Updated **12/13/2021**

FEDERAL PROJECT

Effective May 15, 2020
Supersedes April 22, 2020

BIDDING INSTRUCTIONS

FOR ALL PROJECTS:

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

For a Paper Bid:

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

For an Electronic Bid:

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

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

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

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

IN ADDITION, FOR FEDERAL AID PROJECTS:

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

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

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

April 28, 2017
Supersedes November 05, 2014

NOTICE

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

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

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

The downloading of bid packages from the MDOT website is not the same as providing an electronic bid to the Department. Electronic bids must be submitted via http://www.BIDX.com. For information on electronic bidding contact Rebecca Snowden at rebecca.snowden@maine.gov or Diane Barnes at diane.barnes@maine.gov.

NOTICE

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

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

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

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

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

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

October 16, 2001

STATE OF MAINE DEPARTMENT OF TRANSPORTATION

Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT_____

_____, of the City/Town of_____and State of_____

as Principal, and_____as Surety, a

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

Business in_____and hereby held and firmly bound unto the Treasurer of

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

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

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

_____

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

Signed and sealed this_____day of_____20_____

WITNESS:

_____

_____

_____

WITNESS

_____

_____

_____

PRINCIPAL:

By_____

By:_____

By:_____

SURETY:

By_____

By:_____

Name of Local Agency: _____

SAMPLE

NOTICE

Bidders:

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

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

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

State of Maine
Department of Transportation

RFI No: _____

REQUEST FOR INFORMATION

Date _____ Time _____

Information Requested for:

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

Question(s):_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Request by:

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

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

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

NOTICE

Disadvantaged Business Enterprise Proposed Utilization

The Apparent Low Bidder shall submit the Disadvantaged Business Enterprise Proposed Utilization form with their bid. This is a curable bid defect.

The Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan form contains additional information that is required by USDOT.

The Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan form should be used.

A copy of the new Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan and instructions for completing it are attached.

Note: Questions about DBE firms, or to obtain a printed copy of the DBE Directory, contact The Office of Civil Rights at (207) 624-3066.

MDOTs DBE Directory of Certified firms can also be obtained at https://www.maine.gov/mdot/civilrights/dbe/

INSTRUCTIONS FOR PREPARING THE MaineDOT CONTRACTOR'S DBE/SUBCONTRACTOR UTILIZATION FORM

The Contractor Shall Extend equal opportunity to MaineDOT certified DBE firms (as listed in MaineDOT's DBE Directory of Certified Businesses) in the selection and utilization of Subcontractors and Suppliers.

SPECIFIC INSTRUCTIONS FOR COMPLETING THE FORM:

Insert Contractor name, the name of the person(s) preparing the form, and that person(s) telephone, fax number and e-mail address.

Calculate and provide percentage of your bid that will be allocated to DBE firms, Federal Project Identification Number, and location of the Project work.

In the columns, name each subcontractor, DBE and non-DBE firm to be used, provide the Unit/Item cost of the work/product to be provided by the subcontractor, give a brief description and the dollar value of the work.

Revised 1/12

DBE GOAL NOTICE FFY 2022-2024

Maine Department of Transportation
Disadvantaged Business Enterprise Program

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

For FFY 2022-24 (October 1, 2021 through September 30, 2024) MaineDOT has established an annual DBE participation goal of **1.97%** to be achieved through race/gender neutral means. This goal has been approved by the Federal Highway Administration and remains in effect through September 30, 2024. MaineDOT must meet this goal each federal fiscal year. If the goal is not met, MaineDOT must provide a justification for not meeting the goal and provide a plan to ensure the goal is met, which may include contract goals on certain projects that contractors will be required to meet.

MaineDOT asks all contractors, consultants and subcontractors to seek certified DBE firms for projects and to work to meet the determined 1.97% goal without the need to impose contract goals. DBE firms are listed on the MaineDOT website at:

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

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

MaineDOT CONTRACTOR'S DBE/SUBCONTRACTOR PROPOSED UTILIZATION FORM

All Bidders must furnish this form with their bid on Bid Opening day

Contractor: _____ **Telephone:** _____ **Ext** _____

Contact Person: _____ **Fax:** _____

E-mail: _____

BID DATE: _____

FEDERAL PROJECT PIN # _____ **PROJECT LOCATION:** _____

TOTAL ANTICIPATED DBE____% PARTICIPATION FOR THIS CONTRACT

WBE	DBE	Non DBE	Firm Name	Item Number & Description of Work	Quantity	Cost Per Unit/Item	Anticipated $ Value
						Subcontractor Total>	
						DBE Total >	

NOTE: THIS INFORMATION IS USED TO TRACK AND REPORT ANTICIPATED DBE PARTICIPATION IN ALL FEDERALLY FUNDED MAINE DOT CONTRACTS. THE ANTICIPATED DBE AMOUNT IS VOLUNTARY AND WILL NOT BECOME A PART OF THE CONTRACTUAL TERMS.

Equal Opportunity Use:

Form received:___/___/___Verified by: _____

FHWA ☐ FTA ☐ FAA ☐

For a complete list of certified firms and company designation (WBE/DBE) go to http://www.maine.gov/mdot/civilrights/

Rev. 01/15

Maine Department of Transportation Civil Rights Office

Directory of Certified Disadvantaged Business Enterprises

Listing can be found at:

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

For additional information and guidance contact:

Civil Rights Office at (207) 624-3066

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

Vendor Registration

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

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO CONTRACTORS

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper "Bids for **Bridge Replacements and Highway Intersection Reconstruction** in the city of **Old Town**" 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 **March 16, 2022** and at that time and place, publicly opened and read. Bids will be accepted from all bidders. The lowest responsive bidder must have completed, or successfully complete, a **Bridge Construction and/or Highway Construction prequalification),** or project specific prequalification to be considered for the award of this contract. **We now accept electronic bids for bid packages posted on the bidx.com website. Electronic bids do not have to be accompanied by paper bids. Please note: The Department will accept a facsimile of the bid bond; however, the original bid bond must then be received at the MDOT Contract Section within 72 hours of the bid opening. Until further notice, dual bids (one paper, one electronic) will be accepted, with the paper copy taking precedence.**

Description: Maine Federal Aid Project No. 2189401 WINS. 022511.01, 022512.01, 022950.01

Location: In Penobscot County, WIN. 022511.01 is located at Stillwater #2 Bridge over Stillwater River. WIN. 022512.01 is located at Stillwater #1 Bridge over So. Channel Stillwater River. WIN. 022950 is located on Stillwater Ave. beginning 0.01 mi north of the Orono town line extending northerly 0.72 mi.

Outline of Work: Bridge Replacements and Highway Intersection Reconstruction 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 **Project Manager Mike Wight** at (207) 624-3431, use electronic RFI form or email questions to RFI-Contracts.MDOT@maine.gov, project name and identification number should be in the subject line. Questions received after 12:00 noon of Monday (or if that Monday is a state holiday, Friday) prior to bid date will not be answered. Bidders shall not contact any other Departmental staff for clarification of Contract provisions, and the Department will not be responsible for any interpretations so obtained. TTY users call Maine Relay 711.

Plans, specifications and bid forms may be seen at the MaineDOT Building in Augusta, Maine, and at the Department of Transportation's Regional Office in **Bangor**. They may be purchased from the Department between the hours of 8:00 a.m. to 4:30 p.m. by cash, credit card (Visa/Mastercard) or check payable to Treasurer, State of Maine sent to Maine Department of Transportation, Attn.: Mailroom, 16 State House Station, Augusta, Maine 04333-0016. They also may be purchased by telephone at (207) 624-3536 between the hours of 8:00 a.m. to 4:30 p.m. Full size plans **$231.00 ($243.00** by mail). Half size plans **$115.50 ($120.50** by mail), Bid Book $10 ($13 by mail), Single Sheets $2, payment in advance, all non-refundable.

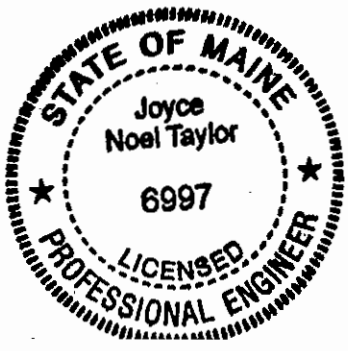
Each Bid must be made upon blank forms provided by the Department and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of 5% of the bid amount, payable to Treasurer,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

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

All work shall be governed *by State of Maine, Department of Transportation, Standard Specifications, March 2020 Edition,* price $10 [$15 by mail], and *Standard Details, March 2020 Edition*, price $10 [$15 by mail]. They also may be purchased by telephone at (207) 624-3536 between the hours of 8:00 a.m. to 4:30 p.m. *Standard Detail* updates can be found at http://www.maine.gov/mdot/contractors/publications/ .

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

Augusta, Maine
February 16, 2022



JOYCE NOEL TAYLOR P. E.
CHIEF ENGINEER

March 26, 2020

NOTICE

(COVID-19 Pandemic)

The Department considers the COVID-19 Pandemic an Uncontrollable Event as defined in Section 101.2 of the Department's Standard Specifications.

Accordingly, any documented delay to the project's Critical Path due to COVID-19 related issues, such as impacted workforce, subcontracts, or material supply, will be considered an Excusable Delay as defined in Section 109.5(A)(3) of the Department's Supplemental Specifications.

As an Excusable Delay, the Contractor is entitled to an extension of time provided that other associated notification, documentation, and procedural requirements set forth in the Contract are met.

NOTICE

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

SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

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

Amendment Number	Date

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

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
0010	201.11 CLEARING	1.000 AC				
0020	201.23 REMOVING SINGLE TREE TOP ONLY	25.000 EA				
0030	201.24 REMOVING STUMP	26.000 EA				
0040	202.08 REMOVING BUILDING NO.: Old Mill Road 70+42lt	LUMP SUM	LUMP SUM			
0050	202.08 REMOVING BUILDING NO.: Stillwater Ave, 35+30lt	LUMP SUM	LUMP SUM			
0060	202.11 REMOVING PORTLAND CEMENT CONCRETE PAVEMENT	2,700.000 SY				
0070	202.15 REMOVING EXISTING MANHOLE OR CATCH BASIN	13.000 EA				
0080	202.19 REMOVING EXISTING BRIDGE STILLWATER NO.1	LUMP SUM	LUMP SUM			
0090	202.19 REMOVING EXISTING BRIDGE STILLWATER NO.2	LUMP SUM	LUMP SUM			
0100	202.202 REMOVING PAVEMENT SURFACE	3,900.000 SY				
0110	202.203 PAVEMENT BUTT JOINTS	1,160.000 SY				
0120	203.20 COMMON EXCAVATION	14,830.000 CY				

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
0130	203.2318 DISPOSAL OF SPECIAL WASTE	33.000 T				
0140	203.25 GRANULAR BORROW	5,450.000 CY				
0150	203.35 CRUSHED STONE 3/4 INCH	98.000 CY				
0160	206.082 STRUCTURAL EARTH EXCAVATION - MAJOR STRUCTURES	2,700.000 CY				
0170	206.092 STRUCTURAL ROCK EXCAVATION - MAJOR STRUCTURES	200.000 CY				
0180	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	12,640.000 CY				
0190	304.14 AGGREGATE BASE COURSE - TYPE A	15.000 CY				
0200	403.2081 12.5 MM POLYMER MODIFIED HOT MIX ASPHALT	2,508.000 T				
0210	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	612.000 T				
0220	403.211 HOT MIX ASPHALT (SHIMMING)	1,100.000 T				
0230	403.213 HOT MIX ASPHALT 12.5 MM BASE	2,820.000 T				
0240	409.15 BITUMINOUS TACK COAT - APPLIED	2,513.000 G				

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
0250	461.131 TEMPORARY PAVEMENT	420.000 T				
0260	501.502 ROCK SOCKETED H-PILES	324.000 LF				
0270	501.54 STEEL H-BEAM PILES 117 LBS/FT, DELIVERED	364.000 LF				
0280	501.804 DRILLING EQUIPMENT MOBILIZATION	LUMP SUM	LUMP SUM			
0290	502.219 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS	LUMP SUM	LUMP SUM			
0300	502.239 STRUCTURAL CONCRETE PIERS	LUMP SUM	LUMP SUM			
0310	502.24 STRUCTURAL CONCRETE PIERS (PLACED UNDER WATER)	190.000 CY				
0320	502.26 STRUCTURAL CONCRETE ROADWAY AND SIDEWALK SLABS ON STEEL BRIDGES	LUMP SUM	LUMP SUM			
0330	502.31 STRUCTURAL CONCRETE APPROACH SLABS	LUMP SUM	LUMP SUM			
0340	502.49 STRUCTURAL CONCRETE CURBS AND SIDEWALKS	LUMP SUM	LUMP SUM			
0350	502.77 FIBER REINFORCED POLYMER BRIDGE DRAIN - TYPE: B	6.000 EA				

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
0360	502.77 FIBER REINFORCED POLYMER BRIDGE DRAIN - TYPE: F	6.000 EA	_____.____	_____.____
0370	503.12 REINFORCING STEEL, FABRICATED AND DELIVERED	101,450.000 LB	_____.____	_____.____
0380	503.13 REINFORCING STEEL, PLACING	101,450.000 LB	_____.____	_____.____
0390	503.26 STAINLESS STEEL REINFORCEMENT - FABRICATED & DELIVERED	182,900.000 LB	_____.____	_____.____
0400	503.27 STAINLESS STEEL REINFORCEMENT - PLACING	182,900.000 LB	_____.____	_____.____
0410	504.702 STRUCTURAL STEEL FABRICATED AND DELIVERED, WELDED	LUMP SUM	LUMP SUM	_____.____
0420	504.71 STRUCTURAL STEEL ERECTION	LUMP SUM	LUMP SUM	_____.____
0430	505.08 SHEAR CONNECTORS	LUMP SUM	LUMP SUM	_____.____
0440	506.9104 THERMAL SPRAY COATING - SHOP APPLIED	LUMP SUM	LUMP SUM	_____.____
0450	507.08161 STEEL APPROACH RAILING, 4 BAR	4.000 EA	_____.____	_____.____
0460	507.0821 STEEL BRIDGE RAILING, 3 BAR	LUMP SUM	LUMP SUM	_____.____
0470	507.0822 STEEL APPROACH RAILING, 3-BAR	4.000 EA	_____.____	_____.____

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
0480	507.0831 STEEL BRIDGE RAILING, 4 BAR	LUMP SUM	LUMP SUM	_____.____
0490	508.14 HIGH PERFORMANCE WATERPROOFING MEMBRANE	LUMP SUM	LUMP SUM	_____.____
0500	510.12 SPECIAL DETOUR__FOOT ROADWAY WIDTH, VEHICULAR AND PEDESTRIAN TRAFFIC SEPARATED 30FT RDWY 5FT SW	LUMP SUM	LUMP SUM	_____.____
0510	511.07 COFFERDAM: Bridge 1 Abutment No. 1	LUMP SUM	LUMP SUM	_____.____
0520	511.07 COFFERDAM: Bridge 1 Abutment No. 2	LUMP SUM	LUMP SUM	_____.____
0530	511.07 COFFERDAM: Bridge 2, Abutment No. 1	LUMP SUM	LUMP SUM	_____.____
0540	511.07 COFFERDAM: Bridge 2, Abutment No. 2	LUMP SUM	LUMP SUM	_____.____
0550	511.07 COFFERDAM: Bridge 2, Pier No. 1	LUMP SUM	LUMP SUM	_____.____
0560	513.22 CRUSHED STONE SLOPE PROTECTION	100.000 SY	_____.____	_____.____
0570	515.21 PROTECTIVE COATING FOR CONCRETE SURFACES	LUMP SUM	LUMP SUM	_____.____
0580	519.60 EXPANSION DEVICE - ASPHALTIC PLUG JOINT	171.000 LF	_____.____	_____.____

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0590	523.52 BEARING INSTALLATION	6.000 EA				
0600	523.5401 LAMINATED ELASTOMERIC BEARINGS, FIXED	6.000 EA				
0610	527.34 WORK ZONE CRASH CUSHIONS	4.000 UN				
0620	603.159 12 INCH CULVERT PIPE OPTION III	84.000 LF				
0630	603.165 15 INCH REINFORCED CONCRETE PIPE CLASS III	40.000 LF				
0640	603.175 18 INCH REINFORCED CONCRETE PIPE CLASS III	108.000 LF				
0650	603.179 18 INCH CULVERT PIPE OPTION III	169.000 LF				
0660	604.072 CATCH BASIN TYPE A1-C	12.126 EA				
0670	604.092 CATCH BASIN TYPE B1-C	11.000 EA				
0680	604.164 REBUILDING CATCH BASIN	4.000 EA				
0690	604.18 ADJUSTING MANHOLE OR CATCH BASIN TO GRADE	10.000 EA				
0700	604.245 CATCH BASIN TYPE F4-C	2.000 EA				

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
0710	604.247 CATCH BASIN TYPE F5-C	1.000 EA	_____.____	_____.____
0720	604.249 CATCH BASIN TYPE F6-C	1.000 EA	_____.____	_____.____
0730	604.252 CATCH BASIN TYPE A5-C	4.126 EA	_____.____	_____.____
0740	604.262 CATCH BASIN TYPE B5-C	2.000 EA	_____.____	_____.____
0750	605.09 6 INCH UNDERDRAIN TYPE B	2,150.000 LF	_____.____	_____.____
0760	605.11 12 INCH UNDERDRAIN TYPE C	1,700.000 LF	_____.____	_____.____
0770	605.12 15 INCH UNDERDRAIN TYPE C	140.000 LF	_____.____	_____.____
0780	606.1301 31” W-BM GR, MID-WAY SPLICE-SGL FACED	413.000 LF	_____.____	_____.____
0790	606.1303 31” W-BM GR, MID-WAY SPLICE-15' RAD AND LESS	100.000 LF	_____.____	_____.____
0800	606.1721 BRIDGE TRANSITION - TYPE 1	8.000 EA	_____.____	_____.____
0810	606.259 ANCHORAGE ASSEMBLY	4.000 EA	_____.____	_____.____
0820	606.353 REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	4.000 EA	_____.____	_____.____

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
0830	606.356 UNDERDRAIN DELINEATOR POST	4.000 EA				
0840	606.47 SINGLE WOOD POST	6.000 EA				
0850	606.51 MULTIPLE MAILBOX SUPPORT	4.000 EA				
0860	607.291 REMOVE AND RESET STONE WALL	10.000 LF				
0870	607.42 ORNAMENTAL PICKET FENCE	72.000 LF				
0880	608.26 CURB RAMP DETECTABLE WARNING FIELD	270.000 SF				
0890	609.11 VERTICAL CURB TYPE 1	4,940.000 LF				
0900	609.12 VERTICAL CURB TYPE 1 - CIRCULAR	360.000 LF				
0910	609.221 TERMINAL CURB TYPE 1	660.000 LF				
0920	609.222 TERMINAL CURB TYPE 1 - CIRCULAR	130.000 LF				
0930	609.31 CURB TYPE 3	1,650.000 LF				
0940	609.34 CURB TYPE 5	190.000 LF				
0950	609.35 CURB TYPE 5 - CIRCULAR	140.000 LF				

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0960	610.08 PLAIN RIPRAP	260.000 CY				
0970	610.16 HEAVY RIPRAP	4,700.000 CY				
0980	610.18 STONE DITCH PROTECTION	26.000 CY				
0990	613.319 EROSION CONTROL BLANKET	52.000 SY				
1000	615.07 LOAM	905.000 CY				
1010	618.13 SEEDING METHOD NUMBER 1	71.000 UN				
1020	619.12 MULCH	71.000 UN				
1030	619.14 EROSION CONTROL MIX	10.000 CY				
1040	620.58 EROSION CONTROL GEOTEXTILE	4,580.000 SY				
1050	620.60 SEPARATION GEOTEXTILE	2,000.000 SY				
1060	620.66 DRAINAGE GEOCOMPOSITE	370.000 SY				
1070	626.11 PRECAST CONCRETE JUNCTION BOX	9.000 EA				
1080	626.22 NON-METALLIC CONDUIT	525.000 LF				

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
1090	626.221 NON-METALLIC CONDUIT CONCRETE ENCASED	55.000 LF	_____.____	_____.____
1100	626.251 NON-METALLIC UNDER PAVEMENT CONDUIT (SCHEDULE 80 OR GREATER RATING)	450.000 LF	_____.____	_____.____
1110	626.26 3" DIAMETER UTILITY CONDUIT SYSTEM, TEMPORARY	1.000 LS	_____.____	_____.____
1120	626.35 CONTROLLER CABINET FOUNDATION	2.000 EA	_____.____	_____.____
1130	626.36 REMOVE OR MODIFY CONCRETE FOUNDATION	3.000 EA	_____.____	_____.____
1140	626.421 24 INCH DIAMETER FOUNDATION	77.000 LF	_____.____	_____.____
1150	626.451 42 INCH DIAMETER FOUNDATION	42.000 LF	_____.____	_____.____
1160	626.46 48 INCH DIAMETER FOUNDATION	23.000 LF	_____.____	_____.____
1170	626.48 60 INCH DIAMETER FOUNDATION	26.000 LF	_____.____	_____.____
1180	627.733 4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	20,000.000 LF	_____.____	_____.____
1190	627.75 WHITE OR YELLOW PAVEMENT & CURB MARKING	4,225.000 SF	_____.____	_____.____

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
1200	627.78 TEMPORARY 4 INCH PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW	20,000.000 LF				
1210	627.94 PREFORMED THERMOPLASTIC PAVEMENT MARKING	35.000 SF				
1220	629.05 HAND LABOR, STRAIGHT TIME	123.000 HR				
1230	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	123.000 HR				
1240	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	200.000 HR				
1250	631.32 CULVERT CLEANER (INCLUDING OPERATOR)	40.000 HR				
1260	639.18 FIELD OFFICE TYPE A	1.000 EA				
1270	642.15 PRECAST CONCRETE STEPS	1.000 EA				
1280	643.21 NON-INVASIVE DETECTION - STOP LINE: Stillwater Ave & Bennoch Road	LUMP SUM	LUMP SUM			
1290	643.21 NON-INVASIVE DETECTION - STOP LINE: Stillwater Ave & College Ave	LUMP SUM	LUMP SUM			
1300	643.71 TRAFFIC SIGNAL MODIFICATION Stillwater Ave at Bennoch Rd	LUMP SUM	LUMP SUM			

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
1310	643.71 TRAFFIC SIGNAL MODIFICATION Stillwater Ave at College Ave	LUMP SUM	LUMP SUM	_____.____
1320	643.72 TEMPORARY TRAFFIC SIGNAL Stillwater at Bennoch Rd	LUMP SUM	LUMP SUM	_____.____
1330	643.72 TEMPORARY TRAFFIC SIGNAL Stillwater at College Ave	LUMP SUM	LUMP SUM	_____.____
1340	643.91 MAST ARM POLE 25' Arm	3.000 EA	_____.____	_____.____
1350	643.91 MAST ARM POLE 33' Arm	1.000 EA	_____.____	_____.____
1360	643.91 MAST ARM POLE 35' Arm	2.000 EA	_____.____	_____.____
1370	643.91 MAST ARM POLE 40' Arm	1.000 EA	_____.____	_____.____
1380	643.91 MAST ARM POLE 50' Arm	1.000 EA	_____.____	_____.____
1390	643.92 PEDESTAL POLE	11.000 EA	_____.____	_____.____
1400	645.103 DEMOUNT GUIDE SIGN	31.000 EA	_____.____	_____.____
1410	645.106 DEMOUNT REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	66.000 EA	_____.____	_____.____
1420	645.108 DEMOUNT POLE	2.000 EA	_____.____	_____.____

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
1430	645.113 REINSTALL GUIDE SIGN	13.000 EA	_____.____	_____.____
1440	645.116 REINSTALL REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	29.000 EA	_____.____	_____.____
1450	645.251 ROADSIDE GUIDE SIGNS, TYPE I	104.000 SF	_____.____	_____.____
1460	645.271 REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGNS, TYPE I	248.000 SF	_____.____	_____.____
1470	645.512 LED BLANK-OUT SIGN, OVERHEAD MOUNT	1.000 EA	_____.____	_____.____
1480	652.312 TYPE III BARRICADE	6.000 EA	_____.____	_____.____
1490	652.33 DRUM	160.000 EA	_____.____	_____.____
1500	652.34 CONE	250.000 EA	_____.____	_____.____
1510	652.35 CONSTRUCTION SIGNS	1,500.000 SF	_____.____	_____.____
1520	652.36 MAINTENANCE OF TRAFFIC CONTROL DEVICES	991.000 CD	_____.____	_____.____
1530	652.38 FLAGGER	15,220.000 HR	_____.____	_____.____
1540	652.381 TRAFFIC OFFICER	40.000 HR	_____.____	_____.____

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
1550	652.41 PORTABLE CHANGEABLE MESSAGE SIGN	8.000 EA	_____.____	_____.____
1560	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM	LUMP SUM	_____.____
1570	658.20 ACRYLIC LATEX COLOR FINISH, GREEN	115.000 SY	_____.____	_____.____
1580	659.10 MOBILIZATION	LUMP SUM	LUMP SUM	_____.____
1590	660.21 ON-THE-JOB TRAINING (BID)	1,000.000 HR	_____.____	_____.____
1600	801.03 TEST PITS	7.000 EA	_____.____	_____.____
1610	801.04 PREINSULATED SEWER PIPE	280.000 LF	_____.____	_____.____
1620	801.071 TEMPORARY SEWER BY-PASS	LUMP SUM	LUMP SUM	_____.____
1630	801.133 6" FORCE MAIN	80.000 LF	_____.____	_____.____
1640	801.141 4" PVC SANITARY SEWER (SDR-35)	20.000 LF	_____.____	_____.____
1650	801.16 6 INCH PVC SANITARY SEWER (SDR-35)	20.000 LF	_____.____	_____.____
1660	812.162 ADJUSTING SEWER MANHOLE TO GRADE	40.000 EA	_____.____	_____.____

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
1670	822.322 6 INCH DUCTILE IRON PIPE	950.000 LF				
1680	822.35 10 INCH CLASS 52 DUCTILE IRON PIPE	15.000 LF				
1690	822.36 12 INCH DUCTILE IRON PIPE	1,065.000 LF				
1700	822.37 16 " DUCTILE IRON PIPE	396.000 LF				
1710	823.31 12 INCH GATE VALVE	3.000 EA				
1720	823.331 6 INCH GATE VALVE	6.000 EA				
1730	823.374 16 " GATE VALVE	2.000 EA				
1740	824.30 FIRE HYDRANT	5.000 EA				
1750	824.31 REMOVE FIRE HYDRANT	5.000 EA				
1760	824.32 REMOVE/RESET HYDRANT	1.000 EA				
1770	825.4222 2" HDPE CTS SERVICE	90.000 LF				
1780	825.43 1" COPPER SERVICE	870.000 LF				
1790	825.5411 TEMPORARY WATER MAIN	 LUMP SUM	 LUMP SUM			

Proposal ID: 022511.01 Project(s): 022511.01, 022512.01, 022950.01

SECTION: 1 Old Town, Br. #2 - WIN 22511.01

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
1800	827.30 ROCK EXCAVATION- REMOVE AND REFILL	20.000 CY				
1810	827.304 TRENCH ROCK EXCAVATION	100.000 CY				
1820	827.31 UNSUITABLE SOIL EXCAVATION, REMOVE AND REFILL- ABOVE GRADE	100.000 CY				
1830	827.312 SELECT BACKFILL	70.000 CY				
1840	827.321 ABANDON EXISTING WATER MAIN IN PLACE	LUMP SUM	LUMP SUM			
1850	827.331 TRENCH INSULATION	700.000 SY				
1860	830.10 WATER MAIN BRIDGE CROSSING	LUMP SUM	LUMP SUM			
1870	830.13 SEWER MAIN BRIDGE CROSSING	LUMP SUM	LUMP SUM			
	Section: 1		Total:			
			Total Bid:			

CONTRACT AGREEMENT, OFFER & AWARD

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

_____

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

_____

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

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WINS. 022511.01, 022512.01, 022950.01** for **Bridge Replacements and Highway Intersection Reconstruction** in the city of **Old Town** County of **Penobscot** Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

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

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

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **October 30, 2025.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

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

_____

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

D. Contract.

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

E. Certifications.

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

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

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

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

F. Offer.

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

WINS. 022511.01, 022512.01, 022950.01 - Bridge Replacements and Highway Intersection Reconstruction- in the city of Old Town

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

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

As Offeror also agrees:

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

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

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

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

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

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

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

CONTRACTOR

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

G. Award.

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

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: Bruce A. Van Note, Commissioner
_____	
Witness	

CONTRACT AGREEMENT, OFFER & AWARD

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

_____

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

_____

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

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WINS. 022511.01, 022512.01, 022950.01** for **Bridge Replacements and Highway Intersection Reconstruction** in the city of **Old Town** County of **Penobscot** Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

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

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

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **October 30, 2025.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

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

_____

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

D. Contract.

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

E. Certifications.

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

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

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

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

F. Offer.

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

WINS. 022511.01, 022512.01, 022950.01 - Bridge Replacements and Highway Intersection Reconstruction- in the city of Old Town

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

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

As Offeror also agrees:

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

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

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

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

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

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

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

CONTRACTOR

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

G. Award.

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

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: Bruce A. Van Note, Commissioner
_____	
Witness	

CONTRACT AGREEMENT, OFFER & AWARD

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

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

SAMPLE

A. The Work.

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

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

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

B. Time.

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

C. Price.

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

D. Contract.

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

SAMPLE

E. Certifications.

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

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

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

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

F. Offer.

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

PIN 012345.00 South Nowhere, Hot Mix Asphalt Overlay ,

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

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

SAMPLE

As Offeror also agrees:

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

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

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

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

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

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

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

CONTRACTOR

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

SAMPLE

G. Award.

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

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: Bruce A. Van Note, Commissioner
_____	
(Witness)	

BOND # _____

CONTRACT PERFORMANCE BOND
(Surety Company Form)

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

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

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

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

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

SAMPLE

BOND # _____

CONTRACT PAYMENT BOND
(Surety Company Form)

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

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

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

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

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

SAMPLE

"General Decision Number: ME20220047 01/07/2022

Superseded General Decision Number: ME20210047

State: Maine

Construction Type: Highway

County: Penobscot County in Maine.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022, Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022, Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least $11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

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

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

Modification Number	Publication Date
0	01/07/2022

* ENGI0004-004 04/01/2018

	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Grader/Blade, Mechanic, Paver (Asphalt, Aggregate, and Concrete), Roller Asphalt	$ 22.61	12.50

TEAM0340-003 01/01/2017

	Rates	Fringes
TRUCK DRIVER (Vacuum Truck)	$ 14.84	13.08

SUME2014-042 06/23/2017

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

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours

they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union, which prevailed in the survey for this classification, which in this example would be Plumbers 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion

date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Division National Office Branch of Wage Surveys. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

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

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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

The request should be accompanied by a full statement of the interested party's position and by any information (wage

payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

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

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

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

THIS DOCUMENT MUST BE CLEARLY POSTED AT ALL CONSTRUCTION SITES FUNDED IN PART WITH STATE FUNDS

State of Maine
Department of Labor
Bureau of Labor Standards
Augusta, Maine 04333-0045
Telephone (207) 623-7906

Wage Determination - In accordance with 26 MRS §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid to laborers and workers employed on the below titled project.

