The color of structural steel painted in its entirety shall comply with SAE AMS-STD-595 – Colors Used in Government Procurement Color No. 14272 (Green), unless otherwise specified in the Contract. The color of partially painted weathering steel shall comply with SAE AMS-STD-595 – Colors Used in Government Procurement Color No. 30045 (Brown), unless otherwise specified in the Contract. All other coating colors shall be as specified in the Contract."

506.13 Surface Preparation Amend this section by adding this paragraph to the end:

"**Steel shall meet the requirements of SSPC SP8 Pickling prior to being immersed in the zinc tanks. Verification of the surface preparation shall be included in the QC documentation**."

SECTION 518
STRUCTURAL CONCRETE REPAIR

518.02 Repair Materials Replace the paragraph beginning with "Where the depth of placement…" with the following:
"**Where the depth of placement is equal to or greater than 1 inch, the Contractor may use concrete as the repair material. When concrete is used, the coarse aggregate shall conform to the requirements of the table below and Standard Specification Section 703.02, Coarse Aggregate for Concrete, or 703.03, Combined Aggregate Grading for Concrete."**

Remove the second table with the heading, "Sieve Designation Percent by Weight Passing a Square Mesh Sieve"

SECTION 523
BEARINGS

523.051 Protective Coating Revise this subsection by removing the paragraph beginning with "Anchor rods shall be galvanized…" and replacing with:

"**Anchor rods shall be galvanized. When anchor rods are designated to secure bare unpainted steel or painted steel, a dielectric coating (epoxy or bituminous type coatings are acceptable) shall be applied to the anchor rod and/or adjacent steel to prevent contact between galvanized surfaces and painted or unpainted steel."**

523.22 Fabrication Amend this subsection by adding the following: "**Elastomeric Bearings shall be fabricated in accordance with AASHTO M251."**

SECTION 526
CONCRETE BARRIER

Amend this section by deleting it in its entirety and replacing it with:

"**526.01 Description This work shall consist of the furnishing, constructing, erecting, setting, resetting, and removal of concrete barrier and associated elements in accordance with these specifications, the Standard Details, and the lines and grades shown on the Plans or established by the Resident.**

The types of concrete barrier are designated as follows:

Portable Concrete Barrier Type I Double faced removable barrier in accordance with the Standard Details.

Permanent Concrete Barrier Type II Double faced barrier as shown on the Plans.

Permanent Concrete Barrier Type IIIa Single faced barrier 32 inches high in accordance with the Standard Details or as shown on the Plans.

Permanent Concrete Barrier Type IIIb Single faced barrier 42 inches high in accordance with the Standard Details or as shown on the Plans.

Permanent Concrete Transition Barrier Barrier of various heights joining steel bridge rail to steel guardrail in accordance with the Standard Details or as shown on the Plans.

Permanent Texas Classic Rail Barrier Traffic rail or sidewalk rail, in accordance with the Standard Details or as shown on the Plans.

526.02 Materials

a. Concrete Concrete for barriers, both permanent and portable, shall have a design strength of 5,000 psi.

For cast-in-place barrier: The concrete shall be Class LP, in accordance with Standard Specification Section 502, Structural Concrete.

For precast barrier: The concrete shall meet the requirements of Standard Specification 712.061, Structural Precast Concrete Units, except that the stripping strength for precast barriers is 4,000 psi.

b. Reinforcing Steel Reinforcing steel shall meet the requirements of Section 503, Reinforcing Steel.

c. Structural Steel Plates and barrier connections shall meet the requirements specified in Standard Specification 504 - Structural Steel and shall be hot dip galvanized after fabrication in accordance with Standard Specification 506, Shop Applied Protective Coating – Steel

d. Bolts Bolts shall meet the requirements specified in Section 713.02, High Strength Bolts.

e. Connecting Pins for Portable Concrete Barrier Portable concrete barriers must be connected using a 1- inch diameter pin. The connecting pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A449 steel. Materials with greater strength may be used with the approval of the Department.

f. Anchor Pins for Portable Concrete Barrier Anchoring to concrete or asphalt will be required when specified on the Plans. When required, portable concrete barriers must be anchored using a 1 ½ - inch diameter anchor pin. The anchor pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A36 steel. Materials with greater strength may be used with the approval of the Department.

g. Device Crashworthiness MaineDOT is transitioning to MASH2016 criteria for Portable Concrete Barrier on the following schedule:

New Portable Concrete Barrier shall be crash tested and/or evaluated to MASH2016 criteria.

Current Portable Concrete Barrier in useful serviceable condition that is successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Other current Portable Concrete Barrier that is deemed acceptable by the Department may be utilized on projects off the National Highway System through December 31, 2024.

526.03 Construction Requirements

Cast-in-place barriers shall be fabricated in accordance with Standard Specification Section 502, Structural Concrete. Precast barriers shall be fabricated in accordance with Standard Specification 534, Precast Structural Concrete.

Concrete finish for permanent barrier shall be rubbed as defined in Standard Specification Section 502, Structural Concrete, 502.13 D2 or an approved equal.

Portable concrete barrier shall be generally free from fins and porous areas and shall present a neat and uniform appearance.

Permanent barrier shall have a protective coating applied in accordance with Standard Specification Section 515, Protective Coating for Concrete Surfaces.

Reflective delineators for concrete median barrier shall meet the requirements of Special Provision 645, Highway Signing.

Preformed Joint Filler shall meet the requirements specified in Subsection 705.01, Preformed Expansion Joint Filler.

Permissible dimensional tolerances for all concrete barriers shall be as follows:

a. Cross-sectional dimensions shall not vary from design dimensions by more than ¼ inch. The vertical centerline shall not be out of plumb by more than ¼ inch.

b. Longitudinal dimensions shall not vary from the design dimensions by more than ¼ inch per 10 feet of barrier section and shall not exceed ¾ inches per section.

c. Location of anchoring holes shall not vary by more than ½ inch from the dimensions shown in the concrete barrier details on the Plans.

d. Surface straightness shall not vary more than ¼ inch under a 10-foot straightedge.

e. The barrier shall have no significant cracking. Significant cracking is defined as fractures or cracks passing through the section, or any continuous crack extending for a length of 12 inches or more, regardless of position in the section.

526.04 Method of Measurement Permanent Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be measured for payment by lump sum, complete in place.

Portable concrete barrier, both anchored and unanchored will be measured for payment by lump sum. Lump sum measurement will include verification of the installation and removal of all portable concrete at the completion of the Contractor's operations.

The Contractor shall replace sections of portable concrete barrier, including anchored barrier damaged by the traveling public when directed by the Resident. Replacement sections will be measured for payment in accordance with Standard Specification 109.7, Equitable Adjustments to Compensation and Time.

Transition barrier will be measured by each, complete in place.

526.05 Basis of Payment The accepted quantities of Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be paid for at the Contract lump sum price for the type specified, complete in place.

The accepted quantities of Portable Concrete Barrier Type I, both anchored and unanchored will be paid for at the Contract lump sum price. Such payment shall be full compensation for furnishing all materials, assembling, moving, resetting, transporting, temporarily storing, removing barrier, furnishing new parts as necessary, and all incidentals necessary to complete the work.

Portable barrier shall become the property of the Contractor upon completion of the use of the barrier on the project and shall be removed from the project site by the Contractor.

Transition barrier will be paid for at the Contract price each, complete in place.

The accepted quantity of all types of concrete barrier, whether portable or permanent, will be paid for at the lump sum or per each price, as applicable, which payment shall be full compensation for all materials, including reinforcing steel, protective coating, reflective

delineators, steel plates and hardware, equipment, labor and incidentals required, as necessary, to complete the work.

Payment will be made under:

	Pay Item	**Pay Unit**
526.301	**Portable Concrete Barrier, Type I**	**Lump Sum**
526.304	**Portable Concrete Barrier, Anchored Type I**	**Lump Sum**
526.312	**Permanent Concrete Barrier Type II**	**Lump Sum**
526.321	**Permanent Concrete Barrier Type IIIa**	**Lump Sum**
526.323	**Texas Classic Rail**	**Lump Sum**
526.331	**Permanent Concrete Barrier Type IIIb**	**Lump Sum**
526.34	**Permanent Concrete Transition Barrier**	**Each**
526.502	**Precast Concrete Median Barrier**	**Lump Sum**"

SECTION 527
ENERGY ABSORBING UNIT

527.02 Materials Amend this section by deleting it in its entirety and replacing it with:

"**MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Portable Crash Cushions will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Work Zone Crash Cushions shall be selected from the Department's Qualified Products List of Crash Cushions/Impact Attenuators or approved equal."

SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.02 Materials Replace the description of "Coarse Aggregate for Concrete (Class A, AA, or Latex) in its entirety with: "**Coarse Aggregate for Concrete (Class A, AA, or SP-1-7)"**

535.22 Tolerances Amend this section by deleting it in its entirety and replacing it with:
"**Product dimensional tolerances shall be in conformance with the latest edition of PCI MNL-135, Tolerance Manual for Precast and Prestressed Concrete Construction, as applicable to the particular product (e.g., slab, I-girder, box beam), the Plans, and this Specification. Use Box**

Beam fabrication tolerances for voided or solid slab beams and use Double Tee tolerances for NEXT beams. In case of dispute, the Fabrication Engineer shall determine the allowable tolerance."

535.24 Installation of Slabs, Beams, and Girders Revise the 5th paragraph by replacing "6.0 and 9.0" to "5.0 and 8.0" so it reads: **"Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements."**

535.25, Installation of Precast/Prestressed Deck Panels Revise the 2nd paragraph by replacing "6.0 and 9.0" to "5.0 and 8.0" so it reads: **"Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements."**

SECTION 606
GUARDRAIL

Amend this section by replacing it with the following:

606.01 Description This work shall consist of furnishing and installing guardrail components in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or as established. Guardrail is designated as:

31" W-Beam Guardrail - Mid-Way Splice
Galvanized steel w-beam, 8" wood or composite offset blocks, galvanized steel posts
Thrie Beam
Galvanized steel thrie beam, 8" wood or composite offset blocks, galvanized steel posts

Median guardrail shall consist of two beams of the above types, mounted on single posts.

Bridge mounted guardrail shall consist of furnishing all labor, materials, and equipment necessary to install guardrail as shown on the plans. This work shall also include drilling for and installation of offset blocks if specified, and incidental hardware necessary for satisfactory completion of the work.

Remove and Reset and Remove, Modify, and Reset guardrail shall consist of removing the existing designated guardrail and resetting in a new location as shown on the plans or directed by the Resident. Remove, Modify, and Reset guardrail and Modify guardrail include the following guardrail modifications: Removing plate washers at all posts, except at anchorage assemblies as noted on the Standard Details, adding offset blocks, and other modifications as listed in the Construction Notes or General Notes. Modifications shall conform to the guardrail Standard Details.

Bridge Connection shall consist of the installation and attachment of beam guardrail to the existing bridge. This work shall consist of constructing a concrete end post or modifying an existing end post as required, furnishing, and installing a terminal connector, necessary hardware, and incidentals required to complete the work as shown on the plans. Bridge Transition shall consist of a bridge connection and furnishing and installing guardrail components as shown in the Standard Details.

606.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Timber Preservative	708.05
Metal Beam Rail	710.04
Guardrail Posts	710.07
Guardrail Hardware	710.08

Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report.

Posts for underdrain delineators shall be “U” channel steel, 8 ft long, 2 ½ lb/ft minimum and have 3/8-inch round holes, 1-inch center to center for a minimum distance of 2 ft from the top of the post.

Reflectorized Flexible Guardrail Markers shall be mounted on all guardrails. A marker shall be mounted onto guardrail posts at the flared guardrail terminal end point and tangent point, both at the leading and trailing ends of each run of guardrail. The marker’s flexible posts shall be gray with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends. Whenever the guardrail terminal is not flared, markers will only be required at the terminal end point. These shall be red or green as appropriate. Markers shall be installed on the protected side of guardrail posts unless otherwise approved by the Resident. Reflectorized flexible guardrail markers shall be from the Department’s Qualified Products List of Delineators. The marker shall be gray, flexible, durable, and of a non-discoloring material to which 3-inch by 9-inch reflectors shall be applied, and capable of recovering from repeated impacts and meeting MASH 16 requirements. Reflective material shall meet the requirements of Section 719.01 for ASTM D 4956 Type III reflective sheeting. The marker shall be secured to the guardrail post with two fasteners, as shown in the Standard Details.

Reflectorized beam guardrail reflectors shall be mounted on all “w” beam guardrail and shall be either the “butterfly” type or linear delineation system panels. “Butterfly” or linear delineation panels shall be installed at approximately 62.5 foot intervals on tangents (after every tenth post) and 31.25 feet on curves (after every fifth post), and shall be centered on the guardrail beam. On Divided highways, the left-hand delineators shall be yellow and the right-hand delineators shall be silver/ white. On two-way directional highways, the right-hand side will have silver / white reflectors and no reflectorized delineator used on the left. Delineators shall have reflective sheeting that meets or exceeds the requirements of Section 719.01.

"Butterfly" reflectors shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Aluminum, galvanized metal or other materials shall not be used. Reflective sheeting will be applied to only one side of the delineator facing the direction of traffic and shall be centered vertically on the guardrail beam as shown in the Standard Detail 606(7).

Linear delineation system panels shall be 1.5 inches wide by approximately 11 inches nominal length, with a minimum of 5 raised lateral ridges spaced at approximately 2.25 inches. The height of each ridge shall be 0.34 inches with a 45 degree profile and a 0.28 inches radius at the top. Sheeting shall be laminated to thin gauge aluminum with a pre-applied adhesive tape on the back. Panels shall not be installed over seams or bolt heads and shall be centered horizontally on the guardrail beam; linear delineation panels shall be attached to only one guardrail beam. The guardrail beam surface shall be cleaned and prepared according to the manufacturer's instructions. Air temperature and guardrail surface temperature must be a minimum of 50 degrees F (10 C) with rising temperature at the time of installation.

Exact locations of the either the "butterfly" type or the linear delineation panels shall be approved by the Resident prior to installation.

Single wood post shall be of cedar, white oak, or tamarack, well-seasoned, straight, and sound and have been cut from live trees. The outer and inner bark shall be removed, and all knots trimmed flush with the surface of the post. Posts shall be uniform taper and free of kinks and bends.

Single steel post shall conform to the requirements of Section 710.07 b.

Single steel pipe post shall be galvanized, seamless steel pipe conforming to the requirements of ASTM A120, Schedule No. 40, Standard Weight.

Acceptable multiple mailbox assemblies shall be listed on the Department's Qualified Products List and shall be MASH 16 tested and approved.

Flared and Tangent w-beam guardrail terminals and guardrail offset blocks shall be from the Department's Qualified Products List. Flared terminals shall be installed with a 4 ft offset as shown in the Manufacturer's installation instructions.

Anchorage assemblies used to anchor trailing ends, radius guardrail, or other ends not exposed to traffic shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report, Drawing SEW02a.

Existing materials damaged or lost during adjusting, removing and resetting, or removing, modifying, and resetting, shall be replaced by the Contractor without additional compensation. Existing guardrail posts and guardrail beams found to be unfit for reuse shall be replaced when directed by the Resident.

606.03 Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven

through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

When set in holes, posts shall be on a stable foundation and the space around the posts, backfilled in layers with suitable material, thoroughly tamped.

The reflectorized flexible guardrail markers shall be set plumb with the reflective surface facing the oncoming traffic. Markers shall be installed on the protected side of guardrail posts. Markers, which become bent or otherwise damaged, shall be removed and replaced with new markers.

Single wood posts shall be set plumb in holes and backfilled in layers with suitable material, thoroughly tamped. The Resident will designate the elevation and shape of the top. The posts, that are not pressure treated, shall be painted two coats of good quality oil base exterior house paint.

Single steel posts shall be set plumb in holes as specified for single wood posts or they may be driven if suitable driving equipment is used to prevent battering and distorting the post.

Additional bolt holes required in existing posts shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.04 Rails Brackets and fittings shall be placed and fastened as shown on the plans. Rail beams shall be erected and aligned to provide a smooth, continuous barrier. Beams shall be lapped with the exposed end away from approaching traffic.

End assemblies shall be installed as shown on the plans and shall be securely attached to the rail section and end post.

All bolts shall be of sufficient length to extend beyond the nuts but not more than ½ inch. Nuts shall be drawn tight.

Additional bolt holes required in existing beams shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.045 Offset Blocks The same offset block material is to be provided for the entire project unless otherwise specified.

606.05 Shoulder Widening At designated locations the existing shoulder of the roadway shall be widened as shown on the plans. All grading, paving, seeding, and other necessary work shall be in accordance with the Specifications for the type work being done.

606.06 Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in

accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

606.07 Abraded Surfaces All galvanized surfaces of new guardrail and posts, which have been abraded so that the base metal is exposed, and the threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

606.08 Method of Measurement Guardrail will be measured by the linear foot from center to center of end posts along the gradient of the rail except where end connections are made to masonry or steel structures, in which case measurement will be as shown on the plans. When connected to radius rail, measurement will be to the end of the last tangent beam.

Guardrail terminal, reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be measured by each unit of the kind specified and installed.

Widened shoulder will be measured as a unit of grading within the limits shown on the plans.

Excavation in solid rock for placement of posts will be paid under force account unless otherwise indicated in the Bid Documents.

Reflectorized beam guardrail reflectors (“butterfly” type or linear delineation system panels) when identified by pay item, will be measured for payment by each.

606.09 Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per linear foot for the type specified, complete in place. Reflectorized beam guardrail (“butterfly”-type) delineators will not be paid for directly but will be considered incidental to guardrail items. Reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be paid for at the contract unit price each for the kind specified complete in place.
Guardrail terminals will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer’s installation instructions. Pay limits for a flared terminal will be 37.5 feet. Pay limits for a tangent terminal will be 50 feet. Each guardrail terminal will be clearly marked with the Manufacturer’s name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under 109.7.5 – Force Account. Type III Retroreflective Adhesive Sheeting shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 3 in wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail terminals shall also include a set of installation drawings supplied to the Resident.

Anchorages to bridge end posts will be part of the bridge work. Connections thereto will be considered included in the unit bid price for guardrail.

Guardrail to be placed on a radius of curvature of 150 ft or less will be paid for under the designated radius pay item for the type guardrail being placed.

Widened shoulder will be paid for at the contract unit price each complete in place and will be full compensation for furnishing and placing, grading and compaction of aggregate subbase and any required fill material.

Adjust guardrail will be paid for at the contract unit price per linear foot and will be full compensation for adjusting to grade. Payment shall also include adjusting guardrail terminals where required.

Modify guardrail will be paid for at the contract unit price per linear foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams; removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals where required.

Remove and Reset guardrail will be paid for at the contract unit price per linear foot and will be full compensation for removing, transporting, storing, reassembling all parts, necessary cutting, furnishing new parts when necessary, reinstalling at the new location, and all other incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals when required.

Remove, Modify, and Reset guardrail will be paid for at the contract unit price per foot and will be full compensation for the requirements listed in Modify guardrail and Remove and Reset guardrail.

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or “w”-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition and vertical curb, and any other necessary materials and labor, including the bridge connection as stated in the previous paragraph.

No payment will be made for guardrail removed, but not reset and all costs for such removal shall be considered incidental to the various contract pay items.

Reflectorized beam guardrail reflectors (“butterfly” type and the linear delineation panels) will not be paid for directly but will be considered incidental to all new guardrail items. The Contractor shall

furnish and install either the “butterfly” type or linear delineation panels, at its discretion, for new guardrail items.

Reflectorized beam guardrail reflectors (either “butterfly” type or linear delineation system panels) will be paid for under the applicable pay items for installation in conjunction with Adjust, Modify, Remove and Reset, Remove Modify and Reset guardrail items. The accepted quantity of “butterfly” type or linear delineation system panels will be paid for at the contract unit price each for all work and materials furnished to install, complete in place, including all incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
606.1301	31” W-Beam Guardrail - Mid-Way Splice – Single Faced	Linear Foot
606.1302	31” W-Beam Guardrail - Mid-Way Splice – Double Faced	Linear Foot
606.1303	31” W-Beam Guardrail - Mid-Way Splice, 15’ Radius and Less	Linear Foot
606.1304	31” W-Beam Guardrail - Mid-Way Splice, Over 15’ Radius	Linear Foot
606.1305	31” W-Beam Guardrail - Mid-Way Splice Flared Terminal	Each
606.1306	31” W-Beam Guardrail - Mid-Way Splice Tangent Terminal	Each
606.1307	Bridge Transition (Asymmetrical) – Type IA	Each
606.1721	Bridge Transition - Type I	Each
606.1722	Bridge Transition - Type II	Each
606.1731	Bridge Connection - Type I	Each
606.1732	Bridge Connection - Type II	Each
606.178	Guardrail Beam	Linear Foot
606.25	Terminal Connector	Each
606.257	Terminal Connector - Thrie Beam	Each
606.259	Anchorage Assembly	Each
606.265	Terminal End-Single Rail - Galvanized Steel	Each
606.266	Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275	Terminal End-Double Rail - Galvanized Steel	Each
606.276	Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.352	Reflectorized Beam Guardrail Delineators (“Butterfly” type)	Each
606.3521	Linear Delineation System Panel	Each
606.353	Reflectorized Flexible Guardrail Marker	Each
606.354	Remove and Reset Reflectorized Flexible Guardrail Marker	Each
606.356	Underdrain Delineator Post	Each
606.358	Guardrail, Modify	Linear Foot
606.362	Guardrail, Adjust	Linear Foot
606.365	Guardrail, Remove, Modify, and Reset	Linear Foot
606.366	Guardrail, Remove and Reset	Linear Foot
606.367	Replace Unusable Existing Guardrail Posts	Each
606.3671	Replace Unusable Offset Blocks	Each
606.47	Single Wood Post	Each
606.48	Single Galvanized Steel Post	Each

606.50	Single Steel Pipe Post	Each
606.51	Multiple Mailbox Support	Each
606.568	Guardrail, Modify - Double Rail	Linear Foot
606.63	Thrie Beam Rail Beam	Linear Foot
606.64	Guardrail Thrie Beam - Double Rail	Linear Foot
606.65	Guardrail Thrie Beam - Single Rail	Linear Foot
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 15 ft radius and less	Linear Foot
606.72	Guardrail Thrie Beam - over 15 ft radius	Linear Foot
606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	Linear Foot
606.74	Guardrail - Single Rail Bridge Mounted	Linear Foot
606.753	Widen Shoulder for Low Volume Guardrail End	Each
606.754	Widen Shoulder for Flared Guardrail Terminal	Each
606.78	Low Volume Guardrail End	Each
606.80	Buried-in-Slope Guardrail End	Each

SECTION 608
SIDEWALKS

Section 608.022Detectable Warning Materials Standard Revise this section by removing the last sentence of this section beginning with "Concrete…" and replacing it with "**Concrete shall meet the requirements of Section 608.021, Sidewalk Materials, of this specification or may be a prepackaged concrete mix from the Department's Qualified Products List (QPL).**"

SECTION 609
CURB

Remove this section in its entirety and replace with the following:

609.01 Description Construct or reset curb, gutter, or combination curb and gutter, paved ditch, and paved flume. The types of curb are designated as follows:

Type 1 - Stone curbing of quarried granite stone
Type 2 – Concrete Curbing
Type 3 - Bituminous curbing
Type 5 - Stone edging of quarried granite stone

609.02 Materials Except as provided below, the materials used shall meet the requirements of the following Sections of Division 700 - Materials:

Portland Cement and Portland Pozzolan Cement	701.01
Water	701.02
Air Entraining Chemical Admixture	701.03
Fine Aggregate for Concrete	703.01

Coarse Aggregate for Concrete	703.02
Joint Mortar	705.02
Reinforcing Steel	709.01
Stone Curbing and Edging	712.04
Epoxy Resin	712.35
Hot Mix Asphalt Curbing	712.36
Structural Precast Concrete Units (Concrete Curb)	712.061

The Contractor shall submit a concrete mix design for the Portland Cement Concrete to the Resident, for the uses specified below or in accordance with the Contract Documents.

Circular curb, terminal sections and transition sections shall be in reasonably close conformity with the shape and dimensions shown on the Plans and to the applicable material requirements herein for the type of curb specified.

Dowels shall be reinforcing steel deformed bars.

Concrete for Slipform Concrete Curb shall meet the requirements below:

a. Class A, with the exception that permeability requirements shall be waived.
b. Entrained air content of Slipform Concrete Curb shall be 4.0% to 7.0%
c. Concrete temperature, prior to discharge, shall not exceed 90 F.
d. Proposed mix designs may contain polypropylene fibers.
e. Partially discharged loads may be retempered with water provided the maximum water to cement ratio is not exceeded.

609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections

a. Installation The curb stone shall be set on a compacted foundation so that the front top arris line conforms to the lines and grades required. The foundation shall be prepared in advance of setting the stone by grading the proper elevation and shaping to conform as closely as possible to the shape of the bottom of the stone. The required spacing between stones shall be assured by the use of an approved spacing device to provide an open joint between stones of at least ¼ inch and no greater than ⅝ inch.

b. Backfilling All remaining spaces under the curb shall be filled with approved material and thoroughly hand tamped so the stones will have a firm uniform bearing on the foundation for the entire length and width. Any remaining excavated areas surrounding the curb shall be filled to the required grade with approved materials. This material shall be placed in layers not exceeding 8 inches in depth, loose measure and thoroughly tamped.

When backfill material infiltrates through the joints between the stones, small amounts of joint mortar or other approved material shall be placed in the back portion of the joint to prevent such infiltrating.

c. Protection The curb shall be protected and kept in good condition. All exposed surfaces smeared or discolored shall be cleaned and restored to a satisfactory condition or the curb stone removed and replaced.

d. Curb Inlets Curb placed adjacent to curb inlets shall be installed with steel dowels cemented into each stone with epoxy grout as shown in the Standard Details.

The epoxy grout shall be used in accordance with the manufacturer's instructions. The grout shall be forced into the hole, after which the dowel shall be coated with grout for one-half its length and inserted into the grout filled hole. The hole shall be completely filled with grout around the dowel. All tools and containers must be clean before using.

The Contractor may elect to substitute concrete to backfill Stone Curbing or Stone Edging at their option. If the concrete backfill option is elected, the Concrete Fill shall meet the requirements of 609.02. The Contractor shall submit a concrete design for the Portland Cement Concrete, with a minimum designated compressive strength of 3000 PSI meeting the requirements of Class S or Class Fill Concrete. The Contractor may elect to choose a Prepackaged Concrete Mix from the Departments Qualified Products list (QPL). Concrete backfill shall be completed in conformance with a Department supplied concrete backfill detail.

609.04 Bituminous Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. String or chalk lines shall be positioned on the prepared base to provide guidelines. The foundation shall be uniformly painted with tack coat at a rate of 0.04 to 0.14 gal/yd^2.

b. Placing The curb shall be placed by an approved power operated extruding type machine using the shape mold called for. A tight bond shall be obtained between the base and the curb. The Resident may permit the placing of curbing by other than mechanical curb placing machines when short sections or sections with short radii are required. The resulting curbing shall conform in all respects to the curbing produced by the machine.

c. When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed with bituminous sealing compound.

d. Acceptance Curb may be accepted or rejected based on appearance concerning texture, alignment, or both. All damaged curb shall be removed and replaced at the Contractor's expense.

e. Polyester fibers shall be uniformly incorporated into the dry mix at a rate of 0.25 percent of the total batch weight. Certification shall be provided from the supplier with each shipment meeting the following requirements:

Average Length	0.25 inches ± 0.005
Average Diameter	0.0008 inches ± 0.0001
Specific Gravity	1.32-1.40
Melting Temperature	480 °F Minimum

609.05 Slipform Concrete Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. The Contractor shall not place Slipform Concrete Curb on a wet or frozen foundation. The foundation (HMA or concrete) may be in a Saturated Surface Dry condition, but no standing water shall be allowed. String or chalk lines shall be positioned on the prepared foundation to provide guidelines. Prior to placing the curb, the foundation shall be uniformly coated with an epoxy resin adhesive that meets the requirements of AASHTO M 235, Type I, II, III, IV or V and has been tested by AASHTO Product Evaluation & Audit Solutions. The Contractor shall submit the epoxy resin adhesive that they propose to utilize with the concrete mix design. The epoxy resin adhesive must be approved prior to placement and used in accordance with manufacturer's recommendations.

b. Placing Concrete shall be placed with an approved Slipform machine that will produce a finished product according to the design specified in the Plans. For cold weather slip forming, the outside temperature must be at least 36°F and rising. The curb shall be placed on a firm, uniform foundation, shall conform to the section profile specified in the Plans, and shall match the appropriate grade. Expansion joints shall be placed in the curb where it meets rigid structures such as but not limited to building foundations, catch basin headers or fire hydrants. Contraction joints will be placed at 10-foot intervals using sawing methods, which shall cut 1 to 3 inches into the concrete. Contraction joints shall be cut between 1 and 7 days after placement of the concrete. Joints shall be constructed perpendicular to the subgrade and match other joints in roadways, sidewalks, or other structures when applicable.

c. Curing and Sealing Proper curing shall be provided using either a combination curing/sealing compound spray that meets ASTM 1315 Type 1-Class A, or a curing compound spray that meets ASTM 309 Type 1-D – Class A. Curing may also be accomplished by the methods specified in Standard Specification Section 502.14, Curing Concrete.

If a combination curing/sealing compound spray is not used, a separate sealing compound from the MaineDOT Qualified Products List for a Type 1c sealer shall be applied after the concrete has cured.

d. Protection Slipform curb must be adequately protected after placement. The concrete shall be allowed to cure for at least 72 hours. During cold weather conditions, when temperatures drop below the required temperature of 36°F after placement, curbing shall be protected by concrete blankets or a combination of plastic sheeting and straw. After any

placement of Slipform curb, regardless of weather conditions, the placed curb shall be adequately protected by traffic control devices as necessary.

e. Marking When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed unless a combination curing/sealing compound is used.

f. Acceptance Curb shall be accepted or rejected based on finish, alignment, entrained air content, and compressive strength. Concrete Quality Control and Acceptance shall be done in accordance with Standard Specification Section 502, Method C. All damaged curb shall be removed and replaced at the Contractor's expense.

609.06 Stone Edging The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Slope The edging shall be set on a slope as shown on the Plans or as directed.

b. Joints Joints shall be open and not greater than 1½ inch in width.

609.07 Stone Bridge Curb

a. Installation Each stone and the bed upon which it is to be placed shall be cleaned and thoroughly wetted with water before placing the mortar for bedding and setting the stone. The stone shall be set on a fresh bed of joint mortar and well bedded before the mortar has set so that the front top arris line conforms to the line and grade required. Whenever temporary supporting wedges or other devices are used in setting the stones, they shall be removed before the mortar in the bed has become set, and the holes left by them shall be filled with mortar. Concrete behind the stones shall not be placed until the stones have been in place at least two days. Bedding and pointing mortar for joints shall be cured as required under Section 502 - Structural Concrete.

b. Joints Vertical joints shall be ½ inch in width plus or minus ⅛ inch. Whenever possible, the face and top of the joint shall be pointed with joint mortar to a depth of 1½ inch, before the bedding mortar has set. Joints which cannot be so pointed, shall be prepared for pointing by raking them to a depth of 1½ inch before the mortar has set. Joints not pointed at the time the stone is laid shall be thoroughly wetted with clean water and filled with mortar. The mortar shall be well driven into the joint and finished with an approved pointing tool, flush with the pitch line of the stones.

609.08 Resetting Stone or Portland Cement Concrete Curb, Including Terminal Sections and Transitions

The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Removal of Curbing The Contractor shall carefully remove and store curb specified on the Plans or designated for resetting. Curb damaged or destroyed, because of the

Contractor's operations or because of their failure to store and protect it in a manner that would prevent its loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

b. Cutting and Fitting Cutting or fitting necessary in order to install the curbing at the locations directed shall be done by the Contractor.

609.09 Method of Measurement Curb, both new and reset, will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted. Curb inlets at catch basins, including doweling, will not be measured for payment but shall be considered included in the cost of the catch basin. New transition sections and terminal curb will be measured by the unit. Reset transition sections and terminal curb will be included in the measurement for resetting curb.

Concrete Slipform Curb and terminal ends will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted.

609.10 Basis of Payment The accepted quantities of curbing will be paid for at the contract unit price per linear foot for each kind and type of curbing as specified.

Payment for terminal curb shall include only that portion of the curbing modified for installation at ends of curb runs shown in the Standard Details. Curb adjacent to terminal ends shall be paid for at the contract unit price per linear foot for the type of curb installed.

Vertical Curb Type 1 is required to have a radius of 60 feet or less, will be paid for as Vertical Curb Type 1 - Circular.

Curb, Type 5 required to have a radius of 30 feet or less will be paid for as Curb Type 5 - Circular.

There will be no separate payment for concrete fill, mortar, reinforcing steel, anchors, tack coat, drilling for and grouting anchors, pointing and bedding of curbing, and for cutting and fitting, but these will be considered included in the work of the related curb.

Removal of existing curb and necessary excavation for installing new or reset curbing will not be paid for directly but shall be considered to be included in the appropriate new or reset curb pay item. Base and Subbase material will be paid for under Section 304 - Aggregate Base and Subbase Course. Backing up bituminous curb is incidental to the curb items. Loam, as directed, will be paid under 615 – Loam.

Payment will be made under:

	Pay Item	Pay Unit
609.11	Vertical Curb Type 1	Linear Foot
609.12	Vertical Curb Type 1 - Circular	Linear Foot
609.13	Vertical Bridge Curb Type 1	Linear Foot
609.131	Vertical Bridge Curb Type 1A	Linear Foot
609.132	Vertical Bridge Curb Type 1B	Linear Foot
609.142	Vertical Bridge Curb Type 1B - Circular	Linear Foot
609.15	Sloped Curb Type 1	Linear Foot
609.151	Sloped Curb Type 1 - Circular	Linear Foot
609.161	Concrete Slipform Curb – Vertical Type 2	Linear Foot
609.21	Concrete Slipform Curb Type 2	Linear Foot
609.219	Concrete Slipform Terminal End Type 2	Linear Foot
609.23	Terminal Curb Type 1	Each
609.234	Terminal Curb Type 1 - 4 foot	Each
609.237	Terminal Curb Type 1 - 7 foot	Each
609.2371	Terminal Curb Type 1 - 7 foot – Circular	Each
609.238	Terminal Curb Type 1 - 8 foot	Each
609.26	Curb Transition Section B Type 1	Each
609.31	Curb Type 3	Linear Foot
609.34	Curb Type 5	Linear Foot
609.35	Curb-Type 5 - Circular	Linear Foot
609.38	Reset Curb Type 1	Linear Foot
609.39	Reset Curb Type 2	Linear Foot
609.40	Reset Curb Type 5	Linear Foot

SECTION 610
STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION

610.02 Materials Amend this subsection by adding the following to the end of the material list:
"**Stone Ditch Protection 703.29"**

SECTION 618
SEEDING

618.08 Mulching Revise this Section so that the third sentence reads: "Mulch for Seeding Method Number 1 shall only be cellulous fiber mulch Section 619.04 **(b)** or straw mulch Section 619.04 (**a**)."

SECTION 619
MULCH

619.03 General Amend this Section by adding the following sentence to the end: **"Straw mulch shall be used in all wetland areas."**

SECTION 626
FOUNDATIONS, CONDUIT, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS

Section 626.021 Miscellaneous Materials Revise this section by removing the fourth paragraph beginning with " All Concrete for concrete encasement…" and replace it with "**All concrete for concrete encasement of conduit shall be Class S or Class Fill concrete in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department's Qualified Products List (QPL).**"

Section 626.031Conduit Revise the fifth paragraph beginning with "After the trench has been…" by removing the last sentence beginning with "Where concrete encasement…" and replacing it with **"Where concrete encasement is required around the conduit, the concrete shall meet Class S, Class Fill in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department's Qualified Products List (QPL)."**

626.034 Concrete Foundations Revise this Section by changing '626.037' to '**626.036**' in the Second Paragraph which begins with "Foundations shall consist of cast-in-place…".

Revise the 10th paragraph beginning with "Before placing concrete, the required elbows…" by removing "…**in accordance with Standard Specification 633**."

626.036 Precast Foundations Revise the last sentence of paragraph one so that it reads: "**Construction of precast foundations shall conform to the Standard Details and all requirements of 712.061**."

SECTION 627
PAVEMENT MARKINGS

627.02 Materials Amend this section by adding the following to the existing Specification:

"When pavement marking paint must be applied on pavement with an air temperature between 35 ºF and 50 ºF, a low temperature waterborne paint may be used upon the Department's approval as noted below.

The Contractor shall submit the following information for Department review and approval at least 10 calendar days prior to application:

The manufacturer and product name of the low temperature waterborne paint

The manufacturer's technical product data sheets

The product's SDS sheets

All required and recommended application specifications for the product

The manufacturer's requirements for temperature, surface preparation, paint thickness and the bead application shall be followed. No additional payment will be made for the use of low temperature waterborne paint. "

627.06 Application Revise this subsection by replacing the paragraph beginning with " On other final pavement markings…" with the following:
"On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be one uniform covering coat at least 16 mils thick. Before the paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.

Painted lines and markings shall be applied in accordance with the manufacturer's published recommendations. These recommendations will be supplied to the Resident prior to installation."

Revise this subsection by replacing the paragraph beginning with " If the final reflectivety values are less…" with the following:

"The final reflectivity will be acceptable if 90 percent or more of the painted pavement lines and markings meet the specified minimum value. If less than 90 percent of the painted pavement lines and markings meet the specified minimum final reflectivity values, the Contractor shall repaint those areas not meeting required reflectivity at no cost to the Department.

If, after repainting, analysis of the final reflectivity values results in the need for a second repainting, the Contractor will submit in writing a plan of action to meet the reflectivity minimums prior to continuing any work. Once the plan has been reviewed and approved by the Department, the Contractor shall reapply at no cost to the Department."

SECTION 634
HIGHWAY LIGHTING

634.021 Materials Revise this subsection by removing the paragraph beginning with "All bolts for mounting lighting fixtures" and replacing with:

"**All bolts for mounting lighting fixtures under bridge structures shall conform to the requirements of ASTM A307. These bolts and other fastening hardware shall be galvanized in**

accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."

SECTION 637
DUST CONTROL

Revise this section by removing it in its entirety.

SECTION 643
TRAFFIC SIGNALS

643.021 Materials Amend this subsection by adding the following at the end:

"**MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Temporary Traffic Control Signals will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029."

643.023 Traffic Signal Structures Remove the third paragraph and replace it with the following:

"**Traffic signal support structures shall be classified as Fatigue Category III if they are located on roads with a speed limit of 35 mph or less, Fatigue Category II if they are located on roads with a speed limit of greater than 35 mph, and Fatigue Category I if noted on the Contract Plans. Fatigue Importance Factors shall be as specified in Table 11.6-1 (Fatigue Importance Factors). Fatigue analyses are not required for span-wire (strain) pole traffic signal support structures with heights of 55 feet or less unless required by the current edition of AASHTO "LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals".**

643.09 Service Connection Revise this subsection by removing the paragraph that begins with "Traffic signal services shall have…".

