

Updated 8/1/2026

FEDERAL PROJECT

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 2026 Edition.

February 5, 2026
Supersedes April 28, 2017

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 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

WIN:

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

WIN:

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

WIN:

Town:

Name of Contractor:

August 1, 2026

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, executors, 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: _____

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.

RFI No: _____

Date _____ **Time** _____

WIN(S): _____ **Town(s):** _____ **Bid Date:** _____

Question(s):_____

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

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

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NOTICE

BIDDER'S LIST FORM

All Bidders must submit the Bidder's List Form with their bid.

The Bidder's List Form contains information required by USDOT.

The Bidder's List Form must be completed by each Prime Contractor.

A copy of the new Bidder's List 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.

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. Consultant Information - *This section must be completed by the Consultant and as an attachment to Technical Proposals for new contracts and contract modifications.*

Consultant Name: _____

Consultant Email Address: _____ Contract Date: _____

Federal Project WIN: _____ Project Location: _____

SECTION B. COMMITMENT DETAILS – Consultant and all proposed subcontractant information are required in this section.

A. Firm 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. Age of each firm	F. 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 3 subs use additional form.

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

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

MaineDOT Use Only: ☐ FHWA ☐ FTA ☐ FAA ☐ Original Contract ☐ Modification

Received Date: _____ Verified by: _____

Rev 08.26

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) 624-3056

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>

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)

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 **Install traffic signal and widen for turn lane at Route 26 and Oxford St.** in the town of **Oxford**" 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 **October 21, 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, traffic signal/lighting**, 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. 2704400 WIN 027044.00

Location: In Oxford County, project is located at the intersection of Route 26 and Oxford Street.

Outline of Work: Install traffic signal and widen for turn lane at Route 26 and Oxford St. plus 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 Aurele Gorneau II 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 \$19.00 (\$22.50 by mail). Half size plans \$9.50 (\$11.75 by mail), Bid Book \$10 (\$13 by mail), Single Sheets \$2, payment in advance, all non-refundable.

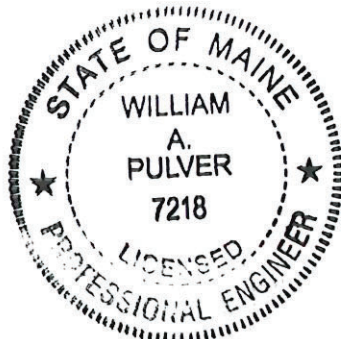
Each Bid must be made upon blank forms provided by the Department and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of 5% of the bid amount, payable to Treasurer, 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 2026 Edition*, price \$10 [\$15 by mail], and *Standard Details, March 2026 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 <https://www.maine.gov/dot/doing-business/bid-opportunities/standards>

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

Augusta, Maine
September 30, 2026



A handwritten signature in blue ink, appearing to read "W. A. Pulver", written over a horizontal line.

WILLIAM A. PULVER P. E.
CHIEF ENGINEER

9/23/2026

Maine Department of Transportation

Proposal Schedule of Items

Page 1 of 5

Proposal ID: 027044.00

Project(s): 027044.00

SECTION: 1 INITIAL GROUP

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
0010	202.15 REMOVING EXISTING MANHOLE OR CATCH BASIN	1.000 EA	_____	 _____	_____	 _____
0020	202.202 REMOVING PAVEMENT SURFACE	3,900.000 SY	_____	 _____	_____	 _____
0030	203.20 COMMON EXCAVATION	800.000 CY	_____	 _____	_____	 _____
0040	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	530.000 CY	_____	 _____	_____	 _____
0050	403.2081 12.5 MM POLYMER MODIFIED HOT MIX ASPHALT	400.000 T	_____	 _____	_____	 _____
0060	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	8.000 T	_____	 _____	_____	 _____
0070	403.211 HOT MIX ASPHALT (SHIMMING)	120.000 T	_____	 _____	_____	 _____
0080	403.213 HOT MIX ASPHALT 12.5 MM BASE	210.000 T	_____	 _____	_____	 _____
0090	409.15 BITUMINOUS TACK COAT - APPLIED	370.000 G	_____	 _____	_____	 _____
0100	424.386 MASTIC FOR ASPHALTIC PLUG JOINT REPLACEMENT, >1.25 INCH	42.000 LF	_____	 _____	_____	 _____
0110	603.41 24 INCH REINFORCED CONCRETE PIPE CLASS IV	88.000 LF	_____	 _____	_____	 _____
0120	603.55 CONCRETE PIPE TIES	1.000 GP	_____	 _____	_____	 _____

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Maine Department of Transportation

Proposal Schedule of Items

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Proposal ID: 027044.00

Project(s): 027044.00

SECTION: 1 INITIAL GROUP

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	604.092 CATCH BASIN TYPE B1-C	2.250 EA				
0140	604.18 ADJUSTING MANHOLE OR CATCH BASIN TO GRADE	2.000 EA				
0150	604.262 CATCH BASIN TYPE B5-C	1.250 EA				
0160	605.09 6 INCH UNDERDRAIN TYPE B	200.000 LF				
0170	605.11 12 INCH UNDERDRAIN TYPE C	63.000 LF				
0180	605.13 18 INCH UNDERDRAIN TYPE C	63.000 LF				
0190	609.31 CURB TYPE 3	490.000 LF				
0200	610.08 PLAIN RIPRAP	7.000 CY				
0210	615.07 LOAM	120.000 CY				
0220	618.14 SEEDING METHOD NUMBER 2	9.000 UN				
0230	619.12 MULCH	9.000 UN				
0240	620.58 EROSION CONTROL GEOTEXTILE	23.000 SY				
0250	626.22 NON-METALLIC CONDUIT	30.000 LF				

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Maine Department of Transportation

Proposal Schedule of Items

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Proposal ID: 027044.00

Project(s): 027044.00

SECTION: 1 INITIAL GROUP

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
0260	626.221 NON-METALLIC CONDUIT CONCRETE ENCASED	20.000 LF	_____	_____	_____	_____
0270	626.35 CONTROLLER CABINET FOUNDATION	1.000 EA	_____	_____	_____	_____
0280	626.421 24 INCH DIAMETER FOUNDATION	7.000 LF	_____	_____	_____	_____
0290	627.733 4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	3,600.000 LF	_____	_____	_____	_____
0300	627.75 WHITE OR YELLOW PAVEMENT & CURB MARKING	570.000 SF	_____	_____	_____	_____
0310	629.05 HAND LABOR, STRAIGHT TIME	10.000 HR	_____	_____	_____	_____
0320	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	10.000 HR	_____	_____	_____	_____
0330	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	10.000 HR	_____	_____	_____	_____
0340	631.32 CULVERT CLEANER (INCLUDING OPERATOR)	4.000 HR	_____	_____	_____	_____
0350	639.19 FIELD OFFICE TYPE B	1.000 EA	_____	_____	_____	_____
0360	643.21 NON-INVASIVE DETECTION - STOP LINE: ROUTE 26 AT OXFORD	LUMP SUM	LUMP SUM		_____	_____

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Maine Department of Transportation