2022 Fair Minimum Wage Rates
Highway & Earth Penobscot County

Occupational Title	Minimum Wage	Minimum Benefit	Total
Carpenter	$25.36	$4.69	$30.05
Cement Masons And Concrete Finisher	$20.00	$0.00	$20.00
Commercial Divers	$28.00	$2.50	$30.50
Construction And Maintenance Painters	$23.34	$2.53	$25.87
Construction Laborer	$20.00	$0.00	$20.00
Control And Valve Installers And Repairers - Except Mechanical Door	$26.00	$5.49	$31.49
Conveyor Operators And Tenders	$18.00	$2.71	$20.71
Crane And Tower Operators	$31.54	$6.68	$38.22
Crushing Grinding And Polishing Machine Operators	$21.00	$6.36	$27.36
Earth Drillers - Except Oil And Gas	$23.25	$5.53	$28.78
Electricians	$48.50	$23.17	$71.67
Excavating And Loading Machine And Dragline Operators	$24.00	$3.00	$27.00
Fence Erectors	$18.00	$0.72	$18.72
Flaggers	$15.25	$0.00	$15.25
Heating And Air Conditioning And Refrigeration Mechanics And Installers	$26.33	$4.06	$30.39
Heavy And Tractor - Trailer Truck Drivers	$21.44	$3.41	$24.85
Highway Maintenance Workers	$20.74	$5.37	$26.11
Industrial Machinery Mechanics	$26.00	$5.19	$31.19
Industrial Truck And Tractor Operators	$24.00	$5.61	$29.61
Light Truck Or Delivery Services Drivers	$20.00	$5.49	$25.49
Millwrights	$25.13	$3.51	$28.64
Mixing And Blending Machine Operators	$24.71	$13.50	$38.21
Mobile Heavy Equipment Mechanics - Except Engines	$24.71	$3.30	$28.01
Operating Engineers And Other Equipment Operators	$23.75	$3.24	$26.99
Paving Surfacing And Tamping Equipment Operators	$24.71	$3.75	$28.46
Pipelayers	$28.00	$7.20	$35.20
Plumbers Pipe Fitters And Steamfitters	$26.00	$2.93	$28.93
Reinforcing Iron And Rebar Workers	$48.58	$0.00	$48.58
Structural Iron And Steel Workers	$24.00	$1.36	$25.36

Welders are classified as the trade to which welding is incidental (e.g. welding structural steel is Structural Iron and Steel Worker)

Apprentices – The minimum wage rate for registered apprentices are those set forth in the standards and policies of the Maine State Apprenticeship and Training Council for approved apprenticeship programs.

For any other specific trade on this project not listed above, contact the Bureau of Labor Standards for further clarification.

Title 26 §1310 requires that a clearly legible statement of all fair minimum wage and benefits rates to be paid the several classes of laborers, workers and mechanics employed on the construction on the public work must be kept posted in a prominent and easily accessible place at the site by each contractor and subcontractor subject to sections 1304 to 1313.

Appeal – Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates.

A true copy

Attest: Scott R. Cotnoir
Scott R. Cotnoir
Wage & Hour Director
Bureau of Labor Standards

Expiration Date: 12-31-2022

THIS DOCUMENT MUST BE CLEARLY POSTED AT ALL CONSTRUCTION SITES FUNDED IN PART WITH STATE FUNDS

State of Maine
Department of Labor
Bureau of Labor Standards
Augusta, Maine 04333-0045
Telephone (207) 623-7906

Wage Determination - In accordance with 26 MRS §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid to laborers and workers employed on the below titled project.

2022 Fair Minimum Wage Rates
Heavy & Bridge Penobscot County

Occupational Title	Minimum Wage	Minimum Benefit	Total
Carpenter	$28.12	$4.78	$32.90
Cement Masons And Concrete Finisher	$20.04	$1.02	$21.06
Commercial Divers	$34.00	$2.49	$36.49
Construction And Maintenance Painters	$33.75	$31.25	$65.00
Construction Laborer	$20.78	$4.00	$24.78
Conveyor Operators And Tenders	$16.50	$0.00	$16.50
Crane And Tower Operators	$30.00	$7.28	$37.28
Crushing Grinding And Polishing Machine Operators	$21.00	$4.38	$25.38
Earth Drillers - Except Oil And Gas	$23.25	$5.53	$28.78
Electrical Power - Line Installer And Repairers	$38.60	$7.68	$46.28
Electricians	$28.20	$8.24	$36.44
Excavating And Loading Machine And Dragline Operators	$30.50	$4.67	$35.17
Flaggers	$17.00	$0.72	$17.72
Heating And Air Conditioning And Refrigeration Mechanics And Installers	$26.33	$4.06	$30.39
Heavy And Tractor - Trailer Truck Drivers	$20.00	$1.05	$21.05
Highway Maintenance Workers	$21.66	$3.22	$24.88
Industrial Machinery Mechanics	$30.00	$7.45	$37.45
Industrial Truck And Tractor Operators	$24.00	$5.61	$29.61
Ironworker - Ornamental	$25.00	$3.32	$28.32
Light Truck Or Delivery Services Drivers	$24.50	$6.23	$30.73
Millwrights	$29.40	$17.41	$46.81
Mobile Heavy Equipment Mechanics - Except Engines	$26.25	$6.32	$32.57
Operating Engineers And Other Equipment Operators	$34.82	$32.39	$67.21
Paving Surfacing And Tamping Equipment Operators	$35.11	$2.28	$37.39
Pile-Driver Operators	$30.54	$8.93	$39.47
Pipelayers	$28.50	$7.20	$35.70
Plumbers Pipe Fitters And Steamfitters	$32.86	$18.00	$50.86
Radio Cellular And Tower Equipment Installers	$27.00	$0.00	$27.00
Reinforcing Iron And Rebar Workers	$48.58	$0.00	$48.58
Riggers	$25.25	$9.62	$34.87
Sheet Metal Workers	$23.00	$5.54	$28.54
Structural Iron And Steel Workers	$27.87	$7.22	$35.09
Telecommunications Line Installers And Repairers	$25.00	$3.28	$28.28

Welders are classified as the trade to which welding is incidental (e.g. welding structural steel is Structural Iron and Steel Worker)

Apprentices – The minimum wage rate for registered apprentices are those set forth in the standards and policies of the Maine State Apprenticeship and Training Council for approved apprenticeship programs.

For any other specific trade on this project not listed above, contact the Bureau of Labor Standards for further clarification.

Title 26 §1310 requires that a clearly legible statement of all fair minimum wage and benefits rates to be paid the several classes of laborers, workers and mechanics employed on the construction on the public work must be kept posted in a prominent and easily accessible place at the site by each contractor and subcontractor subject to sections 1304 to 1313.

Appeal – Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates.

A true copy

Attest: Scott R. Cotnoir
Scott R. Cotnoir
Wage & Hour Director
Bureau of Labor Standards

Expiration Date: 12-31-2022

SPECIAL PROVISION
SECTION 104
(WAGE RATES)

When two or more wage rate schedules appear in the bid Book, the highest rate shall prevail for each classification.

SPECIAL PROVISIONS
SECTION 104
Utilities

UTILITY COORDINATION

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

THE CONTRACTOR SHALL PLAN AND CONDUCT WORK ACCORDINGLY.

MEETING

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

GENERAL INFORMATION

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

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

Overview & Utility/Railroad Contact Information:

Utility/Railroad	Aerial	Underground	Contact Name	Contact Number
Bangor Gas Company		**X**	**Ryan Rancourt**	**949-4546**
City of Old Town	**X**	**X**	**John Rouleau**	**944-0921**
Charter Communications	**X**		**Frank Varrelmann**	**249-0733**
Consolidated Communications	**X**	**X**	**Brian Smith**	**712-8604**
FirstLight	**X**		**Mike Ellingwood**	**462-2759**
Old Town Sewer Department		**X**	**David Smith**	**299-4459**
Old Town Water District		**X**	**Steven Lane**	**852-2720**
University of Maine System	**X**		**Corey Lavoie**	**949-4227**
Versant Power	**X**	**X**	**Dave Perkins and Scott Richardson**	**949-3918 949-3970**

Temporary utility adjustments **ARE** anticipated. If any unexpected utility relocations become necessary, they shall be scheduled in accordance with Section 104 of the Standard Specifications and shall be performed by the appropriate utility company in conjunction with the work by the Contractor. Should the Contractor choose to have any poles temporarily relocated, all work shall be done at the Contractor's request and expense, with no additional cost or schedule impacts to the Department.

Unless otherwise specified, any underground utility/railroad facilities shown on the project plans represent approximate locations gathered from available information. The Department cannot certify the level of accuracy of this data. Underground facilities indicated on the topographic sheets (plan views) have been collected from historical records and/or on-site designations provided by the respective utility/railroad

companies. Underground facilities indicated on the cross-sections have been carried over from the plan view data and may also include further approximations of the elevations (depths) based upon straight-line interpolation from the nearest manholes, gate valves, or test pits.

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

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

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

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

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

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

Utility/railroad working days are Monday through Friday. Times are estimated on the basis of a single crew for each utility/railroad. Any times and dates mentioned are **estimates only** and are dependent upon favorable weather, working conditions, and freedom from emergencies. The Contractor shall have no claim against the Department if they are exceeded.

AERIAL

Summary:

Utility	Pole Set	New Wires/ Cables	Trans. Wires/ Cables	Remove Poles	Estimated Working Days
Versant Power	**X**		**X**	**X**	**60**
Charter Communications			**X**		**20**
FirstLight		**X**	**X**		**60**
Consolidated Communications	**X**	**X**	**X**	**X**	**75**
				Total:	**215**

Utility Specific Issues:

Versant Power

Versant Power has approximately **35 poles** to set as per the pole list included in this specification and has cables to run/transfer to the new pole locations. Versant also has **7 poles** to set outside the project limits to tie in. The contractor shall notify Versant once all poles are staked, pole access is provided, and the clearing and spot cuts/fills are completed. **Versant will require two weeks to schedule their work after notice is received that the prep work is completed.** Once work is scheduled Versant estimates **50 working days to complete their**

work minus 4 poles near the bridge/island that will not be set until after the bridge is constructed due to crane clearances. Versant estimates **10 working days to complete work on the 4 poles** (#6/99, 6/98 ⅓, #6/98 ½ & #6/98) around the bridges/island after the bridge is constructed and crane clearances are not needed anymore (Station 20+75 to 29+48 Rt.). Versant estimates a total of **60 working days to complete all of their work.** Versant will remove the old poles once all transfers are complete.

Charter Communications
Charter Communications has cables to run/transfer to the new pole locations. After Versant has completed their work, Charter shall begin their work. The contractor and/or Versant shall notify Charter once all of Versant's work is completed. **Charter will require two weeks to schedule their work after notice is received.** Once work is scheduled Charter estimates **20 working days to complete their work**. Charter will remove their cable from Station 20+75 to 29+48 Rt. during construction and may re-establish the cable there after construction is completed.

FirstLight
FirstLight has cables to run/transfer to the new pole locations. After Charter has completed their work, FirstLight shall begin their work. The contractor and/or Charter shall notify FirstLight once all of Charter's work is completed. **FirstLight will require two weeks to schedule their work after notice is received.** Once work is scheduled FirstLight estimates **20 working days to complete their transfer work**.

FirstLight will remove their cable from Station 20+75 to 29+83 Rt. and temporarily attach them to the temporary bridge during construction. FirstLight has entered into an Agreement with the Maine Department of Transportation to include the attachment of the conduit to run their temporary cable within in the Department's contract. The Contractor shall perform the conduit work as part of the contract with the appropriate bid items (Item #626.26, 3 Inch Diameter Utility Conduit System, Temporary). The conduit will be installed from 22+32 Lt to 29+48 Lt. FirstLight will run an aerial cable from 20+75 Rt. to 22+32 Lt. and drop their cable into the temporary conduit and rise back up on the pole at 29+48 Lt. and run an aerial cable from there to 29+83 Rt. Once the temporary conduit is installed on the temporary bridge FirstLight estimates **20 working days to complete this temporary cable work**. The aerial line from 20+75 to 29+83 Rt. cannot be abandoned until the temporary conduit and cable is installed.

After the bridge construction is complete FirstLight will re-establish their cable back to the aerial line from 20+75 to 29+83 Rt. FirstLight estimates **20 working days to complete this permanent cable relocation work**. After the new aerial cable is active FirstLight will remove the temporary cable from the temporary conduit. The temporary conduit and temporary bridge removal cannot begin until the new cable is active. FirstLight estimates a total of **60 working days to complete all their work**.

University of Maine System
University of Maine System leases bandwidth from FirstLight's line. **No impacts are anticipated.**

Consolidated Communications
Consolidated Communications (CCI) has approximately **1 pole** to set as per the pole list included in this specification (temporary pole #100D at Station 22+32 Rt.) and has cables to run/transfer to the new pole locations. The contractor shall notify CCI once the pole is staked, pole access is provided, and the clearing and spot cut/fill is completed. After FirstLight has completed their work, CCI shall begin their cable work. The contractor and/or FirstLight shall notify CCI once all of FirstLight's work is completed. **CCI will require two**

weeks to schedule their work after notice is received that the prep work is completed. Once work is scheduled CCI estimates **45 working days to complete their transfer work**.

CCI will remove their cable from Station 20+75 to 29+83 Rt. and temporarily attach them to the temporary bridge during construction. CCI has entered into an Agreement with the Maine Department of Transportation to include the attachment of the conduit to run their temporary cable within in the Department's contract. The Contractor shall perform the conduit work as part of the contract with the appropriate bid items (Item # 626.271, 5 Inch Diameter Utility Conduit System, Temporary). The conduit will be installed from 22+32 Lt to 29+48 Lt. CCI will run an aerial cable from 20+75 Rt. to 22+32 Lt. and drop their cable into the temporary conduit and rise back up on the pole at 29+48 Lt. and run an aerial cable from there to 29+83 Rt. Once the temporary conduit is installed on the temporary bridge CCI estimates **20 working days to complete this temporary cable work**. The aerial line from 20+75 to 29+83 Rt. cannot be abandoned until the temporary conduit and cable is installed.

After the bridge construction is complete CCI will re-establish their cable back to the aerial line from 20+75 to 29+83 Rt. CCI estimates **10 working days to complete this permanent cable relocation work**. After the new aerial cable is active CCI will remove the temporary cable from the temporary conduit. The temporary conduit and temporary bridge removal cannot begin until the new cable is active. CCI estimates a total of **75 working days to complete all their work**.
{Discussion}

Pole List:

Existing Pole #	Existing Station	Left/ Right		Existing Offset	Proposed Station	Left/ Right		Proposed Offset	Comments
		LT	RT			LT	RT		
61/5	3+93.2	X		30.47					OK, BEHIND SIDEWALK
61/4	5+34.4		X	25.49	**5+33**		**X**	**28'**	**REPLACE**
61/3	6+67.6		X	29.57	**6+70**		**X**	**28'**	**REPLACE**
61/2S	8+11.5	X		24.75					OK, BEHIND SIDEWALK
61/2	8+11.9		X	31.81	**8+09**		**X**	**28'**	**REPLACE**
Stub	8+16.9		X	29.59					REMOVE, NOTHING ON POLE
61/1	10+00.5		X	40.43	**9+90**		**X**	**35'**	**REPLACE**
6/107	11+47.0		X	41.72	**11+49**		**X**	**44.9'**	**REPLACE**
6/106	12+73.4		X	29.10	**12+75**		**X**	**29'**	**REPLACE**
106S					**12+75**	**X**		**50'**	**NEW STUB POLE**
6/105	14+10.6		X	27.50	**14+05**		**X**	**27.5'**	**REPLACE**
6/104	15+47.8		X	26.44					EXCEPTION TO BE OK
6/103	16+55.4		X	26.16	**16+50**		**X**	**26'**	**REPLACE**
102S					**17+86**	**X**		**28'**	**NEW STUB POLE**
6/102	17+86.2		X	24.02	**17+86**		**X**	**24'**	**REPLACE**
6/101	19+55.9		X	23.20	**19+58**		**X**	**24'**	**REPLACE**
6/100	20+85.0		X	22.01	**20+75**		**X**	**24'**	**RELOCATE**
6/99	21+95.4		X	20.58	**22+50**		**X**	**24'**	**MOVE, IN PIPE & GR**
100D					**22+32**	**X**		**80'**	**TEMP. POLE/BRIDGE CROSSING**
6/98 1/3	24+02.5		X	20.75	**24+32**		**X**	**24'**	**MOVE, IN NEW ABUTMENT**
6/98 1/2	25+74.3		X	21.64	**25+50**		**X**	**24'**	**MOVE, ABUTMENT/EXCAVATION**
6/98	28+80.0		X	20.70	**28+70**		**X**	**24'**	**MOVE, IN GUARDRAIL**

6/97 1/2s	29+49.9	X		20.70	**29+48**	**X**		**75'**	**MOVE, IN SIDEWALK**
6/97 1/2	29+48.5		X	20.74	**29+48**		**X**	**24'**	**REPLACE, ADD TEMP. PUSH BRACE**
6/97	30+27.6		X	21.70	**29+83**		**X**	**27'**	**MOVE, IN NEW ROADWAY**
6/96	31+62.5		X	22.03	**31+58**		**X**	**32'**	**MOVE, IN NEW ROADWAY**
Joint 1	32+50.2	X		35.40	**32+49**	**X**		**70'**	**MOVE, IN ROADWAY/SIDEROAD**
6/95	32+76.1		X	22.01	**32+76**		**X**	**32'**	**MOVE, IN NEW ROADWAY**
6/94	34+13.5		X	22.16	**34+13**		**X**	**32'**	**MOVE, IN NEW ROADWAY**
6/93	35+45.7		X	28.50	**34+75**		**X**	**32'**	**MOVE, IN NEW ROADWAY/S.R.**
6/92	37+01.3		X	28.74	**36+98**		**X**	**32'**	**MOVE, IN SIDEWALK**
6/91	37+81.8		X	28.53	**37+75**		**X**	**32'**	**MOVE, IN NEW ROADWAY/ENT.**
6/90	39+21.6		**X**	30.39					OK, BEHIND CURB
6/89	40+10.8		**X**	31.23					OK, BEHIND CURB
6/88	41+48.5		**X**	27.37					OK, BEHIND CURB
BENNOCH ROAD									
247/370	61+44.4		X	25.16					OK, BEYOND PROJECT LIMITS
247/371S					**63+00**	**X**		**30'**	**NEW STUB POLE**
247/371	63+2.6		X	24.16	**63+00**		**X**	**22'**	**REPLACE**
60/1	166+60.1		X	19.98'					OK, BEYOND PROJECT LIMITS
COLLEGE AVENUE									
247A/35	81+45.0		X	26.85	**81+40**		**X**	**32'**	**REPLACE**
247A/36	82+71.6		X	24.86	**82+70**		**X**	**36.5'**	**MOVE, IN NEW ROADWAY/CURB**
247A/37	83+78.9	X		17.01	**83+71**		**X**	**37'**	**MOVE, IN NEW ROADWAY**
247A/37.5	85+22.8	X		23.02	**84+74**	**X**		**38'**	**MOVE, IN NEW ROADWAY**
COLLEGE AVENUE EXTENSION									
55/1	87+42.2		X	18.72	**87+50**		**X**	**19'**	**RELOCATE**
55/2	88+13.8	X		58.78					OK, WAY OFF ROAD
55/(3S)3D	89+17.6		X	28.49	**89+40**		**X**	**24'**	**RELOCATE**
55/3	89+25.4	X		21.42	**89+65**	**X**		**20'**	**RELOCATE**

UNDERGROUND

Summary:

Utility	Summary of Work	Estimated Working Days
Bangor Gas Company	Excavation coordination/Watch and Protect	**-**
City of Old Town	Traffic signal power service connections	**-**
Consolidated Communications	Manhole and conduit riser demolitions	-
Old Town Sewer Department	Replace, relocate and adjust sewer facilities	-
Old Town Water District	Replace, relocate and adjust water facilities	-
	Total:	-

Utility Specific Issues:

Bangor Gas Company

Bangor Gas Company has gas mains and gate valves located within the project limits. Some facilities will be close to proposed drainage systems and may need to be slid back to accommodate the new drainage. Bangor Gas company will work with the contractor to accomplish this when the trench is open. Bangor Gas has approximately **2 water gate valves** to adjust to grade. Bangor Gas intends to lower their gate valves prior to pavement removal, where needed. Bangor Gas intends to loosen and raise the gate valves prior to paving surface and estimates **1 working day** to complete the adjustments. **The Contractor will be responsible to make final grade adjustments in conjunction with the paving operations.** The contractor shall provide **two weeks notification** to Bangor Gas for any and all work to be performed by Bangor Gas.

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

City of Old Town

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

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

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

Consolidated Communications

Consolidated Communications (CCI) has underground telephone systems (including direct buried cables, duct structures, conduits and telephone manholes) within the project limits. All existing underground facilities located within the ROW will be abandoned in place except for facilities from 15+35 to 15+55. All CCI aerial work will need to be completed prior to the existing underground facilities being abandoned. The contractor shall not damage the underground telephone systems in any way until CCI has confirmed that they have been abandoned. Once the underground facilities are abandoned the contractor can excavate through the facilities as needed to complete their work. The old telephone manhole at Station 36+29 Rt. will be removed after the underground facilities have been abandoned. CCI has entered into an Agreement with the Maine Department of Transportation to include the manhole demolition in the Department's contract as well as 3 conduit riser demolitions. The Contractor shall perform the demolition work as part of the contract with the appropriate bid items. The manhole located at Station 236+29 Rt. will be removed with Item #202.15 Removing Existing Manhole or Catch Basin. Conduit risers located at Station 35+45 Rt., 37+82 Rt. & 82+71 Rt. will be removed with Item #631.12 All-Purpose Excavator (Including Operator) and #629.05 Hand Labor, Straight Time.

Old Town Sewer Department

Old Town Sewer Department has sewer mains within the limits of the project. The Sewer Department intends to replace, relocate and adjust sections of their sewer facilities. The Sewer Department has entered into an

Agreement with the Maine Department of Transportation to include the sewer work in the Department's contract. The Contractor shall perform the sewer work as part of the contract and shall include the sewer work in the schedule for construction. The work shall be completed in accordance with the plans and special provisions for the sewer work included in the contract documents and shall be completed in a manner that the system remains fully functional at all times unless otherwise approved by the Sewer Department. The Sewer Department requires 2 weeks notification prior to work taking place to schedule their on-site representative for inspection purposes. If a suspension of sewer work occurs the Sewer Department requires 2 weeks notification prior to sewer work starting back up to schedule inspection.

Old Town Water District
Old Town Water District has water mains within the limits of the project. The Water District intends to replace, relocate and adjust sections of their water facilities. The Water District has entered into an Agreement with the Maine Department of Transportation to include the water work in the Department's contract. The Contractor shall perform the water work as part of the contract and shall include the water work in the schedule for construction. The work shall be completed in accordance with the plans and special provisions for the water work included in the contract documents and shall be completed in a manner that the system remains fully functional at all times unless otherwise approved by the Water District. The Water District requires 2 weeks notification prior to work taking place to schedule their on-site representative for inspection purposes. If a suspension of water work occurs the Water District requires 2 weeks notification prior to water work starting back up to schedule inspection.

AMERICAN IRON AND STEEL REQUIREMENTS
New water and sewer utility construction for Old Town Sewer Department and Old Town Water District is funded by the SRF Program. Therefore, **Clean Water Act (CWA) 2014, Section 608,** requirements for the use of AIS in Clean Water State Revolving Fund (CWSRF) projects and **America's Water Infrastructure Act of 2018' (AWIA)** updates and revisions to the Safe Drinking Water Act (SDWA), including the Drinking Water State Revolving Fund (DWSRF) provisions applies an American Iron and Steel (AIS) requirement to this project. Those requirements are incorporated and made a part hereof by reference.

Also see the Old Town Sewer Department and Old Town Water District construction specifications for details of the American Iron and Steel requirements. Note that both AIS and Buy America certifications will be collected for the project files. The AIS certifications will be collected to satisfy the AIS funding agency requirements and documents while the Buy America certifications will be collected to satisfy FHWA project requirements.

BUY AMERICA
Consolidated Communications and FirstLight utility construction work performed as part this federal-aid project is subject to the requirements of Buy America in accordance with Federal Regulation 23 CFR 635.410 Section 1518. Specific requirements are presented in MaineDOT Standard Specification Section 100, Appendix A, Section 3.A., Buy America.

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

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

MAINTAINING UTILITY LOCATION MARKINGS

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

UTILITY SIGNING

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

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS & RESPONSIBILITIES
Communication and Coordination
(Portage Closure)

Section 104, General Rights and Responsibilities, of the Standard Specifications is amended as follows:

104.4.10 Coordination of Bridge Work Notification:

The following paragraphs are added:

The Contractor shall close the river channel to boat traffic that portages around the dam located downstream during the following activities or during any activity that may prove a safety risk:

1. Installation of temporary bridge superstructure
2. Existing bridge removal
3. Installation of new steel beams
4. Installation and removal of deck formwork

Warning signs of the portage closure shall be installed upstream and downstream of the bridge. The existing portage signs shall be covered during the closure of the portage. There are a total of 7 existing portage signs. The existing portage signs at the beginning and end of the portage may require the use of a boat to access the signs. The exact location of portage closure signs shall be approved by the Resident.

The Contractor shall inform the following entities a minimum of ten (10) days before any river closure:

1. Brookfield Dam
   Stillwater Station B
   1052 Stillwater Avenue
   Old Town, Maine
   866-714-6110
   Robert Brochu 207-827-4067
   Robert.Brochu@brookfieldrenewable.com

2. https://oronopaddlers.org orono.paddlers@gmail.com
3. https://paddleandchowder.org
4. Old Town Police
5. Old Town Fire Department

The Contractor shall also publish a notice in the following newspapers before each river closure and when the river is reopened to boaters:

1. Bangor Daily News
2. The Penobscot Times

Basis of Payment The work with the portage signs shall not be paid for directly. This work shall be considered as incidental to related contract items.

December 17, 2010
Supersedes December 30, 2009

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

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

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

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Traffic Control)

Subsection 105.3 Traffic Control and Maintenance shall be amended by the addition of the following:

Vehicular Traffic:

Two lanes of vehicular traffic, one in each direction, shall be maintained at all times on Stillwater Avenue and College Avenue with a minimum total width of 24 feet split evenly except as allowed below:

1. Road closures of Stillwater Avenue will be allowed at night with a maximum duration of 45 minutes between the hours of 1 am and 3 am beginning Monday morning through Thursday morning to allow for the removal of the existing steel beams, delivery and erection of the new structural steel beams, utility work or other work as approved by the Resident. Traffic officers shall be used during night time road closures. The Contractor shall provide a minimum of 3 days of advanced notice of road closures. Messages shall be displayed on variable message boards located on Stillwater Avenue at both ends of the bridge. The Contractor shall contact the following entities a minimum of 3 days in advanced of any road closure:

    a) MaineDOT Region 4 Office
    b) MaineDOT Transportation Management Center (TCM)
    c) Old Town Police
    d) Old Town Fire Department
    e) Orono Police
    f) Orono Fire Department
    g) University of Maine Police Department
    h) Maine State Police Troop E
    i) Penobscot County Regional Communications Center (207-945-4636)
    j) Penobscot County Sheriff's office
    k) Bureau of Maine Vehicles – Over size/Overweight Permits

A nighttime road closure shall not be started if emergency services have been dispatched along Stillwater Avenue. The Contractor shall check with the Penobscot County Regional Communications before any road closures.

2. Stillwater Avenue and College Avenue can be reduced to a single 12' wide traffic lane at night between the hours of 7 pm and 7 am using flaggers. The maximum total length of the work zone along Stillwater Avenue shall be as follows:

    a. 2,500 feet between 7 pm and 7 am

The Contractor shall keep all traffic lanes and turn lanes in operations during the following major events at the University of Maine.

1. University of Maine Hello Weekend starting at 6 am on the Friday of Hello Weekend and ending on Sunday at 6 pm. Hello Weekend is typically the last weekend of August before school starts.

2. University of Maine Commencement/Graduation Weekend between 1 pm Friday and 7 pm Saturday. Commencement is typically the second weekend in May.

3. University of Maine Homecoming Weekend starting at 8 am on the Saturday of Homecoming Day and ending the same day at 8 pm. Homecoming is usually held the 2nd or 3rd weekend in October.

4. All University of Maine home hockey games at Alfond Arena starting 2 hours before the game start time to 2 hours after the game is over including any overtime.

5. All University of Maine home football games at the Harold Alfond Sports Stadium starting 5 hours before the games start time to 2 hours after the game is over including any overtime.

6. Any high school state championships sponsored by the Maine Principals Association (MPA) held at the University of Maine. The Contractor shall contact the Maine Principals Association (207-622-1513) to confirm the date and times for any future championships.

The Contractor shall coordinate with the University of Maine to confirm the exact dates of these events a minimum of 1 month in advance. The Contractor shall inform the Resident in writing of the exact dates of these major events.

The Contractor shall cease all operations and have all travel lanes open to traffic and the roadway in safe operating condition during the following holidays:

Memorial Day Weekend
Friday at noon to Monday at 8 pm

1. May 27 - 30, 2022
2. May 26 - 29, 2023
3. May 24 - 27, 2024
4. May 23 - 26, 2025

July 4th Weekend
July 3rd at 3 pm to July 5th at 6 am

Labor Day Weekend
Friday at noon to Monday at 8 pm

1. September 2 - 5, 2022
2. September 1 - 4, 2023
3. August 30 – September 2, 2024
4. August 29 – September 1, 2025

Thanksgiving Weekend
November 24th at noon to November 25th at 8 pm

Christmas
December 24th at noon to December 25th at 8 pm

Vehicular Traffic at Intersections

Stillwater Avenue and College Avenue Intersection:
College Avenue between the hours of 2 pm and 6 pm between station 82+00 and station 85+35 shall have a total of three traffic lanes. One lane for eastbound traffic to Orono and two lanes westbound traffic. The westbound right lane shall be a thru and right turn lane. The westbound left lane shall be a left turn only lane.