And by removing the paragraphs beginning with " A service ground rod shall be installed…" and "A total of 4, 10' service…" and replace them with "**A total of 4, 10' service ground rods shall be installed and properly connected together on the outside of the cabinet foundation. One ground rod shall be located at each corner and shall be either flush or slightly below finished grade. The connection between the ground rod and the ground wire shall be an**

exothermic connection such as a Cadweld. The ground wire from the interconnected ground rods shall be routed through a conduit in the foundation and into the base of the cabinet".

SECTION 645
HIGHWAY SIGNING

Section 645.023 Sign Support Structures. Under letter "c.", revise the fifth paragraph beginning with "In addition to the required details…" by removing the words "**and foundation**" from the 5th sentence.

Section 645.08 Method of Measurement. Revise the second paragraph beginning with "Bridge-type, cantilever and…" by removing the words "**including the foundation**" .

Section 645.09 Basis of Payment. Revise the third paragraph beginning with "The accepted bridge-type, cantilever and…" by removing the word "**foundation**" from the second sentence. Add the following sentence to the end of the paragraph "**Conduits, Junction Boxes, and Foundations will be paid for under Section 626.**"

SECTION 652
MAINTENANCE OF TRAFFIC

652.2.5 Portable Changeable Message Sign Revise the fifth paragraph so it reads:

"The control system shall include a display screen upon which messages can be reviewed before being displayed on the message sign. The control system shall be capable of maintaining memory when power is unavailable. Messages must be changeable with either a portable electronic device like a notebook computer or an on-board keypad. The controller shall have the capability to store a minimum of 200 user-defined and 200 pre-programmed messages. Controller and battery compartments shall be enclosed in lockable, weather-tight boxes. The cabinet shall be locked at all times that the Contractor is not actively changing the message. The Contractor shall change the password for the controller prior to stationing the PCMS and shall provide the password to the Resident. The password shall be unique per PCMS and secure and shall not be written anywhere in, on, around, or stored in the PCMS."
Amend this Section by adding the following new subsection:

"**652.2.6 Device Crashworthiness MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Category 1 (Cones, Drums, Tubular Markers, Flexible Delineators, and similar devices that have little chance if causing windshield penetration, tire damage, or other significant effect on the control or trajectory of a vehicle) – All Category 1 devices will be manufacturer self-certified as MASH2016 by January 1, 2025. Current Category 1 devices in useful serviceable condition that are not self-certified as MASH2016 compliant may be utilized through December 31, 2024.

Category 2 (Barricades, Portable Sign Supports, Category 1 devices with attachments, and similar devices that are not expected to produce significant vehicular velocity change but may be otherwise hazardous) – All Category 2 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2025. Current Category 2 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2024.

Category 3 (Portable Concrete Barrier, Portable Crash Cushions, Truck Mounted Attenuators, Category 2 devices weighing more than 100 pounds, and similar devices that are expected to produce significant vehicular velocity change or other harmful reactions) – All Category 3 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029. (See Standard Specification 526 for additional Portable Concrete Barrier information).

Category 4 (Trailer Mounted Devices: Arrow Boards, Temporary Traffic Control Signals, Area Lighting, Portable Changeable Message Sign, and other similar devices.) – All Category 4 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029."

652.3.3 Submittal of Traffic Control Plan Amend this section by adding:

"n. A security plan for any PCMS shall be included. The Contractor shall provide a plan for secure access to the PCMS and protection from unauthorized users. The plan shall have details on securing the cabinets via a lock and password from unauthorized users, password changing protocols, and where the access information will be kept so it can be used in the event of emergency. The Contractor shall not Identify or store passwords in the TCP."

652.4 Flaggers Revise the first paragraph of this section so that it reads:

"The Contractor shall furnish flaggers as required by the TCP or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the Department and administered by a Department-approved Flagger-Certifier who is employing that flagger. All flaggers must carry an official certification card with them while flagging that has been issued by their employer."

SECTION 681
PRECAST AGGREGATE-FILLED, CONCRETE BLOCK GRAVITY WALL

681.08 Basis of Payment Amend this section by adding the Item Number "**681.10**' in front of the item "Precast Aggregate-Filled Concrete Block Gravity Wall" at the end of the section.

SECTION 701
STRUCTURAL CONCRETE RELATED MATERIAL

701.01 Portland Cement and Portland Pozzolan Cement Amend the first sentence of Paragraph 3 by adding "**or Type 1L Portland Limestone cement**" so that it reads:
"**A Type IP (MS) Portland-pozzolan cement (blended hydraulic cement with moderate sulfate resistance) or Type 1L Portland Limestone cement meeting the requirements of AASHTO M 240, may be used instead of Type II or where Type I Portland cement, meeting the requirements of AASHTO M 85, is allowed**."

SECTION 703
AGGREGATES

Add the following to Section 703 - Aggregates

703.01 Fine Aggregate for Concrete Fine aggregate for concrete shall consist of natural sand or, when approved by the Resident, other inert materials with similar characteristics or combinations thereof, having strong, durable particles. Fine aggregate from different sources of supply shall not be mixed or stored in the same pile nor used alternately in the same class of construction or mix without permission of the Resident.

All fine aggregate shall be free from injurious amounts of organic impurities. Should the fine aggregate, when subjected to the colorimetric test for organic impurities, AASHTO T 21, produce a color darker than the reference standard color solution (laboratory designation Plate III), the fine aggregate shall be rejected.

Fine aggregate shall have a sand equivalent value of not less than 75 when tested in accordance with AASHTO T 176.
Fine aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

The fineness modulus shall not be less than 2.26 or more than 3.14. If this value is exceeded, the fine aggregate will be rejected unless suitable adjustments are made in proportions of coarse and fine aggregate. The fineness modulus of fine aggregate shall be determined by adding the cumulative percentages of material by weight retained on the following sieves: Nos. 4, 8, 16, 30, 50, 100 and dividing by 100.

Fine aggregate, from an individual source when tested for absorption as specified in AASHTO T 84, shall show an absorption of not more than 2.3 percent.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5.0

703.02 Coarse Aggregate for Concrete Coarse aggregate for concrete shall consist of crushed stone or gravel having hard, strong, durable pieces, free from adherent coatings and of which the composite blend retained on the ⅜ inch sieve shall contain no more than 15 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

The coarse aggregate from an individual source shall have an absorption no greater than 2.0 percent by weight determined in accordance with AASHTO T 85 modified for weight of sample.

The composite blend shall have a Micro-Deval value of 18.0 percent or less as determined by AASHTO T 327 or not exceed 40 percent loss as determined by AASHTO T 96.

Coarse aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

Coarse aggregate shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves						
Grading	S	A	AA	SP-1-7	SP-1-78	SP-2-8	SP-2-89
Aggregate Size	1 ½ inch	1 inch	¾ inch	½ inch	½ inch	⅜ inch	⅜ inch
2 inch	100						
1 ½ inch	95-100	100					
1 inch	-	95-100	100				
¾ inch	35-70	-	90-100	100	100		
½ inch	-	25-60	-	90-100	90-100	100	100
⅜ inch	10-30	-	20-55	40-70	40-75	85-100	90-100
No. 4	0-5	0-10	0-10	0-15	5-25	10-30	20-55
No. 8	-	0-5	0-5	0-5	0-10	0-10	5-30
No. 16	-	-	-	-	0-5	0-5	0-10
No. 50	-	-	-	-	-	-	0-5
No. 200*	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5

*This limit will be 0-2.0 for Department production samples. Yearly quality samples will be held to 0-1.5.

703.0201 Alkali Silica Reactive Aggregates All coarse and fine aggregates proposed for use in concrete shall be tested for Alkali Silica Reactivity (ASR) potential under AASHTO T 303 (ASTM C 1260), Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction, prior to being accepted for use. Acceptance will be based on testing performed by an accredited independent lab submitted to the Department. Aggregate submittals will be required on a 5-year cycle, unless the source or character of the aggregate in question has changed within 5 years from the last test date.

As per AASHTO T 303 (ASTM C 1260): Use of a particular coarse or fine aggregate will be allowed with no restrictions when the mortar bars made with this aggregate expand less than or equal to 0.10 percent at 30 days from casting. Use of a particular coarse or fine aggregate will be classified as potentially reactive when the mortar bars made with this aggregate expand greater than 0.10 percent at 30 days from casting. Use of this aggregate will only be allowed with the use of cement-pozzolan blends and/or chemical admixtures that result in mortar bar expansion of less than 0.10 percent at 30 days from casting as tested under ASTM C 1567.

Acceptable pozzolans and chemical admixtures that may be used when an aggregate is classified as potentially reactive include, but are not limited to the following:

a. Class F Coal Fly Ash meeting the requirements of AASHTO M 295
b. Ground Granulated Blast Furnace Slag (Grade 100 or 120) meeting the requirements of AASHTO M 302
c. Densified Silica Fume meeting the requirements of AASHTO M 307
d. Lithium-based admixtures
e. Metakaolin

Pozzolans or chemical admixtures required to offset the effects of potentially reactive aggregates will be incorporated into the concrete at no additional cost to the Department.

Amend this section by adding the new sub section:

"703.03 Combined Aggregate Grading for Concrete The combined gradation of the fine and coarse aggregates when mathematically blended using the mix design percentages shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves						
Grading	**S**	**A**	**AA**	**SP-1-7**	**SP-1-78**	**SP-2-8**	**SP-2-89**
Aggregate Size	**1½ inch**	**1 inch**	**¾ inch**	**½ inch**	**½ inch**	**⅜ inch**	**⅜ inch**
2 inch	**100**						
1½ inch	**95–100**	**100**					
1 inch	**80–100**	**95–100**	**100**				
¾ inch	**55–90**	**90–100**	**93–100**	**100**	**100**		
½ inch	**45–80**	**55–80**	**60–90**	**90–100**	**90–100**	**100**	**100**
⅜ inch	**40–65**	**40–65**	**50–80**	**55–85**	**65–90**	**90–100**	**90–100**
No. 4	**35–55**	**35–55**	**35–60**	**30–60**	**40–70**	**45–75**	**50–80**
No. 8	**25–53**	**28–50**	**30–55**	**25–55**	**30–65**	**35–65**	**35–75**
No. 16	**15–40**	**18–45**	**19–45**	**18–50**	**20–55**	**20–55**	**20–55**
No. 30	**7–30**	**9–30**	**10–33**	**8–32**	**10–38**	**10–38**	**10–40**
No. 50	**3–14**	**4–14**	**4–16**	**3–16**	**4–20**	**4–20**	**4–20**
No. 100	**0–6**	**0–6**	**0–6**	**0–6**	**0–7**	**0–8**	**0–8**
No. 200	**0–3.5***	**0–3.5***	**0–3.5***	**0–3.5***	**0–3.5***	**0–3.5***	**0–3.5***

***The percent passing the No. 200 sieve shall not exceed 6.0 percent for any fine aggregate. The percent passing the No. 200 sieve shall not exceed 2.0 percent for any single coarse aggregate. The percent passing the No. 200 sieve shall not exceed 4.0 percent for the combined gradation of self-consolidating concrete (SCC) mix designs."**

703.05 Aggregate for Sand Leveling Aggregate for sand leveling shall be sand of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The aggregate shall meet the grading requirements of the following table.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	85-100
No. 200	0-5.0

703.06 Aggregate for Base and Subbase The following shall apply to Sections (a.) and (c.) below. The material shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro- Deval value exceeds 25.0, the Washington State Degradation DOT Test Method T113, Method of Test for Determination of Degradation Value (January 2009 version) shall be performed, except that the test shall be performed on the portion of the sample that passes the ½ in sieve and is retained on the No. 10 sieve. If the material has a Washington Degradation value of less than 15, the material shall be rejected.

The material used in Section (b.) below shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0 the material may be used if it does not exceed 25 percent loss on AASHTO T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

Recycled Asphalt Pavement (RAP) shall not be used for or blended with aggregate base or subbase.

a. Aggregate for base, Type A and B shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type A	Type B
½ inch	45-70	35-75
¼ inch	30-55	25-60
No. 40	0-20	0-25
No. 200	0-6.0	0-6.0

At least 50 percent by weight of the material retained on the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

Type A aggregate for base shall only contain particles of rock that will pass the 2 inch square mesh sieve.

Type B aggregate for base shall only contain particles of rock that will pass the 4 inch square mesh sieve.

b. Aggregate for base, Type C shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
	Type C
4 inches	100
3 inches	90-100
2 inches	75-100
1 inch	50-80
½ inch	30-60
No. 4	15-40
No. 200	0-6.0

At least 50 percent by weight of the material coarser than the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

c. Aggregate for subbase shall be sand or gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type D	Type E
½ in	35-80	
¼ inch	25-65	25-100
No. 40	0-30	0-50
No. 200	0-7.0	0-7.0

Type D aggregate for subbase gravel may contain up to 50 percent by weight Recycled Concrete Aggregate (RCA). When RCA is used, the portion of the resulting blend of gravel and RCA retained on a ½" square mesh sieve shall contain a total of no more than 5 percent by weight of other recycled materials such as brick, concrete masonry block, or asphalt pavement as determined by visual inspection.

RCA shall be substantially free of wood, metal, plaster, and gypsum board as defined in Note 9 in Section 7.4 of AASHTO M 319. RCA shall also be free of all substances that fall under the category of solid waste or hazardous materials.

Aggregate for subbase shall not contain particles of rock which will not pass the 6 inch square mesh sieve.

703.08 Recycled Asphalt Pavement Recycled asphalt pavement shall consist of salvaged asphalt materials from milled pavements or production waste that has been processed before use to meet the requirements of the job mix formula. It shall be free of winter sand, granular fill, construction debris, or other materials not generally considered asphalt pavement.

703.081 RAP for Asphalt Pavement Recycled Asphalt Pavement (RAP) may be introduced into hot-mix asphalt pavement at percentages approved by the Department according to the MaineDOT Policies and Procedures for HMA Sampling and Testing.

If approved by the Department, the Contractor shall provide documentation stating the source, test results for average residual asphalt content, and stockpile gradations showing RAP materials have been sized to meet the maximum aggregate size requirements of each mix designation. The Department will obtain samples for verification and approval prior to its use.

The maximum allowable percent of RAP shall be determined by the asphalt content, the percent passing the 0.075 mm sieve, the ratio between the percent passing the 0.075 mm sieve and the asphalt content, and Coarse Micro-Deval loss values as tested by the Department.

The maximum percentage of RAP allowable shall be the lowest percentage as determined according to Table 4 below:

Classification	Maximum RAP Percentage Allowed	Asphalt content standard deviation	Percent passing 0.075 mm sieve standard deviation	Percent passing 0.075 mm sieve / asphalt content ratio	Residual aggregate M-D loss value
Class III	**10%**	**≤ 1.0**	**N/A**	**≤ 4.0**	**≤ 18**
Class II	**20%**	**≤ 0.5**	**≤ 1.0**	**≤ 2.8**	
Class I	**30%**	**≤ 0.3**	**≤ 0.5**	**≤ 1.8**	

Table 4: Maximum Percent RAP According to Test Results

The Department will monitor RAP asphalt content and gradation during production by testing samples from the stockpile at approximately 15,000 T intervals (in terms of mix production). The allowable variance limits (from the numerical average values used for mix designs) for this testing are determined based upon the maximum allowable RAP percentage and are shown below in Table 5.

Table 5: RAP Verification Limits

Classification	Asphalt content (compared to aim)	Percent passing 0.075 mm sieve (compared to aim)
Class III	± 1.5	± 2.0
Class II	± 1.0	± 1.5
Class I	± 0.5	± 0.7

For specification purposes, RAP will be categorized as follows:

Class III – A maximum of 10.0 percent of Class III RAP may be used in any base, intermediate base, surface, or shim mixture. A maximum of 20.0 percent of Class III RAP may be used in hand-placed mixes for item 403.209.

Class II – A maximum of 20.0 percent Class II RAP in any base, binder, surface, or shim course.

Class I – A maximum of 20.0 percent Class I RAP may be used in any base, intermediate base, surface, or shim mixture without requiring a change to the specified asphalt binder. A maximum of 30.0 percent Class I RAP may be used in in any base or intermediate base mixture provided that a PG 58-28 or PG 58-34 asphalt binder is used. A maximum of 30.0 percent Class I RAP may be used in any surface or shim mixture provided that PG 58-34 asphalt binder is used. Mixtures exceeding 20.0 percent Class I RAP must be evaluated and approved by the Department.

The Contractor may use up to two different RAP sources in any one mix design. The total RAP percentage of the mix shall not exceed the maximum allowed for the highest classification RAP source used (i.e. if a Class I & Class III used, total RAP must not exceed 30.0%). The blended RAP material must meet all the requirements of the classification for which the RAP is entered (i.e. 10% Class III with 20% Class I, blend must meet Class I criteria). The Department may take belt cuts of the blended RAP to verify the material meets these requirements. If the Contractor elects to use more than one RAP source in a design, the Contractor shall provide an acceptable point of sampling blended RAP material from the feed belt.

In the event that RAP source or properties change, the Contractor shall notify the Department of the change and submit new documentation stating the new source or properties a minimum of 72 hours prior to the change to allow for obtaining new samples and approval.

Revise this Section by removing 703.7 and 703.9 in its entirety and replace with the following:

703.07 Aggregates for HMA Pavements **Coarse and fine aggregate for hot mix asphalt pavements shall be of such gradation that when combined in the proper proportions, including filler, if required, the resultant blend will meet the composition of mixture for the type of pavement specified.**

Coarse aggregate, that material retained on the No. 4 sieve, shall be crushed stone or crushed gravel and, unless otherwise stipulated, shall consist of clean, tough, durable fragments free from an excess of soft or disintegrated pieces and free from stone coated with dirt or other objectionable matter. Coarse aggregate shall not exceed an absorption of 2.0 percent by weight as determined by AASHTO T 85.

Fine aggregate, material that passes the No. 4 sieve, shall consist of natural sand, manufactured sand, or a combination of these. It shall consist of hard, tough grains, free from injurious amounts of clay, loam, or other deleterious substances. Fine aggregate shall not exceed an absorption of 2.3 percent by weight as determined by AASHTO T 84.

All individual aggregates for hot mix asphalt pavements shall meet Table 3 requirements (excluding LCP) unless otherwise noted. The Department reserves the right to sample and test the aggregate for any of the following properties at any time:

TABLE 3: Aggregate Consensus Properties Criteria

Estimated Traffic, Million 18 kip ESALs	AASHTO T 335 (minimum %)	AASHTO T 304 Method A **	ASTM D 4791 Method B	AASHTO T 176	Aggregate shall meet at least one of these:		
					AASHTO T 327	AASHTO T 96	WSDOT T 113*
< 3.0	75/60	≥ 40%	≤ 10%	≥ 45	≤ 18.0%	≤ 40%	≥ 30
3.0 to < 10	90/80	≥ 45%		≥ 50		≤ 35%	
≥ 10	95/90					≤ 30%	N/A

* As determined by Washington State DOT Test Method T 113, Method of Test for Determination of Degradation Value except that the reported degradation value will be the result of testing a single composite specimen from that portion of the sample that passes the ½ inch sieve and is retained on the No. 10 sieve.

** Property will be evaluated on a mix design basis by calculating a weighted average based upon individual aggregate values (weighted average by the percentage proportion of the aggregate within the design).

AASHTO T 335 - "90/80" denotes that 90 percent of the coarse aggregate has one fractured face and 80 percent has two fractured faces.

AASHTO T 304 - Criteria are presented as percent air voids in loosely compacted fine aggregate, (U).

ASTM D4791 - Criteria are presented as maximum percent by weight of flat and elongated particles (5:1 ratio).

The entire HMA wearing course shall come from the same source of material and the same job mix formula, except when permission is obtained from the Department to change sources.

703.09 HMA Mixture Composition **The coarse and fine aggregate shall meet the requirements of Section 703.07. The several aggregate fractions for mixtures shall be sized, graded, and combined in such proportions that the resulting composite blends, including RAP aggregate will meet the grading requirements of the following table:**

Aggregate Gradation Control Points

Nominal Maximum Aggregate Size---Control Points (Percent Passing)						
Sieve Designation	**Type 25 mm**	**Type 19 mm**	**Type 12.5 mm**	**Type 9.5 mm**	**Type 9.5 mm Thin Lift Mixture (TLM)**	**Type 4.75 mm**
	Percent By Weight Passing - Combined Aggregate					
37.5 mm	**100**					
25 mm	**90-100**	**100**				
19 mm	**-90**	**90-100**	**100**			
12.5 mm	**-**	**-90**	**90-100**	**100**	**100**	**100**
9.5 mm	**-**	**-**	**-90**	**90-100**	**95-100**	**95-100**
4.75 mm	**-**	**-**	**-**	**-90**	**60-95**	**80-100**
2.36 mm	**19-45**	**23-49**	**28-58**	**32-67**	**47-65**	**40 - 80**
1.18 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.60 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.30 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.075 mm	**2.0-6.0**	**2.0-6.0**	**2.0-6.0**	**2.0-7.0***	**2.0-7.0***	**2.0-7.0**

*** For 9.5 mm nominal maximum aggregate size mixtures, the maximum design aim for the percent passing the 75 µm sieve is 6.5%.**

SECTION 709
REINFORCING STEEL AND WELDED STEEL WIRE FABRIC

709.01 Reinforcing Steel Remove the second paragraph of Section 709.01 of the standard specification beginning with "Low-Carbon, Chromium,…" and replace with the following:

" Low-carbon, chromium, reinforcing steel shall be deformed bars conforming to the requirements of ASTM A1035. Bars shall be Grade 100 and alloy Type CS unless otherwise specified on the Plans. "

SECTION 710
FENCE AND GUARDRAIL

710.06 Fence Posts and Braces Revise the first Paragraph so that it reads:

"Wood posts shall be of cedar, white oak, or tamarack or other AWPA approved species, of the diameter or section and length shown on the plans."

Remove the fourth paragraph which starts " That portion of wood posts…".

Revise the paragraph beginning with "Braces shall be of spruce, eastern hemlock … so that it now reads:

"Braces shall be of spruce, eastern hemlock, Norway pine, pitch pine, or tamarack timbers or other AWPA approved species, or spruce, cedar, tamarack or other AWPA approved species round posts of sufficient length to make a diagonal brace between adjacent posts. All wood posts and braces shall be pressure-treated in accordance with AASHTO M 133 and AWPA U1, UC4A Commodity Specification B: Posts. "

710.07 Guardrail Posts Revise this section so that the first sentence of section a. reads:

"a. Wood posts shall be of Norway pine, southern yellow pine, pitch pine, Douglas fir, red pine, white pine, or eastern hemlock or other AWPA approved species."

Revise the next paragraph so that it reads:

Wood posts and offset brackets shall be preservative treated in accordance with the requirements of AASHTO M 133 and AWPA U1, UC4A Commodity Specification B: Posts.

710.08 Guardrail Hardware Revise this subsection by replacing "**AASHTO M 298**" with "**ASTM B695**"

SECTION 711
MISCELLANEOUS BRIDGE MATERIAL

711.06 Stud Shear Connector Anchors and Fasteners Amend this section by deleting it in its entirety and replacing it with:
"Shear connectors shall meet the dimensional tolerances of Figure 9.1 of the ANSI/AASHTO/AWS D1.5 Bridge Welding Code (D1.5 Code). Shear connectors, anchors and fasteners shall meet the material requirements of Section 9 of the D1.5 Code. Shear connectors shall meet the mechanical property requirements of Table 9.1, Type B of the D1.5 Code. Anchors and fasteners shall meet the mechanical property requirements of Table 9.1 of the D1.5 Code, Type A."

SECTION 712
MISCELLANEOUS HIGHWAY MATERIAL

712.061 Structural Precast Units Amend this section by adding the following sentence to the end of the first paragraph of the Construction subsection:

"Facilities certified by NPCA or PCI shall provide to the Fabrication Engineer a copy of their annual audit to include deficiency reports and corrective actions."

Revise this section by changing the letter "b" of ASTM C1611 of the Concrete Testing subsection so that it reads:

"**b. Air content shall be 5.0% to 8.0%**."

SECTION 713
STRUCTURAL STEEL AND RELATED MATERIAL

Section 713.01 Structural Steel Replace paragraph two in its entirety with the following:
"**Main load-carrying components subject to tensile stresses or stress reversal shall meet the notch toughness requirements in AASHTO M 270M, Table 11, Zone 2, for non-fracture critical steel or Table 12, Zone 2 for fracture critical steel. Frequency of tension tests shall comply with the requirements of S1.**"

Section 713.02 High Strength Bolts **R**evise this subsection by removing the portion from the beginning up to and including TABLE 1 – Test Schedule*, and replace it with:

"**Bolts shall conform to the requirements of ASTM F3125, Grade A325, Type 1 or Type 3. Type 3 bolts shall be supplied for all structures utilizing unpainted AASHTO M 270M weathering steel. Type 1 galvanized bolts shall be used for all structures utilizing metallized or galvanized steel.**

Nuts shall meet the requirements of ASTM A563.

Circular and beveled washers shall conform to the requirements of ASTM F436.

Direct Tension Indicators (DTI'S) shall conform to the requirements of ASTM F959. DTI's for use with painted steel shall have a plain "as fabricated" finish. DTI's for use with unpainted steel shall be galvanized to the requirements of ASTM B695 Class 50, Type I and have a fusion-bonded epoxy coating. DTI's used with galvanized steel, metalized steel and steel coated with a zinc-rich primer shall be galvanized to the requirements of ASTM B695 Class 50, Type I.

"Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies shall meet the requirements of ASTM F3125, Grade F1852.

Bolts, nuts and washers specified to be galvanized, shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695 Class 50, Type I.

All fastener (bolts and nuts), whether black or galvanized, shall be coated with a suitable lubricant. Galvanized nuts shall be lubricated with a lubricant containing a visible dye.

Each lot of bolts, nuts, washers and DTI's shall be tested by the manufacturer in accordance with the tests tabulated in Table 1 - Test Schedule. The testing frequency for bolts, nuts and washers from each shipping lot of fasteners shall be as specified in the applicable AASHTO/ASTM Standard Specifications. The testing frequency for each production lot of DTI's shall be as specified in ASTM F959.

TABLE 1 - Test Schedule*

Bolts	Tensile Strength (Wedge Test) Proof Load Hardness Coating Thickness	ASTM F606 ASTM F606 ASTM F606 ASTM B695
Nuts	Proof Load Hardness Coating Thickness	ASTM F606 ASTM F606 ASTM B695
Washers	Hardness Coating Thickness	ASTM F606 ASTM B695
DTI's	Coating Thickness Compression Load	ASTM B695 ASTM F959

Section 716
STRUCTURAL ALUMINUM AND RELATED MATERIAL

716.01 Aluminum Railings: Revise this subsection by removing section d. and replacing with:

d. Steel Anchor Assembly Steel spacers for post anchors shall conform to the requirements of ASTM A36. Nuts embedded in concrete shall conform to the requirements of ASTM A307.

Anchor bolts, exposed nuts and washers shall conform to the requirements of ASTM A449 or ASTM F1554, Grade 55 and shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I.

SECTION 718
TRAFFIC SIGNALS MATERIAL

718.03 Signal Mounting Amend the paragraph beginning with "All trunions, brackets and…" by adding "**For polycarbonate signal heads with more than 3 sections or requiring mounting extensions greater than 12 inches in length, reinforcing plates shall be used to reinforce the housings at the point of attachment.**" to the end of the paragraph.

718.08 Controller Cabinet Revise this subsection by replacing the paragraph beginning with "The cabinet shall be supplied with LED light panels…" on or about page 7-66 with "**The cabinet shall be supplied with white LED light panels which shall automatically illuminate via a door open switch whenever one of the four main cabinet doors are opened for the ground mount cabinet or two main doors for the side of pole cabinet. The ground mounted cabinet shall contain four LED light panels per side totaling eight panels for the cabinet; one panel each at the top and bottom portion of the front side and back side on the Control side and Power/Auxiliary side of the cabinet. Each light panel shall produce a minimum of 250 lumens for a total minimum lumen output of 2000 lumens with all eight panels illuminated. The minimum output per side would be 1000 lumens. The LED panels shall be protected by a clear shatterproof shield. The side of pole mounted cabinet shall contain four light panels; one at the top of the rack assembly and one at the bottom rack assembly on each side of the cabinet.**

A second door open status switch per door shall activate a controller input to log a report event that one of the doors was opened. All door open status switches shall be connected to the same controller input. For the ground mount cabinet, there shall be two switches on each of the four main doors. For the side-of-pole mount cabinet, there shall be two switches on each of the two main doors."

Revise this subsection by replacing the paragraph beginning with "The cabinet shall be supplied with a generator panel …" on or about page 7-68 with:

"The cabinet shall be supplied with a generator panel. The generator panel shall consist of a manual transfer switch and a twist-lock connector for generator hookup. The transfer switch knob and twist-lock connector shall be located inside a stainless steel enclosure with a separate lockable door accessed with a Corbin #2 key. The unit shall be mounted on the left, exterior of the control side wall of the ground mount cabinet a minimum of 36" above the surrounding grade and on the lower left side of the pole mounted cabinet. The generator transfer switch shall be a Reliance C30A1N Signa Series or approved equal. "

Revise this subsection by removing the following from the paragraph beginning with "The ground mounted cabinet shall be supplied and installed with an electric service meter socket trim and electrical service disconnect switch …" on or about page 7-69: **"(removed: thus preventing that space from being used either by equipment supplied as part of the project, or future equipment that would be installed in the rack system. Joe indicated that he would add this language to the detail so it is covered.)".**

Revise this subsection by replacing the following in the paragraph beginning with "The Contractor shall reconfigure the default user name…" on or around page 7-70; "MaineDOT IT" with "**MaineDOT Traffic Division**".

In the paragraph beginning with "Tests shall be conducted by the contractor…" on or around page 7-73, amend this subsection by removing **"in the state of Maine and"** after "The facility shall be".

Amend this Section by adding the following subsection:

718.13 Field Monitoring Unit (FMU) This item of work shall conform to this specification. This item shall consist of furnishing and installing a Field Monitoring Unit (FMU) and software, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and interface cables, as described herein.

Where applicable, communications from MaineDOT's cloud-based Central Management System (CMS) to the on-street traffic signal controllers shall be made through fiber optic interconnect cable connected back to existing internet connections and/or the Field Monitoring Unit (FMU). The Contractor shall furnish and install all materials necessary for a complete and operational fiber optic interconnection to all project intersections as shown on the plans. All connections to the CMS cloud-based system shall be via a secure VPN network.

The FMU shall be the only remote connection device used by isolated intersections to connect to the cloud-based system. All connections shall be encrypted VPN tunnels. The Contractor shall coordinate all configuration settings with MaineDOT IT and the Engineer.

The FMU central web based interface shall be a separate element from the CMS.

MATERIALS: The materials for this work shall conform to the following requirements:

1. The work under this item specifies the requirements for the FMU. The FMU shall operate independent of the brand/type of intersection controller deployed in the ATC traffic cabinet.

2. The FMU shall conform to the following requirements:
   - 2.1 The FMU shall function correctly between -34 degrees C and +74 degrees C.
   - 2.2 The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.
   - 2.3 The FMU shall monitor and log all ATC Controller and ATC cabinet faults and or alarms.
   - 2.4 The FMU shall be wired directly to the ATC cabinet.
   - 2.5 The FMU shall have an internal cellular modem running at 4G LTE.
     - 2.5.1 The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.
   - 2.6 The FMU shall incorporate an integrated GPS and cell modem.
   - 2.7 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.
   - 2.8 The FMU shall be powered via a standard 120V input power.

2.9 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.

2.10 The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.

2.11 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.

2.12 The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.

2.13 In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.

2.14 The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.

2.15 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.

2.16 The FMU shall include weather proof antennas.

3. **Map Display FMU Management Software**

3.1 The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.

3.2 The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.

3.3 The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top

of the list, followed by medium priority, low priority and then finally by intersections not in alarm.

3.4 The icons shall change to be able to clearly indicate if an intersection is offline.

3.5 Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.

3.6 The default map display position and zoom shall be configurable by user, so that the user's view will default to show the intersections that the user is responsible for managing.

3.7 The map view shall have the ability to show Google traffic overlays on the map.

4. **Intersection Detail Display FMU Management Software**

4.1 It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:

4.1.1 The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).

4.1.2 The time since the last communication with the device

4.1.3 The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)

4.1.3.1 The AC mains voltage (value)

4.1.3.2 The battery back-up voltage (value)

4.1.3.3 The cabinet temperature (value)

4.1.3.4 The cabinet humidity (value)

4.1.3.5 The presence of AC power (OK or Fail)

4.1.3.6 The flashing status of the intersection (OK or Flashing)

4.1.3.7 Stop Time status (OK or Stop Time Active)

4.1.3.8 The cabinet door status (Open or Closed)

4.1.3.9 The intersection fan status (Fan On or Fan off)

4.1.4 It shall be possible to view graphs of each of the value parameters in graphical form, over the recent two-week period. This includes real time graphs of:

4.1.4.1 The AC mains voltage

4.1.4.2 The battery back-up voltage

4.1.4.3 The cabinet temperature

4.1.4.4 The cabinet humidity

5. **Diagnostics and Log Display FMU Management Software**

5.1 From the device level detail within the FMU management software, it shall be possible to drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems.

5.2 It shall be possible to filter the logs by Device; by Device Type and/or by Group as well as between dates.

5.3 It shall be possible to print these selected logs to a local printer or a PDF file.

5.4 It shall be possible to export these logs to Excel on the local computer for further analysis.

6. **Alarms FMU Management Software**

6.1 The FMU management software shall have a comprehensive alarm generation capability

6.2 It shall be possible to configure alarms to be generated on any parameter becoming out of tolerance, including analog values, digital values and enumerated values.

6.3 Alarms shall be configurable to be of Low, High or Critical Priority.

6.4 The alarm priority shall be displayed throughout the FMU management software, on all displays, using color codes such as red-critical; yellow – high; and amber-low to indicate the priority of the alarm.

6.5 The current active alarms shall be accessible for view via an expandable window, to see which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

7. **Alerts FMU Management Software**

7.1 The FMU management software shall have comprehensive alerting capability, to enable the response personnel to be notified when an abnormal situation has occurred.

7.2 It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.

7.3 The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.

7.4 The intention is that the FMU management software provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

8. **Hosting and Connectivity and Service FMU / FMU Management Software**

8.1 The contractor shall supply the FMU with the FMU manufacturers 10 year options for Connectivity and Service, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:

8.1.1 Cellular Connectivity

8.1.2 No cellular overage charges

8.1.3 Extended warranty on the hardware for the period of the Connectivity and Service Agreement

8.1.4 Over-the-air software updates

8.1.5 Over-the-air security updates

8.1.6 Future Connected Vehicles Service

Section 719
SIGNING MATERIAL

719.072 Overhead Signing: Revise this subsection by replacing it in entirety with:

"**Sign panels mounted to independent sign support structures and support structure components mounted to bridges passing over the highway are considered to be overhead signing. Overhead signing shall be mounted on W6 by 9 steel beams conforming to the requirements of ASTM A992/A992M, galvanized in accordance with AASHTO M 111 (ASTM A123), or the same size aluminum beams conforming to ASTM B221M, alloys and tempers of 6061-T6, 6063-T6 or 6005-T5. These components shall be horizontally spaced a maximum of 5¼ feet on center, extending from the bottom of sign panel to the top. If supplemental signs are included in the contract, these beams will extend from the bottom of the main sign panel to the top of the supplemental sign panel. The maximum distance from the edge of the sign to the center of the W6 by 9 shall not exceed approximately 3¼ feet.**

On independent sign support structures, these W6 by 9 beam components shall be fastened to chords with a pair of appropriately sized U-bolts on each side of the web at each fastening

location. A similar pair of U-bolt assemblies shall be used in attaching each chord of an overhead component to upright supports. U-bolts for steel support structures shall conform to ASTM A449, Type 1. U-bolt hardware, which includes nuts, flat washers, and helical lock washers, shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Washers shall conform to the requirements of ASTM F436. The U-bolt material for aluminum support structures, or a combination of steel and aluminum structural components, shall be stainless steel conforming to the requirements of ASTM F593, alloy group 1, with a minimum yield strength of 45 ksi. Steel support structures may also utilize stainless steel hardware assemblies as an alternative to galvanized steel. Nuts shall be of the locking type with nylon inserts. Washers shall conform to the requirements of ASTM A276, Type 302. Flat washers, without helical lock washers, will be acceptable in this stainless steel assembly.

On bridge mounted structures, the fastener configurations shall be depicted in the contract documents. "

SECTION 720
STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS

720.03 Steel Supports: Revise this subsection by removing the paragraph beginning with "Chord flange splice fastener" and replacing with:

"**Chord flange splice fastener assemblies shall conform to ASTM A325, Type 1, and galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Other fastener assemblies shall be as specified in Section 719.07, or as approved by the Fabrication Engineer."**

720.06 Steel H-beam: Revise this subsection by replacing it in its entirety with:

"**Steel H-beam Post shall conform to the requirements of ASTM A992. All work shall conform to the applicable provisions of Section 504 – Structural Steel. Steel shall be hot-dip galvanized in accordance with AASHTO M 111 (ASTM A123). All steel hardware for use with H-beam poles shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."**

720.07 Anchor Bolts: Revise this subsection by replacing it in its entirety with:

"**Anchor bolts and nuts supplied for aluminum and/or steel supports shall conform to ASTM A449, Type 1, or ASTM F1554, Grade 55, both with a minimum yield strength of 55 ksi. Anchor bolts shall be supplied with 2 heavy hex nuts and 2 hardened washers and unless otherwise specified the anchor bolts shall have a 90° bend with a 6 inch minimum leg length at the lower end. The anchor bolts, nuts and hardened washers shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. The bolt**

shall be zinc-coated 12 inches from the exposed end, unless otherwise specified. If the anchor bolts are to be used with breakaway devices incorporating the function of a nut, for example, longitudinally grooved breakaway couplings, nuts or washers will not be required.

Alternate materials, grades, and designs may be used for anchor bolts subject to approval of the Fabrication Engineer."

720.09 Wood Ornamental Light Standard: Revise this subsection by removing the paragraph beginning with "All bolts shall be" and replacing it with:

"**All bolts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."**

720.12 Wood Sign Posts Revise the first sentence so that it reads:

"Wood sign posts shall be rectangular, straight and sound timber, cut from live growing native spruce, red pine, hemlock, cedar trees or other AWPA approved species, free from loose knots or other structurally weakening defects of importance, such as shake or holes or heart rot."

Revise the third paragraph that starts with "When pressure treated…" so that it reads:

"All sign posts shall be pressure-treated in accordance with AASHTO M 133 and AWPA Standard U1, UC4A, Commodity Specification A: Sawn Products."

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. General
II. Nondiscrimination
III. Non-segregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
XI. Certification Regarding Use of Contract Funds for Lobbying
XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (*see* 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

> "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than $10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH–1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to *DBAconformance@dol.gov*. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to *DBAconformance@dol.gov*, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements* (1) *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* $31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of $150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

* * * * *

3. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)
This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

The United States Department of Transportation (USDOT)

Standard Title VI/Non-Discrimination Assurances

DOT Order No. 1050.2A

The **Maine Department of Transportation** (herein referred to as the "Recipient"), **HEREBY AGREES THAT,** as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation (DOT), through Federal Highway Administration (herein referred to as "FHWA" is subject to and will comply with the following:

Statutory/Regulatory Authorities

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.,* 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- 49 C.F.R. Part 21 (entitled *Non-discrimination In Federally-Assisted Programs Of The Department Of Transportation-Effectuation Of Title VI Of The Civil Rights Act Of 1964);*
- 28 C.F.R. section 50.3 (U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964);

The preceding statutory and regulatory cites hereinafter are referred to as the "Acts" and "Regulations," respectively.