Proposal Schedule of Items

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Proposal ID: 027044.00

Project(s): 027044.00

SECTION: 1 INITIAL GROUP

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
0370	643.22 NON-INVASIVE DETECTION - ADVANCE: ROUTE 26 AT OXFORD	LUMP SUM	LUMP	SUM	_____	_____
0380	643.80 TRAFFIC SIGNALS AT ROUTE 26 AT OXFORD STREET	LUMP SUM	LUMP	SUM	_____	_____
0390	643.92 PEDESTAL POLE	1.000 EA	_____	_____	_____	_____
0400	645.106 DEMOUNT REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	2.000 EA	_____	_____	_____	_____
0410	645.108 DEMOUNT POLE	2.000 EA	_____	_____	_____	_____
0420	645.271 REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGNS, TYPE I	8.000 SF	_____	_____	_____	_____
0430	652.33 DRUM	25.000 EA	_____	_____	_____	_____
0440	652.34 CONE	40.000 EA	_____	_____	_____	_____
0450	652.35 CONSTRUCTION SIGNS	140.000 SF	_____	_____	_____	_____
0460	652.361 MAINTENANCE OF TRAFFIC CONTROL DEVICES	LUMP SUM	LUMP	SUM	_____	_____
0470	652.38 FLAGGER	900.000 HR	_____	_____	_____	_____

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Maine Department of Transportation

Proposal Schedule of Items

Page 5 of 5

Proposal ID: 027044.00

Project(s): 027044.00

SECTION: 1 INITIAL GROUP

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
0480	652.41 PORTABLE CHANGEABLE MESSAGE SIGN	3.000 EA	_____	_____	_____	_____
0490	654.351 CONNECTED ROADSIDE UNIT (RSU)	1.000 EA	_____	_____	_____	_____
0500	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM	LUMP	SUM	_____	_____
0510	659.10 MOBILIZATION	LUMP SUM	LUMP	SUM	_____	_____
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 **027044.00** for **Install traffic signal and widen for turn lane at Route 26 and Oxford St.** in the town of **Oxford**, County of **Oxford**, 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; 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 shall be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **December 10, 2027**. 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 2026 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 2026 Edition, Standard Details March 2026 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 2026 Edition*, *Standard Details March 2026 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of: **WIN 027044.00, Install traffic signal and widen for turn lane at Route 26 and Oxford St.,** 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 2026 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 2026 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.
documents referenced herein.

This award consummates the Contract, and the

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: Dale F. Doughty, 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 **027044.00** for **Install traffic signal and widen for turn lane at Route 26 and Oxford St.** in the town of **Oxford**, County of **Oxford**, 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; 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 shall be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **December 10, 2027**. 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 2026 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 2026 Edition, Standard Details March 2026 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 2026 Edition*, *Standard Details March 2026 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of: **WIN 027044.00, Install traffic signal and widen for turn lane at Route 26 and Oxford St.,** 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 2026 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 2026 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.
documents referenced herein.

This award consummates the Contract, and the

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: Dale F. Doughty, 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:

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 No.0112345.00, 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 2026 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 2026 Edition, Standard Details March 2026 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 2026 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.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications, March 2026 Edition, Standard Details March 2026 Edition*, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

WIN 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.

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 2026 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 2026 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.

Date

(Witness Sign Here)
Witness

CONTRACTOR
(Sign Here)

(Signature of Legally Authorized Representative
of the Contractor)

(Print Name Here)
(Name and Title Printed)

G. Award.

Your offer is hereby accepted.
documents referenced herein.

This award consummates the Contract, and the

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: Dale F. Doughty, 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:

Signature.....
Print Name Legibly

Signature
Print Name Legibly

SURETY ADDRESS:

.....
.....
.....

TELEPHONE.....

SIGNATURES:

CONTRACTOR:

.....
Print Name Legibly

SURETY:

.....
Print Name Legibly

NAME OF LOCAL AGENCY:

ADDRESS
.....
.....

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

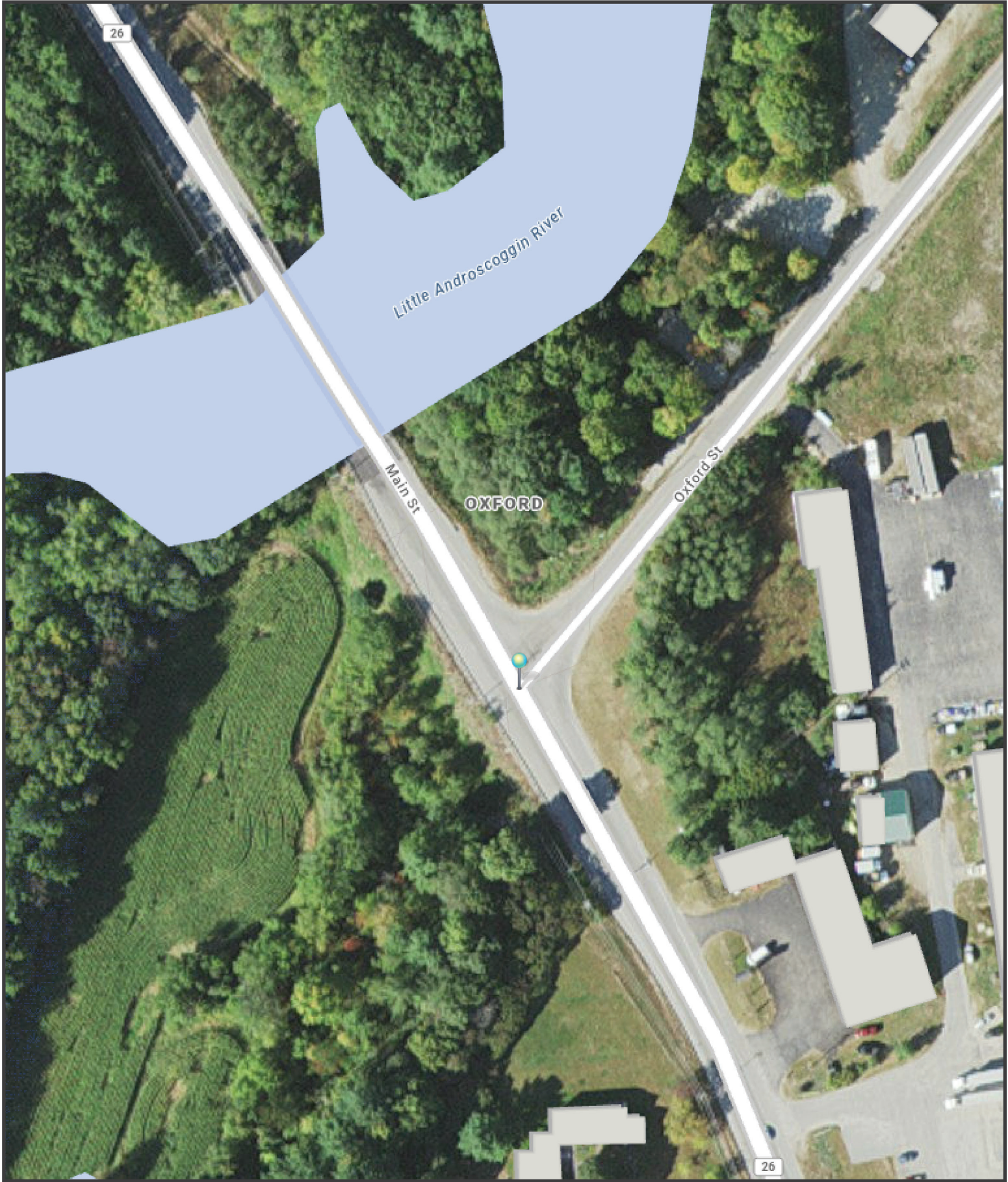
.....