Stillwater Avenue between the hours of 2 pm and 6 pm between station 33+00 and station 35+10 shall have a total of three traffic lanes. One lane for westbound traffic and two lanes for eastbound traffic. The eastbound right lane shall be a right turn only lane. The eastbound left lane shall be a left turn and a thru lane.

Stillwater Avenue and Bennoch Road Intersection:
Stillwater Avenue between the hours of 2 pm and 6 pm between station 8+00 and station11+00 shall have a total of three traffic lanes. One lane for westbound traffic and

two lanes for eastbound traffic. The eastbound right lane shall be a thru and right turn. The eastbound left lane shall be a left turn lane.

Pedestrian Traffic:

A 5' wide ADA compliant sidewalk shall be maintained at all times within the project limits. If a temporary cross walk is installed, rapid flashing beacons shall be installed and operational before pedestrians make use of the temporary crosswalk. The rapid flashing beacons shall be furnished and installed in accordance with Special Provision 634 LED Pedestrian Crosswalk Beacon.

Access to adjacent property owners:

The Contractor shall maintain access at all times to the Brookfield dam property located at station 9+25 right. During work on Brookfield's driveway itself or drainage in front of the driveway, the Contractor shall be able to provide access within twenty (20) minutes. Access to the driveway for the Riverside House of Pizza at station 21+06 right shall be maintained while traffic uses the Special Detour.

SPECIAL PROVISION 105
GENERAL SCOPE OF WORK
Equal Opportunity and Civil Rights
(Disadvantaged Business Enterprises Program)

105.10.1.1 Disadvantaged Business Enterprises Program The Maine Department of Transportation (MaineDOT) has established a Disadvantaged Business Enterprise (DBE) program in accordance with regulations of the United States Department of Transportation (USDOT), 49 CFR Part 26. The MaineDOT receives federal financial assistance from USDOT, and as a condition of receiving this assistance, the Department has signed an assurance that it will comply with 49 CFR Part 26.The MaineDOT is responsible for determining the eligibility of and certifying DBE firms in Maine.

A DBE is defined as a for-profit business that is owned and controlled by one or more socially and economically disadvantaged person(s). For the purpose of this definition:

1. "Socially and economically disadvantaged person" means an individual who is a citizen or lawful permanent resident of the United States and who is Black, Hispanic, Native American, Asian, Female; or a member of another group or an individual found to be disadvantaged by the Small Business Administration pursuant to Section 3 of the Small Business Act.
2. "Owned and controlled" means a business which is:
    a. A sole proprietorship legitimately owned and controlled by an individual who is a disadvantaged person.
    b. A partnership or limited liability company in which at least 51% of the beneficial ownership interests legitimately are held by a disadvantaged person(s).
    c. A corporation or other entity in which at least 51% of the voting interest and 51% of the beneficial ownership interests legitimately are held by a disadvantaged person(s).

The disadvantaged group owner(s) or stockholder(s) must possess control over management, interest in capital, and interest in earnings commensurate with the percentage of ownership. If the disadvantaged group ownership interests are real, substantial and continuing and not created solely to meet the requirements of this program, a firm is considered a bona fide DBE.

105.10.1.2 Commercially Useful Function MaineDOT will count expenditures of a DBE contractor toward DBE goals only if the DBE is performing a commercially useful function on that contract. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. Credit will only be given when the DBE meets all conditions for a CUF. Credit for labor will be in accordance with the responsibilities outlined in the contract. To perform a commercially useful function, the DBE must also be responsible, with respect to materials and supplies used on the Contract, for negotiating price, determining quality and quantity, ordering the materials, and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, MaineDOT will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the Contract is commensurate with the work it is actually performing and DBE credit claimed for its performance of the work, and other relevant factors.

Rented equipment used by the DBE must not be rented from the Prime Contractor on a job that the DBE is subcontracted with that Prime Contractor for regular course of business.

A current listing of certified DBEs that may wish to participate in the highway construction program and the scope of work for which they are certified can be found at http://www.maine.gov/mdot/disadvantaged-business-enterprises/pdf/directory.pdf. Credit will be given for the value described by a DBE performing as:

A. A prime contractor; 100% of actual value of work performed by own workforces.
B. An approved subcontractor; 100% of work performed by own workforces.
C. An owner-operator of construction equipment; 100% of expenditures committed.
D. A manufacturer; 100% of expenditures committed. The manufacturer must be a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Contractor. Brokers and packagers shall not be regarded as manufacturers.
E. A regular dealer; 60% of expenditures committed. A regular dealer is defined as a firm that owns, operates, or maintains a store, warehouse or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public. For purposes of this provision a "Broker" is a DBE that has entered into a legally binding relationship to provide goods or services delivered or performed by a third party. Brokers and packagers shall not be regarded as regular dealers.
F. A bona fide service provider; 100% of reasonable fees or commissions. Eligible services include professional, technical, consultant, or managerial, services and assistance in the procurement of essential personnel, facilities, equipment, materials or supplies required for the performance of the contract. Eligible services also include agencies providing bonding and insurance specifically required for the performance of the contract.
G. A trucking, hauling or delivery operation. 100% of expenditures committed when trucks are owned, operated, licensed and insured by the DBE and used on the contract and, if applicable, includes the cost of the self supplied materials and supplies.100% of expenditures committed when the DBE leases trucks from another DBE firm including an owner-operator. 100% of reasonable fees or commissions the DBE receives as a result of a lease arrangement for trucks from a non-DBE, including an owner-operator.
H. Any combination of the above.

105.10.1.3 Race-neutral Goals The Maine DOT is required to set an annual goal (approved on a three year basis) for DBE participation in Federal-aid projects. In order to fulfill that goal, bidders are encouraged to utilize DBE businesses certified by the MaineDOT. MaineDOT seeks to meet the established DBE goal solely through race-neutral means. *Race-neutral* DBE participation occurs when a DBE is awarded a prime contract through customary competitive procurement procedures, is awarded a subcontract on a contract that does not carry a DBE contract goal, or wins a subcontract from a prime contractor that did not consider its DBE status in making the award. A DBE/subcontractor Utilization Proposed Form is required to be included in bid documents.

MaineDOT will analyze each project and create a Project Availability Target (PAT), based on a number of factors including project scope, available DBE firms, firms certified in particular project work, etc. Each bid will request that the contractor attempt to meet the PAT. This PAT is developed to assist contractors to better understand what the MaineDOT expectations are for a

specific project. The PAT is NOT a mandate but an assessment of what this particular project can bear for DBE participation. The Department anticipates that each contractor will make the best effort to reach or exceed this PAT for the project.

105.10.1.4 Race-conscious Project Goals If it is determined by the Department that the annual DBE goal will not be met through *race-neutral* means, the Department may implement *race-conscious contract goals* on some projects. Race-conscious contract goals are goals that are enforceable by the Department and require that the prime contractor use good faith effort to achieve the goal set by the Department for that particular project. If race conscious means are implemented on a project, the Prime must comply with the requirements of 49 CFR.

At the time of the bid opening, all Bidders shall submit with their bid a Disadvantaged Business Enterprise (DBE) Commitment Form provided by the Department. This form will list the DBE and non-DBE firms that are proposed to be used during the execution of the Work. The list shall show the name of the firm, the item/material/type of work involved and the dollar amount of work to be performed. The dollar total of each commitment shall be totaled and a percentage determined.

If the project goal is not met, acceptable documentation showing all good faith efforts made to obtain participation may be required in order to award the project. Failure to provide the required listing with the dollar participation total or acceptable documentation of good faith efforts to obtain DBE participation within 3 days after the bid opening date will be considered a lack of responsiveness on the part of the low bidder. Rejection of the low bid under these circumstances will require the low bidder to surrender the Proposal Guaranty to the Department. The submission and approval of the above forms does not constitute a formal subcontract.

If for any reason during the progress of the Work the Contractor finds that DBEs included on the list are unable to perform the proposed work, the Contractor, with written release by the committed DBE or approval of the Department, may substitute other DBE firms for those named on the list. If the Contractor is able to clearly document their inability to find qualified substitute firms to meet the project goal, the Contractor may request in writing approval to substitute the DBE with a non-DBE firm. If at any time during the life of the Contract it is determined that the Contractor is not fulfilling the goal or commitment(s) and is not making a good faith effort to fulfill the DBE requirement, the Department may withhold progress payments. If good faith effort is determined by the Department, failure to meet the DBE contract goal will not be a detriment to the bid award. Fulfillment of the goal percentage shall be determined by dividing the dollars committed to the DBEs by the actual contract dollars. These requirements are in addition to all other Equal Employment Opportunity requirements on Federal-aid contracts.

105.10.1.5 Certification of DBE attainment on Contracts The MaineDOT must certify that it has conducted post-award monitoring of all contracts to ensure that DBEs had done the work for which credit was claimed. The certification is for the purpose of ensuring accountability for monitoring which the regulation already requires. The MaineDOT will certify these contracts through review of CUF forms, Elations sub-contract payment tracking as well as occasional on-site reviews of projects and through the project's final closeout documentation provided by our Contracts Section.

105.10.1.6 Bidders' List Survey Pursuant to 49 CFR 26.11 the MaineDOT is required to "create and maintain" a bidders list and gather bidder information on our construction/consultant projects, Contractors will maintain information on all subcontract bids submitted by DBE and Non-DBE firms and provide that information to the Department. The Following information is required:

Firm Name
Firm Address
Firm status (DBE or non-DBE)
Age of firm (years)
And the annual gross receipts amount as indicated by defined brackets, i.e. $500,000 to $800,000, rather than requesting exact figures.

Not only is this information critical in determining the availability of DBE businesses relative to other businesses that do similar work, but the Federal Highway Administration requires that we obtain this information.

MaineDOT DBE Project Attainment Target (PAT)
for this Project is 6%

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

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

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

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

December 5, 2011
Supersedes December 1, 2010

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

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

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

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

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

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

SPECIAL PROVISION
SECTION 106
QUALITY
(Quality Level Analysis- Structural Concrete)

106.7.1 Standard Deviation Method Under H. Replace the Method A payfactor with the following;

"Method A: PF = [32.5 + (Quality Level * 0.75)] * 0.01"

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 for following WIN:

Element	Time	Supplemental LD
WIN 22512.01		
Structural Plate Girders	46 Calendar Days	$1,000 per Calendar Day
Thermal Spray Coating	21 Calendar Days	$1,000 per Calendar Day
WIN 22511.01		
Structural Plate Girders	80 Calendar Days	$1,000 per Calendar Day
Thermal Spray Coating	49 Calendar 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:

> For metal fabrication work: welding, including tack welding, heat correcting, non-destructive examination, assembly verification, and hold points in the approved Thermal Spray Coating procedure and any other times as required in the Standard Specifications or Special Provisions.

SPECIAL PROVISION
SECTION 107
TIME
(Supplemental Liquidated Damages)

The Contractor will be assessed supplemental liquidated damages at the rate of $750 per each 15 minutes, or any part thereof, for not reopening Stillwater Avenue after the allotted maximum duration of 45 minutes for road closures as specified in Section 105.

The Contractor will be assessed supplemental liquidated damages at the rate of $1,000 per day, or any portion of a day, that traffic has not been transferred off of the temporary detour and on to the new bridge after May 22, 2025.

Assessment of supplemental liquidated damages will be in addition to the liquidated damages specified in Section 107 of the Standard Specifications.

SPECIAL PROVISION
SECTION 107
TIME
(Supplemental Liquidated Damages)

The following is added to Standard Specification Subsection 107.8, Supplemental Liquidated Damages:

Station 2+00 to 19+80 and Station 31+45 to 42+00 including associated intersection alignments shall be complete (as defined in the following paragraph) by August 31st, 2023. The Contractor will be assessed Supplemental Liquidated Damages at the rate of one thousand dollars ($1,000.00) per Calendar Day for each Calendar Day that the work is not complete.

Complete is defined as all work items complete and accepted by the Department except for: surface pavement, final line striping and hand striping, the final lift of pavement in driveways.

These assessments of Supplemental Liquidated Damages will be in addition to the Liquidated Damages specified in Section 107 of the Standard Specifications.

SPECIAL PROVISION
SECTION 107
TIME
(Contract Completion Date)

The specified Contract

Completion Date is October 30, 2025

SPECIAL PROVISION
SECTION 108
PAYMENT
(Steel Cost Adjustment)

This Special Provision was developed to minimize risk to the Contractor and steel fabricator(s) associated with current volatile fluctuations in the cost of steel materials.

Description
Steel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in steel prices. All prices and costs are in U.S. Dollars (USD).

Types of Steel Products
An adjustment will be made for fluctuations in the cost of plate and rolled-shape steel used in the fabrication of steel for Contract pay items covered under the following sections of the Standard Specification:

- Section 504, Structural Steel
- Section 507, Railing

The adjustments shall apply to the above items when they are part of the original Contract or Extra Work added by Contract Modification and paid for by agreed unit prices. The adjustments shall not apply when the item is Extra Work added by Contract Modification and paid for at a lump sum price or by Force Account.

Documentation
Sufficient documentation shall be furnished to the Department to verify the following:

1. The dates on which steel was shipped from the mill to the fabricator, and quantity of steel, in pounds, shipped on those dates.
2. The quantity of steel, in pounds, incorporated into the various pay items covered by this Special Provision. The Department reserves the right to verify submitted quantities.

Method of Adjustment
Steel cost adjustments shall be computed as follows:

$$\mathbf{SCA = Q \times D}$$

Where: **SCA** = steel cost adjustment, in USD
Q = quantity of steel incorporated into the work, in pounds
D = price factor, in USD per pound

$$\mathbf{D = MP_B - MP_A}$$

Where: **MP_B** = The Platts Steel Spot Market Prices for Plate, as published by the Engineering News- Record, for the month the steel is shipped from the mill. The price will be converted from USD per ton to USD per pound.

MP_A = The Platts Steel Spot Market Prices for Plate, as published by the Engineering News- Record for the month prior to the bid opening, for work paid for at the Contract price; or for the month the Contract Modification is signed by the Contractor for Extra Work that is paid for by agreed unit prices. The price will be converted from USD per ton to USD per pound.

The total weight of the steel that will be used to calculate the steel cost adjustment for the respective Pay Items is shown in the following table:

Standard Specification Section	Total Weight of Steel (lbs.)
504, Structural Steel	892,000
507, Railings	62,100

No steel cost adjustment will be made for any products manufactured from steel having a mill shipping date prior to the Contract Bid date.

If the Contractor fails to provide the required documentation, the method of adjustment will be calculated as described above; however, the MP_B will be based on the date the steel arrives at the jobsite. In this case, an adjustment will only be made when there is a decrease in steel costs.

Basis of Payment

Steel cost adjustments may be positive or negative but will only be made when there is a difference between the MP_A and MP_B in excess of five percent, as calculated by:

Percent Difference = {(MPB – MPA) / MPA} x 100

Steel cost adjustments will be calculated by the Department and will be paid or deducted when all other Contract requirements for the applicable items of work are satisfied. Adjustments will only be made for fluctuations in the cost of the steel as described herein. No adjustments will be made for changes in the cost of manufacturing, fabrication, shipping, storage, etc.

The steel cost adjustments shall not apply during any time after the Contract Completion Date when the Contractor is being assessed Liquidated Damages.

Cost adjustments, if any, shall be made by Contract Modification in accordance with this Special Provision.

SPECIAL PROVISION
SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS
(Building Removal)

Description

This work shall consist of removing wholly and satisfactory, and disposing of all designated buildings, structures and other obstructions included below. All plywood panels, hasps, padlocks and other materials used to secure the buildings will remain the property of the Department of Transportation. These panels and padlocks will be transportedto a location in the area to be determine by the Property Manager.

All debris and unusable materials shall be removed to an approved transfer station or approved landfill. Under no circumstances shall any material or debris be disposed of by burning on the premises nor shall the debris be burned at an off-premise site. For a related provision, see Department of Environmental Protection Maine Solid Waste Management Rules, 06-096 CMR Ch. 401, Landfill Siting, Design and Operation. All fill material used for the foundation cavities shall meet the Standard Specification requirements for Common Borrow, Section 703.18.

Demolition of the structures will be conducted entirely from the unit location. At no time will demolition vehicles or equipment be in the highway right-of-way. Contractor shallprovide and maintain all temporary barricades, signs or other safety measures as necessary to complete the work. Contractor shall obtain any and all permits or licenses necessary for the performance of the work and conform to all Federal, State and local laws, regulations or ordinancesapplicable to the work.

Buildings to be removed under Section 202 - Removing Structures and Obstructions of the contractwill be made available to the Contractor as follows: Immediately.

Building 1: Old Mill Rd.

Building 2: Stillwater Ave.

No items are reserved to the property owner.

Failure by the Maine State Department of Transportation to meet dates of availability may entitle the Contractor to time extension if requested by the Contractor, in writing, such request indicating delays in construction, if any, caused by changes in availability dates.

The Contractor shall not remove a building until the Contractor has certified it to be free of rodents. Should rodent control measures be required, the Contractor shall procure the extermination services as soon as possible. The cost of extermination services until the building is found to be rodent free will be paid for under Section 109.3.7.5 – Force Account.

The Contractor will re-inspect the building within 7 days after the extermination services are performed. All subsequent inspection costs and extermination services necessary to assure that the building is rodent free at time of removal will be at the expense of the Contractor.

Each building shall be removed promptly after certification that it is free of rodents.

Buildings may or may not contain asbestos. Prior to any demolition of building(s) the Contractor will conduct an asbestos survey on the building(s) to determine if any asbestos exists. The survey will be conducted by a DEP certified Asbestos Inspector. No separate payment will be made for the survey and it shall be considered incidental. The survey results will be communicated with the Resident. If no asbestos is discovered, the demolition process may proceed. If asbestos is found, the Contractor will employ a DEP certified Asbestos Abatement Contractor for its' removal and disposal. The Department will bear all expenses incurred in the abatement of any asbestos containing material as detailed in Standard Specification 109.7.5 – Force Account.

If not completed by the Property Manager, the Contractor shall remove all utility service connections prior to demotion of any buildings. The Contractor shall coordinate disconnection ofoverhead utilities with the appropriate utility companies. Electrical service within portions of anybuilding to be removed shall be disconnected or otherwise shut off by a licensed electrician. Sewerconnections shall be cut off and sealed with a water and gas tight seal or pumped and removed inits entirety. Water connections or services shall be cut and completely capped or plugged in a manner to prevent any flow or seepage of water into the excavated area. The final condition of allservice connections shall be to the satisfaction of the local water and sewer company's utility engineer before such connections are covered by any fill material.

The Contractor shall remove and dispose of all buildings indicated in the bid documents. Cavitiesremaining as a result of foundation or structure removal shall be filled to the level of the surrounding ground. All excavations will be compacted using vibratory equipment in one-foot layers to the surrounding existing grade levels. In this process, the contour and grades of the abutting land are to be followed. Erosion control including loaming, seeding and mulch shall be done, and will be considered to be incidental to the contract.

Upon notice of availability, ownership of the buildings and all the equipment, fixtures and materials therein shall transfer from the State to the Contractor who then shall proceed with the work required. The buildings shall not be used or occupied for any purpose and shall be removed as soon as possible after the date available. All equipment belonging to a utility is excepted from transfer from the State to the Contractor.

Building 1 & 2 contain one oil/fuel tank each that is to be disposed of. Any fuel left in the tanks is a regulatory material and may be reused or disposed of in accordancewith local State and Federal regulations. The tanks are also to be disposed of in accordance with local, State and Federal regulations.

Start and Completion of Work: Work under the contract shall be started within ten (10) days ofreceipt of a fully executed contract. The Contractor will notify the MaineDOT Property Manager prior to the start of the work and agrees that once the demolition is commenced. The work will be performed continuously from day-to-day until completion. The completion date will be that noted on the Contract Agreement, Offer & Award Form.

Method of Measurement: Removing buildings will be measured by the lump sum payment.

Basis of Payment: All work will be paid for at the contract Lump Sum price, which shall be fullcompensation for all materials, labor and equipment necessary for the work described above andas shown in the Plans and/or as directed by the Resident.

Payment will be made under:

Pay Item		Pay Unit
202.08	Removing Building #1 and #2	Lump Sum

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

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

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

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

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

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

TABLE 1: MILLING CONDITIONS FOR ADJOINING LANES

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

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

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

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

TABLE 2: MILLING CONDITIONS FOR THE EDGE OF TRAVELED WAY

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

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

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

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

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

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

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

Basis of Payment

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

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

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

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

Old Town
WIN 22511.01 & WIN 22512.01
Stillwater Bridge #1 (#1472)
Stillwater Bridge #2 (#2806)
Stillwater River – Class B Waterbody
November 17, 2021

SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT
(Dredge Materials)

Management and Disposal: Dredge Material (See MaineDOT Standard Specifications § 101.2 Definitions) is regulated as a Special Waste.

In accordance with CMR 418, 500-cubic yards or less of Dredge Material Beneficially Used in the area(s) adjacent to and draining into the dredged water body is exempt from Beneficial Use Permits. Work associated with Stillwater Bridge #1 (#1472) and Stillwater Bridge #2 (#2806) replacement initiative will require the excavation of select Dredge Material from the Stillwater River. It is anticipated that approximately 16-cubic yards of dredge will be excavated. There may be onsite Beneficial Use for a portion of this Dredge Material, as directed by the Resident; the remaining Dredge Material shall be disposed of at an appropriately licensed facility.

The Contractor shall dispose of project Dredge Material that is not Beneficially Used at the site of generation, at a facility licensed by the Maine Department of Environmental Protection (MDEP) for the management of Special Waste. The Contractor shall be responsible for making all necessary arrangements for dewatering and proper management of the Dredge Material, including any laboratory testing, in accordance with the facility's license. The Contractor shall provide documentation to the Resident demonstrating that Dredge Material was managed as specified. Submitted documentation shall consist of truck manifests, waybills, or related documentation acceptable to the Resident, and shall clearly document the management site location and quantity of Dredge Material.

It is acknowledged that excavation of Dredge for this work may include some boulders. The MDEP has determined that sound boulders (rock 12-inches or more in diameter), that are free of adhering sediment or other contaminants, shall be deemed as Inert Fill material and shall not be included in Dredge Material Quantities.

Method of Measurement: Excavation of Dredge material will be measured for payment under related Contract Items.

Basis of Payment: The accepted quantity of Dredge Material properly disposed of, as Special Waste, will be paid for at the contract unit price bid for Disposal of Special Waste.

Payment shall be full compensation for dewatering, testing, stockpiling, loading, managing, transporting, disposal, and all associated fees.

Payment will be made under:

Pay Item		Pay Unit
203.2318	Disposal of Special Waste	Ton

SECTION 401 - HOT MIX ASPHALT PAVEMENT

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

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

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

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

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

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

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

samples for testing of the mixture. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement. The Contractor shall be allowed to submit aim changes for a JMF as outlined in the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual: Mix Design Approval Section.
The Contractor shall submit a new JMF for approval each time a change in material source or materials properties is proposed. The same approval process shall be followed. The cold feed percentage of any aggregate may be adjusted up to 10 percentage points from the amount listed on the JMF, however no aggregate listed on the JMF shall be eliminated. The cold feed percentage for RAP may be reduced up to 10 percentage points from the amount listed on the JMF and shall not exceed the percentage of RAP approved in the JMF or for the specific application under any circumstances.

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

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

TABLE 2: ALLOWABLE TEMPERATURE RANGES

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

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

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

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

TABLE 3: SEASONAL AND TEMPERATURE LIMITATIONS

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

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

401.07 Hot Mix Asphalt Plant

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

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

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

minimize segregation. All stockpiles used in MaineDOT mixes shall be identified with weatherproof signs at least 12" high and 24" wide, with reflective lettering at least 2" high.

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

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

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

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

401.077 Batch Plants

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

Mixer Unit Clearance between blades and liner shall be 1" maximum, unless the aggregate exceeds 1 ¼" then the clearance shall be 1 ½". The spray bar length shall be at least 75% of the mixer length. The mixer unit shall be a twin pug mill-type mixer capable of mixing continuously for at least 45 seconds after all materials have been introduced into the mixer. The blades in the mixer shall be capable of producing a homogenous mixture. If the mixer is not enclosed, it shall be equipped with an adjustable hood to prevent loss of dust by dispersion. The mixer unit shall be subject to annual inspection prior to removal of safety features and being readied for service. The Contractor shall provide the Department the opportunity to inspect the mixer unit prior to the annual inspection. The Contractor shall provide the Department a minimum period of 72 hours to inspect the mixer unit and provide at least 24 hours' notice that the mixer unit is ready for inspection.

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

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

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

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

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

401.078 Drum Plants

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

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

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

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

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

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

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

a. A loaded truck may be intercepted and weighed on a platform scale that has been sealed by the State Sealer of Weights and Measures within the past 12 months. The inspector will notify the producer to take corrective action on any discrepancy over 1.0%. The producer may continue to operate for 48 hours under the following conditions.

1. If the discrepancy does not exceed 1.5%; payment will still be governed by the printed ticket.
2. If the discrepancy exceeds 1.5%, the plant will be allowed to operate as long as payment is determined by truck platform scale net weight.

If, after 48 hours the discrepancy has not been addressed and reduced below 1.0%, then plant operations will cease. Plant operation may resume after the discrepancy has been brought within 1.0%.

b. Where platform scales are not readily available, a check will be made to verify the accuracy and sensitivity of each scale within the normal weighing range and to assure that the interlocking devices and automatic printer system are functioning properly. If platform scales are not readily

available, a weight with a known mass-verified and sealed annually by a licensed scale company, may be used by hanging weight from silo or surge hopper, at lower middle and upper third levels upon request to verify scale accuracy.

d. In the event of a malfunction of the automatic printer system, production may be continued without the use of platform truck scales for a period not to exceed the next two working days, providing total eights of each batch are recorded on weight tickets and certified by a Licensed Public Weighmaster.

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

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

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

TABLE 4: PAVER REQUIREMENTS

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

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

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

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

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

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

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

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

placed perpendicular to the direction of travel and checked continuously along the length of the lane.

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

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

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

TABLE 5: PLACEMENT CONDITIONS FOR ADJOINING LANES

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

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

The Contractor shall install additional warning signage that clearly defines the centerline elevation differential hazard. Unless otherwise addressed in the contract, the Contractor shall install additional centerline delineation such as a double application of raised pavement markers at 100 foot intervals, or temporary painted line. For any exposed vertical edge between the shoulder and traveled way, at a minimum, the use of temporary painted line, or RPMs placed along the edge of traveled way at 200 foot intervals is required. The Traffic Control Plan shall be amended to include this option and the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of 0.50 mile for the entire length of effected roadway section. If this option is utilized, all additional signing, labor, traffic control devices, or incidentals will not be paid for directly, will be considered incidental to the appropriate 652 items.

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

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

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

The Contractor shall roll the surface when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving. The Contractor shall prevent adhesion of the HMA to the rollers or vibrating compactors without the use of fuel oil or other petroleum-based

release agents. Solvents designed to strip asphalt binders from aggregates will not be permitted as release agents on equipment, tools, or pavement surfaces.

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

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

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

For all items requiring pavement density testing, the Contractor shall cut 6-inch diameter cores at no additional cost to the Department by the end of the working day following paving. Cores shall be cut such that the nearest edge at least 9 inches from any joint. Pre-testing of the cores will not be allowed. If the Contractor and the Department mutually determine that a core is damaged, the Contractor shall cut new core(s) at the same offset and within 3 ft of the initial sample. The Contractor and the Department will mutually determine if underlying material is adhered to the core and if so will mark the core at the point where sawing is needed. The Department will place the cores in a secure container and the Contractor shall transport the cores to the designated MaineDOT lab. The cores will be saw cut by the Department to remove underlying layers. No recuts are allowed at a test location after the core has been tested.
On all sections of overlay with wearing courses designed to be 1 in or less in thickness, there shall be no pay adjustment for density otherwise noted in Section 403 - Hot Mix Asphalt Pavement. For overlays designed to be 1 in or less in thickness, density shall be obtained by the same rolling train and methods as used on mainline travelway surface courses with a pay adjustment for density, unless otherwise directed by the Department.

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

401.16 Joints The Contractor shall construct wearing course transverse and longitudinal joints in such a manner that minimum tolerances shown in Section 401.11 - Surface Tolerances are met when measured with a straightedge. The paver screed shall maintain a uniform head of HMA during transverse and longitudinal joint construction. The HMA shall be free of segregation and meet temperature requirements outlined in Section 401.04. Transverse joints of the wearing course shall

be straight and neatly trimmed. The Contractor may form a vertical face exposing the full depth of the course by inserting a header, by breaking the bond with the underlying course, or by cutting back with hand tools. The Contractor shall apply a coating of emulsified asphalt immediately before paving all joints to the vertical face and 3 in of the adjacent portion of any pavement being overlaid except those formed by pavers operating in echelon. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Department may approve application by a brush for small surfaces, or in the event of a malfunction of the spray apparatus, but for a period of not more than one working day.

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

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

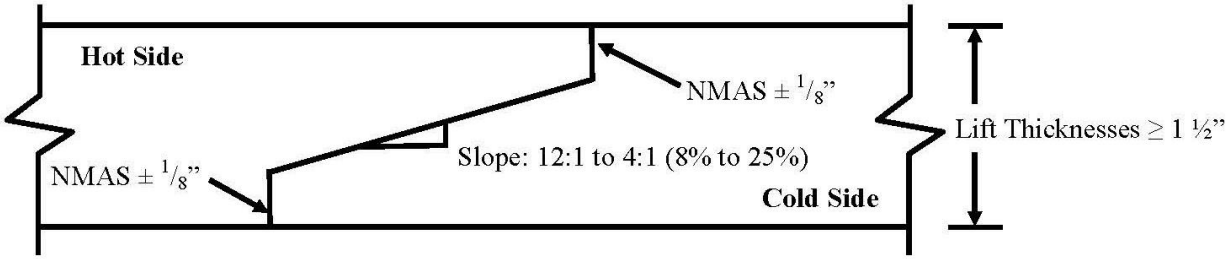


FIGURE 1: Notched Wedge Joint

Notes

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

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

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

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

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

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

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

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

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

a. QCP Administrator - The QCP Administrator must be a full-time employee of or a consultant engaged by the Contractor or paving subcontractor. The QCP Administrator shall have full authority to institute any and all actions necessary for the successful operation of the QCP. The QCP Administrator (or their designee in the QCP Administrator's absence) shall be available to communicate with the Department at all times.