General Assurances

In accordance with the Acts, the Regulations, and other pertinent directives, circulars, policy, memoranda, and/or guidance, the Recipient hereby gives assurance that it will promptly take any measures necessary to ensure that:

> *"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity, "for which the Recipient receives Federal financial assistance from DOT, including the* **FHWA.**

The Civil Rights Restoration Act of 1987 clarified the original intent of Congress, with respect to Title VI and other Non-discrimination requirements (The Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973), by restoring the broad, institutional-wide scope and coverage of these non- discrimination statutes and requirements to include all programs and activities of the Recipient, so long as any portion of the program is Federally assisted.

Specific Assurances

More specifically, and without limiting the above general Assurance, the Recipient agrees with and gives the following Assurances with respect to its Federally assisted **FHWA Program.**

1. The Recipient agrees that each "activity," "facility," or "program," as defined in§§ 21.23(b) and 21.2(e) of 49 C.F.R. § 21 will be (with regard to an "activity") facilitated, or will be (with regard to a "facility") operated, or will be (with regard to a "program") conducted in compliance with all requirements imposed by, or pursuant to the Acts and the Regulations.

2. The Recipient will insert the following notification in all solicitations for bids, Requests For Proposals for work, or material subject to the Acts and the Regulations made in connection with all **FHWA Programs** and, in adapted form, in all proposals for negotiated agreements regardless of funding source:

   *"The **Maine Department of Transportation,** in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 US.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."*

3. The Recipient will insert the clauses of Appendix A and E of this Assurance in every contract or agreement subject to the Acts and the Regulations.

4. The Recipient will insert the clauses of Appendix B of this Assurance, as a covenant running with the land, in any deed from the United States affecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Recipient.

5. That where the Recipient receives Federal financial assistance to construct a facility, or part of a facility, the Assurance will extend to the entire facility and facilities operated in connection therewith.

6. That where the Recipient receives Federal financial assistance in the form, or for the acquisition of real property or an interest in real property, the Assurance will extend to rights to space on, over, or under such property.

7. That the Recipient will include the clauses set forth in Appendix C and Appendix D of this Assurance, as a covenant running with the land, in any future deeds,

leases, licenses, permits, or similar instruments entered into by the Recipient with other parties:

a. for the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
b. for the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.

8. That this Assurance obligates the Recipient for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the Assurance obligates the Recipient, or any transferee for the longer of the following periods:

    A. the period during which the property is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits; or
    b. the period during which the Recipient retains ownership or possession of the property.

9. The Recipient will provide for such methods of administration for the program as are found by the Secretary of Transportation or the official to whom he/she delegates specific authority to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the Acts, the Regulations, and this Assurance.

10. The Recipient agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the Acts, the Regulations, and this Assurance.

By signing this ASSURANCE, **Maine Department of Transportation** also agrees to comply (and require any sub-recipients, sub-grantees, contractors, successors, transferees, and/or assignees to comply) with all applicable provisions governing the **FHWA's** access to records, accounts, documents, information, facilities, and staff. You also recognize that you must comply with any program or compliance reviews, and/or complaint investigations conducted by the **FHWA.** You must keep records, reports, and submit the material for review upon request to **FHWA** or its designee in a timely, complete, and accurate way. Additionally, you must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

Maine Department of Transportation gives this ASSURANCE in consideration of and for obtaining any Federal grants, loans, contracts, agreements, property, and/or discounts, or other Federal-aid and Federal financial assistance extended after the date hereof to the recipients by the U.S. Department of Transportation under the **FHWA Programs**. This ASSURANCE is binding on the State of Maine, other recipients, sub-recipients, sub-grantees, contractors, subcontractors and their subcontractors, transferees, successors in interest, and any other participants in the **FHWA Programs**. The person(s) signing below is authorized to sign this ASSURANCE on behalf of the Recipient.

Maine Department of Transportation
Dale F. Doughty, Acting Commissioner
(Name of Recipient)

By: 
(Signature of Authorized Official)

Dated: 3-27-25

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Highway Administration (FHWA)**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **FHWA** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **FHWA** as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non- discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **FHWA** may determine to be appropriate, including, but not limited to:

a. withholding payments to the contractor under the contract until the contractor complies; and/or
b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX B

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the **Maine Department of Transportation** will accept title to the lands and maintain the project constructed thereon in accordance with all requirements imposed by Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, part 21, Non-discrimination in Federally-assisted Programs of the Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), the Regulations for the Administration of **Federal Highway Administration (FHWA) Program,** and the policies and procedures prescribed by the **FHWA** of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the **Maine Department of Transportation** all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto **Maine Department of Transportation** and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the **Maine Department of Transportation**, its successors and assigns.

The **Maine Department of Transportation**, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the **Maine Department of Transportation** will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non- discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation

and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

APPENDIX C

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the **Maine Department of Transportation** pursuant to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

    1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, **Maine Department of Transportation** will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the **Maine Department of Transportation** will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the **Maine Department of Transportation** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by **Maine Department of Transportation** pursuant to the provisions of Assurance 7(b):

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non- discrimination covenants, **Maine Department of Transportation** will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*

C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, **Maine Department of Transportation** will there upon revert to and vest in and become the absolute property of **Maine Department of Transportation** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.),* (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.),* as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.),* (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure

compliance with Title VI, you must take reasonable steps to
-ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Tetreau, Danielle

From: Maine DEP MELS System <mels-noreply@maine.gov>
Sent: Wednesday, June 25, 2025 4:05 AM
To: Tetreau, Danielle
Subject: MELS - Submission Status Change Notification - PBR_ID-0100546-0001, MaineDOT- Bangor - I-95 Exit 187 Hogan Road

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Maine Department of Environmental Protection User,

This notification is to inform you of a status change on your submission of "Land Permit Application (Including Permit By Rule)" (submission **PBR_ID-0100546-0001**) for MaineDOT- Bangor - I-95 Exit 187 Hogan Road. The status has been updated to status "Completed" on 6/25/2025 4:00 AM.

Please log in here to view more details about your submission or review any correction requests: MELS.

The processor assigned to your submission is Keegan Feero.

This is an automated notification generated by MELS.

Please do not respond directly to this email. If you have any questions, please get in touch with your project manager directly. Be sure to include the assigned permit number or Submission number in your correspondence. Our help desk phone number is 866-894-2578.

11. State transportation facilities

A. Applicability

(1) This section applies to the maintenance, repair, reconstruction, rehabilitation, replacement or minor construction of a State Transportation Facility carried out by, or under the authority of, the Maine Department of Transportation (MaineDOT) or the Maine Turnpike Authority, including any testing or preconstruction engineering, and associated technical support services.

(2) This section does not apply to an activity within a coastal sand dune system.

NOTE: The construction of a transportation facility other than roads and associated facilities may be subject to the Storm Water Management Law, 38 M.R.S.A. Section 420-D.

B. Standards

(1) Photographs of the area to be altered by the activity must be taken before work on the site begins. The photographs must be kept on file and be made available at the request of the DEP.

(2) The activity must be reviewed by the Department of Inland Fisheries and Wildlife and the Department of Marine Resources, as applicable. The applicant must coordinate with the reviewing agencies and incorporate any recommendations from those agencies into the performance of the activity.

(3) All construction activities undertaken must be detailed in a site-specific Soil Erosion and Water Pollution Control Plan and conducted in accordance with MaineDOT's Best Management Practices for Erosion and Sediment Control, dated January 2000, and Standard Specifications, dated December 2002.

(4) Alignment changes may not exceed a distance of 200 feet between the old and new center lines in any natural resource.

(5) The activity may not alter more than 300 feet of shoreline (both shores added together) within a mile stretch of any river, stream or brook, including any bridge width or length of culvert.

(6) The activity may not alter more than 150 feet of shoreline (both shores added together) within a mile stretch of any outstanding river segment identified in 38 M.R.S.A. 480-P, including any bridge width or length of culvert.

(7) The activity must minimize wetland intrusion. The activity is exempt from the provisions of Chapter 310, the Wetland and Waterbodies Protection Rules, if the activity alters less than 15,000 square feet of natural resources per mile of roadway (centerline measurement) provided that the following impacts are not exceeded within the 15,000 square foot area:

(a) 1,000 square feet of coastal wetland consisting of salt tolerant vegetation or shellfish habitat; or

(b) 5,000 square feet of coastal wetland not containing salt tolerant vegetation or shellfish habitat; or

(c) 1,000 square feet of a great pond.

All other activities must be performed in compliance with all sections of Chapter 310, the Wetland Protection Rules, except 310.2(C), 5(A), 9(A), 9(B) and 9(C).

(8) The activity may not permanently block any fish passage in any watercourse containing fish. The applicant must coordinate with the reviewing agencies listed in paragraph 2 above to improve fish passage and incorporate any recommendations from those agencies into the performance of the activity.

NOTE: For guidance on meeting the design objectives for fish passage, including peak flow, maximum velocity, mining depth and gradient, see the MaineDOT Waterbody and Wildlife Crossing Policy and Design Guide (July 2008), developed in conjunction with state and federal resource and regulatory agencies.

(9) Rocks may not be removed from below the normal high water line of any coastal wetland, freshwater wetland, great pond, river, stream or brook except to the minimum extent necessary for completion of work within the limits of construction.

(10) If work is performed in a river, stream or brook that is less than three feet deep at the time and location of the activity, the applicant must isolate the work area from the resource and divert stream flows around the work area, maintaining downstream flows while work is in progress.

(11) Wheeled or tracked equipment may not operate in the water. Equipment operating on the shore may reach into the water with a bucket or similar extension. Equipment may cross streams on rock, gravel or ledge bottom. If avoiding the operation of wheeled or tracked equipment in the water is not possible, the applicant must explain the need to operate in the water. Approval from the DEP to operate in the water must be in writing, and any recommendations from the DEP must be incorporated into the performance of the activity.

(12) All wheeled or tracked equipment that must travel or work in a vegetated wetland area must travel and work on mats or platforms.

(13) Any debris or excavated material must be stockpiled either outside the wetland or on mats or platforms. Erosion and sediment control best management practices must be used, where necessary, to prevent sedimentation. Any debris generated during the activity must be prevented from washing downstream and must be removed from the wetland or water body. Disposal of debris must be in conformance with the Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Section 1301 *et seq*.

(14) Work below the normal high water line of a great pond, river, stream or brook must be done at low water except for emergency work or work agreed to by the resource agencies listed in paragraph 2 above.

(15) Perimeter controls must be installed before the work starts. Disturbance of natural resources beyond the construction limits shown on the plans is not allowed under this rule.

NOTE: Guidance on the location of construction limits can be obtained from the on site Construction Manager.

(16) The use of untreated lumber is preferred. Lumber pressure treated with chromated copper arsenate (CCA) may be used only if necessary and only if use is allowed under federal law and not prohibited from sale under 38 M.R.S.A. 1682, and provided it is cured on dry land in a manner that exposes all surfaces to the air for a period of at least 21 days prior to construction. Wood treated with creosote or pentachlorophenol may not be used where it will contact water.

(17) A temporary road for equipment access must be constructed of crushed stone, blasted ledge, or similar materials that will not cause sedimentation or restrict fish passage. Such roads must be completely removed at the completion of the activity. In addition, any such temporary roads which are in rivers, streams or brooks, must allow for a passage of stormwater flows associated with a 10-year storm.

(18) Non-native species may not be planted in restored areas.

(19) Disposal of debris must be in conformance with Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Sections 1301 *et seq.*

(20) Disturbance of vegetation must be avoided, if possible. Where vegetation is disturbed outside of the area covered by any road or structure construction, it must be reestablished immediately upon completion of the activity and must be maintained.

(21) A vegetated area at least 25 feet wide must be established and maintained between any new stormwater outfall structure and the high water line of any open water body. A velocity reducing structure must be constructed at the outlet of the stormwater outfall that will create sheet flow of stormwater, and prevent erosion of soil within the vegetated buffer. If the 25 foot vegetated buffer is not practicable, the applicant must explain the reason for a lesser setback in writing. Approval from the DEP must be in writing and any recommendations must be incorporated into the activity.

C. Definitions. The following terms, as used in this chapter, have the following meanings, unless the context indicates otherwise:

(1) Diversion. The rerouting of a river, stream or brook around a construction site and then back to the downstream channel.

(2) Fill. a. (verb) To put into or upon, supply to, or allow to enter a water body or wetland any earth, rock, gravel, sand, silt, clay, peat, or debris; b. (noun) Material, other than structures, placed in or immediately adjacent to a wetland or water body.

(3) Floodplain wetlands. Freshwater wetlands that are inundated with flood water during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Agency or other site specific information.

(4) Riprap. Heavy, irregularly shaped rocks that are fit into place, without mortar, on a slope as defined in the MaineDOT Standard Specifications, dated **November 2014**.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

October 1, 2025

Regulatory Division
Transportation & Utility Section
File Number: NAE-2025-01386
MaineDOT WIN: 18595.10

Danielle Tetreau
Maine Department of Transportation
16 State House Station
Augusta, Maine 04333
Sent by Email: Danielle.Tetreau@maine.gov

Dear Danielle Tetreau:

This letter is in response to the application you submitted to the U.S. Army Corps of Engineers (USACE), New England District, on July 11, 2025, for a Department of the Army general permit verification for the reconfiguration of the I-95 and Hogan Road Interchange in Bangor, Maine (Latitude 44.8322°, Longitude -68.7418°), involving the placement of fill material from the following construction activities: reconstruction of the ramps and roadway, addition of pedestrian paths, updating the drainage structures, and the addition of a turnaround. Below the ordinary high water mark (OHWM) of a tributary to the Penjajawoc Stream, the work will discharge permanent riprap fill in 675 square feet to provide bank stabilization at the outlet of an existing culvert and temporary cofferdams in 180 square feet. The work will also result in 0.65 acre of permanent fill in palustrine emergent (PEM) wetlands and 4,110 square feet of permanent fill in palustrine scrub-shrub (PSS) wetlands as well as 445 square feet of temporary fill in PSS wetlands and 25 square feet of temporary fill in PEM wetlands from construction access. The work is shown on a plan set titled “I-95 Exit 187 - Hogan Road Interchange DDI WIN: 18595.10” and “Bangor Penobscot County US I-95 Exit 187/ Hogan Road Interchange,” on 26 sheets dated April 8 and April 22, 2025.

Based on the information you have provided, we verify that the activity is authorized under General Permit 10, Linear Transportation Projects, of the October 14, 2020, federal permits known as the Maine General Permits (GPs). You can find a copy of these permits at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/.

Please review the enclosed GPs carefully, in particular the general conditions beginning on page 5, and ensure that you and all personnel performing work authorized by the GPs are fully aware of and comply with its terms and conditions. A copy of the GPs and this verification letter must be available at the work site as required by General Condition 33. Any deviation from the terms and conditions of the permit, or your

submitted plans, may subject the permittee to the enforcement provisions of our regulations. You must perform this work in compliance with the terms and conditions of the GPs listed above, and in compliance with the following special conditions:

Project Specific Special Conditions:

1. The permittee shall complete and return the enclosed Work-Start Notification Form to this office at least two weeks prior to the anticipated construction start date.

2. The permittee shall complete and return the enclosed Compliance Certification Form to this office within one month following the completion of the authorized work.

3. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the enclosed plan set "I-95 Exit 187 - Hogan Road Interchange DDI WIN: 18595.10" and "Bangor, Penobscot County, US I-95 Exit 187/ Hogan Road Interchange," on 26 sheets dated April 8 and April 22, 2025. If changes are made to the plans or construction methods for work within or adjacent to waters of the U.S, the permittee shall contact USACE immediately to discuss modification of this authorization. USACE must approve any changes before they are undertaken.

4. Compensatory mitigation shall consist of purchasing 0.7617 In-Lieu-Fee (ILF) credits from the Maine Natural Resource Conservation Fund. The current cost to purchase these credits can be found at the following Maine DEP webpage: https://www.maine.gov/dep/land/nrpa/ILF_and_NRCP/ILF/fs-in-lieufee.pdf. The in-lieu fee amount is subject to change yearly and the exact cost is dependent on the date of purchase. The permittee must send a cashier's check or bank draft for this amount, as calculated on the enclosed "In Lieu Fee (ILF) Project Impact Worksheet" to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. The check must include the USACE file number "NAE-2025-01386" and the statement: "For ILF account only." No impacts authorized by this permit shall begin until ILF credits are purchased and USACE receives a copy of the letter from the Maine Department of Environmental Protection (ME DEP) to the permittee stating that the ME DEP has received the check and accepts responsibility for mitigation.

5. In-water work shall occur between July 15 through April 15, of any year(s).

6. This project shall be performed in accordance with erosion control measures conforming with the latest versions of the *State of Maine Department of Transportation Standard Specifications for Highways and Bridges* and the *Department of Transportation's Best Management Practices for Erosion and Sediment Control*.

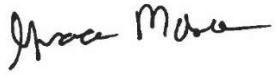
7. If the authorized work is not complete before the monarch butterfly (*Danus plexippus*) is listed under the Endangered Species Act (ESA), the permittee shall contact the Federal Highway Administration to initiate ESA Section 7 consultation with the U.S. Fish and Wildlife Service. The permittee shall also notify USACE to determine if the consultation will result in a need to reverify the project under the GPs.

This verification is valid until October 14, 2025. You must commence or be under contract to commence the work authorized herein by October 14, 2025 and complete the work by October 14, 2026. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. It is recommended that you contact this office before this authorization expires to discuss if permit reissuance is a possibility.

This GP verification and any associated authorizations does not preclude the necessity to obtain any other federal, state, or local permits, licenses, and/or certifications, which may be required.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Rachel Antieau, Project Manager, at 978-580-3512 or by email at Rachel.H.Antieau@usace.army.mil. This agency continually strives to improve our customer service. To better serve you, please complete the Customer Service Survey located at: https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,



Grace Moses
Chief, Technical Support Branch
Regulatory Division

Enclosures

cc (w/enclosures):
Maine DEP; LandonCall@maine.gov
Kristen Chamberlain, MaineDOT; Kristen.Chamberlain@maine.gov

Work-Start Notification Form

File Number: NAE-2025-01386 State: Maine County: Penobscot

Permittee: Maine Department of Transportation
Date Verification Issued: 10/1/2025
Project Manager: Rachel Antieau

At least two weeks prior to commencing the activity authorized by this permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
New England District
Attn: Rachel Antieau
442 Civic Center Drive Suite 350
Augusta, Maine 04330
or
cenae-r-tu@usace.army.mil
978-580-3512

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

The people (e.g. contractor) listed below will do the work, and they understand the permit's conditions and limitations.

Contractor Name/Contractor Firm: _____
Business Address: _____
_____
Contractor Phone and Email: _____

Proposed Construction Dates: Start: _____ Finish: _____

_____ _____
Signature of Permittee Date

U.S. Army Corps of Engineers (USACE)

CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.

Form Approved - OMB No. 0710-0003 Expires 2027-10-31

The Agency Disclosure Notice (ADN)

The Public reporting burden for this collection of information, 0710-0003, is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PURPOSE: This form is used by recipients of U.S. Army Corps of Engineer Regulatory permits to certify compliance with the permit terms and conditions.

Your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, New England District, Regulatory Office.

The certification can be submitted by email at cenae-r-tu@usace.army.mil or by mail at the below address:

U.S. Army Corps of Engineers
New England District Office
696 Virginia Road
Concord, MA 01742

COMPLETED BY THE CORPS

Corps Action Number: NAE-2025-01386

Permit Type: General Permit

General Permit Number and Name (*if applicable*): 10. Linear Transportation Projects

Name of Permittee: Danielle Tetreau, Maine Department of Transportation

Project Name: Hogan Road Interchange DDI - Bangor - MaineDOT WIN 18595.10

Project Location (*physical address*): I-95 Exit 187 in Bangor, Maine
Latitude 44.832202°, Longitude -68.741773°

PERMITTEE'S CERTIFICATION

Date Work Started: _____

Date Work Completed: _____

Enclose photographs showing the completed project (*if available*).

I _____ hereby certify that the work authorized by the above referenced permit has been completed in accordance with all of the permit terms and conditions, and that any required compensatory mitigation has been completed in accordance with the permit conditions.

Name	Date	Signature

MAINE IN-LIEU-FEE (ILF)
PROJECT IMPACT WORKSHEET

DEP Invoice # *Filled in by ILF Administrator in Augusta*

Project name: Hogan Road Interchange DDI - Bangor - MaineDOT WIN 18595.10

Permittee: Maine Department of Transportation (Danielle Tetreau)

DEP/Corps permit #: NAE-2025-01386 *Attach a copy of the permit*

DEP/Corps Project Manager: Rachel Antieau

ILF Fee Amount: **0.7617** credits

Check Date: *Filled in by ILF Administrator in Augusta*

Project address: I-95, Exit 187 in Bangor, Maine (Latitude 44.832202°, Longitude -68.741773°) *Attach a locus map*

Biophysical region - Section: Central Interior and Midcoast

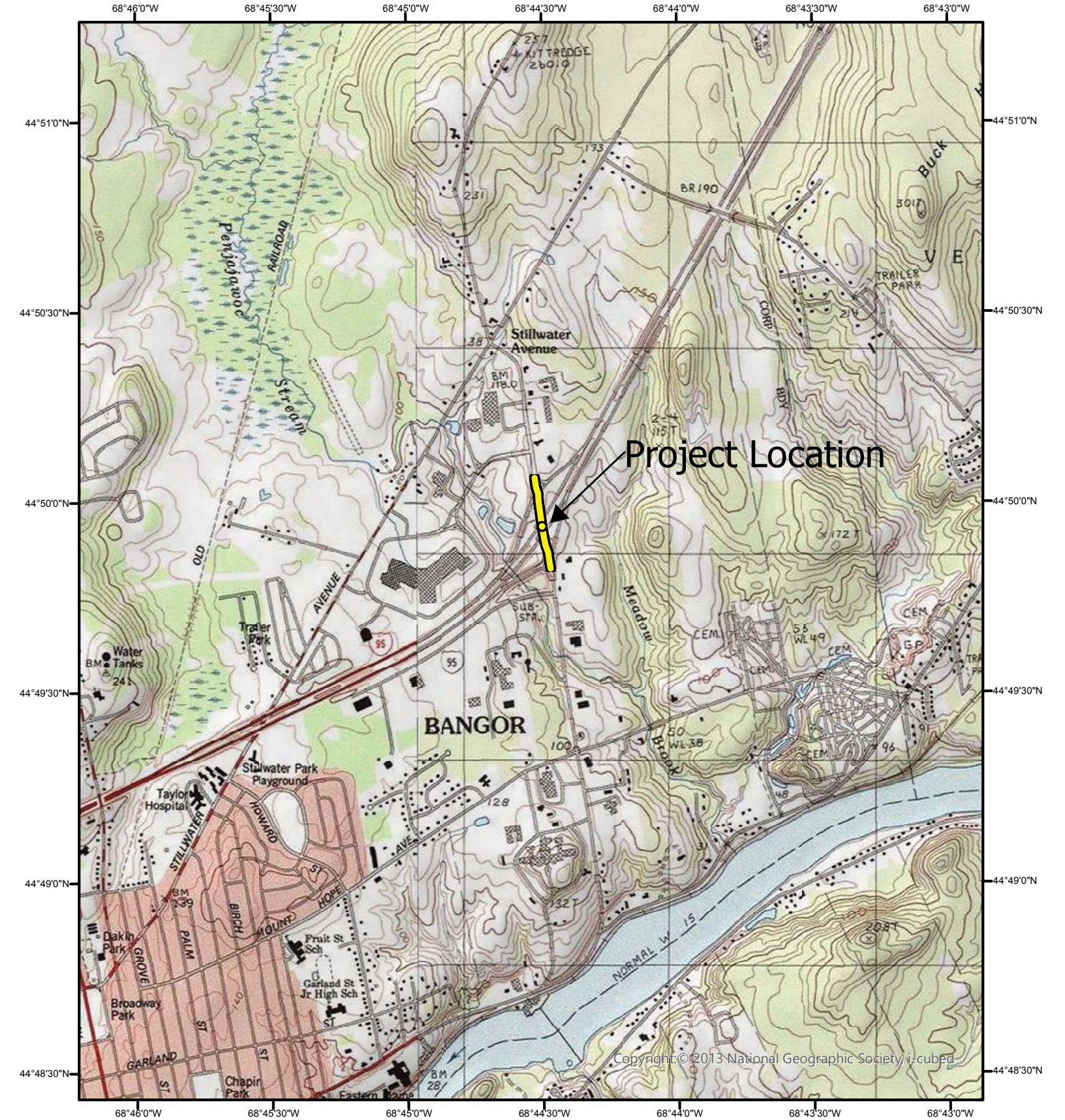
Biophysical region - Subsection: Central Maine Embayment

Total impact area subject to compensation: 33,180 SF (0.7617 acres) (SF impacted x 1 multiplier)

Resource(s) impacted:

Resource Types (list all that apply)	**Functions & Values** (for wetland impacts) (list all that apply, by resource type)	**Types of Impacts** (list all that apply, by resource type)	**SF Impacted** (by resource type)	**Linear FT of Streams Impacted (for Corps use)**
PEM	GWR, STR, NR, WH, VQ	Fill (permanent)	28,395	
PSS	GWR, STR, NR, WH, VQ	Fill (permanent)	4,110	
Riverine		Fill – riprap (permanent)	675	100
		Total impacts:	33,180	100

Resource Types: Wetlands by NWI Type (PEM, PFO, PSS, PUB, M1, M2, E1, E2, etc), significant vernal pool depression (SVP), significant vernal pool critical terrestrial habitat (VPCTH), shorebird feeding & staging habitat (shorebird), inland waterfowl & wading bird habitat (IWWH), Tidal waterfowl & wading bird habitat (TWWH), lake or pond (L1, L2), river/stream/brook (RSB)
Wetland Functions & Values: Groundwater recharge/discharge (GWR); floodflow alteration (FF); fish & shellfish habitat (FSH); sediment toxicant retention (STR); nutrient removal (NR); production export (PE); sediment/shoreline stabilization (SS); recreation (R); education/scientific value (ESV); uniqueness/heritage (UH); and visual quality/aesthetics (VQ); wildlife habitat (WH)
Types of Impacts: May include: filling, dredging, vegetation conversion (e.g. forested to shrub/scrub), excavation with associated discharge, etc.



I-95 Exit 187 - Hogan Road Interchange DDI
WIN: 18595.10
Bangor, ME (Penobscot County)
Veazie, ME USGS Quad
N 44.832202, W -68.741773

N
W E
S

0 0 1
Miles

PROGRESS PRINT
NOT FOR CONSTRUCTION
4/8/2025

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS PREPARED BY:
vhb
500 Southborough Drive, Suite 105B
South Portland, Maine 04106

PLAN LEGEND

Town, County, State
Property Lines
R/W Lines-Existing
R/W Lines-Proposed
Culvert-Existing
Culvert Proposed
Curbing — Existing — Proposed
Type 1
Type 3
Type 5
Outline of Bodies of Water
Exposed Bedrock
Buildings
Trees — Conifer — Deciduous
Tree Line
Clearing Limit Line
Railroad

Catch Basins — Existing ■ Proposed
Manholes — Existing ● Proposed
Proposed Underdrain
Proposed Ditch
Existing Ditch
Utility Poles — Existing ♦ Proposed
Fire Hydrants — Existing ◈ Proposed
Existing Water Line
Existing San. Sewer
Existing San. Sewer Manhole
Guardrail-Existing
Guardrail-Proposed
Guardrail-Cable, Other
Centerline-Existing
Centerline-Proposed
Travelway-Existing
Travelway-Proposed

Boring — HB-XXX-###
Pavement Core — PC-#
Test Pit — TP-XXX-###

Probe — P-#.#X
#.# = Depth
X = W (Weathered Rock)
R (Refusal)
NR (No Refusal)

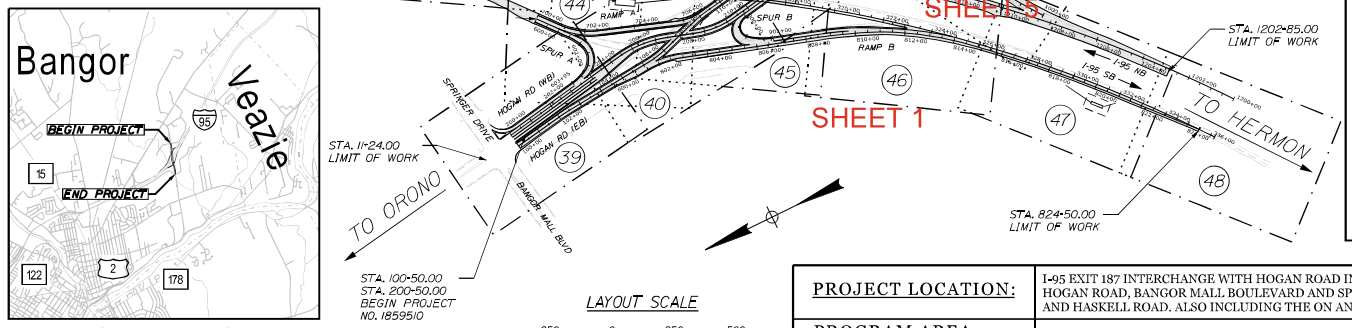
BANGOR

PENOBSCOT COUNTY

US I-95 EXIT 187 / HOGAN ROAD INTERCHANGE

WIN 018595.10 / FED 1859510

PROJECT LENGTH
0.48 MILES



0 1 2
Scale in Miles
LOCATION MAP

LAYOUT SCALE
250 0 250 500
Scale in Feet

INDEX OF SHEETS

Description	Sheet No.
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Typical Sections	2 - 8
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Ramp B & Spur B	140 - 173
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Reverse Direction Loop	221 - 225
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NOTE: BRIDGE PLANS NOT INCLUDED IN THIS SUBMISSION.

TRAFFIC DATA

	HOGAN ROAD			
Current (2019) AADT	23200			
Future (2039) AADT	27840			
DHV - % of AADT	12%			
Design Hour Volume	3248			
% Heavy Trucks (AADT)	3%			
% Heavy Trucks (DHV)	2%			
Directional Distribution (DHV)	51%			
18 kip Equivalent P 2.0	270			
18 kip Equivalent P 2.5	258			
Design Speed (mph)	25			
Functional Class	Minor Arterial			
Highway Corridor Priority	2			
RAMP A / SPUR A	RAMP B / SPUR B	RAMP C / SPUR C	RAMP D / SPUR D	
3780	8580	8220	3740	
4540	10300	9860	4490	
9%	10%	11%	9%	
397	1037	1043	415	
3%	5%	4%	3%	
2%	4%	3%	3%	
100%	100%	100%	100%	
93	378	297	111	
89	361	283	106	
Varies	Varies	Varies	Varies	
Interstate	Interstate	Interstate	Interstate	
1	1	1	1	

PROJECT LOCATION:	I-95 EXIT 187 INTERCHANGE WITH HOGAN ROAD IN BANGOR, MAINE. PROJECT EXTENDS FROM THE INTERSECTION OF HOGAN ROAD, BANGOR MALL BOULEVARD AND SPRINGER DRIVE TO THE INTERSECTION OF HOGAN ROAD, SYLVAN ROAD AND HASKELL ROAD. ALSO INCLUDING THE ON AND OFF RAMPS FOR I-95 NORTHBOUND AND SOUTHBOUND.
PROGRAM AREA:	HIGHWAY PROGRAM
SCOPE OF WORK:	TO REPLACE THE CURRENT DIAMOND INTERCHANGE WITH A DIVERGING DIAMOND INTERCHANGE (DDI) AND IMPROVE INTERSECTIONS TO THE EAST AND WEST OF THE INTERCHANGE.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
APPROVED
DATE
COMMISSIONER:
CHIEF ENGINEER:

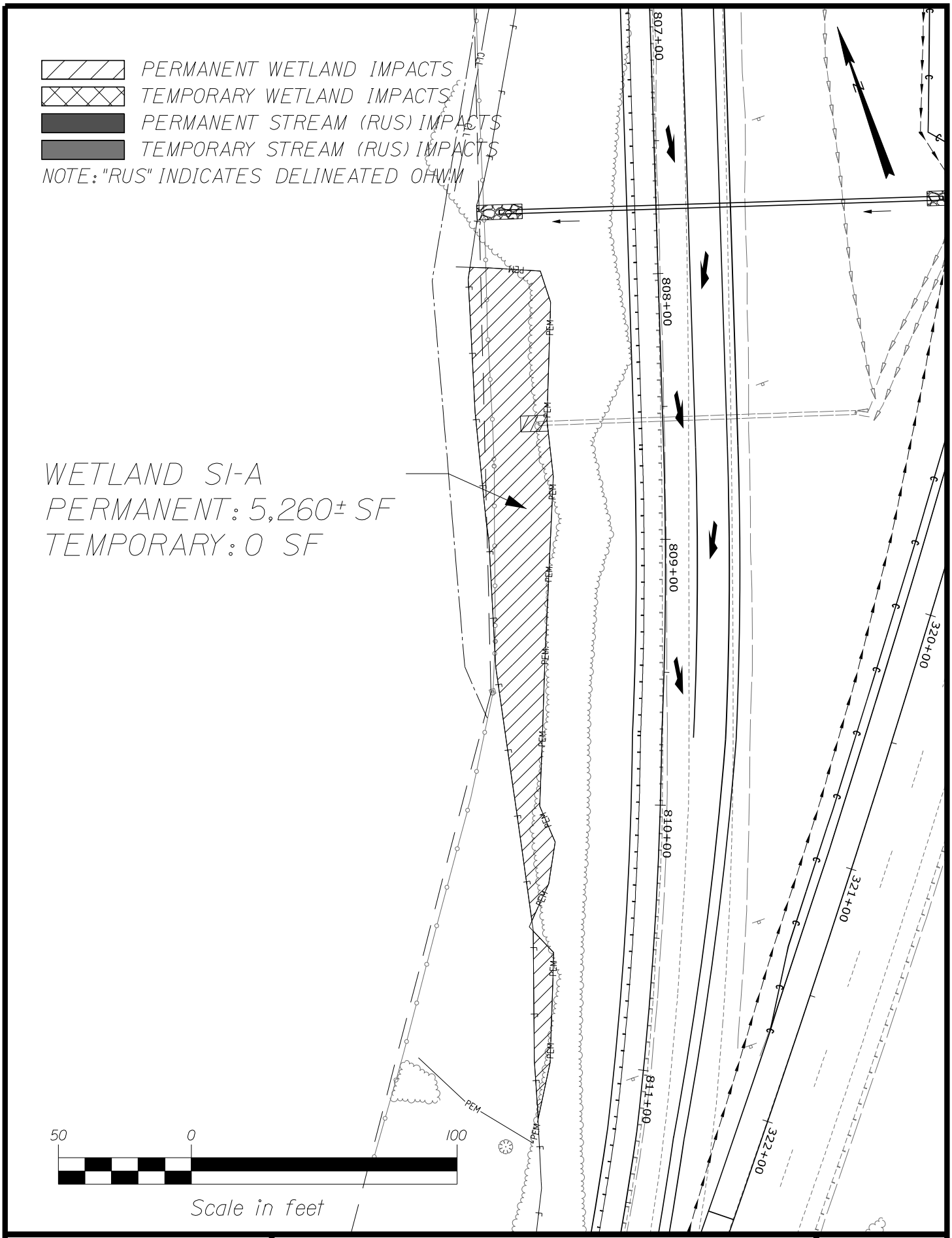
PROJECT INFORMATION
PROGRAM — HIGHWAY
PROJECT MANAGER — E. MOULTON
DESIGNER — E. FLYNN
CONSULTANT — VHB
PROJECT RESIDENT
CONTRACTOR
PROJECT COMPLETION DATE
SIGNATURE
P.E. NUMBER
DATE

BANGOR
I-95 EXIT 187
TITLE SHEET

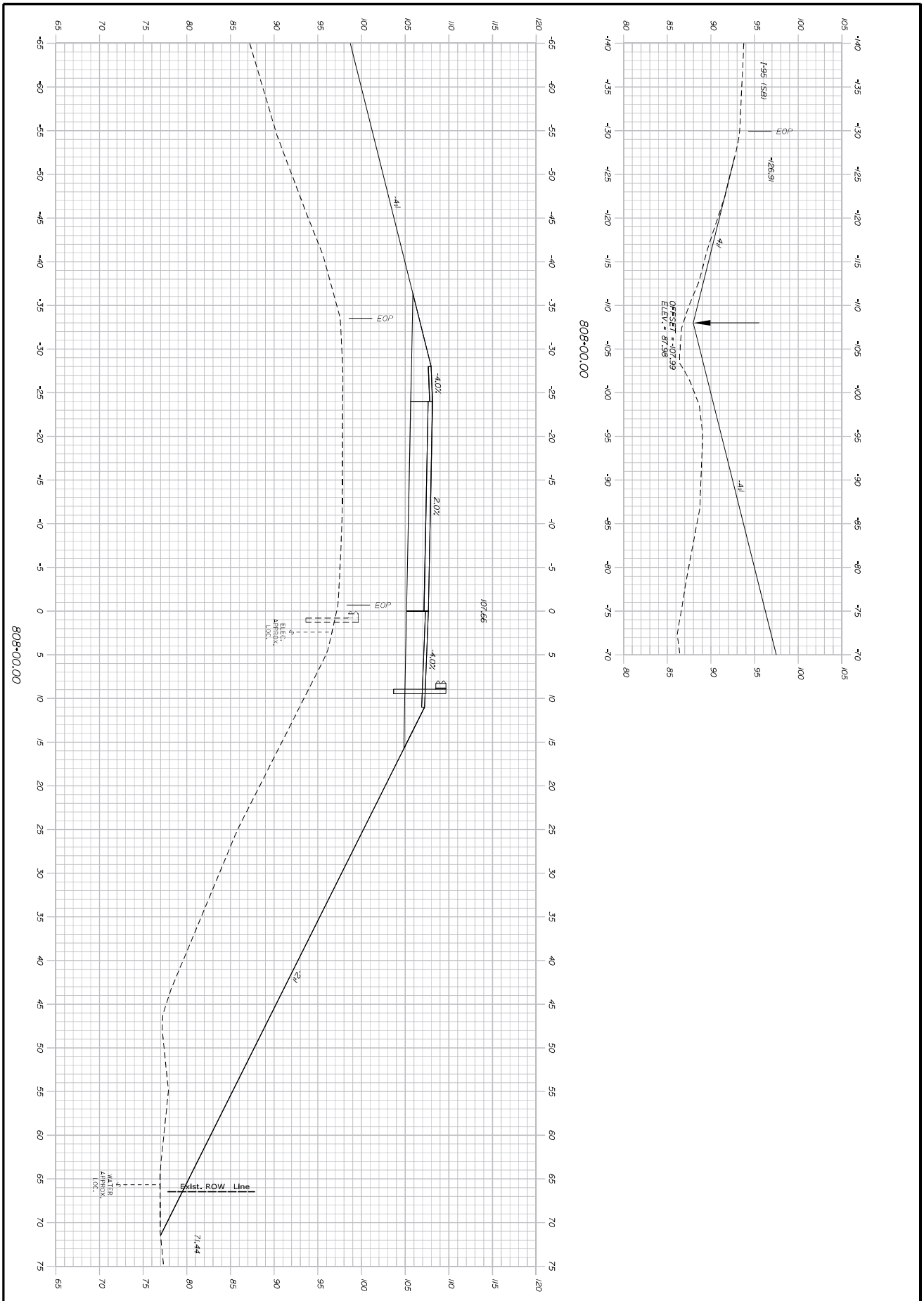
WIN 018595.10

SHEET NUMBER
1
OF 230

Filename: ...\10\HIGHWAY\MSTA\001_Title.dgn Division: HIGHWAY Username: btomic Date:4/8/2025