.....

TELEPHONE

.....

MAP - 027044.00 - OXFORD



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

0.03 Miles
1 inch = 0.03 miles

Date: 8/12/2026
Time: 1:23:08 PM
34

State: Maine

Construction Types: Highway

Counties: Maine Counties of
Oxford

Modification Number	Publication Date
0	01/02/2026
1	05/18/2026

ENGI0004-022 04/01/2025

	Rates	Fringes
POWER EQUIPMENT OPERATOR: GRADER/BLADE, MILLING MACHINE.....	\$ 30.17	13.80

SUME2014-035 06/23/2017

	Rates	Fringes
TRUCK DRIVER: TACKTRUCK.....	\$ 20.18	7.75
TRUCK DRIVER: DUMP TRUCK.....	\$ 15.83	1.16
TRAFFIC CONTROL: LABORER-CONES/ BARRICADES/BARRELS - SETTER/MOVER/SWEEPER.....	\$ 17.47	4.80
TRAFFIC CONTROL: FLAGGER.....	\$ 9.38	0.00
OPERATOR: ROLLER ASPHALT.....	\$ 24.16	3.55
OPERATOR: ROLLER (EARTH).....	\$ 16.43	3.40
OPERATOR: SCREED.....	\$ 19.02	4.82
OPERATOR: PAVER (ASPHALT, AGGREGATE, AND CONCRETE).....	\$ 21.46	8.78
OPERATOR: MECHANIC.....	\$ 22.07	8.73
OPERATOR: LOADER.....	\$ 18.59	5.53
OPERATOR: BULLDOZER.....	\$ 17.30	3.50
OPERATOR: BROOM/SWEEPER.....	\$ 19.09	5.20
OPERATOR: BOBCAT/SKID STEER/SKID LOADER.....	\$ 20.38	1.66
OPERATOR: BACKHOE/EXCAVATOR/TRACKHOE.....	\$ 18.80	4.16
LABORER: WHEELMAN.....	\$ 15.64	4.29
LABORER: LANDSCAPE.....	\$ 18.69	2.70
LABORER: COMMON OR GENERAL.....	\$ 15.83	1.99
LABORER: ASPHALT, INCLUDES RAKER, SHOVELER, SPREADER AND DISTRIBUTOR.....	\$ 15.40	2.69
IRONWORKER, REINFORCING.....	\$ 16.27	0.00
HIGHWAY/PARKING LOT STRIPING: LABORER.....	\$ 14.80	1.27
CARPENTER, INCLUDES FORM WORK.....	\$ 18.34	2.84

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

=====

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>.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least \$13.65 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract from May 11, 2026, through December 31, 2026. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

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.

=====
END OF GENERAL DECISION

"

Town: **Oxford, Route 26**
Project: **027044.00**
Date: **May 15, 2026**
Update: **June 17, 2026**

SPECIAL PROVISIONS
SECTION 104
UTILITIES

UTILITY COORDINATION

The Contractor has primary responsibility for coordinating their work with Utilities **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 and/or railroad work to be undertaken in conjunction with this project. The following list identifies all known Utilities or Railroads 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.

The Contractor shall give all Utilities **ten (10) working days' notice** prior to beginning **ANY** work on this project. In addition to the 10 working days' notice, the Contractor shall adhere to any specific notification periods stipulated in the utility/railroad summaries below.

All work shall be performed in accordance with Section 104.4.6 Utility Coordination of the MaineDOT Standard Specifications.

OVERVIEW

Utility/Railroad	Aerial	Subsurface	Contact Person	Contact Phone
Central Maine Power Company	X		Jason Ward	(207) 242-5398
Charter (Spectrum)	X		Jon Bickford	(207) 253-2210
Fidium (CCI)	X		Ryan Beliveau	(401) 263-2218
Firstlight Fiber	X		Jarrold Smith	(603) 396-1100
Oxford Water District		X	Frank "Bo" Britton	(207) 890-8573

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.

Town: **Oxford, Route 26**

Project: **027044.00**

Date: **May 15, 2026**

Update: **June 17, 2026**

Unless otherwise specified, any underground utility 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 Utilities. 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/Railroad unless otherwise specified herein.

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

**** Specific information regarding the line voltage can be requested from Central Maine Power Co. ****

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

AERIAL

Aerial Utility adjustments **ARE** anticipated for the completion of this project and will be scheduled in compliance with Section 104 of the Standard Specifications.

Aerial utilities require **ten (10) working days notice** prior to any operations involving work around their lines.

**** POLE LIST ****

CMPCO\52\57\634 New pole has been set. CMP, Charter, Firstlight, Fidium need to complete transfers prior to removing the old pole.

CMPCO\1\33\1 New pole has been set. CMP and Fidium need to complete transfers prior to removing the old pole

Summary:

Utility	Pole Set	New Wires/ Cables	Trans. Wires/ Cables	Remove Poles	Estimated Working Days
Central Maine Power	Completed		X	X	5
Charter/Spectrum			X		3
Firstlight Fiber			X		3
Fidium (CCI)			X		3
Total:					14

Town: **Oxford, Route 26**
Project: **027044.00**
Date: **May 15, 2026**
Update: **June 17, 2026**

Utility Specific Issues:

Central Maine Power Company (CMP)

Central Maine Power Company (CMP) has facilities on the project. CMP has installed two replacement poles at **CMP\CO\52\57\634** (50-feet tall) and **CMP\CO\1\33\1** (45-feet tall). CMP intends to relocate their existing lines and a streetlight to the new poles and estimates **4-working days** to complete relocation of their lines to the new poles. CMP will remove two old poles once all transfers have been completed and estimates **1-working day** to complete removal. CMP requires **7-working days** advance notice prior to any operations involving the relocation of their lines.

Charter Communications, Inc. (Charter, aka Spectrum)

Charter Communications, Inc. (Charter) has facilities on the project. Following CMP's completion of transferring their facilities, Charter estimates **3-working days** to transfer their lines to the new poles. Charter requires **7-working days** advance notice prior to any operations involving the relocation of their lines.

Firstlight Fiber

Firstlight Fiber (Firstlight) has facilities on the project. Following Charter's completion of transferring their facilities, Fidium estimates **3-working days** to transfer their lines to the new poles. Firstlight requires **7-working days** advance notice prior to any operations involving the relocation of their lines.