- For items accepted under Methods A and B, the QCP Administrator shall be certified as a Quality Assurance Technologist (QAT) by NETTCP.
- For items accepted under Methods C and D, the QCP Administrator shall be certified by NETTCP as a Quality Assurance Technologist (QAT), Plant Technician, or Paving Inspector.

b. Process Control Technician(s) (PCT) shall utilize test results and other quality control practices to assure the quality of aggregates and other mix components and control proportioning to meet the JMF(s). The PCT shall inspect all equipment used in mixing to assure it is operating

properly and that mixing conforms to the mix design(s) and other Contract requirements, and that delivery slips and plant recordation accurately reflects the mix being produced with all the required information. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one PCT is required. The Plan shall include the criteria to be utilized by the PCT to correct or reject unsatisfactory materials. The PCT shall be certified as a Plant Technician by the NETTCP.

c. Quality Control Technician(s) (QCT) shall perform and utilize quality control tests at the job site to assure that delivered materials meet the requirements of the JMF(s). The QCT shall inspect all equipment utilized in transporting, laydown, and compacting to assure it is operating properly and that all laydown and compaction conform to the Contract requirements. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one QCT is required. The QCP shall include the criteria utilized by the QCT to correct or reject unsatisfactory materials. The QCT shall be certified as a Paving Inspector by the NETTCP.

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

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

a. General Requirements:
    - Job Mix Formulas (JMFs)
    - Name of QCP Administrator, and certification number
    - Description of corrective action process
    - Disposition of defective material
    - A procedure to take immediate possession of acceptance samples once released by MaineDOT and deliver said samples to the designated acceptance laboratory.

b. Process Control Requirements: Each Hot Mix Asphalt plant shall have a Plant Specific Process Control Plan. At minimum the plan shall include:
    - Name of Plant Specific Process Control Technician(s) and certification number(s)
    - Hot mix asphalt plant details
    - Stockpile Management
    - Mixing & transportation
    - Silo management and details
    - A detailed description of RAP processing, stockpiling and introduction into the plant
    - PG Binder management:
        - Tanks and storage (including polymer modified binders if applicable)
        - Binder temperature
        - Sample points
        - Method to ensure mixture contains the specified binder grade
        - Additive introduction details if introduced at the plant
    - Testing and inspection plan for control of aggregates and RAP
    - Mix Testing and inspection plan

c. Quality Control Requirements – Method A & B
   - Name of Quality Control Technicians(s) and certification number(s)
   - Laydown operations
   - Longitudinal joint construction including the tacking of all joints.
   - Procedures for avoiding paving in inclement weather
   - Compaction of shoulders
   - Methods to ensure that segregation is minimized
   - Procedures to determine the maximum rolling and paving speeds based on best engineering practices and past experience in achieving acceptable pavement smoothness.
   - Sequence for paving around drainage structures, under guard rail, around curb, at bridges, intersections, drives and minor approaches to ensure proper compaction, finish, and drainage.
   - Type of release agent to be used on haul units, tools and rollers.

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

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

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

Unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement, the Contractor shall submit a modified QC Plan detailing, how the mix is to be placed, what equipment is to be used, and what HMA plant is to be used for Items covered under the Plan. All mix designs (JMF) shall be approved and verified by MaineDOT prior to use.
A QCP, certified QC personnel, and a Prepave Meeting shall not be required for Item 403.209 - Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals) accepted under visual or Method D. An approved JMF shall be provided to the Resident prior to placement.

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

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

TABLE 6: MINIMUM QUALITY CONTROL FREQUENCIES

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

*Method A and B only

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

TABLE 7: CONTROL LIMITS

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

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

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

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

The Contractor shall make density test results, including randomly sampled densities, available to the Department onsite. Summaries of each day's results, including a daily paving report summarizing the mixture type, mixture temperature, equipment used, environmental conditions, and the number of roller passes, shall be recorded and signed by the QCT and provided to the QC.mainedot@maine.gov email address and Resident in writing by 1:00 p.m. the next working day. The Contractor shall fill all holes in the pavement resulting from cutting cores by the Contractor or the Department with a properly compacted, acceptable mixture no later than the following working day. Before filling, the Contractor shall carefully clean the holes and apply a coating of emulsified asphalt. The Contractor may only cut additional cores for verification of the densometer, at a rate not to exceed 3 per day or 2 per 1000 ton placed.

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

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

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

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

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

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

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

401.192 Quality Control for Method D, (sidewalks, drives, islands & incidentals) and visual acceptance items

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

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

TABLE 8: ACCEPTANCE PROPERTIES – METHOD A & C

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

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

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

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

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

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

*Unless otherwise agreed upon at the Prepave Meeting

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

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

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

TABLE 10: ACCEPTANCE LIMITS – METHOD A & C

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

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

TABLE 11: CEASE PRODUCTION – METHOD A & C

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

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

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

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

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

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

The following variables will be used for pay adjustment:

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

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

TABLE 12: PAY ADJUSTMENT CALCULATIONS – METHOD A & C

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

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

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

TABLE 13: 0.075 MM SIEVE PAY ADJUSTMENT

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

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

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

TABLE 14: ACCEPTANCE PROPERTIES – METHOD B & D

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

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

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

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

TABLE 16: ACCEPTANCE LIMITS – METHOD B & D

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

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

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

TABLE 17: PAY ADJUSTMENTS – METHOD B & D

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

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

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

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

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

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

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

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

TABLE 18: DISPUTE RESOLUTION VARIANCE LIMITS

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

*****Disputes will not be allowed on Item 403.209

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

SECTION 402 - PAVEMENT SMOOTHNESS

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

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

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

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

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

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

TABLE 1: ACCEPTANCE LIMITS

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

Computation of Smoothness Pay Adjustment:

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

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

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

Payment will be made under:

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

SECTION 403 - HOT MIX ASPHALT PAVEMENT

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

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

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

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

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

Payment will be made under:

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

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

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

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

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

Aggregates for HMA Pavement	703.07
HMA Mixture Composition	703.09

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

SPECIAL PROVISION
DIVISION 400
PAVEMENTS

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

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

TABLE 1: VOLUMETRIC DESIGN CRITERIA

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

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

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

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

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

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

TABLE 1A: HAMBURG WHEEL TRACKER REQUIREMENTS

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

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

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

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

TABLE 2A: MINIMUM QUALITY CONTROL FREQUENCIES

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

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

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

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

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

TABLE 3: MINIMUM ACCEPTANCE FREQUENCIES

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

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

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

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

TABLE 4: HWT PAY ADJUSTMENT

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

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

SPECIAL PROVISION
SECTION 401
HOT MIX ASPHALT PAVEMENT

401 HOT MIX ASPHALT LONGITUDINAL JOINT DENSITY

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

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

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

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

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

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

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

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

TABLE 1: LONGITUDNAL JOINT DENSITY ACCEPTANCE LIMITS

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

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

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

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

Where

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

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

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

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

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

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

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

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

Payments will be made under:

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

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT PAVEMENT

Desc. Of Course	Grad Design.	Item Number	Total Thick	No. Of Layers	Comp. Notes
6" HMA - Full Construction Areas (As Directed)					
Stillwater Ave & Bennoch Rd - Travelway & Travelway Base Repair Areas					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,10,21,22,23,24,25,42
Shim	9.5 mm	403.211	variable	1/more	4,10,20,30,42
Intermediate	12.5 mm	403.213	2"	1	4,10,22,23,41,43,45
Base	12.5 mm	403.213	2"	1	4,10,22,23,41,43,45
4" HMA - Full Construction Areas (As Indicated)					
Stillwater Ave - Shoulders					
College Ave, Sideroads - Travelway & Shoulders					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,10,21,22,23,24,25,42
Shim	9.5 mm	403.211	variable	1/more	4,10,20,30,41,42
Base	12.5 mm	403.213	2"	1	4,10,22,23,41
3" HMA - Bridge Decks (As Indicated)					
Stillwater Ave - Travelway & Shoulders					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,10,21,23,24,25,30,41,42
Base	12.5 mm	403.213	1 ½"	1	4,10,23,30,41,42
2" HMA - Mill with HMA Overlay & HMA Overlay with Shim (As Directed)					
College Ave, Stillwater Ave, Bennoch Road, Sideroads					
Travelway & Shoulders					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,10,21,22,23,24,25,42
Shim	9.5 mm	403.211	variable	1/more	4,10,20,30,41,42
Shoulder Reconstruction & Curb Installation - 4" HMA (As Indicated)					
Stillwater Ave, College Ave, & Bennoch Road - Shoulders					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,10,21,23,24,25
Shim	9.5 mm	403.211	variable	1/more	4,10,20,30,41
Base	12.5 mm	403.213	2"	1	4,10,23,32,41,45
Variable Depth Spot Shims (As Directed)					
Shim	9.5 mm	403.211	Variable	1/more	4,10,20,30
Drives & Incidentals (As Directed)					
Wearing	9.5 mm	403.209	2" – 3"	1/more	3,30,32
Temporary Bridge & Sidewalks (As Directed)					
Temporary	12.5 mm	461.131	2" - 3"	1/more	26

COMPLEMENTARY NOTES

2. The required PGAB shall be a storage-stable, homogeneous, polymer modified asphalt binder that meets **PG 64E-**28 grading requirements in AASHTO M 332. All polymer modified asphalt grades utilized on the Project shall be treated with an approved liquid anti-strip. PG binders shall be treated either at the asphalt source terminal with the required dose rate on the delivery documentation, or at the hot mix asphalt plant utilizing a system integrated with the plants controls that will introduce a minimum 0.50 percent anti-strip by weight of asphalt binder used unless a rate is otherwise recommended by the anti-strip manufacturer. The PGAB and anti-strip blend shall meet the **PG 64E-28** requirements. The Contractor shall provide supporting test data showing the PGAB and anti-strip blend meet the required criteria.
3. The aggregate qualities shall meet the design traffic level of <3 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
4. The aggregate qualities shall meet the design traffic level of 3 to <10 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
10. Section 106.6 Acceptance, (2) **Method D** as specified Section 401.21 - Quality Assurance Methods B and D. The Contractor may request a contract modification to change to testing method "C" prior to work starting on this item.
20. The combined aggregate gradation required for this item shall be classified as a 9.5mm Thin Lift Mixture (TLM) mixture, using the Aggregate Gradation Control Points as defined in 703.09.
21. The combined aggregate gradation required for this item shall be classified as a 12.5mm "**fine graded "** mixture, (using the Primary Control Sieve control point) as defined in 703.09.
22. Longitudinal joint density testing shall be applied to the specified HMA layer. See Special Provision 401 – Hot Mix Asphalt Longitudinal Joint Density for project specifics.
23. The mixture shall meet the minimum requirements of Special Provision 401 – HMA Hamburg Wheel Tracker Specification. The Department shall collect 4 additional boxes of HMA on the first day of production and may collect additional material as deemed appropriate.
24. See Special Provision 401 - HMA with Fine Micro-Deval Requirement for project specifics.
25. The Contractor may, at their option, use a Material Transfer Vehicle (MTV) for **all mainline travelway and adjacent shoulders surface course** if paved in the same operation. See Special Provision 401 – Material Transfer Vehicle for specifics.
26. See Special Provision 461 - Temporary Pavement for project specifics.
30. The incentive/disincentive provisions for density shall not apply. Rollers shall meet the requirements of this special provision. The use of an oscillating steel roller shall be required to compact all mixtures pavements placed on bridge decks.
32. In areas inaccessible to a **10 ton** roller, compaction of the new Hot Mix Asphalt Pavement will be obtained using a minimal roller train consisting of a **3-5 ton** vibratory roller. Areas less than 2 feet wide shall be compacted with a minimum of a **150 pound** plate compactor. An approved release agent is required to ensure the mixture does not adhere to hand tools, rollers, pavers, and truck bodies. The use of petroleum based fuel oils, or asphalt stripping solvents will not be permitted.

41. The lower lifts of base and/or shim HMA pavement (consisting of 4 inches in the 6 inch sections, 2 ½ inches in the 4 inch sections, and shim in the 2 inch sections) shall be completed before winter suspension. Bridges shall require 3" of HMA prior to winter suspension should traffic be allowed to traverse. Any surface, base, or shim HMA placed after the seasonal limitations shall be considered temporary and removed and replaced the following construction season. The Department will not be responsible for costs or time related to the placement, removal or replacement of temporary pavement.
42. The Contractor shall plan its construction sequencing so that no longitudinal joints fall within the mainline travelway lanes.
43. The contractor shall mill a butted lap joint into the existing pavement (including construction joints required for sequencing and phasing) at both the beginning and end joints for each pavement layer excluding the bottom base layer. For each layer, the lap joint shall be cut to the depth and width of the pavement layer being placed and extend 5 feet beyond the immediate underlying layer**.** The **butt joint** for the overlying layer shall be **completed prior** to placing the layer adjacent to the joint**.** The Resident may extend this length as determined by the condition of the match point. No additional payment will be made for the milling of the butt joints but will instead be considered incidental to associated paving items.
45. In areas where the sawcut for shoulder reconstruction extends into the traveled way (As Specified or As Directed), pavement in the shoulder and adjacent travelway will be removed to a combined minimum width of 8.5 feet to allow the use of an 8' paver. Pavement shall be placed to a depth matching the required traveled way pavement depth (6" in Stillwater Ave and Bennoch Rd, & 4" in College Ave). Paver shall be a track or rubber tire mounted highway class paver with a minimum tractor weight of 28,000 pounds, equipped with a minimum main screed width of eight feet. The Contractor may option to remove pavement/gravel to the required depth utilizing a milling machine meeting the requirements of SP 202. The removal of pavement, and any additional gravel or existing subbase compaction will be paid under the appropriate contract items.

Tack Coat

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

SPECIAL PROVISION
SECTION 461
TEMPORARY PAVEMENT

Description

This work shall consist of furnishing all labor, materials and equipment, for the manufacturing, installation and removal of all Temporary Pavement in accordance with these specifications, Special Provision 403 Hot Mix Asphalt, and the Plans.

For Temporary Traveled Ways, pavement shall meet all mix design requirements of a 12.5 mm surface mix for the top 1½ inches, and a 12.5 mm base mix for the remaining 1½ inches.

For Temporary Sidewalks and Pedestrian Access, pavement shall meet all mix design requirements of a 9.5 mm surface mix for the required 2 inches.

Acceptance

This work shall not be eligible for mix or density incentive/disincentive.

The Department will accept or reject any HMA based on a **visual basis**, either prior to its use, during placement, or in its final disposition.

Method of Measurement

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

Basis of Payment

The work shall be paid for at the contract Ton price for the manufacturing, installation and removal of all Temporary Pavement.

Payment will be made under:

Pay Item		Pay Unit
461.131	Temporary Pavement	Ton

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

501.01 Description

The following is added to Subsection 501.01 of the Standard Specifications:

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

501.02 Materials

The following is added to Subsection 501.02 of the Standard Specifications:

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

The Contractor shall select grout material supplied from a MaineDOT approved ready mixed concrete batch plant. Ready mixed grout shall achieve a minimum design compressive strength of 5,000 psi at 28 days, have an entrained air content between 6.0 and 9.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the MaineDOT Qualified Products List (QPL) for expansive cements. At least 30 working days prior to beginning construction of the rock-socketed H-pile foundation, the Contractor shall submit the proposed grout mix design to the Resident for review. Grout mix design shall contain no aggregate larger than 0.375 (3/8) inches. In the same timeframe, the Contractor shall also submit to the Resident for review the name and contact information of the independent testing laboratory that will be used to sample and test the grout cubes throughout the course of work at a frequency of no less than once during each continuous grout placing operation. A minimum of six “sets” of 2-in. square grout cubes shall be taken during each grouting operation. One “set” of grout cubes shall consist of a minimum of three individual cubes (i.e., a minimum of 18 individual cubes per each grouting operation). Grout cubes shall be molded, cured and tested in accordance with ASTM C-109. Grout testing will not be measured and paid for separately, but will be considered incidental to related Pay Item No. 501.502. Standard Specification 105.7 shall govern the review process.

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

501.03 Quality Control Plan

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

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

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

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

501.042 Equipment

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

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

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

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

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

501.043 Location and Alignment Tolerances.

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

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

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

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

The vertical distance between the bottom of the abutment and the top of the grout in a rock-socket shall not be less than that shown on the Plans. The maximum vertical deviation of the top of a grout column from that shown on the Plans shall be 2 inches.

501.047 Splicing Piles.

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

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

501.049 Drilling and Rock-Socket Excavation.

The following Subsection is added to the Standard Specifications:

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

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

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

The Contractor shall maintain a grout placement log during each grout placement operation. At a minimum, the log shall contain information such as the: project name and WIN, date of grout placement, bottom depth of grout tube prior to start of grouting, grout placement start and stop times, grout placement equipment and methods, personnel, and weather. Grout

placement logs for each pile or placement shall also include the pile identification, quantity of grout placed, final elevation of the top of the grout placement, and grout flow or placement rate.

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

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

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

501.050 Obstructions

The following Subsection is added to the Standard Specifications:

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

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

501.051 H-Pile and Grout Installation

The following Subsection is added to of the Standard Specifications:

The H-pile shall be lowered to the bottom of the bedrock-socket and then raised and temporarily suspended above the bottom of the rock-socket as shown on the Plans. The socket shall then be filled with grout using tremie methods. "Wet sticking" or placing the pile into wet grout, is prohibited. The Contractor shall support the H-Piles vertically and laterally in their final positions until laboratory test results have been submitted that indicate that the minimum required compressive strength of the grout has been achieved and the abutment is complete and in place.

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

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

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

501.05 Method of Measurement.

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

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

501.06 Basis of Payment.

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

The accepted quantity of Rock Socketed H-Piles, In Place, will be paid for at the Contract Unit Price per linear foot, complete and in place. Such payment will be full compensation for all materials, equipment, testing, and labor to install the piles, including excavation, installing the drill casing, drilling out rock sockets, grouting, backfilling, and all incidentals necessary to complete the work specified in the Contract Documents.

Payment will be made as follows:

Pay Item		Pay Unit
501.502	Rock-Socketed H-Piles 117 lb/ft, in place	Linear Foot
501.804	Drilling Equipment Mobilization, Rock-Socketed H-pile	Lump Sum

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Class A2 Concrete, Sidewalks and Curbs)

502.01 Description

The following is added to Subsection 502.01 of the Standard Specifications:

This work shall consist of providing all materials, equipment, and labor necessary for construction of concrete sidewalks and curbs as shown on the Plans, or as directed or authorized by the Resident. Construction of concrete sidewalks and curbs shall be as specified in Section 502 of the Standard Specifications, except as amended herein.

502.05 Composition and Proportioning

The following is added to Subsection 502.05 of the Standard Specifications:

Modify Table 1 by adding a row for Class A2 (Sidewalks & Curbs)

Concrete CLASS	Compressive Strength (PSI) LSL	Permeability as indicated by Surface Resistivity (KOhm-cm)	Entrained Air (%) LSL	USL	Notes
A2 (Sidewalks &Curbs)	3500	14	5.0	8.0	1,4,5,6

Class A2 cast-in-place concrete for sidewalks and curbs shall contain no more than 580 lbs/yd^3 of cement and not more than 600 lbs./yd^3 of cementitious material. Pozzolans are included as cementitious material.

The following additional note shall apply to Class A2 Concrete used for concrete sidewalks and curbs:

Add Note #6 Shrinkage testing shall be done with a trial batch at least 128 days prior to any concrete placement and shall be conducted in accordance with AASHTO T160 (ASTM C157). The test results shall be submitted to the Department for information purposes only. The concrete mix design shall be submitted by the Contractor to the Department for review no

later than 4 weeks prior to trial batching or placement. No sidewalk and curb concrete shall be placed until the concrete mix design is approved by the Department.

502.19 Basis of Payment.

The following is added to subsection 502.19 of the Standard Specifications:

All costs associated with the additional testing, trial batches, and admixtures as described herein shall be considered incidental to related items.

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

Description

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

Specifications

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

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

2.3 Standards

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

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

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

D.) ASTM D 4385. *Standard Practice for Classifying Visual Defects in Thermosetting Reinforced Plastic Pultruded Products.* American Society for Testing and Materials, West Conshohocken, PA.

E.) ASTM D 570. *Test Method for Water Absorption of Plastics.* American Society for Testing and Materials, West Conshohocken, PA.

F.) ASTM E 1356. *Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry.* American Society for Testing and Materials, West Conshohocken, PA.

G.) ASTM E 1640. *Standard Test Method for Assignment of the Glass Transition Temperature by Dynamic Mechanical Analysis.* American Society for Testing and Materials, West Conshohocken, PA.

H.) ASTM C 582. *Standard Specification for Contact-Mold Reinforced Thermosetting Plastic (RTP) Laminates for Corrosion-Resistant Equipment.* American Society for Testing and Materials, West Conshohocken, PA.

Material

Materials shall conform to the following requirements:

1. FRP composite drain and pipe material shall meet the requirements of Appendix A.

2. All material and workmanship will meet or exceed the requirements of the ASTM Specifications above.

3. Drain support assembly shall meet the material and protective coating requirements specified in the Standard Details.

Construction Requirements

FRP Drain Manufacturers

The FRP bridge drains shall be supplied by one of the following companies:

1. Kenway Corporation
2. FRP Bridge Drain Pipe-Westfall Company
3. ACO USA

The above suppliers have been pre-certified by providing materials samples that have been tested in accordance with Appendix A. Other suppliers/manufacturers may become certified if FRP bridge drain samples are tested in accordance with the requirements in Appendix A along with meeting the following requirements.

All manufactures or fabricators of FRP bridge drain systems/components are required to have a minimum of 3 years of experience in providing FRP composite structural grade products to the general market. Manufacturers need to provide documentation that personnel involved in manufacture/fabrication hold and maintain American Composites Manufactures Association (ACMA) certifications in a minimum of one of the following disciplines: 1) Open Molding, 2) Corrosion, 3) Vacuum Infusion, 4) Closed Molding and that the Manufacturer/Fabricator have an

ISO 9001:(current year) or other independent certification to ensure that the Manufacturer's process has been independently audited for conformance.

Design Guide for FRP Composite Scupper Bodies/Drain Inlets

General

The bridge shall use a drain size specified on the plans. See Appendix B for additional details. The bottom of the downspout shall extend a minimum of 12 inches below the bottom of the beams. For bridge decks with an integral concrete wearing surface, the drain pan depth shall be reduced to provide adequate concrete cover.

Deck/interface drain holes.

For bridge decks with pavement and waterproofing membrane, drain holes are required on both sides of the scupper to capture moisture at the interface between the top of the deck and bottom of the asphalt pavement. Three holes one half inch in diameter spaced at 6 inches on center and three and one quarter inches on center below the top of the grate, or pavement thickness, shall be placed on both sides of the scupper. If the holes are created after the molding process by punching, drilling or other mechanical means the holes shall be sealed using a compatible epoxy compound.

Grates

Grates shall be bicycle friendly and designed for HL-93 Live Load unless otherwise specified. Any gaps in grates shall have a maximum clear width of two inches. The minimum clear opening size in any grating shall be 1 1/8” by 1 1/8“. Grates shall be stainless steel (ASTM A995) or FRP specifically designed and meeting the HL-93 Live Load requirements.

- Steel grating shall be commercial heavy - duty grating with 1 1/2" x 5/16" bearing bars spaced at 2 3/8” and 3/8" diameter cross bars spaced at 2”. The grating shall be centered in the drain top. The bearing bars shall run parallel to traffic.
- FRP grating if used shall provide an opening area at least 75% of steel grating noted above. FRP gratings that do not meet this requirement are not acceptable and shall not be used.

Grates shall be designed so that they can be removed by mechanical means. Fasteners for grates shall be stainless. Where selected grates require orientation to flow, the grates will have orienting features included as required, i.e. for orders of paired drains one drain would have left hand orientation and the other right-hand orientation.

Grate Frames

Grate frames may be either integrated FRP composite or of stainless steel construction attached to the scupper/inlet body in a matter consistent with the physical design parameters.

Anchoring provisions
Scupper/inlet anchoring shall be bonded to the grate framing in a manner that provides a load path into the concrete decking. Anchor details to be specified as part of the shop drawings for the bridge drains and be a non-corrosive material.

Cross and Longitudinal Slope Compensation
The scupper/inlet designs shall provide a means to match the grate to the deck angles while maintaining the downspout in a plumb orientation. If purchased in pairs, one left-handed version will be required for each right-handed version. This may be achieved when a down spout portion is bonded to the scupper body, through the frame attachment to the scupper body.

FRP Composite Drain Sections
Bridge deck downspouts, bridge drain deck extensions, elbows and pipe for under drains shall be constructed using a circular cross section; however other cross sections are allowed with approval of the Fabrication Engineer. Drain sections shall comply with the material requirements set forth in Appendix A and maintain wall thickness of no less than 1/4 inch.

FRP Composite Deck Drain Extensions.
Down spout drain extensions shall be integrated and bonded directly to the scupper bodies.

Transitions through Connections and Components.
All transitions and joints to be manufactured through the use of smooth radius molds. Miter joint and edged transitions are not allowed. All internal joint connections are to be smooth and continuous.

Pigmented FRP Composite Drain Components
Pipes, fittings, bodies and all FRP composite drain system components shall be pigmented through the wall. The color used shall match the color of the beams unless otherwise allowed by the Fabrication Engineer. Paint, gel-coat or any other exterior coating shall not be accepted.

Joint Connections
Joints may be welded using manufacturer recommended adhesives in accordance with the adhesive manufacturer's application procedures. Adhesives must be compatible with the FRP resins, applied in a way that ensures complete bonding and liquid tight sealing of the resins, and be compatible with the environmental conditions such as temperature, freeze thaw conditions, and wet alkaline environments.

Shop Drawings/Inspection

Drawings
The Contractor shall prepare shop detail, erection, and other necessary working drawings in accordance with Section 105.7 - Working Drawings. Drawings shall include dimensions and

tolerances necessary for manufacture and installation, all hardware, orienting features, anchor details, fastener details, gasket details, cross and longitudinal matching features, joint details, transition details, and material lay-up/composition

Notice of Beginning Work

The Contractor shall give the Fabrication Engineer a minimum of two weeks notice before the beginning of work. No work shall be performed before the Fabrication Engineer has been notified. Before beginning work, a pre-fabrication meeting may be held at the discretion of the Fabrication Engineer or, if requested, by the Contractor.

The Contractor shall advise the Fabrication Engineer of the production schedule and any changes to it. If the Contractor suspends work on a project, the Fabrication Engineer will require 48 hours notice prior to the resumption of work.

Inspection

Quality Control (Q.C.) is the responsibility of the Contractor. The Quality Control Inspector (Q.C.I.) shall inspect all aspects of the work and shall supervise all nondestructive examination (NDE). The Q.C.I. shall record measurements and test results in a clear and legible manner. The Q.C.I. shall reject materials and workmanship that do not meet contract requirements. The Contractor may perform NDE in addition to the minimum required. The results of all measurements and testing shall be made available to the Quality Assurance Inspector (Q.A.I.).

Quality Assurance (Q.A.) is the prerogative of the Fabrication Engineer. The Q.A.I. will ensure that the Q.C. Department is performing properly, verify documentation, periodically inspect workmanship and witness NDE. Q.A. testing deemed necessary by the Fabrication Engineer in addition to the minimum testing requirements shall be scheduled to minimize interference with the production schedule.

Inspector's Authority

The Q.A.I. will have the authority to reject material or workmanship that does not meet the contract requirements. The acceptance of material or workmanship by the Q.A.I. will not prevent subsequent rejection, if found unacceptable.

Rejections

Rejected material and workmanship shall be corrected or replaced by the Contractor.

Bill of Materials

The Contractor shall provide the Fabrication Engineer with copies of all bills of materials used in the fabrication of the FRP bridge drains.

Packaging, Storage and Shipping of Components

FRP drains shall be stored and handled in accordance with the manufacturer's recommendation. The drains shall be stored above the ground and not be allowed to come into contact with seawater, mud, grease, dirt or other deleterious materials that may be present on the job site.

Installation

The Contractor shall install the FRP drains in accordance with the manufacturer's installation procedures, Contract Plans, and in accordance with the Contractor's installation drawings. FRP bridge drains will be accurately placed at the locations shown on the Plans or as authorized by the Resident. Adequate means shall be provided for securely holding the drains in place during placement of concrete. Any damaged drain shall be repaired or replaced at the Resident's discretion and at no additional cost to the Department.

Method of Measurement

FRP Bridge Drains will be measured by the number of units, for fabrication and delivery. Installation for the drains will be incidental to the Structural Concrete Superstructure item.

Basis of Payment

FRP Bridge Drains will be paid for at the contract unit price. Such payment will include compensation for the fabrication and delivery of the drains in accordance with this specification.

Payment will be under:

Pay Item		Pay Unit
502.77	FRP Bridge Drain –Type F	Each
502.77	FRP Bridge Drain –Type B	Each

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

APPENDIX A

A.1 Scope
This section specifies the material composition, properties, test requirements and reports that shall be submitted and approved prior to and after product certification of each FRP composite drain component type, e.g. scupper body or pipe component. The manufacturer is responsible for testing using an approved independent lab per section A.5.3. Once certified the approved product may be manufactured with only internal testing provided the manufacturing process and laminate composition do not change. Changes to process and or composition do require additional testing and product certification. The manufacturer shall report the individual test results per section A.5.3. If the strength is less than the required properties certification will not be granted.

A.2 Material/Laminate Composition

A.2.1 Fibers
Fiber sizings and coupling agents shall be compatible with the resin system used to impregnate them.

A.2.2 Matrix Resins
Commercial grades of vinyl ester and epoxy resin systems are permitted provided the finished product meets the material property requirements before and after durability conditioning as set forth in Section A. Styrene is permitted to be added to the polymer resin during processing. Added styrene shall be less than 10 percent by mass of the polymer resin. The amount of styrene, as a mass percentage of the polymer resin, added during processing shall be reported per Section A.5.3.

