

**Updated 05/15/2020**

# **STATE PROJECT**

## BIDDING INSTRUCTIONS

1. Use pen and ink to complete all paper Bids. Signatures shall be original. Stamped and copied signatures will not be accepted. Bids are not accepted by email or FAX.
2. 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 in Appendix A, d) two copies of the completed and signed Contract Agreement form, e) the completed Contractor Information Sheet, 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 the Expedite® software and submitted via the Bid Express™ web-based service, and b) 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.
  4. All Bid Packages which are mailed or sent express, shall be provided in double (one envelope inside the other) envelopes, for security and other reasons. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open  
WIN or Title: 023263.10  
Towns: Coplin Plantation  
Date of Bid Opening: February 7, 2024  
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  
or Title: 023263.10  
Towns: Coplin Plantation  
Date of Bid Opening: February 7, 2024  
Name of Contractor:

If a paper Bid is to be sent express, please take note that overnight services do not always arrive in time and that delivery may be affected by carrier volume, weather and other factors. Packages using express services should be sent directly to the DOT Headquarters Building, Maine Department of Transportation, 24 Child Street, Augusta. “FedEx First Overnight” delivery is suggested as the package is delivered directly to the DOT Headquarters Building, Mailroom, 24 Child Street, Augusta. Allow extra days for U.S. Postal Service Express Mail which has proven not to be reliable and sometimes does not deliver directly to the DOT Headquarters Building but instead delivers to the State of Maine Mail Distribution Center.

If a paper bid is to be mailed, the mailing address is Maine Department of Transportation, 16 State House Station, Augusta, ME 04333-0016. Allow additional working days for this mail to pass through the state mail system in addition to the US Postal Service as this mail is not delivered directly to the Department of Transportation.

If a paper Bid is to be hand carried, deliver directly to the “Public Entrance” which is located on the Capitol Street side of the DOT Headquarters Building in Augusta. <http://www.maine.gov/mdot/contact>. Hand-carried Bids may be in one envelope, and should be marked with the following information:

Bid Enclosed: Do Not Open  
WIN or Title: 023263.10  
Towns: Coplin Plantation  
Date of Bid Opening: February 7, 2024  
Name of Contractor:

IN ADDITION, FOR FEDERAL AID PROJECTS:

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

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

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

# 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](mailto: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.**

# 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](mailto: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):** \_\_\_\_\_

Request by: \_\_\_\_\_  
**Company Name:** \_\_\_\_\_ **Phone:**(\_\_\_\_)\_\_\_\_\_

**Email:** \_\_\_\_\_ **Fax:** (\_\_\_\_) \_\_\_\_\_

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### **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>

## CONTRACTOR INFORMATION

**Contractor Name:** \_\_\_\_\_

**Mailing Address:** \_\_\_\_\_

**Vendor Customer Number:** \_\_\_\_\_

**Contact Information (Primary Contact):** \_\_\_\_\_

**Phone:** \_\_\_\_\_ **Cell Phone:** \_\_\_\_\_

**Fax:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Mailing Address (if different from above):** \_\_\_\_\_

\_\_\_\_\_

The company has the following organizational structure:

☐ Sole Proprietorship

☐ Limited Liability Company

☐ Partnership

☐ Joint Venture

☐ Corporation

☐ Other: \_\_\_\_\_

\_\_\_\_\_

(Date)

\_\_\_\_\_

(Signature)

\_\_\_\_\_

(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 **Precast Concrete Box Culvert, Supply and Delivery** in **Coplin Plantation**" 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 **February 7, 2024**, and at that time and place, publicly opened and read. Bids will be accepted from all bidders. **We now accept bids for packages posted on the bidx.com website. Electronic bids do not have to be accompanied by paper bids. Until further notice, dual bids (one paper, one electronic) will be accepted, with the paper copy taking precedence.** The lowest responsive bidder must demonstrate successful completion of projects of similar size and scope to be considered for the award of this contract.

Description: WIN 023263.10

Location: In Franklin County, delivery is to project located in Coplin Plantation on Route 16.

Outline of Work: Fabricate and deliver precast concrete box culvert and other incidental work.

For general information regarding Bidding and Contracting procedures, contact George Macdougall at (207) 624-3410. Our webpage at <http://www.maine.gov/mdot/contractors/> contains a copy of the Schedule of Items, Plan Holders List, written portions of bid amendments, drawings, bid results and an electronic form for RFI submittal. For Project-specific information fax all questions to **Guy Whittington** at (207) 624-3431, use electronic RFI form or email questions to [RFI-Contracts.MDOT@maine.gov](mailto:RFI-Contracts.MDOT@maine.gov), project name and identification number should be in the subject line. Questions received after 12:00 noon of 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. Bid Book \$10 (\$13 by mail), payment in advance, all non-refundable.

**There will be no bid bond, performance bond or payment bond required.**

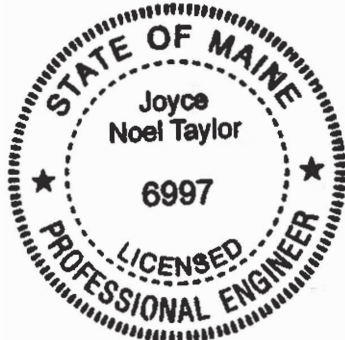
Each Bid must be made upon blank forms provided by the Department.

This Contract is subject to all applicable State Laws.

All work shall be governed by *State of Maine, Department of Transportation, Standard Specifications, March 2020 Edition*, price \$10 [\$15 by mail], and *Standard Details, March 2020 Edition*, price \$10 [\$15 by mail]. *Standard Detail* updates can be found at <http://www.maine.gov/mdot/contractors/publications/>.

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

Augusta, Maine  
January 17, 2024



JOYCE NOEL TAYLOR, P. E.  
CHIEF ENGINEER

CTM: \_\_\_\_\_  
TEDOCS# \_\_\_\_\_  
CSN \_\_\_\_\_

**MAINE DEPARTMENT OF TRANSPORTATION**  
**CONTRACT AGREEMENT TO PURCHASE SUPPLIES, MATERIALS**  
**AND/OR EQUIPMENT FOR A SPECIFIC PROJECT**

This Agreement (the "Contract") is entered into between the Maine Department of Transportation ("Department" or "MaineDOT") with its principal office located at Child Street, Augusta, Maine, and a mailing address of 16 State House Station, Augusta, Maine 04333-0016, and \_\_\_\_\_ ("Contractor"), a corporation or other legal entity organized under the laws of the State of \_\_\_\_\_ with its principal place of business located at \_\_\_\_\_, and a mailing address of \_\_\_\_\_ and a telephone number as follows: \_\_\_\_\_.

The Vendor Customer Number of the Contractor is \_\_\_\_\_.

MaineDOT, pursuant to 23 M.R.S.A. §52, requested bids for the sale and delivery of the Materials, Supplies, and Equipment (the "Materials") described in the Contract Documents. The terms and conditions of the purchase of the Materials are set forth below:

**A. Deliverables.**

The Contractor agrees to provide the Materials known as **Precast Concrete Box Culvert**, more specifically described in Appendix A for use in MaineDOT **WIN 023263.10 Coplin Plantation** (the "Project").

**B. Time.**

This Contract becomes effective on the date last signed below. The materials shall be ready for delivery on or before July 15, 2024. The actual delivery date of the materials shall be determined by the project schedule and coordinated with the Department's Contractor responsible for installing the precast units which is expected to be between July 15, 2024 and August 30, 2024. This Contract expires on December 31, 2024.

**C. Price.**

The Unit Price(s) offered by Contractor and accepted by MaineDOT, and the quantities given in the Schedule of Items of the Bid Package, will be used as the basis for determining the original Contract amount set forth in section F below.

CTM: \_\_\_\_\_  
TEDOCS# \_\_\_\_\_  
CSN \_\_\_\_\_

**D. Contract Documents.**

The Contract consists of this Agreement and the following attachments which are hereby incorporated into the Contract as part of its terms and conditions:

Appendix A--Description of Materials, Supplies, Equipment and Bid Price  
Appendix B--Special Provisions for the Purchase of Supplies, Materials or Equipment  
Special Provisions, Supplemental Specifications and Appendices  
Standard Specifications, March 2020 Edition, as updated through advertisement  
Standard Details, March 2020 Edition as updated through advertisement

By agreement, this Contract may be amended, modified, or supplemented by written agreement signed by both parties.

**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 and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor certifies that it has not been debarred, suspended, declared ineligible or voluntarily excluded from contracts by the Federal Government or any state agency within the last 3 years.
3. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
4. 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.**

By signing below, the Bidder (1) represents that the Bidder has examined the contract, all documents referenced in said Contract, and the site and scope of work, (2) does hereby bid and offer to enter into this contract to construct and/or perform the Work in strict accordance with the terms and conditions of this Contract at the unit prices bid in the attached "Schedule of Items", (3) represents that the Bidder has given the Department notice of any errors or ambiguities related to the documents or the work that have been

CTM: \_\_\_\_\_  
TEDOCS# \_\_\_\_\_  
CSN \_\_\_\_\_

discovered by the Bidder, (4) the above-named organization is the legal entity entering into the resulting contract with the Department if they are awarded the contract and, (5) the undersigned is authorized to enter contractual obligations on behalf of the above-named organization.

The properly completed and signed Schedule of Items provided with the Bid constitutes the Bidder's offer and that this offer shall remain open for 30 calendar days after the date of opening of bids.

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 this Contract and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

**CONTRACTOR**

\_\_\_\_\_  
Date

\_\_\_\_\_  
\_\_\_\_\_  
(Name and Title Printed)

**G. Award.**

By signing below, an authorized representative of MaineDOT hereby accepts Contractor's offer and awards this Contract to Contractor in the amount of \$ \_\_\_\_\_ under the terms and conditions set forth above.

**MAINE DEPARTMENT OF TRANSPORTATION**

\_\_\_\_\_  
Date

\_\_\_\_\_  
By: Bruce A. Van Note, Commissioner

CTM: \_\_\_\_\_  
TEDOCS# \_\_\_\_\_  
CSN \_\_\_\_\_

MAINE DEPARTMENT OF TRANSPORTATION  
CONTRACT AGREEMENT TO PURCHASE SUPPLIES, MATERIALS  
AND/OR EQUIPMENT FOR A SPECIFIC PROJECT

This Agreement (the "Contract") is entered into between the Maine Department of Transportation ("Department" or "MaineDOT") with its principal office located at Child Street, Augusta, Maine, and a mailing address of 16 State House Station, Augusta, Maine 04333-0016, and \_\_\_\_\_ ("Contractor"), a corporation or other legal entity organized under the laws of the State of \_\_\_\_\_ with its principal place of business located at \_\_\_\_\_, and a mailing address of \_\_\_\_\_ and a telephone number as follows: \_\_\_\_\_.

The Vendor Customer Number of the Contractor is \_\_\_\_\_.

MaineDOT, pursuant to 23 M.R.S.A. §52, requested bids for the sale and delivery of the Materials, Supplies, and Equipment (the "Materials") described in the Contract Documents. The terms and conditions of the purchase of the Materials are set forth below:

**A. Deliverables.**

The Contractor agrees to provide the Materials known as **Precast Concrete Box Culvert**, more specifically described in Appendix A for use in MaineDOT **WIN 023263.10 Coplin Plantation** (the "Project").

**B. Time.**

This Contract becomes effective on the date last signed below. The materials shall be ready for delivery on or before July 15, 2024. The actual delivery date of the materials shall be determined by the project schedule and coordinated with the Department's Contractor responsible for installing the precast units which is expected to be between July 15, 2022 and August 30, 2024. This Contract expires on December 31, 2024.

**C. Price.**

The Unit Price(s) offered by Contractor and accepted by MaineDOT, and the quantities given in the Schedule of Items of the Bid Package, will be used as the basis for determining the original Contract amount set forth in section F below.

CTM: \_\_\_\_\_  
TEDOCS# \_\_\_\_\_  
CSN \_\_\_\_\_

**D. Contract Documents.**

The Contract consists of this Agreement and the following attachments which are hereby incorporated into the Contract as part of its terms and conditions:

Appendix A--Description of Materials, Supplies, Equipment and Bid Price  
Appendix B--Special Provisions for the Purchase of Supplies, Materials or Equipment  
Special Provisions, Supplemental Specifications and Appendices  
Standard Specifications, March 2020 Edition, as updated through advertisement  
Standard Details, March 2020 Edition as updated through advertisement

By agreement, this Contract may be amended, modified, or supplemented by written agreement signed by both parties.

**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 and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor certifies that it has not been debarred, suspended, declared ineligible or voluntarily excluded from contracts by the Federal Government or any state agency within the last 3 years.
3. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
4. 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.**

By signing below, the Bidder (1) represents that the Bidder has examined the contract, all documents referenced in said Contract, and the site and scope of work, (2) does hereby bid and offer to enter into this contract to construct and/or perform the Work in strict accordance with the terms and conditions of this Contract at the unit prices bid in the attached "Schedule of Items", (3) represents that the Bidder has given the Department notice of any errors or ambiguities related to the documents or the work that have been

CTM: \_\_\_\_\_  
TEDOCS# \_\_\_\_\_  
CSN \_\_\_\_\_

discovered by the Bidder, (4) the above-named organization is the legal entity entering into the resulting contract with the Department if they are awarded the contract and, (5) the undersigned is authorized to enter contractual obligations on behalf of the above-named organization.

The properly completed and signed Schedule of Items provided with the Bid constitutes the Bidder's offer and that this offer shall remain open for 30 calendar days after the date of opening of bids.

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 this Contract and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

**CONTRACTOR**

\_\_\_\_\_  
Date

\_\_\_\_\_  
\_\_\_\_\_  
(Name and Title Printed)

**G. Award.**

By signing below, an authorized representative of MaineDOT hereby accepts Contractor's offer and awards this Contract to Contractor in the amount of \$ \_\_\_\_\_ under the terms and conditions set forth above.

**MAINE DEPARTMENT OF TRANSPORTATION**

\_\_\_\_\_  
Date

\_\_\_\_\_  
By: Bruce A. Van Note, Commissioner



CTM: \_\_\_\_\_  
TEDOCS# \_\_\_\_\_

**MAINE DEPARTMENT OF TRANSPORTATION**  
**CONTRACT AGREEMENT TO PURCHASE SUPPLIES, MATERIALS**  
**AND/OR EQUIPMENT FOR A SPECIFIC PROJECT**

This Agreement (the "Contract") is entered into between the Maine Department of Transportation ("Department" or "MaineDOT") with its principal office located at Child Street, Augusta, Maine, and a mailing address of 16 State House Station, Augusta, Maine 04333-0016, and (Name of Contractor bidding the job) ("Contractor"), a corporation or other legal entity organized under the laws of the State of (State ) with its principal place of business located at (Physical address of Company bidding job), and a mailing address of (Mailing address of Company bidding job) and a telephone number as follows: (XXX-XXX-XXXX).

The Vendor Customer Number of the Contractor is (VC999999999).

MaineDOT, pursuant to 23 M.R.S.A. §52, requested bids for the sale and delivery of the Materials, Supplies, and Equipment (the "Materials") described in the Contract Documents. The terms and conditions of the purchase of the Materials are set forth below:

**A. Deliverables.**

The Contractor agrees to provide the Materials known as Project Specific Materials, more specifically described in Appendix A for use in MaineDOT WIN 099999.00 TOWN (the "Project").

**B. Time.**

This Contract becomes effective on the date last signed below. The Contractor agrees to deliver the Materials on or before February 29, 20XX. This Contract expires on December 31, 20XX.

**C. Price.**

The Unit Price(s) offered by Contractor and accepted by MaineDOT, and the quantities given in the Schedule of Items of the Bid Package, will be used as the basis for determining the original Contract amount set forth in section G below.



#### **D. Contract Documents.**

The Contract consists of this Agreement and the following attachments which are hereby incorporated into the Contract as part of its terms and conditions:

Appendix A--Description of Materials, Supplies, Equipment and Bid Price  
Appendix B--Special Provisions for the Purchase of Supplies, Materials or Equipment  
Special Provisions, Supplemental Specifications and Appendices  
Standard Specifications, March 2020 Edition, as updated through advertisement  
Standard Details, March 2020 Edition as updated through advertisement

By agreement, this Contract may be amended, modified, or supplemented by written agreement signed by both parties.

#### **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 certifies that it has not been debarred, suspended, declared ineligible or voluntarily excluded from contracts by the Federal Government or any state agency within the last 3 years.
3. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
4. 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.**

By signing below, the Bidder (1) represents that the Bidder has examined the contract, all documents referenced in said Contract, and the site and scope of work, (2) does hereby bid and offer to enter into this contract to construct and/or perform the Work in strict accordance with the terms and conditions of this Contract at the unit prices bid in the attached "Schedule of Items", (3) represents that the Bidder has given the Department notice of any errors or ambiguities related to the documents or the work that have been discovered by the Bidder, (4) the above-named organization is the legal entity entering into the resulting contract with the Department if they are awarded the contract and, (5) the undersigned is authorized to enter contractual obligations on behalf of the above-named organization.