STATE OF MAINE DEPARTMENT OF TRANSPORTATION 018595.10	I-95 EXIT 187 DDI BANGOR PENOBSCOT	SHEET NUMBER 1 OF 3
4/22/2025	IMPACT PLAN	



Sta. 808+00.00 to Sta. 808+00.00

SHEET NUMBER 153 OF 230	BANGOR RAMP B CROSS SECTIONS	PROJ. MANAGER: R. MOULTON; BY; DATE DESIGN-DETAILED1: ECF; EBD; 4/8/2025 CHECKED-REVIEWED: ECF; AG; 4/8/2025 DESIGN2-DETAILED2 DESIGN3-DETAILED3 REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4 FIELD CHANGES	vhb
			STATE OF MAINE DEPARTMENT OF TRANSPORTATION 18595.10 WIN 18595.10 HIGHWAY PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

18595.10
WIN

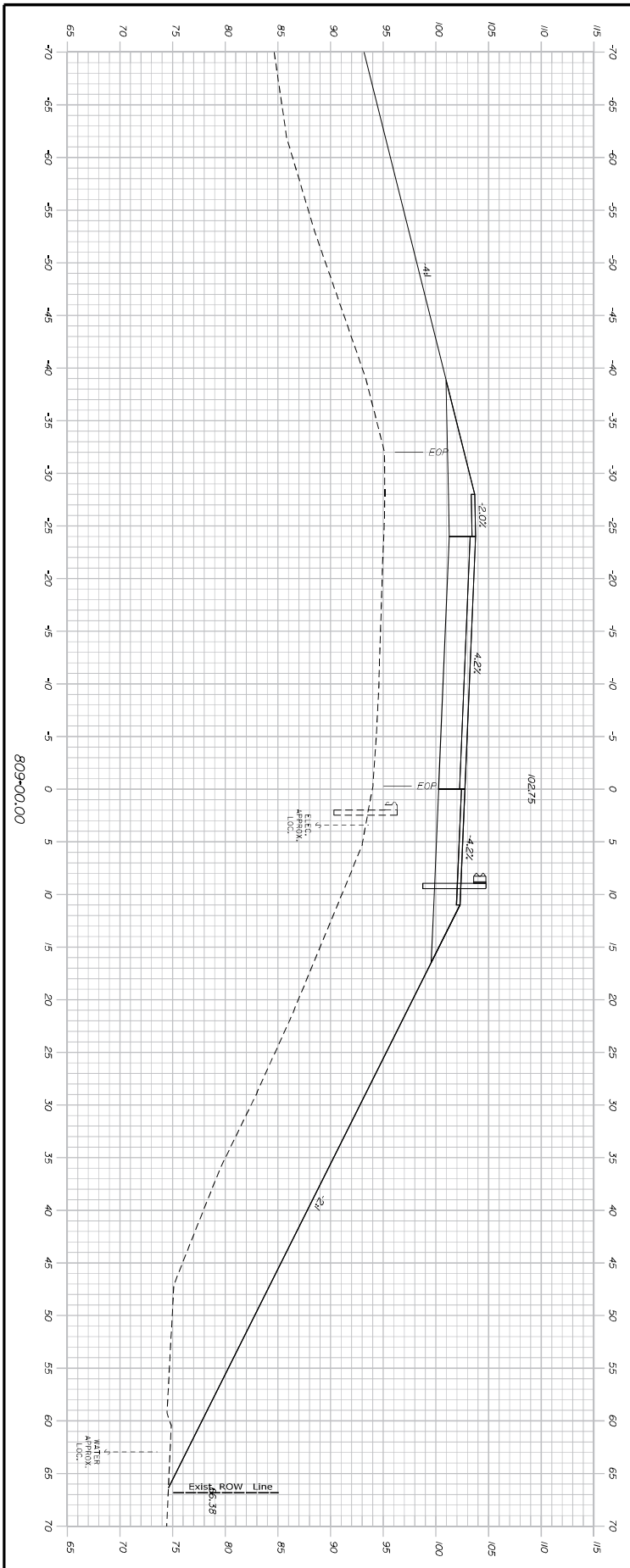
HIGHWAY PLANS

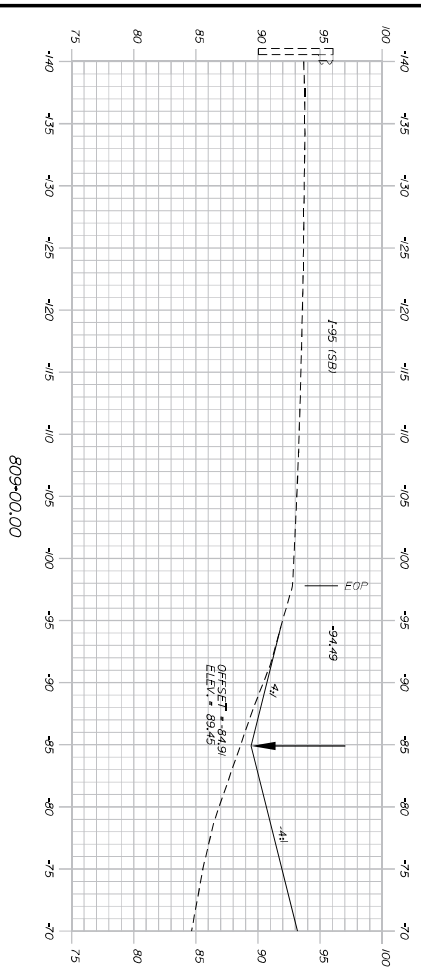
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

CROSS SECTIONS

BANGOR
RAMP B

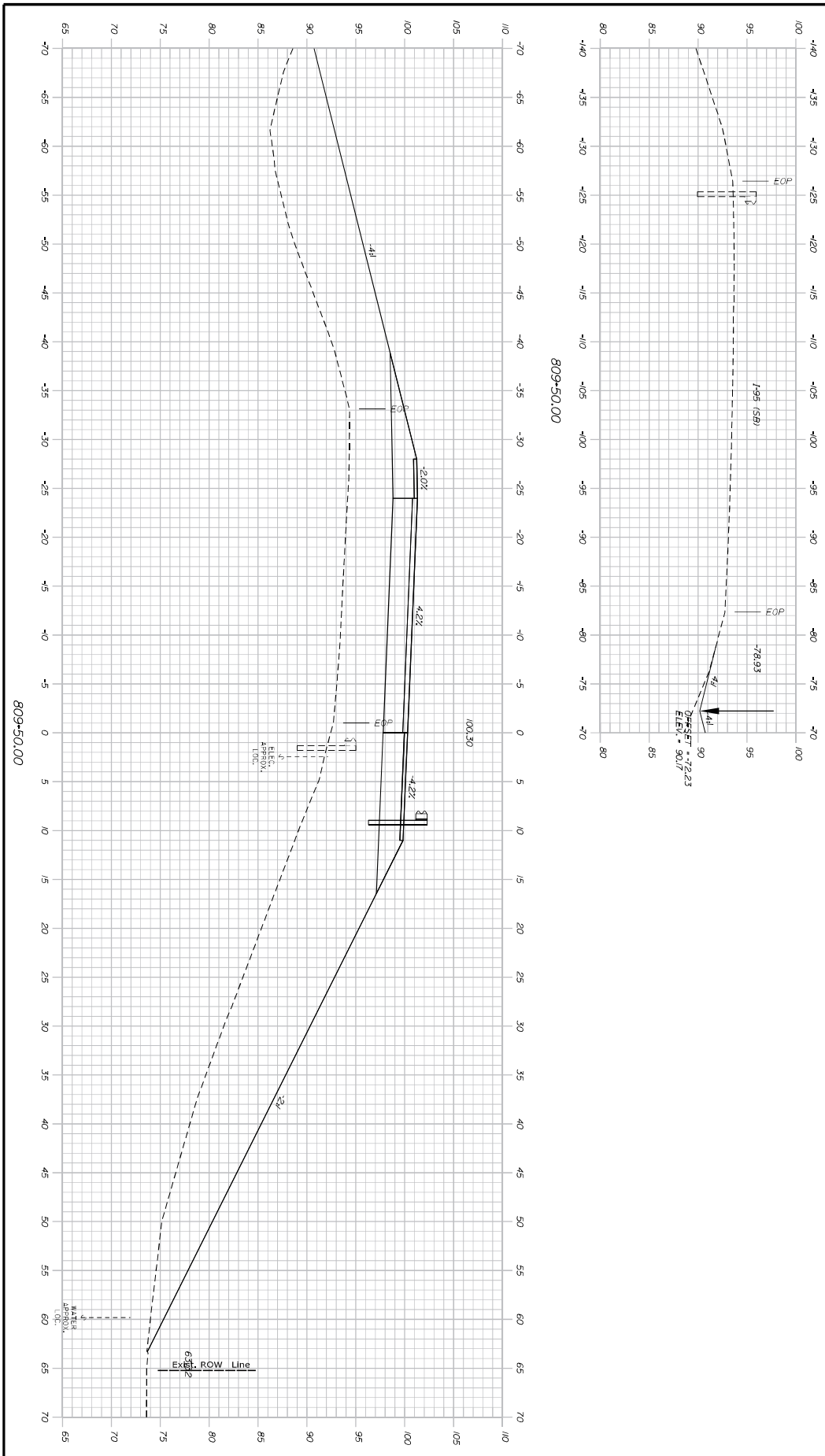
SHEET NUMBER 154 OF 230





Sta. 809+00.00 to Sta. 809+00.00

SHEET NUMBER 155 OF 230	BANGOR RAMP B CROSS SECTIONS	PROJ. MANAGER: R. MOULTON; BY; DATE DESIGN-DETAILED: ECF; EBD; 4/8/2025 CHECKED-REVIEWED: ECF; AG; 4/8/2025 DESIGN2-DETAILED2 DESIGN3-DETAILED3 REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4 FIELD CHANGES	vhb
			STATE OF MAINE DEPARTMENT OF TRANSPORTATION 18595.10 WIN 18595.10 HIGHWAY PLANS



Sta. 809+50.00 to Sta. 809+50.00

SHEET NUMBER 156 OF 230

BANGOR
RAMP B

CROSS SECTIONS

PROJ. MANAGER	R. MOULTON	BY	DATE
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CHECKED-REVIEWED	ECF	AG	4/8/2025
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REVISIONS 3			
REVISIONS 4			
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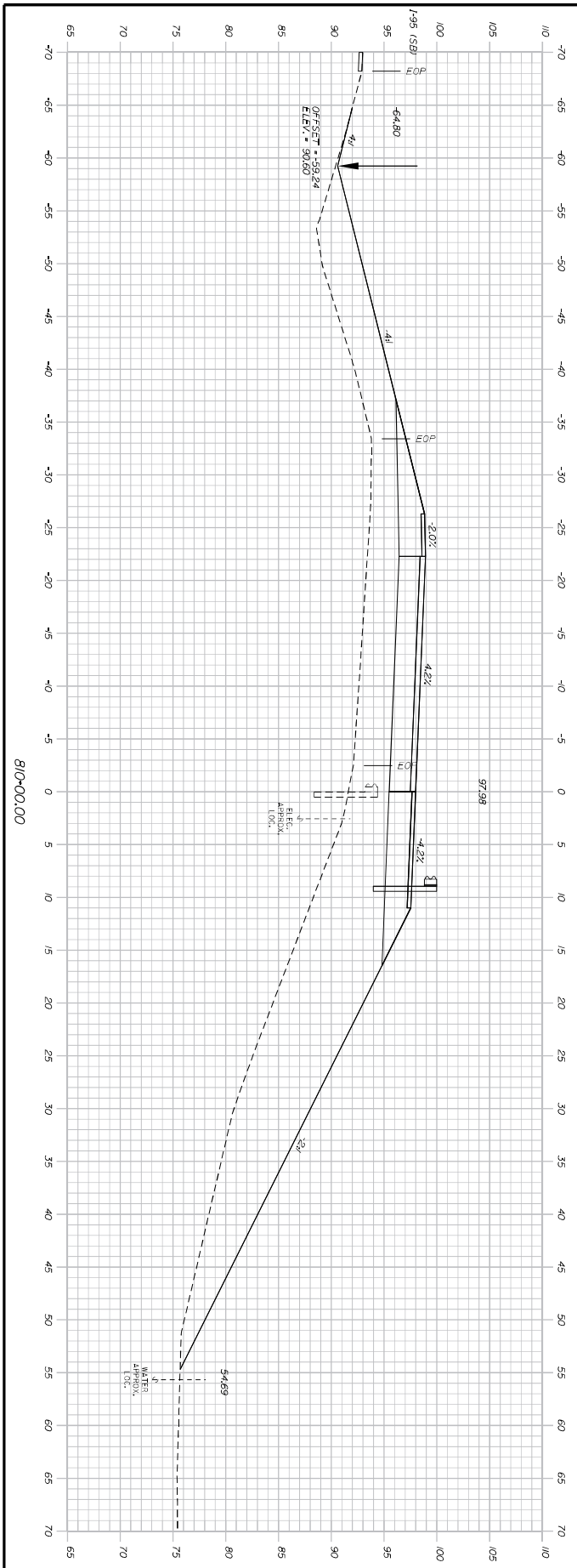
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

18595.10

WIN
18595.10

HIGHWAY PLANS

436



Sta. 810+00.00 to Sta. 810+00.00

SHEET NUMBER 157 OF 230

BANGOR
RAMP B

CROSS SECTIONS

PROJ. MANAGER	R. MOULTON	BY	DATE
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CHECKED-REVIEWED	ECF	AG	4/8/2025
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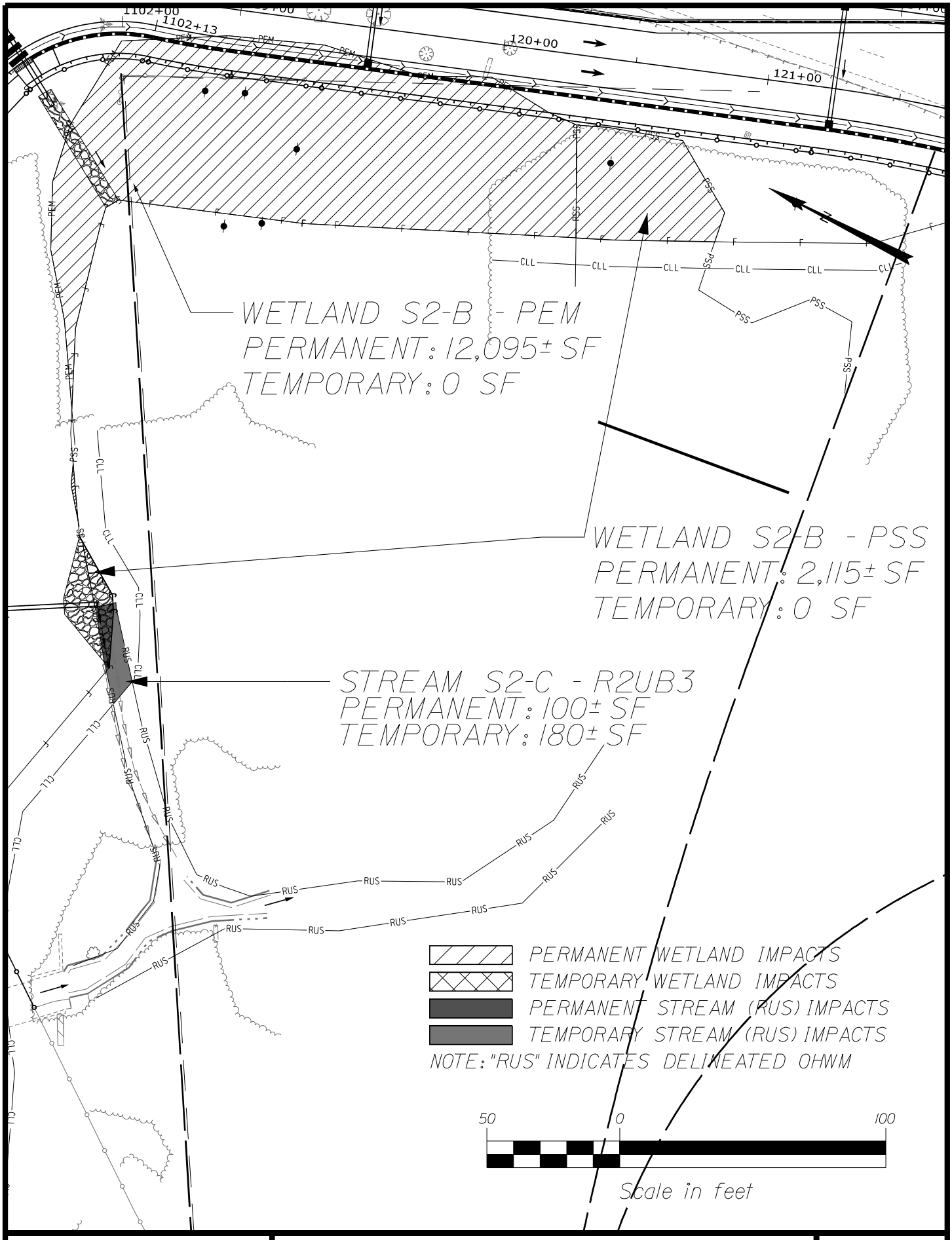
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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

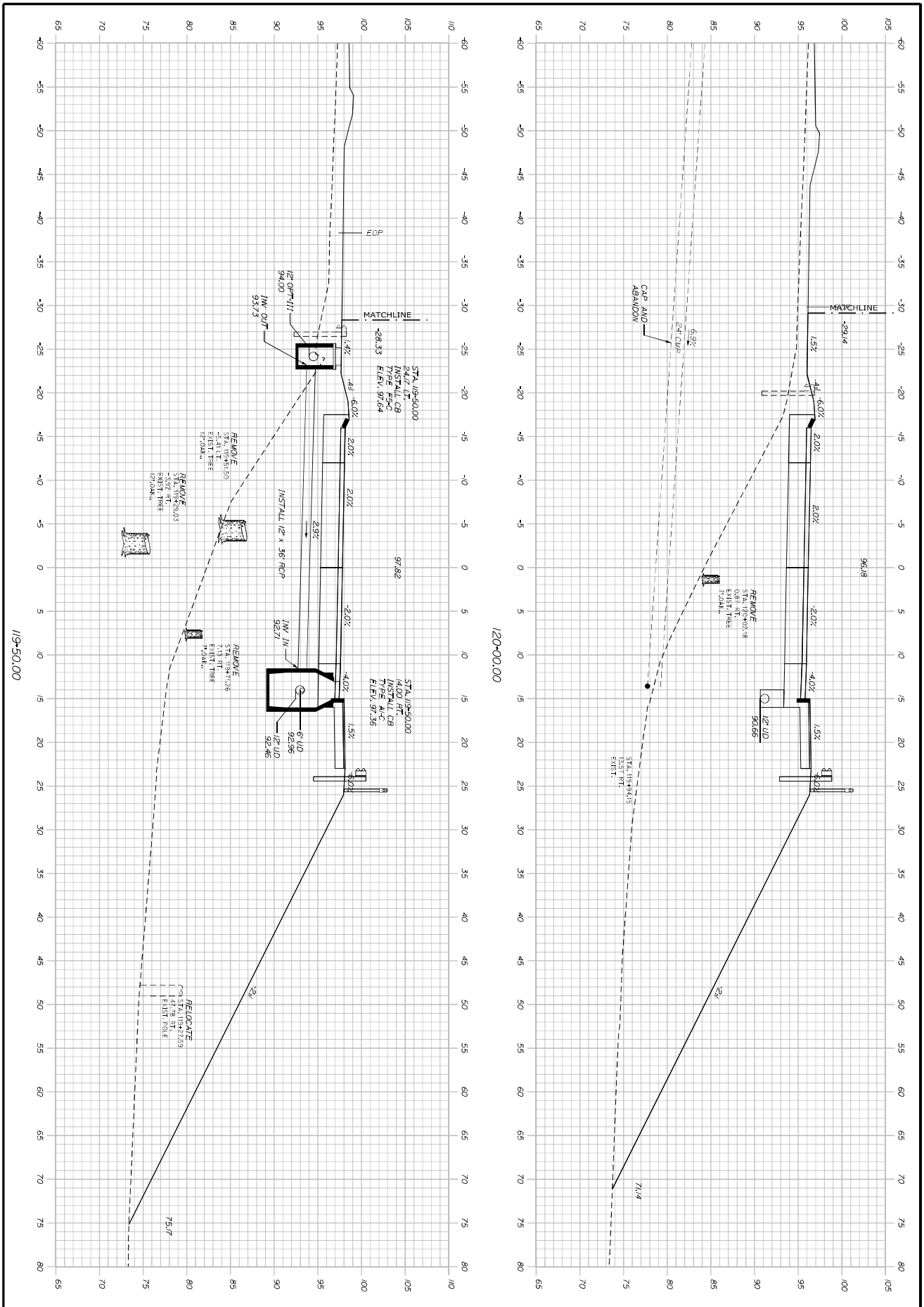
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HIGHWAY PLANS



STATE OF MAINE DEPARTMENT OF TRANSPORTATION 018595.10	I-95 EXIT 187 DDI BANGOR PENOBSCOT	SHEET NUMBER 2 437 OF 3
4/22/2025	IMPACT PLAN	



BANGOR HOGAN ROAD (EB)	PROJ. MANAGER	R. MOULTON	BY	DATE
	DESIGN-DETAILED	ECF	EBD	4/8/2025
	CHECKED-REVIEWED	ECF	AG	4/8/2025
	DESIGN2-DETAILED2			
CROSS SECTIONS	DESIGN3-DETAILED3			
	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

vhb

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

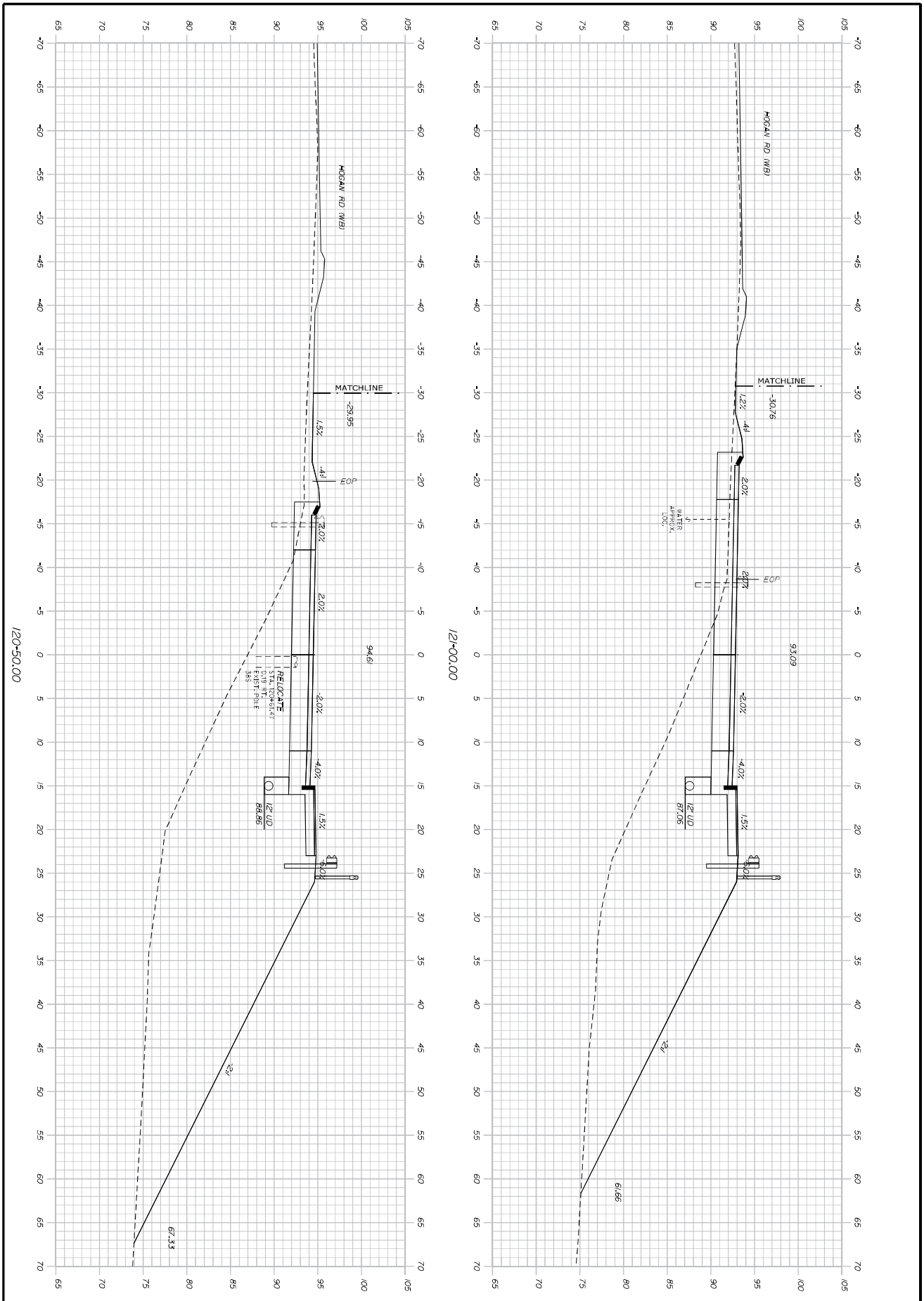
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HIGHWAY PLANS

SHEET NUMBER
100
OF 230

Sta. 119+50.00 to Sta. 120+00.00



PROJ. MANAGER	R. MOULTON	BY	DATE
DESIGN-DETAILED	ECF	EBD	4/8/2025
CHECKED-REVIEWED	ECF	AG	4/8/2025
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

BANGOR
HOGAN ROAD (EB)

CROSS SECTIONS

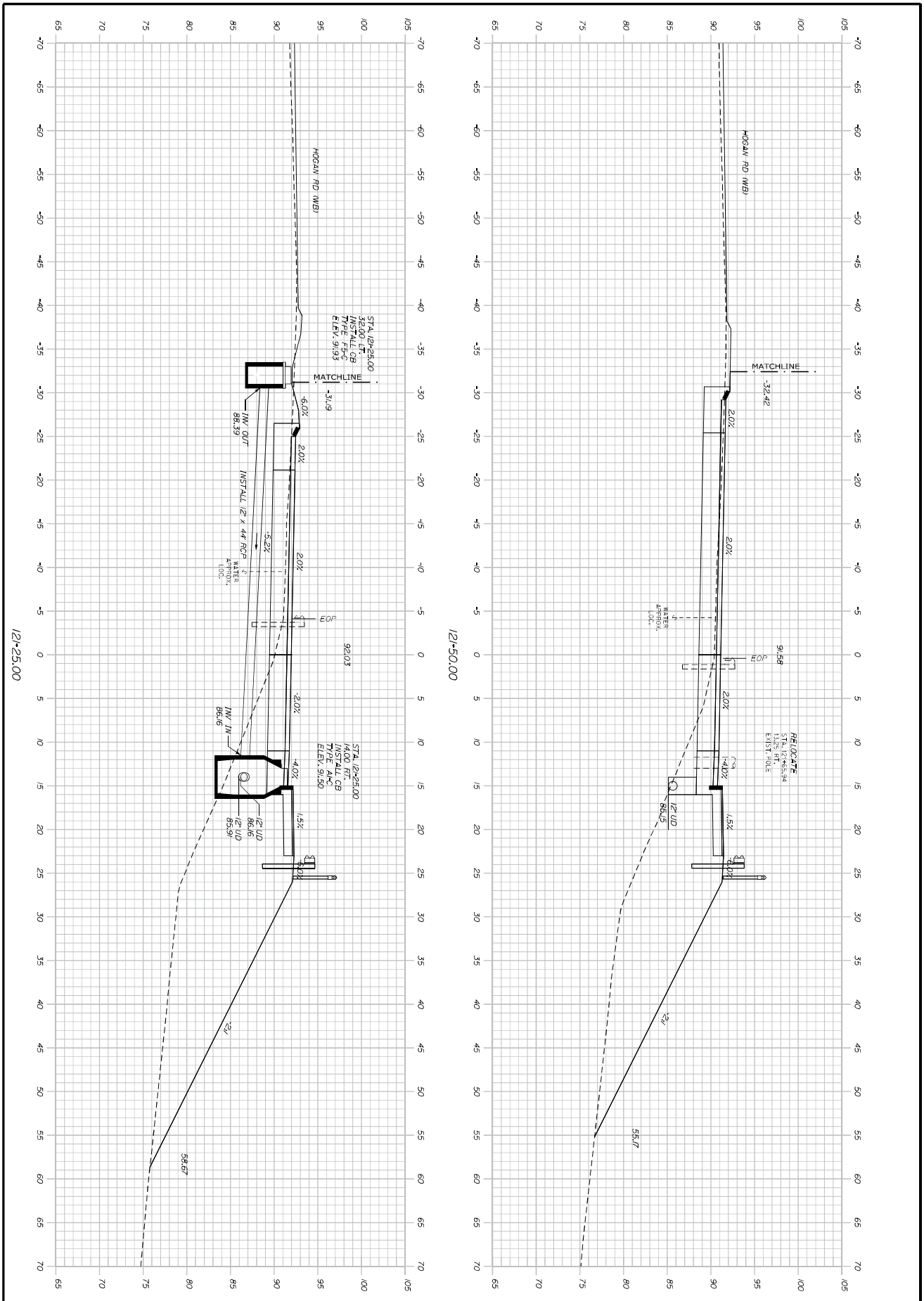
SHEET NUMBER 101 OF 230

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

18595.10

WIN 18595.10 HIGHWAY PLANS

Sta. 120+50.00 to Sta. 121+00.00



BANGOR
HOGAN ROAD (EB)

CROSS SECTIONS

PROJ. MANAGER	R. MOULTON	BY	DATE
DESIGN-DETAILED	ECF	EBD	4/8/2025
CHECKED-REVIEWED	ECF	AG	4/8/2025
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REVISIONS 4			
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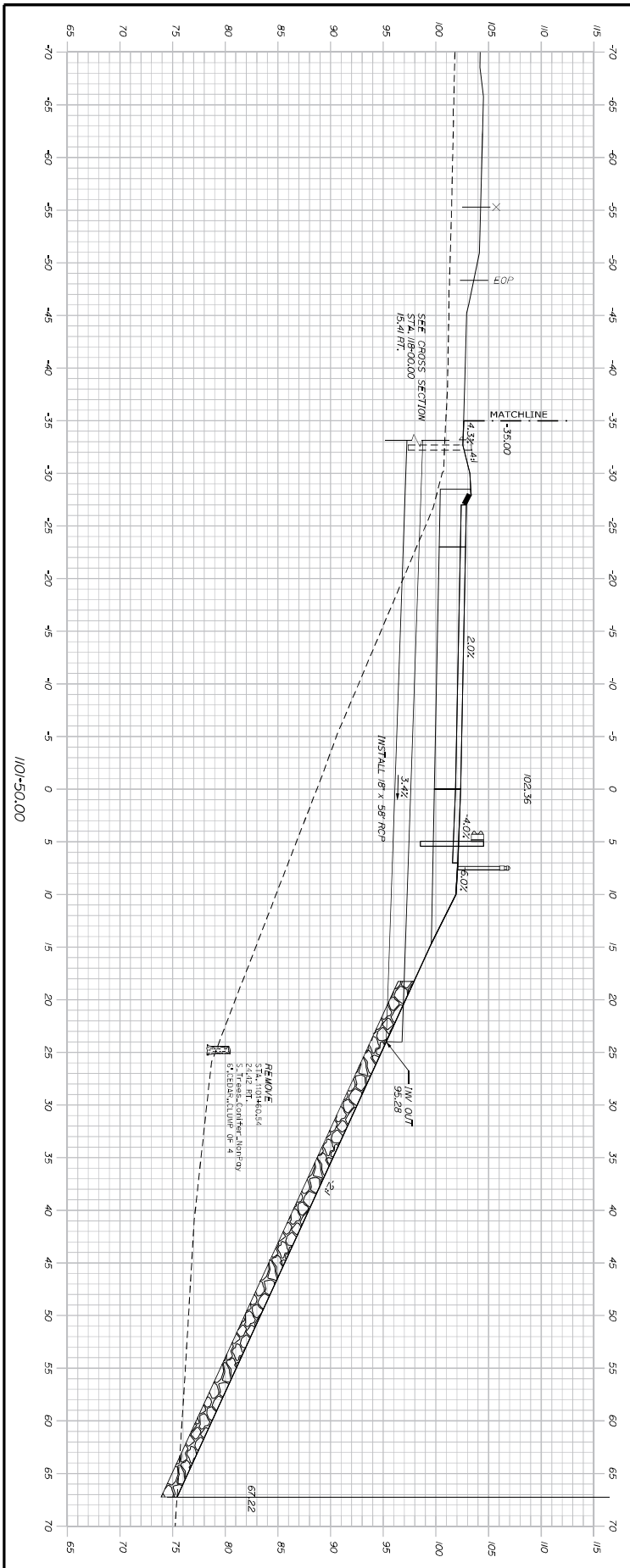
SHEET NUMBER 102 OF 230

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

18595.10

WIN 18595.10 HIGHWAY PLANS

Sta. 121+25.00 to Sta. 121+50.00



Sta. 1101+50.00 to Sta. 1101+50.00

SHEET NUMBER 190 OF 230

BANGOR
SPUR C

CROSS SECTIONS

PROJ. MANAGER	R. MOULTON	BY	DATE
DESIGN-DETAILED	ECF	EBD	4/8/2025
CHECKED-REVIEWED	ECF	AG	4/8/2025
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DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

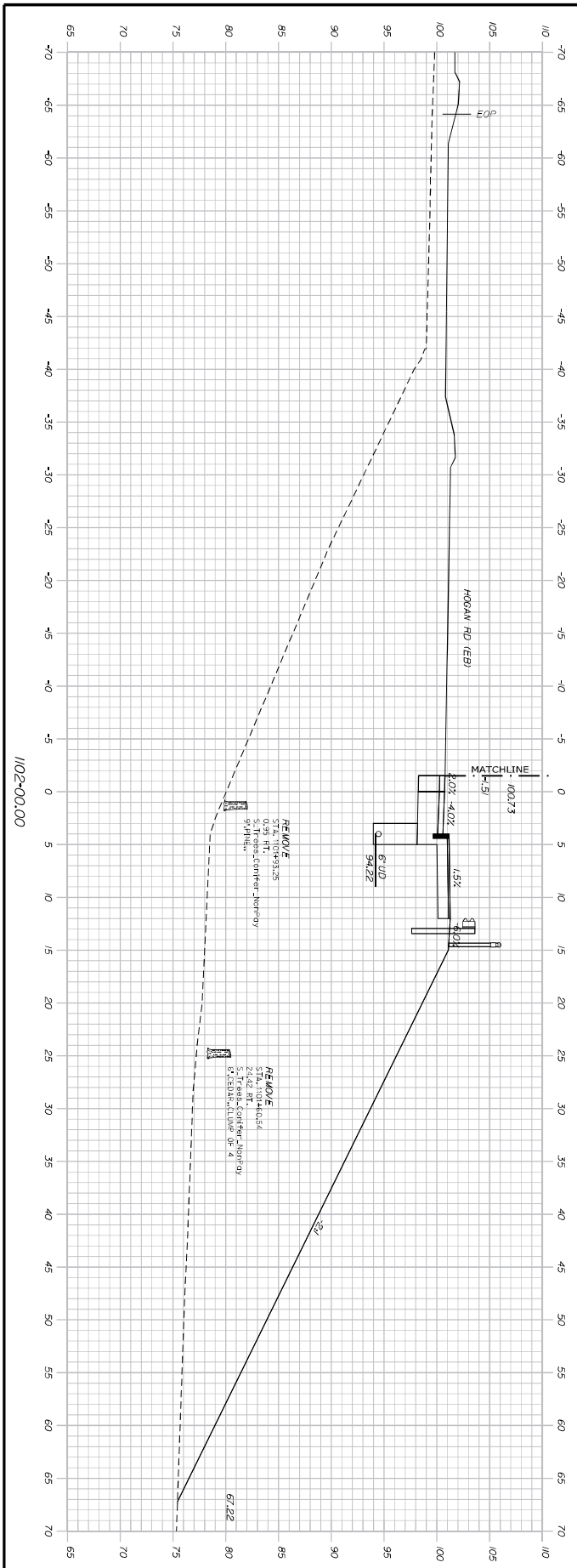
vhb

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

18595.10

WIN
18595.10

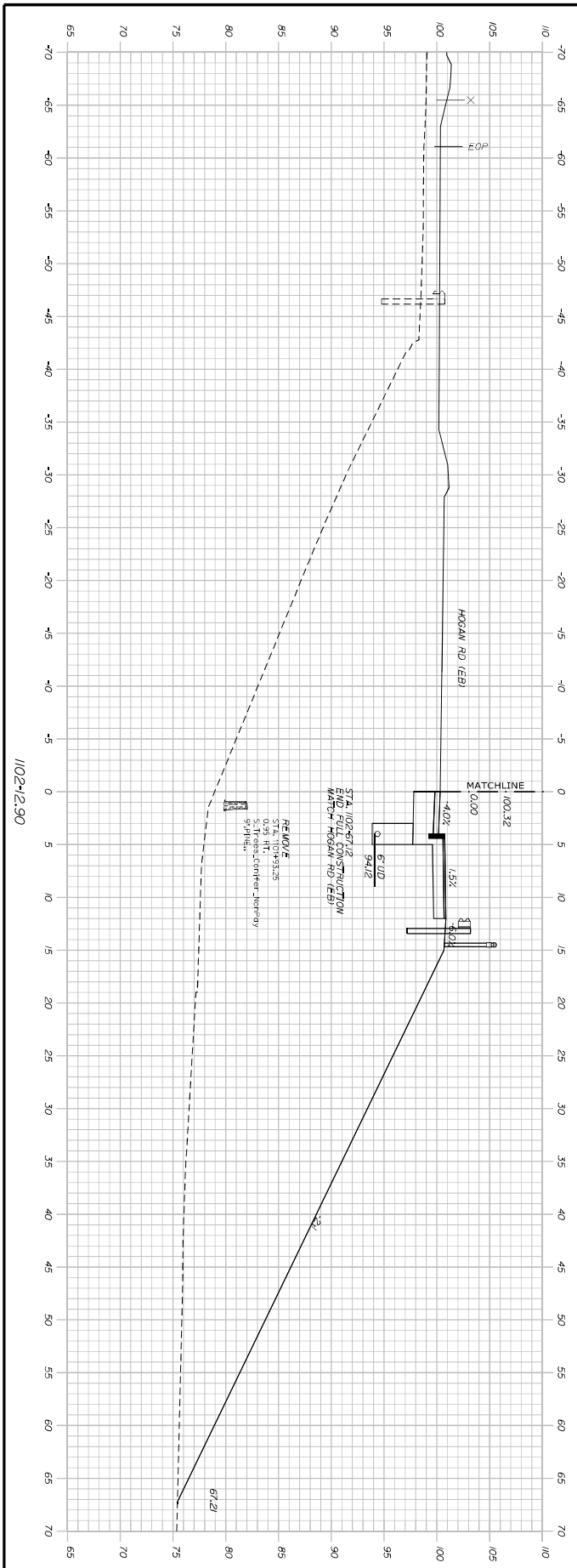
HIGHWAY PLANS



Sta. 1102+00.00 to Sta. 1102+00.00

SHEET NUMBER 191 OF 230	BANGOR SPUR C CROSS SECTIONS	PROJ. MANAGER: R. MOULTON / BY / DATE DESIGN-DETAILED: ECF / JBD / 4/8/2025 CHECKED-REVIEWED: ECF / AG / 4/8/2025 DESIGN2-DETAILED2 DESIGN3-DETAILED3 REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4 FIELD CHANGES	vhb