A.2.3 Fillers and Additives
Commercial grade inorganic fillers such as kaolin clay, calcium carbonate, and alumina tri-hydrate shall not exceed 20 percent by mass of the polymer resin constituent. Commercial grade additives and process-aids, such as release agents, low profile shrink additives, initiators, promoters, hardeners, catalysts, pigments, fire-retardants, and ultra-violet inhibitors are permitted and depend on the processing method. Shrink additives, if used, shall be less than 20 percent by mass of the polymer resin. Commercial grade inorganic or organic non-woven surfacing mats or veils are permitted.

A.2.4 Fiber Content
Fiber content shall be measured by ASTM D 3171 or ASTM D 2584. Fiber content shall be high enough to meet the mechanical property requirements of the FRP system laminate. The manufacturer shall report the fiber content of the end product by volume or by mass in accordance to the method used. If fiber content is not provided by the manufacturer, then the manufacturer shall provide material data sheets with the weight per unit area of the fiber reinforcement used to manufacture the part.

A.2.5 Glass Transition Temperature
The characteristic value of the glass transition temperature of the composite system, determined in accordance with ASTM E1640, shall be at least 40 degrees Fahrenheit higher than the maximum design temperature, $T_{MaxDesign}$, defined in section 3.12.2.2 of the AASHTO LRFD Guide Specifications for Design of Concrete-Filled FRP Tubes for Flexural and Axial Members, 2012. FRP drain systems may not be used in environments with a service temperature higher than the glass transition temperature of the resin used for their manufacturing.

A.2.6 Longitudinal and Transverse Coefficients of Thermal Expansion (CTE)
The coefficient of Thermal Expansion (CTE) of the tube may vary in the longitudinal and circumferential directions of the component depending on the laminate architecture and type of fibers and resins.

A.3 Mechanical Properties

A.3.1 Tensile Properties
The tensile strength, tensile modulus of elasticity, and ultimate tensile strain shall be determined for both the axial and hoop directions of the tubular components or in transverse and longitudinal directions of inlet bodies, see Section A.5.1 Test Samples. The tensile strength as reported by the manufacturer for product certification shall be measured according to ASTM Test Method D 3039, or other tension test method designed to determine tensile properties of composite laminates at the approved frequency and number of specimens as specified in section A.5.

A.3.4 Compressive Properties
The compressive strength and ultimate compressive strain shall be determined for the longitudinal directions of the tube laminate. The compressive strength and ultimate compressive strains shall be derived from specimens tested in accordance with ASTM Test Method D 6641, or other approved compression test method designed to determine compressive properties of the composite.

A.4 Durability Properties
Material properties shall retain 85% of their baseline values for the material properties listed in Section 2.3 after conditioning for all the durability tests listed below. Durability test methods are adopted from AASHTO Guide Specifications for Design of Bonded FRP Systems for Repair and Strengthening of Concrete Bridge Elements.

Durability property testing is only required for initial product certification and not required for subsequent production orders. The testing is the responsibility of the manufacturer and shall be conducted by an approved independent testing lab per section A.5.2.

A.4.1 Moisture Absorption
Samples will be immersed in distilled water having a temperature of 100 +/-3 degrees Fahrenheit and tested after 1,000 hours of exposure.

A.4.2 Resistance to Alkaline Environment
Samples will be immersed in a saturated solution of calcium hydroxide (pH-11) at ambient temperature of 73 +/-3 degrees Fahrenheit for 1,000 hours prior to testing. The pH level will be monitored and the solution will be maintained as needed.

A.4.3 Alternating Ultraviolet Light and Condensation Humidity
Samples will be conditioned in an apparatus under Cycle I-UV exposure condition according to ASTM G154 Standard Practice. Samples will be tested within two hours after removal from the apparatus.

A.4.4 Freeze-Thaw
Samples will be exposed to 100 repeated cycles of freezing and thawing in an apparatus meeting the requirements of ASTM C666.

A.5 Sampling, Testing & Results.

A.5.1 Test Samples.
The manufacturer is responsible for testing and may use samples in accordance to the test methods and needs of test equipment available. Test coupons may be cut from manufactured products or prepared using identical processes e.g. wet lay-up, vacuum infusion, etc. in a flat sheet, or witness plate, in which test coupons may be cut. Approval of the Fabrication Engineer shall be required for acceptance of test specimens produced by a different manufacturing method. Samples derived from special coupon test sheets shall be taken interior to edge sections 1.5x the width of the required coupon width. Samples shall be prepared from samples oriented with the directions illustrated in figures 1 and 2 for scupper body and drain pipes. For samples from filament wound pipes, samples shall be constructed over polygon mandrels allowing for flat panels to be removed for test purposes. Each test shall use a quantity of three samples. See Tables A.5.4 for tests, material requirements and sample breakdown.

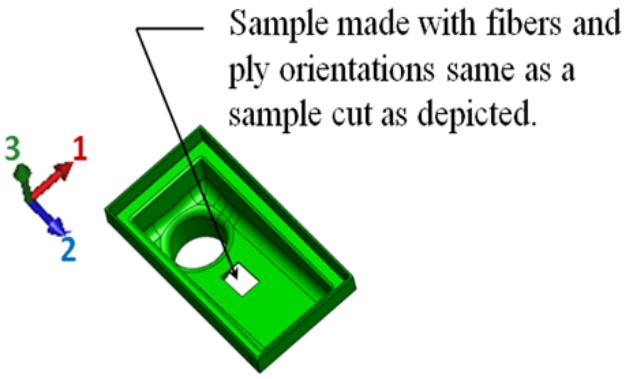


Figure 1.) Scupper Body Sample Orientations.

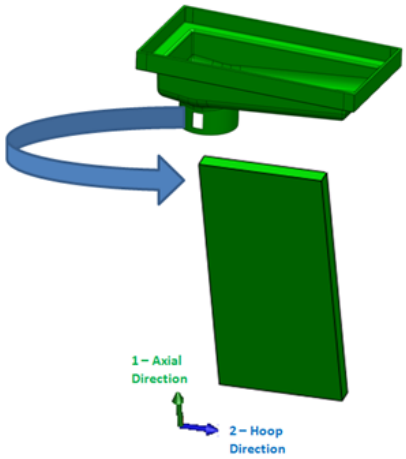


Figure 2.) Drain Pipe Sample Orientations.

A.5.2 Test Lab Requirements.
All testing of FRP material properties is being conducting in accordance to specified standards. Internal or external testing is to be conducted through laboratory facilities in accordance to ISO/IEC Guide 58, *Calibration and Testing Laboratory Accreditation Systems - General Requirements for Operation and Recognition* and ISO/IEC 17025 *General Requirements for the Competence of testing and Calibration Laboratories* as related by AASHTO document R18 "Recommended Practice for Establishing and Implementing a Quality System for Construction Materials Testing Laboratories."

A.5.3 Production Validation (PV) Testing.
Certification of materials used in FRP drain products must undergo PV testing of the specified material properties before and after environmental conditioning as set forth in Section A.5.4 by an independent lab. PV tests may be conducted internally by the manufacturer for development but are not acceptable for certification. Reported values for the material composition is be recorded and reported by the manufacturer, no independent audit is required.

A.5.4 Production Validation Sample Quantities, Minimum Material Properties and Reported Values
The following data shall be reported for material certification. Note that the tables shown use orientations related to FRP scupper or inlet bodies as set forth in Figure 1 of Section A.5.1. When evaluating tubular sections, orientation direction 2 as shown in Figure 2 of Section A.5.1 shall be substituted for orientation direction 3. The required number of samples have been reduced from ASTM requirements.

Table A.5.4.a PV reported material composition data. (Recorded by the manufacturer during the manufacturing process)

Section No.	Characteristic	Applicable Test Standard	Number of Samples	Tolerance	Reported
A.2.2	Styrene, mass percentage of polymer resin	per tolerance	N/A	10% max	
A.2.3	Inorganic fillers, mass percentage of polymer resin.	per tolerance	N/A	20% max	
	Shrink additives, mass percentage of polymer resin.	per tolerance	N/A	20% max	
A.2.4	Fiber Content	ASTM D3171 or ASTM D2584	3	Sufficient to meet mechanical properties	
A.2.5	Glass Transition Temperature	ASTM E1640	3	> Max Design Temperature	

Table A.5.4.b PV Reported Baseline Mechanical Properties

(Conducted by an independent laboratory. Samples as Manufactured w/o additional conditioning per Section A.3)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	10000 (psi)				
		Tensile Modulas of Elasticity			800000 (psi)				
		Ultimate Tensile Strain			0.003 in/ in				
	2	Tensile Strength		3	10000 (psi)				
		Tensile Modulas of Elasticity			800000 (psi)				
		Ultimate Tensile Strain			0.003 in/ in				
A.3.4	1	Compressive Strength	ASTM D6641	3	22000 (psi)				
		Ultimate Compressive Strain			0.003 in/ in				
	3	Compressive Strength		3	22000 (psi)				
		Ultimate Compressive Strain			0.003 in/ in				

Table A.5.4c PV Reported Mechanical Properties after 1000 hr. Moisture Immersion Condidtioning per Section A.4.1

(Conducted by an independent laboratory)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
	2	Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
A.3.4	1	Compressive Strength	ASTM D6641	3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				
	3	Compressive Strength		3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				

Table A.5.4d PV Reported Mechanical Properties after 1000 hr. of Alkaline Environment Conditioning per Section A.4.2

(Conducted by an independent laboratory)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
	2	Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
A.3.4	1	Compressive Strength	ASTM D6641	3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				
	3	Compressive Strength		3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				

Table A.5.4e PV Reported Mechanical Properties after UV Light Conditioning per Section A.4.3 (ASTM G154).

(Conducted by an independent laboratory)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
	2	Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
A.3.4	1	Compressive Strength	ASTM D6641	3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				
	3	Compressive Strength		3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				

Table A.5.4f PV Reported Mechanical Properties after 100 Freeze-Thaw Cycle Conditioning per Section A.4.4 (ASTM C666).

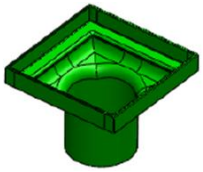
(Conducted by an independent laboratory)

						Independent Lab Reported Values			
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Minumum Allowable Values	Sample 1	Sample 2	Sample 3	Avg Value
A.3.1	1	Tensile Strength	ASTM D3039	3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
	2	Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
A.3.4	1	Compressive Strength	ASTM D6641	3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				
	3	Compressive Strength		3	18700 (psi)				
		Ultimate Compressive Strain			0.0025 in/in				

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

APPENDIX B

Standard Details



Bridge Drain – Symmetric Inlet

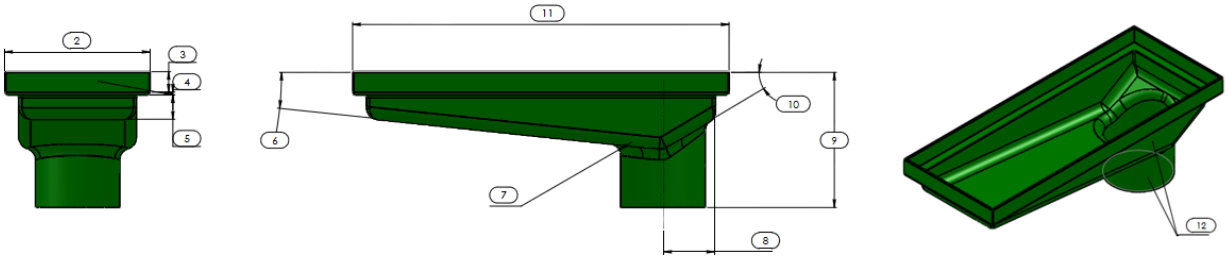
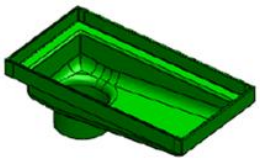


Table B1 Preferred Symmetric FRP Composite Inlet Bodies

	Size Designation	A	B	C		
	Size Dimensions (Grate Length x Width, Down Spout Diameter)	12x12xØ8	14x14xØ10	18x18xØ12		
Dimension		Nominal Dimensions			Nominal Design Tolerance	Manufacturing Tolerance
Number	Name					
1	Down Spout Inner Diameter	8"	10"	12"	min	+/- 0.015"
2	Grate Frame Width	12"	14"	18"	+/- 1"	+/- 0.025"
3	Grate Frame Height	As required to contain grate and recessed from deck surface				
4	Grate Frame Flange & Wall Thickness	0.25"	0.25"	0.25"	min	+/- 0.025"
5	Scupper Toe Depth	4"	4"	4"	+1"/-0"	+/- 0.1"
6	Scupper Toe Slope	1:10	1:10	1:10	min	+ 1 degree
7	Scupper Body Radii	2"	2"	2"	min	+0.1"
8	Down Spout Position to Heel	6"	6"	6"	+/- 0.5"	
9	Height	18"	18"	18"	Open	+/- 0.25"
10	Scupper Heel Slope	1:10	1:10	1:10	min	+0.1"
11	Grate Frame Length	12"	14"	18"	+/- 1"	+/- 0.025"
12	Scupper and Down Spout Wall Thickness	0.25"	0.25"	0.25"	min	+0.015"



Bridge Drain-Offset Scupper

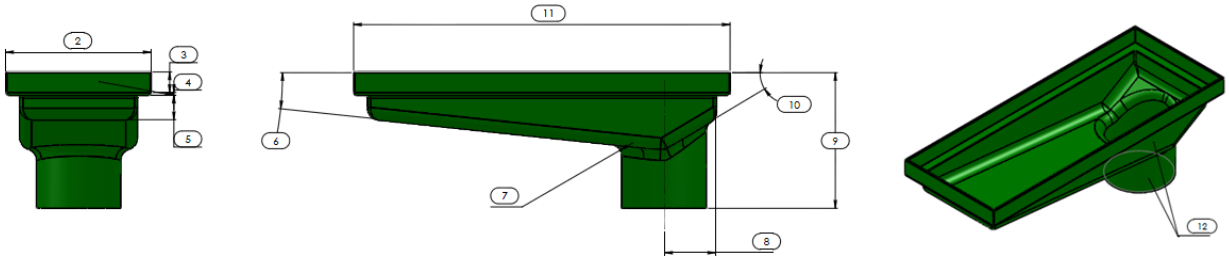


Table B2 Preferred Offset FRP Composite Scupper Bodies

	Size Designation	D	E	F	G		
	Size Dimensions (Grate Length x Width, Down Spout Diameter)	24x12xØ8	30x12xØ10	36x12xØ10	42x12xØ12		
Dimension		Nominal Dimensions				Nominal Design Tolerance	Manufacturing Tolerance
Number	Name						
1	Down Spout Inner Diameter	8"	10"	10"	12"	min	+/- 0.015"
2	Grate Frame Width	12"	12"	12"	12"	+ 2"/-0"	+/- 0.025"
3	Grate Frame Height	As required to contain grate and recessed from deck surface					
4	Grate Frame Flange & Wall Thickness	0.25"	0.25"	0.25"	0.25"	min	+/- 0.025"
5	Scupper Toe Depth	4"	4"	4"	4"	+1"/-0"	+/- 0.1"
6	Scupper Toe Slope	1:10	1:10	1:10	1:10	min	+ 1 degree
7	Scupper Body Radii	2"	2"	2"	2"	min	+0.1"
8	Down Spout Position to Heel	6"	6"	6"	6"	+/- 0.5"	
9	Height	13.5"	16"	18"	18"	Open	+/- 0.25"
10	Scupper Heel Slope	1:10	1:10	1:10	1:10	min	+0.1"
11	Grate Frame Length	24"	30"	36"	42"	+ 2"/-0"	+/- 0.025"
12	Scupper and Down Spout Wall Thickness	0.25"	0.25"	0.25"	0.25"	min	+0.015"

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

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
A	502.219	Structural Concrete, Abutments and Retaining Walls	$400	A
A	502.239	Structural Concrete Piers	$400	A
A	502.26	Structural Concrete Roadway and Sidewalk Slab on Steel Bridges	$400	A
A	502.31	Structural Concrete Approach Slab	-	C
S	502.49	Structural Concrete Curb and Sidewalks	-	C
S	502.249	Structural Concrete Piers (placed under water)	-	C
A	608.26	Curb Ramp Detectable Warning Field	-	C
A	626.35	Controller Cabinet Foundation	-	C
LP	626.421	24-Inch Foundation	-	C
LP	626.451	42-Inch Foundation	-	C
LP	626.46	48-Inch Foundation	-	C
LP	626.48	60-Inch Foundation	-	C

P Values listed above reflect the price per cubic yard (yd^3) for pay adjustment purposes.
Pay adjustments will be in accordance with the Standard Specification Section 502.195.

SPECIAL PROVISION
SECTION 507
RAILINGS
(Steel Approach Railing)

Description

This work consists of furnishing and installing steel approach railing and its attachment to a steel bridge railing system and guardrail transition.

Materials

All materials shall conform to the requirements of the Standard Specifications, Standard Details, and Contract Plans as applicable.

Construction Requirements

All components shall be fabricated and installed in accordance with the Standard Specifications, Standard Details, and Contract Plans at locations shown on the Plans or as directed by the Resident. The steel approach railing shall be positioned so as to provide a neat and smooth transition from the bridge railing to the highway guardrail, without kinks or abrupt change in orientation.

Embankment material around the rail posts shall be thoroughly compacted. Curbing shall be set flush with the face of the bridge curb.

On 4-bar approach railing installations, the bottom tube rail that extends past the approach railing under the bridge transition guardrail will be considered part of this work. HSS spacer blocks and all hardware to attach bottom rail to guardrail posts will also be considered part of this work.

Method of Measurement

Each installation will be measured for payment as one unit, complete in place and accepted.

Basis of Payment

Steel Approach Railing will be paid for at the Contract unit price for each installation. Such payment includes fabrication and installation of the railing components and attachment to the bridge railing system, bottom tube rail for 4-bar approach railing, and any related connection hardware in accordance with the Plans, Specifications, and Standard Details.

Payment will be made under:

Pay Item		Pay Unit
507.0812	Steel Approach Railing, 2-Bar	Each
507.0822	Steel Approach Railing, 3-Bar	Each

507.08161	Steel Approach Railing, 4-Bar	Each

SPECIAL PROVISION
SECTION 510
SPECIAL DETOUR

510.01 Description

The following sentence is added:

This work shall also include installing, maintaining and removal of a temporary 8’ tall solid fence located immediately behind the temporary sidewalk and along the property owned by Chris Manlove/Jane C. Adams property located between station 29+58 left to station 31+09 left. The temporary 8’ tall fence shall extend a minimum of 50’ to the west beyond the southwest corner of the building on the Chris Manlove/Jane C. Adams property. The temporary 8’ tall fence shall extend a minimum of 20’ to the east beyond the southeast corner of the building on the Chris Manlove/Jane C. Adams property Mr. Manlove plans to move his existing building further back on his property just beyond the temporary road limits.

510.031 Design

The following sentences are added:

The special detour approaches shall be designed so that surface runoff is directed away from the Chris Manlove/Jane C. Adams property. The width of the temporary sidewalk on the special detour can be reduced to a minimum of 4’ for a maximum distance of 200’ in the vicinity of the Chris Manlove/Jane C. Adams property if needed.

510.06 Special Detour Construction The temporary 8’ tall solid fence located by the Chris Manlove/Jane C. Adams shall be in place before the detour is opened to traffic.

510.08 Method of Measurement
The following sentence is added:

Special Detour and the adjacent Temporary Structural Supports used for the purpose of maintaining traffic and supporting the partially excavated roadway during staged construction will be measured by one lump sum.

510.09 Basis of Payment

The following sentence is added:

The accepted Special Detour will be paid for at the Contract lump sum price which price shall include installation, maintenance and removal of the temporary 8’ tall solid fence as described above.

SPECIAL PROVISION
SECTION 510
SPECIAL DETOUR
(Miscellaneous)

510.06 Special Detour Construction

The following sentences are added:

The back entrance to the Riverside House of Pizza that exits out to on Stillwater Avenue between shall be remain open to traffic while the detour is in place.

The Contractor shall install, maintain, and remove a floating barrier system to the located immediately upstream from the Special Detour. The floating barrier system shall be in place until construction is complete. The barrier system shall extend across the entire river shall consist of series of interconnected floating fluorescent orange barrels. The system shall also include at least two special floats with written warning signs.

510.09 Basis of Payment

The following sentences are added:

The Special Detour includes the design, installation, and removal of a closed drainage system between detour stations 152+00 and 153+75.

The Special Detour includes the installation, maintenance and removal of a floating barrier system.

SPECIAL PROVISION
SECTION 510
SPECIAL DETOURS
(Guardrail and Barrier)

This specification is amended as follows:

510.032(c) Approach Road Guardrail
This subsection is replaced with the following:

The Special Detour approaches shall have guardrail or concrete barrier where side slopes are steeper than 3 horizontal to 1 vertical, or as specified on the Plans. Approach guardrail shall be Type 3 guardrail or an approved equal and shall be attached to the bridge rail in a manner that develops the guardrail in tension. Approach barrier shall be attached to the bridge rail with a rigid connection with a similar strength capacity to the bridge rail. If the Plans specify a type of rail or barrier, that type shall be used.

The termination of approach guardrail or barrier and the end treatment of the rail shall be in accordance with the current AASHTO Roadside Design Guide.

510.09 Basis of Payment
This subsection is amended as follows:

The following sentence is inserted in the first paragraph after the second sentence:
All guardrail or concrete barrier required solely for the Special Detour shall be incidental to this item.

The second paragraph is replaced with the following:
Traffic control devices, work zone crash cushions, temporary erosion control, pavement, and dust control will be paid for in accordance with the applicable Contract items.

SPECIAL PROVISION
SECTION 511
COFFERDAMS

Section 511 of the Standard Specifications is amended as follows:

511.03 Cofferdam Construction

Section 511.03.C of the Standard Specifications shall be replaced with the following:

C. Inspection of Seal Cofferdams. Seal cofferdam excavations shall initially be inspected by the Contractor after final cleaning and settlement of suspended sediment.

For each seal cofferdam excavation, the Contractor shall submit a written procedure to the Department for sediment/overburden removal and excavation inspection. For cofferdams where seal concrete is to be placed on bedrock, the inspection procedure shall describe the Contractor's final cleaning and inspection process for attaining cleanliness of each cofferdam excavation.

The seal cofferdam bottom will be considered clean if, at the time of placement of the seal concrete, more than 50 percent of the bottom area has less than 1 inch of sediment or loose soil, and no portion of the area has more than 2 inches of sediment or loose soil/rock.

At a minimum, the inspection shall consist of measurements using a sediment/overburden measuring system. The Contractor shall provide access, equipment, and personnel for checking the cleanliness and condition of the cofferdam excavation. The sediment/overburden measuring system shall consist of manual sounding for depth and hardness via a steel probe consisting of a 24-inch long No. 10 steel reinforcing bar with a flat end suspended on a non-stretch cable or tape. Location-Depth-Hardness-Soil Thickness readings shall be recorded from the soundings. Measurements shall be taken at a spacing of 5 feet along the perimeter cofferdam walls, and on an additional grid of equally spaced internal locations each representative of no more than 25 square feet of the seal base area.

In addition, the cofferdam inspection shall include an illuminated underwater video. The video shall be recorded by a diver, under live observation by the Department, and communication shall be available between the diver and Department representative to request video coverage of specific locations. The Contractor shall have a spotter that can indicate the general location of the diver within the cofferdam. The video inspection shall continue until the Department is satisfied that the conditions have been adequately recorded. In the event that conditions render visual inspection impossible, the above-described measuring system may utilize hand probing by the divers in lieu of visual inspection.

The Contractor shall prepare and submit an Inspection Report for each cofferdam. The Report shall include results of video inspection/diver probing and soundings that conclusively show the cleanliness and loose soil content of each 25 square foot segment of the seal cofferdam excavation. The Contractor's Inspection Report will be submitted to the Department for approval.

The Contractor shall notify the Resident at least 48 hours prior to when each seal cofferdam excavation will be ready for final inspection by the Department. The Contractor shall allow adequate time for each occurrence of cofferdam excavation inspection by the Department. Facilities and equipment shall be provided and maintained for the Department to independently inspect the cofferdam using steel probes and/or the Department's Dive Team prior to depositing the seal concrete.

No seal concrete placement shall begin until the Department has approved the cofferdam excavation.

SPECIAL PROVISION
SECTION 513
SLOPE PROTECTION

Section 513.02 of the standard specification is removed and replaced with the following:

513.02 Materials Materials shall meet the Requirement of the following Sections of Division – 700 Materials.

Stone Ditch Protection	703.29

SPECIAL PROVISION
SECTION 603
PIPE CULVERTS AND STORM DRAINS

603.12 Basis of Payment: This section shall be amended with the addition of the following:

Pay Item		Pay Unit
603.165	15 Inch Reinforced Concrete Pipe Class III	Linear Foot
603.175	18 Inch Reinforced Concrete Pipe Class III	Linear Foot

SPECIAL PROVISION
SECTION 606
GUARDRAIL
(Anchorage Assembly)

Description This work shall consist of furnishing and installing anchorage assemblies in accordance with current Standard Specifications and as shown in the attached details at the locations indicated on the plans.

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

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

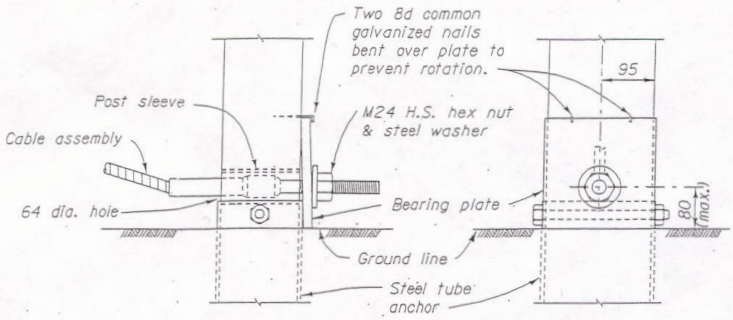
CONSTRUCTION REQUIREMENTS

Method of Measurement Anchorage assemblies will be measured by the unit (each) complete in place and will include all components shown on the attached details.

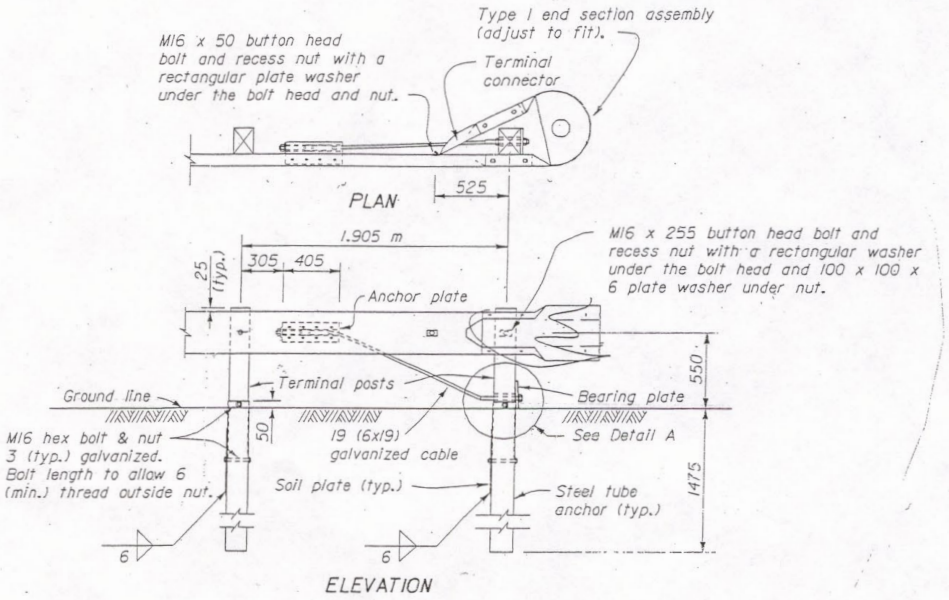
Basis of Payment The accepted quantity of anchorage assemblies will be paid for at the contract unit price per each, complete in place and will include all components shown on the attached details. Payment shall be full compensation for furnishing and installing all components as shown on the attached details and for incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
606.259	Anchorage Assembly	Each

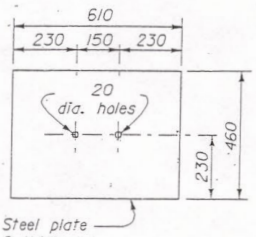


DETAIL A



ELEVATION

ANCHORAGE ASSEMBLY

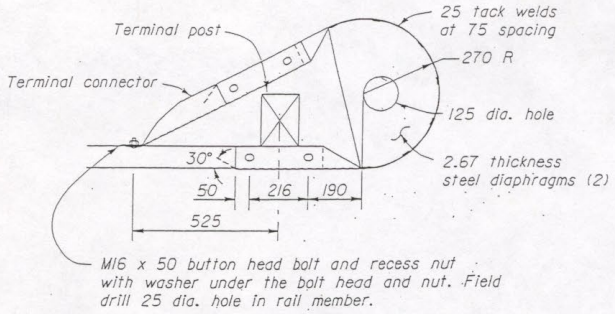


SOIL PLATE
(2 reqd.)

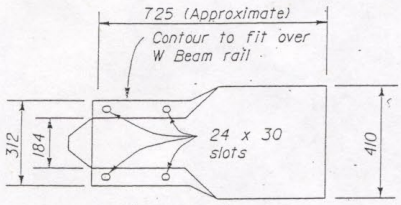
NOTES:

1. Unless otherwise shown, dimension are in millimeters.
2. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
3. Furnish hardware in metric sizes shown. Equivalent imperial sizes may be used when metric sizes are not available.

Anchorage Assembly

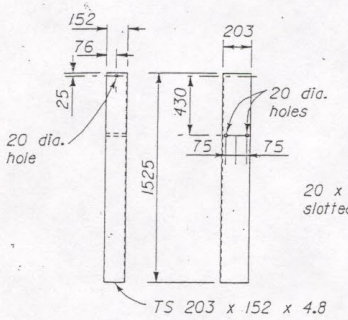


PLAN

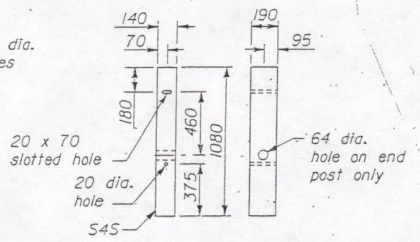


ELEVATION

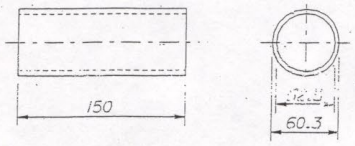
TYPE I END SECTION ASSEMBLY



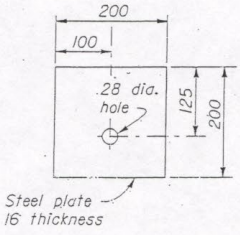
STEEL TUBE ANCHOR



TERMINAL POST



GALVANIZED STANDARD PIPE POST SLEEVE



BEARING PLATE

Anchorage Assembly

SPECIAL PROVISION
SECTION 607
FENCES
(Remove and Reset Stone Wall)

607.01 Description: This work shall include the removal of existing stone walls from their original location and resetting it at the location and to the dimensions as shown on the plans or as directed by the Resident.