Fidium (fka CCI)

Fidium has copper and fiber facilities on the project. Following Firstlight's completion of transferring their facilities, Fidium estimates **3-working days** to transfer their lines to the new poles. Fidium requires **10-working days** advance notice prior to any operations involving the relocation of their lines.

The Town of Oxford OR the State of Maine

Aerial signals and cables for traffic signals are within the project's limits. The Contractor will coordinate with the Town of Oxford Town Manager (207) 539-4431 Ext 100 **OR** the State of Maine's Tiffany Tinkham (207) 485-2358 Tiffany.J.Tinkham@maine.gov to facilitate the service orders with Central Maine Power Company.

SUBSURFACE

Subsurface Utility adjustments are **NOT** anticipated as part of this project. Though unexpected, if subsurface utility adjustments or installations become necessary, they will be scheduled in compliance with Section 104 of the Standard Specifications and will be done by the Utilities in conjunction with the work by the Contractor, or after the Contractor has finished their work.

Utility Specific Issues:

Oxford Water District (OWD) has a drinking water system and water gates located within the limits of the project. All water lines and water gates are located outside of the paving areas. **OWD** requires **10 working days notification** to have a person onsite while the contractor is digging near their facilities or to make any adjustments to them.

Town: **Oxford, Route 26**
Project: **027044.00**
Date: **May 15, 2026**
Update: **June 17, 2026**

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.

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Limits of Operations)

The Contractor's traffic control plan shall be operationally effective, complete and in conformity with Federal requirements, contract provisions, the current edition of the MUTCD, and MaineDOT policy and procedures as determined by the Department prior to beginning work.

At least one lane of alternating one-way traffic shall be maintained at all times.

A minimum lane width of 11'-0" shall be maintained at all times.

Traffic delays shall not exceed 5 minutes with alternating one-way flow.

A full closure for setting overhead wires may be required in consultation with the Resident and in accordance with the submitted traffic control plan.

SPECIAL PROVISION 105
CONSTRUCTION AREA

A Construction Area located in the **Town of Oxford** has been established by the Maine Department of Transportation (MDOT) in accordance with provisions of 29-A § 2382 Maine Revised Statutes Annotated (MRSA).

- (a) The section of highway under construction in the Town of Oxford, Oxford County at the intersection of Route 26 and Oxford Street.
- (b) (Route 26) station 13+50.00 to station 20+27.47 of the construction plus approaches.
- (c) (Oxford Street) station 30+00.00 to station 33+00.00 of the construction plus approaches.

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 **Town of Oxford** 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 town 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 107
TIME

The Contractor will be allowed to commence work once all plans required under this Contract have been approved and a pre-construction meeting has been held.

The specified Contract Completion Date for this contract is **December 10, 2027**.

All work schedule changes must be submitted for approval to MaineDOT at least 48 hours before the requested change.

The Contractor shall request absences at least 72 hours in advance, subject to approval by MaineDOT. The Contractor shall ensure that the roadway surface and signage are maintained for safe passage of the traveling public during approved absences. The Contract Completion Date will not be modified because of approved absences.

Once operations commence, for every weekday not worked, the Contractor will be charged Supplemental Liquidated Damages equal to those set forth in Section 107.7.2 of the Standard Specifications; excluding days lost to inclement weather, holidays, and approved absences. These Supplemental Liquidated Damages shall be in addition to and on top of any Liquidated Damages assessed for failure to complete the work within the Contract Time.

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 $\frac{1}{4}$ 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 $\frac{1}{2}$ 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 $\frac{3}{8}$ 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 ItemPay Unit

202.202 Removing Pavement Surface
202.20201 Removing Pavement Surface (Hourly)

S.Y.
Hour

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) using a single approved design for each item 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

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		
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.

3. The minimum ambient air temperature for placement of HMA for curbs, driveways, sidewalks, islands, and other incidental work shall be 40°F, regardless of whether the mixture is produced using an approved WMA technology.

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:

- The quantity information required shall be individual weights of each batch or total net weight of each truckload.
- Signatures (legible initials acceptable) of Weighmaster (required only in the event of a malfunction as described in 401.074 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 $\pm \frac{1}{4}$ 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 $\frac{1}{4}$ 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.

When covering portland cement concrete surfaces (concrete slabs or concrete backfill), as a minimum, a triple application of tack coat shall be applied on the surface prior to pavement being placed over the concrete.

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 In 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. A maximum unmatched centerline joint of the project's 1 days' average production will be permitted over the weekend.
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 of the project's 1 days' average production 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.
Longitudinal Joints (<45 mph) *	
Greater than 2"	With use of a Notch-Wedge device, 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 of the project's 1 days' average production will be permitted over the weekend.

* Longitudinal joint allowances for segments under 45 mph will only be permitted if the segment length is continuous for one mile or greater or the total length of the project is one mile or less.

Constructed wedge joints that degrade or break off will not qualify for the open joint duration as described above. The impacted area shall be matched up within 48 hours of notification by the Department. Prior to matching, the Contractor shall trim off the impacted area and construct a vertical joint. Failure to comply will result in an automatic Traffic Control Violation as per section 652.8.

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.

When covering a portland cement concrete surface (concrete slabs or concrete backfill) a minimum of 3 inches of HMA pavement will be required over the concrete.

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 of bridge curbing and concrete bridge headers shall be completely sealed with hot-applied asphaltsealant material, meeting the requirements of Type 4 or mastic crack seal. Sealant 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.

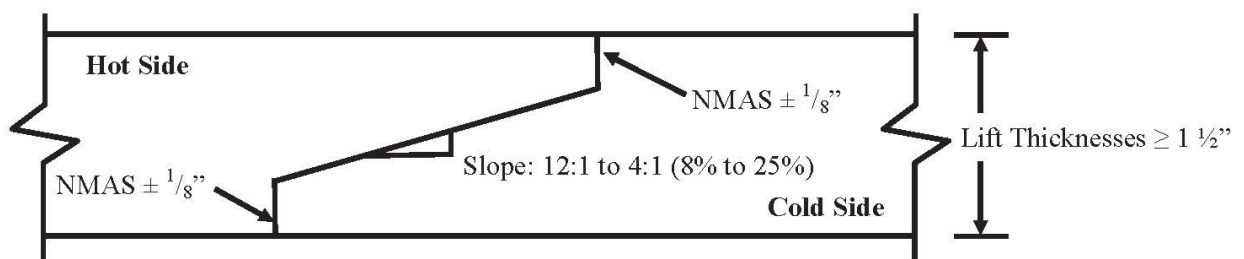


FIGURE 1: Notched Wedge Joint

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.
- 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.

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.

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 zone during placement.
- Mix TMD to be used for density gauge setting for method spec density work
- Procedures for avoiding paving in inclement weather.

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.