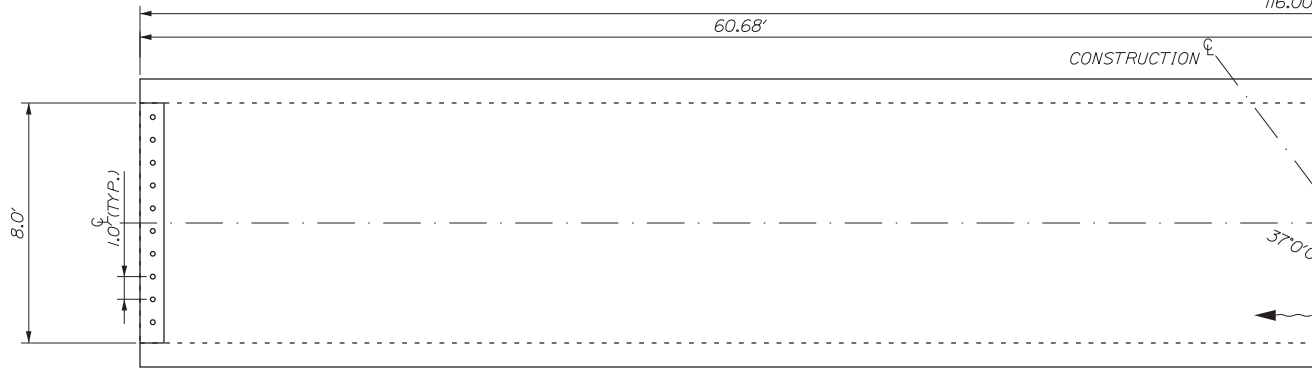
Date:12/28/2023

Username: alicia.litchfield

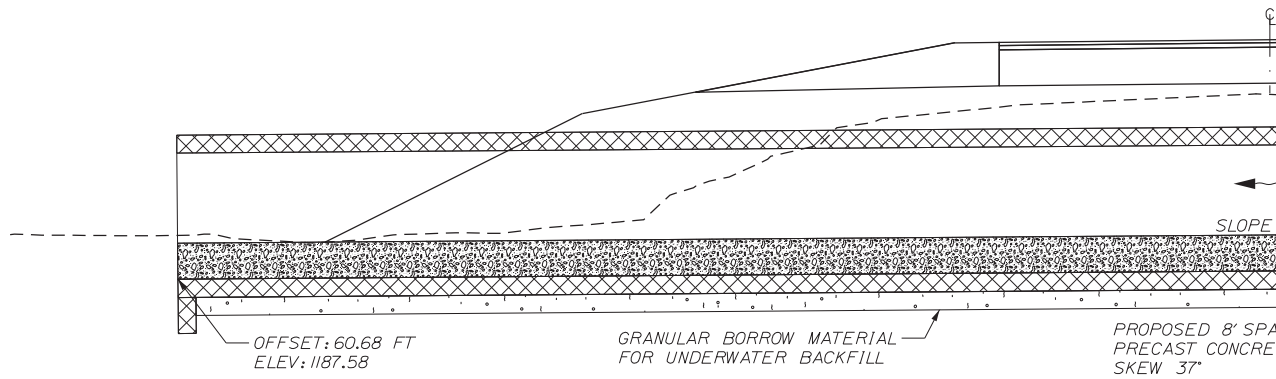
Division: HIGHWAY

Filename: ... \CulvertDetail\_materials.dgn

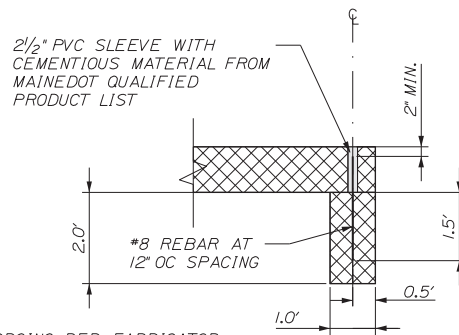
8' SPAN x 7' RISE x 116' LONG  
PRECAST CONCRETE BOX CULVERT



CULVERT H  
NOT TO SCALE



LONGITUDINAL PRECAST CONCRETE  
NOT TO SCALE



TOE WALL NOTES

1. TOE WALL REINFORCING PER FABRICATOR

PRECAST CONCRETE TOE WALL DETAIL

NOT TO SCALE

24" AGGREGATE SUBE

CONTRACTOR'S METHOD OF E  
IN ACCORDANCE WITH OSHA  
BACKFILL WITH EXCAVATED M

#### CULVERT NOTES

1. INSTALL STANDARD MEMBRANE WATERPROOFING OVER THE TOP AND TO AT LEAST 12 INCHES DOWN THE EXTERIOR SIDES OF PRECAST UNITS.
2. CONSTRUCTION, HANDLING AND ASSEMBLY OF THE PRECAST UNITS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS APPLICABLE.
3. THE PRECAST UNIT SHALL BE DESIGNED TO CARRY LOADINGS WITH A MINIMUM FILL COVER OF 18" OVER THE TOP OF THE UNITS.
4. THE PRECAST CULVERT BOX CULVERT SHALL BE BEDDED ON A 1-FOOT LAYER OF COMPACTED GRANULAR BORROW MATERIAL FOR UNDERWATER BACKFILL.
5. A "CLAMSHELL" BOX CULVERT SHALL BE USED.

## **APPENDIX A**

### **Description of Materials, Supplies, Equipment and Bid Price**

#### **Contractor**

#### **SCHEDULE OF ITEMS**

**The Department will reject bids if any one of the following occurs:**

- a) the Bid is not Delivered to the precise location and by the precise time set forth in the Notice to Contractors or any applicable Bid Amendment,
- b) the Bid is not signed,
- c) the unit price for any item is not provided or is unreadable, or

**Do not make handwritten changes to the bid documents.**

The Bidder will have no opportunity to cure the above Non-curable Bid Defects. For clarification, questions, comments/recommendations use the “Request for Information” form as directed in the Bid Book instructions. For a related provision see Standard Specification, Section 102.11 – Bid Responsiveness.

**Bidders are required to bid all Items.**

#### **SCHEDULE OF ITEMS**

<b>Item Description</b>	<b>Approx. Quantity and Units</b>	<b>Unit Price</b>	<b>Bid Amount</b>
<b>534.71 Precast Concrete Box Culvert – Fabrication and Delivery</b>	<b>1 LS</b>	<b>\$</b>	<b>\$</b>
<b>TOTAL</b>			<b>\$</b>

Description The Contractor shall furnish and deliver the materials listed in the Schedule of Items in this Appendix in accordance with the contract documents. The structure must meet the requirements of this Contract, the Plans, the State of Maine, Department of Transportation, Standard Specifications, March 2020 Edition including, but not limited to Section 712.061 – Structural Precast Units and Standard Details March 2020 Edition as updated through advertisement, Supplemental Specifications, and Special Provisions including, but not limited to Special Provision, Section 534, **Precast Structural Concrete** (Precast Structural Concrete Box Culvert, Fabrication and Delivery).

Delivery The materials shall be ready for delivery on or before July 15, 2024. The actual delivery date of the materials shall be determined by the project schedule and coordinated with the MaineDOT in conjunction with the Department's Contractor responsible for installing the precast units. The delivery date is expected to be between July 17, 2024 and August 30, 2024.

The manufacturer shall deliver the precast units to the project site on a weekday (Monday to Friday) in coordination with the field site Contractor who is installing the precast units. The precast units shall be delivered to the project site by the manufacturer:

Project: Coplin Plt., State Project 023263.10

Location: The Project is located on Route 16 approximately 0.14 of a mile south of the Eustis town line.

Date: Must be ready for delivery by July 15, 2024 (Contractor and manufacturer will decide exact date and time.)

The onsite contractor must give the manufacturer 7 calendar days' notice of when the structure shall be delivered.

The Contractor who is installing the precast units shall be responsible for unloading the precast units at or near the project site in a timely fashion. Any incidental materials needed to temporarily store the precast units at the project site shall be provided by the Contractor.

The Manufacturer will supply MaineDOT Project Manager, Guy Whittington, at (207) 592-4345, with the appropriate project submittals. Alternative contact is: Mark Shibbes, Project Manager of Region 3, cell phone (207) 592-6295. MaineDOT shall provide the manufacturer with the contact information for the Contractor responsible for installation of the precast concrete box culvert upon award of the installation Contract. The Manufacturer shall coordinate delivery of the materials with the Contractor responsible for installation of the precast concrete box culvert.

Contract Administrator

The contract administrator for this contract will be:

Name: Guy Whittington  
Title: Senior Project Manager  
Address: Maine Department of Transportation  
16 State House Station Road, Augusta, ME 04333-0016

Invoices and Payments The Contractor shall submit an itemized bill to the Department for materials following delivery for approval and payment. At a minimum, invoices shall include the following information:

Contractor name, address & Contract Number  
Invoice Date & Number  
Dates of Delivery

The Department will pay based upon the materials delivered at the prices bid and the invoices approved. Payments to the Contractor shall be full compensation for furnishing all labor, equipment, materials, services, and incidentals used to supply the materials under the Contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of any kind arising from the nature or prosecution of the Work. The Department may withhold payments claimed by the Contractor on account of incomplete or incorrect invoices or materials that are defective or not in conformance with the contract.

Material Quality Materials and manufactured products shall be new unless otherwise specified, free from defect, and in conformity with the contract. If there is no applicable standard set forth in this Contract for a particular item, then the item shall be in accordance with industry standards prevailing at the time of bid. The Department has the authority to inspect all Materials and every detail of the Work. The Department may reject the finished product if any of the components do not comply with the specifications. The Department may reject materials not conforming to the Specifications at any time.



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1) **WARRANTY.** Contractor warrants:

- a) That all articles and services to be supplied by it under this contract are fit and sufficient for the purpose intended;
- b) That all articles and services covered by this contract will conform to the specifications, drawing samples, symbols or other description specified by the Department;
- c) That such articles are merchantable, good quality and free from defects whether patent or latent in material and workmanship;
- d) That all workmanship, materials and articles to be provided are of the best grade and quality; and,
- e) That it has good and clear title to all articles to be supplied by it and the same are free and clear from all liens, encumbrances and security interest.

Neither the final certificate of payment nor any provision herein, nor partial nor entire use of the articles provided shall constitute an acceptance of work not done in accordance with this Contract or relieve the Contractor from liability in respect of any warranties or responsibility for faulty material or workmanship. The Contractor shall remedy any defects in the materials and articles delivered pursuant to this Contract and pay any damages resulting from such defects which shall appear within 1 year from the date of final acceptance of the materials and articles provided hereunder. The Department shall give written notice of observed defects with reasonable promptness.

- 2) **TAXES.** Contractor agrees that, unless otherwise indicated in this Contract, the prices herein do not include federal, state or local sales, or use the tax from which an exemption is available for purposes of this order. Contractor agrees to accept and use tax exemption certificates when supplied by the Department as applicable. In case it shall ever be determined that any tax included in the prices herein was not required to be paid by Contractor, Contractor agrees to notify the Department and to make prompt application for the refund thereof, to take all proper steps to procure the same and when received to pay the same to the Department.
- 3) **PACKING & SHIPMENT.** Deliveries shall be made as specified without charge for boxing, shipping or storage, unless otherwise specified. Articles shall be suitably packed to secure lowest transportation cost and to conform with the requirements of common carriers and any applicable specifications. Order numbers and symbols must



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be plainly marked on all invoices, packages, bills of lading and shipping orders. Bill of lading should accompany each invoice. Count or weight shall be final and conclusive on shipments not accompanied by packing lists. Shipping terms F.O.B. destination.

- 4) **DELIVERY.** Delivery should be strictly in accordance with delivery schedule. Articles fabricated beyond the Department's releases are at Contractor's risk. Contractor shall not make material commitments or production arrangements in excess of the amount or in advance of the time necessary to meet delivery schedule. Unless otherwise specified herein, or receipt of written approval, no deliveries shall be made in advance of the Department's delivery schedule. Neither party shall be liable for excess costs of deliveries or defaults due to causes beyond its control and without its fault or negligence, provided, however, that when the Contractor has reason to believe that the deliveries will not be made as scheduled, written notice setting forth the cause of the anticipated delay will be given immediately to the Department. If the Contractor's delay or default is caused by the delay or default of a subcontractor, such delay or default shall be excusable only if it arose out of causes beyond the control of both Contractor and subcontractor and without fault of negligence or either of them and the articles or services to be furnished were not obtainable from other sources in sufficient time to permit Contractor to meet the required delivery schedule.
- 5) **REMEDY.** If Contractor's deliveries fail to meet such schedule, the Department, without limiting its other remedies, may direct expedited shipping, and the difference between the expedited routing and the order routing costs shall be paid by the Contractor.
- 6) **INSPECTION.** All articles and work will be subject to final inspection and approval after delivery, notwithstanding prior payment, it being expressly agreed that payment will not constitute final acceptance. The Department at its option may either reject any article or work not in conformity with the requirements and terms of this order, or re-work the same at Contractor's expense. The Department may reject an entire shipment of similar articles if a sample inspection discloses that ten (10%) percent of the articles inspected are defective. This may be waived if the Contractor agrees to reimburse the Department for the cost of a complete inspection of the articles included in such shipment. Rejected material will be returned at Contractor's risk and expense at the full invoice price plus applicable transportation charges, if any. No replacement of defective articles of work shall be made unless specified by the Department.

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- 7) **BENEFITS AND DEDUCTIONS.** If the Contractor is an individual, the Contractor understands and agrees that he/she is an independent contractor for whom no Federal or State Income Tax will be deducted by the Department, and for whom no retirement benefits, survivor benefit insurance, group life insurance, vacation and sick leave, and similar benefits available to State employees will accrue. The Contractor further understands that annual information returns, as required by the Internal Revenue Code or State of Maine Income Tax Law, will be filed by the State Controller with the Internal Revenue Service and the State of Maine Bureau of Revenue Services, copies of which will be furnished to the Contractor for his/her Income Tax records.
  
- 8) **INDEPENDENT CAPACITY.** In the performance of this Contract, the parties hereto agree that the Contractor, and any agents and employees of the Contractor shall act in the capacity of an independent contractor and not as officers or employees or agents of the State.
  
- 9) **DEPARTMENT'S REPRESENTATIVE.** The Contract Administrator shall be the Department's representative during the period of this Contract. He/she has authority to curtail services if necessary to ensure proper execution. He/she shall certify to the Department when payments under the Contract are due and the amounts to be paid. He/she shall make decisions on all claims of the Contractor.
  
- 10) **CHANGES IN THE WORK.** The Department may make changes to its order, the Contract Amount will be amended accordingly, these changes will not invalidate this Contract. In no event shall Contractor fail or refuse to continue the performance of its obligations under this Contract because of the inability of the parties to agree on an adjustment or adjustments. Any monetary adjustment or any substantive change in the articles or materials shall be in the form of an amendment, signed by both parties and approved by the MaineDOT. Said amendment must be effective prior to delivery of the articles or materials.
  
- 11) **SUBLETTING, ASSIGNMENT OR TRANSFER.** The Contractor shall not sublet, sell, transfer, assign or otherwise dispose of this Contract or any portion thereof, or of its right, title or interest therein, without written request to and written consent of the Contract Administrator. No subcontracts or transfer of Contract shall in any case release the Contractor of its liability under this Contract.
  
- 12) **PERSONNEL.** The Contractor warrants that it has not employed or contracted with any company or person, other than for assistance with the normal study and preparation of a proposal, to solicit or secure this Contract and that it has not paid, or agreed to pay, any company or person, other than a bona fide employee working solely for the Contractor, any fee, commission, percentage, brokerage fee, gifts, or

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any other consideration, contingent upon, or resulting from the award for making this Contract. For breach or violation of this warranty, the Department shall have the right to annul this Contract without liability or, in its discretion to otherwise recover the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.

**13) EQUAL EMPLOYMENT OPPORTUNITY.** During the performance of this Contract, the Contractor agrees as follows:

- a) The Contractor shall not discriminate against any employee or applicant for employment relating to this Contract because of race, color, religious creed, sex, national origin, ancestry, age, physical or mental disability, or sexual orientation, unless related to a bona fide occupational qualification. The Contractor shall take affirmative action to ensure that applicants are employed and employees are treated during employment, without regard to their race, color, religion, sex, age, national origin, physical or mental disability, or sexual orientation.

Such action shall include but not be limited to the following: employment, upgrading, demotions, or transfers; recruitment or recruitment advertising; layoffs or terminations; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices setting forth the provisions of this nondiscrimination clause.

- b) The Contractor shall, in all solicitations or advertising for employees placed by or on behalf of the Contractor relating to this Contract, state that all qualified applicants shall receive consideration for employment without regard to race, color, religious creed, sex, national origin, ancestry, age, physical or mental disability, or sexual orientation.
- c) The Contractor shall send to each labor union or representative of the workers with which it has a collective bargaining agreement, or other agreement or understanding, whereby it is furnished with labor for the performance of this Contract a notice to be provided by the contracting agency, advising the said labor union or workers' representative of the Contractor's commitment under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d) The Contractor shall inform the Department's Equal Employment Opportunity Coordinator of any discrimination complaints brought to an external regulatory body (Maine Human Rights Commission, EEOC, Office of Civil Rights) against

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their agency by any individual as well as any lawsuit regarding alleged discriminatory practice.