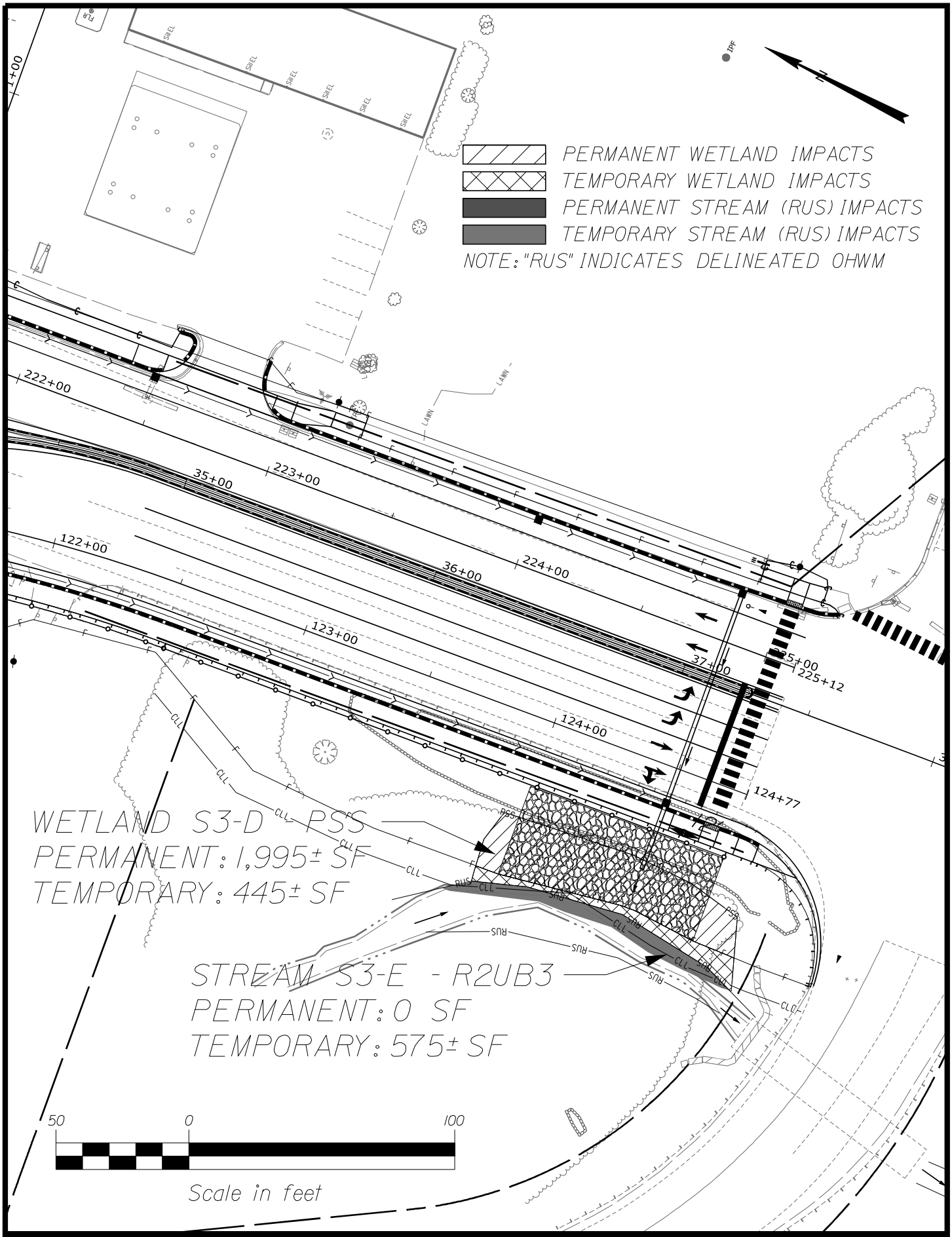
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
18595.10
WIN 18595.10 HIGHWAY PLANS



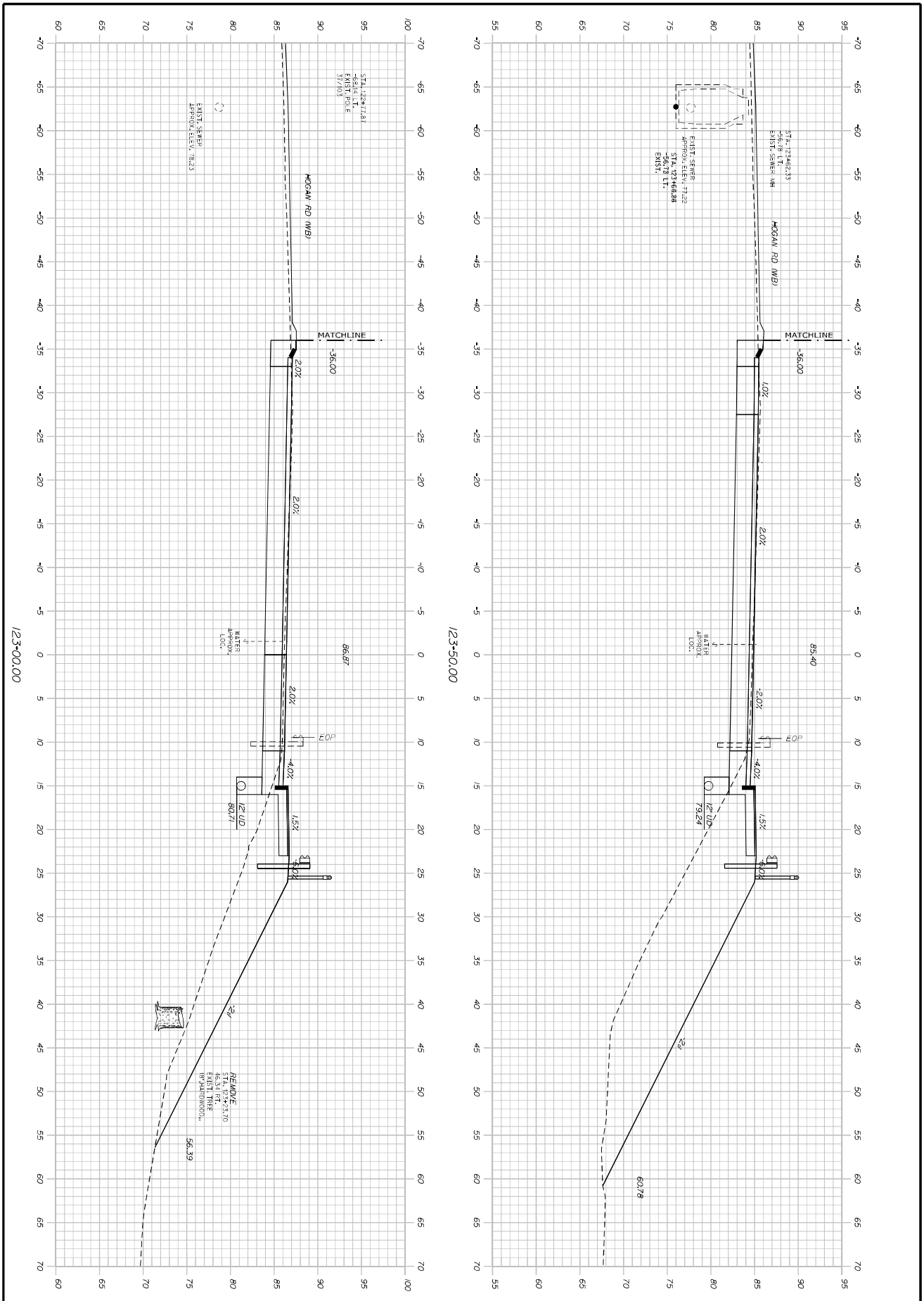
Sta. 1102+12.90 to Sta. 1102+12.90

SHEET NUMBER 192 OF 230	BANGOR SPUR C CROSS SECTIONS	PROJ. MANAGER: R. MOULTON DESIGN-DETAILED: ECF BD 4/8/2025 CHECKED-REVIEWED: ECF AG 4/8/2025 DESIGN2-DETAILED2: DESIGN3-DETAILED3: REVISIONS 1: REVISIONS 2: REVISIONS 3: REVISIONS 4: FIELD CHANGES:	vhb

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
18595.10
WIN 18595.10 HIGHWAY PLANS



STATE OF MAINE DEPARTMENT OF TRANSPORTATION 018595.10	I-95 EXIT 187 DDI BANGOR PENOBSCOT	SHEET NUMBER 3 444 OF 3
4/22/2025	IMPACT PLAN	



BANGOR
HOGAN ROAD (EB)

CROSS SECTIONS

PROJ. MANAGER	R. MOULTON	BY	DATE
DESIGN-DETAILED	ECF	EBD	4/8/2025
CHECKED-REVIEWED	ECF	AG	4/8/2025
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DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

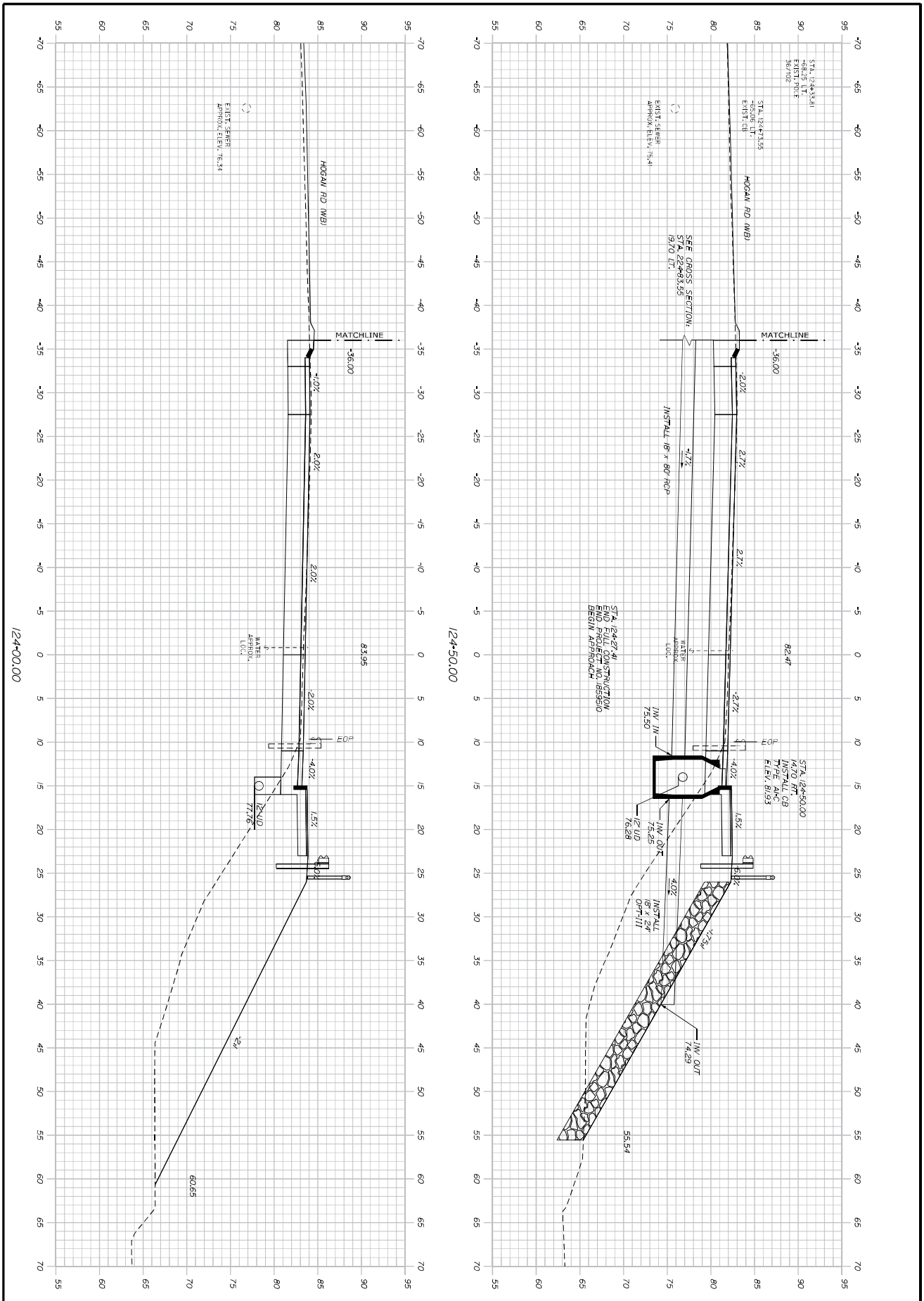
SHEET NUMBER 104 OF 230

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

18595.10

WIN 18595.10 HIGHWAY PLANS

Sta. 123+00.00 to Sta. 123+50.00



BANGOR HOGAN ROAD (EB)	PROJ. MANAGER	R. MOULTON	BY / DATE
	DESIGN-DETAILED	ECF	EBD 4/8/2025
	CHECKED-REVIEWED	ECF	AG 4/8/2025
	DESIGN2-DETAILED2		
CROSS SECTIONS	DESIGN3-DETAILED3		
	REVISIONS 1		
	REVISIONS 2		
	REVISIONS 3		
	REVISIONS 4		
	FIELD CHANGES		

vhb

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

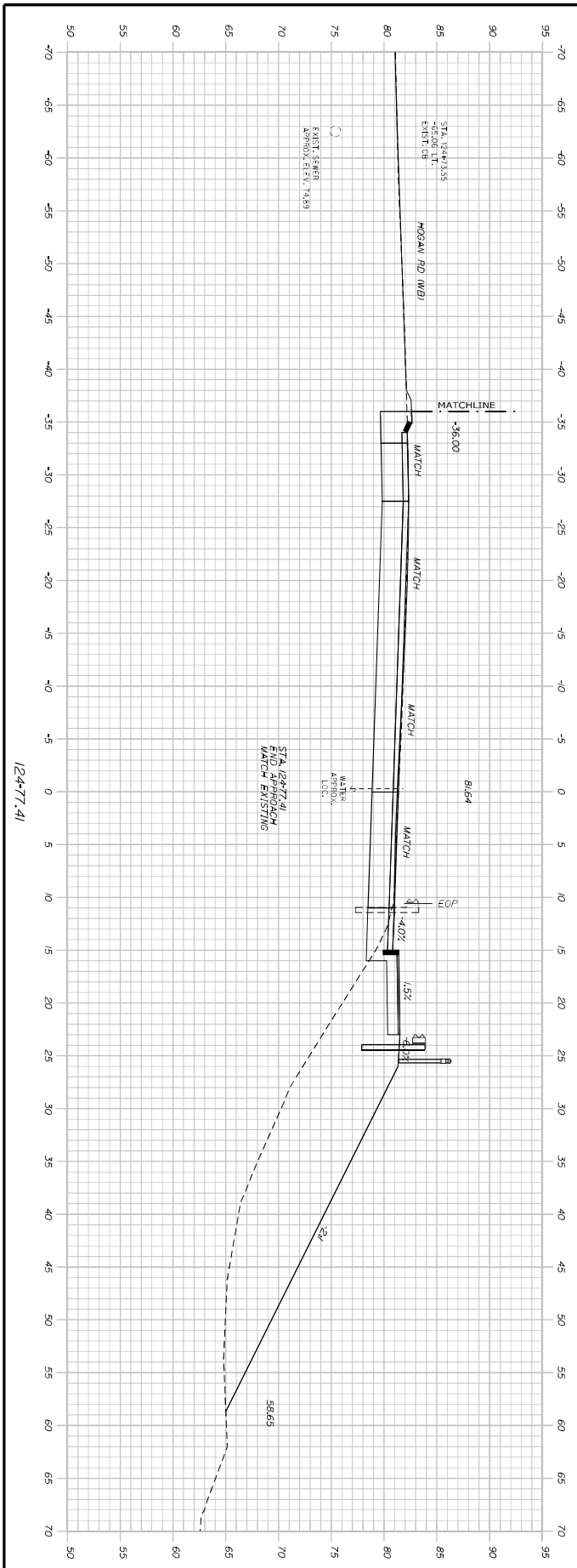
18595.10

WIN
18595.10

HIGHWAY PLANS

SHEET NUMBER 105 OF 230

Sta. 124+00.00 to Sta. 124+50.00



Sta. 124+77.41 to Sta. 124+77.41

SHEET NUMBER 106 OF 230

BANGOR
HOGAN ROAD (EB)

CROSS SECTIONS

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DESIGN-DETAILED	ECF	EBD	4/8/2025	
CHECKED-REVIEWED	ECF	AG	4/8/2025	
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REVISIONS 2				
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REVISIONS 4				
FIELD CHANGES				

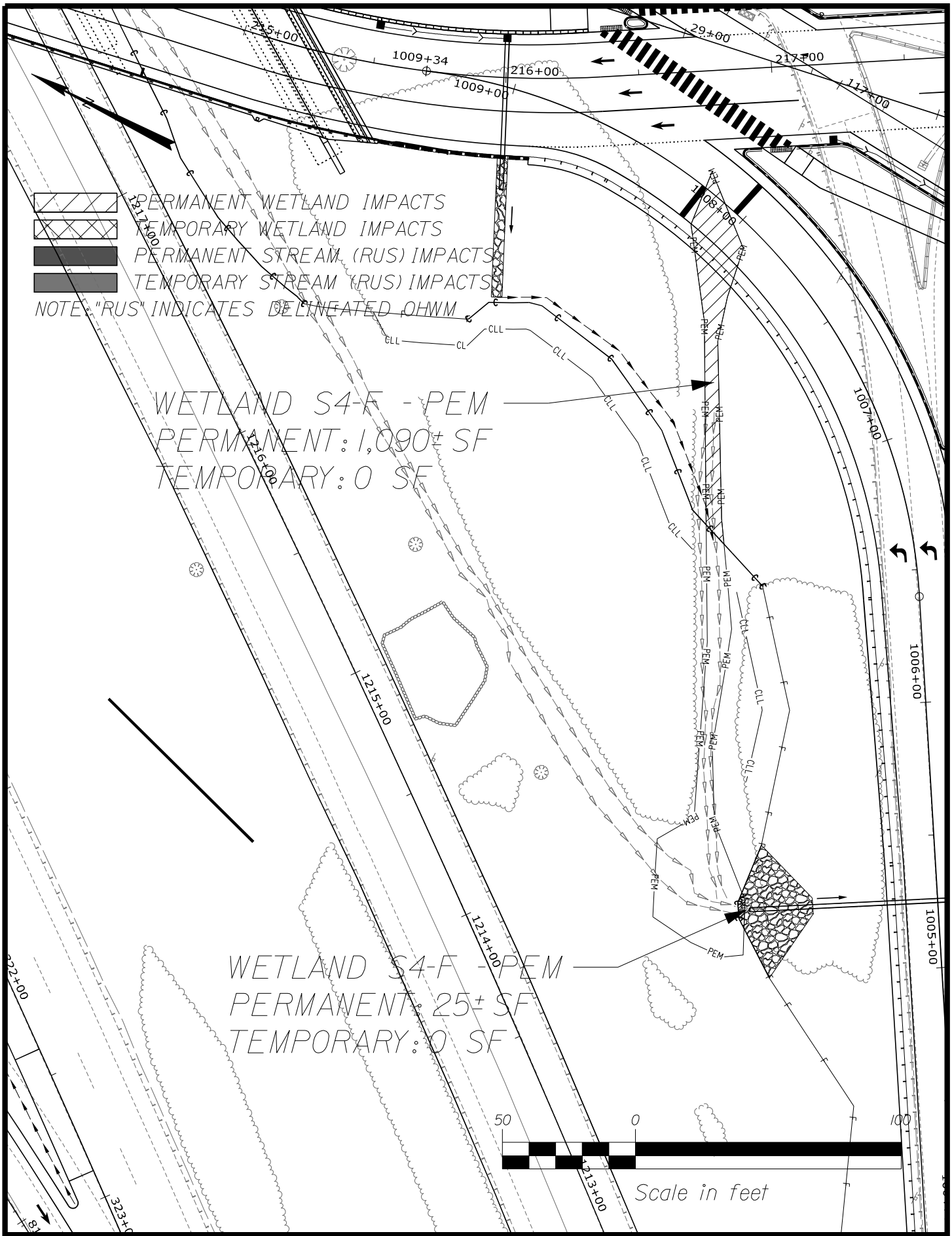
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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

18595.10

WIN
18595.10

HIGHWAY PLANS



STATE OF MAINE DEPARTMENT OF TRANSPORTATION 018595.10	I-95 EXIT 187 DDI BANGOR PENOBSCOT	SHEET NUMBER 4 448
4/22/2025	IMPACT PLAN	OF 6

PROJ. MANAGER	R. MOULTON	BY	DATE	
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DESIGN-DETAILED2				
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REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

BANGOR
RAMP C
CROSS SECTIONS

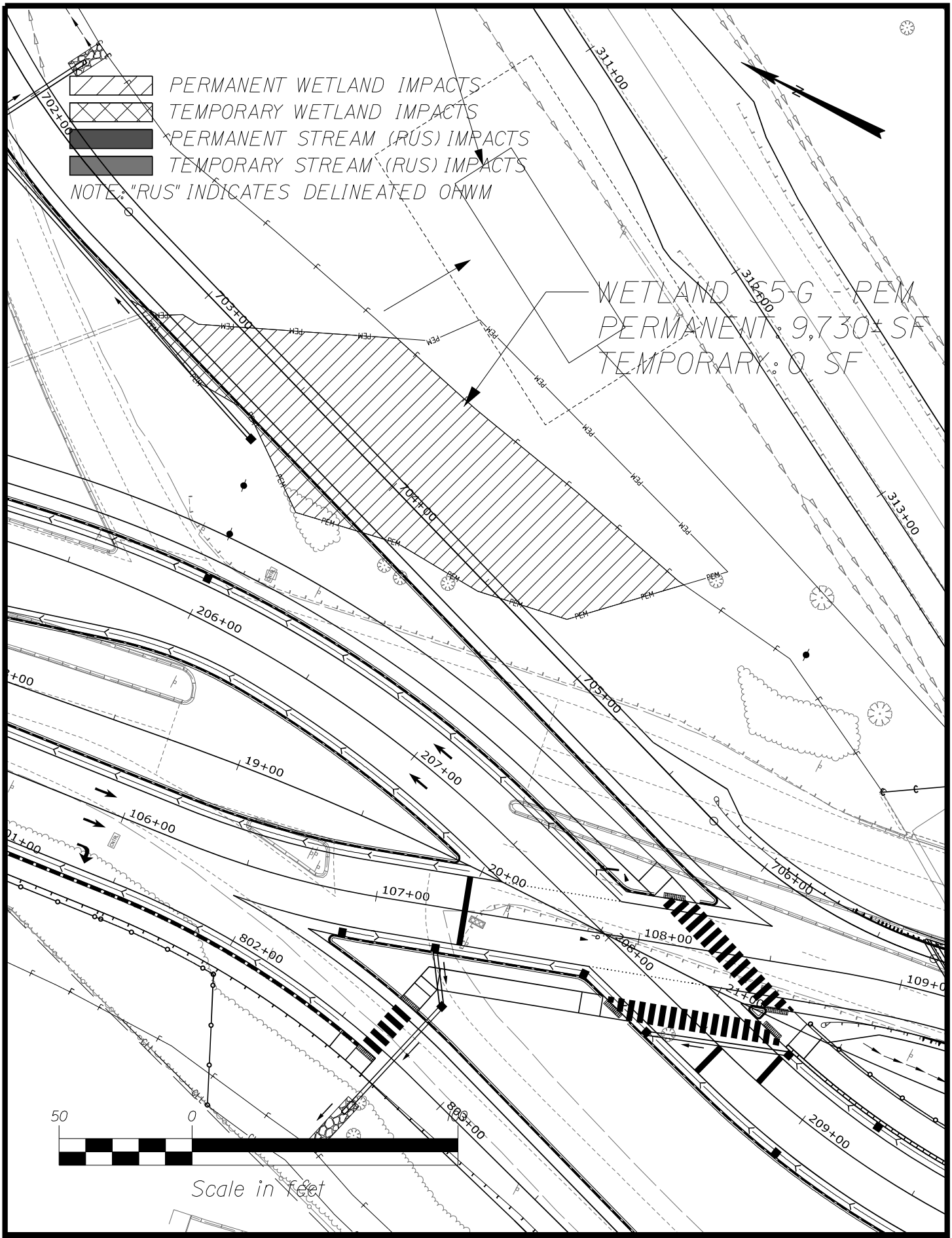
SHEET NUMBER 184 OF 230

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

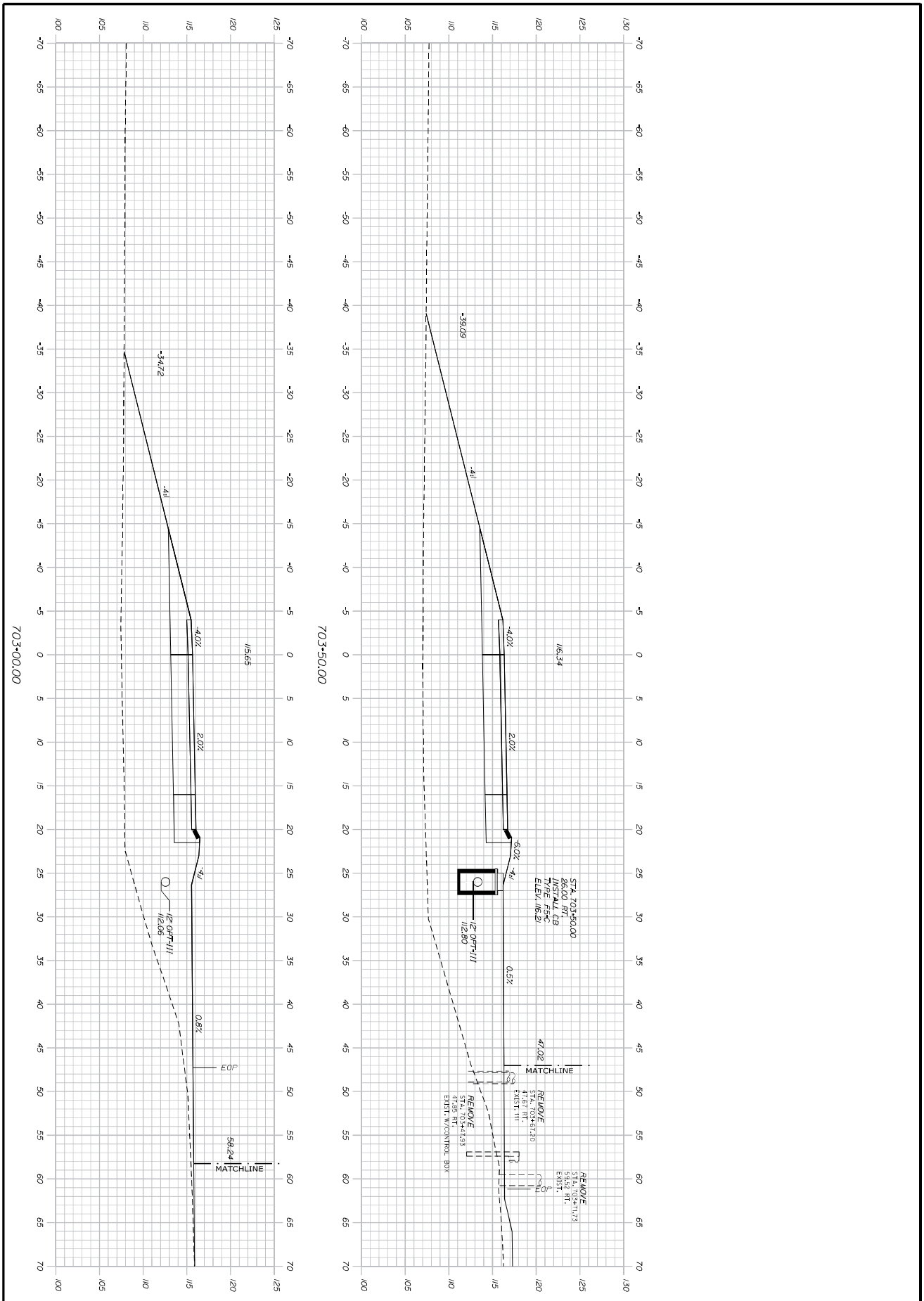
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STATE OF MAINE DEPARTMENT OF TRANSPORTATION 018595.10	I-95 EXIT 187 DDI BANGOR PENOBSCOT	SHEET NUMBER 5 450 OF 6
4/22/2025	IMPACT PLAN	



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BANGOR
RAMP A

CROSS SECTIONS

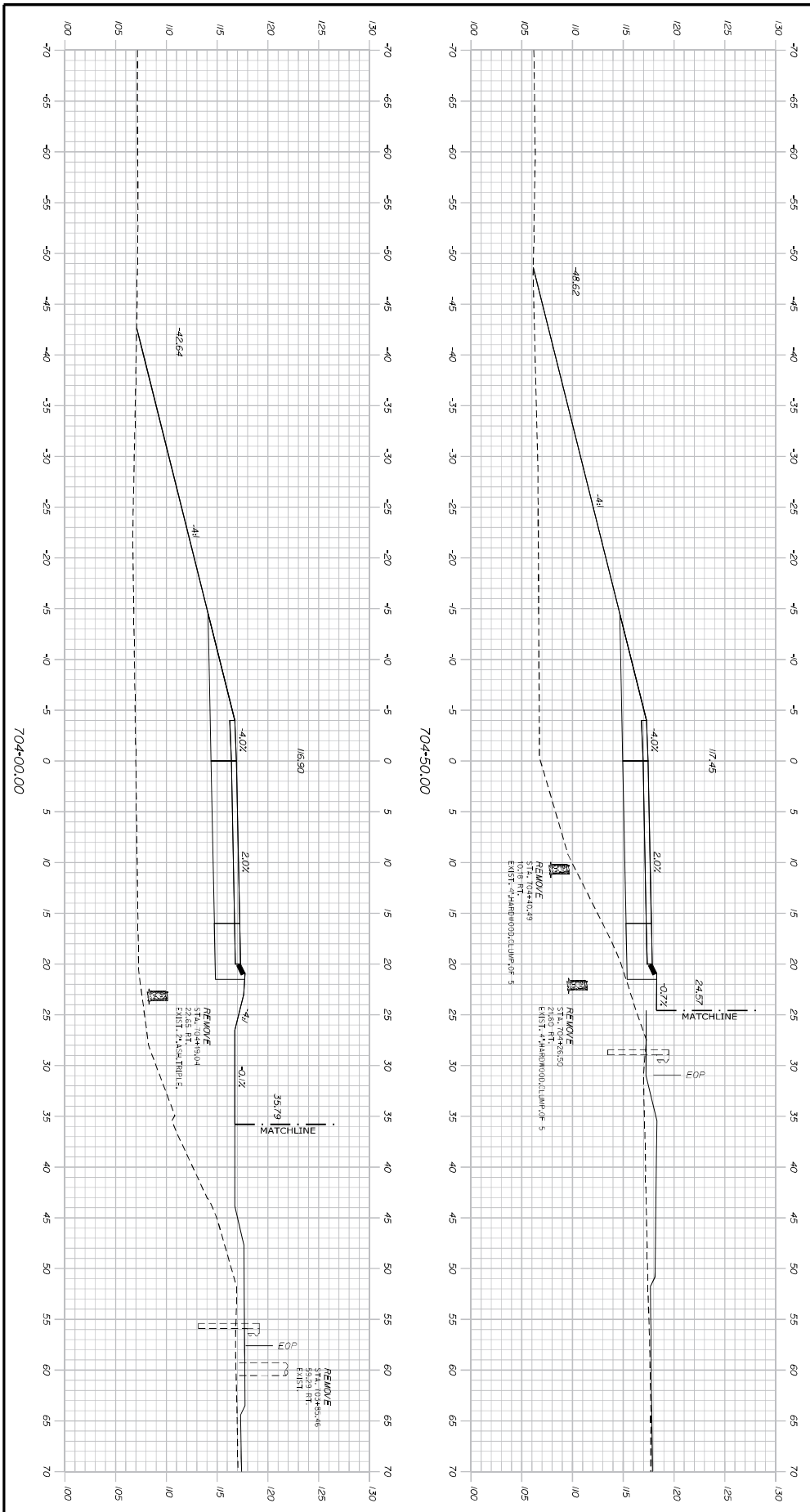
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DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SHEET NUMBER 134 OF 230

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

18595.10

WIN 18595.10 HIGHWAY PLANS



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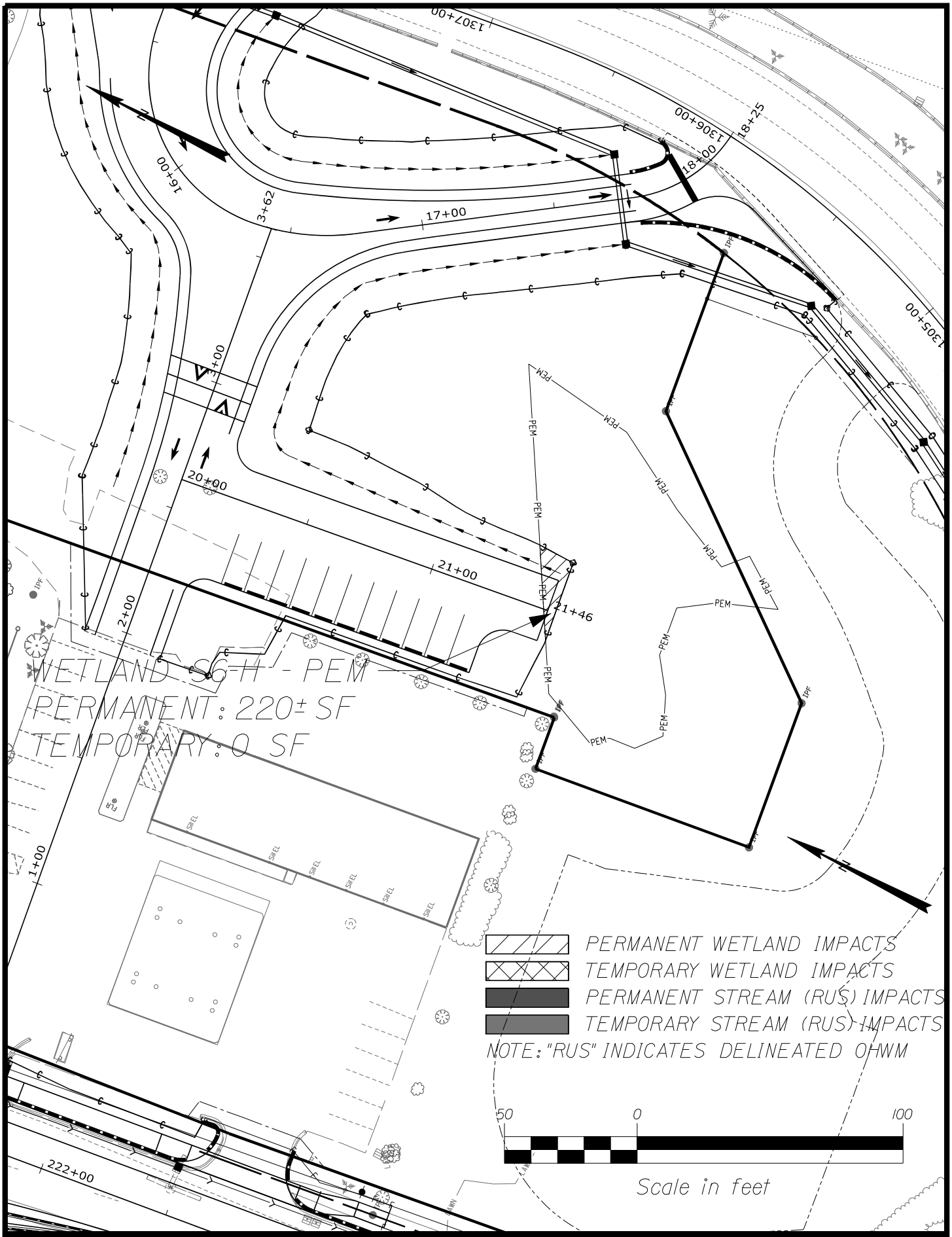
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		DESIGN3-DETAILED3	
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		FIELD CHANGES	
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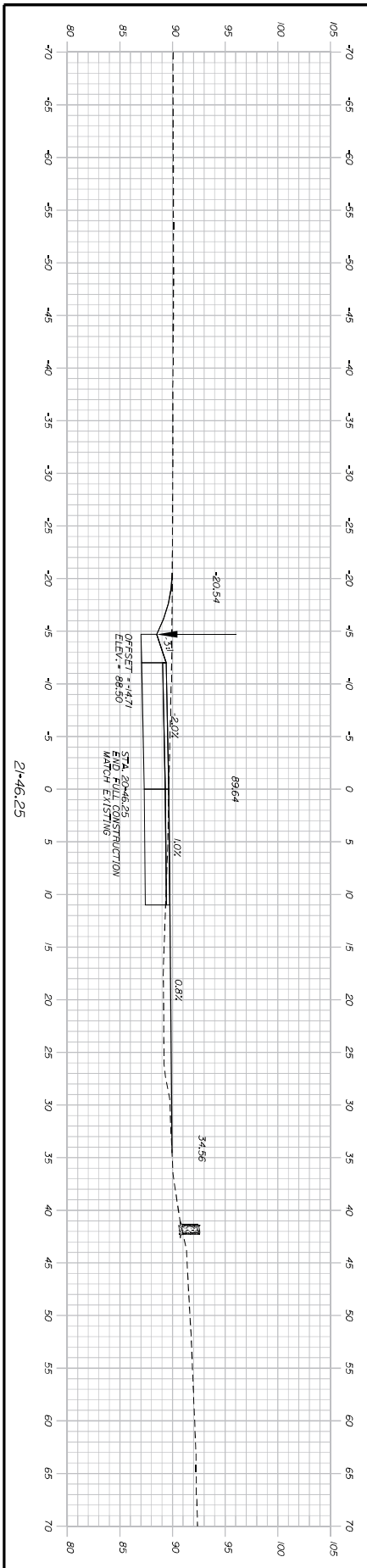
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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WIN 18595.10 HIGHWAY PLANS



STATE OF MAINE DEPARTMENT OF TRANSPORTATION 018595.10	I-95 EXIT 187 DDI BANGOR PENOBSCOT	SHEET NUMBER 6 453 OF 6
4/22/2025	IMPACT PLAN	



Sta. 21+46.25 to Sta. 21+46.25

SHEET NUMBER 230 OF 230

BANGOR
SWETTS PARKING

CROSS SECTIONS

PROJ. MANAGER	R. MOULTON	BY	DATE
DESIGN-DETAILED	ECF	JBD	4/8/2025
CHECKED-REVIEWED	ECF	AG	4/8/2025
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

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HIGHWAY PLANS

DEPARTMENT OF THE ARMY
GENERAL PERMITS FOR
THE STATE OF MAINE

The New England District of the U.S. Army Corps of Engineers (Corps) hereby issues 23 General Permits (GPs), listed below, for activities subject to Corps jurisdiction in waters of the United States within the boundaries of the State of Maine including tribal lands, and in adjacent ocean waters to the seaward limit of the outer continental shelf. These GPs are issued in accordance with Corps regulations at 33 CFR 320 – 332 and specifically 33 CFR 325.2(e)(2). These GPs will protect the aquatic environment and the public interest while effectively authorizing activities that have no more than minimal individual and cumulative adverse environmental effects.