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

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 and Acceptance for Item 403.209 Hot Mix Asphalt, 9.5 mm Nominal Maximum Size, (sidewalks, drives, islands & incidentals) and visual acceptance items Item 403.209 will be accepted under method D acceptance unless otherwise noted in the 403 special provision. 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) when accepted under either visual acceptance or under Method D acceptance unless otherwise specified in the 403 SP. 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 subplot 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 subplot 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 subplot remaining at the end of production for the year, then it shall be combined with the previous subplot. If there is more than one-half subplot remaining at the end of production for the year, then it shall constitute the last subplot 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 a 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		N/A
Voids at N _{design}		
Fines to Effective Binder*		
VMA at N _{design}		
VFB		<60 PWL
% TMD (In-place Density)		

*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	$PA = (\text{Voids @ } N_d \text{ PF} - 1.0)(Q)(P) \times 0.20 + (\text{VMA @ } N_d - 1.0)(Q)(P) \times 0.20 + (\text{PGAB Content PF} - 1.0)(Q)(P) \times 0.10$	$PA = (\text{density PF} - 1.0)(Q)(P) \times 0.50$
Method C	$PA = (\% \text{ Passing Nom. Max PF} - 1.0)(Q)(P) \times 0.05 + (\% \text{ passing 2.36 mm PF} - 1.0)(Q)(P) \times 0.05 + (\% \text{ passing 0.30 mm PF} - 1.0)(Q)(P) \times 0.05 + (\% \text{ passing 0.075 mm PF} - 1.0)(Q)(P) \times 0.10 + (\text{PGAB Content PF} - 1.0)(Q)(P) \times 0.25$	$PA = (\text{density PF} - 1.0)(Q)(P) \times 0.50$

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 subplot 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	250 ton (Max 4 Sublots)
Sublot Size – Density	125 ton (Max 5 Sublots)

*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 met or 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 subplot 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

402.10 Incentive/Disincentive - Pavement Smoothness

Pay Unit

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:

<u>Pay Item</u>	<u>Pay Unit</u>
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

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 403
HOT MIX ASPHALT

Desc. Of Course	Grad Design.	Item Number	Total Thickness	No. Of Layers	Comp. Notes
<u>2" Mill & 1 ½" HMA Overlay w/ Variable Depth Shim</u>					
<u>Travelway, Turn Lane, Flush Median, & Shoulders (As Indicated)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,8,24,42,43
Shim	9.5 mm	403.211	variable	1/more	4,8,20,24,30,42,43
<u>6" HMA - Reconstruction Areas</u>					
<u>Route 26 - Partial Turn Lane & Shoulders (As Indicated)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,8,24,42
Shim	9.5 mm	403.211	variable	1/more	4,8,20,24,30,42,45
Intermediate	12.5 mm	403.213	1 ½"	1	4,8,33,40,44,45,55
Base	12.5 mm	403.213	2 ½"	1	4,8,33,40,44,45,55
<u>6" HMA - Reconstruction Areas</u>					
<u>Oxford Road - Travelway, Turn Lane & Shoulders (As Indicated)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,8,24,42
Shim	9.5 mm	403.211	variable	1/more	4,8,20,24,30,42
Intermediate	12.5 mm	403.213	1 ½"	1	4,8,34,41,55
Base	12.5 mm	403.213	2 ½"	1	4,8,34,41,55
<u>Drives, Misc. (As Directed)</u>					
Wearing	9.5 mm	403.209	2"	1/more	3,20,30

COMPLEMENTARY NOTES

2. 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.
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**.
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.

24. See Special Provision 401 - HMA with Fine Micro-Deval Requirement 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.
33. Roadway HMA mixtures may be placed with a track or rubber tire mounted highway class paver with a minimum tractor weight of 28,000 pounds, equipped with a minimum main screed width of eight feet.
34. For the shoulder work between STA. 31+50 to STA. 33+00 RT, the roadway HMA mixtures shall be placed with a track or rubber tire mounted, self-contained, self-propelled paver of sufficient size to place Hot Mix Asphalt Pavement in the shoulder or similar construction. The Compaction of the new Hot Mix Asphalt Pavement will be obtained using a minimal roller train consisting of a **3-5 ton** vibratory roller.
40. The entire roadway (including the shoulder) shall be considered mainline travelway for density testing purposes according to the specified testing method.
41. Excluding the shoulder work between STA. 31+50 to STA. 33+00 RT, the entire roadway (including the shoulder) shall be considered mainline travelway for density testing purposes according to the specified testing method.
42. The Contractor shall plan its construction sequencing so that no longitudinal joints fall within the mainline travelway lanes.
43. The Department shall profile railroad and bridge approaches every 10 feet along the roadway center line and edge of travelways, out to a match point at a minimum of 75 feet from the structure, to determine the approach pavement taper, elevations, and pavement removal or shim requirements. This work shall be accomplished in cooperation with the Contractor by means of conventional surveying equipment or blocking and string lines as cooperatively determined by the Contractor and Department. At minimum, the survey work will be completed 10 days prior to milling and/or paving operations.
44. The **minimum** saw cut shall be **8.5 feet** (including the curb pad) to accommodate a 8 foot paver.
45. The base paving will be placed at a "straight grade" to match the milled surface and the final gutter grade (2" below the top of surface). The shim will be used to reestablish the shoulder break.
55. The vertical surface of the longitudinal joint between the edge of existing HMA and proposed HMA 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 (3 ½ 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 0.05 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 424

Mastic for Asphaltic Plug Joint Replacement

Description This work consists of the preparation, cleaning, furnishing and installing of asphaltic mastic materials in one or more layers over prior installed asphaltic plug joint (APJ) systems or in new locations as indicated in the contract documents, or shown on the Plans, in accordance with these Specifications or as directed by the Department.

This work will include the removal of any existing pavement over the prior existing APJ or bridge joint to a width of 24 inches, or as otherwise described in the contract. It shall also include any required trimming, cleaning or drying of the pavement, supply, installation and finishing of asphaltic mastic materials to the required depth, grade and cross slope. This work may include the installation of headers or templates before the placement of the surrounding pavement surface layers with the intent to form an area above the existing asphaltic plug joint channel and provide an installation reservoir for the asphaltic mastic materials without the need to remove pavement layers.

MATERIALS

The hot pour mastic materials required are hot-applied, pourable, self-adhesive type mastics blended with aggregates designed for maintenance and repair of asphalt and Portland cement concrete pavements. Hot pour mastic materials are composed of highly modified polymer asphalt binder and fine graded aggregates as required by the application.

The mastic materials shall be delivered in the manufacturer's original container. The material shall be pre-packaged with the manufacturers name and product name marked on each container. The materials shall conform to the following requirements:

Parameter

Color	Black
Pourability @ 400F (PTM1)*	1000-1400 gm
Stability @ 158F (PTM2)	.6in. max
Flexibility @ Low Temperature (PTM3)	Pass @ -20F
Adhesion @77F (PTM4)	15psi min.
Specific Gravity (ASTM D792)	1.35max.
Skid Resistance, BPN (ASTM E303)	40 min.
Minimum Application Temperature	375°F
Maximum Application Temperature	410°F

The density of the mastic with aggregate weight per gallon is 15.5 lbs/gal at 60°F.

EQUIPMENT

Equipment Equipment used in the performance of the work shall be subject to the Departments or authorized representative's approval and shall be maintained in a satisfactory working condition at all times.