- e) The Contractor shall comply with all aspects of the Americans with Disabilities Act (ADA) in employment and in the provision of service to include accessibility and reasonable accommodations for employees and clients.
- f) Contractors and subcontractors with contracts in excess of \$50,000 shall also pursue in good faith affirmative action programs.
- g) The Contractor shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Contract so that such provisions shall be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

14) **STATE EMPLOYEES NOT TO BENEFIT.** No individual employed by the State at the time this Contract is executed or any time thereafter shall be admitted to any share or part of this Contract or to any benefit that might arise therefrom directly or indirectly that would constitute a violation of 5 MRSA § 18 or 17 MRSA § 3104. No other individual employed by the State at the time this Contract is executed or any time thereafter shall be admitted to any share or part of this Contract or to any benefit that might arise therefrom directly or indirectly due to his employment by or financial interest in the Contractor or any affiliate of the Contractor. The Contractor shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Contract so that such provisions shall be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

15) **MATERIAL SAFETY DATA SHEETS.** All manufacturers, importers, suppliers, or distributors of hazardous chemicals doing business in this State must provide a copy of the current material safety data sheet for any hazardous chemical to their direct purchasers of that chemical.

16) **ACCESS TO RECORDS.** The Contractor shall maintain all books, documents, payrolls, papers, accounting records and other evidence pertaining to this Contract and make such materials available at its offices at all reasonable times during the period of this Contract and for such subsequent period as specified under Maine Uniform Accounting and Auditing Practices for Community Agencies (MAAP) rules. The Contractor shall allow inspection of pertinent documents by the Department or

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any authorized representative of the State of Maine or Federal Government, and shall furnish copies thereof, if requested.

- 17) **TERMINATION.** The performance of work under the Contract may be terminated by the Department in whole, or in part, whenever the Contract Administrator determines that such termination is in the best interest of the Department including but not limited to the following circumstances:
- (a) The Contractor fails to make delivery of articles, or to perform services within the time or time specified herein, or
  - (b) The Contractor fails to make delivery of articles, or specified materials, or
  - (c) If Contractor defaults under any other term or condition of this contract, or
  - (d) If Contractor fails to make progress as to endanger the performance of this contract in accordance with its terms; or,
  - (e) If Contractor is adjudged bankrupt, or if it makes a general assignment for the benefit of its creditors or if a receiver is appointed on account of its insolvency.

In the event that the Division terminates this agreement in whole or in part pursuant to this paragraph, the Division may procure (articles and services similar to those so terminated) upon such terms and in such manner as deemed appropriate by the Department, and Contractor shall be liable to the Department for any excess cost incurred.

- 18) **GOVERNMENTAL REQUIREMENTS.** The Contractor warrants and represents that it will comply with all governmental ordinances, laws and regulations.
- 19) **GOVERNING LAW.** This Contract is pursuant to 23 M.R.S.A. §52, and shall be governed in all respects by the laws, statutes, and regulations of the United States of America and of the State of Maine. Any legal proceeding against the State regarding this Contract shall be brought in State of Maine administrative or judicial forums. The Contractor consents to personal jurisdiction in the State of Maine.
- 20) **STATE HELD HARMLESS.** The Contractor agrees to indemnify, defend and save harmless the State, its officers, agents and employees from any and all claims, costs, expenses, injuries, liabilities, losses and damages of every kind and description (hereinafter in this paragraph referred to as “claims”) resulting from or arising out of the performance of this Contract by the Contractor, its employees, agents, or

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subcontractors. This indemnification includes all legal costs and other expenses of defense against any asserted claims to which this indemnification applies. This indemnification does not extend to a claim that results solely and directly from (i) the Department's negligence or unlawful act, or (ii) action by the Contractor taken in reasonable reliance upon an instruction or direction given by an authorized person acting on behalf of the Department in accordance with this Contract.

- 21) **NOTICE OF CLAIMS.** The Contractor shall give the Department Contract Administrator immediate notice in writing of any legal action or suit filed related in any way to the Contract or which may affect the performance of duties under the Contract, and prompt notice of any claim made against the Contractor by any subcontractor which may result in litigation related in any way to the Contract or which may affect the performance of duties under the Contract.
- 22) **NON-APPROPRIATION.** Notwithstanding any other provision of this Contract, if the State does not receive sufficient funds to fund this Contract and other obligations of the State, if funds are de-appropriated, or if the State does not receive legal authority to expend funds from the Maine State Legislature or Maine courts, then the State is not obligated to make payment under this Contract.
- 23) **SEVERABILITY.** The invalidity or unenforceability of any particular provision or part thereof of this Contract shall not affect the remainder of said provision or any other provisions, and this Contract shall be construed in all respects as if such invalid or unenforceable provision or part thereof had been omitted.
- 24) **FORCE MAJEURE.** The Department may, at its discretion, excuse the performance of an obligation by a party under this Contract in the event that performance of that obligation by that party is prevented by an act of God, act of war, riot, fire, explosion, flood or other catastrophe, sabotage, severe shortage of fuel, power or raw materials, change in law, court order, national defense requirement, or strike or labor dispute, provided that any such event and the delay caused thereby is beyond the control of, and could not reasonably be avoided by, that party. The Department may, at its discretion, extend the time period for performance of the obligation excused under this section by the period of the excused delay together with a reasonable period to reinstate compliance with the terms of this Contract.
- 25) **DEBARMENT, SUSPENSION, INELIGIBILITY, OR EXCLUSION.** By signing the Contract, the Contractor certifies that it has not been debarred, suspended, declared ineligible or voluntarily excluded from contracts by the Federal Government or any state agency within the last 3 years.

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- 26) **SET-OFF RIGHTS.** The State shall have all of its common law, equitable and statutory rights of set-off. These rights shall include, but not be limited to, the State's option to withhold for the purposes of set-off any monies due to the Contractor under this Contract up to any amounts due and owing to the State with regard to this Contract, any other Contract, any other Contract with any State department or agency, including any Contract for a term commencing prior to the term of this Contract, plus any amounts due and owing to the State for any other reason including, without limitation, tax delinquencies, fee delinquencies or monetary penalties relative thereto. The State shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by the State agency, its representatives, or the State Controller.



Special Provision  
Section 107  
Time

(Supplemental Liquidated Damages for Fabrication Time)

107.8.1 Fabrication Time The Department has budgeted for the following amounts of continuous full time fabrication/shop QA inspection for the following Work components:

<u>Element</u>	<u>Time</u>	<u>Supplemental LD</u>
Precast Box Culvert	42 days	\$1,000 per Calendar Day

The Contractor is responsible for requiring their fabricators and suppliers to produce these products for the Work continuously until finished, including any needed actions to correct unacceptable workmanship or materials. If the Department determines that QA inspection beyond these times is required, then the corresponding Supplemental Liquidated Damages will be deducted as they occur from the amounts otherwise due to the Contractor. These allowed Fabrication Time begins on the first day of fabrication and runs consecutively until expiration.

If a fabricator or supplier works more than one shift per day and the Department determines that inspection is required for each shift, each shift will count as a calendar day and the LD rate will be the noted amount per shift per Calendar Day in lieu of per Calendar Day.

QA inspector presence is required but not limited to the following activities:

Materials verification, verification of reinforcing, batching and casting of concrete, breaking of test cylinders, repairs, finishing fascia surfaces and any other times required in the 534 Standard Specifications.

The Fabricator shall notify the Fabrication Engineer a minimum of two weeks prior to the start of work if Fabrication is done in the State of Maine. Three weeks' minimum notification is required for all other locations.



SPECIAL PROVISION  
SECTION 534  
PRECAST STRUCTURAL CONCRETE  
(Fabrication and Delivery)

534.01 Description The Contractor shall design, manufacture, and deliver precast structural concrete box culvert with headwalls and toe walls, in accordance with the Contract Documents.

534.02 Materials Structural precast elements for the arch, box culvert, or three sided frame and associated precast elements shall meet the requirements of the following Standard Specification Subsection, except as noted otherwise in this specification:

Structural Precast Concrete Units 712.061

New concrete mix designs and mix designs not previously approved by the Fabrication Engineer shall be qualified by trial batches prepared in accordance with AASHTO T 126 (ASTM C192). The test results shall demonstrate that the concrete meets the requirements of the Contract Documents.

534.03 Drawings Prepare shop detail, erection and other necessary Working Drawings in accordance with Standard Specification Section 105.7, Working Drawings. The Department will review the drawings in accordance with the applicable requirements of Section 105.7, Working Drawings. Changes and revisions to the reviewed Working Drawings shall require further review by the Fabrication Engineer. Working Drawings shall include the following minimum details:

1. Fully dimensioned views showing the geometry of the units, including all projections, recesses, notches, openings, block outs, keyways and chamfers.
2. Details and bending schedules of reinforcing steel including the size, spacing, and location. Reinforcing provided under lifting devices shall be shown in detail.
3. Details and locations of all items to be embedded.
4. Total weight of each unit.

Concrete mix designs shall be part of the Working Drawing submittal. Include aggregate specific gravity, absorption, percent fracture, fineness modulus and gradation as part of the mix design. Provide the mix design calculations demonstrating how the batch weights, water-cement ratio and admixture dosage rate were determined.

534.04 Design Requirements The Contractor shall design the precast structural concrete structure in accordance with the AASHTO LRFD Bridge Design Specifications, latest edition. The HL-93 live load specified in the AASHTO LRFD Bridge Design Specifications shall be used for all limit states, except for Strength I. The live load used for the Strength I limit state shall be the Maine Modified live load, which consists of the standard HL-93 Live Load with a 25 percent increase in the Design Truck only. (Wheel loads based on the Design Truck shall be increased 25

percent). Additionally, if the governing load rating factor based on the HL-93 live load is equal to or less than 1.10 and the span is 14 feet, or greater, then a load rating based on the Maine legal truck (Configuration #6) shall also be checked to insure the rating factor is equal to, or greater than, 1.0.

The live load deflection check, per AASHTO LRFD Bridge Design Specifications, for the top slab of box culverts and frames with clear spans of 15 feet, or greater, and cover depths of 4 feet, or less, is mandatory. The live load deflection check shall be documented in the design computations submittal.

Design calculations that consist of computer program generated output shall be supplemented with at least one hand calculation and graphics demonstrating the design methodology used. The hand calculation shall document, at a minimum, the Strength I load case flexural design check of the top slab positive moment reinforcing steel. Design calculations shall provide thorough documentation of the sources of equations used and material properties.

The design shall be load rated in accordance with the AASHTO Manual for Bridge Evaluation, latest edition, by the LRFR method and in accordance with the MaineDOT Load Rating Guide.

The Contractor shall submit design calculations and load rating, if applicable, for the precast structure to the Department for review. A Professional Engineer, licensed in accordance with State of Maine laws, shall sign and seal all design calculations and drawings.

The Contractor shall submit the following items for review by the Department, at least fourteen (14) Working Days prior to production:

- A. The name and location of the manufacturer
- B. Method of manufacture and material certificates
- C. Description of method of handling, storing, transporting, and erecting the units
- D. Design computations (bound and indexed)
- E. Load rating computations and completed load rating form (bound and indexed)

534.05 Facilities for Inspection Provide a private office at the fabrication plant for the Department's inspection personnel, or Quality Assurance Inspectors (QAI's), in accordance with Section 535.05, Facilities for Inspection.

Failure to comply with the above requirements will be considered denial of access to the Work for purpose of inspection. The Department will reject all Work done when access for inspection is denied.

534.06 Notice of Beginning Work Refer to Section 712.061.

534.07 Quality Control Quality Control (QC) is the responsibility of the Contractor.

Provide a copy of the Quality System Manual (QSM) to the Fabrication Engineer, if requested.

Inspect all aspects of the Work in accordance with the Contractor's QSM. Reject materials and workmanship that do not meet Contract requirements.

Record measurements and test results on the appropriate forms from APPENDIX E of Precast/Prestressed Concrete Institute Manual for Quality Control for Plants and Production of Structural Precast Concrete Products (MNL 116), or an equivalent form prepared by the user. Provide copies of measurements and test results to the QAI as follows:

Type of Report	When Provided to QAI
Aggregate gradations fine aggregate and coarse aggregate	Prior to beginning work and at least once a week thereafter
Material certifications / calibration certifications	Prior to beginning work (anticipate adequate time for review by QAI)
Pre-placement inspection reports	Prior to the concrete placement
Concrete batch slips	The morning of the next work day
Results of concrete testing	The morning of the next work day
Concrete temperature records	Provide with compressive strength testing
Nonconformance reports/repair procedures	Within 24 hours of discovery
Results of compressive strength testing (for design strength)	Prior to stopping curing / Prior to final acceptance
Post-placement inspection report	Prior to final acceptance

- \* The Contractor and QAI may, by mutual agreement, modify any part of the schedule; however, failure to provide the documentation when required by the Fabrication Engineer will result in the product being deemed unacceptable. The Contractor may perform testing in addition to the minimum required. The results of all testing shall be made available to the Department

534.08 Quality Assurance Quality Assurance (QA) is the prerogative of the Department. Refer to Section 712.061.

534.09 Nonconforming Work Refer to Section 712.061.

534.10 Forms Construct forms in accordance with the Working Drawings. The forms shall be well constructed, carefully aligned and sufficiently tight to prevent leakage of mortar. Reject forms that do not maintain the dimensions shown on the Working Drawings.

Seal wooden forms to prevent absorption of water. Apply and cure the sealer in accordance with the manufacturer's product data sheet.

Remove all paint, adherent material, foreign matter and debris prior to placing concrete.

Apply a non-staining bond-breaking compound to the forms in accordance with the manufacturer's product data sheet. Solvent clean reinforcing steel and welded steel wire fabric contaminated with the bond-breaking compound.

534.11 Reinforcing Steel and Welded Steel Wire Fabric Refer to Sections 712.061 and 503 for fabrication, packaging, handling, storing, placing, splicing and repair of reinforcing steel, welded steel wire fabric and mechanical/welded reinforcing steel splices.

The concrete cover over the outside circumferential reinforcement shall be 2 inches, minimum, and the concrete cover over the inside reinforcement shall be 1-½ inches, minimum. The clear distance of the end of circumferential wires shall not be less than 1 inch or more than 2 inches from the end of the units. Use sufficient supports and spacers to maintain the minimum concrete cover. The supports and spacers shall be made of a dielectric material or other material approved by the Fabrication Engineer.

Welded steel wire fabric shall meet the spacing requirements and contain sufficient longitudinal wires extending through the unit to maintain the shape and position of the reinforcement. Longitudinal distribution reinforcement may be welded steel wire fabric or deformed steel bars which meet the spacing requirements. The ends of the longitudinal distribution reinforcement shall not be more than 3 inches from the ends of the units.

Do not use more than three layers of reinforcing to form a single mat. If reinforcing steel is cut to install lifting devices, install additional reinforcing adjacent to the cut steel, as shown on the Working Drawings.

Tension splices in the reinforcement will not be permitted. For splices other than tension splices, the overlap shall be a minimum of 12 inches for welded steel wire fabric and as specified in Standard Specification Section 503 for deformed steel bars. The center-to-center wire spacing in wire fabric sheets shall not be less than 2 inches, or more than 4 inches, for the circumferential wires, and shall not be more than eight inches for the longitudinal wires. The center-to-center spacing of the longitudinal distribution steel for either line of reinforcing in the top slab shall not be more than 15 inches.

534.12 Inserts Refer to Section 712.061.

534.13 Concrete Placement Do not batch or place concrete until all the form(s) for any continuous placement have been inspected and accepted by the Quality Control Inspector (QCI), and the QAI concurs.

Test concrete in accordance with the Standards included in Section 712.061.

Test the first two loads of concrete for temperature, air entrainment and slump flow for Self-Consolidating Concrete (SCC). If the first load is unacceptable, test the second load as the first. Continue this process until two consecutive loads are acceptable. After two consecutive loads are acceptable, the frequency of testing shall be at the discretion of the QAI.

If there is a change in the dosage rate of any admixture or a change of more than 5° F in mix temperature, then test the concrete for temperature, air entrainment and slump flow for SCC.

Test every load of 1 cubic yard, or less, from a stationary mixer or 2 cubic yards, or less, from a transit mixer for temperature, air entrainment and slump flow for SCC, prior to placing the concrete in the forms.

Perform all testing in the presence of the QAI. The QAI will designate the loads to be tested. Make cylinders used to determine stripping strength during the last 1/3 of the placement.

Place the concrete as nearly as possible to its final location. Control the depth of each lift in order to minimize entrapped air voids. The maximum depth of an unconsolidated lift shall be 18 inches. Vibrate the concrete with internal or internal and external vibrators. Do not use external vibrators, only. Insert internal vibrators vertically and penetrate the lower layer of concrete by at least 4 inches. Insert the vibrators in the concrete to assure that the radii of action of the vibrators overlap. Hold the vibrators in position from 5 to 15 seconds; vibration time shall be reduced by 50 percent when placing SCC. Do not use vibrators to move concrete horizontally. Each lift of concrete shall have sufficient plasticity to be consolidated with subsequent lifts.