This document contains the following sections:		Pages
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III.	PROCEDURES	3 – 4
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I. CORPS JURISDICTION

1. Permits are required from the Corps for the following work:

a. The construction of any structure in, over, or under any navigable water of the U.S. (see 33 CFR 328), the excavating or dredging from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters. The Corps regulates these activities under Section 10 of the Rivers and Harbors Act of 1899 (see 33 CFR 322);

b. The discharge of dredged or fill material and certain discharges associated with excavation into waters of the U.S. including wetlands. The Corps regulates these activities under Section 404 of the Clean Water Act (see 33 CFR 323); and

c. The transportation of dredged material for the purpose of disposal in the ocean. The Corps regulates these activities under Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (see 33 CFR 324).

2. Related laws: Section 408 of the Rivers and Harbors Act of 1899, Section 401 of the Clean Water Act, Section 402 of the Clean Water Act, Section 307(c) of the Coastal Zone Management Act of 1972, Section 106 of the National Historic Preservation Act of 1966, Section 7 of the Endangered Species Act, the Fish and Wildlife Coordination Act of 1956, the Magnuson-Stevens Fishery Conservation and Management Act, Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, and Section 7(a) of the Wild and Scenic Rivers Act.

II. GENERAL CRITERIA

1. In order for activities to qualify for these General Permits (GPs), they shall meet the GPs terms and eligibility criteria on pages 1-4, all applicable general conditions (GCs) in Section IV, and terms of the Maine General Permits in Section V. Any activity not specifically listed may still be eligible for authorization under these GPs; prospective permittees are advised to contact the Corps for specific eligibility determination.

2. Under these GPs, activities may qualify for the following:

- **SELF-VERIFICATION (SV)**: Notification to the Corps is required at least two weeks before work commences; the Corps will acknowledge receipt and GP eligibility of the SV activity in writing.
- **PRE-CONSTRUCTION NOTIFICATION (PCN)**: Notification to and written verification from the Corps is required. *No work under PCN may proceed until written verification from the Corps is received.*

The thresholds for activities eligible for SV and PCN are defined in the general conditions in Section IV and Maine General Permits in Section V.

3. Prospective permittees shall review:

a. Section I to determine if the activity requires Corps authorization.

b. Sections III , IV, and V to determine if the activity is eligible for authorization under these GPs, and specifically whether it is eligible for SV, or whether a PCN is required.

4. Prospective permittees are encouraged to contact the Corps with questions at any time (U.S. Army Corps of Engineers, Maine Project Office, 442 Civic Center Drive, Suite 350, Augusta, Maine 04330, ph. 207-623-8367). Pre-application meetings, whether arranged by the Corps or requested by a prospective permittee, are encouraged to facilitate the review of projects. Pre-application meetings and/or site visits help streamline the authorization process by alerting the prospective permittee to potentially time-consuming factors that are likely to arise during the evaluation of their project (e.g. avoidance, minimization and compensatory mitigation requirements, historic properties, endangered species, essential fish habitat, vernal pools, and dredging of contaminated sediments).

5. Permittees shall ensure compliance with all applicable GCs in Section IV and GPs in Section V. Non-compliance with these GPs and GCs may subject the permittee to criminal, civil, or administrative criminal penalties, and/or an ordered restoration, and/or the permit may be modified, suspended or revoked by the Corps.

III. PROCEDURES

1. State Approvals. Applicants are responsible for applying for and obtaining any required state or local approvals. Federal and state jurisdiction and review criteria may differ in some instances. State permits may be required for specific projects regardless of the GP category.

In order for authorizations under these GPs to be valid, when any of the following state approvals or statutorily-required reviews is also required, the approvals shall be obtained prior to the commencement of work in Corps jurisdiction:

- Maine Department of Environmental Protection (DEP): Natural Resources Protection Act (NRPA) permit, including permit-by-rule (PBR) and general permit authorizations; Site Location of Development Act permit; Maine Waterway Development and Conservation Act permit; and Maine Hazardous Waste, Septage, and Solid Waste Management Act license.
- Maine Department of Agriculture, Conservation and Forestry: Land Use Planning Commission (LUPC) permit.
- Maine Department of Marine Resources: Aquaculture Leases and Licenses.
- Maine Department of Agriculture, Conservation and Forestry, Bureau of Parks and Lands, Submerged Lands: Submerged Lands Lease.

2. How to Obtain/Apply for Corps Authorization.

a. **Self-Verification (SV)**: Prospective permittees shall confirm that the activity meets all the applicable terms and conditions of SV. Consultation with the Corps and/or other relevant federal and state agencies may be necessary to ensure compliance with the applicable general conditions (GCs) and related federal laws such as the National Historic Preservation Act (GC 15), the Endangered Species Act (GC 16), the Magnuson-Stevens Fishery Conservation and Management Act (GC 17), and the Wild and Scenic Rivers Act (GC 13). Activities that are eligible for SV are authorized under these GPs provided the prospective permittee has:

i. Confirmed that the activity meets all applicable terms and conditions of SV.

ii. Provided notifications to the State Historic Preservation Officer (SHPO) (the SHPO in the State of Maine is the Maine Historic Preservation Commission, or MHPC) and all five federally-recognized tribes in the State of Maine (Tribal Historic Preservation Officers, or THPOs) listed in Section VIII before submitting the SV to the Corps in order to be reviewed for the presence of historic, archeological, architectural, or tribal resources in the action area that the activity may affect (see GC 15). Prospective permittees are not required to wait for a response to their notifications before submitting the SV to the Corps.

iii. At least two weeks before work is to commence, submitted to the Corps a Self-Verification Notification Form (SVNF, page 36) with all of the following attachments: location map, project plans, and an Official Species List of federally threatened and endangered species that may occur in the activity's action area and the email address of the person who generated the list (see GC 16).

NOTE: A copy of a state permit application form may be an acceptable surrogate for the SVNF itself; however, the applicant shall not rely on the state permitting agency to provide the Corps a copy of their state permit application.

b. **Pre-Construction Notification (PCN)**: Notification to, and written verification from the Corps is required. For activities that do not qualify for SV or where otherwise required by the terms and conditions of the GPs, the prospective permittee shall submit a PCN and obtain written verification from the Corps before starting work in Corps jurisdiction. The Corps will coordinate review of all PCN activities with other federal and state agencies, as appropriate. The Corps will attempt to issue written verification of the PCN within 60 days of receiving a complete application.

All prospective permittees for PCN activities shall follow the instructions on found on pages 37 – 42, and in particular:

i. Submit directly to the Corps application form *ENG Form 4345* (pages 40 – 42), or the surrogate state permit application form as noted above.

ii. Provide project information outlined on pages 37 – 42 (Content of a Pre-Construction Notification).
iii. Submit an Official Species List of federally threatened and endangered species that may occur in the activity's action area and the email address of the person who generated the list (GC 16).
iv. Provide notifications to the SHPO (MHPC) and all five THPOs in the State of Maine listed in Section VIII before submitting the PCN to the Corps in order to be reviewed for the presence of historic, archeological, architectural, or tribal resources in the action area that the activity may affect (see GC 15). The PCN shall include documentation that MHPC and all of the THPOs were notified (a copy of the prospective permittee's cover letter or emails to MHPC and the THPOs is acceptable). Prospective permittees are not required to wait for a response to their notifications before submitting a PCN to the Corps.

c. **Individual Permit (IP):** Projects that are not eligible for these GPs require an IP (33 CFR 325.5(b)) and prospective permittees shall submit an application directly to the Corps. These GPs do not affect the Corps IP review process or activities exempt from Corps regulation. For general information regarding IPs prospective permittees are encouraged to contact the Corps. ***In addition, the Corps retains discretionary authority on a case-by-case basis to elevate GP-eligible activities to an IP based on concerns for the aquatic environment or for any other factor of the public interest (33 CFR 320.4(a)). Whenever the Corps notifies a prospective permittee that an IP is required, no work in Corps jurisdiction may be conducted until the Corps issues the required authorization in writing indicating that the work may proceed.***

d. **Emergency Situations:** Contact the Corps immediately in the event of an emergency situation for information on the verification process. Emergency situations are limited to sudden, unexpected occurrences that could potentially result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process an application under standard procedures. Emergency work is subject to the same terms and conditions of these GPs as non-emergency work, and similarly, must qualify for authorization under these GPs; otherwise an IP is required. The Corps will work with all applicable agencies to expedite verification according to established procedures in emergency situations.

IV. GENERAL CONDITIONS

An activity is authorized under the General Permits (GPs) only if that activity and the permittee satisfy all of the applicable GPs terms and following general conditions (GCs):

1. Federal Jurisdiction.
2. Minimal Direct, Secondary and Cumulative Effects.
3. Other Permits.
4. Water Quality and Coastal Zone Management.
5. Fills Within 100-Year Floodplains.
6. Discretionary Authority.
7. Single and Complete Project.
8. Use of Multiple General Permits.
9. Mitigation (Avoidance, Minimization, and Compensatory Mitigation).
10. Corps Projects and Property.
11. Navigation.
12. National Lands.
13. Wild and Scenic Rivers.
14. St. John/St. Croix Rivers.
15. Historic Properties.
16. Federal Threatened and Endangered Species.
17. Essential Fish Habitat.
18. Aquatic Life Movements and Management of Water Flows.
19. Spawning, Breeding, and Migratory Areas.
20. Vernal Pools.
21. Restoration of Special Aquatic Sites (Including Wetland Areas).
22. Invasive and Other Unacceptable Species.
23. Soil Erosion, Sediment, and Turbidity Controls.
24. Time-of-Year Work Windows/Restrictions.
25. Pile Driving and Pile Removal in Navigable Waters.
26. Temporary Fill.
27. Heavy Equipment in Wetlands or Mudflats.
28. Bank and Shoreline Stabilization Including Living Shorelines.
29. Stream Work and Crossings, and Wetland Crossings.
30. Utility Line Installation and Removal.
31. Storage of Seasonal Structures.
32. Aquaculture.
33. Permit(s)/Authorization Letter On-Site.
34. Inspections.
35. Maintenance.
36. Federal Liability.
37. Property Rights.
38. Previously Authorized Activities.
39. Transfer of GP Verifications.
40. Modification, Suspension, and Revocation.
41. Special Conditions.
42. False or Incomplete Information.
43. Abandonment.
44. Enforcement Cases.
45. Duration of Authorization.

1. Federal Jurisdiction.

a. Applicability of these GPs shall be evaluated with reference to federal jurisdictional boundaries (e.g. mean high water mark, high tide line, ordinary high water mark, and wetland boundary). Activities shall be evaluated with reference to "waters of the U.S." under the Clean Water Act (33 CFR 328) and "navigable waters of the U.S." under Section 10 of the Rivers and Harbors Act of 1899 (33 CFR 329). Prospective permittees are responsible for ensuring that the boundaries used satisfy the federal criteria defined at 33 CFR 328 – 229. These sections prescribe the policy, practice and procedures to be used in determining the extent of the Corps jurisdiction. Note: Waters of the U.S. includes all waters pursuant to 33 CFR 328.3(a), and in adjacent wetlands as that term is defined in 33 CFR 328.3(c).

b. Permittees shall identify on project plans wetlands, other special aquatic sites (SAS) including vegetated shallows (or submerged aquatic vegetation, SAV) and mudflats, and other waters, such as lakes and ponds, and perennial and intermittent streams on the project site. Wetlands shall be delineated in accordance with the Corps of Engineers Wetlands Delineation Manual and the most recent regional supplement pertaining to the State of Maine. GP-eligible activities may utilize wetland determinations conducted by State of Maine staff in-lieu of a wetland delineation. For activities located in Essential Fish Habitat (GC 17), permittees shall also identify on project plans natural rocky habitats and shellfish areas in order to satisfy the Magnuson-Stevens Fishery Conservation and Management Act.

2. Minimal Direct, Secondary and Cumulative Effects. To be eligible and subsequently authorized by these GPs, an activity shall result in no more than minimal individual and cumulative effects on the aquatic environment as determined by the Corps in accordance with the criteria listed within these GPs and GCs. This may require project modifications involving avoidance, minimization, or compensatory mitigation for unavoidable impacts to ensure that the net adverse effects of an activity are no more than minimal.

3. Other Permits. Permittees shall obtain other Federal, State, or local authorizations as required by law. Permittees are responsible for applying for and obtaining all required State of Maine or local approvals including a Flood Hazard Development Permit issued by the town/city. Work that is not regulated by the State of Maine, but is subject to Corps jurisdiction, may still be eligible for authorization under these GPs.

4. Water Quality and Coastal Zone Management.

a. Permittees shall satisfy any conditions imposed by the State of Maine and EPA, where applicable, in their Clean Water Act Section 401 Water Quality Certification (WQC) for these GPs, or in any Individual Section 401 WQC. See Section VIII for state-specific contact info and to determine if any action is required to obtain a 401 WQC. The Corps may require additional water quality management measures to ensure that the authorized activity does not cause or contribute to a violation of water quality standards. All projects authorized by these GPs shall be designed, constructed and operated to minimize or eliminate the discharge of pollutants.

b. Permittees shall satisfy any additional conditions imposed by the State of Maine in their Coastal Zone Management (CZM) Act of 1972 consistency concurrences for these GPs, or in any Individual CZM consistency concurrences. The Corps may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

5. Fills Within 100-Year Floodplains. The activity shall comply with applicable Federal Emergency Management Agency (FEMA) approved State of Maine or municipal floodplain management requirements. Permittees should contact FEMA and/or the State of Maine Floodplain Management Program regarding floodplain management requirements (see Section VIII for Federal and state-specific contact info).

6. Discretionary Authority. Notwithstanding compliance with the terms and conditions of these GPs, the Corps retains discretionary authority to require a PCN or IP review based on concerns for the aquatic environment or for any other factor of the public interest (see 33 CFR 320.4(a)). This authority is invoked on a case-by-case basis whenever the Corps determines that the potential consequences of the proposal warrant a higher level of review based on the concerns stated above. This authority may be invoked for projects that may contribute to cumulative environmental impacts that are more than minimal or if there is a special resource or concern associated with a particular project.

7. Single and Complete Project. The term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. These GPs shall not be used for piecemeal work and shall be applied to single and complete projects and as such, the same GP shall not be used more than once for the same single and complete project.

a. For non-linear projects, a single and complete project shall have independent utility. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

b. Unless the Corps determines the activity has independent utility, all components of a single project and/or all planned phases of a multi-phased project (e.g., subdivisions should include all work such as roads, utilities, and lot development) shall be treated together as constituting one single and complete project. If any component of a single and complete project requires a PCN, the entire single and complete project shall be reviewed under PCN.

c. For linear projects such as power lines or pipelines with multiple crossings, a "single and complete project" is all crossings of a single water of the U.S. (i.e. single waterbody) at a specific location. For linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly-shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

8. Use of Multiple General Permits. The use of more than one GP for a single and complete project is prohibited, except when the acreage loss of waters of the U.S. authorized by the GPs does not exceed the acreage limit of the GPs with the highest specified acreage limit. For example, if a road crossing over waters is constructed under GP 10, with an associated utility line crossing authorized by GP 9, if the maximum acreage loss of waters of the U.S. for the total project is ≥3 acres it shall be evaluated as an IP.

9. Mitigation (Avoidance, Minimization, and Compensatory Mitigation).

a. Activities shall be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the U.S. to the maximum extent practicable to ensure that adverse effects to the aquatic environment are no more than minimal.

b. Compensatory mitigation for unavoidable impacts to waters of the U.S., including direct, secondary and temporal loss, will generally be required for permanent impacts that exceed the SV limits (SV limits are detailed in Section V), and may be required for temporary impacts that exceed the SV limits, to offset unavoidable impacts which remain after all appropriate and practicable avoidance and minimization has been achieved and to ensure that the adverse effects to the aquatic environment are no more than minimal. Proactive restoration projects or temporary impact work with no secondary effects may generally be excluded from this requirement.

c. Mitigation proposals shall follow the guidelines found in the Compensatory Mitigation for Losses of Aquatic Resources; Final Rule April 10, 2008; 33 CFR 332 (which can be found at: *www.nae.usace.army.mil/Missions/Regulatory/Mitigation* under "Compensatory Mitigation for Losses of Aquatic Resources, 33 CFR 332 (Compensatory Mitigation Rule)") and any other regulation. Permittees considering the use of a monetary payment *in-lieu* of permittee-responsible mitigation as compensation for unavoidable impacts to waters of the U.S. in the State of Maine may utilize the Maine Natural Resources Conservation Program (MNRCP). Information regarding this compensatory program can be found at: *www.mnrcp.org* For unavoidable jurisdictional impacts affecting federally-endangered Atlantic salmon and/or its critical habitat, permittees may be required to compensate for the impacts by utilizing the Maine Atlantic Salmon Restoration and Conservation Program. Information regarding this *in-lieu-fee* compensatory program can be found at: *www.maine.gov/dmr/science-research/searun/programs/ilffacts.html*

10. Corps Projects and Property.

a. Corps projects and property can be found at: *www.nae.usace.army.mil/Missions/Civil-Works*

b. In addition to any authorization under these GPs, prospective permittees shall contact the Corps Real Estate Division at (978) 318-8585 for work occurring on or potentially affecting Corps properties and/or Corps-controlled easements to initiate reviews and determine what real estate instruments are necessary to perform work. Permittees may not commence work on Corps properties and/or Corps-controlled easements until they

have received any required Corps real estate documents evidencing site-specific permission to work.

c. Any proposed temporary or permanent modification or use of a Federal project (including but not limited to a levee, dike, floodwall, channel, anchorage, breakwater, seawall, bulkhead, jetty, wharf, pier, or other work built or maintained but not necessarily owned by the United States), which may obstruct or impair the usefulness of the Federal project in any manner, is not eligible for SV and requires review and approval by the Corps pursuant to 33 USC 408 (Section 408).

d. A PCN is required for all work in, over, under, or within a distance of three times the authorized depth of a Corps Federal Navigation Project (FNP) and may require permission under Section 408.

e. Any structure or work that extends closer to the horizontal limits of any FNP than a distance of three times the project's authorized depth shall be subject to removal at the owner's expense prior to any future Corps dredging or the performance of periodic hydrographic surveys.

f. Where a Section 408 permission is applicable, written verification for the PCN will not be issued prior to the decision on the Section 408 permission request.

11. Navigation

a. There shall be no unreasonable interference with general navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.

b. Work in, over, under, or within a distance of three times the authorized depth of an FNP shall specifically comply with GC 10.

c. Any safety lights and/or signals prescribed by the U.S. Coast Guard, State of Maine or municipality, through regulations or otherwise, shall be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the U.S.

d. The permittee understands and agrees that, if future operations by the U.S. require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

12. National Lands. Activities that impinge upon the value of any National Lands or Federal Properties including but not limited to a National Wildlife Refuge, National Forest, or any area administered by the National Park Service , U.S. Fish and Wildlife Service or U.S. Forest Service are not eligible for SV and require PCN.

13. Wild and Scenic Rivers.

a. The following activities in designated rivers of the National Wild and Scenic River (NWSR) System, or in a river designated by Congress as a "study river" for possible inclusion in the system, require a PCN unless the National Park Service has determined in writing to the prospective permittee that the proposed work will not adversely affect the NWSR designation or study status:

i. Activities that occur in NWSR segments, in and 0.25 miles up or downstream of NWSR segments, or in tributaries within 0.25 miles of NWSR segments.
ii. Activities that occur in wetlands within 0.25 miles of NWSR segments.
iii. Activities that have the potential to alter free-flowing characteristics in NWSR segments.

b. As of October 14, 2020, National Wild and Scenic Rivers and congressional study rivers in Maine include: the Allagash River beginning at Telos Dam continuing to Allagash checkpoint at Eliza Hole Rapids, approximately 3 miles upstream of the confluence with the St. John River (length = 92 92.5 miles); and 11.25 miles of the York River, in the State of Maine, from its headwaters at York Pond to the mouth of the river at York Harbor, plus tributaries (the York River is currently under study).

14. St. John/St. Croix Rivers. A PCN is required for any work within the Saint John and Saint Croix River basins that requires approval of the International Joint Commission. In addition, a PCN is required if any temporary or permanent use, obstruction or diversion of international boundary waters could affect the natural flow or levels of waters on the Canadian side of the line; or if any construction or maintenance of remedial works,

protective works, dams, or other obstructions in waters downstream from boundary waters could raise the natural level of water on the Canadian side of the boundary.

15. Historic Properties.

a. No undertaking shall cause effects (as defined at 33 CFR 325 Appendix C and 36 CFR 800) on properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unknown historic properties within the permit area, unless the Corps or another federal action agency has satisfied the consultation requirements of Section 106 of the National Historic Preservation Act (NHPA). The majority of historic properties are not listed on the National Register of Historic Places and may require identification and evaluation by qualified historic preservation and/or archeological consultants in coordination with the Corps and the State Historic Preservation Officer (SHPO) (the SHPO in the State of Maine is the Maine Historic Preservation Commission, MHPC) and/or the five federally-recognized tribes in the State of Maine (Tribal Historic Preservation Officers, or THPOs). The MHPC, the THPOs, and the National Register of Historic Places can assist with locating information on:

i. Previously identified historic properties; and

ii. Areas with potential for the presence of historic resources, which may require identification and evaluation by qualified historic preservation and/or archaeological consultants in consultation with the Corps and MHPC and/or the THPO(s).

b. For activities eligible for these GPs, permittees shall ensure that the activity will not cause effects as stated above in 15(a). In order to comply with this condition, both SV and PCN prospective permittees shall notify MHPC and all five THPOs for their identification of historic properties. MHPC and the THPOs will generally respond within 30 days of receiving the notification if they believe that the activity may have an adverse effect to historic properties. A PCN is required if an activity may have an adverse effect to historic properties. The PCN shall be submitted as soon as possible if a proposed activity may cause effects as stated above in 15(a) a to ensure that the Corps is aware of any potential effects of the proposed activity on any historic property to ensure all Section 106 requirements are met.

c. All PCNs shall:

i. Show notification to MHPC and all five THPOs for their identification of historic properties;

ii. State which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties; and

iii. Include any available documentation from MHPC or the THPO(s) indicating that there are or are not historic properties affected.

d. The requirements to comply with Section 106 of the NHPA may be satisfied by a Programmatic Agreement (PA) or Programmatic Consultation (PC) with the Corps, New England District or another federal agency. New England District PAs and PCs are found at *www.nae.usace.army.mil/Missions/Regulatory*

e. If the permittee discovers any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by these permits, the permittee shall immediately notify the district engineer of what was found, and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

f. Federal agencies should follow their own procedures for complying with the requirements of Section 106 of the NHPA. Federal permittees shall provide the Corps with the appropriate documentation to demonstrate compliance with those requirements.

g. Federal and non-federal applicants should coordinate with the Corps before conducting any onsite archeological work (reconnaissance, surveys, recovery, etc.) requested by MHPC or the THPOs, as the Corps will determine the Permit Area for the consideration of historic properties based on 33 CFR 325 Appendix C. This is to ensure that work done is in accordance with Corps requirements.

16. Federal Threatened and Endangered Species.

a. No activity is authorized by these GPs which:

i. Is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat or proposed critical habitat of such species;

ii. "May affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed;

iii. Is "likely to adversely affect" a listed species or critical habitat unless Section 7 consultation has been completed by the Corps or another lead action agency in coordination with the Corps under the provisions of a Programmatic Agreement (PA) or Programmatic Consultation (PC); or

iv. Violates the ESA.

b. All prospective permittees shall attach to their SVNF or PCN an Official Species List obtained from the U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) found at: *https://ecos.fws.gov/ipac* and provide the email address of the person who generated the list.

c. For proposed activities in tidal waters, prospective permittees should also refer to the National Oceanic and Atmospheric Administration (NOAA) Fisheries' Section 7 Mapper for federally-listed species found at: *https://noaa.maps.arcgis.com/apps/webappviewer/index.html*

d. A PCN is required if a threatened or endangered species, a species proposed for listing as threatened or endangered, or designated or proposed critical habitat (all hereinafter referred to as "listed species or habitat"), as identified under the ESA, may be affected by the proposed work. An activity may remain eligible for SV if the only listed species affected is the northern long-eared bat (*Myotis septrionalis*), and only after Section 7 consultation has been completed by the Corps under the 4(d) Rule Streamlined Consultation.

e. Federal agencies shall follow their own procedures for complying with the requirements of the ESA while ensuring that the Corps and any other federal action agencies are included in the consultation process.

f. Non-federal representatives designated by the Corps to conduct informal consultation or prepare a biological assessment shall follow the requirements in the designation document(s) and the ESA. Non-federal representatives shall also provide the Corps with the appropriate documentation to demonstrate compliance with those requirements. The Corps will review the documentation and determine whether it is sufficient to address ESA compliance for the GP activity, or whether additional ESA consultation is necessary.

g. The requirements to comply with Section 7 of the ESA may be satisfied by a Programmatic Agreement (PA) or Programmatic Consultation (PC) with the Corps, New England District or another federal agency. New England District PAs and PCs are found at: *www.nae.usace.army.mil/Missions/Regulatory*

17. Essential Fish Habitat (EFH).

a. PCN activities in tidal waters and the following rivers and streams, including all tributaries to the extent that they are currently or were historically accessible for salmon migration, shall be reviewed for the potential to adversely affect EFH (activities meeting SV criteria have been determined to result in no more than minimal adverse effects to EFH and therefore need no additional review):

Androscoggin River	Aroostook River	Boyden River	Dennys River
Ducktrap River	East Machias River	Hobart Stream	Kennebec River
Machias River	Narraguagus River	Orland River	Passagassawaukeag River
Patten Stream	Penobscot River	Pleasant River	Presumpscot River
Saco River	Sheepscot River	St. Croix River	Tunk Stream
Union River			

b. Prospective permittees may be required to describe and identify potential adverse effects to EFH and should refer to the NOAA Fisheries' EFH Mapper found at: *www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper*

c. The requirements to comply with the Magnuson-Stevens Fishery Conservation and Management Act may be satisfied by a Programmatic Agreement (PA) or Programmatic Consultation (PC) with the Corps, New England District or another federal agency. New England District PAs and PCs are found at: *www.nae.usace.army.mil/Missions/Regulatory*

18. Aquatic Life Movements and Management of Water Flows.

a. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Unless otherwise stated, activities permanently impounding water in a stream require a PCN to ensure impacts to aquatic life species are avoided and minimized. All permanent and temporary crossings of waterbodies and wetlands shall be:

i. Suitably spanned, bridged, culverted, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species; and

ii. Properly aligned and constructed to prevent bank erosion or streambed scour both adjacent to and inside the crossing.

b. To avoid adverse impacts on aquatic organisms, the low flow channel/thalweg shall remain unobstructed during periods of low flow, except when it is necessary to perform the authorized work.

c. For work in tidal waters, in-stream controls (e.g. cofferdams) should be installed in such a way as to not obstruct fish passage.

d. To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity shall not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g. stream restoration or relocation activities).

e. Activities that temporarily or permanently adversely impact upstream or downstream flood conditions require a PCN.

19. Spawning, Breeding, and Migratory Areas.

a. Jurisdictional activities in waters of the U.S. such as certain excavations, discharges of dredged or fill material, and/or suspended sediment producing activities that provide value as fish migratory areas, fish and shellfish spawning or nursery areas, or amphibian and migratory bird breeding areas, during spawning or breeding seasons shall be avoided and minimized to the maximum extent practicable.

b. Jurisdictional activities in waters of the U.S. that provide value as breeding areas for migratory birds must be avoided to the maximum extent practicable. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the U.S. Fish and Wildlife's Maine Field Office (see Section VIII for contact info) to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Vernal Pools.

a. A PCN is required if a discharge of dredged or fill material is proposed within a vernal pool depression located within waters of the U.S.

b. GC 20(a) above does not apply to projects that are within a municipality that meets the provisions of a Corps-approved vernal pool Special Area Management Plan (SAMP) and are otherwise eligible for SV, and the applicant meets the requirements to utilize the vernal pool SAMP.

21. Restoration of Special Aquatic Sites (Including Wetland Areas).

a. In areas of authorized temporary disturbance, if trees are cut they shall be cut at or above ground level and not uprooted in order to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.

b. The introduction or spread of invasive plant species in disturbed areas shall be controlled. If construction mats are to be used in areas of invasive plant species, they shall be thoroughly cleaned before re-use.

c. Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation. Original condition means protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are

approximately the same, unless otherwise authorized. Restoration shall typically commence no later than the completion of construction.

d. Upon completion of construction, all areas of authorized disturbed wetland area shall be stabilized with a wetland seed mix containing only plant species native to New England and shall not contain any species listed in the "Invasive and Other Unacceptable Plant Species" Appendix K in the "New England District Compensatory Mitigation Guidance" found at: *www.nae.usace.army.mil/Missions/Regulatory/Mitigation*

22. Invasive and Other Unacceptable Species.

a. The introduction or spread of invasive or other unacceptable plant or animal species on the project site or areas adjacent to the project site caused by the site work shall be avoided to the maximum extent practicable. For example, construction mats and equipment shall be thoroughly cleaned and free of vegetation and soil before and after use. The introduction or spread of invasive plant or animal species on the project site caused by the site work shall be controlled.

b. No cultivars, invasive or other unacceptable plant species may be used for any mitigation, bioengineering, vegetative bank stabilization or any other work authorized by these GPs. However, non-native species and cultivars may be used when it is appropriate and specified in a written verification, such as using *Secale cereale* (Annual Rye) to quickly stabilize a site. All PCNs shall justify the use of non-native species or cultivars.

c. For the purposes of these GPs, plant species that are considered invasive and unacceptable areprovided in Appendix K "Invasive and Other Unacceptable Plant Species" of the most recent "New England District Compensatory Mitigation Guidance" and is found at: *www.nae.usace.army.mil/Missions/Regulatory/Mitigation* The June 2009 "U.S. Army Corps of Engineers Invasive Species Policy" provides policy, goals and objectives and is located at *www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species* If an Invasive Species Control/Management Plan has been prepared it should be included with any SV or PCN.

23. Soil Erosion, Sediment, and Turbidity Controls.

a. Adequate sedimentation and erosion control management measures, practices and devices, such as phased construction, installation of sediment control barriers (i.e. silt fence, vegetated filter strips, geotextilesilt fences, erosion control mixes, hay bales or other devices) downhill of all exposed areas, retention of existing vegetated buffers, application of temporary mulching during construction, and permanent seeding and stabilization shall be installed and properly maintained to reduce erosion and retain sediment on-site during and after construction. They shall be capable of preventing erosion; of collecting sediment, suspended and floating materials; and of filtering fine sediment.

b. Temporary sediment control barriers shall be removed upon completion of work, but not until all disturbed areas are permanently stabilized. The sediment collected by these sediment barriers shall be removed and placed at an upland location and stabilized to prevent its later erosion into a waterway or wetland.

c. All exposed soil and other fills shall be permanently stabilized at the earliest practicable date.

24. Time-of-Year Work (TOY) Windows/Restrictions. In-water work shall be conducted during the following TOY work windows (work allowed) under SV and any in-water work proposed during the following TOY restrictions (no work) shall be reviewed under PCN (and shall contain written justification for deviation from the work allowed windows). The term "in-water work" does not include conditions where the work site is "in-the-dry" (e.g. intertidal areas exposed at low tide). The term also does not include work contained in a cofferdam so long as the cofferdam was installed and subsequently removed within the work allowedwindow.

	TOY Restriction (***no work***)	TOY Work Window (***work allowed***)
Non-tidal waters	Oct. 1st to Jul. 14th	Jul. 15th to Sep. 30th
Tidal waters	Apr. 10th to Nov. 7th	Nov. 8th to Apr. 9th

Alternate work windows proposed under PCN will generally be coordinated with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Maine Department of Inland Fisheries and Wildlife, and/or Maine Department of Marine Resources and resulting written verifications may include species-specific work allowed windows.

25. Pile Driving and Pile Removal in Navigable Waters.

a. Derelict, degraded, or abandoned piles and sheet piles in the project area shall be removed in their entirety as practicable and properly disposed of in an upland location and not in wetlands. In areas of fine-grained substrates, piles/sheets shall be removed by direct, vibratory, or clamshell pull method in order to minimize potential turbidity and sedimentation impacts. If removal is not practicable, said piles/sheets shall be cut off or driven to a depth of at least one foot below substrate.

b. Work involving pile installation and/or removal should adhere to one of the five methods below:

i. "In-the-dry", or

ii. In-water between Nov. 8th to Apr. 9th, or

iii. Drilled and pinned to ledge, or

iv. Vibratory hammers used to install any size and quantity of wood, concrete, or steel, or impact hammers limited to one hammer and <50 piles installed/day with the following: wood piles of any diameter, concrete piles ≤18-inches diameter, steel piles ≤12-inches diameter if: (1) the hammer is ≤3,000 pounds and a wood cushion or equivalent is used between the hammer and steel pile, or (2) a soft start is used. Soft starts require an initial set of three strikes from the impact hammer at 40% energy, followed by a 1-minute waiting period between subsequent three-strike sets. The soft-start procedure shall be conducted any time hammering ceases for more than 30 minutes.

26. Temporary Fill.

a. Temporary fills, including but not limited to construction mats and corduroy roads shall be entirely removed as soon as they are no longer needed to construct the authorized work. Temporary fill shall be placed in its original location or disposed of at an upland site and suitably contained to prevent its subsequent erosion into waters of the U.S.

b. All temporary fill and disturbed soils shall be stabilized to prevent its eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable. Temporary fill shall be placed in a manner that will prevent it from being eroded by expected high flows.

c. Unconfined temporary fill authorized for discharge into waters of the U.S. shall consist of material that minimizes impacts to water quality (e.g. washed stone, stone, etc.).

d. Appropriate measures shall be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Materials shall be placed in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.

e. Construction debris and/or deteriorated materials shall not be placed or otherwise located in waters of the U.S.

27. **Heavy Equipment in Wetlands or Mudflats.** Operating heavy equipment (drill rigs, fixed cranes, etc.) within wetlands shall be minimized, and to the maximum extent practicable such equipment shall not be stored, maintained or repaired in wetlands. Where construction requires heavy equipment operation in wetlands, the equipment shall: a) have low ground pressure (typically <3 psi); b) be placed on swamp/construction/timber mats (herein referred to as "mats") that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) be operated on adequately dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. Mats are to be placed in the wetland from the upland or from equipment positioned on mats if already working within a wetland. Other support structures that are capable of safely supporting equipment may be used with written Corps authorization. Similarly, the permittee may request written authorization from the Corps to waive use of mats during frozen or dry conditions. Construction mats should be managed in accordance with construction mat best management practices (BMPs) found at:
www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Maine-General-Permit

28. Bank and Shoreline Stabilization Including Living Shorelines.

a. Projects involving construction of or repair, replacement, and maintenance of bank or shoreline stabilization structures including living shorelines within Corps jurisdiction shall be designed to minimize environmental effects, effects to neighboring properties, scour, etc. to the maximum extent practicable.

b. Prospective permittees shall design and construct these stabilization projects using this sequential avoidance and minimization process: avoidance of aquatic resource impacts, diversion of overland flow, vegetative stabilization, living shorelines, stone-sloped surfaces, and walls/bulkheads. New vertical walls/bulkheads shall only be used in situations where reflected wave energy can be tolerated. Prospective permittees proposing new vertical walls/bulkheads shall provide written justification demonstrating why other methods of stabilization are not practicable and how the surrounding area would be affected by the resulting reflected wave energy.

Additional conditions to meet SV eligibility criteria for *non-tidal* bank and shoreline stabilization activities:

a. Fill shall be ≤500 linear feet in total length as measured below the plane of the ordinary high water mark (OHWM), includes total if more than one stream bank.
b. Fill placed below the plane of the OHWM shall be ≤1 cubic yard per linear foot.
c. Fill shall not be angled steeper than 1H:1V.
d. No discharge of fill in special aquatic sites other than wetlands.
e. Stone revetment shall be comprised of angular material.
f. No material shall be of the type, or placed in any location, or in any manner, to impair surface water flow into or out of any water of the U.S.
g. No material shall be placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas).
h. The activity shall not be a stream channelization activity.

Additional conditions to meet SV eligibility criteria for *tidal* bank and shoreline stabilization activities:

a. All in-water work shall be conducted "in-the-dry".
b. Fill shall be ≤500 linear feet in total length as measured below the plane of the high tide line (HTL) and shall be ≤200 linear feet in total length as measured below the plane of the mean high water mark (MHWM), includes total for more than one bank. Vertical structures shall be ≤200 linear feet in total length as measured below the plane of the MHWM and shall be ≤18 inches waterward of the existing vertical face.
c. Fill placed below the plane of the HTL shall be ≤1 cubic yard per linear foot.
d. Stone revetment shall be comprised of angular material.
e. Shall not impact special aquatic sites (SAS, incl. submerged aquatic vegetation, SAV), impacts to natural rocky habitats are ≤100 square feet, and impacts to intertidal and shellfish areas are ≤1,000 square feet).
f. No structures/fill shall be steeper than 1H:1V.
g. No new groins, breakwaters, or jetties.