(a) Air Compressor: Air compressors shall be portable and capable of furnishing not less than 4 yd³ of air per minute at not less than 90 psi pressure at the nozzle. The compressor shall be equipped with traps that will maintain the compressed air free of oil and water.

(b) Sweeper: Manually operated, gas powered air-broom or self-propelled sweeper designed especially for use in cleaning pavements shall be used to remove debris, dirt, and dust from the cracks.

(c) Hot Air Lance: Should operate with propane and compressed air in combination at 2000°F - 3000°F, exit air heated at 1000 ft/s. The lance should draw propane from no smaller than a 100 lb tank using separate hoses for propane and air draw. The hoses shall be wrapped together with reflectorized wrap to keep them together and to protect workers in low light situations.

(d) Hand Tools: Shall consist of Boxed or V-shaped squeegee, brooms, shovels, metal bars with chisel shaped ends, and any other tools which may be satisfactorily used to accomplish this work.

(e) Melting Kettle: The unit used to heat asphaltic mastics shall be a double boiler unit equipped with continuous horizontal full sweep agitation and have separate thermostatic control devices that will automatically regulate hot oil and material temperature. Separate digital readouts shall display the temperatures of the hot oil and material. The kettle shall be equipped with mixing paddles, blending augers, or other satisfactory means of agitating, mixing, and blending the aggregates and mastic together. The kettle must be equipped with thermostatic control calibrated between 200°F and 550°F.

An application wand may be required for the work type, and shall apply a controlled flow of material via an insulated or heated hose. The nozzle shall distribute the material as called for in this specification. A pressure regulator shall be provided to regulate pressure at the nozzle. A bypass line into the holding tank is required for use when the nozzle is shut off.

CONSTRUCTION REQUIREMENTS

Weather Asphaltic mastics shall not be applied on a wet or damp surface, or when the atmospheric temperature is below 40°F in a shaded area at the job site, or when weather conditions are otherwise unfavorable to proper crack repair procedures.

Preparation All reservoirs shall be prepared to receive the asphaltic mastic material. All cracks must be cleaned of debris, dried and heated to ensure optimal bonding of the sealant material to the existing pavement and crack edges.

Reservoirs shall be thoroughly cleaned by use of compressed air, hand tools and brooms as needed, and dried by use of a hot air lance. The area shall be free of any moisture, pavement debris, dirt, dust, moisture, petroleum or solvents that might contaminate the mastic materials, or

reduce the bond of the joint system to the substrate or vertical faces. Any loose or broken materials will be removed from the repair area before placing asphaltic mastic materials.

Installation Asphaltic mastic materials shall be installed in accordance with manufacturer's latest instructions and this specification.

Asphalt pavement layers shall be removed to a 24 inch width centered over the previously installed APJ location, visible bridge joint, or as otherwise described in the contract. The asphalt pavement shall be sawcut or milled to the required surface layer depth, but not to a depth that will damage the underlying existing APJ material or HMA layer. The pavement layer shall be removed in a manner that will not damage any existing APJ material or underlying HMA layer.

Interlayers, fabrics, or headers may be used as required to form an installation reservoir and protect the existing APJ channel from damage. Vertical surfaces of the asphalt pavement layers shall be trimmed as needed to provide a straight, uniform width reservoir and shall be cleaned to remove all water, dust, or other contaminants.

All reservoirs shall be flush filled with pre-blended mastic with minimal overband in the same workday as directed by the Resident or authorized representative. The mastic material shall be poured into the repair area and worked using boxed or v-shaped squeegees, tools, lutes or heated irons. Care should be taken not to over work the material and cause unequal dispersion of the aggregate within the repair. The material may be applied in multiple lifts to accommodate material shrinkage or flow during cooling.

Mastics shall be applied in one or more layers to prepared areas directly from the melting kettle chute, wand or other conveyance method filled from the kettle. If bucketed, material cooling during transfer must be minimized.

All asphaltic mastic materials shall be heated to between 380°F and 410°F and thoroughly agitated prior to application. A non-contact infrared thermometer shall be used periodically to monitor the temperature of the material as it exits the kettle. Material may not be used if it is heated beyond the safe heating temperature of 410°F, exceeds the recommended pot life, or is reheated more than one time. Mastics may be applied to prepared areas when the material has been heated to the lower end of the temperature range to minimize material flow and cooling time.

After the material has been applied to the areas, indirect heating by torch or hot air lance can be used to heat the edges and ensure a watertight seal. Do not burn, scorch or ignite the mastic or adjoining pavement when heating.

Traffic will not be allowed on the filled area for one ½ hour, or until the material has cooled enough to support traffic, divots do not occur, and tracking is minimal. Vehicular traffic may pass over finished joints two-hours after completion.

Quality of Work Excess mastic shall be removed from the pavement by approved methods and discarded. Any work determined to be below normal acceptable standards will not be accepted, and will be corrected and / or replaced as directed by the Resident or authorized representative.

Method of Measurement Mastic for Asphaltic Plug Joint Replacement will be measured by the linear foot along the top surface of the installation to the required limits. Preparation of surfaces for the proposed joint system including cutting, grinding, trimming, drying and cleaning will not be measured separately for payment, but shall be incidental to the Asphaltic Plug Joint Replacement.

Basis of Payment Mastic for Asphaltic Plug Joint Replacement will be paid for at the Contract unit price per linear foot which will be full compensation for furnishing the mastic material, heating, placing and finishing the mastic materials, as well as cleaning and preparing the areas for installation of the mastic, including the use of compressed air, hot air lance, grinding, trimming or saw cutting, any sweeping required to remove contaminates from and drying the areas to be treated.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
424.385 Mastic for Asphaltic Plug Joint Replacement , 0.75 – 1.25 inch	Linear Foot
424.386 Mastic for Asphaltic Plug Joint Replacement , >1.25 inch	Linear Foot

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(QC/QA Acceptance Methods)

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
S	626.221	Non-Metallic Conduit, Concrete Encased	N/A	C
LP	626.35	Controller Cabinet Foundation	N/A	C
LP	626.421	24" Diameter Foundation	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 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 installation of a new traffic control signal in the Town of Oxford. 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), span wire, wood poles with guy anchors and extension overhead mast for lighting, LED overhead lighting, pedestal pole, vehicular signal heads, new light-emitting diode (LED) indications, retroreflective backplates on vehicle signal heads, wiring, signal cable, overhead span wire mounted signs, non-invasive stop bar and advance vehicle detection, emergency vehicle preemption, and all appurtenances and incidentals required for complete functioning installation. In addition, the project will connect the traffic signal to the MaineDOT Central Management System with cellular communications through an in-cabinet Field Monitoring Unit (FMU). In addition:

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 operations.

643.025 Additional Materials Materials shall also meet the requirements of Special Provision Section 643, Materials

643.09 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 – **black** housing with black doors.

Signal Backplates – **black** and louvered w/ fluorescent yellow retroreflective strip.

Controller Cabinet – aluminum.

Pedestal Post and Base – **black** / aluminum.