Do not re-temper the concrete with water after discharging has begun. The Contractor may add High Range, Water Reducing, admixture to the concrete after batching if that practice conforms to the manufacturer's product data sheet. Discard concrete that becomes unworkable.

Do not use water or water-based products to aid in finishing fresh concrete.

After the concrete has been placed and finished and before the forms are covered, remove all concrete from projecting reinforcing steel.

534.14 Acceptance and Quality Control Testing of Concrete Refer to Section 712.061.

534.15 Manufacture of Precast Units The units shall be free of fractures. The ends of the units shall be normal to the walls and centerline of the unit, within the limits of variation provided, except where beveled ends are specified. The surfaces of the units shall be a smooth steel form or troweled surface finish, unless a form liner is specified. The ends and interior of the assembled structure shall make a continuous line of units with a smooth interior surface.

Defects which may cause rejection of precast units include, but are not limited to, the

following:

- A. Any discontinuity (crack, rock pocket, etc.) of the concrete which could allow moisture to reach the reinforcing steel.
- B. Rock pockets or honeycomb over 6 square inches in area or over 1 inch deep.
- C. Edge or corner breakage exceeding 12 inches in length or 1 inch in depth.
- D. Any other defect that clearly and substantially impacts the quality, durability, or maintainability of the structure, as determined by the Fabrication Engineer.

The manufacturer of the units shall sequentially number and shop fit each adjacent unit to ensure that they fit together in the field. This fit up shall be witnessed by the QAI. Any non-fitting units shall be corrected or replaced at no cost to the Department.

The manufacturer of the units shall keep accurate records of aggregate gradations, concrete batching, testing, curing, and inspection activities to verify that forms, reinforcing and unit dimensions conform to these requirements. Copies of reports shall be furnished to the Resident when requested.

534.16 Tolerances Dimensional tolerances shall be in conformance with the following:

- A. The internal dimensions shall not vary by more than 1 percent from the design dimensions or 1 ½", whichever is less, with the exception of the cross diagonal dimension which shall not vary by more than one-half inch from the design dimension.
- B. The haunch dimensions shall not vary by more than three-quarters inch from the design dimension.
- C. The dimension of the legs shall not vary by more than one-quarter inch from the dimension shown on the reviewed Working Drawings.
- D. The slab and wall thickness shall not be less than the design thickness by more than ¼". A thickness greater than the design thickness shall not be cause for rejection.
- E. Variations in laying lengths of two opposite surfaces shall not be more than five-eighths inch in any unit, except where beveled ends for laying of curves are specified.
- F. The under-run in length of any unit shall not be more than one-half inch.

534.17 Finishing Concrete Products shall be finished to meet the ordinary finish requirements of Standard Specification Section 502. Units, or portions of units, that will be exposed to view in their final location shall receive a rubbed finish, per Section 502. The Contractor may use alternative methods of achieving an acceptable finish on exposed units if approved by the Fabrication Engineer.

Marking: The date of manufacture, the production lot number, and the type of unit shall be clearly and indelibly scribed on a rear, unexposed portion of each unit.



534.18 Repairing Defects Defects requiring repair will be considered either non-structural or structural.

Non-Structural Defects: Exposed surfaces shall be of uniform appearance; only minor repairs to remove and blend fins, patch minor spalls and to repair small, entrapped air pockets, shall be permitted. Repair honeycombing, ragged or irregular edges and other non-structural or cosmetic defects using a patching material from the MaineDOT Qualified Products List (QPL). The repair, including preparation of the repair area, mixing and application and curing of the patching material, shall be in accordance with the manufacturer's product data sheet. Corners not exposed in the final product may be ground smooth with no further repair necessary, if the depth of the defect does not exceed one-half inch. Remove form ties and other hardware to a depth of not less than one inch from the face of the concrete and patch the holes using a patching material from the MaineDOT QPL.

Structural Defects: Repair structural defects only with the approval of the Fabrication Engineer. Submit a nonconformance report (NCR) to the Fabrication Engineer with a proposed repair procedure. Do not perform structural repairs without an NCR that has been reviewed by the Fabrication Engineer. Structural defects include, but are not be limited to, exposed reinforcing steel, cracks in bearing areas, through cracks and cracks 0.013 inch in width that extend more than 12 inches in length in any direction. Give the QAI adequate notice prior to beginning any structural repairs.

534.19 Handling, Storage and Transportation Handle, store and transport units in a manner as to eliminate the danger of chipping, cracks, fracture, and excessive bending stresses. Any units found damaged upon delivery, or damaged after delivery, shall be subject to rejection.

Do not place precast units in an upright position until a compressive strength of at least 4,000 psi is attained. Precast units may be handled and moved, but not transported, until the 28 day design strength has been attained.

Support stored precast units above the ground on dunnage in a manner to prevent twisting or distortion. Protect the units from discoloration and damage.

Set precast units on one-half inch thick neoprene pads during shipment to prevent damage to the unit legs. The Contractor shall repair any damage to precast units resulting from shipping or handling; this shall be accomplished by saw cutting a minimum of one-half inch deep around the perimeter of the damaged area, removing any loose concrete out to the saw cut perimeter and installing a polymer-modified cementitious patching material, from the Department's QPL, per the manufacturer's product data sheet.

534.21 Method of Measurement Precast Structural Concrete Arches, including three-sided frames, and Precast Concrete Box Culverts will be measured as one lump sum, complete, delivered and accepted.

534.22 Basis of Payment The accepted Precast Structural Concrete Arches, including three-sided frames, or Precast Concrete Box Culverts will be paid for at the respective Contract lump sum price. The lump sum price shall be full compensation for all labor, equipment, materials, professional services, and incidentals necessary for designing, manufacturing and delivering the precast concrete elements and accessories. Falsework, reinforcing steel, welded steel wire fabric, joint wrap, geotextile, repair material, or grout will not be measured and paid for separately, but will be incidental to the lump sum pay item. Pay adjustments for quality level will not be made for precast concrete.

Payment will be made under:

Pay Item

Pay Unit

534.71 Precast Concrete Box Culvert

Lump Sum



SPECIAL PROVISIONS  
ADDITIONS AND REVISIONS TO STANDARD SPECIFICATIONS

SPECIAL PROVISION SECTION 101  
CONTRACT INTERPRETATION

101.2 Definitions Add the following:

“MaineDOT The Department of Transportation of the State of Maine, as established by 23 MRSA §4205 et seq. for the administration of Highway, Bridge, and other public Works; acting through the Commissioner and his/her duly authorized representatives.”

101.2 Definitions Add the following:

“Contract Agreement form The Contract Agreement, Offer and Award, the Maine Department of Transportation Contract Agreement Transportation Related Maintenance Work, the Maine Department of Transportation Contract Agreement to Purchase Supplies, Materials and/or Equipment for a Specific Project, Contract Agreement to Purchase Materials and/or Equipment for a Project and Related Work, the Maine Department of Transportation Private Equipment Rental Agreement – with an Operator, the Maine Department of Transportation Private Equipment Rental Agreement – without an Operator, or other contract agreement contained in the bid documents.”

101.2 Definitions Contract Completion Date Delete the entire section and replace with the following:

“The required completion date of all Work pursuant to the Contract, except warranty work. The Contract Completion Date is usually on the Contract form.”

101.2 Definitions Contract Execution Delete the entire section and replace with the following:

“Execution of the Contract by the Commissioner or their authorized agent by signing the Contract form which action, upon written notification to the Contractor, forms a Contract as provided in Section 103.8 - Execution of Contract by Department.”

101.2 Definitions Contractor Delete the entire section and replace with the following:

“After the Department has executed the Contract by cosigning the Contract form provided in the Bid Documents, previously signed by the successful bidder, the Successful Bidder becomes the Contractor. The Contractor will be the single point of responsibility for all Contract obligations to the Department. The Contractor shall be an independent Contractor with respect to the Department and shall not be an employee,

agent, or representative of the Department. Alternatively, “Contractor,” with a lower case “c,” may mean a firm engaged in construction Work.”

101.2 Definitions Manufacturer Add the following:

“The Contractor”.

## SPECIAL PROVISION SECTION 102 BIDDING

102.6 Bid Guaranty Delete the entire section 102.6.

102.7.1 Location and Time Delete the entire section and replace with the following:

“The Bidder must Deliver its Bid and Bid Guaranty in a sealed envelope to the exact location and before the precise time (as determined by the Department) specified in the Notice to Contractors or any applicable Bid Amendment. The sealed envelope must be labeled with the Bidder's name, the Project location, WIN and Title, and the words “Bid Enclosed”. As a minimum, the Bidder will submit a Bid Package consisting of the Notice to Contractors, the completed Acknowledgement of Bid Amendments form, the completed Schedule of Items in Appendix A, 2 copies of the completed Contract form, and any other Certifications or Bid Requirements listed in the Bid Book. For a related provision, see Section 102.11 - "Bid Responsiveness".

102.11.1 Non-curable Bid Defects Revise the item on the list of non-curable Bid Defects for which the Department will reject Bids as non-responsive that reads “The Bid is not signed by a duly authorized representative of the Bidder.” by replacing it with the following:

“The Bid is not signed by a duly authorized representative of the Bidder.

- Properly submitted electronic bids meet this requirement.

Paper bids must include either (1) one or more signed copies of the Contract Agreement form or (2) a signed copy of the Schedule of Items.”

102.11.1 Non-curable Bid Defects Revise this subsection by removing the words “The unit price and bid amount is not provided or a lump sum price is not provided or is illegible as determined by the Department.” and replacing it with the following:

“The unit price and bid amount is not provided if (1) the item quantity is not one or lump sum or, (2) the lump sum contract price is not provided or, (3) the unit price, bid amount or lump sum price is illegible as determined by the Department.”

102.11.2 Curable Bid Defects Revise the section by replacing it with the following:

“Unless the Department waives a curable Bid defect, the Bidder must cure, within the time stated in the written notice by the Department, but not less than 24 hours, all other Bid Defects not listed in Section 102.11.1 - Non-curable Bid Defects that are identified by the Department. Failure to cure such Defects within said time may result in forfeiture of the Bidder’s Bid Guaranty. Upon such failure, the Department may take any action in the best interests of the Department, including those set forth in Section 103.6 - Failure to Fulfill Award Conditions.

Such curable Bid Defects include, but are not limited to, the following.

The Bidder signs only one of the Contract Agreement Offer & Award forms.

Missing total sum of the items provided in the Schedule of Items.

The prices or signatures on the Bid or Bid Guaranty are not in ink or other non-erasable substance.

Failure to acknowledge Receipt and consideration of all Bid Amendments.

The Bid includes only one signed Contract Agreement form.

The Bid does not include a signed Contract Agreement form but does include a signed Schedule of Items.

If a submitted bid contains any additional conditions or alternate bidding language, the Bidder may cure the defect by removing all conditions and alternate language or the Department will reject the bid as non-responsive.

All other Defects that do not create a significant question as to the Bidder’s total Bid amount or the Bidder’s ability to complete the Work within the Contract Time or by the Contract Completion Date as determined by the Department.”

101.3.6 Priority of Conflicting Contract Documents Delete the entire section and replace with the following:

“If the Contractor discovers any ambiguity, error, omission, conflict, or discrepancy (“ambiguity, etc.”) related to the Contract Documents that may significantly affect the cost, quality, Conformity, or timeliness of the Work, The Contractor must comply with Section 104.3.3 - Duty to Notify Department If Ambiguities Discovered. In the case of ambiguity, etc., the following components of the Contract Documents shall control in the following descending order of priority:

Contract  
Bid Amendments (most recent to least recent)  
Project Specific Permit Requirements  
Appendix A--Description of Materials, Supplies, Equipment and Bid Price  
Appendix B--Special Provisions for the Purchase of Supplies, Materials or  
Equipment  
Any remaining appendices  
Any remaining Special Provisions  
Notes on Plans  
Plans  
Supplemental Specifications  
Supplemental Standard Details  
Standard Specifications  
Standard Details”

SPECIAL PROVISION SECTION 103  
AWARD AND CONTRACTING

103.1.1 Unit Prices Govern Add the following at the end of the paragraph:  
“If the item quantity is one and either a unit price or bid amount is not provided, the unit price or bid amount omitted shall be determined mathematically by the Department.”

103.5 Award Conditions Replace the first paragraph with the following:

“The Apparent Successful Bidder must provide and/or perform all of the items listed in this Section 103.5 within 14 Days of Receipt of the Notice of Intent to Award. Unless indicated otherwise, all items must be Delivered to the Department’s Bureau of Maintenance & Operations.”

103.5.1 Performance and Payment Bonds Delete the entire section 103.5.1.

103.5.4 Execution of Contract By Bidder Delete the entire section and replace with the following:

“The properly completed and signed Contract form provided with the Bid constitutes the Bidder’s offer. Once the Department has received any pre-award items required, the Department will sign and execute the Contract. The point of Contract execution is when the Contractor receives written notice that the contract has been signed by the Department and executed.”

## 2020 STANDARD DETAIL UPDATES

Standard Details and Standard Detail updates are available at:  
<http://maine.gov/mdot/contractors/publications/standarddetail/>

<b><u>Detail #</u></b>	<b><u>Description</u></b>	<b><u>Revision Date</u></b>
502(19)	Bridge Drains	3/17/2023
502(15)	Bridge Drains	3/17/2023
502(20)	Bridge Drains	3/17/2023
502(23)	Bridge Drains	3/17/2023
502(24)	Bridge Drains	3/17/2023
502(25)	Bridge Drains	3/17/2023
502(26)	Bridge Drains	3/17/2023
504(07)	Diaphragm & Crossframe Notes	3/17/2023
507(20)	Steel Approach Railing 3-Bar	2/11/2021
507(21)	Steel Approach Railing 3-Bar	2/11/2021
507(22)	Steel Approach Railing 3-Bar	2/11/2021
507(23)	Steel Approach Railing 3-Bar	2/11/2021
507(27)	Steel Approach Railing	2/11/2021
526(01)	Portable Concrete Barrier	1/14/2021
526(01A)	Portable Concrete Barrier	1/14/2021
526(01B)	Portable Concrete Barrier	1/14/2021
526(02)	Portable Concrete Barrier	1/14/2021
526(02A)	Portable Concrete Barrier	1/14/2021
526(03)	Portable Concrete Barrier	1/14/2021
526(04)	Portable Concrete Barrier	1/14/2021
526(04A)	Portable Concrete Barrier	1/14/2021
526(04B)	Portable Concrete Barrier	1/14/2021
526(05)	Permanent Concrete Barrier	3/17/2023
526(21)	Permanent Concrete Barrier	3/17/2023
526(22)	Concrete Transition Barrier	3/17/2023
526(38)	Concrete Transition Barrier	3/17/2023
526(39)	Texas Classic Rail	3/17/2023
526(55)	Texas Classic Rail	3/17/2023

603(10)	Concrete Pipe Ties	6/10/2021
605(01)	Underdrain	7/8/2022
605(01)	Underdrain Notes	7/8/2022
606(17)	Midway Splice Guardrail Transition	6/10/2022
606(23)	Standard Bridge Transition – Type “1”	2/11/2021
606(24)	Standard Bridge Transition – Type “1A”	2/11/2021
608(02)	Detectable Warnings	6/10/2021
609(09)	Precast Concrete Vertical Curb	2/11/2021
627(07)	Crosswalk	2/22/2022
627(08)	Crosswalk	2/22/2022
643(11)	ATCC Cabinet	12/14/2020
801(11)	Pedestrian Ramp Notes	11/20/2023
801(12)	Pedestrian Ramp Requirements	11/20/2023
801(13)	Ramp Length Table	11/20/2023
801(14)	Parallel Pedestrian Ramp	11/20/2023
801(15)	Perpendicular Pedestrian Ramp – Option 1	11/20/2023
801(16)	Parallel Pedestrian Ramp – Option 2A	11/20/2023
801(17)	Perpendicular Pedestrian Ramp – Option 2A	11/20/2023
801(18)	Parallel Pedestrian Ramp – Option 2B	11/20/2023
801(19)	Perpendicular Pedestrian Ramp – Option 2B	11/20/2023
801(20)	Parallel Pedestrian Ramp – Option 3	11/20/2023
801(21)	Perpendicular Pedestrian Ramp – Option 3	11/20/2023
801(22)	Side Street Pedestrian Ramp	11/20/2023
801(23)	Parallel Pedestrian Ramp – Esplanade	11/20/2023
801(24)	Perpendicular Pedestrian Ramp – Esplanade	11/20/2023
801(25)	Island Crossings	11/20/2023
801(26)	Blended Transition	11/20/2023
801(27)	Pedestrian Ramp Adjacent to Driveway or Entrance	11/20/2023
802(05)	Roadway Culvert End Slope Treatment	1/03/2017

**SUPPLEMENTAL SPECIFICATIONS**  
**(Corrections, Additions, & Revisions to Standard Specifications – March 2020)**

**SECTION 101**  
**CONTRACT INTERPRETATION**

101.2 Definitions

Construction Easement revise this definition by removing it in its entirety and replace with:  
**“A right acquired by the Department for a specific use of private property outside of the established Right-of-Way. Examples include but are not limited to Drainage Easements, Construction and Maintenance Easements, and Slope Easements. Construction Easement areas, including Temporary Construction Limits and Temporary Road Limits, outside of the Right-of-Way remain private property. No use other than to access and perform the specified work activity is permitted without written permission of the owner.”**

Construction Limit Line Remove this definition in its entirety.