607.02 Materials: The stone used shall be the existing material from the wall being removed.

At the Contractor's option with no additional cost to the Department, new clean stone matching the stone within the existing stone wall as to composition, nominal size, and appearance as approved by the Resident may be utilized to construct the reset stone wall.

607.03 Construction Requirements: The Contractor shall carefully remove the existing stone wall as shown on the plans or as directed by the Resident. All stone shall be cleaned prior to reuse within the reset stone wall. The new wall shall be set true to line and the dimensions shown on the plans or as directed by the Resident. The workmanship shall duplicate that of the original installation.

607.04 Method of Measurement: The quantity to be measured under this item will be the number of feet of stone wall reset in accordance with the plans and as directed by the Resident.

607.05 Basis of Payment: The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work. Excavation and backfill shall be paid for separately under the appropriate items.

Payment will be made under:

Pay Item		Pay Unit
607.291	Remove and Reset Stone Wall	Linear Foot

SPECIAL PROVISION
SECTION 607
FENCES
(Ornamental Picket Fence)

607.01 Description: This work shall include all new stockade fencing to be installed as shown on the General Plans.

607.02 Submittal: Contractor shall supply manufacturer's catalogue cuts for specified fencing and/or installation information 14 days prior to installation. Care shall be taken to match the existing fence. The Resident will approve the fence design prior to installation.

607.03 Materials: The base bid shall include the following fence standard:

Premium Grade Picket Fence and square posts, manufactured of Maine White Cedar, 4' height

1. All posts and rails shall be rough sawn of sound white cedar.

2. Panels: All fence boards and planks shall be rough sawn of white cedar, butted board construction.

3. Posts shall be at least (standard) 4" square white cedar. Mortise and tenon installation with panels.

4. The finished height of fencing shall be 4.0 ft. at posts.

5. Posts shall be placed no more than 8.0 ft. O.C. and be firmly anchored in the soil to a depth of not less than 2.0 ft or per manufacturer's recommendation. Backfill with clean sandy gravel, compacted in 6" lifts.

6. If ledge is encountered, posts shall be fastened to support brackets drilled, anchored and epoxied into rock.

7. Wood members shall be inspected for excessive cracking, checking and warping at the start of installation, and may be rejected by the Resident if found to be less than sound and straight.

8. All debris shall be removed from fence installation.

607.04 Construction Requirements: Install fencing as per manufacturer's recommendation in the locations indicated on the plans. Contractor is responsible for locating, marking, and avoiding all subsurface utilities during post installation.

607.05 Method of Measurement: Fence and gates will be measured by the linear foot accepted in place. Measurement will be along the gradient of the fence from outside to outside of end posts for each continuous run of fence. Excavation in rock for placement of fence posts in drilled holes will be measured by the cubic yard determined from the actual depth of the drilled hole in the rock and a hypothetical circle of 2 feet.

607.06 Basis of Payment: The accepted quantities of fence and gates will be paid for at the contract unit price per linear foot of the type and size specified complete in place. Gates will be measured and paid for as the standard fence item and no there will be no separate payment for gates or the associated hardware. Payment shall be full compensation for furnishing and assembling all materials for excavating and backfilling holes, and for all incidental necessary to complete the work except that in rock, payment for drilled holes will be under 109.7.5 Force Account. Excavation of earth to exposed rock shall be incidental.

Clearing or removal of trees, stumps or boulders, required to install the fence shall be considered incidental.

603.12 Basis of Payment: This section shall be amended with the addition of the following:

Payment will be made under:

Pay Item		Pay Unit
607.42	Ornamental Picket Fence	Linear Foot

March 9, 2020

SPECIAL PROVISION
SECTION 609
CURBING

609.10 Basis of Payment is amended with the addition of the following:

Pay Item		Pay Unit
609.221	Terminal Curb Type 1	Linear Foot
609.222	Terminal Curb Type1- Circular	Each

SPECIAL PROVISION
SECTION 620
GEOTEXTILES
(Drainage Geocomposite)

Description

This work shall consist of furnishing and placing Drainage Geocomposite and Weep Hole Connections as specified herein, as shown on the plans, and as directed by the Resident. Geocomposite Drainage shall consist of a formed polystyrene core covered on one side with a non-woven, needle-punched polypropylene filter fabric.

Materials

Drainage Geocomposite must be a composite system consisting of permeable geotextile and three-dimensional polymeric core providing equal flow in two perpendicular directions.

The Contractor shall furnish and install a Drainage Geocomposite as a hydrostatic water relief system. The Drainage Geocomposite shall be tied in to a water discharge system or weep holes. The weep holes shall be fitted with Weep Hole Connections, that effectively drain water from the geocomposite through the weep holes. The Weep Hole Connections may consist of Sitedrain AWD-102, Option 2 – Drain Gate connections, or equivalent.

Drainage Geocomposite work shall consist of furnishing all materials and labor required for placing and securing Drainage Geocomposite material, connection pipes, footing drains, weep holes and Weep Hole Connections, and horizontal drains, as shown on the Plans or as directed by the Resident.

Quality Assurance Testing

Drainage Geocomposite must be backed by a Letter of Certification from the Manufacturer that the flow rate in the plane of the core meets or exceeds the specified flow given herein and determined by ASTM D4716.

Submittals

The required submittals are as follows:

A. Submit Letter of Certification that material meets or exceeds physical properties per the following table.

B. The design layout of the Drainage Geocomposite including type, spacing, overlap, collection drainage, and other information.

Product Specification

The Drainage Geocomposite shall consist of Miradrain 6000XL, Amerdrain 500, or equal that meets or exceeds the following properties:

TYPICAL PROPERTIES **Fabric Properties**	**Typical Value**	**Test Method**
Material	Non-woven Polypropylene	
Grab tensile strength	100 lbs	ASTM D4632
Puncture strength	65 lbs	ASTM D4833
AOS	70 sieve	ASTM D4751
Permeability	0.3 cm/sec	ASTM D4491
Core properties		
Material	Polystyrene	
Compressive strength	15,000 psf	ASTM D1621 (Mod.)
Product properties		
Flow capacity per unit width[1]	16 gpm/ft	ASTM D4716

[1] In Plane Flow Rate, Gradient = 1.0

All numeric values in the above table, except AOS, represent minimum average roll values in the weakest principal direction (i.e., average test results of any roll in a lot sampled for conformance or quality assurance testing shall meet or exceed the minimum values). Values for AOS represent maximum average roll values.

Placement Requirements

The Drainage Geocomposite shall be installed by methods approved by the Manufacturer.

The installer shall place the Drainage Geocomposite at the elevations and alignment shown on the Plans, as noted and as directed by the Resident. The Drainage Geocomposite shall be installed with the fabric side toward the soil.

When installing the Drainage Geocomposite:

- Start at the low point of the wall and attach the panel to the wall.
- Weep Hole Connections shall be installed in conjunction with the Drainage Geocomposite.
- Adjacent panels may be:

  (1) Joined together with the lateral edge of the next/upper panel placed over the flanged edge of the lower panel;

  (2) Overlap the dimples of the preceding panel onto the dimples of the previous panel by 2 inches.

The Drainage Geocomposite from the adjacent panels shall overlap the preceding panel. The overlap fabric can be adhered with the Manufacturer's approved tape or duct tape. The Drainage Geocomposite shall be attached to non-waterproofed walls with contact adhesive, tape or concrete nails. The Drainage Geocomposite will be permanently secured prior to completion of backfilling.

Backfilling shall be placed within seven days of Drainage Geocomposite installation. Backfill to at least 6 inches above the top edge of the Drainage Geocomposite.

The top or terminal edge of the Drainage Geocomposite shall be covered by applying a piece of filter geotextile, meeting the requirements of MaineDOT Standard Specification Section 722.03, over the edge sufficient in width to prevent soil or other foreign construction materials from intruding into or behind the Drainage Geocomposite panels.

If necessary, the Drainage Geocomposite and filter geotextile shall be positioned by hand to minimize wrinkles.

Unanticipated subsurface drainage features exposed in the excavation shall be drained independently of the Drainage Geocomposite.

Backfill Requirements

Structural backfill as shown on the Plans shall be placed immediately against the Drainage Geocomposite. Care shall be taken during the backfill operation not to damage the geotextile surface of the drain. The backfill shall be placed and compacted in accordance with the project Plans and specifications. Care shall also be taken to avoid excessive settlement of the backfill material. The Drainage Geocomposite, once installed, shall not be exposed for more than seven days prior to backfilling.

Storage Requirements

The Contractor shall check the Drainage Geocomposite upon delivery to ensure that the proper material has been delivered. The Contractor shall be responsible for the storage of the Drainage Geocomposite material at the site.

Drainage Geocomposite shall be provided in rolls wrapped with a protective covering and stored in a manner, which protects the material from temperatures greater than 140° F, mud, dirt, dust, and debris. Protective wrapping shall not be removed until immediately before the Drainage Geocomposite is installed.

Drainage Geocomposite material shall be delivered and stored in original packages bearing the Manufacturer's name. The fabric shall not be exposed to direct sunlight for more than seven days during its storage and installation. The Drainage Geocomposite material shall be stored in a clean, dry environment out of the pathway of construction equipment. Each roll of Drainage Geocomposite material shall be labeled to identify the production run.

Repair Requirements

Prior to the placement of the Drainage Geocomposite each roll shall be inspected for damage resulting from construction.

Any ripped, torn, or damaged areas of the Drainage Geocomposite material shall be removed and patched by placing a patch large enough to cover the damaged area and provide a sufficient overlap on all sides to fasten. The patch shall be secured to the original Drainage Geocomposite

material using the Manufacturer's approved methods. If the hole width or tear width across the panel is more than 50% of the width of the material, the damaged area shall be cut out and the two portions of the Drainage Geocomposite material shall be joined in accordance with the placement requirement.

If the damage occurs to the Drainage Geocomposite material during shipping, handling, or installation, the damaged areas shall be cut out and a repair section of Drainage Geocomposite shall be installed at the Contractor's expense.

Method of Measurement

Drainage Geocomposite installation shall be measured by the square yard in place and accepted. Measurements will not be made for overlaps, patches, and repairs.

Basis of Payment

The accepted quantity of Drainage Geocomposite installed shall be paid for at the contract unit price per square yard, which shall be full compensation for off-loading, inspection, storage, materials, equipment, and any incidentals necessary to complete the installation.

The cost and placement of the drainage collection pipe will be incidental to the installation of the Drainage Geocomposite.

Payment will be made under:

	Pay Item	Unit
620.66	Drainage Geocomposite	Square Yard

SPECIAL PROVISION
SECTION 626
CONDUIT
(Utility Conduit System, Temporary)

Description
This work shall consist of designing, furnishing and installing all materials and labor for the installation of a temporary 3" diameter utility conduit system from pole at station 22+32 Lt. to pole at station 29+48 Lt. Work shall include furnishing and installing temporary bridge utility conduit system including any hardware to attach to the bridge along with the required excavation and backfill, and all other incidentals. FirstLight will install fiber cables (Approx. Wt. = 0.15#/ft.) into Contractor installed temporary conduit and will remove wires from conduit before temporary bridge demo. This work shall be in conformance with the Plans, these specifications, and Special Provision Section 104 Utilities.

Required pre-installation meeting
Prior to beginning installation of this work, a utility meeting shall be held with all utilities, the Resident, and the Maine DOT utility coordinator.

Materials
The conduit materials furnished by the Contractor shall be new. All materials shall conform to NEMA or UL standards as applicable.

Conduit from pole station 22+32 Lt. to pole station 29+48Lt. shall be Polyvinylchloride (PVC) conduit, schedule 40, suitable for buried or concrete encased applications.

Pull-lines shall be polypropylene rope.

Submittals
The Contractor shall within 60 days following execution of the contract, submit a list of materials which are to be installed. The list shall include the manufacturer, size, and identifying number of each item. The list shall be supplemented by such data as may be required, including detailed scale drawings of proposed conduit system. The Contractor shall submit for review, design data and sample articles of the material proposed for use. All of the data shall be submitted in duplicate. The Department or Utility will not be liable for material purchased, labor performed, or work delayed until the review is complete and the list of materials and associated details are approved.

Construction Requirements
Workmanship shall conform to the requirements of: NEC, NESC, ASTM Standards, the ANSI, the local Utility Companies, the State of Maine, and any local ordinances that may apply except when otherwise noted on the plans or in the Special Provisions.

The Contractor shall be responsible for and shall repair all damage caused to underground drainage structures, utilities, or lighting conduit, which are encountered during construction.

Trenches for conduits shall be excavated to a width that will permit proper installation of the conduit and to a suitable depth as directed by the Resident Engineer.

After the trench has been excavated as specified, the bottom of the trench shall be prepared with a sand bedding material. After placing the conduit, sand shall be placed around the sides and over the top of the conduit. The entire trench shall be backfilled with an approved material, placed in layers not exceeding eight inches (8”), and thoroughly compacted.

All underground conduits shall be placed to a suitable depth and shall not interfere with poles, guardrail posts, approach rail anchor block, sign foundations or other objects.

3” diameter PVC conduit shall be made watertight by joining with solvent or in accordance with the manufacturer’s specifications.

Conduits shall be bent carefully to avoid damage and without the use of an open flame. Bends sharper than 45 degrees will not be permitted. The total angle of all bends in one run and the radius of bends shall conform to the NEC requirements.

Where PVC conduit runs are placed parallel to other conduits, they shall be separated by a minimum of 2” of sand or soil cushion. The bottom of trenches shall be lined with a 3” bedding material of compacted sand before laying the conduit. Backfill to a compacted depth of 6” above the top of the conduit shall be sand, free from rocks or hard lumps.

The Contractor shall install pull-lines in all conduits. The ends of the lines shall be secured in such manner as to prevent accidental withdrawal of the wire.

The conduits will be terminated at each pole with a long radius sweep & shall be capped with watertight conduit caps.

Within ten (10) days after completion of the conduit, the Contractor, in the presence of the Resident, shall rod and pull through each duct a mandrel and brush of a pattern satisfactory to the Resident, but which shall not be more than 1/8” smaller than the bore of the conduit. Where obstructions in the conduits prevent passage of the mandrel, the Contractor shall, at their own expense, remove and relay those portions of the conduits necessary to clear the obstruction.

Method of Measurement

3 Inch Diameter Utility Conduit System, Temporary will be measured by the lump sum, complete, and accepted in place.

Basis of Payment

Payment for 3 Inch Diameter Utility Conduit System, Temporary, shall be full compensation for all labor, materials, equipment and incidentals necessary to complete

the work, including but not limited to furnishing and installing the conduit; excavating; furnishing and placing backfill materials that may be specified on the plans, pull wire, fittings, bonding; test cleaning interiors of conduits, and related incidental work and materials. Item shall be payable at a maximum rate of 50% upon installation of conduit. The remaining 50% shall be paid once the temporary conduit is no longer needed and temporary conduit system has been removed from the site. All submittals for approval will be considered incidental to pay item 626.26.

Payment will be made under:

Pay Item	Description	Pay Unit
626.26	3 Inch Diameter Utility Conduit System, Temporary	Lump Sum

SPECIAL PROVISION
SECTION 626
CONDUIT
(Utility Conduit System, Temporary)

Description
This work shall consist of designing, furnishing and installing all materials and labor for the installation of a temporary 5" diameter utility conduit system from pole at station 22+32 Lt. to pole at station 29+48 Lt. Work shall include furnishing and installing temporary bridge utility conduit system including any hardware to attach to the bridge along with the required excavation and backfill, and all other incidentals. Consolidated Communications will install copper and fiber cables (Approx. Wt. = 3.7#/ft.) into Contractor installed temporary conduit and will remove wires from conduit before temporary bridge demo. This work shall be in conformance with the Plans, these specifications, and Special Provision Section 104 Utilities.

Required pre-installation meeting
Prior to beginning installation of this work, a utility meeting shall be held with all utilities, the Resident, and the Maine DOT utility coordinator.

Materials
The conduit materials furnished by the Contractor shall be new. All materials shall conform to NEMA or UL standards as applicable.

Conduit from pole station 22+32 Lt. to pole station 29+48Lt. shall be Polyvinylchloride (PVC) conduit, schedule 40, suitable for buried or concrete encased applications.

Pull-lines shall be polypropylene rope.

Submittals
The Contractor shall within 60 days following execution of the contract, submit a list of materials which are to be installed. The list shall include the manufacturer, size, and identifying number of each item. The list shall be supplemented by such data as may be required, including detailed scale drawings of proposed conduit system. The Contractor shall submit for review, design data and sample articles of the material proposed for use. All of the data shall be submitted in duplicate. The Department or Utility will not be liable for material purchased, labor performed, or work delayed until the review is complete and the list of materials and associated details are approved.

Construction Requirements
Workmanship shall conform to the requirements of: NEC, NESC, ASTM Standards, the ANSI, the local Utility Companies, the State of Maine, and any local ordinances that may apply except when otherwise noted on the plans or in the Special Provisions.

The Contractor shall be responsible for and shall repair all damage caused to underground drainage structures, utilities, or lighting conduit, which are encountered during construction.

Trenches for conduits shall be excavated to a width that will permit proper installation of the conduit and to a suitable depth as directed by the Resident Engineer.

After the trench has been excavated as specified, the bottom of the trench shall be prepared with a sand bedding material. After placing the conduit, sand shall be placed around the sides and over the top of the conduit. The entire trench shall be backfilled with an approved material, placed in layers not exceeding eight inches (8”), and thoroughly compacted.

All underground conduits shall be placed to a suitable depth and shall not interfere with poles, guardrail posts, approach rail anchor block, sign foundations or other objects.

5” diameter PVC conduit shall be made watertight by joining with solvent or in accordance with the manufacturer’s specifications.

Conduits shall be bent carefully to avoid damage and without the use of an open flame. Bends sharper than 45 degrees will not be permitted. The total angle of all bends in one run and the radius of bends shall conform to the NEC requirements.

Where PVC conduit runs are placed parallel to other conduits, they shall be separated by a minimum of 2” of sand or soil cushion. The bottom of trenches shall be lined with a 3” bedding material of compacted sand before laying the conduit. Backfill to a compacted depth of 6” above the top of the conduit shall be sand, free from rocks or hard lumps.

The Contractor shall install pull-lines in all conduits. The ends of the lines shall be secured in such manner as to prevent accidental withdrawal of the wire.

The conduits will be terminated at each pole with a long radius sweep & shall be capped with watertight conduit caps.

Within ten (10) days after completion of the conduit, the Contractor, in the presence of the Resident, shall rod and pull through each duct a mandrel and brush of a pattern satisfactory to the Resident, but which shall not be more than 1/8” smaller than the bore of the conduit. Where obstructions in the conduits prevent passage of the mandrel, the Contractor shall, at their own expense, remove and relay those portions of the conduits necessary to clear the obstruction.

Method of Measurement

5 Inch Diameter Utility Conduit System, Temporary will be measured by the lump sum, complete, and accepted in place.

Basis of Payment

Payment for 5 Inch Diameter Utility Conduit System, Temporary, shall be full compensation for all labor, materials, equipment and incidentals necessary to complete

the work, including but not limited to furnishing and installing the conduit; excavating; furnishing and placing backfill materials that may be specified on the plans, pull wire, fittings, bonding; test cleaning interiors of conduits, and related incidental work and materials. Item shall be payable at a maximum rate of 50% upon installation of conduit. The remaining 50% shall be paid once the temporary conduit is no longer needed and temporary conduit system has been removed from the site. All submittals for approval will be considered incidental to pay item 626.271.

Payment will be made under:

Pay Item	Description	Pay Unit
626.271	5 Inch Diameter Utility Conduit System, Temporary	Lump Sum

SPECIAL PROVISION
SECTION 627
PAVMENT MARKINGS

The provisions of Section 627 of the Standard Specifications shall apply with the following additions and modifications:

627.01 Description Add the following:

This work shall consist of furnishing and placing reflectorized preformed segments of plastic pavement marking lines. The preformed pavement marking shall be installed recessed into grooves in the pavement.

627.02 Materials Add the following:

Where reflectorized preformed plastic pavement markings are required, they shall conform to Section 712.05.

627.05 Preparation of Surface Add the following:

Unless otherwise directed by the pavement marking material manufacturer, where recessed pavement markings are required, the Contractor shall mill a groove in the pavement for each segment of preformed plastic pavement marking to be placed. Continuous grooving for tape installation along the pavement marking line shall not be acceptable. The groove length shall be the required pavement marking segment length plus 12 inches on each end (for example, a 24-inch pavement marking segment shall require a 48-inch groove with the tape centered in the groove). The groove width for the preformed plastic pavement marking shall be the width of the preformed pavement marking plus 1 inch on each edge (for example, a 4-inch pavement marking segment shall require a groove width of 6 inches). The groove shall have a uniform depth of 150 mils (+/- 20 mils). The bottom of the groove shall have a smooth, flat finished surface. Grooves shall be clean, dry, and free of oil, dirt, paint, debris, or other contaminants. If a wet cutting head is used to create the groove, the pavement surface shall be allowed to dry for a minimum of 24 hours prior to the final cleaning of the groove and application of the pavement marking. Immediately prior to the application of the preformed plastic pavement marking, the groove shall be cleaned with high-pressure air blasts.

At the start of the grooving operations, the Contractor shall demonstrate a test section of three properly spaced groove segments as directed by the Resident. Size and embedment depths shall be measured and shall meet allowable tolerances. If it is determined the test section has not been grooved at the appropriate size or depth, the Contractor shall modify the cutting head and repeat the test for additional segments until the grooves are accepted by the Resident. Grooves shall not be installed within 14 days of the placement of the pavement surface.

627.09 Method of Measurement Add the following:

Preformed Thermoplastic Pavement Markings will be measured by the square foot of preformed plastic pavement markings applied, tested, and accepted.

627.10 Basis of Payment Add the following:

The accepted quantity of Preformed Thermoplastic Pavement Marking will be paid for at the contract unit price per square foot. Such price will be full compensation for the pavement marking material, pavement marking layout, groove testing, surface preparation and cleaning, and for all labor, tools, materials, equipment, and incidentals necessary to provide a complete installation.

Payment will be made under the following:

Pay Item		Pay Unit
627.94	Preformed Thermoplastic Pavement Marking	Square Foot

Highway Lighting Quality Control Checklist

Subsection 634.09 Field Testing

Project Pin # _____

Location (if multiple services, please be specific)- _____

Grounding Electrode Resistance at service _____

Number of Circuits _____

Hand-Off-Auto Switch? _____

Circuit #1

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

Circuit #2

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.

(YEAR)

Electrician's Signature _____

Electrician's License # _____

Highway Lighting Quality Control Checklist

Subsection 634.09 Field Testing

Project Pin # _____

Location (if multiple services, please be specific)- _____

Grounding Electrode Resistance at service _____

Number of Circuits _____

Hand-Off-Auto Switch? _____

Circuit #3

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

Circuit #4

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.

(YEAR)

Electrician's Signature _____

Electrician's License # _____

Traffic Signal Quality Control Checklist

Subsection 643.14 Field Testing

Project Pin # _____

Grounding Electrode Resistance at service _____

ID tags on loop amps / detector cards? _____

Location _____

Street Approach	_____		
Loop #	_____	**Resistance**	_____
Phase #	_____	**Meg to ground**	_____
L,C, or R Lane	_____	**Amount of bondo covering loop**	_____
Pulse or Presence	_____		

Street Approach	_____		
Loop #	_____	**Resistance**	_____
Phase #	_____	**Meg to ground**	_____
L,C, or R Lane	_____	**Amount of bondo covering loop**	_____
Pulse or Presence	_____		

Street Approach	_____		
Loop #	_____	**Resistance**	_____
Phase #	_____	**Meg to ground**	_____
L,C, or R Lane	_____	**Amount of bondo covering loop**	_____
Pulse or Presence	_____		

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.

(YEAR)

Electrician's Signature _____

Electricain's License # _____

SPECIAL PROVISION
SECTION 643
TEMP. SOLAR POWERED LED PEDESTRIAN CROSSWALK BEACON

The Contractor shall install temporary solar powered flashing beacon assemblies at locations identified in the approved traffic control plan. Their installation shall be as described in this special provision.

1. Beacon Dimensions and Placement in Sign Assembly:
   a. Each temporary rectangular rapid flashing beacon (RRFB) shall consist of two rectangular-shaped yellow indications (in each direction), each with an LED-array based light source. Each RRFB indication shall be a minimum of approximately 5 inches wide by approximately 2 inches high. Flashing lights and signage shall be in both directions of vehicle travel.
   b. The two RRFB indications shall be aligned horizontally, with the longer dimension horizontal and with a minimum space between the two indications of approximately seven inches (7 in), measured from inside edge of one indication to inside edge of the other indication.
   c. The outside edges of the RRFB indications, including any housing, shall not project beyond the outside edges of the W11-15 or W11-2 signage attached to the beacon assembly.
   d. As a specific exception to 2009 MUTCD Section 4L.01 guidance, the RRFB shall be located between the bottom of the crossing warning sign and the top of the supplemental downward diagonal arrow plaque, rather than 12 inches above or below the sign assembly.

2. Beacon Flashing Requirements:
   a. When activated, the two yellow indications in each RRFB shall flash in a rapidly alternating "wig-wag" flashing sequence (left light on, then right light on).
   b. As a specific exception to 2009 MUTCD Section 4L.01 requirements for the flash rate of beacons, RRFBs shall use a much faster flash rate. Each of the two yellow indications of an RRFB shall have 70 to 80 periods of flashing per minute and shall have alternating but approximately equal periods of rapid pulsing light emissions and dark operation. During each of its 70 to 80 flashing periods per minute, one of the yellow indications shall emit two rapid pulses of light and the other yellow indication shall emit three rapid pulses of light.
   c. The flash rate of each individual yellow indication, as applied over the full on-off sequence of a flashing period of the indication, shall not be between 5 and 30 flashes per second, to avoid frequencies that might cause seizures.
   d. The light intensity of the yellow indications shall meet the minimum specifications of Society of Automotive Engineers (SAE) standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005.

3. Beacon Operation:
   a. The RRFB, normally dark, shall initiate operation only upon pedestrian actuation, and shall cease operation at a predetermined time after the pedestrian actuation.
   b. All RRFBs associated with a given crosswalk shall, when activated, simultaneously commence operation of their alternating rapid flashing indications and shall cease operation simultaneously.
   c. A pedestrian instruction sign with the legend PUSH BUTTON TO TURN ON WARNING LIGHT should be mounted adjacent to or integral with each pedestrian pushbutton.
   d. The duration of a predetermined period of operation of the RRFBs following each actuation shall be 20 seconds.
   e. Solar power assemblies shall be provided on each beacon assembly.
   f. Communication between the devices shall be via spread spectrum wireless.

4. Pole and Foundation
   a. Temporary pole and foundation systems shall be provided. A shop drawing submittal is required for the pole, foundation and beacon assembly device proposed.

643.18 Method of Measurement

Rectangular rapid flashing beacon assemblies installed with signs and equipment in accordance with the latest federal standards as shown and approved on the traffic control plans at each location shall constitute a single installation.

643.19 Basis of Payment

The rectangular rapid flashing beacon will not be paid for directly, but incidental to related contract pay items.

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Non-Invasive Detection – Stop Bar)

Description. This item shall consist of furnishing and installing a non-invasive stop bar vehicle detection including all necessary fittings and mounting hardware at the locations shown on the plans or as indicated by the Maine Department of Transportation (MaineDOT).

Materials. The Contractor shall furnish and install a Stop Bar Vehicle Detection (SBVD) system that detect vehicles on a roadway by processing images sent from an IP based sensor to an interface board with detector outputs that can be received by the traffic signal controller. The SBVD shall include equipment meeting the following and all the requirements as defined under item 718.13. These IP based traffic sensors shall be installed at the locations shown on the plans and in accordance with these specifications. All remote communications for the Non-Invasive Detection – Stop Bar system shall be routed electrically, and IP based to the Field Monitoring Unit (FMU) or the Fiber Ethernet Switch; the use of a separate cellular modem/data connection shall not be allowed. No additional hardware, software items and/or subscription fees/costs shall be needed/allowed to satisfy the requirements as defined in these specifications. All Non-Invasive Detection – Stop Bar units supplied by the Contractor as part of this project shall be from the same manufacturer and be the identical make/model and firmware revision. The SBVD shall be supplied by one of the following listed manufactures:

- Gridsmart/Cubic
- MioVision
- Flir (Thermal)
- Wavetronix Stop Bar detection system

The SBVD system shall be non-intrusive (i.e. above ground) and shall consist of:

a. Mounting brackets
b. IP based Traffic sensor and detection module (radar shall provide IP cabinet interface device)
c. Communications cable

The SBVD system, at a minimum, shall:

- Collect and store volume, speed, and classification of all vehicle types as well as bicycles and pedestrians;
- Provide stop bar detection;
- Be ATCC 5301 v02 compatible
- Be ATC 5201 v06 compatible
- Provide Turning Movement counts through either manufactures software or as inputs into the MaineDOT Central Management Software (CMS)
- Provide remote access to digital video stream

- Support remote configuration
- Shall be connected to FMU switchable power outlet

The SBVD system shall be connected, via Ethernet, to the Fiber Ethernet switch or Field Monitoring Unit (FMU) in each Advanced Transportation Controller Cabinet (ATCC), and to the cloud-based video management server over the cellular modem.

If the ATCC is supplied with a Fiber Ethernet Switch and connected to the existing City fiber network, the Contractor shall establish a Virtual Private Network (VPN) communication pathway with input from the City IT department to allow for remote monitoring and control.