643.19 Basis of Payment The traffic signal (Item 643.80) 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, wood poles, span wire and tether cable, risers, vehicular signal heads, retroreflective backplates, overhead span wire 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 Section 643, Materials for more information) will be paid for under pay items 643.80, 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 will be incidental to Item 643.80 Traffic Signals. The contract lump sum payment will be full compensation for furnishing and installing all materials, including, but not limited to 10-year licensing of Centrac's 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.

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.

Wood pole with guys will be incidental to Item 643.80 Traffic Signals. The contract lump sum payment will be full compensation for furnishing and installing all materials, including, but not limited to wood pole with guy wires and anchors and extension overhead mast for lighting, and all appurtenances and incidentals required to erect and guy anchor the pole.

Payment will be made under the following:

Oxford
027044.00
August 19, 2026

Pay Item
643.80 Traffic Signals at: Route 26 at Oxford Street
643.92 Pedestal Pole

Pay Unit
Lump Sum
Each

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 Non-Invasive Detection – Advance shall include equipment meeting the following and all the requirements as defined in Special Provision 643 Traffic Signals, Materials. The use of a hybrid/combination unit to meet the following specifications shall not be allowed. A hybrid/combination unit is defined as a device designed to function using multiple detection technologies. 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, 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 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 only.

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 simultaneously detect and track multiple vehicles. 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. Detector interface panel. The Contractor shall furnish one 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 Non-Invasive Detection - Advance processor system software on the cloud-based Central Management System (CMS).

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 installed attached 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). The call shall be placed when a vehicle has been detected in the dilemma zone as shown on the plans. In addition, the completed installation shall provide remote access to the Non-Invasive Detection - Advance system via MaineDOT control and/or the cloud-based CMS.

Method of Measurement. The non-invasive advance vehicle detection system will be measured for payment as a lump sum for a fully installed and operational Non-Invasive Detection – Advance system. All items, equipment, labor, incidentals and testing required to create a fully functional system will be considered incidental to the cost of this item. The item shall be unconditionally warrantied for at least 3 years from installation 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.

<u>Pay Item</u>	<u>Pay Unit</u>
643.22 Non-Invasive Detection - Advance: Route 26 at Oxford Street, 3 Approaches	Lump Sum

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 in Special Provision 643 Traffic Signals, Materials. 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 have a documented history of meeting the following requirements within the State of Maine at similar conditions to the project location, such as systems supplied by Currux, Gridsmart/Cubic, Miovision, or approved equals.

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 up to 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 Fiber Ethernet switch or 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 Resident. The Contractor may be required to adjust and readjust the location of existing and proposed vehicle detection zones in the presence of the Resident, 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.

<u>Pay Item</u>	<u>Pay Unit</u>
643.21 Non-Invasive Detection - Stop Bar: Route 26 at Oxford Street, 3 Approaches	Lump Sum

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Material)

The provisions of Section 643 of the Standard Specifications shall apply with the following additions and modifications:

Traffic Signal Control System

The expanded traffic signal control system shall meet 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 intersection.
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 communications 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 the 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 NTCIP standards committees, their degree of involvement, and present efforts including timetables for meeting proposed NTCIP standards under review. All communications between the local field controllers to the CMS shall be Ethernet based protocols, serial or FSK communications shall not be allowed.
5. The expanded system and controllers shall be able to provide signal priority routing to support Snowplow CV Operations.

6. The expanded cloud-based CMS shall be configured to provide remote access to the project intersections as well as system users as designated by MaineDOT and or the Resident.
7. The expanded cloud-based CMS shall be configured to require a 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 staff and the Resident.
8. The Contractor shall coordinate with MaineDOT IT staff to create a site to site VPN connection between the MaineDOT internal network and the Contractor expanded cloud system for the CMS, SPM and the Connected Vehicle (CV) system. This site-to-site connection shall be in conjunction with MaineDOT IT staff 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 Resident for approval. No manufacture default passwords shall be allowed and no duplicate passwords shall be allowed.
10. The Contractor shall configure within the expanded cloud based CMS the ability to remotely access, configure and view all detection systems installed within the project.
11. All client and device based remote access operations to the expanded 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 Resident for approval.
12. The expanded CMS, SPM and the Connected Vehicle (CV) system shall communicate directly to all ATC controllers, cabinet assemblies and all in cabinet devices capable of supporting remote access; remote interface units are unacceptable. The system shall provide continuous communications, 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) as shown on the plans. 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 2026 MaineDOT Standard Specifications sections 718.07.

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

SPM Reports

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
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) compatible with existing MaineDOT On-Board Units (OBU) procured under previous projects. 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 where 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 where 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 programmed 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 Resident 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 programmed 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 programmed 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 Resident 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 programmed 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 programmed 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 Resident 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 programmed 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. This CV function shall be fully programmed 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 Resident to coordinate the installation of CV devices into emergency vehicles. 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 programmed 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 programmed 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 Resident.

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 programmed 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 define and create geo-fence detection zone at all intersections as part of the project. The geo-fence detection zone shall initially be programmed 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 any 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 Resident.

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 programmed 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 Resident 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 programmed 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 programmed 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 Resident 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 programmed 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 programmed 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 Resident 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 programmed 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 programmed 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 Resident 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 programmed 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 Resident. 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 Resident, 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 Resident 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 Resident 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 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 Resident at least fourteen (14) calendar days prior to any planned test activity stage. No tests shall be conducted until the Resident, 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 Resident 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 Resident, 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 Resident'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.

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 Resident.

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 petri dish 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 weatherproof 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

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 Resident. 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 Resident 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).

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 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 weatherproof 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 and 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:

<u>Pay Item</u>	<u>Pay Unit</u>
654.351 Connected Roadside Unit (RSU)	Each

SUPPLEMENTAL SPECIFICATIONS
(Corrections, Additions, & Revisions to Standard Specifications – March 2026)

Throughout the entire Document; Replace “AASHTO NTPEP” with “**AASHTO Product Evaluation and Audit Solutions**”

DIVISION 100

GENERAL CONDITIONS

- 100.1 In the first sentence, replace “2025” with “2026”
so that it says” **This 2026 edition...**”
- 101.2 Under the definition of Standard Specifications remove the phrase “Revision of 2020”.
- 104.5.4 In front of “Prompt Payment of Subcontractors” place the subsection number “**104.5.5**”.
- At the end of the paragraph starting with “**Payment Tracking Federal Projects**” add the sentence “ **Contractors and Subcontractors shall acknowledge Payments within 30 Days.**”

APPENDIX A TO DIVISION 100

- A-18 Starting on page A-18, Replace Section 1273 in the appendix with the current version dated June 25, 2026.

SECTION 201

STRUCTURAL EXCAVATION

- 201.24 Under ‘Pay Item’ add
- | | | |
|---------------|-----------------------|-------------|
| 201.24 | Removing Stump | Each |
|---------------|-----------------------|-------------|

SECTION 524

TEMPORARY STRUCTURAL SUPPORTS

- 524.06 Basis of Payment, in the item chart change the description of Item Number 524.301 from “Temporary Structural Support, Approaches” To “**Temporary Structural Support, _____**”

SECTION 639

ENGINEERING FACILITIES

- 639.01 Subsection 639.091 of the standard specification is deleted and replaced with the following:

“639.092 **Communication Services** The Contractor shall provide a secure, high-speed internet connection for the exclusive use of State personnel within the field office. The connection must remain active and functional for the entire duration of the project.