Holidays Amend this paragraph by adding “**Juneteenth**” between ‘Memorial Day’ and ‘Independence Day’.

Plans Revise this paragraph by removing “**Standard Details, Supplemental Standard Details**” from the first sentence.

Project Limits Revise this definition by removing it in its entirety and replacing it with:  
**“Areas within the Right-of-Way, Construction Easements, or Temporary Construction Limits shown on the Plans or otherwise indicated in the Contract. If no Project Limits are indicated in the Contract, the Project Limits shall be determined by the Department. For a related Maine statute, see 23 MRSA § 653. “**

Right-Of-Way Revise this definition by removing it in its entirety and replacing it with:  
**“The area of land, property, or interest therein, acquired for or devoted to the Project or other purposes. Portions of the Right-of-Way may be used for storage of materials and equipment and the location of engineering facilities, subject to written approval by the Department.”**

Amend this Section by adding the following two definitions (that replace Construction Limit Line);

Temporary Construction Limits **The area within which the Contractor may access and perform the Physical Work and outside of which Work may not be performed without written authorization by the property owner.**

Temporary Road Limits **The area within which the Contractor may construct and maintain a temporary detour for maintenance of traffic.**

## SECTION 102 BIDDING

102.11 Bid Responsiveness Revise the paragraph that states  
“The Bid is not signed by a duly authorized representative of the Bidder.” So that it reads:

**“The Bid is not signed by a duly authorized representative of the Bidder.**

- **Properly submitted electronic bids meet this requirement.**
- **Paper bids must include at least one signed copy of the Contract Agreement Offer & Award form.”**

## SECTION 103 AWARD AND CONTRACTING

103.3.1 Qualification Requirement for Award Revise this subsection so that it reads:

**“103.3.1 Qualification Requirement for Award If the Notice to Contractors lists a Prequalification requirement, the Apparent Successful Bidder must successfully complete the Prequalification process as a condition of Award. The Apparent Successful Bidder who does not already hold an Annual Prequalification shall have 21 days to provide the Department with their Prequal documents or the Department may move on to the next low bidder.”**

## SECTION 104 GENERAL RIGHTS AND RESPONSIBILITIES

104.2.1 Furnishing of Right-of-Way Revise this subsection by removing it in its entirety and replace with the new subsection:

**“104.2.1 Furnishing of Property Rights The Department will secure all necessary rights to real property within the Project Limits shown on the Right-of-Way Plans that are provided with the Bid Documents. For related provisions, see Sections 104.3.2 – Furnishing of Other Property Rights, Licenses and Permits and 105.4.5 - Maintenance of Existing Structures. For related definitions, see Construction Easements and Right-of-Way.”**

104.3.2 Furnishing of Other Property Rights, Licenses and Permits Revise this subsection by replacing “104.2.1 Furnishing of Right-of-Way” with “**104.2.1 Furnishing of Property Rights**”.



## SECTION 105 GENERAL SCOPE OF WORK

105.10.2 Requirements Applicable to All Contracts Under section A, number 2, in the first sentence of the first paragraph, revise this Section by replacing the word “handicap” in two places with the word “disability” so it now reads:

**“2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, State that all qualified applicants will receive consideration for employment without regard to race, color, sexual orientation, religious creed, sex, national origin, ancestry, age, physical disability, or mental disability.”**

## SECTION 106 QUALITY

106.6 Acceptance Revise this Subsection by replacing the paragraph beginning with “Acceptance of Hot Mix Asphalt Pavement will be based” with:

**“Acceptance of Hot Mix Asphalt Pavement will be based on Method A or C Statistical Acceptance, or Method B or D Acceptance as specified. The method of acceptance for each item is defined in Special Provision, Section 403, Hot Mix Asphalt Pavement. When items of Hot Mix Asphalt Pavement are not so designated, Method A will be utilized whenever there are more than 1000 tons per Hot Mix Asphalt Pavement item, and Method B will be utilized when there are less than or equal to 1000 tons per Hot Mix Asphalt Pavement item.”**

Revise Subsection “B” by removing it and replacing it with:

**“B. Items not designated for Statistical Acceptance will utilize Method B or D Acceptance testing to validate the quality of the material incorporated into the Project. For material paid under Item 403.209 – Method D, or designated to be visually accepted, the Contractor shall provide the Department with a Certification Letter that indicates that the material supplied complies with the Specifications. Test results representative of the certified material shall be attached to the letter.**

**The Department will randomly sample and test the certified Material for properties noted in Table 1 of Section 502 - Structural Concrete or Table 14 of Section –401.21 Acceptance Method B & D. Material will be subject to rejection as noted in Structural Concrete Section 502.195 - Quality Assurance Method C Concrete or Hot Mix Asphalt, Section 401.2022 Pay Adjustment – Method B & D.”**

106.7.1 Standard Deviation Method Revise 106.7.1, subsection H by removing the following from the first paragraph:

**“Method B:  $PF = [70 + (Quality\ Level * 0.33)] * 0.01$ ”**

106.9.1 Warranty by Contractor Revise the third paragraph of this section so that it reads:

**“For a related provision regarding obligations regarding plantings, see section 621.36 – Maintenance Period. “**

## SECTION 107 TIME

107.3.1 General Amend this paragraph by adding **“Juneteenth”** between ‘Patriot’s Day’ and ‘the Friday after Thanksgiving’.

## SECTION 108 PAYMENT

108.3 Retainage Revise the third paragraph of this section so that it reads:

**“Upon Final Acceptance, and determination by the department that there are no claims either by or on the Contractor or Subcontractors; no over payments by the department; no LDs due; and no disincentives due, the Department will reduce Retent to 1% of the original Contract Award amount, or \$100,000, whichever is less, as it deems desirable and prudent.”**

108.4.1 Price Adjustment for Hot Mix Asphalt Revise the first paragraph of this section by replacing the first sentence with the following:

**“For each Contract, a price adjustment for performance graded binder will be made for the following pay items, when the total quantity of Hot Mix Asphalt included in these items is in excess of 500 tons, based on the estimated quantities of these items at the time of bid.”**

Amend this section by adding **“Item 461.2101 Polymer Modified 9.5 mm”** to the list of Pay Items that are eligible for a price adjustment. Also add **“Item 461.2101 - 6.4%”** to the list of Asphalt percentages.

## SECTION 110 INDEMNIFICATION, BONDING, AND INSURANCE

110.3.9 Administrative & General Provisions Amend this subsection by adding **“Automobile Liability”** under letter A) Additional Insured to the list of exceptions.

## SECTION 206 STRUCTURAL EXCAVATION

206.01 Description – *Structural Earth Excavation, Below Grade* delete the entire sentence and replace with **“shall consist of the removal of excavation required for unknown or unanticipated subsurface condition. See 206.04 – Method of Measurement for pay limits.”**

206.04 Method of Measurement – Drainage and Minor Structures Paragraph 1, sentence 2, delete the remainder of the sentence beginning with “...provided the maximum allowable...” And replace with: “**...in accordance with the following limits:**”

- **Vertical pay limits:**
  - o Below a plane parallel with and 12 inches below the bottom of the drainage or minor structure or
  - o Below the excavation limits shown in the Bid Documents; whichever is greater.
- **Horizontal pay limits – The maximum allowable horizontal dimensions shall not exceed those bounded by vertical surfaces 18 inches outside the base, or extreme limits of, the structure, and to the vertical neat lines of underdrain trenches, as shown in the Contract Documents.**

## SECTION 401 HOT MIX ASPHALT PAVEMENT

401.19 Contractor Quality Control Amend this Section by adding the following to the end:  
**“Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all items covered by the QCP as identified in Special Provision 403.”**

## SECTION 501 FOUNDATION PILES

### 501.05 Method of Measurement

c. Piles in Place Revise the third paragraph by replacing the “10” with “20” so that it reads:

Unused pile cutoffs **20** feet or more in length, except those required to accommodate the Contractor’s construction method, as discussed herein, will remain the property of the Department and will be stored at a bridge maintenance yard nearest the project. Hauling and unloading of piles will be done by the Contractor or by the Department, depending upon availability of services.

## SECTION 502 STRUCTURAL CONCRETE

502.09 Forms and Falsework Amend this subsection by adding the subsection title “**502.10 Placing Concrete**” after section “D” Removal of Forms and False work” and after the paragraph beginning with “2. Forms and False work, including blocking...”. So that a new subsection starts and reads:

### **“502.10 Placing Concrete**

A. **General** Concrete shall not be placed until forms ....”

502.1701 Quality Control, Method A and B Revise this Section so that the first paragraph and the first sentence of the second paragraph read:

**“502.17 Quality Control The Contractor shall control the quality of the concrete through testing, inspection, and practices which shall be described in the QCP, sufficient to assure a product meeting the Contract requirements. The QCP shall meet the requirements of Section 106, Quality, and this specification. No work under this item shall proceed until the QCP is submitted to and approved by the Department. Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all cast-in-place items covered by the QCP, using the P value listed in Special Provision 502. If no P value is listed, a value of \$350, or bid value per cubic yard, whichever is less, shall be used.**

**502.1701 Quality Control, Method A and B The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following: “**

Section 502.1701, Quality Control, Revise Table 4 of this Subsection by removing it in its entirety and replacing it with:

TABLE 4  
METHOD A & B MINIMUM QUALITY CONTROL TESTING REQUIREMENTS \*

TEST	TEST METHOD	SAMPLING LOCATION	FREQUENCY
Gradation	AASHTO T-27 & T-11	Stockpile	One set per proposed grading before production. One set every 100 yd <sup>3</sup> (Min. 1 set per month)
Organic Impurities	AASHTO T-21	Stockpile	<b>Once per fine aggregate per year **</b>
% Absorption	AASHTO T-84 & T-85	Stockpile	Once per aggregate per year
Specific Gravity	AASHTO T-84 & T-85	Stockpile	Once per aggregate per year
Total Moisture in Aggregate	AASHTO T-255	Stockpile	One set per day's production
Free Water and Aggregate Wt.	N/A		One per day's production
% Entrained Air	AASHTO T-152	On Project	On first two loads and every third load thereafter provided consistent results are achieved
Compressive Strength	AASHTO T-22	On Project	One set per subplot
Compressive Strength	AASHTO T-22 @ 7days	On Project	One set per subplot

\* Additional QC testing will be required any time a process change occurs during a placement, including changes in type or dosage of admixture. Additional testing shall include, but is not limited to, entrained air testing.

**\*\* If the color produced is a laboratory designation Plate III, then the fine aggregate shall be tested once per month.**

502.18, Method of Measurement, Revise Subsection 'F' by removing the word 'transverse' so that it reads: **"Saw cut grooving of concrete wearing surfaces, complete and accepted, will be measured for payment as one lump sum."**

502.19, Basis of Payment, Revise the third paragraph by removing the word 'transverse' so that it reads: **"Saw cut grooving of concrete wearing surfaces will be paid for at the Contract Lump Sum Price, which shall be payment for furnishing all materials, labor, and equipment, including depth gauges and all incidentals, to satisfactorily complete the work."**  
(Also see 535.24 and 535.25 for related changes)

## SECTION 503 REINFORCING STEEL

Section 503.07 Splicing Revise this section by removing the table and following footnote and replacing them with:

Minimum Lap Splice Length (inches)									
Bar Type	Bar Size								
	#3	#4	#5	#6	#7	#8	#9	#10	#11
Plain or Galvanized	16	20	24	29	38	47	59	72	85
Epoxy or Dual Coated	17	24	36	43	56	71	88	107	128
Stainless	19	24	30	36	47	59	73	89	107
Low-carbon Chromium	24	32	39	47	63	78	97	119	142

**"The minimum lap splice lengths in the table above are based on the parameters below. When any of these parameters are altered, appropriate minimum lap splice lengths will be as shown on the Plans.**

- Normal weight concrete
- Minimum 28-day concrete compressive strength from 4,000 psi to 10,000 psi
- Class B tension lap splice
- Minimum center-to-center spacing between bars of 6 inches
- Minimum clear cover of 2 inches
- Nominal reinforcing steel yield strengths
  - Low-carbon Chromium = 100 ksi
  - Stainless = 75 ksi
  - All others = 60 ksi
- Reinforcement with yield strengths greater than 75 ksi shall have beam transverse

**reinforcement and column ties provided over the required lap splice length in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications**

**When lap splices are placed horizontally in an element where the concrete depth below the splice will be 12 inches, or more, the indicated lap splice lengths shall be multiplied by a factor of 1.3.”**

## **SECTION 506** **SHOP APPLIED PROTECTIVE COATING – STEEL**

**506.13 Surface Preparation** Amend this section by adding this paragraph to the end:

**“Steel shall meet the requirements of SSPC SP8 Pickling prior to being immersed in the zinc tanks. Verification of the surface preparation shall be included in the QC documentation.”**

## **SECTION 523** **BEARINGS**

**523.051 Protective Coating** Revise this subsection by removing the paragraph beginning with “Anchor rods shall be galvanized...” and replacing with:

**“Anchor rods shall be galvanized. When anchor rods are designated to secure bare unpainted steel or painted steel, a dielectric coating (epoxy or bituminous type coatings are acceptable) shall be applied to the anchor rod and/or adjacent steel to prevent contact between galvanized surfaces and painted or unpainted steel.”**

**523.22 Fabrication** Amend this subsection by adding the following: **“Elastomeric Bearings shall be fabricated in accordance with AASHTO M251.”**

## **SECTION 526** **CONCRETE BARRIER**

Amend this section by deleting it in its entirety and replacing it with:

**“526.01 Description This work shall consist of the furnishing, constructing, erecting, setting, resetting, and removal of concrete barrier and associated elements in accordance with these specifications, the Standard Details, and the lines and grades shown on the Plans or established by the Resident.**

**The types of concrete barrier are designated as follows:**

**Portable Concrete Barrier Type I Double faced removable barrier in accordance with the Standard Details.**

**Permanent Concrete Barrier Type II Double faced barrier as shown on the Plans.**

**Permanent Concrete Barrier Type IIIa** Single faced barrier 32 inches high in accordance with the Standard Details or as shown on the Plans.

**Permanent Concrete Barrier Type IIIb** Single faced barrier 42 inches high in accordance with the Standard Details or as shown on the Plans.

**Permanent Concrete Transition Barrier** Barrier of various heights joining steel bridge rail to steel guardrail in accordance with the Standard Details or as shown on the Plans.

**Permanent Texas Classic Rail Barrier** Traffic rail or sidewalk rail, in accordance with the Standard Details or as shown on the Plans.

### **526.02 Materials**

a. **Concrete** Concrete for barriers, both permanent and portable, shall have a design strength of 5,000 psi.

For cast-in-place barrier: The concrete shall be Class LP, in accordance with Standard Specification Section 502, Structural Concrete.

For precast barrier: The concrete shall meet the requirements of Standard Specification 712.061, Structural Precast Concrete Units, except that the stripping strength for precast barriers is 4,000 psi.

b. **Reinforcing Steel** Reinforcing steel shall meet the requirements of Section 503, Reinforcing Steel.

c. **Structural Steel** Plates and barrier connections shall meet the requirements specified in Standard Specification 504 - Structural Steel and shall be hot dip galvanized after fabrication in accordance with Standard Specification 506, Shop Applied Protective Coating – Steel

d. **Bolts** Bolts shall meet the requirements specified in Section 713.02, High Strength Bolts.

e. **Connecting Pins for Portable Concrete Barrier** Portable concrete barriers must be connected using a 1- inch diameter pin. The connecting pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A449 steel. Materials with greater strength may be used with the approval of the Department.

f. **Anchor Pins for Portable Concrete Barrier** Anchoring to concrete or asphalt will be required when specified on the Plans. When required, portable concrete barriers must be anchored using a 1 ½ - inch diameter anchor pin. The anchor pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A36 steel. Materials with greater strength may be used with the approval of the Department.