29. Stream Work and Crossings, and Wetland Crossings.

a. A PCN is required for all new and replacement crossings in navigable waters.

b. In order to effectively size and configure crossings in navigable waters, new and replacement crossings shall consider factors including but not limited to: local tidal elevations over the range of tidal heights, basin topography and bathymetry, existing and proposed road elevations. Flood risk tolerance, conditions of habitat and natural community types present, and sea level rise during the useful life of the crossing.

c. A PCN is required for activities that result in unavoidable impacts to wetlands in excess of SV thresholds.

d. In-stream work and crossings and wetland crossings shall adhere to all applicable GCs including but not limited to:

i. GC 16 (Federally Threatened and Endangered Species)
ii. GC 17 (Essential Fish Habitat)
iii. GC 18 (Aquatic Life Movements and Management of Water Flows)

iv. GC 23 (Soil Erosion, Sediment and Turbidity Controls)
v. GC 24 (Time-of-Year Work Windows/Restrictions)
vi. GC 26 (Temporary Fill)
vii. GC 28 (Bank Stabilization)

e. Slip Lining. Work resulting in a decreased width, height, or diameter of an existing crossing (e.g. slip lining and invert lining) is discouraged and requires PCN. Written justification shall be provided for this activity.

f. Culvert Extensions. A PCN is required for any extension to an existing culvert.

g. Scour protection or armoring of the inlet and/or outlet of a crossing shall not disrupt normal flow patterns or substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area (see GC 18).

h. The permittee shall maintain the work authorized herein in good condition and in conformance with the terms and general conditions of this permit to facilitate aquatic life passage as stated in GC 18. Culverts that develop "hanging" inlets or outlets, result in bed washout, or a stream that doesn't match the characteristics of the substrate in the natural stream channel such as mobility, slope, stability confinement will require maintenance or repair to comply with this GC (this does not apply to temporary stream crossings).

Additional conditions to meet SV eligibility criteria for Stream Work and Crossings:

a. Crossings shall be designed and constructed using the techniques and principles outlined in Stream Simulation, Stream Smart, Habitat Connectivity Design.
b. Crossings shall be designed to be at least 1.2 times bankfull width. Any footings, abutments, and/or abutment armoring shall also be at least 1.2 times bankfull width.
c. Crossings shall have a natural bottom substrate under or within the structure matching the characteristics of the substrate in the natural stream channel. Crossings shall be designed and constructed with appropriate streambed forms and streambed characteristics so that water depths and velocities are comparable to those found in the adjacent natural channel at a variety of flows.
d. Crossings shall include a bank on both sides of the stream matching the horizontal profile of the existing stream and banks in order to allow terrestrial passage for wildlife and to prevent undermining of the footings as applicable.
e. Closed bottom culverts shall be embedded at least 25 percent of the maximum height of the culvert.
f. No unconfined fill or excavation in flowing waters is allowed. In-stream construction work shall be conducted "in-the-dry" under no-flow conditions or by using cofferdams, temporary flume pipes, culverts, etc. Downstream flows shall be maintained during in-stream construction. It is recommended that project plans include pertinent details for working in-the-dry and maintaining downstream flows.
g. Conditions (a) thru (e) immediately above do not apply to temporary stream crossings; however, in addition to conditions (f) immediately above, temporary stream crossings shall adhere to the following:
    i. Be placed on geotextile fabric or other material where practicable to ensure restoration to the original grade. Soil may not be used to construct or stabilize these structures and rock shall be large enough to allow for easy removal without disrupting the streambed.
    ii. Be designed and maintained to withstand and pass high flows. Water height shall be no higher than the top of the culvert's inlet. A minimum culvert diameter of two feet is required to pass debris. Culverts shall be aligned to prevent bank erosion or streambed scour.
    iii. Be equipped with energy dissipating devices installed downstream if necessary to prevent scour.
    iv. Be designed and maintained to prevent soil from entering the waterbody.
    v. Be removed upon the completion of work. Impacts to the streambed or banks requires restoration to their original condition using the methods in (a) above.

PCN Conditions for Stream Work and Crossings:

a. Crossings are recommended to meet the conditions for SV; written justification shall be provided for any deviation from SV conditions.

b. Crossings shall be designed using the least intrusive and environmentally damaging method following this sequential minimization process: 1) spans with no stream impacts, 2) spans with stream impacts, and 3) embedded culverts with Stream Simulation, Stream Smart, or Habitat Connectivity.

Additional Conditions for Wetland Crossings:

a. New and replacement wetland crossings that are permanent shall be constructed in such a manner as to preserve hydraulic and ecological connectivity, at its present level, between the wetlands on either side of the road. Crossing structures commonly include but are not limited to spans and culverts. To meet this condition, spans or culverts should be placed at least every 50 feet with an opening at least 2 feet high and 3 feet wide at ground level. Closed bottom culverts should be embedded at least 6 inches and should have a natural bottom substrate within the structure. Alternative crossing designs that preserve wetland hydraulic and ecological connectivity (e.g. "rock sandwiches) may also be considered.

b. Any work that results in flooding, or impacts to wetland drainage from the upgradient side of the wetland crossing does not qualify for SV.

c. In the case of non-compliance, the permittee shall take necessary measures to correct wetland damage due to lack of hydraulic and ecological connectivity.

30. Utility Line Installation and Removal.

a. Utility lines in jurisdictional waters should be installed subsurface and shall be maintained in such a way so that they remain subsurface. If it is necessary to discharge dredged or filled material to keep such utility lines buried or restore them to their original subsurface condition, a PCN and written verification from the Corps may be required (e.g., in the case of side casting into wetlands from utility trenches).

b. For subsurface utility lines the bottom and side slope cover associated with the initial installation under Federal Navigation Projects (FNPs) is a technical determination. The depth requirement varies based on geotechnical (composition of bottom materials and layering), hydraulic (current, or wave induced scour depth), navigation (propeller induced scour depth and ships' anchor penetration), maintenance dredging (penetration of barge spuds), construction factors (energy from blasting potentially transmitted to utility crossings), physical conditions (exposed open water conditions or sheltered/harbor conditions), and the proposed location of the utility crossing within any FNP or within navigable waters, including areas dredged by others. On a case-by-case basis, the Corps will determine the depth and cover requirements for each proposed utility crossing. Additional conditions to the GP will be attached to address pre and post installation requirements. In waterways that do not have existing FNPs, this depth should be taken as two feet below the existing bottom or maximum depth of proposed dredging, as applicable.

c. Aerial utility lines crossing navigable waters require PCN and shall meet minimum clearances per 33 CFR 322.5(i).

d. For horizontal directional drilling work, returns of drilling fluids to the surface (i.e., frac-outs) are not authorized and require restoration to the maximum extent practicable in accordance with the terms and conditions of these GPs. The permittee and its contractor shall have onsite and shall implement the procedures detailed in a frac-out contingency plan for monitoring drilling operations and for the immediate containment, control and recovery/removal of drilling fluids released into the environment should a discharge of material occur during drilling operations.

e. For new installations within waters of the U.S., any abandoned or inactive utility lines should be removed and faulty lines (e.g., leaking hazardous substances, petroleum products, etc.) shall be removed or repaired to the extent practicable. A PCN is required if they are to remain in place, e.g., to protect sensitive areas or ensure safety.

f. No work shall drain a water of the U.S. by providing a conduit for water on or below the surface. Trench plugs installed along pipelines may be effective.

g. Trenches should be backfilled with native sediment immediately after completion of work.

h. Pre-construction elevations should be re-established. Any additional material needed to accomplish this should be of consistent type and grain-size as the existing substrate sediment.

i. Utility line activities in non-tidal waters adjacent to special aquatic sites, and all work in tidal waters should utilize horizontal directional drilling as practicable.

31. Storage of Seasonal Structures. Seasonal or recreational structures such as pier sections, floats, aquaculture structures, etc. that are removed from the waterway for a portion of the year shall be stored in an upland location and not in wetlands, tidal wetlands, their substrate, or on mudflats. These seasonal structures may be stored on the fixed, pile-supported portion of a structure that is waterward of the mean high water mark or the ordinary high water mark, e.g. the storage of a ramp or gangway on the pile-supported pier. Seasonal storage of structures in navigable waters, e.g., in a protected cove, requires prior Corps approval and local harbormaster approval.

32. Aquaculture. Activities involving the cultivation of Atlantic salmon and other salmonids, or other federally-listed threatened or endangered species are not eligible for authorization under these GPs. All other aquaculture activities shall adhere to all applicable GCs including but not limited to:

a. GC 3 (Other Permits) In particular, permittees shall maintain a current State of Maine Department of Marine Resources lease or license.
b. GC 10 (Corps Projects and Property)
c. GC 11 (Navigation)
d. GC 16 (Federal Threatened and Endangered Species)
e. GC 17 (Essential Fish Habitat)
f. GC 18 (Aquatic Life Movements and Management of Water Flows)
g. GC 31 (Storage of Seasonal Structures)

Additional conditions to meet SV eligibility criteria for Tidal Aquaculture:

a. Shall not exceed 400 square feet in area.
b. Shall receive signed approval from Harbormaster or appropriate Town Official.
c. Shall not include enclosures or impoundments.
d. Shall not be located in or within a distance of three times the authorized depth of a FNP.
e. Shall not be located in or impinge upon the value of National Lands and Federal Properties including but not limited to National Parks and National Wildlife Refuges.
f. Shall not impact special aquatic sites (SAS, incl. submerged aquatic vegetation, SAV), impacts to natural rocky habitats are ≤100 square feet, and impacts to intertidal and shellfish areas are ≤1,000 square feet.
g. No structures, cages, gear, or shell hash shall be located in/within 25 feet of SAV.
h. All gear, except for mooring tackle, when not in use on the site shall be stored in an upland location above the mean high water mark and not on wetland (incl. salt marsh).

33. Permit(s)/Authorization Letter On-Site. The permittee shall ensure that a copy of the terms and conditions of these GPs and any accompanying authorization letter with attached plans are at the site of the work authorized by these GPs whenever work is being performed and that all construction personnel performing work which may affect waters of the U.S. are fully aware of the accompanying terms and conditions. The entire permit authorization shall be made a part of any and all contracts and subcontracts for work that affects areas of Corps jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means all terms and conditions of the GPs, the GPs, and the authorization letter (including its drawings, plans, appendices and other attachments) and subsequent permit modifications as applicable. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or subcontract. Although the permittee may assign various aspects of the work to different contractors or subcontractors, all contractors and subcontractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire GP authorization, and no contract or subcontract shall require or allow unauthorized work in areas of Corps jurisdiction.

34. Inspections. The permittee shall allow the Corps to make periodic inspections at any time deemed necessary in order to ensure that the work is eligible for authorization under these GPs, is being, or has been performed in accordance with the terms and conditions of these GPs. To facilitate these inspections, the permittee shall

complete and return to the Corps the Work-Start Notification Form and the Compliance Certification Form when either is provided with an authorization letter. The Corps may also require post-construction engineering drawings and/or photographs for completed work or post-dredging survey drawings for any dredging work to verify compliance.

35. Maintenance. The permittee shall maintain the activity authorized by these GPs in good condition and in conformance with the terms and condition of these permits. This does not include maintenance dredging, related disposal, or beach nourishment projects, which are subject to review thresholds for GP 5 on page 30, unless specified in written authorization from the Corps.

36. Federal Liability. In issuing these permits, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes;

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest;

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit;

d. Design or construction deficiencies associated with the permitted work; or

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

37. Property Rights. Per 33 CFR 320.4(g)(6), these GPs do not convey any property rights, either in real estate or material, or any exclusive privileges, nor does it authorize any injury to property or invasion of rights or any infringement of federal, state, or local laws or regulations.

38. Previously Authorized Activities.

a. Projects that received prior authorization from the Corps (via Category 1 or 2) and that completed authorized work under the previous nationwide permits, programmatic permits, regional general permits or letters of permission, shall remain authorized in accordance with the original terms and conditions of those authorizations, including their terms, general conditions, expiration date, and any special conditions provided in a written verification.

b. Activities authorized pursuant to 33 CFR Part 330.3 ("Activities occurring before certain dates") are not affected by these GPs.

c. Any work not commenced, not under contract to commence, nor completed that was originally authorized by the Corps under the GP in effect between October 13, 2015 and October 13, 2020 remains authorized subject to the terms and general conditions of this GP along with any special conditions included in written authorizations. Exception: if previously authorized work has not commenced or not under contract to commence and a new federally-listed threatened or endangered species may be affected, the Corps shall consult with the U.S. Fish and Wildlife Service or NOAA Fisheries prior to re-authorizing the work under these GPs. Requests for re-authorization shall include an Official Species List per GC 16.

39. Transfer of GP Verifications. If the permittee sells the property associated with a GP verification, the permittee may transfer the GP verification to the new owner by submitting a letter to the Corps to validate the transfer. A copy of the GP verification shall be attached to the letter, the letter shall contain the name, address, phone number and email of the transferee (new owner), shall include the following statement and signature, and be mailed to: U.S. Army Corps of Engineers, Maine Project Office, 442 Civic Center Drive, Suite 350, Augusta, Maine 04330:

> "When the structures or work authorized by these GPs are still in existence at the time the property is transferred, the terms and conditions of these GPs, including any special conditions, will continue to be binding on the new owner(s) of the property."
>
> _____
> Transferee Printed Name
>
> _____
> Transferee Signature Date

40. Modification, Suspension, and Revocation. These GPs and any individual authorization issued thereof may be either modified, suspended, or revoked, in whole or in part, pursuant to the policies and procedures of 33 CFR 325.7, and any such action shall not be the basis for any claim for damages against the U.S.

41. Special Conditions. The Corps may independently or in coordination with federal resource agencies impose special conditions on a project authorized pursuant to these GPs that are determined necessary to minimize adverse navigational and/or environmental effects, or based on any other factor of the public interest. Failure to comply with all terms and conditions of the authorization, including special conditions, constitutes a permit violation and may subject the permittee to criminal, civil or administrative penalties and/or an ordered restoration.

42. False or Incomplete Information. If the Corps makes a determination regarding the eligibility of a project under these GPs and subsequently discovers that it has relied on false, incomplete or inaccurate information provided by the permittee, the Corps may determine that the GP authorization is not valid; modify, suspend or revoke the authorization; and the U.S. Government may institute legal proceedings.

43. Abandonment. If the permittee decides to abandon the activity authorized under these GPs, unless such abandonment is merely the transfer of property to a third party, he/she may be required to restore the area to the satisfaction of the Corps.

44. Enforcement cases. These GPs do not apply to any existing or proposed activity in Corps jurisdiction associated with an ongoing Corps or EPA enforcement action, until such time as the enforcement action is resolved or the Corps or EPA, as appropriate, determines that the activity may proceed independently without compromising the enforcement action.

45. Duration of Authorization.

a. These GPs expire on October 14, 2025 unless otherwise specifically indicated in an individual authorization letter. Activities authorized under these GPs that have either commenced or are under contract to commence in reliance upon this authorization will have an additional year from the expiration date to complete the work. The permittee must be able to document to the Corps' satisfaction that the activity commenced or was under contract to commence by the expiration date of these GPs. If work is not completed within the one year extended timeframe, the permittee must contact the Corps. The Corps may issue a new authorization, provided the activity meets the applicable terms and conditions of the Maine GPs that are in effect at the time.

b. Activities authorized under these GPs will remain authorized until these GPs expire, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.2(e)(2). Activities completed under the SV or PCN authorizations of these GPs will continue to be authorized after its expiration date.

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Tammy R. Turley
Chief, Regulatory Division

V. MAINE GENERAL PERMITS

An activity is authorized under General Permits 1 through 23 listed below only if that activity and the permittee satisfy all of the applicable GP terms and general conditions. Any activity not specifically listed may still be eligible for authorization under these GPs; prospective permittees are advised to contact the Corps for specific eligibility determination.

1. Repair, Replacement, and Maintenance of Authorized Structures and Fills;
Repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill and minor expansions thereof.

2. Moorings
New moorings and mooring fields, the relocation of previously authorized moorings, expansions, boundary reconfigurations or modifications of previously authorized mooring fields, conversion of mooring types (e.g. private to rental), and maintenance and replacement of moorings. Moored floats, lobster cars, rafts, and similar float structures are not included in this GP.

3. Structures, Floats and Lifts
New, expansions, reconfigurations or modifications of structures for navigational access in waters of the U.S. including but not limited to temporary/seasonal or permanent pile and crib-supported piers, floats, stairs, shore outhauls, and boat and float lifts/ways. Floats may include lobster cars, work floats, moored floats, swim floats, and shellfish upweller floats.

4. Aids to Navigation, and Temporary Recreational Structures
Aids to navigation and regulatory markers which are approved by and installed in accordance with the requirements of the U.S. Coast Guard (see 33 CFR, chapter I, subchapter C, part 66) and temporary buoys, markers, small floating docks, and similar structures placed for recreational use during specific events such as fireworks displays, water skiing competitions, and boat races or seasonal use.

5. Dredging, Disposal of Dredged Material, Beach Nourishment, and Rock Removal and Relocation
New, maintenance, and improvement dredging, including: a) Disposal of dredged material at a confinedaquatic disposal, beach nourishment, near shore, designated open water or ocean water disposal site(s), provided the Corps finds the dredged material to be suitable for such disposal; (b) Beach nourishment not associated with dredging; (c) Rock removal and relocation for navigation.

6. U.S. Coast Guard Approved Bridges and Causeways
Discharges of dredged or fill material incidental to the construction and modification of bridges across navigable waters of the U.S., including cofferdams abutments, foundation seals, piers, approach fills, and temporary construction and access fills provided that the USCG authorizes the construction of the bridge structure under Section 9 of the Rivers and Harbors Act of 1899 or other applicable laws.

7. Bank and Shoreline Stabilization Including Living Shorelines
Bank stabilization activities necessary for erosion protection along the banks of lakes, ponds, streams, and marine/tidal waters. Includes bulkheads, seawalls, riprap, revetments or slope protection & similar structures as well as vegetative planting, soil bioengineering or alternative techniques that are a combination of the two (i.e. living shorelines), specifically for the purpose of shoreline protection.

8. Residential, Commercial and Institutional Developments, and Recreational Facilities
Discharges of dredged or fill material into waters of the U.S for the construction or expansion of: residences and residential subdivisions; commercial and institutional buildings or subdivisions; and recreational facilities; and attendant features including but not limited to roads, parking lots, garages, stormwater management facilities, yards, and utilities.

9. Utility Line Activities

Activities required for (a) the construction, maintenance, relocation, repair, & removal of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for utility lines; (b) the construction, maintenance or expansion of utility line substation facilities associated with a power/utility line in non-tidal waters; and (c) the construction and maintenance of foundations for overhead utility line towers, poles, and anchors provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible. This GP authorizes the construction of access roads to facilitate construction of the above activities provided the activity, in combination with all other activities included in one single and complete project.

10. Linear Transportation Projects

Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., driveways, roads, highways, railways, trails, airport runways, and taxiways) and attendant features.

11. Mining Activities

Temporary or permanent discharges of dredged or fill material into waters of the U.S. for mining activities.

12. Boat Ramps and Marine Railways

Temporary or permanent discharges of dredged or fill material, excavation and other work in waters of the U.S. required for the construction of temporary or permanent boat ramps and marine railways.

13. Land and Water-Based Renewable Energy Generation Facilities and Hydropower Projects

Structures and work and discharges of dredged or fill material into waters of the U.S. for the construction, expansion, modification or removal of: (a) land-based renewable energy production facilities (e.g. solar and wind) and their attendant features; (b) water-based wind or hydrokinetic renewable energy generation pilot projects and their attendant features; and (c) discharges of dredged or fill materialassociated with hydropower projects. Attendant features may include, but are not limited to, land-based collection and distribution facilities, control facilities, and parking lots.

14. Reshaping Existing Drainage Ditches and Mosquito Management

Discharges to modify the cross-sectional configuration of currently serviceable drainage ditches constructed in waters of the U.S., for the purpose of improving water quality by regrading the drainage ditch with gentler slopes, which can reduce erosion, increase growth of vegetation, and increase uptake of nutrients and other substances by vegetation. Also authorized are mosquito reduction activities.

15. Response Operations for Oil or Hazardous Substances

Activities conducted in response to a discharge or release of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300) including containment, cleanup, and mitigation efforts, provided activities are done under either (i) The Spill Prevent, Control & Countermeasure Plan require by 40 CFR 112.3; (ii) The direction or oversight of the Federal on-site coordinator designated by 40 CFR 300; or (iii) Any approved existing State, regional or local contingency plan provided that the Regional Response Team (if one exists in the area) concurs with the proposed response efforts or does not object to the response effort. Activities required for the cleanup of oil releases in waters of the U.S. from electrical equipment that are governed by EPA's polychlorinated biphenyl (PCB) spill response regulations at 40 CFR 761. Booms placed in tidal waters. Use of temporary structures & fills for spill response training exercises.

16. Cleanup of Hazardous and Toxic Waste

Specific activities to effect the containment, stabilization or removal of hazardous or toxic waste materials, including court ordered remedial action plans or related settlements which are performed, ordered or sponsored by a government agency with established legal or regulatory authority.

17. Scientific Measurement Devices
Scientific devices for measuring and recording scientific data, such as staff gauges, tide and current gauges, meteorological stations, water recording and biological observation devices, water quality testing and improvement devices, and similar structures.

18. Survey Activities
Survey activities such as soil borings, core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, exploratory trenching and historic resources surveys (but not recovery).

19. Agricultural Activities
Regulated discharges of dredged or fill material in non-tidal waters of the U.S. for agricultural activities, including the construction of building pads for farm buildings. Authorized activities include: (a) installation, placement, or construction of drainage tiles, ditches, or levees; mechanized land clearing; land leveling; the relocation of existing serviceable drainage ditches; and similar activities; (b) construction of farm ponds, excluding perennial streams, provided the farm pond is used solely for agricultural purposes; and (c) discharges of dredged or fill material to relocate existing serviceable drainage ditches constructed in non-tidal streams.

20. Fish and Wildlife Harvesting, Enhancement, and Attraction Devices
Activities in waters of the U.S. associated with fish and wildlife harvesting devices including pound nets, crab and lobster traps, crab dredging, eel pots, duck blinds, and clam and oyster digging, fish aggregating devices, and small fish attraction devices such as open water fish concentrators (sea kites, etc.). This GP does not include aquaculture activities.

21. Habitat Restoration, Establishment and Enhancement Activities
Activities in waters of the U.S. associated with the restoration, enhancement and establishment of non-tidal and tidal wetlands and riparian areas, including invasive, non-native or nuisance species control; the restoration and enhancement of non-tidal streams and other non-tidal open waters; the relocation of non-tidal waters, including non-tidal streams & associated wetlands for reestablishment of a natural stream morphology and reconnection of the floodplain; the restoration and enhancement of shellfish, finfish and wildlife; and the rehabilitation or enhancement of tidal streams, tidal wetlands and tidal open waters; provided those activities result in net increases in aquatic resource functions and services. Also included are shellfish enhancement measures including but not limited to “brushing”, clam pots, boxes, and netting.

22. Stream and Wetland Work and Crossings
Activities required for the construction, expansion, modification, or improvement of linear transportation projects that cross waters of the U.S. (e.g., driveways, roads, highways, railways, trails, airport runways, and taxiways) and attendant features. Crossing structures include, but are not limited to temporary or permanent jurisdictional spans, bridges, culverts, and fords. Any stream channel modification is limited to the minimum necessary to construct or protect the project; such modifications must be in the immediate vicinity of the project.

23. Aquaculture
The installation of buoys, floats, racks, trays, nets, lines or other structures in waters of the U.S. for the containment and cultivation of fish, shellfish and seaweed/kelp. Also authorized are anchored upweller floats, small-scale shellfish hatchery seawater intake/discharge structures, and discharges of dredged or fill material associated with cultivation such as the placement of cultch or spatted-shell on bottom.

USER NOTE: All Self-Verification and Pre-Construction Notification activities shall comply with all applicable terms (pages 1 - 4), General Conditions (pages 5 - 19), and additional terms below.

GENERAL PERMITS FOR THE STATE OF MAINE		
A. INLAND WATERS AND WETLANDS	Inland Waters and Wetlands are defined as waters that are regulated under Section 404 of the Clean Water Act, including rivers, streams, lakes, ponds, and wetlands, and ***excludes Section 10 Navigable Waters of the U.S.*** The jurisdictional boundaries are the ordinary high water mark (OHWM) in the absence of adjacent wetlands; beyond the OHWM to the limit of adjacent wetlands when adjacent wetlands are present; and the wetland limit when only wetlands are present. For the purposes of these GPs and designated activities, fill placed in the area between the mean high water mark (MHWM) and the high tide line (HTL), and in the bordering and contiguous wetlands to tidal waters are reviewed in the Navigable Waters section below beginning on page 28.	
	Activities not meeting the Self-Verification terms below require Pre-Construction Notification and activities not meeting the Pre-Construction Notification terms below require an application for an Individual Permit (IP).	
GENERAL PERMIT #	**SELF-VERIFICATION (SV)**	**PRE-CONSTRUCTION NOTIFICATION (PCN)**
1. Repair, Replacement, and Maintenance of Authorized Structures and Fills *(for stream crossings see GP 22)*	Repair, replacement, and maintenance of existing, currently serviceable, authorized fills with no expansion or change in use, provided: • Conditions of the original authorization apply. • Minor deviations in fill design allowed. • The repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events is authorized, provided the work is commenced, or is under contract to commence, within two years of the date of their destruction or damage. • Drawdown of impoundments for dam/levee repair does not exceed 18 months and one growing season (Apr-Sept).	Repair, replacement, and maintenance of existing authorized fills not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
2. Moorings	Not Applicable – these activities in non-navigable inland waters do not require Corps authorization.	Not Applicable – these activities in non-navigable inland waters do not require Corps authorization.
3. Structures, Floats, and Lifts	Pile-supported structures, floats and lifts located in non-navigable inland waters do not require Corps authorization. Solid fill or crib-supported structures with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.	Fill activities associated with structures, floats, and lifts not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
4. Aids to Navigation and Temporary Recreational Structures	Not Applicable – these activities in non-navigable inland waters do not require Corps authorization.	Not Applicable – these activities in non-navigable inland waters do not require Corps authorization.
5. Dredging, Disposal of Dredged Material, Beach Nourishment, and Rock Removal and Relocation	Those activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No stream channelization, relocation, or loss of streambed including impoundments or discharges of tailings into streams.	Those activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.

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	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
6. U.S. Coast Guard Approved Bridges and Causeways	Not applicable in inland waters and wetlands; see B. Navigable Waters on page 31 below.	Not applicable in inland waters and wetlands; see B. Navigable Waters on page 31 below.
7. Bank and Shoreline Stabilization Including Living Shorelines (see also GC 28)	Bank and shoreline stabilization activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • Fill is ≤500 LF in total length as measured below the plane of the OHWM, includes total if more than one stream bank. • Fill placed below the plane of the OHWM is ≤1 CY per linear foot. • There is no discharge in special aquatic sites other than wetlands. • Revetment is comprised of angular material. • In-stream work is limited to Jul. 15th to Sep. 30th • No structures angled steeper than 1H:1V.	Bank and shoreline stabilization activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
8. Residential, Commercial and Institutional Developments, and Recreational Facilities	Those developments and facilities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts. Fill area includes all temporary and permanent fill, and regulated discharges associated with excavation. Provided: • The historic fill and proposed fill area <15,000 SF specifically complies with GC 5 Single and Complete Projects. • No work in special aquatic sites other than wetlands.	Those developments and facilities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts. *Mechanical clearing of areas within Corps jurisdiction without grubbing or other soil disturbance >3 acres as a secondary impact may still be eligible for PCN at the discretion of the Corps.*
9. Utility Line Activities (see also GC 30)	Utility line activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill (excluding mats), and associated secondary impacts, provided: • There is no permanent change in pre-construction contours in waters in the U.S. • Material resulting from trench excavation is temporarily side cast into waters of the U.S. for <3 months and is placed in such a manner that is not dispersed by current or other forces. • The line does not run parallel to, or along a streambed. • No stream channelization, relocation, or loss of streambed including impoundments. • There is no discharge in special aquatic sites other than wetlands. • Construction mats of any area necessary to conduct activities provided mats are removed as soon as work is completed and shall be in place no longer than one single growing season. • In-stream work is limited to Jul. 15th to Sep. 30th • In-water work is conducted in-the-dry. • Intake structures that are dry hydrants used exclusively for firefighting activities with no stream impoundments. • Construction mats of any area necessary to conduct activities provided mats are removed as soon as work is completed and shall be in place no longer than one single growing season.	Utility line activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts. *Mechanical clearing of areas within Corps jurisdiction without grubbing or other soil disturbance >3 acres as a secondary impact may still be eligible for PCN at the discretion of the Corps.*

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	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
10. Linear Transportation Projects *(for stream crossings refer to GP 22)*	Linear transportation activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill (excl. mats), and associated secondary impacts, provided: • The historic fill and proposed fill area <15,000 SF specifically complies with GC 5 Single and Complete Projects. • There is no discharge in special aquatic sites other than wetlands. • Construction mats of any area necessary to conduct activities provided mats are removed as soon as work is completed and shall be in place no longer than one single growing season.	Linear transportation activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts. *Mechanical clearing of areas within Corps jurisdiction without grubbing or other soil disturbance >3 acres as a secondary impact may still be eligible for PCN at the discretion of the Corps.*
11. Mining Activities	Mining activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No stream channelization, relocation, or loss of streambed including impoundments.	Mining activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
12. Boat Ramps	Boat ramps with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, and temporary fills.	Boat ramps not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
13. Land and Water-Based Renewable Energy Generation Facilities and Hydropower Projects	Those facilities and projects with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No stream channelization, relocation, or loss of streambed including impoundments. • No new water-based facilities are eligible.	Those facilities and projects not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts. *Mechanical clearing of areas within Corps jurisdiction without grubbing or other soil disturbance >3 acres as a secondary impact may still be eligible for PCN at the discretion of the Corps.*
14. Reshaping Existing Ditches and Mosquito Management	Not applicable in inland waters and wetlands; see B. Navigable Waters on page 33 below.	Not applicable in inland waters and wetlands; see B. Navigable Waters on page 33 below.
15. Response Operations for Oil or Hazardous Substances	The SVNF or a surrogate state reporting form may be submitted after-the-fact for response operations. This GP also authorizes the use of temporary structures and fills in waters of the U.S. for spill response training exercises with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts (*SVNF is required prior to the activity*).	Those response operations not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.

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	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
16. Cleanup of Hazardous and Toxic Waste	Those cleanup activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No stream channelization, relocation, or loss of streambed including impoundments. • The activity does not involve establishing new disposal sites or expanding existing sites used for the disposal of hazardous or toxic waste.	Those cleanup activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts. • The activity does not involve establishing new sites for the disposal of hazardous or toxic waste.
17. Scientific Measurements Devices	Those devices with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No biological sampling devices. • Devices do not restrict or concentrate movement of aquatic organisms. • Upon completion of use, the devices and any associated fills shall be removed in their entirety.	Those devices not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
18. Survey Activities	Those survey activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • Exploratory trenches are restored in accordance with GC 21. • No discharge of excavated material from test wells for oil and gas exploration (the plugging of such wells is authorized).	Those survey activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
19. Agricultural Activities	Those agricultural activities subject to Corps jurisdiction with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No stream channelization, relocation, or loss of streambed including impoundments.	Those agricultural activities subject to Corps jurisdiction not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
20. Fish and Wildlife Harvesting, Enhancement and Attraction Devices and Activities	Not applicable in inland waters and wetlands; see B. Navigable Waters on page 34 below.	Not applicable in inland waters and wetlands; see B. Navigable Waters on page 34 below.
21. Habitat Restoration, Establishment, and Enhancement 480	Those activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No water impoundments allowed. • No conversion of a stream to wetland or vice versa, a wetland to a pond or uplands, or one wetland type to another. • No dam removal.	Those activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.

	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
22. Stream and Wetland Work and Crossings (see also GC 29)	Stream work and crossings with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No work in designated or proposed critical habitat for endangered species. • Crossings are designed and constructed using the techniques and principles outlined in Stream Simulation, Stream Smart, or Habitat Connectivity Design. • Crossings are designed to be 1.2 times bankfull width. • Crossings have a natural bottom substrate. • Crossings include a bank on both sides of the channel. • Closed bottom culverts are embedded at least 25% of the maximum width of the culvert. • In-stream work is limited to Jul. 15th to Sep. 30th • In-stream work is conducted "in-the-dry". • No slip lining. • No culvert extensions. • No stream channelization, relocation, or loss of streambed including impoundments. Wetland work and crossings, provided: • No flooding or impacts to wetland drainage from the upgradient side of the crossing.	Stream and Wetland Work and Crossings not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.
23. Aquaculture (see also GC 32)	Aquaculture activities with <15,000 SF of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts, provided: • No water impoundments allowed. • No conversion of i) a stream to wetland or vice versa, a wetland to a pond or uplands, and ii) one wetland type to another.	Aquaculture activities not eligible for SV, provided: • <3 acres of permanent and/or temporary inland waterway and/or wetland fill, and associated secondary impacts.

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USER NOTE: All Self-Verification and Pre-Construction Notification activities shall comply with all applicable terms (pages 1 - 4), General Conditions (pages 5 - 19), and additional terms below.

B. NAVIGABLE WATERS	**Navigable Waters of the U.S. are defined as** those waters that are subject to the ebb and flow of the tide in addition to the non-tidal portions of the following federally-designated waters in Maine (the Kennebec River to Moosehead Lake, the Penobscot River to the confluence of the East and West Branch at Medway and, Lake Umbagog within the State of Maine) (Section 10 Rivers and Harbors Act of 1899). The jurisdictional limits are the mean high water mark (MHWM) in tidal waters and the ordinary high water mark (OHWM) in non-tidal portions of the federally-designated navigable rivers. For the purposes of these GPs, fill placed in the area between the mean high water mark (MHWM) and the high tide line (HTL), and in the bordering and contiguous wetlands to tidal waters are also reviewed in this Navigable Waters section.	
	Activities not meeting the Self-Verification terms below require Pre-Construction Notification and activities not meeting the Pre-Construction Notification terms below require an application for an Individual Permit.	
GENERAL PERMIT #	**SELF-VERIFICATION**	**PRE-CONSTRUCTION NOTIFICATION**
1. Repair, Replacement, and Maintenance of Authorized Structures and Fills **See GC 25 for pile driving and removal conditions.*	Repair, replacement, or maintenance of previously authorized, currently serviceable structures or fills, provided: • Conditions of the original authorization apply. • No expansion or change in use. Shall be rebuilt in same footprint, however minor deviations in design allowed. • The repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events is authorized, provided that work is commenced, or is under contract to commence, within two years of the date of their destruction or damage. • In-water work is conducted "in-the-dry" (see GC 24). • No impacts to special aquatic sites (SAS) (incl. submerged aquatic vegetation, SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal area ≤1,000 SF • Slope stabilization is ≤500 LF in total length as measured below the plane of the HTL and is ≤200 LF in total length as measured below the plane of the MHWM or OHWM. Vertical structures are ≤200 LF in total length as measured below the plane of the MHWM or OHWM and are ≤18 inches waterward of existing face. • Dam and flood control, or levee work does not alter water levels or flood elevations. • Discharge of accumulated bottom sediments from or through a dam is not more than *de minimus*. • Tide gate work has a Corps-approved operation and maintenance plan and no effect to hydraulic regime, or tide gates that solely convey stormwater and/or Maine National Pollutant Discharge Elimination System-permitted discharges.	Repair, replacement, or maintenance of previously authorized structures or fills not eligible for SV, provided: • ≤0.5 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF

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	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
2. Moorings	Private, non-commercial, non-rental, single-boat moorings, provided: • Authorized by the local harbormaster/town. • Not associated with any boating facility (e.g. marinas). • Not located within a Federal Navigational Project (other than in a Federal Anchorage) or within a distance of three times the authorized depth of a Federal Navigation Project. Moorings in a Federal Anchorage must not be associated with a boating facility and must not be for rent. • No interference with navigation. • Mooring is not located in SAS (incl. SAV) or intertidal areas. Minor relocation of previously authorized moorings, provided: • Authorized by the local harbormaster/town. • Relocation is not within a Federal Navigational Project (other than in a Federal Anchorage) or within a distance of three times the authorized depth of a Federal Navigation Project. • No interference with navigation. • Relocated mooring is not located in SAS (incl. SAV) or intertidal areas. **SV Moorings above do not require a SVNF.*	Moorings not eligible for SV and don't require an IP. This includes private moorings with no harbormaster or means of local approval or moorings associated with a boating facility (e.g. marina). *Locating new moorings in SAS (incl. SAV) shall be avoided to the maximum extent practicable. If SAS cannot be avoided, consideration shall be given to alternative mooring systems that prevents mooring chains from resting or dragging on the bottom substrate at all tides.* An IP is required for moorings located within the horizontal limits, or with moored vessels that extend into the horizontal limits of a Federal Navigation Project (other than in a Federal Anchorage).
3. Structures, Floats, and Lifts 483 *Cont'd below on page 30*	Reconfiguration of such existing authorized structures with all intertidal work conducted "in-the-dry" (see GC 24). Minor relocation of previously authorized floats provided: • Relocation is not into a Federal Navigation Project or within a distance of three times the authorized depth of a Federal Navigation Project (other than a Federal Anchorage). • No interference with navigation. • Not relocated in or within 25 feet of SAV. • Seasonal floats are stored above the MHWM and not on wetland (incl. salt marsh). New private, non-commercial ramp and float structures attached to land (no piers) or new floats provided: • Not located in or within a distance of three times the authorized depth of a Federal Navigation Project. • No interference with navigation. • No structure extends across >25% of the waterway width at mean low water. • Not located in or within 25 feet of SAV. • Ramp is <150 LF over salt marsh waterward of the MHWM and is ≥1:1 height:width ratio over salt marsh.	New structures, floats, and/or lifts including floatways/skidways, built to access waterway (both seasonal and permanent). Includes pile-supported, solid fill-supported, and crib-supported structures. Also includes expansions to existing authorized boating facilities (e.g. marinas). Provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF **See GC 25 for pile driving and pile removal conditions.* Compliance with the following is recommended: • *Lowermost part of floats are ≥18 inches above the substrate during all tides.* • *Structures are ≥1:1 height:width ratio over salt marsh.* • *Structures and floats are not located in or within 25 feet of SAV.* • *Moored vessels are not positioned over SAV.* • *Structures attached to land are located ≥ 25 feet from the property line (The Corps may require a letter of no objection from the abutter if located within 25 feet of the property line.)*

	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
Cont'd from page 29	• Ramp and floats attached to land are located ≥25 feet from the property line. • Seasonal ramp and floats are stored above the HTL and not on wetland (incl. salt marsh). Compliance with the following is recommended: • *Lowermost part of floats is ≥18 inches above the substrate during all tides.*	• *No structure extends across >25% of the waterway width at mean low water.* • *Not located within a distance of three times the authorized depth of a Corps Federal Navigation Project.* An IP is required for structures, floats, and/or lifts including floatways/skidways, located in such that they and/or vessels docked or moored at them are within the horizontal limits of a Corps Federal Navigation Project. An IP is also required for structures and floats associated with a new or previously unauthorized boating facility (e.g. marinas).
4. Aids to Navigation and Temporary Recreational Structures	Aids to navigation and regulatory markers which are approved by and installed in accordance with the requirements of the U.S. Coast Guard. (See 33 CFR 66, Chapter I, subchapter C). **These SV Aids do not require a SVNF.* Temporary buoys, markers, floats, etc. for recreational use during specific events, provided: • They are removed within 30 days after the specific event has concluded. • No interference with navigation. • No impact to SAV.	Aids and temporary structures not eligible for SV.
5. Dredging, Disposal of Dredged Material, Beach Nourishment, and Rock Removal and Relocation	Maintenance dredging of <1,000 CY for navigational purposes with upland disposal including return water from upland contained disposal area, provided: • Proper siltation controls are used. • No expansion of footprint. • No dredging in or within a distance of three times the authorized depth of a Federal Navigation Project. • Dredging operation is limited to Nov. 8th to Apr. 9th (it is recommended that in areas populated by winter flounder, dredging should cease by March 15th). • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal area ≤1,000 SF • No dredging within 25 feet of SAV. • No dredging in or within 100 feet of shellfish areas. • No blasting. • No dredging in designated or proposed critical habitat for endangered species.	Maintenance dredging not eligible for SV and new dredging <25,000 CY Includes return water from upland contained disposal areas. Disposal includes: • Upland. • Beach nourishment (above MHW line) of any area provided the dredging's primary purpose is navigation or the sand is from an upland source. • Open water & confined aquatic disposal if Corps finds the material suitable. Beach nourishment associated with dredging when the primary purpose is not navigation requires at least a PCN. Temporary and/or permanent fill or excavation in SAV <1,000 SF and Permanent fill or excavation in other SAS <4,300 SF

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	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
6. U.S. Coast Guard Approved Bridges and Causeways	Discharges of dredged or fill material associated with U.S. Coast Guard Approved Bridges and Causeways, provided: • In-water work is conducted "in-the-dry" (see GC 24). • Discharge of dredged or fill material <15,000 SF • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal area ≤1,000 SF Compliance with the following is recommended: • *Discharge of dredged or fill material should not occur within 100 feet of SAV or within 25 feet of natural rocky habitat or other SAS.* *Note: new causeways and approach fills are not eligible for SV.*	Discharges of dredged or fill material associated with U.S. Coast Guard Approved Bridges and Causeways not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
7. Bank and Shoreline Stabilization Including Living Shorelines (see also GC 28)	Bank and shoreline stabilization activities, provided: • In-water work is conducted "in-the-dry" (see GC 24). • Fill is ≤500 LF in total length as measured below the plane of the HTL and is ≤200 LF in total length as measured below the plane of the MHWM or OHWM (includes total for more than one bank). Replacement vertical structures are ≤200 LF in total length as measured below the plane of the MHWM or OHWM and are ≤18 inches waterward of existing face. • Fill placed below HTL is ≤1 CY per linear foot. • Stone revetment is comprised of angular material. • No fills angled steeper than 1H:1V. • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal or shellfish areas ≤1,000 SF • No new groins, breakwaters, or jetties.	Bank and shoreline stabilization activities not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts, provided: • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
8. Residential, Commercial and Institutional Developments, and Recreational Facilities	Not Eligible	Residential, commercial and institutional developments and recreational facilities, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts, provided: • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF Conversions of previously authorized pile-supported buildings over navigable waters to residences, offices, or other non-water dependent uses require PCN. Floating house boats or businesses on floats require PCN.