Components of the SBVD system shall all be the same make and model. As a minimum, the SBVD system shall be supplied and installed with the following functionality:

- Shall have the capability of remotely displaying live video streams and/or live radar telemetry from all IP video/radar detection units installed at the intersections. The setup of detection zones shall be available via remote access. The system shall log which user made any changes to the detection zone configurations.
- Shall support communication of Telemetry Data, Video Data, Alert Data, and Vehicle Identification Data to the Server via the Communication Service.
- Shall be connected to the Ethernet Switch and/or the FMU in each ATCC.
- Shall acquire and record phase, channel, detector, pedestrian detector, pre-emption, alarm and overlap statuses at a frequency of no less than 10 times per second including whether a phase is next or has a call for service on it
- Shall consist of an SBVD system at all project intersections, as shown in the Plans.
- Video detection shall consist of an IP based camera assembly and a digital video detection system. Analog cameras with separate video encoders shall not be allowed.
- Radar detection shall consist of a radar sensor and IP cabinet interface device.
- Every vehicular approach at every project intersection shall be included in the vehicle detection system, as shown in the Plans.
- Shall be supplied with the ability to automatically collect and process data based on the classification of vehicles.
- Shall provide 24/7 turning movement count reports at no additional costs to MaineDOT for the life of the product.
- Shall be connected to the in-cabinet high speed communications bus (SIU) within the controller cabinet.
- Shall transmit detector data to the controller unit via the in-cabinet high speed communications bus (SIU) within the controller cabinet.
- Shall be installed in the ATCC such that SBVD is electrically powered via one of the switchable duplex outlets provided on the FMU. This configuration shall allow MaineDOT to power cycle and reset the SBVD, via remote FMU control (outlet power), in the event that the detection unit locks up.

Construction Requirements. The Contractor shall be responsible for furnishing all training, labor, materials, cables, connectors, tools, equipment, shipping and incidental items necessary to complete the installation and make the non-invasive stop bar vehicle detection system fully operational.

Installation of the non-invasive stop bar vehicle detection system shall include the installation of any and all associated equipment including, but not limited to, the following:

a. Detector Assembly with integrated machine vision processor. The Contractor shall furnish at a minimum of one assembly per applicable approach and/or a signal device for all approaches.

b. Detector Communications Interface Panel. The Contractor shall furnish one detector communications interface panel per cabinet.

c. Detector Cable. The Contractor shall furnish the specified cable type, all connectors, sealing tape and incidental work necessary to complete the installation of the connector cable between the detector assembly and the interface panel.

d. Mounting Brackets and Ancillary Equipment and Labor. The Contractor shall furnish detector mounting brackets and all associated equipment labor, materials and incidental work necessary to attach the detector assemblies to a mast arm or extension bracket, complete the installation and make the non-invasive stop bar vehicle detection system fully operational.

The Contractor shall install the SBVD system software on any number of computers/systems as required by MaineDOT to allow visual confirmation of the detection zones as shown on the plans. All equipment shall be installed and wired in a neat and orderly manner in conformance with the manufacturer's instructions. The detector assembly(s) shall be affixed to the support structure in accordance with the manufacturer's instructions to provide the optimal field of detection.

The non-invasive stop bar vehicle detection locations shown on the Plans are for illustrative purposes only. Final locations shall be located in the field and shall be approved by MaineDOT and/or the Engineer. The Contractor may be required to adjust and readjust the location of existing and proposed vehicle detection zones in the presence of the Engineer, at no additional cost, to properly set the detection areas

Installation will be considered complete when the Contractor shows the system successfully and consistently places a request to the controller to call and extend the appropriate phase based on a vehicle detected in the detection zone; and remote access to the SBVD via MaineDOT control and or the cloud based CMS/ACST.

Method of Measurement. The non-invasive stop bar vehicle detection system will be measured for payment as a lump sum system fully installed and operational. All items, equipment, labor and incidentals required to create a fully functional system will be considered incidental to the cost of this item. Units shall be pre-approved or unconditionally warranted for at least 3 years from factory purchase and certified to comply with the product's published specification by an independent laboratory.

Basis of Payment. Payment will be full compensation for furnishing, transporting, handling, installing and testing the materials and equipment specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Pay Item		Pay Unit
643.21	Non-Invasive Detection - Stop Bar: Stillwater Ave & Bennoch Rd	Lump Sum
643.21	Non-Invasive Detection - Stop Bar: Stillwater Ave & College Ave	Lump Sum

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS

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

643.01 Description The project will result in the modernization of traffic control signals and pedestrian crossing facilities in the city of Old Town, Maine. Equipment includes, but is not limited to Econolite Advanced Transportation Controller Cabinets (ATCC) with rack mounted Advanced Transportation Controllers (ATC) – all per Bangor Area Comprehensive Transportation Systems (BACTS) Specifications, mast arm poles, pedestal poles, vehicular and pedestrian signal heads with countdown timers, new light-emitting diode (LED) indications, retroreflective backplates on vehicle signal heads, wiring, signal cable, overhead mast arm mounted signs, non-invasive stop bar vehicle detection, accessible pedestrian signals (APS), and all appurtenances and incidentals required for complete functioning installations. In addition, the project will provide the means for remote communications to the traffic signal control cabinet equipment by field monitoring unit (FMU) to an existing cloud-based central management system (CMS) via a secure Virtual Private Network (VPN) tunnel.

Pedestrian equipment is to be installed under the guidelines of the Americans with Disabilities Act (ADA) having work integrated with curb ramp and detectable warning field improvements also being provided with this project.

Backplates will be provided for all new vehicle signal heads. The backplates shall be a minimum of 5-inches with 3-inch fluorescent yellow retroreflective strips. New backplates shall provide louvers for one-way, three-, four-section, and five-section 12-inch signal heads.

All traffic signal controller timing parameters shall be programmed to provide free operations.

643.211 Additional Materials Materials shall also meet the requirements in the following Special Provision to Section of Division 700 - Materials:

Traffic Controller	718.07
Field Monitoring Unit	718.14
Twelve (12) Position Fiber Optic Patch Panel	718.15
Ethernet Switch with Fiber Optic Interfaces	718.16
Pedestrian Crossing System	718.17

643.9 Service Connection Add the following:

A total of 4, 10’ service ground rods shall be installed and properly connected together in the cabinet foundation.

The Contractor shall be responsible for grounding the system to 5 ohms or less tested without an electrical connection to the utility neutral or ground conductor. The grounding shall be performed using a ground meter with reference grounds. In the event that a 5-ohm reading is not achieved, the Contractor shall install a chem-rod grounding electrode in close proximity to the cabinet. The chem-rod shall be properly connected to the four rod, grounding system in the cabinet. The chem-rod shall consist of a 10' copper rod (vertical or horizontal orientation) filled with common salt and desiccant, back filled with natural earth bentonite clay ground enhancement material. The chem-rod shall be installed per manufacturer's instructions. The location and orientation for the chem-rod installation shall be approved by the Resident. All testing shall be done in the presence of the Resident.

643.12 Painting Unless otherwise directed by MaineDOT or through the Resident Engineer, all exterior parts of the listed equipment shall be delivered to the project finished as follows:

Vehicular Signal Heads – all parts **black**.
Pedestrian Signal Heads – all parts **black**.
Accessible Pedestrian Signals (APS) – **black**.
Signal Backplates – **black** and louvered w/ fluorescent yellow retroreflective strip.
Controller Cabinets – **bare metal /** aluminum.
Mast Arms, Uprights, and Bases – **bare metal** / galvanized steel.
Pedestal Posts and Bases – **bare metal** / aluminum.

643.19 Basis of Payment Traffic signal modifications (Item 643.71) will be paid for at the contract lump sum price for the intersection, which payment will be full compensation for furnishing and installing all materials, including, but not limited to ATCC complete with rack mount ATC controllers, FMU, generator transfer switch, risers, vehicular signal heads, retroreflective backplates, aerial disconnects, signal cable, light emitting diode (LED) lamps, and all appurtenances and incidentals required for complete functioning installations and for furnishing all tools and labor necessary for completing the installations.

Temporary Traffic Signals (Item 643.72) will be paid for at the contract lump sum price for the intersection, which payment will be full compensation for furnishing and installing all materials, tools and labor necessary for completing the temporary installation. Payment for temporary traffic signals shall include compensation for the removal of the system upon completion of the permanent signal installation.

Mast Arms (Item 643.91) will be paid for at the contract unit price each which payment shall be full compensation for furnishing and installing all mast arms, uprights, bases, anchor bolts to be supplied by the manufacturer of the mast arm poles, ancillary materials, tools and labor necessary to erect and install the structures.

Pedestal poles (Item 643.92) will be paid for at the contract unit price each which payment shall be full compensation for furnishing and installing all pedestal posts, bases, anchor bolts, ancillary materials, tools and labor necessary to erect and install the structures.

Payment will be made under the following:

Pay Item	Pay Unit
643.71 Traffic Signal Modification: Stillwater Ave & Bennoch Rd	Lump Sum
643.71 Traffic Signal Modification: Stillwater Ave & College Ave	Lump Sum
643.72 Traffic Signal Modification: Stillwater Ave & Bennoch Rd	Lump Sum
643.72 Traffic Signal Modification: Stillwater Ave & College Ave	Lump Sum
643.91 Mast Arm Pole, w/25’ Arm	Each
643.91 Mast Arm Pole, w/33’ Arm	Each
643.91 Mast Arm Pole, w/35’ Arm	Each
643.91 Mast Arm Pole, w/40’ Arm	Each
643.91 Mast Arm Pole, w/50’ Arm	Each
643.92 Pedestal Pole	Each

SPECIAL PROVISION
SECTION 645
HIGHWAY SIGNING
(LED Blank-Out Sign)

The provisions of Section 645 of the Standard Specifications shall apply with the following additions and modifications:

645.01 Description This work shall also consist of furnishing and installing new LED blank-out signs, overhead mounted in accordance with these specifications and in reasonably close conformity with the plans.

645.0212 LED Blank-Out Sign The LED blank-out signs shall be contained within an aluminum housing with a black powder coat finish. The housing shall be weatherproof conforming to NEMA 3R. Message shall be MUTCD R10-15 (Turning Vehicles Yield to Pedestrians) sign with arrows as shown in the Plans. Message legend and symbols shall be made up of discrete LEDs with a maximum pitch of 20 mm to cover the stroke width of the letters or symbol that simulate the static sign legend per the MUTCD. LED colors shall substantially conform to the color of the legend and symbols of the standard MUTCD sign. The LEDs shall be dimmable to adjust the LED brightness in accordance with ambient light conditions.

645.065 Installation of LED Blank-Out Signs LED blank-out signs shall be designed for overhead mounting on a horizontal mast arm. Signs shall be actuated in sequence from control logic provided at the traffic signal controller. Actuations shall turn the sign on; absence of actuation shall cause the sign to remain unlit.

All exposed wiring shall be in accordance with section 715.11. All wiring shall be in accordance with section 718.01-c.

645.08 Method of Measurement

LED Blank-Out Signs, Overhead Mounted will be measured by each unit sign complete in place and accepted.

645.09 Basis of Payment

LED Blank-Out Sign, Overhead Mounted (Item 645.512) will be paid for at the contract unit price each which payment shall be full compensation for furnishing and installing all materials, tools and labor necessary to erect and install the signs.

Payment will be made under the following:

Pay Item		Pay Unit
645.512	LED Blank-Out Sign, Overhead Mounted	Each

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC
(Portable-Changeable Message Sign)

The provisions of Section 652 of the Standard Specifications shall apply with the following additions and modifications:

652.2.5 Portable-Changeable Message Sign

Portable-Changeable Message Signs shall be furnished by the Contractor for installation and use at the following location:

1. Orono, Route 2/Stillwater Avenue, located between the beginning of the project and the end of the I 95 Northbound offramp
2. Old Town, Route 2/Stillwater Avenue, located between University Forest Road and 1250 east of the end of the project.
3. Old Town, College Avenue, located 1500'+/- south of the intersection of Route 41 and Webber Road
4. Old Town, Bennoch Road, located a minimum of 1,000' north of the intersection with Stillwater Avenue
5. Old Town, Bennoch Road, located a minimum of 1,000' south of the intersection with Stillwater Avenue
6. Orono, I95 Northbound, located at least 2,500' +/- south of the Kelly Road Exit 191
7. Old Town, I95 Northbound, located at least 2,500' +/- south of the Stillwater Avenue Exit 193
8. Old Town, I95 Southbound, located at least 2,500' +/- north of the Route 43 Exit 197

Once the Highway work WIN 022950.01 is substantially complete, the message boards at the following locations shall be removed as directed by the Resident:

1. Old Town, Bennoch Road, located a minimum of 1,000' north of the intersection with Stillwater Avenue
2. Old Town, Bennoch Road, located a minimum of 1,000' south of the intersection with Stillwater Avenue
3. Old Town, I95 Southbound, located at least 2,500' north of the Route 43 Exit 197

The exact location of any Portable-Changeable Message Signs shall be approved by the Resident. The Contractor shall provide, operate, and maintain the Portable-Changeable Message Signs. The Contractor shall remove, transport, and maintain the signs as directed by the Resident. The Contractor will be responsible for the day to day programming and operation of the signs.

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC
(Work Zone Traffic Control)

652.3.4 General Requirements. The following paragraphs are added:

The Contractor's Traffic Control Plan (TCP) shall address bicycle traffic. The following sign shall be used on the project:

Bikes May Use Full Lane (MUTCD R4-11)

Painted Shared Lane Markings (SLM's) or sharrow MUTCD figure 9C-9 shall be used during construction.

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC

Approaches. Approach signing shall include the following signs at a minimum. Field conditions may warrant the use of additional signs as determined by the Resident.

Road Work Next X* Miles
Road Work 500 Feet (Ahead)
End Road Work

Work Areas. At each work site, signs and channelizing devices shall be used as directed by the Resident.

Signs include:

Road Work XXXX[1].
One Lane Road Ahead
Flagger Sign

Other typical signs include:

Be Prepared to Stop
Low Shoulder
Bump
Pavement Ends

The above lists of Approach signs and Work Area signs are representative of the contract requirements. Other sign legends may be required.

Unless otherwise defined in Special Provision 105/107 or submitted and approved in the Traffic Control Plan, the following shall apply:

- The Contractor shall conduct their operations in such a manner that the roadway will not be restricted to one lane for more than 2,500 feet at each work area and no more than 4,000 feet for paving and milling work areas.
- Where more than one work area restricts traffic to one lane operation, these work areas shall be separated by at least 1 mile of two-way operation.

Temporary Centerline A temporary centerline shall be placed each day on all new pavement to be used by traffic. The temporary centerline, when specified of reflectorized traffic paint, shall conform to the standard marking patterns used for permanent markings. Failure to apply a temporary centerline daily will result in a Traffic Control Violation and suspension of paving operations until temporary markers are applied to all previously placed pavement.

[1] "Road Work Ahead" to be used in short duration operations and "Road Work xx feet" to be used in stationary operations as directed by the Resident.

September 09, 2021

SPECIAL PROVISION
SECTION 717
ROADSIDE IMPROVEMENT MATERIALS
(Seed)

717.03 Seed Revise this Sub Section by removing the material property tables for "Method #1 - Park Mixture" and "Method #2 - Roadside Mixture #2" and replace with the following:

Seed Mixtures shall consist of seed proportioned percent by weight as follows:

Method #1 – Park Mixture	
Specification	**Property**
Turf Type Tall Fescue	40% +/- 2%
85/80 Kentucky Bluegrass	25% +/-2%
Perennial Rye Grass	20% +/-2%
Annual Ryegrass	15% +/- 2%

Method #2 – Roadside Mixture #2	
Specification	**Property**
Turf Type Tall Fescue	60% +/-2%
White Clover	5% +/-2%
Perennial Rye Grass	15% +/-2%
Annual Ryegrass	20% +/-2%

This special provision is temporary while supplies are limited and may be Modified to the Seed Mix in the March 2020 Standard Specification Book when supplies are available again.

SPECIAL PROVISION
SECTION 718
TRAFFIC SIGNALS MATERIAL

The provisions of Section 718 of the Standard Specifications shall apply with the following additions and modifications:

718.07 Controllers Traffic signal controllers shall be modified as follows:

ADD the following text:

The traffic signal controllers shown on the plans shall be per Bangor Area Comprehensive Transportation Systems (BACTS) Regional Transportation Management Systems (RTMS) Specifications and shall be Ethernet equipped Econolite Brand Advanced Transportation Controllers (ATC) only with the capability of support NTCIP Protocols. The traffic signal controllers shall support direct Ethernet communications from a cabinet installed Ethernet switch to the controllers Ethernet port.

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

Communications from the cloud-based system to the on-street traffic signal controllers shall be made through the Field Monitoring Unit (FMU) as shown on the plans. The FMU shall be the only remote connection device used by isolated intersections to connect to MaineDOT's cloud-based Central Management System (CMS) system. All connections shall be encrypted VPN tunnels. The Contractor shall coordinate all configuration settings with MaineDOT 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 contain two individually switchable 120VAC outlets controlled via the cloud-based management software.

2.5.1 The following two devices shall be plugged into the outlets:

2.5.1.1 Non-Invasive detection system

2.5.1.2 C-V2X/DSRC unit

2.6 The FMU shall have an internal cellular modem running at 4G LTE.

2.6.1 The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.

2.7 The FMU shall incorporate an integrated GPS and cell modem.

2.8 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.

2.9 The FMU shall be powered via a standard 120V input power.

2.10 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.

2.11 The FMU shall, 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.

2.12 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.

2.13 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.

2.14 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.

2.15 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.

2.16 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.

2.17 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

718.15 Twelve (12) Position Fiber Optic Patch Panel This item of work shall conform to this specification. This item shall consist of furnishing and installing 12 Position Fiber Optic Patch Panels at the locations shown on the plans or as indicated by the Engineer for future fiber optic cable connections.

MATERIALS: The Fiber Optic Patch Panels shall meet the following requirements:

1. The Fiber Optic Patch Panel - 12 position shall be a stand-alone unit manufactured for outdoor field cabinets.

2. The Fiber Optic Patch Panel - 12 position shall include and be capable of accommodating a minimum of 12 SC type connector sleeves.

3. The Fiber Optic Patch Panel - 12 position shall include and be capable of terminating up to 12 connectorized pigtails.

4. The Fiber Optic Patch Panel shall incorporate a hinged access door.

5. The Fiber Optic Patch Panel shall be rack, wall, or shelf mountable as required by the specific location. The patch panel shall be securely fastened in place as recommended by the manufacturer.

6. The Fiber Optic Patch Panel shall include splice trays meeting the following requirements:

    6.1 The splice trays in the Fiber Optic Patch Panel - 12 position shall be capable of holding a minimum of 24 splices.

    6.2 The splice trays shall incorporate a system to retain and provide strain relief to the fiber optic buffers tubes and connector pigtails.

    6.3 The splice trays shall incorporate grooves where the fiber optic splice can be held in place.

    6.4 Each splice tray shall incorporate a clear snap on lid.

7. The Fiber Optic Patch Panel shall include a restraining system to hold the splice trays securely in place.

8. The Fiber Optic Patch Panel shall incorporate cable guides that maintain fiber strands and fiber buffer tubes bending radius greater than the minimum allowed by the manufacturer.

9. The Fiber Optic Patch Panel - 12 Position shall use 12 connectorized pigtails to connect the fiber optic cable to the Fiber Optic Patch Panel.

10. The number of pigtails to be furnished and spliced to the fiber optic cable are shown in the fiber optic splice tables in the plans. The connectorized pigtails shall meet the following requirements:

    10.1 All fiber optic connectors shall be SC type with a PC (physical contact) 2.5 mm ceramic ferrule.

    10.2 The connector mean insertion loss shall be 0.3 dB and maximum 0.5 dB.

    10.3 The connector mean return loss shall be ≤ -59 dB and maximum of ≤ -55 dB.

    10.4 All SC connectors shall have a durability rate of less than 0.2 dB change over 500 rematings.

    10.5 Connectors shall meet ANSI/TIA EIA-604-3A requirements.

    10.6 The fiber optic strand of the connectorized pigtail shall have matching optical properties as the fiber optic strand used on the fiber optic cable.

11. The Fiber Optic Patch Panel shall incorporate a restraining mechanism to hold the fiber optic cable central member and outside jacket.

718.16 Ethernet Switch With Fiber Optic Interfaces This item of work shall conform to this specification. This item shall consist of furnishing and installing an Ethernet Switch with fiber optic interfaces, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and fiber optic patch cords, as described herein.

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

1. The work under this item specifies the requirements for the Ethernet Switch with single mode fiber optic interfaces. The Ethernet Switch shall accept both RJ-45 Ethernet connection as well as single mode SC fiber optic connections. The Ethernet Switch shall be installed within the field cabinets as shown on the plans. The Ethernet Switch shall be capable of shelf mounting or wall mounting with supplied wall mount brackets.

2. The Ethernet Switch specified herein shall be a self-contained unit capable of 24-hour per day unattended operation. The Ethernet Switch shall be supplied, assembled and tested by the Contractor. The Ethernet Switch shall be of rugged design and suitable for reliable operation when mounted in the configuration as specified in these Specifications and the Plans. The Ethernet Switch shall be configured for minimum maintenance and need for adjustment after initial set-up. The Ethernet Switch shall include all software required for monitoring and updating the Ethernet Switch from a computer within the Police Department.

3. The Ethernet Switch shall have the following connections:

    3.1 Minimum of Six (6) 10/100 Mbps Ethernet ports with RJ-45 connectors that shall support the following network standards:

        3.1.1 IEEE.802.3 10 Base-T

        3.1.2 IEEE.802.3u 100 Base-T

        3.1.3 IEEE.802.1d Spanning Tree

        3.1.4 IEEE.802.1w Rapid Spanning Tree

        3.1.5 IEEE.802.1q VLAN

        3.1.6 IEEE.802.1p Class of service (CoS)

    3.2 The Contractor shall supply, install, and test all Ethernet cables required to make all connections as shown in the Plans.

    3.3 The Contractor shall supply, install, and test all fiber optic patch cords required to make all connections as shown in the Plans. Fiber optic patch cords shall meet the following requirements:

3.3.1 Each patch cord shall contain one single mode fiber strand with a factory terminated SC type connector.

3.3.2 Each patch cord shall be 3 feet in length.

3.3.3 The patch cords shall operate without degradation over a temperature range of -34 to 74 degrees Celsius at a relative humidity of 10% to 90% condensing.

3.3.4 All fiber optic strands shall be nonconductive to electricity.

3.3.5 The Fiber Optic Patch Cord shall meet or exceed the following performance characteristics:

3.3.5.1 Fiber Optic Patch Cords shall consist of tight buffered optical fibers of the type used for interconnect cable with a 900 µm secondary buffer.

3.3.5.2 The fiber shall be surrounded by aramid fiber yarn strength members and a UL listed OFNR, UV resistant and fungus resistant yellow outer jacket 3mm in diameter.

3.3.5.3 The optical fibers shall be 100 kpsi proof tested and have an attenuation change no greater than .05 dB/km.

3.3.5.4 The attenuation of the Fiber Optic Patch Cord shall not exceed 1.0 dB/km at 1310 nm and 0.75 db/km at 1550 nm.

3.3.5.5 The SC type connector shall meet the following requirements:

3.3.5.5.1 All fiber optic connectors shall be SC type with a PC (physical contact) 2.5 mm ceramic ferrule.

3.3.5.5.2 The connector mean insertion loss shall be 0.3 dB and maximum 0.5 dB.

3.3.5.5.3 The connector mean return loss shall be -59 dB and maximum of -55 dB.

3.3.5.5.4 All SC connectors shall have a durability rate of less than 0.2 dB change over 500 rematings.

3.3.5.5.5 Connectors shall meet ANSI/TIA EIA-604-3A requirements.

3.4 Two single mode fiber optic ports, each containing two SC type connectors that shall support the following network standards:

3.4.1 IEEE.802.3u 100 Base-FX

3.4.2 IEEE.802.1d Spanning Tree

3.4.3 IEEE.802.1w Rapid Spanning Tree

3.4.4 IEEE.802.1q VLAN

3.4.5 IEEE.802.1p Class of Service (CoS)

3.5 The two single mode fiber optic ports shall meet the following optical requirements:

3.5.1 The two optical emitters shall be laser diode type.
3.5.2 The two single mode fiber optic ports shall have an operating wavelength of 1310 nm, single mode.
3.5.3 The two single mode fiber optic ports shall each have an optical power budget of 13dB, minimum.
3.5.4 The two optical emitters shall have a transmit power of -15dbM, minimum.
3.5.5 The two optical detectors shall have receive sensitivity of -28dbM, worst case.

4. The Ethernet Switch shall be a fully managed Ethernet layer 3 device.

5. The Ethernet Switch shall have a switching method of store and forward.

6. The Ethernet Switch shall support the following protocols:

6.1 RTP/ID

6.2 TCP/IP with full multicast support

6.3 DNS

6.4 DHCP

7. The Ethernet Switch shall support the following network management protocols:

7.1 SNMP V2c

7.2 RMON for Ethernet agent

7.3 Telnet/TFTP

8. The Ethernet Switch shall have an operating temperature range of -34°C to +74° C

9. The Ethernet Switch shall have a power usage of +12VDC to +24VDC at 1 amp or less. This shall be provided by an included plug-in type AC adapter.

718.17 Pedestrian Crossing System Pedestrian crossings must have 16-inch by 18-inch countdown pedestrian signals that count down during the pedestrian clearance interval. The pedestrian countdown modules shall be GE Lumination GT1 Series in 16 inch – McCain Model 1000 Series housings (exterior finish per Special Provision 643 color specification) or approved equal.

The Accessible Pedestrian Signal (APS) push buttons with locator tones shall be at a minimum Campbell Company Advisor Model A915 or approved equal. Signs shall be posted at each audible signal push button stating which street may be crossed based upon the related push button. Where APS are proposed to be separated by a distance of at least 10 feet and in accordance with Section 4E.11.07 of the Manual on Uniform Traffic Control Devices (MUTCD), the audible walk indication shall be a percussive tone. When using Campbell buttons, MaineDOT has selected "Perc EW 30" for east/west concurrent PED crossings and "Perc NS 70" for north/south PED crossings.

If field modifications dictate that buttons be moved to the same pole or are separated by less than 10 feet, audible walk interval messages should be used as follows:

- For locations with concurrent pedestrian phases – for example "Main Street, Walk sign is on to cross." The name of the street to cross at locations with concurrent pedestrian phases will change at each audible push button.

The audible push button identification information messages used during the non-walk phases should be as follows:

- For locations with concurrent pedestrian phases – for example "Wait to cross Main Street."

All controllers are be set so that a pedestrian actuation does not knock the intersection out of coordination.

SPECIAL PROVISION
SECTION 801
SANITARY SEWER

Description This work shall consist of constructing cellar drain inspection standpipes, in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans and as directed by the resident in the field.

Materials Meet Sections:

Sewer Line Bedding and Initial Backfilling	703.02 for class AA
Stone PVC Pipes & Fittings 4 in.	ASTM D3034 (SDR 35)

Construction Requirements

Excavation Trenches shall be excavated in accordance with the requirements of Section 206 - Structural Excavation and wide enough to allow joining the pipe and compacting the bedding and backfill material under and around the pipe. Unless otherwise designated, trench walls shall be as nearly vertical as possible and the trench width no greater than necessary for installation of the pipe.

Bedding The inspection standpipe and pipe line shall be bedded in original material.

Laying The Contractor shall not install nor backfill cellar drain inspection standpipes between December 15th and April 1st without written permission. Installing shall begin at the downhill end of the cellar drain line. Bell or groove ends shall be placed facing uphill.

Joining The pipe ends shall be thoroughly cleaned before the joint is made. Joints shall be made in accordance with the manufacturer's recommended procedures.

Backfilling After the inspection standpipe and pipe are installed, it will be inspected before any backfill material is placed. All pipe found to be out of alignment, unduly settled or damaged to the extent that full performance is impaired, shall be taken up and re-laid or replaced. One bag of concrete mix shall be installed around the foot of the standpipe, placement as per manufacturer’s recommendations.

Trenches shall be backfilled in accordance with Section 206.03 and as follows. The backfill shall be original excavation in 12 in. maximum lifts and shall be thoroughly compacted with power tampers or vibratory compactors or other approved equipment or combination of equipment.

Method of Measurement PVC pipe will be measured by the length in feet along the invert, horizontally and vertically, including fittings and caps, laid as directed, complete in place,

and accepted. Pipe laid in excess of the authorized length will not be included. Pipe installed inside a manhole will not be measured for payment.

Basis of Payment The accepted quantities of pipe will be paid for at the contract unit price per meter [linear foot], for the types and sizes specified, complete in place and shall be full compensation for all labor, materials, equipment, excavation, dewatering, bedding, furnishing and installing pipe, removal and disposal of existing pipes, connecting to manholes, connecting to existing cellar drain, concrete footing, backfill, compacting, cleaning, testing, maintaining existing flows, and all other incidental required.

No payment will be made for pipe ordered without written approval of the Resident when such pipe is not required to be installed for completion of the work.

Payment will be made under:

Pay Item		Pay Unit
801.141	4 in. PVC Sanitary Sewer (SDR-35)	Linear Foot
801.16	6 in. PVC Sanitary Sewer (SDR-35)	Linear Foot

COPY NO. ____

STILLWATER AVENUE PUMP STATION

FORCE MAIN REPLACEMENT

FEDERAL AID PROJECT: 2189401

CITY OF OLD TOWN

OLD TOWN, MAINE

BIDDING AND CONTRACT REQUIREMENTS AND SPECIFICATIONS

NOVEMBER 2021

20593A

WRIGHT-PIERCE
Engineering a Better Environment

CITY OF OLD TOWN

OLD TOWN, MAINE

BIDDING AND CONTRACT REQUIREMENTS AND SPECIFICATIONS

FOR

STILLWATER AVENUE PUMP STATION

FORCE MAIN REPLACEMENT

NOVEMBER 2021

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SECTION 00800-SC-20

CWSRF SUPPLEMENTARY CONDITIONS
(MAINE DEP REV OCT 2018)
(MODIFIED TO NOTE DOT DOCUMENTS WHICH COVER DEP REQUIREMENTS)

1. Agency Not a Party

"This contract is expected to be funded in whole or in part by the State of Maine Department of Environmental Protection (DEP) Clean Water State Revolving Loan Fund (CWSRF) program. Neither the State of Maine nor any of its departments, agencies, or employees is or will be a party to this contract. The word "agency" in the contract documents refers to the DEP and all other involved funding agencies."

2. Contract Award Approval

"The Owner and Contractor shall furnish the documents as required by this contract to the State of Maine Department of Environmental Protection (DEP) Clean Water State Revolving Loan Fund (CWSRF) program for contract award approval. Concurrence by the Agency in the award of the Contract is required before the Contract is effective."

3. Conflict of Interest

"Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors."

4. Gratuities

"If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.

In the event this Contract is terminated as provided in above paragraph, Owner may pursue

the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee."