**g. Device Crashworthiness** MaineDOT is transitioning to MASH2016 criteria for Portable Concrete Barrier on the following schedule:

**New Portable Concrete Barrier shall be crash tested and/or evaluated to MASH2016 criteria.**

**Current Portable Concrete Barrier in useful serviceable condition that is successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.**

**Other current Portable Concrete Barrier that is deemed acceptable by the Department may be utilized on projects off the National Highway System through December 31, 2024.**  
**526.03 Construction Requirements**

**Cast-in-place barriers shall be fabricated in accordance with Standard Specification Section 502, Structural Concrete. Precast barriers shall be fabricated in accordance with Standard Specification 534, Precast Structural Concrete.**

**Concrete finish for permanent barrier shall be rubbed as defined in Standard Specification Section 502, Structural Concrete, 502.13 D2 or an approved equal.**

**Portable concrete barrier shall be generally free from fins and porous areas and shall present a neat and uniform appearance.**

**Permanent barrier shall have a protective coating applied in accordance with Standard Specification Section 515, Protective Coating for Concrete Surfaces.**

**Reflective delineators for concrete median barrier shall meet the requirements of Special Provision 645, Highway Signing.**

**Preformed Joint Filler shall meet the requirements specified in Subsection 705.01, Preformed Expansion Joint Filler.**

**Permissible dimensional tolerances for all concrete barriers shall be as follows:**

- a. Cross-sectional dimensions shall not vary from design dimensions by more than ¼ inch. The vertical centerline shall not be out of plumb by more than ¼ inch.**
- b. Longitudinal dimensions shall not vary from the design dimensions by more than ¼ inch per 10 feet of barrier section and shall not exceed ¾ inches per section.**
- c. Location of anchoring holes shall not vary by more than ½ inch from the dimensions shown in the concrete barrier details on the Plans.**
- d. Surface straightness shall not vary more than ¼ inch under a 10-foot straightedge.**



e. The barrier shall have no significant cracking. Significant cracking is defined as fractures or cracks passing through the section, or any continuous crack extending for a length of 12 inches or more, regardless of position in the section.

**526.04 Method of Measurement** Permanent Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be measured for payment by lump sum, complete in place.

Portable concrete barrier, both anchored and unanchored will be measured for payment by lump sum. Lump sum measurement will include verification of the installation and removal of all portable concrete at the completion of the Contractor's operations.

The Contractor shall replace sections of portable concrete barrier, including anchored barrier damaged by the traveling public when directed by the Resident. Replacement sections will be measured for payment in accordance with Standard Specification 109.7, Equitable Adjustments to Compensation and Time.

Transition barrier will be measured by each, complete in place.

**526.05 Basis of Payment** The accepted quantities of Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be paid for at the Contract lump sum price for the type specified, complete in place.

The accepted quantities of Portable Concrete Barrier Type I, both anchored and unanchored will be paid for at the Contract lump sum price. Such payment shall be full compensation for furnishing all materials, assembling, moving, resetting, transporting, temporarily storing, removing barrier, furnishing new parts as necessary, and all incidentals necessary to complete the work.

Portable barrier shall become the property of the Contractor upon completion of the use of the barrier on the project and shall be removed from the project site by the Contractor.

Transition barrier will be paid for at the Contract price each, complete in place.

The accepted quantity of all types of concrete barrier, whether portable or permanent, will be paid for at the lump sum or per each price, as applicable, which payment shall be full compensation for all materials, including reinforcing steel, protective coating, reflective delineators, steel plates and hardware, equipment, labor and incidentals required, as necessary, to complete the work.

Payment will be made under:

	<u>Pay Item</u>	<u>Pay Unit</u>
526.301	Portable Concrete Barrier, Type I	Lump Sum
526.304	Portable Concrete Barrier, Anchored Type I	Lump Sum
526.312	Permanent Concrete Barrier Type II	Lump Sum
526.321	Permanent Concrete Barrier Type IIIa	Lump Sum
526.323	Texas Classic Rail	Lump Sum
526.331	Permanent Concrete Barrier Type IIIb	Lump Sum
526.34	Permanent Concrete Transition Barrier	Each
526.502	Precast Concrete Median Barrier	Lump Sum”

## SECTION 527 ENERGY ABSORBING UNIT

527.02 Materials Amend this section by deleting it in its entirety and replacing it with:

**“MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

**Portable Crash Cushions will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.**

**Work Zone Crash Cushions shall be selected from the Department’s Qualified Products List of Crash Cushions/Impact Attenuators or approved equal.”**

## SECTION 535 PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.22 Tolerances Amend this section by deleting it in its entirety and replacing it with:

**“Product dimensional tolerances shall be in conformance with the latest edition of PCI MNL-135, Tolerance Manual for Precast and Prestressed Concrete Construction, as applicable to the particular product (e.g., slab, I-girder, box beam), the Plans, and this Specification. Use Box Beam fabrication tolerances for voided or solid slab beams and use Double Tee tolerances for NEXT beams. In case of dispute, the Fabrication Engineer shall determine the allowable tolerance.”**

535.24 Installation of Slabs, Beams, and Girders Revise the 5<sup>th</sup> paragraph by replacing “6.0 and 9.0” to “5.0 and 8.0” so it reads: **“Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements.”**

535.25, Installation of Precast/Prestressed Deck Panels Revise the 2<sup>nd</sup> paragraph by replacing “6.0 and 9.0” to “5.0 and 8.0” so it reads: **“Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements.”**

## SECTION 606 GUARDRAIL

Amend this section by replacing it with the following:

606.01 Description This work shall consist of furnishing and installing guardrail components in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or as established. Guardrail is designated as:

31” W-Beam Guardrail - Mid-Way Splice

Galvanized steel w-beam, 8” wood or composite offset blocks, galvanized steel posts

Thrie Beam

Galvanized steel thrie beam, 8” wood or composite offset blocks, galvanized steel posts

Median guardrail shall consist of two beams of the above types, mounted on single posts.

Bridge mounted guardrail shall consist of furnishing all labor, materials, and equipment necessary to install guardrail as shown on the plans. This work shall also include drilling for and installation of offset blocks if specified, and incidental hardware necessary for satisfactory completion of the work.

Remove and Reset and Remove, Modify, and Reset guardrail shall consist of removing the existing designated guardrail and resetting in a new location as shown on the plans or directed by the Resident. Remove, Modify, and Reset guardrail and Modify guardrail include the following guardrail modifications: Removing plate washers at all posts, except at anchorage assemblies as noted on the Standard Details, adding offset blocks, and other modifications as listed in the Construction Notes or General Notes. Modifications shall conform to the guardrail Standard Details.

Bridge Connection shall consist of the installation and attachment of beam guardrail to the existing bridge. This work shall consist of constructing a concrete end post or modifying an existing end post as required, furnishing, and installing a terminal connector, necessary hardware, and incidentals required to complete the work as shown on the plans. Bridge Transition shall consist of a bridge connection and furnishing and installing guardrail components as shown in the Standard Details.

606.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Timber Preservative	708.05
Metal Beam Rail	710.04
Guardrail Posts	710.07
Guardrail Hardware	710.08

Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report.

Posts for underdrain delineators shall be "U" channel steel, 8 ft long, 2 ½ lb/ft minimum and have 3/8-inch round holes, 1-inch center to center for a minimum distance of 2 ft from the top of the post.

Reflectorized Flexible Guardrail Markers shall be mounted on all guardrails. A marker shall be mounted onto guardrail posts at the flared guardrail terminal end point and tangent point, both at the leading and trailing ends of each run of guardrail. The marker's flexible posts shall be gray with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends. Whenever the guardrail terminal is not flared, markers will only be required at the terminal end point. These shall be red or green as appropriate. Markers shall be installed on the protected side of guardrail posts unless otherwise approved by the Resident. Reflectorized flexible guardrail markers shall be from the Department's Qualified Products List of Delineators. The marker shall be gray, flexible, durable, and of a non-discoloring material to which 3-inch by 9-inch reflectors shall be applied, and capable of recovering from repeated impacts and meeting MASH 16 requirements. Reflective material shall meet the requirements of Section 719.01 for ASTM D 4956 Type III reflective sheeting. The marker shall be secured to the guardrail post with two fasteners, as shown in the Standard Details.

Reflectorized beam guardrail reflectors shall be mounted on all "w" beam guardrail and shall be either the "butterfly" type or linear delineation system panels. "Butterfly" or linear delineation panels shall be installed at approximately 62.5 foot intervals on tangents (after every tenth post) and 31.25 feet on curves (after every fifth post), and shall be centered on the guardrail beam. On Divided highways, the left-hand delineators shall be yellow and the right-hand delineators shall be silver/ white. On two-way directional highways, the right-hand side will have silver / white reflectors and no reflectorized delineator used on the left. Delineators shall have reflective sheeting that meets or exceeds the requirements of Section 719.01.

"Butterfly" reflectors shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Aluminum, galvanized metal or other materials shall not be used. Reflective sheeting will be applied to only one side of the delineator facing the direction of traffic and shall be centered vertically on the guardrail beam as shown in the Standard Detail 606(7).

Linear delineation system panels shall be 1.5 inches wide by approximately 11 inches nominal length, with a minimum of 5 raised lateral ridges spaced at approximately 2.25 inches. The height of each ridge shall be 0.34 inches with a 45 degree profile and a 0.28 inches radius at the top. Sheeting shall be laminated to thin gauge aluminum with a pre-applied adhesive tape on the back. Panels shall not be installed over seams or bolt heads and shall be centered horizontally on the guardrail beam; linear delineation panels shall be attached to only one guardrail beam. The guardrail beam surface shall be cleaned and prepared according to the manufacturer's instructions. Air temperature and guardrail surface temperature must be a minimum of 50 degrees F (10 C) with rising temperature at the time of installation.

Exact locations of the either the “butterfly” type or the linear delineation panels shall be approved by the Resident prior to installation.

Single wood post shall be of cedar, white oak, or tamarack, well-seasoned, straight, and sound and have been cut from live trees. The outer and inner bark shall be removed, and all knots trimmed flush with the surface of the post. Posts shall be uniform taper and free of kinks and bends.

Single steel post shall conform to the requirements of Section 710.07 b.

Single steel pipe post shall be galvanized, seamless steel pipe conforming to the requirements of ASTM A120, Schedule No. 40, Standard Weight.

Acceptable multiple mailbox assemblies shall be listed on the Department’s Qualified Products List and shall be MASH 16 tested and approved.

Flared and Tangent w-beam guardrail terminals and guardrail offset blocks shall be from the Department’s Qualified Products List. Flared terminals shall be installed with a 4 ft offset as shown in the Manufacturer’s installation instructions.

Anchorage assemblies used to anchor trailing ends, radius guardrail, or other ends not exposed to traffic shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report, Drawing SEW02a.

Existing materials damaged or lost during adjusting, removing and resetting, or removing, modifying, and resetting, shall be replaced by the Contractor without additional compensation. Existing guardrail posts and guardrail beams found to be unfit for reuse shall be replaced when directed by the Resident.

606.03 Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

When set in holes, posts shall be on a stable foundation and the space around the posts, backfilled in layers with suitable material, thoroughly tamped.

The reflectorized flexible guardrail markers shall be set plumb with the reflective surface facing the oncoming traffic. Markers shall be installed on the protected side of guardrail posts. Markers, which become bent or otherwise damaged, shall be removed and replaced with new markers.

Single wood posts shall be set plumb in holes and backfilled in layers with suitable material, thoroughly tamped. The Resident will designate the elevation and shape of the top. The posts, that are not pressure treated, shall be painted two coats of good quality oil base exterior house paint.

Single steel posts shall be set plumb in holes as specified for single wood posts or they may be driven if suitable driving equipment is used to prevent battering and distorting the post.

Additional bolt holes required in existing posts shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.04 Rails Brackets and fittings shall be placed and fastened as shown on the plans. Rail beams shall be erected and aligned to provide a smooth, continuous barrier. Beams shall be lapped with the exposed end away from approaching traffic.

End assemblies shall be installed as shown on the plans and shall be securely attached to the rail section and end post.

All bolts shall be of sufficient length to extend beyond the nuts but not more than ½ inch. Nuts shall be drawn tight.

Additional bolt holes required in existing beams shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.045 Offset Blocks The same offset block material is to be provided for the entire project unless otherwise specified.

606.05 Shoulder Widening At designated locations the existing shoulder of the roadway shall be widened as shown on the plans. All grading, paving, seeding, and other necessary work shall be in accordance with the Specifications for the type work being done.

606.06 Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

606.07 Abraded Surfaces All galvanized surfaces of new guardrail and posts, which have been abraded so that the base metal is exposed, and the threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

606.08 Method of Measurement Guardrail will be measured by the linear foot from center to center of end posts along the gradient of the rail except where end connections are made to masonry or steel structures, in which case measurement will be as shown on the plans. When connected to radius rail, measurement will be to the end of the last tangent beam.

Guardrail terminal, reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be measured by each unit of the kind specified and installed.

Widened shoulder will be measured as a unit of grading within the limits shown on the plans.



Excavation in solid rock for placement of posts will be paid under force account unless otherwise indicated in the Bid Documents.

Reflectorized beam guardrail reflectors (“butterfly” type or linear delineation system panels) when identified by pay item, will be measured for payment by each.

606.09 Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per linear foot for the type specified, complete in place. Reflectorized beam guardrail (“butterfly”-type) delineators will not be paid for directly but will be considered incidental to guardrail items. Reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be paid for at the contract unit price each for the kind specified complete in place.

Guardrail terminals will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer's installation instructions. Pay limits for a flared terminal will be 37.5 feet. Pay limits for a tangent terminal will be 50 feet. Each guardrail terminal will be clearly marked with the Manufacturer's name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under 109.7.5 – Force Account. Type III Retroreflective Adhesive Sheeting shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 3 in wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail terminals shall also include a set of installation drawings supplied to the Resident.

Anchorage to bridge end posts will be part of the bridge work. Connections thereto will be considered included in the unit bid price for guardrail.

Guardrail to be placed on a radius of curvature of 150 ft or less will be paid for under the designated radius pay item for the type guardrail being placed.

Widened shoulder will be paid for at the contract unit price each complete in place and will be full compensation for furnishing and placing, grading and compaction of aggregate subbase and any required fill material.

Adjust guardrail will be paid for at the contract unit price per linear foot and will be full compensation for adjusting to grade. Payment shall also include adjusting guardrail terminals where required.

Modify guardrail will be paid for at the contract unit price per linear foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams;

removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals where required.

Remove and Reset guardrail will be paid for at the contract unit price per linear foot and will be full compensation for removing, transporting, storing, reassembling all parts, necessary cutting, furnishing new parts when necessary, reinstalling at the new location, and all other incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals when required.

Remove, Modify, and Reset guardrail will be paid for at the contract unit price per foot and will be full compensation for the requirements listed in Modify guardrail and Remove and Reset guardrail.

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or “w”-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition curb, and any other necessary materials and labor, including the bridge connection as stated in the previous paragraph.

No payment will be made for guardrail removed, but not reset and all costs for such removal shall be considered incidental to the various contract pay items.

Reflectorized beam guardrail reflectors ( “butterfly” type and the linear delineation panels ) will not be paid for directly but will be considered incidental to all new guardrail items. The Contractor shall furnish and install either the “butterfly” type or linear delineation panels, at its discretion, for new guardrail items.