A. Performance Requirements:

- **Bandwidth:** The connection must deliver a minimum continuous download speed of **25 Mbps** and a minimum upload speed of **5 Mbps** per field office. For construction contracts over \$10 million, the minimum download speed shall scale to **50 Mbps**.
- **Latency:** The network latency must not exceed **80 milliseconds** round-trip to ensure stable connection to State VPN environments.
- **Data Allowance:** The service plan must include unlimited data, or a business-tier data allowance of no less than **200 GB per month per user**. Data throttling below the minimum required bandwidth speeds is prohibited.

B. Acceptable Technologies:

The Contractor may utilize any commercially available broadband technology that meets the performance requirements of Section A, including but not limited to:

- Cable or Fiber-optic broadband
- Fixed Wireless Access (FWA) or 4G LTE/5G Cellular Routers
- Low Earth Orbit (LEO) Satellite Systems (e.g., Starlink Business)

Traditional Geostationary (GEO) satellite internet systems (characterized by latencies exceeding 200 milliseconds) are explicitly prohibited unless a specific geographic exception is approved in writing by the Resident Engineer.

C. Hardware and Security:

- The Contractor shall supply a commercial-grade Wi-Fi router capable of supporting Wi-Fi 6 (802.11ax) standards.
- The field office network must be protected by a secure, unique WPA3 (or WPA2-Enterprise) password provided only to State personnel. A separate "guest" network must be configured if the Contractor's personnel share the physical connection.

The Contractor shall be responsible for the installation charges and all reinstallation charges following suspended periods. Monthly service and maintenance charges shall be billed by the Communication Service Provider (CSP) directly to the Contractor.

D. Waiver of Performance Requirements:

In locations where commercially available communication services are unable to meet one or more of the performance requirements specified in Section A, the Contractor may submit a written request to the Department for a waiver of the affected requirement(s). The request shall identify the requirement(s) that cannot be met, document the communication technologies reasonably available at the project location, and demonstrate that the proposed service represents the highest level of performance commercially available.

SECTION 643

TRAFFIC SIGNALS

643.19	Under 'Pay Item' replace		
643.83	Non-Invasive Detection – Stop Bar		Each
643.84	Non-Invasive Detection – Advance		Each
With the following:			
643.83	Video Detection System		Lump Sum
643.84	Interconnect Wire Between		Lump Sum

SECTION 652

MAINTENANCE OF TRAFFIC

- 652.2 Materials. Revise the second paragraph beginning with “ All signs shall be...” by adding the word “cones” to the second sentence so it reads in part
- “All barricades, **cones**, drums, and vertical panel markers shall be ...”
- 652.8.2 Revise the last paragraph beginning with “ There will be no payment...” by adding the following to the end:
- “There will be no payment for Maintenance of Traffic Control Devices during approved Contractor Requested Suspensions; The Contractor shall be responsible for maintaining all traffic control devices left in place during the suspension.”**

CONTRACT PROVISIONS FOR FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Davis-Bacon and Related Act Provisions
- IV. Contract Work Hours and Safety Standards Act Provisions
- V. Subletting or Assigning the Contract
- VI. Safety: Accident Prevention
- VII. False Statements Concerning Highway Projects
- VIII. Implementation of Clean Air Act and Federal Water Pollution Control Act
- IX. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- X. Certification Regarding Use of Contract Funds for Lobbying
- XI. 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. Historically, contracting agencies using Federal-aid highway funds were required to ensure Form FHWA-1273 was physically incorporated into all contracts and subcontracts. Effective June 10, 2026, this requirement was eliminated [91 FR 25492]. Future use of Form FHWA-1273 is now optional on the part of the contracting agency using Federal-aid highway funds. FHWA continues to make Form FHWA-1273 available as a convenience to contracting agencies. Contracting agencies must continue to ensure compliance with the provisions cited in Form FHWA-1273 in accordance with the provisions regardless of the use of Form FHWA-1273. Accordingly, the contracting agency retains the authority to determine whether the contractor must use Form FHWA-1273 to physically incorporate required contract provisions in each subcontract and in lower tier contracts. Where permitted by the contracting agency, the contractor may choose other ways to include required contract provisions in each subcontract, besides incorporating Form FHWA-1273. Contract provisions in Form FHWA-1273 are not required to be physically included in subcontracts for design services on Federal-aid design-build contracts, or in purchase orders, rental agreements and other agreements for supplies or services.

The applicable provisions 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 or 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.

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.

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

The contractor and all subcontractors must comply with the following policies: 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, including any amendments thereto.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with 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, including any amendments thereto.

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.

1. Assurances Required:

a. The requirements of 49 CFR Part 26, including any amendments thereto, 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, including any amendments thereto, 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, including any amendments thereto, are incorporated by reference. 49 CFR Part 21.

III. 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 IV, 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 repurchase 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 [29 CFR part 30](#), including any amendments thereto.

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 III. 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 in any subcontracts the clauses set forth in paragraphs (1) through (11) of this section, 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](#).

IV. 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.

* \$33 as of January 15, 2025 (See 90 FR 1859) 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 III 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 procurement 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.

V. 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 this section 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 this section 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 longstanding 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).

VI. 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).

VII. 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."

VIII. 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.

IX. 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 to 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.

* * * * *

X. 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.

XI. 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** (40 U.S.C. sections 14501(d) and 14701
and the Appalachian Regional Commission Code as
authorized under 40 U.S.C. section 14302)

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 40 U.S.C. 14501 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 U.S.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 effecting 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, Commissioner
(Name of Recipient)

By: 
(Signature of Authorized Official)

Dated: 9-17-26

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 Aviation 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 Aviation 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).



Environmental Summary Sheet

WIN: 27044.00

Town: Oxford

CPD Team Leader: Danielle Tetreau

ENV Field Contact: Nick Koltai

Date Submitted: 4/10/2026

NEPA Complete: Section 326 Categorical Exclusion (CE) 23 CFR 771.117.c.27 issued on 6/5/2025

Section 106

Review Complete: No Effect - No Properties - SHPO Concurrence 3/4/2025

Section 106 Resources: none

Section 4(f) and 6(f)

Section 4(f)

Review Complete - No properties, no use

Section 6(f)

Review Complete - No properties, no takes

Section 7 – Endangered Species Act

Species of Concern: tri-colored bat (proposed endangered): no jeopardy

Monarch butterfly (proposed threatened): no jeopardy

Essential Fish Habitat

Species of Concern: Atlantic salmon – No Effect - no in-water work proposed

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

Not Applicable – no resource impacts

Army Corps of Engineers: Clean Water Act.

Not Applicable - no resource impacts

Stormwater Review

Review Complete

Hazardous Material Review

Review complete – no concerns



Special Provisions Required

Standard Specification 656-Erosion Control Plan

N/A ☐

Applicable ☒

Standard Specification 105.8.8 – Protected Species

N/A ☐

Applicable ☒