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	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
9. Utility Line Activities (see also GC 30)	Repair, replacement, or maintenance of previously authorized, currently serviceable utilities with no expansion or change in use, provided: • Conditions of the original authorization apply. • In-water work limited to Nov. 8th to Apr. 9th. • Trenching or filling confined to existing footprint and <100 LF; trenches shall be backfilled immediately. • Jet-plow, fluidization, or other direct burial methods confined to existing footprint and <200 LF • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal or shellfish areas ≤1,000 SF • No work in designated or proposed critical habitat for endangered species. New work in, over, or under navigable waters including new outfalls and any intake structure work requires PCN. Aerial utility lines over navigable waters requires PCN.	Those utility activities not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
10. Linear Transportation Projects *(for stream crossings refer to GPs 6 and 22)*	Not Eligible	Linear transportation projects, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
11. Mining Activities	Not Eligible	Not Eligible
12. Boat Ramps and Marine Railways	No new boat ramps or marine railways. In-water work is conducted "in-the-dry" (see GC 24). No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal or shellfish areas ≤1,000 SF Boat ramp and marine railway work not eligible for maintenance (i.e. not currently serviceable) may be replaced "in-kind" with minor deviations provided: • Work is confined to the intertidal zone. • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal or shellfish areas ≤1,000 SF	Those ramps and railways not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts, provided: • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF

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	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
13. Land and Water-Based Renewable Energy Generation Facilities and Hydropower Projects	Not Eligible	Work associated with those facilities and projects, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF For each single and complete project, no more than 10 generation units (e.g., wind turbines or hydrokinetic devices) may be authorized. No new impoundments.
14. Reshaping Existing Ditches and Mosquito Management	≤500 LF of drainage ditch will be modified. The reshaping of the ditch cannot increase drainage capacity beyond the original as-built capacity nor can it expand the area drained by the ditch as originally constructed (i.e., the capacity of the ditch shall be the same as originally constructed and it cannot drain additional wetlands or other waters of the U.S.). No new ditches or relocation of drainage ditches constructed in waters of the U.S.; the location of the centerline of the reshaped drainage ditch shall be approximately the same as the location of the centerline of the original drainage ditch. No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal or shellfish areas ≤1,000 SF	Those activities not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
15. Response Operations for Oil or Hazardous Substances	The SVNF or a surrogate state reporting form may be submitted after-the-fact for spill response activities. This GP also authorizes the use of temporary structures and fills in waters of the U.S. for spill response training exercises (*SVNF is required prior to the activity*), provided: • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, impacts to intertidal or shellfish areas ≤1,000 SF, and impacts to tidal resources <0.5 acre	Those response operations not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
16. Cleanup of Hazardous and Toxic Waste 487	Only booms placed for hazardous and toxic waste containment and absorption and prevention are eligible for SV. *A SVNF is not required for these eligible containment booms.*	Cleanup activities not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF An IP is require for the establishment of new disposal sites or expanding existing sites used for the disposal of hazardous or toxic waste.

	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
17. Scientific Measurements Devices	Those scientific measurements devices, provided: • Devices do not restrict or concentrate movement of aquatic organisms. • No interference with navigation. • No blasting. • No biological sampling devices. • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, impacts to intertidal areas ≤1,000 SF, and impacts to tidal resources ≤0.5 acre • Upon completion of use, the devices and any associated structures or fills are removed in their entirety.	Those scientific measurements devices not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
18. Survey Activities	Those survey activities, provided: • No blasting. • No interference with navigation. • No seismic exploratory operations. • No oil and gas exploration. • No trenching or other silt-producing activities. • No fill for roads or construction pads. • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, impacts to intertidal areas ≤1,000 SF, and impacts to tidal resources <0.5 acre • No blasting. • No biological sampling devices. *A SVNF is not required for required sediment sampling for Corps-regulated dredge proposals.*	Those survey activities not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
19. Agricultural Activities	Not Eligible	Not Eligible
20. Fish and Wildlife Harvesting, Enhancement and Attraction Devices and Activities *(for aquaculture refer to GP 23)* 488	Those devices and activities, provided: • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, impacts to intertidal areas ≤1,000 SF, and impacts to tidal resources ≤0.5 acre • No interference with navigation. • No artificial reefs or enclosures • No impoundments or semi-impoundments for the culture or holding of motile species such as lobster, or the use of covered oyster trays or clam racks. • Structures and shell hash should not be located within 25 feet of SAV. • All gear, except for mooring tackle, when not in use on the site is stored in an upland location above the MHWM and not on wetland (incl. salt marsh). *A SVNF is not required for these eligible devices and activities.*	Those devices and activities not eligible for SV, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF Impoundments or semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster and new fish weirs with an impounded area <0.5 acre

	SELF-VERIFICATION (SV)	PRE-CONSTRUCTION NOTIFICATION (PCN)
21. Habitat Restoration, Establishment, and Enhancement	Those activities, provided: • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, impacts to intertidal areas ≤1,000 SF, and impacts to tidal resources <0.5 acre • No thin layer deposition for salt marsh restoration. • SAS planting and transplanting is <100 SF • No artificial or living reefs. • The activity is authorized in writing by a local, state, or non-Corps federal environmental agency. Water impoundments require PCN. • No conversion of i) a stream to wetland or vice versa, wetland to a pond or uplands, and ii) one wetland type to another. • No dam removal.	Those activities not eligible for SV provided those activities are proactive and result in net increases in aquatic resource functions and services.
22. Stream and Wetland Work and Crossings (see also GC 29) (*see GP 6 for bridges & causeways*)	Not Eligible	Those crossings of tidal navigable water not including bridges and causeways, provided: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts. • Temporary and/or permanent fill or excavation in SAV <1,000 SF • Permanent fill or excavation in other SAS <4,300 SF
23. Aquaculture* (see also GC 32)	Shellfish and marine algae installations that do not exceed 400 SF in area, provided: • Signed approval from Harbormaster or appropriate Town Official. • No enclosures or impoundments. • Not located in or within a distance of three times the authorized depth of a Federal Navigation Project. • Not located in or impinge upon the value of any National Lands or Federal Properties. • No impacts to SAS (incl. SAV), impacts to natural rocky habitat ≤100 SF, and impacts to intertidal and shellfish areas ≤1,000 SF • No structures, cages, gear, or shell hash located in/within 25 feet of SAV. • All gear, except for mooring tackle, when not in use on the site is stored in an upland location above the MHWM and not on wetland (incl. salt marsh).	Shellfish, finfish, and marine algae aquaculture (with the exception of Atlantic salmon and any other salmonid, or other federally-listed endangered or threatened species), or other aquaculture facilities with no more than minimal individual and cumulative impacts to environmental resources or navigation. This is inclusive but not limited to cages, nets, bags, racks, long lines, fences, posts, poles, predator screening, etc. ***State of Maine Aquaculture guidelines are provided at: *www.maine.gov/dmr/aquaculture/index.html***

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US Army Corps of Engineers ®
New England District

Section VI: Self-Verification Notification Form

(for all tidal and non-tidal projects in Maine subject to Corps jurisdiction)

At least two weeks before work commences, complete all fields (write "none" if applicable) below or use the fillable form found at www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Maine-General-Permit/ The two-week lead time is not required for emergency situations. **Send this form, an Official Species List, and project plans to the following email address: cenae-r-me@usace.army.mil**

Maine Project Office
U.S. Army Corps of Engineers
442 Civic Center Drive, Suite 350
Augusta, Maine 04330

State Permit #: _____
Date of State Permit: _____
State Project Manager: _____

Permittee: _____

Address, City, State, Zip: _____

Email, Phone: _____

Agent: _____

Address, City, State, Zip: _____

Email, Phone: _____

Contractor: _____

Address, City, State, Zip: _____

Email, Phone: _____

Project Name: _____

Address, City, State, Zip: _____

Lat °N, Long °W: _____ Tax Map/Lot: _____

Waterway Name: _____

Description of Work: _____

Proposed Starting Date: _____ Proposed Finish Date: _____

Area of wetland impact (SF): Permanent: _____ Temporary: _____

Area of waterway impact (SF): Permanent: _____ Temporary: _____

Work will be done under the following Section V General Permits (circle all that apply):

I. Inland Waters and wetlands: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

II. Navigable Waters: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Have MHPC and all five federally-recognized tribes in Maine been notified of the proposed work?_____Yes_____No

Your signature below, as permittee, indicates that you accept and agree to comply with the terms, eligibility criteria, and general conditions for Self-Verification under the Maine General Permit.

Permittee Signature:_____Date: _____

US Army Corps
of Engineers ®
New England District

Section VII: Content of a Pre-Construction Notification

In addition to the following required information, the applicant must provide additional information as the Corps deems essential to make a public interest determination including, where applicable, a determination of compliance with the Section 404(b)(1) guidelines or ocean dumping criteria. Such additional information may include environmental data and information on alternate methods and sites as may be necessary for the preparation of the required environmental documentation. For a more comprehensive checklist, go to *www.nae.usace.army.mil/missions/regulatory* >> Forms >> Application and Plan Guideline Checklist. Please check with the Corps for project-specific requirements.

Information required for all projects:

- □ DIGITAL SUBMISSIONS ARE ENCOURAGED (email PCN to **cenae-r-me@usace.army.mil**)
- □ Completed Corps application form (ENG Form 4345 attached below or found electronically at *www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Obtain-a-Permit*) or appropriate state application form. Forms may need to be supplemented to include the information noted below.
- □ Proof of notification to MHPC and all five federally-recognized tribes (see Section VIII for contact info).
- □ Official Species List for any federally-listed endangered or threatened species and email address of the person who generated the list.
- □ Drawings, sketches, or plans (detailed engineering plans and specifications are not required) that are legible, reproducible (color is encouraged, but features must be distinguishable in black and white), no larger than 8.5”x11”, with bar scale (plans overlaid on aerial photos are discouraged). Wetland area impact sheets shall have the highest resolution possible to show work within Corps jurisdiction (do not just reduce project overview or cut large-scale plan into quadrant sheets). Provide locus map and a plan overview of the entire property with a key index to the individual impact sheets. A locus map be on a section of color USGS topographic map.
- □ Include:
  - □ All direct, secondary, permanent and temporary effects the project would cause, including the anticipated amount of impacts to waters of the U.S. expected to result from the activity, in acres, linear feet, or other appropriate unit of measure.
  - □ Any historic permanent fill associated with each single and complete project.
  - □ Cross-section views of all wetland and waterway fill areas and wetland replication areas.
  - □ Document on project plans wetlands, other special aquatic sites (SAS) including vegetated shallows (or submerged aquatic vegetation, SAV) and mudflats, natural rocky habitat, shellfish areas, vernal pools, and other waters, such as lakes and ponds, and perennial, and intermittent streams on the project site (GC1).
  - □ MLW line, MHW mark, and HTL elevations in tidal waters. Show OHWM elevation in lakes and non-tidal streams.
  - □ **Existing and proposed conditions.**
- □ Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below OHWM in inland waters and below the HTL in coastal waters.
- □ If applicable, a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions (see GC 21).

Information that may be required:

- □ Photographs of wetland/waterway to be impacted. Photos at low tide are preferred for work in tidal waters.
- □ For drawings, sketches, or plans:
  - □ The vertical datum for all coastal projects and projects in towns bordering coastal waters shall be in U.S. survey feet and referenced to MLLW and include current tidal epoch, with a reference chart showing conversion factor to the North American Vertical Datum of 1988. Do not use local datum. See *www.nae.usace.army.mil/missions/regulatory* >> Forms and Publications >>Vertical Datum - FEMA (Jul 2007);
  - □ The horizontal state plane coordinates shall be shown on plan and elevation views and shall be in the North American Datum of 1983 (NAD83) State Plane Coordinate System in U.S. survey feet.
- □ For the construction of a filled area or pile or float-supported platform, the use of, and specific structures to be erected on, the fill or platform.
- □ For the discharge of dredged or fill material into waters of the U.S. or the transportation of dredged material for the purpose of disposing of it in ocean waters, the source of the material; the purpose of the discharge, a description of the type, composition and quantity of the material; the method of transportation and disposal of the material; and the location of the disposal site.
- □ For the discharge of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized. Include either a statement describing how impacts to waters of the U.S. are to be compensated for or a statement explaining why compensatory mitigation should not be required for the proposed impacts.
- □ Purpose and need for the proposed activity;
- □ Limits and coordinates of any Federal Navigation Project in the vicinity of the project area.
- □ Limits and coordinates of any proposed mooring field, reconfiguration zone or aquaculture activity. Provide coordinates for all corners;
- □ Schedule of construction/activity;
- □ Names and addresses of adjoining property owners;
- □ Location and dimensions of adjacent structures;
- □ Alternatives analysis;
- □ Wetland delineation data sheets;
- □ List of authorizations required by other federal, interstate, state, or local agencies for the work, including all approvals received or denials already made.
- □ Identification and description of potential impacts to Essential Fish Habitat (see GC 17).
- □ Identification of potential discharges of pollutants to waters, including potential impacts to impaired waters, in the project area.
- □ Invasive Species Control Plan (see GC 22). For sample control plans, see *www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species*
- □ Wildlife Action Plan (WAP) maps. Contact the Maine Department of Inland Fisheries & Wildlife (Section VIII) or online at *www.maine.gov/ifw/wildlife/conservation/action_plan.html*

Information for dredging projects that may be required:

- □ Sediment testing, including physical (e.g., grain-size analysis), chemical and biological testing. For projects proposing open water disposal, applicants must contact the Corps as early as possible regarding sampling and testing protocols. Sampling and testing of sediments without such contact should not occur and if done, would be at the applicant's risk.
- □ The area in square feet and volume of material to be dredged below mean high water.
- □ Existing and proposed water depths.
- □ Type of dredging equipment to be used.
- □ Nature of material (e.g., silty sand).
- □ Any existing sediment grain size and bulk sediment chemistry data for the proposed or any nearby projects.
- □ Information on the location and nature of municipal or industrial discharges and occurrence of any contaminant spills in or near the project area.
- □ Shellfish survey.
- □ Location of the disposal site (include locus sheet).
- □ Identification and description of any potential impacts to Essential Fish Habitat.
- □ Delineation of submerged aquatic vegetation (e.g., eelgrass beds).

Information for tidal crossing projects that may be required:

- □ A graphic longitudinal elevation profile plot of the tidal stream channel thalweg, both up and downstream of the proposed project site. Thalweg elevations shall extend from the crossing to beyond the zone of scour, channel widening, or other channel alteration resulting from the present or pre-existing crossings. The profile plot should include labeled elevations for the:
  - □ crossing invert and top of the inlet and outlet
  - □ roadbed crown
  - □ lowest and highest recorded tides at the site
  - □ reference datums, such as MLLW, MHHW, and astronomical high tide
  - □ hydraulic controls and nearest crossings that could influence or be influenced by the proposed crossing
- □ A graphic plot of continuous tidal water levels recorded up and downstream, simultaneously, of the proposed crossing for an entire lunar cycle. The water level plot should include labeled elevations for the:
  - □ crossing invert and crossing top at the inlet and outlet
  - □ roadbed crown
  - □ reference datums, such as MLLW, MHHW, and astronomical high tide
- □ A map showing projected extents of maximum flooding within the area influenced by the crossing under current conditions and as a result of sea level rise. The present minimum sea level rise scenario suggested for planning purposes by the Maine Climate Council Scientific and Technical Subcommittee is the Intermediate Scenario, which projects an increase of 3.0-4.6 feet by 2100.

Information for aquaculture projects that may be required:

- □ Maine Aquaculture guidelines and joint Corps/Maine DMR applications may be found at: *www.maine.gov/dmr/aquaculture/index.htm*
- □ In addition to the information required above, applications should also include:
  - □ Results of coordination with Harbor Master and U.S. Coast Guard
  - □ Whether canopy predator nets are being used.

U.S. Army Corps of Engineers (USACE)

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 02-28-2022

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: http://dpcld.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Middle - Last -	First - Middle - Last -
Company -	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address-	Address-
City - State - Zip - Country -	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize,_____to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____

SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
	Address
15. LOCATION OF PROJECT	City - State- Zip-
Latitude: N Longitude: W	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality

Section - Township - Range -

17. DIRECTIONS TO THE SITE

18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? ☐ Yes ☐ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Section VIII: Agency Contacts

1. Federal

U.S. Army Corps of Engineers
Maine Project Office
442 Civic Center Drive, Suite 350
Augusta, Maine 04330
(207) 623-8367; (207) 623-8206 (fax)
Email: cenae-r-me@usace.army.mil

U.S. Environmental Protection Agency
5 Post Office Square
Suite 100 (OEP05–2)
Boston, Massachusetts 02109-3912
(617) 918-1589

U.S. Fish and Wildlife Service
Maine Field Office
P.O. Box A
East Orland, Maine 04431
(207) 469-7300; (207) 902-1588 (fax)
(Federal endangered species)

National Marine Fisheries Service
Maine Field Office
17 Godfrey Drive, Suite 1
Orono, Maine 04473
(207) 866-7379; (207) 866-7342 (fax)
(Federal endangered species)

FEMA Region 1
Federal Insurance and Mitigation Division
99 High Street 6th Floor
Boston, Massachusetts 02110
(floodplains)

Federal Emergency Management Agency
99 High Street
Boston, Massachusetts 02110
(877) 336-2734
(Floodplain Management)

National Marine Fisheries Service
55 Great Republic Drive
Gloucester, Massachusetts 01930
(978) 281-9102; (978) 281-9301 (fax)
(Federal endangered species & EFH)

National Park Service
North Atlantic Region
15 State Street
Boston, Massachusetts 02109
(617) 223-5203
(Wild and Scenic Rivers)

Commander (dpb)
First Coast Guard District
One South Street - Battery Building
New York, New York 10004-1466
(212) 668-7021; (212) 668-7967 (fax)
(bridge permits)

2. State of Maine

a. Department of Environmental Protection (*State permits & Water Quality Certifications*)

Augusta Regional Office
17 State House Station
Augusta, Maine 04333
(207) 287-7688

Southern Maine Regional Office
312 Canco Road
Portland, Maine 04103
(201) 822-6300

Eastern Maine Regional Office
106 Hogan Road
Bangor, Maine 04401
(207) 941-4570

Northern Maine Regional Office
1235 Central Drive
Presque Isle, Maine 04769
(207) 764-0477

b. Department of Agriculture, Conservation and Forestry

i. Maine Land Use Planning Commission (LUPC) (*State permits & Water Quality Certifications for the unorganized areas of the State*)

Augusta Office
22 State House Station
Augusta, Maine 04333-0022
(207) 287-2631; (207) 287-7439 (fax)

Greenville Regional Office
43 Lakeview Drive
P.O. Box 1107
Greenville, Maine 04441
(207) 695-2466; (207) 695-2380 (fax)

Western Region Office
932 U.S. Route 2
East Wilton, Maine 04992
(207) 670-7492; (207) 287-7439 (fax)

Downeast Regional Office
106 Hogan Road, Suite 8
Bangor, Maine 04401
(207) 215-4685; (207) 941-4222 (fax)

Ashland Regional Office
45 Radar Road
Ashland, Maine 04732-3600
(207) 435-7963; (207) 435-7184 (fax)

Eastern Region Office
191 Main Street
East Millinocket, Maine 04430
(207) 399-2176; (207) 746-2243 (fax)

ii. Maine Coastal Program

21 State House Station
Augusta, Maine 04333
(207) 707-2324; (207) 624-6024 (fax)
(CZM consistency determinations)

iii. Division of Parks and Public Lands

22 State House Station
Augusta, Maine 04333
(207) 287-3061; (207) 287-6170 (fax)
(submerged lands leases)

iv. Maine Floodplain Management Program

17 Elkins Lane
Augusta, Maine 04333
(207) 287-8063
(floodplains)

c. Department of Marine Resources

21 State House Station
Augusta, Maine 04333
(207) 633-9500; (207) 624-6024 (fax)
(aquaculture leases/licenses)

3. Historic Properties

a. State Historic Preservation Officer (SHPO)

Kirk F. Mohney, Director
Maine Historic Preservation Commission
65 State House Station
Augusta, Maine 04333-0065
(207) 287-2132; (207) 287-2335 (fax)

b. Tribal Historic Preservation Officers (THPOs)

Houlton Band of Maliseet Indians
88 Bell Road
Littleton, Maine 04730
(207) 532-4273, x215; (207) 532-6883 (fax)
istjohn@maliseets.com

Aroostook Band of Micmacs
7 Northern Road
Presque Isle, Maine 04769
(207) 764-1972; (207) 764-7667 (fax)
jdennis@micmac-nsn.gov

Passamaquoddy Tribe of Indians
Pleasant Point Reservation
P.O. Box 343
Perry, Maine 04667
(207) 853-2600; (207) 853-6039 (fax)
soctomah@gmail.com

Penobscot Nation
Cultural and Historic Preservation Dept.
12 Wabanaki Way
Indian Island, Maine 04468
(207) 817-7471
chris.sockalexis@penobscotnation.org

Passamaquoddy Tribe of Indians
Indian Township Reservation
P.O. Box 301
Princeton, Maine 04668
(207) 796-2301; (207) 796-5256 (fax)
soctomah@gmail.com

Section IX: Definitions

Action Area: The "Endangered Species Consultation Handbook – Procedures for Conducting Consultation and Conference Activities Under Section 7 of the ESA," defines action area as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. [50 CFR 402.02]."

Agricultural Activities: The Clean Water Act exempts certain discharges associated with normal farming, ranching, and forestry activities such as plowing, cultivating, minor drainage, and harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices (Section 404(f)(1)(A)). Prospective permittees are strongly advised to contact the Corps for a determination of whether their activity is exempt or requires a permit.

Attendant Features: Occurring with or as a result of; accompanying.

Aquatic Habitat Restoration, Establishment and Enhancement: The Corps will decide if a project qualifies and must determine in consultation with federal and state agencies that the net effects are beneficial. The Corps may refer to Nationwide Permit 27 published in the January 6, 2017 Federal Register. Activities authorized here may include, but are not limited to: the removal of accumulated sediments; the installation, removal, and maintenance of small water control structures, dikes, and berms; the installation of current deflectors; the enhancement, restoration, or establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or establish stream meanders; the backfilling of artificial channels and drainage ditches; the removal of existing drainage structures; the construction of small nesting islands in inland waters**;** the construction of open water areas; the construction of native shellfish species habitat over unvegetated bottom for the purpose of habitat protection or restoration in tidal waters; shellfish seeding; activities needed to reestablish vegetation, including plowing or discing for seed bed preparation and the planting of appropriate wetland species; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities. Only native plant species shall be planted at the site.

Biodegradable: A material that decomposes into elements found in nature within a reasonably short period of time and will not leave a residue of plastic or a petroleum derivative in the environment after degradation. Examples of biodegradable materials include jute, sisal, cotton, straw, burlap, coconut husk fiber (coir) or excelsior. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation.

Boating facilities: These provide, rent or sell mooring space, such as marinas, yacht clubs, boat yards, dockominiums, town facilities, land/home owners, etc. Not classified as boating facilities are piers shared between two abutting properties or town mooring fields that charge an equitable user fee based on the actualcosts incurred.

Bordering and Contiguous Wetlands: A bordering wetland is immediately next to its adjacent waterbody and may lie at, or below, the ordinary high water mark (mean high water mark in navigable waters) of that waterbody and is directly influenced by its hydrologic regime. Contiguous wetlands extend landward from their adjacent waterbody to a point where a natural or manmade discontinuity exists. Contiguous wetlands include bordering wetlands as well as wetlands that are situated immediately above the ordinary high water mark and above the normal hydrologic influence of their adjacent waterbody.

Brushing: The placement of tree boughs, wooden lath structure, or small-mesh fencing on mudflats, or any bottom disturbance (e.g., discing, plowing, raking, etc.), to enhance recruitment of shellfish.

Buffer Zone: The buffer zone of an FNP is equal to three times the authorized depth of the FNP.

Construction mats: Constructions, swamp and timber mats (herein referred to as "construction mats") are generic terms used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes. A timber mat consists of large timbers bolted or cabled together. Corduroy roads, which are not considered to be construction mats, are cut trees and/or saplings with the

crowns and branches removed, and the trunks lined up next to one another. Corduroy roads are typically installed as permanent structures. Like construction mats, they are considered as fill whether they are installed temporarily or permanently.

Cumulative effects: See "Direct, secondary, and cumulative effects."

Currently Serviceable: Useable as-is or with some maintenance, but not so degraded as to essential require reconstruction.

Direct, secondary, and cumulative effects:
Direct Effects: The loss of aquatic ecosystem within the footprint of the discharge of dredged or fill material. Direct effects are caused by the action and occur at the same time and place.
Secondary Effects: These are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. Information about secondary effects on aquatic ecosystems shall be considered prior to the time final Section 404 action is taken by permitting authorities. Some examples of secondary effects on an aquatic ecosystem are a) aquatic areas drained, flooded, fragmented, or mechanically cleared, b) fluctuating water levels in all impoundment and downstream associated with the operation of a dam, c) septic tank leaching and surface runoff from residential or commercial developments on fill, and d) leachate and runoff from a sanitary landfill located in waters of the U.S. See 40 CFR 230.11(h).
Cumulative Effects: The changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual 1) discharges of dredged or fill material, or 2) structures. Although the impact of a particular discharge may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems. See 40 CFR 230(g).

Dredging:
Maintenance Dredging: Includes areas and depths previously authorized by the Corps and dredged.
The Corps may require proof of authorization. Maintenance dredging typically refers to the routine removal of accumulated sediment from channel beds to maintain the design depths of navigation channels, harbors, marinas, boat launches and port facilities. Routine maintenance dredging is conducted regularly for navigational purposes (typically at least once every ten years) and does not include any expansion of the previously dredged area or depth. The Corps may review a maintenance dredging activity as new dredging if sufficient time has elapsed to allow for the colonization of SAS, shellfish, etc. The main characteristics of maintenance dredging projects are variable quantities of material; soft, uncompacted soil; contaminant content possible; thin layers of material; occurring in navigation channels and harbors; repetitive activity
New Dredging: Dredging of an area or to a depth that has never been authorized by the Corps or dredged.

Dredged material & discharge of dredged material: These are defined at 323.2(c) and (d). The term dredged material means material that is excavated or dredged from waters of the U.S.

Essential Fish Habitat (EFH): This is broadly defined to include those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

Fill material & discharge of fill material: These are defined at 323.2(e) and (f). The term fill material is defined as material placed in waters of the U.S. where the material has the effect of either replacing any portion of a water of the U.S. with dry land or changing the bottom elevation of any portion of a water of the U.S.

Fill area: Fill area includes all temporary and permanent fill (including mats), and regulated discharges associated with excavation.

Federal navigation projects (FNPs): These areas are maintained by the Corps; authorized, constructed and maintained on the premise that they will be accessible and available to all on equal terms; and are comprised of Federal Anchorages, Federal Channels and Federal Turning Basins. The buffer zone is equal to three times the authorized depth of a FNP. More information on the following FNPs is provided at *www.nae.usace.army.mil/missions/navigation.aspx* >> Navigation Projects.

Flume: An open artificial water channel, in the form of a gravity chute that leads water from a diversion dam or weir completely aside a natural flow. A flume can be used to measure the rate of flow.

Frac out: During normal drilling operations, drilling fluid travels up the borehole into a pit. When the borehole becomes obstructed or the pressure becomes too great inside the borehole, the ground fractures and fluid escapes to the surface.

Habitat Connectivity Design: projects designed and constructed for consistency with natural stream dimensions, profiles, and dynamics, in accordance with the following technical references: U.S. Forest Service guide (Forest Service Stream-Simulation Working Group 2008), augmented by documents published by the states of Washington (Barnard et al. 2013), Vermont (Bates and Kirn 2009) and California (Love and Bates 2009).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Individual Permit: A Department of the Army authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the procedures of 33 CFR 322, or a specific project involving the proposed discharge(s) in accordance with the procedures of 33 CFR 323, and in accordance with the procedures of 33 CFR 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR 320.

Living Shoreline: Living shorelines stabilize banks and shores in coastal waters along shores with small fetch and gentle slopes that are subject to low-to mid-energy waves. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural "soft" elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines shall maintain the natural continuity of the land-water interface, and retain or enhance shoreline ecological processes. Living shorelines must have a substantial biological component, either tidal or lacustrine fringe wetlands or oyster or mussel reef structures.

Maintenance:

a. The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 – "Activities occurring before certain dates," provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification.

- Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make repair, rehabilitation, or replacement are authorized.
- Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.
- No seaward expansion for bulkheads or any other fill activity is considered SV maintenance.
- Only structures or fills that were previously authorized and are in compliance with the terms and condition of the original authorization can be maintained as a non-regulated activity under 33 CFR 323.4(a)(2), or in accordance with the SV or PCN thresholds in Section V.

b. The state's maintenance provisions may differ from the Corps and may require reporting and written authorization from the state.

c. Contact the Corps to determine whether stream crossing replacements require a PCN.

d. Exempted Maintenance. In accordance with 33 CFR 323.4(a)(2), any discharge of dredged or fill material that may result from any of the following activities is not prohibited by or otherwise subject to regulation under Section 404 of the CWA: "Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design."

The following definition is also applicable:

Minor deviations: Deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards, which are necessary to make repair, rehabilitation, or replacement are permitted, provided the adverse environ-mental effects resulting from such repair, rehabilitation, or replacement are minimal.

Marina reconfiguration zone: A Corps-authorized area in which permittees may rearrange pile-supported structures and floats without additional authorizations. A reconfiguration zone does not grant exclusive privileges to an area or an increase in structure or float area.

Natural Rocky Habitats: Natural rocky habitats are intertidal and subtidal substrates composed of pebble-gravel, cobble, boulder, or rock ledge and outcrops. Manufactured stone (e.g. cut or engineered rip-rap) is not considered a natural rocky habitat. Natural rocky habitats are either found as pavement (consolidated pebble-gravel, cobble, or boulder areas) or as a mixture with fines (i.e. clay and sand) and other substrates.

Navigable waters of the U.S.: See Waters of the U.S. below.

Overall project: See "single and complete linear project" below.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Permanent impacts: Permanent impacts means waters of the U.S. that are permanently affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent impacts include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody.

Pre-construction notification (PCN): A request submitted by a prospective permittee to the Corps for confirmation that a particular activity is authorized by this GP. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of these GPs. A PCN may be voluntarily submitted in cases where PCN is not required and the project proponent wants confirmation that the activity is authorized under this GP.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/ historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in again in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area. Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complexes: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Secondary effects: See "Direct, secondary, and cumulative effects."

Shellfish Areas: Areas that currently support molluscan shellfish. Information regarding these locations can be obtained from the State of Maine GeoLibrary Data Catalog at: *www.maine.gov/geolib/catalog.html*

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the U.S. (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for the purposes of this GP. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.
The overall project, for purposes of this GP, includes all regulated activities that are reasonably related and necessary to accomplish the project purpose.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. For non-linear projects, the single and complete project shall have independent utility (see definition).

Special aquatic sites (SAS): These are defined at 40 CFR 230 Subpart E. They include sanctuaries and refuges, wetlands, mud flats, vegetated shallows (submerged aquatic vegetation, SAV), coral reefs, and riffle and pool complexes.

Stream: The term "stream" in the document means rivers, streams, brooks, etc.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Stream Simulation: A method for designing and building road-stream crossings intended to permit free and unrestricted movements of any aquatic species. Reference:
https://www.nae.usace.army.mil/Missions/Regulatory/Stream-and-River-Continuity/

Stream Smart Design: projects designed to allow the stream to act like a stream by passing fish and wildlife as well as the higher flows that come with large infrequent storms while protecting the stability of the road and public safety. Stream Smart Design follows the "Four S's": The culvert must SPAN the stream, allowing for passage of aquatic and terrestrial wildlife. The culvert has to be SET at the right elevation. The SLOPE of the culvert must match the stream. There must be SUBSTRATE (natural sediment) in the crossing. Reference:
www1.maine.gov/mdot/publications/docs/brochures/pocket_guide_stream_smart_web.pdf

Temporary impacts: Temporary impacts include waters of the U.S. that are temporarily filled, flooded, excavated, drained or mechanically cleared because of the regulated activity.

Temporal loss: The time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site(s) (33 CFR 332.2).

Utility line: Any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term 'utility line' does not include activities that drain a water of the U.S., such as drainage tile or French drains, but it does apply to pipes conveying drainage from another area.

Vegetated shallows/Submerged Aquatic Vegetation (SAV): Permanently inundated areas that under normal circumstances support communities of rooted aquatic vegetation, such as eelgrass in marine systems as well as a number of freshwater species in rivers and lakes. Note: Eelgrass surveys should be conducted be conducted between May and October unless otherwise directed.

Vernal pools (VPs): The State of Maine, Department of Environmental Protection has specific protections for VPs. For the purposes of these GPs, VPs are depressional wetland basins that typically go dry in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In most years, VPs support one or more of the following obligate indicator species: wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* sp.). However, they should preclude sustainable populations of predatory fish.

Water dependency: activity requiring access or proximity to or siting within a special aquatic site (SAS) to fulfill its basic project purpose.

Water diversions: Water diversions are activities such as bypass pumping (e.g., "dam and pump") or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

Weir: A barrier across a river designed to alter the flow characteristics. In most cases, weirs take the form of a barrier, smaller than most conventional dams, across a river that causes water to pool behind the structure (not unlike a dam) and allows water to flow over the top. Weirs are commonly used to alter the flow regime of the river, prevent flooding, measure discharge and help render a river navigable.

Waters of the United States (U.S.)

Waters of the U.S.: The term waters of the U.S. and all other terms relating to the geographic scope of jurisdiction are defined at 33 CFR 328. Also see Section 502(7) of the Federal CWA [33 USC 1352(7)]. Waters of the U.S. include jurisdictional wetlands. Not all waters and wetlands are jurisdictional. Contact the Corps with any questions regarding jurisdiction.

Navigable waters: Refer to 33 CFR 329. These waters include the following federally-designated navigable waters in New England. This list represents only those waterbodies for which affirmative determinations have been made; absence from this list shall not be taken as an indication that the waterbody is not navigable: In Maine, navigable waters are those waters that are subject to the ebb and flow of the tide in addition to the non-tidal portions of the following federally-designated waters in Maine (the Kennebec River to Moosehead Lake, the Penobscot River to the confluence of the East and West Branch at Medway and, Lake Umbagog within the State of Maine).

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tideline.

Environmental Summary Sheet

WIN: 18595.10 & .11 **Date Submitted: 11/7/2025**
Town: Bangor
CPD Team Leader: Danielle Tetreau
ENV Field Contact: Ryan Annis

NEPA Complete: Programmatic Categorical Exclusion (CE) 23 CFR 771.117.c.27 issued on 2/12/2025

Section 106
Review Complete: No Effect - No Properties - SHPO Concurrence 3/16/2018, Re-Concurrence: 2/1/2023
Section 106 Resources: none present

Section 4(f) and 6(f)

Section 4(f)	Section 6(f)
Review Complete - No use	Review Complete - No takes

Section 7 – Endangered Species Act
Species of Concern:
Atlantic salmon Critical Habitat: Informal Consultation **- NLAA see SP 105**
Monarch butterfly (proposed): not listed, no jeopardy for continued existence.
**See Special Provision 105 for Environmental Requirements.*

Essential Fish Habitat
Species of Concern: Atlantic salmon – No adverse effect see SP 105

Maine Department of Inland Fisheries and Wildlife
Not Applicable **Timing Window:** Not Applicable

Maine Department of Agriculture, Conservation, and Forestry
Public Lands, Submerged Land Lease: Not Applicable
Maine Land Use Planning Commission: Not Applicable

Maine Department of Environmental Protection
Permit-By-Rule – PBR_ID-0100546-001 – *Approved 7/3/2025*
**See Special Provision 105 for Environmental Requirements.*

Army Corps of Engineers: Clean Water Act.
Pre-Construction Notification - NAE-2025-1386 – *Approved 10/1/2025*
**See Special Provision 105 for Environmental Requirements*

Stormwater Review
Review Complete - Complies with MS4 and Chapter 500 MOA

Hazardous Material Review
Review complete – See General Note, areas of concern:
Station 221+50 to 224+00 Left
Station 11+00 to 12+50 Left & Right

☒ **Special Provisions Required**

Standard Specification 656-Erosion Control Plan	N/A☐	Applicable☒
Special Provision 105-Environmental Requirements	N/A☐	Applicable☒
General Note for Hazardous Waste	N/A☐	Applicable☒
Special Provision 203-Hazardous Waste	N/A☒	Applicable☐
Special Provision 656-Minor Soil Disturbance	N/A☒	Applicable☐
Special Provision 203-Dredge Spec	N/A☒	Applicable☐