Reflectorized beam guardrail reflectors ( either “butterfly” type or linear delineation system panels) will be paid for under the applicable pay items for installation in conjunction with Adjust, Modify, Remove and Reset, Remove Modify and Reset guardrail items. The accepted quantity of “butterfly” type or linear delineation system panels will be paid for at the contract unit price each for all work and materials furnished to install, complete in place, including all incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
606.1301 31” W-Beam Guardrail - Mid-Way Splice – Single Faced	Linear Foot
606.1302 31” W-Beam Guardrail - Mid-Way Splice – Double Faced	Linear Foot
606.1303 31” W-Beam Guardrail - Mid-Way Splice, 15’ Radius and Less	Linear Foot
606.1304 31” W-Beam Guardrail - Mid-Way Splice, Over 15’ Radius	Linear Foot
606.1305 31” W-Beam Guardrail - Mid-Way Splice Flared Terminal	Each
606.1306 31” W-Beam Guardrail - Mid-Way Splice Tangent Terminal	Each



606.1307	Bridge Transition (Asymmetrical) – Type IA	Each
606.1721	Bridge Transition - Type I	Each
606.1722	Bridge Transition - Type II	Each
606.1731	Bridge Connection - Type I	Each
606.1732	Bridge Connection - Type II	Each
606.178	Guardrail Beam	Linear Foot
606.25	Terminal Connector	Each
606.257	Terminal Connector - Thrie Beam	Each
606.259	Anchorage Assembly	Each
606.265	Terminal End-Single Rail - Galvanized Steel	Each
606.266	Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275	Terminal End-Double Rail - Galvanized Steel	Each
606.276	Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.352	Reflectorized Beam Guardrail Delineators (“Butterfly” type)	Each
606.3521	Linear Delineation System Panel	Each
606.353	Reflectorized Flexible Guardrail Marker	Each
606.354	Remove and Reset Reflectorized Flexible Guardrail Marker	Each
606.356	Underdrain Delineator Post	Each
606.358	Guardrail, Modify	Linear Foot
606.362	Guardrail, Adjust	Linear Foot
606.365	Guardrail, Remove, Modify, and Reset	Linear Foot
606.366	Guardrail, Remove and Reset	Linear Foot
606.367	Replace Unusable Existing Guardrail Posts	Each
606.3671	Replace Unusable Offset Blocks	Each
606.47	Single Wood Post	Each
606.48	Single Galvanized Steel Post	Each
606.50	Single Steel Pipe Post	Each
606.51	Multiple Mailbox Support	Each
606.568	Guardrail, Modify - Double Rail	Linear Foot
606.63	Thrie Beam Rail Beam	Linear Foot
606.64	Guardrail Thrie Beam - Double Rail	Linear Foot
606.65	Guardrail Thrie Beam - Single Rail	Linear Foot
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 15 ft radius and less	Linear Foot
606.72	Guardrail Thrie Beam - over 15 ft radius	Linear Foot
606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	Linear Foot
606.74	Guardrail - Single Rail Bridge Mounted	Linear Foot
606.753	Widen Shoulder for Low Volume Guardrail End	Each
606.754	Widen Shoulder for Flared Guardrail Terminal	Each
606.78	Low Volume Guardrail End	Each
606.80	Buried-in-Slope Guardrail End	Each

## SECTION 608 SIDEWALKS

Section 608.022 Detectable Warning Materials Standard Revise this section by removing the last sentence of this section beginning with “Concrete...” and replacing it with **“Concrete shall meet the requirements of Section 608.021, Sidewalk Materials, of this specification or may be a prepackaged concrete mix from the Department’s Qualified Products List (QPL).”**

## SECTION 609 CURB

609.02 Materials Revise the paragraph beginning “The Contractor shall submit a concrete mix...” so that it reads:

**“The Contractor shall submit a concrete mix design for the Portland Cement Concrete to the Resident, with a minimum designed compressive strength of 3000 psi concrete fill.”**

609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections Revise this section by underlining the section number and title so that it reads in the spec book as:

**“609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections”**

Revise the last paragraph beginning with “The Contractor may elect...” so that it reads:

**“The Contractor may elect to substitute concrete to backfill Stone Curbing or Stone Edging at their option. If the concrete backfill option is elected, the Concrete Fill shall meet the requirements of 609.02. The Contractor shall submit a concrete design for the Portland Cement Concrete, with a minimum designated compressive strength of 3000 PSI meeting the requirements of Class S or Class Fill Concrete. The Contractor may elect to choose a Prepackaged Concrete Mix from the Department’s Qualified Products list (QPL). Concrete backfill shall be completed in conformance with a Department supplied concrete backfill detail.”**

## SECTION 610 STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION

610.02 Materials Amend this subsection by adding the following to the end of the material list:  
**“Stone Ditch Protection 703.29”**

## SECTION 618 SEEDING

618.08 Mulching Revise this Section so that the third sentence reads: “Mulch for Seeding Method Number 1 shall only be cellulous fiber mulch Section 619.04 (b) or straw mulch Section 619.04 (a).”

## SECTION 619 MULCH

619.03 General Amend this Section by adding the following sentence to the end: “**Straw mulch shall be used in all wetland areas.**”

## SECTION 626 FOUNDATIONS, CONDUIT, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS

Section 626.021 Miscellaneous Materials Revise this section by removing the fourth paragraph beginning with “ All Concrete for concrete encasement...” and replace it with “**All concrete for concrete encasement of conduit shall be Class S or Class Fill concrete in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department’s Qualified Products List (QPL).**”

Section 626.031 Conduit Revise the fifth paragraph beginning with “After the trench has been...” by removing the last sentence beginning with “Where concrete encasement...” and replacing it with “**Where concrete encasement is required around the conduit, the concrete shall meet Class S, Class Fill in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department’s Qualified Products List (QPL).**”

626.034 Concrete Foundations Revise this Section by changing ‘626.037’ to ‘**626.036**’ in the Second Paragraph which begins with “Foundations shall consist of cast-in-place...”.

Revise the 10<sup>th</sup> paragraph beginning with “Before placing concrete, the required elbows...” by removing “...**in accordance with Standard Specification 633.**”

626.036 Precast Foundations Revise the last sentence of paragraph one so that it reads: “**Construction of precast foundations shall conform to the Standard Details and all requirements of 712.061.**”

## SECTION 627 PAVEMENT MARKINGS

627.02 Materials Amend this section by adding the following to the existing Specification:

**“When pavement marking paint must be applied on pavement with an air temperature between 35 °F and 50 °F, a low temperature waterborne paint may be used upon the Department’s approval as noted below.**

**The Contractor shall submit the following information for Department review and approval at least 10 calendar days prior to application:**

**The manufacturer and product name of the low temperature waterborne paint**

**The manufacturer’s technical product data sheets**

**The product’s SDS sheets**

**All required and recommended application specifications for the product**

**The manufacturer’s requirements for temperature, surface preparation, paint thickness and the bead application shall be followed. No additional payment will be made for the use of low temperature waterborne paint. “**

627.06 Application Revise this subsection by replacing the paragraph beginning with “ On other final pavement markings...” with the following:

**“On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be one uniform covering coat at least 16 mils thick. Before the paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.**

**Painted lines and markings shall be applied in accordance with the manufacturer’s published recommendations. These recommendations will be supplied to the Resident prior to installation.”**

Revise this subsection by replacing the paragraph beginning with “ If the final reflectivity values are less...” with the following:

**The final reflectivity will be acceptable if 90 percent or more of the painted pavement lines and markings meet the specified minimum value. If less than 90 percent of the painted pavement lines and markings meet the specified minimum final reflectivity values, the Contractor shall repaint those areas not meeting required reflectivity at no cost to the Department.**

**If, after repainting, analysis of the final reflectivity values results in the need for a second repainting, the Contractor will submit in writing a plan of action to meet the reflectivity**

**minimums prior to continuing any work. Once the plan has been reviewed and approved by the Department, the Contractor shall reapply at no cost to the Department.**

### SECTION 637 **DUST CONTROL**

**Revise this section by removing it in its entirety.**

### SECTION 643 **TRAFFIC SIGNALS**

643.021 Materials Amend this subsection by adding the following at the end:

**“MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

**Temporary Traffic Control Signals will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.”**

643.023 Traffic Signal Structures Remove the third paragraph and replace it with the following:

**“Traffic signal support structures shall be classified as Fatigue Category III if they are located on roads with a speed limit of 35 mph or less, Fatigue Category II if they are located on roads with a speed limit of greater than 35 mph, and Fatigue Category I if noted on the Contract Plans. Fatigue Importance Factors shall be as specified in Table 11.6-1 (Fatigue Importance Factors). Fatigue analyses are not required for span-wire (strain) pole traffic signal support structures with heights of 55 feet or less unless required by the current edition of AASHTO “LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals”.**

643.09 Service Connection Revise this subsection by removing the paragraph that begins with “Traffic signal services shall have...”.

**And by removing the paragraphs beginning with “ A service ground rod shall be installed...” and “A total of 4, 10’ service...” and replace them with “A total of 4, 10’ service ground rods shall be installed and properly connected together on the outside of the cabinet foundation. One ground rod shall be located at each corner and shall be either flush or slightly below finished grade. The connection between the ground rod and the ground wire shall be an exothermic connection such as a Cadweld. The ground wire from the interconnected ground rods shall be routed through a conduit in the foundation and into the base of the cabinet”.**

## SECTION 645 HIGHWAY SIGNING

Section 645.023 Sign Support Structures. Under letter “c.”, revise the fifth paragraph beginning with “In addition to the required details...” by removing the words **”and foundation”** from the 5<sup>th</sup> sentence.

Section 645.08 Method of Measurement. Revise the second paragraph beginning with “Bridge-type, cantilever and...” by removing the words **”including the foundation”** .

Section 645.09 Basis of Payment. Revise the third paragraph beginning with “The accepted bridge-type, cantilever and...” by removing the word **”foundation”** from the second sentence. Add the following sentence to the end of the paragraph **“Conduits, Junction Boxes, and Foundations will be paid for under Section 626.”**

## SECTION 652 MAINTENANCE OF TRAFFIC

**652.2.5 Portable Changeable Message Sign** Revise the fifth paragraph so it reads:

**“The control system shall include a display screen upon which messages can be reviewed before being displayed on the message sign. The control system shall be capable of maintaining memory when power is unavailable. Messages must be changeable with either a portable electronic device like a notebook computer or an on-board keypad. The controller shall have the capability to store a minimum of 200 user-defined and 200 pre-programmed messages. Controller and battery compartments shall be enclosed in lockable, weather-tight boxes. The cabinet shall be locked at all times that the Contractor is not actively changing the message. The Contractor shall change the password for the controller prior to stationing the PCMS and shall provide the password to the Resident. The password shall be unique per PCMS and secure and shall not be written anywhere in, on, around, or stored in the PCMS.”**

Amend this Section by adding the following new subsection:

**“652.2.6 Device Crashworthiness** **MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

**Category 1 (Cones, Drums, Tubular Markers, Flexible Delineators, and similar devices that have little chance of causing windshield penetration, tire damage, or other significant effect on the control or trajectory of a vehicle) – All Category 1 devices will be manufacturer self-certified as MASH2016 by January 1, 2025. Current Category 1 devices in useful serviceable condition that are not self-certified as MASH2016 compliant may be utilized through December 31, 2024.**

**Category 2 (Barricades, Portable Sign Supports, Category 1 devices with attachments, and similar devices that are not expected to produce significant vehicular velocity change but may be otherwise hazardous) – All Category 2 devices will be crash tested and/or evaluated to**

**MASH2016 criteria by January 1, 2025. Current Category 2 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2024.**

**Category 3 (Portable Concrete Barrier, Portable Crash Cushions, Truck Mounted Attenuators, Category 2 devices weighing more than 100 pounds, and similar devices that are expected to produce significant vehicular velocity change or other harmful reactions) – All Category 3 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029. (See Standard Specification 526 for additional Portable Concrete Barrier information).**

**Category 4 (Trailer Mounted Devices: Arrow Boards, Temporary Traffic Control Signals, Area Lighting, Portable Changeable Message Sign, and other similar devices.) – All Category 4 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.”**

652.3.3 Submittal of Traffic Control Plan Amend this section by adding:

**“n. A security plan for any PCMS shall be included. The Contractor shall provide a plan for secure access to the PCMS and protection from unauthorized users. The plan shall have details on securing the cabinets via a lock and password from unauthorized users, password changing protocols, and where the access information will be kept so it can be used in the event of emergency. The Contractor shall not Identify or store passwords in the TCP.”**

652.4 Flaggers Revise the first paragraph of this section so that it reads:

**“The Contractor shall furnish flaggers as required by the TCP or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the Department and administered by a Department-approved Flagger-Certifier who is employing that flagger. All flaggers must carry an official certification card with them while flagging that has been issued by their employer.”**

## SECTION 681

### **PRECAST AGGREGATE-FILLED, CONCRETE BLOCK GRAVITY WALL**

681.08 Basis of Payment Amend this section by adding the Item Number “**681.10**” in front of the item “Precast Aggregate-Filled Concrete Block Gravity Wall” at the end of the section.

## SECTION 701

### **STRUCTURAL CONCRETE RELATED MATERIAL**

701.01 Portland Cement and Portland Pozzolan Cement Amend the first sentence of Paragraph 3 by adding “**or Type 1L Portland Limestone cement**” so that it reads:



**“A Type IP (MS) Portland-pozzolan cement (blended hydraulic cement with moderate sulfate resistance) or Type 1L Portland Limestone cement meeting the requirements of AASHTO M 240, may be used instead of Type II or where Type I Portland cement, meeting the requirements of AASHTO M 85, is allowed.”**

## SECTION 703 AGGREGATES

Add the following to Section 703 - Aggregates

703.01 Fine Aggregate for Concrete Fine aggregate for concrete shall consist of natural sand or, when approved by the Resident, other inert materials with similar characteristics or combinations thereof, having strong, durable particles. Fine aggregate from different sources of supply shall not be mixed or stored in the same pile nor used alternately in the same class of construction or mix without permission of the Resident.

All fine aggregate shall be free from injurious amounts of organic impurities. Should the fine aggregate, when subjected to the colorimetric test for organic impurities, AASHTO T 21, produce a color darker than the reference standard color solution (laboratory designation Plate III), the fine aggregate shall be rejected.

Fine aggregate shall have a sand equivalent value of not less than 75 when tested in accordance with AASHTO T 176.

Fine aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

The fineness modulus shall not be less than 2.26 or more than 3.14. If this value is exceeded, the fine aggregate will be rejected unless suitable adjustments are made in proportions of coarse and fine aggregate. The fineness modulus of fine aggregate shall be determined by adding the cumulative percentages of material by weight retained on the following sieves: Nos. 4, 8, 16, 30, 50, 100 and dividing by 100.

Fine aggregate, from an individual source when tested for absorption as specified in AASHTO T 84, shall show an absorption of not more than 2.3 percent.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
$\frac{3}{8}$ inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5.0



**703.02 Coarse Aggregate for Concrete** Coarse aggregate for concrete shall consist of crushed stone or gravel having hard, strong, durable pieces, free from adherent coatings and of which the composite blend retained on the  $\frac{3}{8}$  inch sieve shall contain no more than 15 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

The coarse aggregate from an individual source shall have an absorption no greater than 2.0 percent by weight determined in accordance with AASHTO T 85 modified for weight of sample.

The composite blend shall have a Micro-Deval value of 18.0 percent or less as determined by AASHTO T 327 or not exceed 40 percent loss as determined by AASHTO T 96.

Coarse aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

Coarse aggregate shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves			
Grading	A	AA	S	LATEX
Aggregate Size	1 inch	$\frac{3}{4}$ inch	1½ inch	$\frac{1}{2}$ inch
2 inch			100	
1½ inch	100		95-100	
1 inch	95-100	100	-	
$\frac{3}{4}$ inch	-	90-100	35-70	100
$\frac{1}{2}$ inch	25-60	-	-	90-100
$\frac{3}{8}$ inch	-	20-55	10-30	40-70
No. 4	0-10	0-10	0-5	0-15
No. 8	0-5	0-5	-	0-5
No. 16	-	-	-	-
No. 50	-	-	-	-
No. 200	0 - 1.5	0 - 1.5	0 - 1.5	0 - 1.5

**703.0201 Alkali Silica Reactive Aggregates** All coarse and fine aggregates proposed for use in concrete shall be tested for Alkali Silica Reactivity (ASR) potential under AASHTO T 303 (ASTM C 1260), Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction, prior to being accepted for use. Acceptance will be based on testing performed by an accredited independent lab submitted to the Department. Aggregate submittals will be required on a 5-year cycle, unless the source or character of the aggregate in question has changed within 5 years from the last test date.

As per AASHTO T 303 (ASTM C 1260): Use of a particular coarse or fine aggregate will be allowed with no restrictions when the mortar bars made with this aggregate expand less than or equal to 0.10 percent at 30 days from casting. Use of a particular coarse or fine aggregate will be classified

as potentially reactive when the mortar bars made with this aggregate expand greater than 0.10 percent at 30 days from casting. Use of this aggregate will only be allowed with the use of cement-pozzolan blends and/or chemical admixtures that result in mortar bar expansion of less than 0.10 percent at 30 days from casting as tested under ASTM C 1567.

Acceptable pozzolans and chemical admixtures that may be used when an aggregate is classified as potentially reactive include, but are not limited to the following:

- a. Class F Coal Fly Ash meeting the requirements of AASHTO M 295
- b. Ground Granulated Blast Furnace Slag (Grade 100 or 120) meeting the requirements of AASHTO M 302
- c. Densified Silica Fume meeting the requirements of AASHTO M 307
- d. Lithium-based admixtures
- e. Metakaolin

Pozzolans or chemical admixtures required to offset the effects of potentially reactive aggregates will be incorporated into the concrete at no additional cost to the Department.

703.05 Aggregate for Sand Leveling Aggregate for sand leveling shall be sand of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The aggregate shall meet the grading requirements of the following table.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
$\frac{3}{8}$ inch	85-100
No. 200	0-5.0

703.06 Aggregate for Base and Subbase The following shall apply to Sections (a.) and (c.) below. The material shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0, the Washington State Degradation DOT Test Method T113, Method of Test for Determination of Degradation Value (January 2009 version) shall be performed, except that the test shall be performed on the portion of the sample that passes the  $\frac{1}{2}$  inch sieve and is retained on the No. 10 sieve. If the material has a Washington Degradation value of less than 15, the material shall be rejected. The material used in Section (b.) below shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0 the material may be used if it does not exceed 25 percent loss on AASHTO T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

Recycled Asphalt Pavement (RAP) shall not be used for or blended with aggregate base or subbase.

- a. Aggregate for base, Type A and B shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type A	Type B
½ inch	45-70	35-75
¼ inch	30-55	25-60
No. 40	0-20	0-25
No. 200	0-6.0	0-6.0

At least 50 percent by weight of the material retained on the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

Type A aggregate for base shall only contain particles of rock that will pass the 2 inch square mesh sieve.

Type B aggregate for base shall only contain particles of rock that will pass the 4 inch square mesh sieve.

- b. Aggregate for base, Type C shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
	Type C
4 inches	100
3 inches	90-100
2 inches	75-100
1 inch	50-80
½ inch	30-60
No. 4	15-40
No. 200	0-6.0

At least 50 percent by weight of the material coarser than the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

- c. Aggregate for subbase shall be sand or gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type D	Type E
½ in	35-80	
¼ inch	25-65	25-100
No. 40	0-30	0-50
No. 200	0-7.0	0-7.0

Type D aggregate for subbase gravel may contain up to 50 percent by weight Recycled Concrete Aggregate (RCA). When RCA is used, the portion of the resulting blend of gravel and RCA retained on a ½" square mesh sieve shall contain a total of no more than 5 percent by weight of other recycled materials such as brick, concrete masonry block, or asphalt pavement as determined by visual inspection.

RCA shall be substantially free of wood, metal, plaster, and gypsum board as defined in Note 9 in Section 7.4 of AASHTO M 319. RCA shall also be free of all substances that fall under the category of solid waste or hazardous materials.

Aggregate for subbase shall not contain particles of rock which will not pass the 6 inch square mesh sieve.

703.08 Recycled Asphalt Pavement Recycled asphalt pavement shall consist of salvaged asphalt materials from milled pavements or production waste that has been processed before use to meet the requirements of the job mix formula. It shall be free of winter sand, granular fill, construction debris, or other materials not generally considered asphalt pavement.

703.081 RAP for Asphalt Pavement Recycled Asphalt Pavement (RAP) may be introduced into hot-mix asphalt pavement at percentages approved by the Department according to the MaineDOT Policies and Procedures for HMA Sampling and Testing.

If approved by the Department, the Contractor shall provide documentation stating the source, test results for average residual asphalt content, and stockpile gradations showing RAP materials have been sized to meet the maximum aggregate size requirements of each mix designation. The Department will obtain samples for verification and approval prior to its use.

The maximum allowable percent of RAP shall be determined by the asphalt content, the percent passing the 0.075 mm sieve, the ratio between the percent passing the 0.075 mm sieve and the asphalt content, and Coarse Micro-Deval loss values as tested by the Department.

The maximum percentage of RAP allowable shall be the lowest percentage as determined according to Table 4 below:

<b>Classification</b>	<b>Maximum RAP Percentage Allowed</b>	<b>Asphalt content standard deviation</b>	<b>Percent passing 0.075 mm sieve standard deviation</b>	<b>Percent passing 0.075 mm sieve / asphalt content ratio</b>	<b>Residual aggregate M-D loss value</b>
<b>Class III</b>	<b>10%</b>	<b><math>\leq 1.0</math></b>	<b>N/A</b>	<b><math>\leq 4.0</math></b>	<b><math>\leq 18</math></b>
<b>Class II</b>	<b>20%</b>	<b><math>\leq 0.5</math></b>	<b><math>\leq 1.0</math></b>	<b><math>\leq 2.8</math></b>	
<b>Class I</b>	<b>30%</b>	<b><math>\leq 0.3</math></b>	<b><math>\leq 0.5</math></b>	<b><math>\leq 1.8</math></b>	

Table 4: Maximum Percent RAP According to Test Results

The Department will monitor RAP asphalt content and gradation during production by testing samples from the stockpile at approximately 15,000 T intervals (in terms of mix production). The allowable variance limits (from the numerical average values used for mix designs) for this testing are determined based upon the maximum allowable RAP percentage and are shown below in Table 5.

Table 5: RAP Verification Limits

<b>Classification</b>	<b>Asphalt content (compared to aim)</b>	<b>Percent passing 0.075 mm sieve (compared to aim)</b>
<b>Class III</b>	<b><math>\pm 1.5</math></b>	<b><math>\pm 2.0</math></b>
<b>Class II</b>	<b><math>\pm 1.0</math></b>	<b><math>\pm 1.5</math></b>
<b>Class I</b>	<b><math>\pm 0.5</math></b>	<b><math>\pm 0.7</math></b>

For specification purposes, RAP will be categorized as follows:

Class III – A maximum of 10.0 percent of Class III RAP may be used in any base, intermediate base, surface, or shim mixture. A maximum of 20.0 percent of Class III RAP may be used in hand-placed mixes for item 403.209.

Class II – A maximum of 20.0 percent Class II RAP in any base, binder, surface, or shim course.

Class I – A maximum of 20.0 percent Class I RAP may be used in any base, intermediate base, surface, or shim mixture without requiring a change to the specified asphalt binder. A maximum of 30.0 percent Class I RAP may be used in in any base or intermediate base mixture provided that a PG 58-28 or PG 58-34 asphalt binder is used. A maximum of 30.0 percent Class I RAP may be

used in any surface or shim mixture provided that PG 58-34 asphalt binder is used. Mixtures exceeding 20.0 percent Class I RAP must be evaluated and approved by the Department.

The Contractor may use up to two different RAP sources in any one mix design. The total RAP percentage of the mix shall not exceed the maximum allowed for the highest classification RAP source used (i.e. if a Class I & Class III used, total RAP must not exceed 30.0%). The blended RAP material must meet all the requirements of the classification for which the RAP is entered (i.e. 10% Class III with 20% Class I, blend must meet Class I criteria). The Department may take belt cuts of the blended RAP to verify the material meets these requirements. If the Contractor elects to use more than one RAP source in a design, the Contractor shall provide an acceptable point of sampling blended RAP material from the feed belt.

In the event that RAP source or properties change, the Contractor shall notify the Department of the change and submit new documentation stating the new source or properties a minimum of 72 hours prior to the change to allow for obtaining new samples and approval.

## SECTION 709 REINFORCING STEEL AND WELDED STEEL WIRE FABRIC

709.01 Reinforcing Steel Remove the second paragraph of Section 709.01 of the standard specification beginning with “Low-Carbon, Chromium,...” and replace with the following:

**“ Low-carbon, chromium, reinforcing steel shall be deformed bars conforming to the requirements of ASTM A1035. Bars shall be Grade 100 and alloy Type CS unless otherwise specified on the Plans. “**

## SECTION 710 FENCE AND GUARDRAIL

710.06 Fence Posts and Braces Revise the first Paragraph so that it reads:

“Wood posts shall be of cedar, white oak, or tamarack or other AWPAs approved species, of the diameter or section and length shown on the plans.”

Remove the fourth paragraph which starts “ That portion of wood posts...”.

Revise the paragraph beginning with “Braces shall be of spruce, eastern hemlock ... so that it now reads:

“Braces shall be of spruce, eastern hemlock, Norway pine, pitch pine, or tamarack timbers or other AWPAs approved species, or spruce, cedar, tamarack or other AWPAs approved species round posts of sufficient length to make a diagonal brace between adjacent posts. All wood posts and braces

shall be pressure-treated in accordance with AASHTO M 133 and AWWA U1, UC4A Commodity Specification B: Posts. “

710.07 Guardrail Posts Revise this section so that the first sentence of section a. reads:

“a. Wood posts shall be of Norway pine, southern yellow pine, pitch pine, Douglas fir, red pine, white pine, or eastern hemlock or other AWWA approved species.”

Revise the next paragraph so that it reads:

Wood posts and offset brackets shall be preservative treated in accordance with the requirements of AASHTO M 133 and AWWA U1, UC4A Commodity Specification B: Posts.

710.08 Guardrail Hardware Revise this subsection by replacing “AASHTO M 298” with “ASTM B695”

## SECTION 711 MISCELLANEOUS BRIDGE MATERIAL

711.06 Stud Shear Connector Anchors and Fasteners Amend this section by deleting it in its entirety and replacing it with:

**“Shear connectors shall meet the dimensional tolerances of Figure 9.1 of the ANSI/AASHTO/AWS D1.5 Bridge Welding Code (D1.5 Code). Shear connectors, anchors and fasteners shall meet the material requirements of Section 9 of the D1.5 Code. Shear connectors shall meet the mechanical property requirements of Table 9.1, Type B of the D1.5 Code. Anchors and fasteners shall meet the mechanical property requirements of Table 9.1 of the D1.5 Code, Type A.”**

## SECTION 712 MISCELLANEOUS HIGHWAY MATERIAL

712.061 Structural Precast Units Amend this section by adding the following sentence to the end of the first paragraph of the Construction subsection:

**“Facilities certified by NPCA or PCI shall provide to the Fabrication Engineer a copy of their annual audit to include deficiency reports and corrective actions.”**

Revise this section by changing the letter “b” of ASTM C1611 of the Concrete Testing subsection so that it reads:

**“b. Air content shall be 5.0% to 8.0%.”**



## SECTION 713 STRUCTURAL STEEL AND RELATED MATERIAL

### Section 713.02 High Strength Bolts

Revise the second sentence of this subsection so that it reads **“Nuts shall meet the requirement of ASTM A563”**. Revise the third sentence of this subsection so that it reads **“Circular and beveled washers shall conform to the requirement of ASTM F436”**.

## SECTION 718 TRAFFIC SIGNALS MATERIAL

718.03 Signal Mounting Amend the paragraph beginning with “All trunions, brackets and...” by adding **“For polycarbonate signal heads with more than 3 sections or requiring mounting extensions greater than 12 inches in length, reinforcing plates shall be used to reinforce the housings at the point of attachment.”** to the end of the paragraph.

718.08 Controller Cabinet Revise this subsection by replacing the paragraph beginning with “The cabinet shall be supplied with LED light panels...” on or about page 7-66 with **“The cabinet shall be supplied with white LED light panels which shall automatically illuminate via a door open switch whenever one of the four main cabinet doors are opened for the ground mount cabinet or two main doors for the side of pole cabinet. The ground mounted cabinet shall contain four LED light panels per side totaling eight panels for the cabinet; one panel each at the top and bottom portion of the front side and back side on the Control side and Power/Auxiliary side of the cabinet. Each light panel shall produce a minimum of 250 lumens for a total minimum lumen output of 2000 lumens with all eight panels illuminated. The minimum output per side would be 1000 lumens. The LED panels shall be protected by a clear shatterproof shield. The side of pole mounted cabinet shall contain four light panels; one at the top of the rack assembly and one at the bottom rack assembly on each side of the cabinet.**

**A second door open status switch per door shall activate a controller input to log a report event that one of the doors was opened. All door open status switches shall be connected to the same controller input. For the ground mount cabinet, there shall be two switches on each of the four main doors. For the side-of-pole mount cabinet, there shall be two switches on each of the two main doors.”**

Revise this subsection by replacing the paragraph beginning with “The cabinet shall be supplied with a generator panel ...” on or about page 7-68 with:

**“The cabinet shall be supplied with a generator panel. The generator panel shall consist of a manual transfer switch and a twist-lock connector for generator hookup. The transfer switch knob and twist-lock connector shall be located inside a stainless steel enclosure with a separate lockable door accessed with a Corbin #2 key. The unit shall be mounted on the left, exterior of the control side wall of the ground mount cabinet a minimum of 36” above the surrounding grade and on the lower left side of the pole mounted cabinet. The generator transfer switch shall be a Reliance C30A1N Signa Series or approved equal. “**

Revise this subsection by removing the following from the paragraph beginning with “The ground mounted cabinet shall be supplied and installed with an electric service meter socket trim and electrical service disconnect switch ...” on or about page 7-69: **“(removed: thus preventing that space from being used either by equipment supplied as part of the project, or future equipment that would be installed in the rack system. Joe indicated that he would add this language to the detail so it is covered.)”**.

Revise this subsection by replacing the following in the paragraph beginning with “The Contractor shall reconfigure the default user name...” on or around page 7-70; “MaineDOT IT” with **“MaineDOT Traffic Division”**.

In the paragraph beginning with “Tests shall be conducted by the contractor...” on or around page 7-73, amend this subsection by removing **“in the state of Maine and”** after “The facility shall be”.

Amend this Section by adding the following subsection:

**718.13 Field Monitoring Unit (FMU)** This item of work shall conform to this specification. This item shall consist of furnishing and installing a Field Monitoring Unit (FMU) and software, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and interface cables, as described herein.

Where applicable, communications from MaineDOT’s cloud-based Central Management System (CMS) to the on-street traffic signal controllers shall be made through fiber optic interconnect cable connected back to existing internet connections and/or the Field Monitoring Unit (FMU). The Contractor shall furnish and install all materials necessary for a complete and operational fiber optic interconnection to all project intersections as shown on the plans. All connections to the CMS cloud-based system shall be via a secure VPN network.

The FMU shall be the only remote connection device used by isolated intersections to connect to the cloud-based system. All connections shall be encrypted VPN tunnels. The Contractor shall coordinate all configuration settings with MaineDOT IT and the Engineer.

The FMU central web based interface shall be a separate element from the CMS.

**MATERIALS:** The materials for this work shall conform to the following requirements:

1. The work under this item specifies the requirements for the FMU. The FMU shall operate independent of the brand/type of intersection controller deployed in the ATC traffic cabinet.
2. The FMU shall conform to the following requirements:
  - 2.1 The FMU shall function correctly between -34 degrees C and +74 degrees C.
  - 2.2 The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.
  - 2.3 The FMU shall monitor and log all ATC Controller and ATC cabinet faults and or alarms.

- 2.4 The FMU shall be wired directly to the ATC cabinet.
- 2.5 The FMU shall have an internal cellular modem running at 4G LTE.
  - 2.5.1 The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.
- 2.6 The FMU shall incorporate an integrated GPS and cell modem.
- 2.7 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.
- 2.8 The FMU shall be powered via a standard 120V input power.
- 2.9 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.
- 2.10 The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.
- 2.11 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.
- 2.12 The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.
- 2.13 In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.
- 2.14 The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.
- 2.15 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.
- 2.16 The FMU shall include weather proof antennas.

### **3. Map Display FMU Management Software**

- 3.1 The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.
- 3.2 The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.
- 3.3 The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top of the list, followed by medium priority, low priority and then finally by intersections not in alarm.
- 3.4 The icons shall change to be able to clearly indicate if an intersection is offline.
- 3.5 Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.
- 3.6 The default map display position and zoom shall be configurable by user, so that the user's view will default to show the intersections that the user is responsible for managing.
- 3.7 The map view shall have the ability to show Google traffic overlays on the map.

### **4. Intersection Detail Display FMU Management Software**

- 4.1 It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:
  - 4.1.1 The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).
  - 4.1.2 The time since the last communication with the device
  - 4.1.3 The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)
    - 4.1.3.1 The AC mains voltage (value)
    - 4.1.3.2 The battery back-up voltage (value)
    - 4.1.3.3 The cabinet temperature (value)
    - 4.1.3.4 The cabinet humidity (value)
    - 4.1.3.5 The presence of AC power (OK or Fail)
    - 4.1.3.6 The flashing status of the intersection (OK or Flashing)
    - 4.1.3.7 Stop Time status (OK or Stop Time Active)

4.1.3.8 The cabinet door status (Open or Closed)

4.1.3.9 The intersection fan status (Fan On or Fan off)

4.1.4 It shall be possible to view graphs of each of the value parameters in graphical form, over the recent two-week period. This includes real time graphs of:

4.1.4.1 The AC mains voltage

4.1.4.2 The battery back-up voltage

4.1.4.3 The cabinet temperature

4.1.4.4 The cabinet humidity

## **5. Diagnostics and Log Display FMU Management Software**

5.1 From the device level detail within the FMU management software, it shall be possible to drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems.

5.2 It shall be possible to filter the logs by Device; by Device Type and/or by Group as well as between dates.

5.3 It shall be possible to print these selected logs to a local printer or a PDF file.

5.4 It shall be possible to export these logs to Excel on the local computer for further analysis.

## **6. Alarms FMU Management Software**

6.1 The FMU management software shall have a comprehensive alarm generation capability

6.2 It shall be possible to configure alarms to be generated on any parameter becoming out of tolerance, including analog values, digital values and enumerated values.

6.3 Alarms shall be configurable to be of Low, High or Critical Priority.

6.4 The alarm priority shall be displayed throughout the FMU management software, on all displays, using color codes such as red-critical; yellow – high; and amber-low to indicate the priority of the alarm.

6.5 The current active alarms shall be accessible for view via an expandable window, to see which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

## **7. Alerts FMU Management Software**

7.1 The FMU management software shall have comprehensive alerting capability, to enable the response personnel to be notified when an abnormal situation has occurred.

- 7.2 It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.
- 7.3 The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.
- 7.4 The intention is that the FMU management software provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

#### **8. Hosting and Connectivity and Service FMU / FMU Management Software**

- 8.1 The contractor shall supply the FMU with the FMU manufacturers 10 year options for Connectivity and Service, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:
  - 8.1.1 Cellular Connectivity
  - 8.1.2 No cellular overage charges
  - 8.1.3 Extended warranty on the hardware for the period of the Connectivity and Service Agreement
  - 8.1.4 Over-the-air software updates
  - 8.1.5 Over-the-air security updates
  - 8.1.6 Future Connected Vehicles Service

### SECTION 720 STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS

720.12 Wood Sign Posts Revise the first sentence so that it reads:

Wood sign posts shall be rectangular, straight and sound timber, cut from live growing native spruce, red pine, hemlock, cedar trees or other AWPAs approved species, free from loose knots or other structurally weakening defects of importance, such as shake or holes or heart rot.

Revise the third paragraph that starts with “When pressure treated...” so that it reads:

All sign posts shall be pressure-treated in accordance with AASHTO M 133 and AWPAs Standard U1, UC4A, Commodity Specification A: Sawn Products.