5. Audit and Access to Records

"Owner, Agency, the Comptroller General, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the Contractor, which are pertinent to the Contract, for the purpose of making audits, examinations, excerpts and transcriptions. Contractor shall maintain all required records for three years after final payment is made and all other pending matters are closed."

6. Anti-Kickback

"Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency."

7. Clean Air and Pollution Control Acts

"If this Contract exceeds $100,000, Contractor shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 USC 7401 *et seq.*) and the Federal Water Pollution Control Act as amended (33 USC 1251 *et seq*.). Contractor will report violations to the Agency and the Regional Office of the EPA."

8. State Energy Policy

"Contractor shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan, shall be utilized."

9. Equal Opportunity Requirements

A. "If this Contract exceeds $10,000, Contractor shall comply with Executive Order 11246, "Equal Employment Opportunity," as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

B. "Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the Contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting Contractor's goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed."

C. "Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the Contract is to be performed."

10. Environmental Requirements

"When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:

1. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.

2. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.

3. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).

4. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be

temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service."

11. Suspension and Debarment

"The Contractor must comply with Subpart B and Subpart C of 2 CFR Part 180 and Part 1532. By entering into this contract, the contractor certifies that neither the contractor's firm, nor any person or firm who has an interest in the contractor firm, is a Debarred or Suspended person or firm. Furthermore, by entering into this contract, the contractor shall certify that no part of this contract shall be subcontracted to a Debarred or Suspended person or firm. Contractors may access the federal government's Excluded Parties List System on the internet for verification of excluded parties"

12. Taxes

Add the following language to General Conditions Article 6.10:

"The Owner is exempt from Maine state sales and use taxes on all materials to be incorporated in the work. The Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the work. The Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased or leased by Contractor or to supplies or materials not incorporated into the work."

13. State Minimum wages

"All laborers and mechanics employed or working upon the construction site of the project shall be paid not less than the prevailing State minimum wage rate regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. The most current version of the State of Maine poster for Minimum Wage (as per the Department of Labor website) must be posted where it can be easily seen by employees."

14. Posting Documents

"The contractor shall post documents in accordance with all applicable state and federal labor and employment laws. Posters shall be located and maintained by the Contractor at such place or places on the project site where employees can easily see them. Posters displayed outdoors must be laminated or otherwise protected from the weather. The most current version of workplace posters can be found on the internet on the state and federal Department of Labor websites."

15. SRF Project Sign

"At the start of the project, the Contractor shall provide and erect a project sign as detailed

and specified in the **attachment to these supplementary conditions**. The location of the sign shall be as directed by the Engineer. No other contractor, subcontractor, or material signs will be permitted on the sign. The Contractor shall maintain and keep the project sign in good condition until the work is completed when the sign will be removed. Provide adequate supports for the sign as site conditions may require and keep sign a proper distance above prevailing grade to permit public viewing."

"Alternate methods of publicizing may be considered on a project specific basis for projects with a contract value less than $250,000. Prior to the start of the project, the Contractor must obtain Agency approval, through the Owner, for use of a proposed method. Alternate methods that may be considered include: posters or wall signage on public buildings or at a public location, newspaper advertising, online signage, and press releases. Minimum public awareness requirements and sample language can be obtained from the Agency."

16. SRF Disadvantaged Business Enterprises Program (Refer to DOT Utility Policy No. 2021-1 included in these documents)

17. Davis-Bacon and Related Acts (Refer to DOT Specifications)

18. American Iron and Steel (AIS) Requirements (Refer to DOT Utility Policy No. 2021-1 included in these documents)

19. List of Attachments to the CWSRF Supplementary Conditions (Refer to DOT Utility Policy No. 2021-1 included in these documents)

SECTION SC 36

EQUAL OPPORTUNITY CLAUSE

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(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, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or workers' representatives of the contractor's commitment under this section, and shall post copies of the notice in conspicuous places available employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Department and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's non compliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24,1965, so that such provisions

will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Department may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Department, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

END OF SECTION

SECTION SC-38

EXECUTIVE ORDER 11246

PART 1 - GENERAL

1.1 DESCRIPTION

A. Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

1. As used in these specifications:
   a. "Covered area" means the geographical area described in the solicitation from which this Contract resulted;
   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941.
   d. "Minority" includes:
      i. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      ii. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      iii. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      iv. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North American and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the CONTRACTOR, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this Contract resulted.
3. If the CONTRACTOR is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and

to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The CONTRACTOR shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this Contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the CONTRACTOR should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The CONTRACTOR is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the CONTRACTOR has a collective bargaining agreement, to refer either minorities or women shall excuse the CONTRACTOR's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the CONTRACTOR during the training period, and the CONTRACTOR must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The CONTRACTOR shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the CONTRACTOR's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The CONTRACTOR shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the CONTRACTOR's employees are assigned to work. The CONTRACTOR, where possible, will assign two or more women to each construction project. The CONTRACTOR shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the CONTRACTOR's obligation to maintain

such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the CONTRACTOR or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the CONTRACTOR by the union or, if referred, not employed by the CONTRACTOR, this shall be documented in the file with the reason therefore, along with whatever additional actions the CONTRACTOR may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the CONTRACTOR has a collective bargaining agreement has not referred to the CONTRACTOR a minority person or woman sent by the CONTRACTOR, or when the CONTRACTOR has other information that the union referral process has impeded the CONTRACTOR's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the CONTRACTOR's employment needs, especially those programs funded or approved by the Department of Labor. The CONTRACTOR shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the CONTRACTOR's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the CONTRACTOR in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year, and, by posting the company's EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of

these meetings, persons attending, subject matter discussed and disposition of the subject matter.

h. Disseminate the CONTRACTOR's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media and providing written notification to and discussing the CONTRACTOR's EEO policy with other Contractors and Subcontractors with whom the CONTRACTOR does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the CONTRACTOR’s recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source the CONTRACTOR shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a CONTRACTOR's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60.3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the CONTRACTOR's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the CONTRACTOR's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the CONTRACTOR is

a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these Specifications provided that the CONTRACTOR actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the CONTRACTOR's minority and female workforce participation, makes a good faith effort to meet its individual goals and time-tables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the CONTRACTOR. The obligation to comply, however, is the CONTRACTOR's and failure of such a group to fulfill an obligation shall not be a defense for the CONTRACTOR's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The CONTRACTOR, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the CONTRACTOR may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the CONTRACTOR has achieved its goals for women generally, the CONTRACTOR may be in violation of the Executive Order if a specific minority group of women is underutilized).
10. The CONTRACTOR shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
11. The CONTRACTOR shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The CONTRACTOR shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing Subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any CONTRACTOR who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The CONTRACTOR, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the CONTRACTOR fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 80-4.8.
14. The CONTRACTOR shall designate a responsible official to monitor all employment related activity to ensure that the company's EEO policy is being carried out, to submit reports relating to the provision hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction

trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

END OF SECTION

SECTION SC-40

CERTIFICATION OF NONSEGREGATED FACILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Certification of Nonsegregated Facilities - (Applicable to federally assisted construction Contracts and related Subcontracts exceeding $10,000 which are not exempt from the Equal Opportunity Clause).

The federally assisted construction CONTRACTOR certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction CONTRACTOR certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction CONTRACTOR agrees that a breach of this certification is a violation of the Equal Opportunity clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally assisted construction CONTRACTOR agrees that (except where he has obtained identical certifications from proposed Subcontractors for specific time periods) he will obtain identical certifications from proposed Subcontractors prior to the award of Subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

_____

Signature Date

_____

Name and Title of Signer (Please Type)

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

END OF SECTION

SECTION SC-41

NOTICE TO LABOR UNIONS OR OTHER ORGANIZATIONS OF WORKERS NONDISCRIMINATION IN EMPLOYMENT

To: _____
(Name of union or organization of workers)

The undersigned currently holds Contract(s) with _____
(Name of Applicant)

involving funds or credit of the U. S. Government of (a) subcontract(s) with a prime contractor holding such contract(s).

You are advised that under the provisions of the above contract(s) or subcontract(s) and in accordance with Executive Order 11246, dated September 24, 1965, the undersigned is obliged not to discriminate against any employee or applicant for employment because of race, color, creed, or national origin. This obligation not to discriminate in employment includes, but is not limited to, the following:

HIRING, PLACEMENT, UPGRADING, TRANSFER, OR DEMOTION;

RECRUITMENT, ADVERTISING, OR SOLICITATION FOR EMPLOYMENT;

TRAINING DURING EMPLOYMENT; RATES OF PAY OR OTHER FORMS

OF COMPENSATION; SELECTION FOR TRAINING, INCLUDING

APPRENTICESHIP; LAYOFF, OR TERMINATION.

This notice is furnished you pursuant to the provisions of the above contract (s) or subcontract(s) and Executive Order 11246.

COPIES OF THIS NOTICE WILL BE POSTED BY THE UNDERSIGNED IN CONSPICUOUS PLACES AVAILABLE TO EMPLOYEES OR APPLICANTS FOR EMPLOYMENT.

_____

/s/ _____
(Contractor or Subcontractor)

_____
(Date)

END OF SECTION

UTILITY POLICY NO. 2021-1

AMERICAN IRON AND STEEL VS. BUY AMERICA REQUIREMENTS FOR UTILITY WORK PERFORMED UNDER MAINEDOT PROJECT CONTRACTS

Initial Policy Development Date: October 2021
Last Revision Date: October 2021

Background:

The Buy America Act required that iron and steel materials used to build Federal-Aid transportation infrastructure projects be made in the United States beginning in 1982. The American Iron and Steel (AIS) regulation was enacted into USEPA funded State Revolving Fund (SRF) Program in January 2014 followed by enactment into the Federal USDA funded Rural Development Program in May 2017.

Unfortunately, after enactment of AIS, the Federal Highway Administration (FHWA) interpreted that the overlapping regulations both apply in a transportation project when the AIS funded utility construction work is performed under a Federal-Aid state DOT project contract.

(See FHWA Buy America Q&A, Ques. 38: – *"For joint funded projects involving other Federal agencies where there is no established lead agency, 23 USC 313 continues to apply to the FHWA funding and other agencies' requirements apply as well."*)
https://www.fhwa.dot.gov/construction/contracts/buyam_qa.cfm

This interpretation creates confusion as to which regulation applies in some instances because although the regulations are basically the same, i.e., they both require iron and steel products be American made, each regulation has some differing requirements.

For example, the dollar value of allowable non-US steel in Buy America is different than the "De minimis incidental components" allowance in AIS which allows use of Canadian valve boxes. Another example, Buy America allows MaineDOT to fabricate precast reinforced concrete T-beams or voided slabs or Pre-stressed beams at a Canadian manufacturer using US steel and oversight by a MaineDOT inspector at the plant, but fabricating any precast reinforced concrete items out of country is not allowed under any circumstances under AIS requirements.

Purpose and Scope:

Considering the background, the purpose of this policy is to provide process guidance for Maine Department of Environmental Protection (Maine DEP), Maine Department of Health and Human Services (Maine DHHS) and Maine USDA managers of the SRF and Rural Development programs, respectively, and MaineDOT Utility Coordinators regarding application of AIS requirements. The guidance covers the documents to use and process to follow when AIS requirements are implemented under a MaineDOT project contract for USEPA (SRF Program) and Federal USDA (Rural Development Program) funded utility construction.

It should be noted that MaineDOT, Maine DEP, Maine DHHS and the Maine office of USDA together have petitioned FHWA to start the process to develop a "Memorandum of Agreement" for the purpose of defining responsibilities for the utilities and MaineDOT when utility work is funded with SRF or the Rural Development Programs. MaineDOT Policy 2021-1 will be used for the foreseeable future unless and until our Federal Partners, USEPA, Federal USDA and FHWA develop that Memorandum of Agreement.

Process Guide:

General –
When AIS funding is used for utility construction performed under a MaineDOT contract, both AIS and Buy America Certifications must be collected from the contractor. The AIS certifications will be collected to satisfy the AIS funding agency requirements and documents while the Buy America certifications will be collected to satisfy FHWA requirements. Both the MaineDOT Utility Coordinators and funding agency partners will work collaboratively to assure that each of their respective requirements are met, as well as, making sure that all of the documentation is completed and submitted.

MaineDOT Document Modifications –
AIS funding requires the modification of the MaineDOT Utility Receivable Agreement and Special Provision 104, Utilities, to reference the appropriate regulation and address the requirements. Utility Coordinators will replace the Buy America clause in the Receivable Agreement with the clause in Appendix A for AIS funded projects. Special Provision 104 will include one or several of the clauses found in Appendix B when used for AIS projects depending on project circumstances. Note that the Special Provision may also need to account for utilities that are not funded under AIS, and thus fall under Buy America requirements, when both types are in the same project.

AIS Funding Agency Documents –
Appendices C, D, and E present all the supplementary specification documents that will need to be placed *within the Utility Company, District, Municipality, etc. project specifications*. The table below presents the purpose for each Appendix C, D, and E:

Appendix C –
Use for the case when there is only one utility funded by the SRF Program in the MaineDOT contract.

~~Appendix D –~~ (NOT USED)
~~Use for the situation when there is only one utility funded by the Rural Development Program in the MaineDOT contract.~~

~~Appendix E –~~ (NOT USED)
~~Use for the case when both a SRF funded utility entity and a Rural Development funded utility entity have utility construction projects in the same project under a MaineDOT contract.~~

Each of the appendices contain all the supplementary specifications and documents needed for each specific situation. The intent of the appendices is to *allow the Utility Coordinators and/or the Funding Agency Representatives to copy the entire content of each Appendix C, D, or E, as appropriate, and*

provide it to the utilities or their consultant to place into the utilities construction plan and specification package.

The MaineDOT Utility Coordinators, Utility Engineer, and representatives of the SRF and Rural Development funding agencies will work together to assure that all the appropriate information gets into the MaineDOT project specifications and Utility Receivable Agreement. If questions arise during execution of the project, all the partners described in the beginning of this paragraph will communicate with each other to resolve the issues.

APPENDIX A

Replacement Clause for Utility Receivable Agreements

Replace Section 11, Buy America Requirements, with the entire Section 11, American Iron and Steel (AIS) Requirements, below:

11. **American Iron and Steel (AIS) Requirements:** The following regulations regarding AIS requirements are incorporated and made a part hereof by reference. Note that both AIS and Buy America certifications will be collected for the project files. The AIS certifications will be collected to satisfy the AIS funding agency requirements and documents while the Buy America certifications will be collected to satisfy FHWA project requirements.

    For USEPA (SRF) Funded Projects: Clean Water Act (CWA) 2014, Section 608, includes requirements for the use of AIS in Clean Water State Revolving Fund (CWSRF) projects. America's Water Infrastructure Act of 2018' (AWIA**)** also includes several updates and revisions to the Safe Drinking Water Act (SDWA), including the Drinking Water State Revolving Fund (DWSRF) provisions.

APPENDIX B

NOTE: There may be project situations where AIS requirements apply to one utility and Buy America requirements apply to another utility. In those cases, the appropriate AIS clause below and the Buy America clause below must both be included in Special Provision 104, Utilities, noting which requirement applies to each utility.

AIS Clause for Special Provision 104, Utilities

AMERICAN IRON AND STEEL REQUIREMENTS

New water or sewer utility construction for the ABC Water or Sewer Department is funded by the SRF Program. Therefore, Clean Water Act (CWA) 2014, Section 608, requirements for the use of AIS in Clean Water State Revolving Fund (CWSRF) projects and America's Water Infrastructure Act of 2018' (AWIA) updates and revisions to the Safe Drinking Water Act (SDWA), including the Drinking Water State Revolving Fund (DWSRF) provisions applies an American Iron and Steel (AIS) requirement to this project. Those requirements are incorporated and made a part hereof by reference.

Also see the ABC Water or Sewer Department construction specifications for details of the American Iron and Steel requirements. Note that both AIS and Buy America certifications will be collected for the project files. The AIS certifications will be collected to satisfy the AIS funding agency requirements and documents while the Buy America certifications will be collected to satisfy FHWA project requirements.

BUY AMERICA REQUIREMENTS

XYZ Water or Sewer District utility construction work performed as part this federal-aid project is subject to the requirements of Buy America in accordance with Federal Regulation 23 CFR 635.410 Section 1518. Specific requirements are presented in MaineDOT Standard Specification Section 100, Appendix A, Section 3.A., Buy America.

APPENDIX C

AIS Funding Agency Documents for an SRF Funded Utility Project Under a MaineDOT Project Contract

STATE REVOLVING FUND (SRF)

Utility Construction Contract Requirements To Supplement the Maine Department of Transportation (MDOT) General Conditions

Last Updates: October 2021

STATE REVOLVING FUND (SRF)
UTILITY CONSTRUCTION CONTRACT REQUIREMENTS
TO SUPPLEMNENT THE
MAINE DEPARTMENT OF TRANSPORTATION
GENERAL CONDITIONS

Last Updates: October 2021

Utility Construction Supplementary Conditions

Gratuities

If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract. In the event this Contract is terminated as provided in above paragraph, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

Environmental Requirements

When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:

1. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.
2. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted

pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

Utility Construction Project Sign

At the start of the project, the Contractor shall provide and erect a project sign as detailed and specified in the attachment to these supplementary conditions. The location of the sign shall be as directed by the Engineer. No other contractor, subcontractor, or material references will be permitted on the sign. The Contractor shall maintain and keep the project sign in good condition until the work is completed when the sign will be removed. Provide adequate supports for the sign as site conditions may require and keep sign a proper distance above prevailing grade to permit public viewing.

Alternate methods of publicizing may be considered on a project specific basis for projects with a contract value less than $250,000. Prior to the start of the project, the Contractor must obtain Agency approval, through the Owner, for use of a proposed method. Alternate methods that may be considered include: posters or wall signage on public buildings or at a public location, newspaper advertising, online signage, and press releases. Minimum public awareness requirements and sample language can be obtained from the Agency.

SRF Disadvantaged Business Enterprises Program

The contractor must maintain all records documenting its compliance with the requirements of this part, including documentation of its good faith efforts (such as copies of solicitation letters and emails) and data relied upon in formulating its fair share objectives.

1. During the bidding period, the Contractor is required to make the following good faith efforts if they will be awarding subcontracts:
   (a) Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. This will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
   (b) Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
   (c) Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
   (d) Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
   (e) Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.

(f) Employ the good faith efforts described above even if the prime contractor has achieved its fair share objectives under subpart D of this part.

2. The Contractor must comply with the following provisions when submitting their bid:

   (a) The contractor must complete and submit SRF Form 6100–4, 'DBE Program Subcontractor Utilization Form' (copy attached) as part of the prime contractor's bid or proposal package to the Owner. Note, only DBE subcontractors should be listed. If no DBE subcontractors are to be used, the contractor must still complete and submit the form.

   (b) The contractor must have each of its proposed DBE subcontractors complete the SRF Form 6100–3, 'DBE Program Subcontractor Performance Form' (copy attached). The completed forms must be submitted as part of the prime contractor's bid or proposal package to the Owner.

3. Prior to contract award, as the Successful Bidder, the Contractor must comply with the following provisions:

   (a) The contractor must submit to the Owner documentation of its good faith efforts (such as copies of solicitation letters and emails) and data relied upon in formulating its fair share objectives. Solicitation documentation must include proof of receipt. The records must be submitted to the Owner even if the goals were met.

   (b) The contractor must submit to the Owner a bidders list of all firms that bid or quote on subcontracts, including both MBE/WBEs and non-MBE/WBEs. The purpose of a bidders list is to provide contractors who conduct competitive bidding with as accurate a database as possible about the universe of MBE/WBE and non-MBE/WBE subcontractors. The list must include the following information:

      (1) Entity's name with point of contact;

      (2) Entity's mailing address, telephone number, and e-mail address;

      (3) The procurement on which the entity bid or quoted, and when; and

      (4) Entity's status as an MBE/WBE or non-MBE/WBE.

4. Following contract award, the Contractor must comply with the following additional provisions:

   (a) The contractor must provide SRF Form 6100–2, 'DBE Program Subcontractor Participation Form' (copy attached) to all DBE subcontractors listed on Form 6100-4. SRF Form 6100–2 gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have during the course of the project, for example, reasons why the DBE subcontractor believes it was terminated by the prime contractor. If DBE subcontractors choose to complete this form, the completed form should be given to the SRF Project Manager.

   (b) Complete the SRF Progress Report of DBE Subcontractor Utilization Form (copy attached) for all contractor pay applications whether or not they include invoiced amounts

from DBE subcontractors. The progress report should be attached to the corresponding pay application for processing through the Owner.

(c) Pay subcontractors for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Owner.

(d) Notify the Owner in writing prior to any termination of a DBE subcontractor for convenience by the prime contractor.

(e) If a DBE subcontractor fails to complete work under the subcontract for any reason, the prime contractor must employ the good faith efforts described above if soliciting a replacement subcontractor. Documentation of good faith efforts shall be submitted to the Owner upon request.

American Iron and Steel (AIS) Requirements

The Contractor acknowledges, to and for the benefit of the Owner and the State (Maine Department of Environmental Protection and the Maine Department of Health and Human Services), that it understands the goods and services under this Agreement are being funded with monies made available by the State Revolving Fund (SRF) that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. See attached Public Law 113-76, Section 436. The Contractor hereby represents and warrants, to and for the benefit of the Owner and the State, that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State. While the Contractor has no direct contractual privity with the State, as a lender to the Owner for the funding of its project, the Owner and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

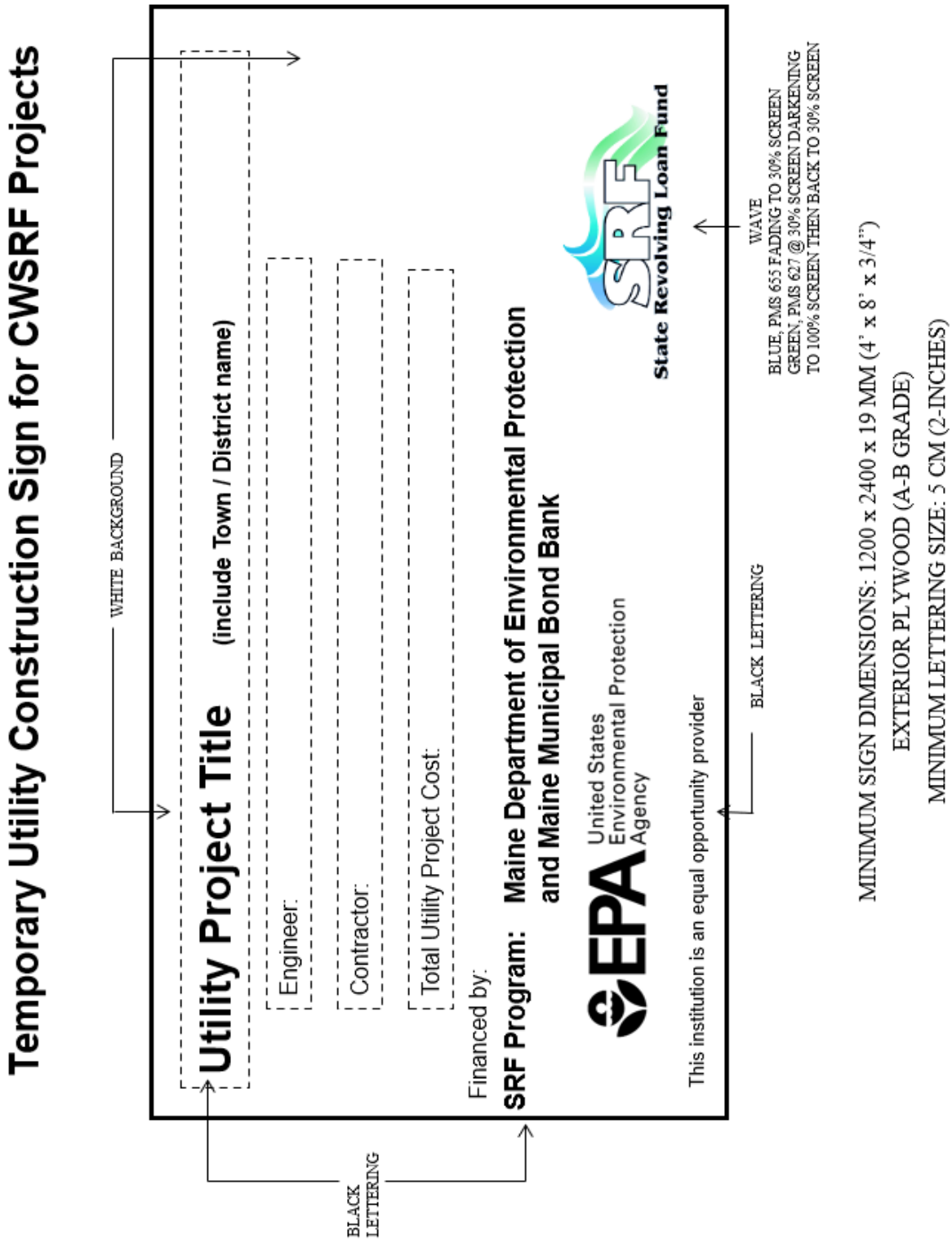
The Owner shall maintain files on the project site for American Iron and Steel (AIS) manufacturer certifications. The Contractor and subcontractors shall provide step manufacturer certifications to the Owner for each AIS item delivered to the site. The files shall be made available to State and Federal officials for inspection upon request. See sample Step Manufacturer Certification attachment for information that should be included. The Contractor and its subcontractors shall submit to the Owner, an AIS Compliance Certification (see form attached) with each contractor pay application. The Owner, shall in turn, submit this certification from the Contractor, with their AIS Compliance Certification (see form attached), to the State with the SRF pay requisition. The nationwide waiver to the American Iron and Steel law permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a

project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project. It is the State's interpretation that all SRF projects will contain incidental components that might not comply with the law and therefore it is likely that the Owner will use the de minimis waiver. The Contractor is required to provide the necessary documentation. See attached sample de minimis tracking form. Owners should, in consultation with their contractors, determine the items to be covered by this waiver, must retain relevant documentation (i.e., invoices) as to those items in their project files, and must summarize the items to which this waiver is applied, the total cost of incidental components covered by the waiver, and the calculations by which they determined the total cost of materials used in and incorporated into the project. The Owner shall maintain files on the project site for this documentation. The files shall be made available to State and Federal officials for inspection upon request.
The Contractor shall refer to the attached guidance taken from an EPA Memorandum. Additional information regarding the AIS requirements can be found on this website
http://water.epa.gov/grants_funding/aisrequirement.cfm

List of Attachments to the Utility Supplementary Conditions
(ALL attachments should follow this list)

- Utility Construction Project Sign Drawings
- Progress Report of DBE Subcontractor Utilization Form
- DBE Program Subcontractor Utilization Form - SRF 6100-2
- DBE Program Subcontractor Performance Form - SRF 6100-3
- DBE Program Subcontractor Participation Form - SRF 6100-4
- AIS Covered Products Q &A
- AIS Law
- AIS Certification by Owner
- AIS Certification by Contractor
- AIS Step Manufacturer Certification
- AIS De Minimis Tracking Form
- AD-1048 Certification Regarding Debarment

Select Utility Construction Project Sign Drawings As Appropriate



Disadvantaged Business Enterprise Program

(DBE)PROGRESS REPORT OF DBE SUBCONTRACTOR UTILIZATION FORM

TO ENSURE PROMPT PAYMENT THE FOLLOWING INFORMATION MUST BE SUBMITTED WITH ALL REIMBURSEMENT REQUESTS WHETHER THEY INCLUDE INVOICED AMOUNTSFROM A QUALIFYING WBE OR MBE PARTICIPANT OR NOT:

Municipality/District:_____ SRF #:_____

Name of Project:_____ Contractor:_____

Contractor's Payment Request No._____Period covered by the request_____

The accompanying Reimbursement Request includes the following WBE/MBE participation:

Name & Address of WBE/MBE firm to be paid	WBE	MBE	Source of Certification, i.e., DOT, EPA or SBA	Amount to be paid this request	Type of Work
	☐	☐			
	☐	☐			
	☐	☐			

This attachment must be signed by an authorized representative of the contractor.

Signature:_____Date: _____

Name:_____ Title: _____

Address: _____

Phone:_____ E-Mail: _____

Disadvantaged Business Enterprise Program (DBE)Subcontractor Participation Form

DBE Subcontractor Participation Form) SRF FORM 6100-2, Page 1 of 2

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form toits DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and /or report any concerns regarding the EPA-funded project (e.g. in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the DEP DBE Coordinator at any time during the project period of performance.

Subcontractor Name	Project Name	
Bid /Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Received from the Prime ContractorInvolving Construction, Services, Equipment or Supplies	Amount Receivedby Prime Contractor

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA acceptscertifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

Please use the space below to report any concerns regarding the above EPA-funded project:

Subcontractor Signature	**Print Name**
Title	**Date**

Disadvantaged Business Enterprise Program (DBE)Subcontractor Participation Form

DBE Subcontractor Performance Form) SRF FORM 6100-3, Page 1 of 2

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the priceof the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name	Project Name	
Bid /Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor

DBE Certified By: ☐ DOT ☐ SBA
☐ Other:_____

Meets/exceeds EPA certification standards?
☐ YES ☐ NO ☐ Unknown

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA acceptscertifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provideservices pursuant to an EPA award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form doesnot signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33Section 33.202 (c).

Prime Contractor Signature	**Print Name**
Title	**Date**

Subcontractor Signature	**Print Name**
Title	**Date**

Disadvantaged Business Enterprise Program (DBE)Subcontractor Participation Form

DBE Subcontractor Utilization Form) SRF FORM 6100-4, Page 1 of 2

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certifiedDBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial AssistanceAgreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid /Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity:		

I have identified potential DBEcertified subcontractors	☐ _ YES	☐ _ NO
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/Company Name	Company Address/Phone/Email	Est. Dollar Amt.	Currently DBE Certified ?

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuantto an EPA award or financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacementof a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Section 33.202 (c).

Prime Contractor Signature	**Print Name**
Title	**Date**

Link to AIS Covered Products Q & A

https://www.epa.gov/cwsrf/american-iron-and-steel-requirement-guidance-and-questions-and-answers

From the "Consolidated Appropriations Act, 2014"

H.R. 3547 (PL113-76, enacted 1/17/2014)

USE OF AMERICAN IRON AND STEEL

"SEC. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorizedby section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a projectfor the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipalcastings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administratorof the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public inputon the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act."

CERTIFICATION BY THE OWNER
OF COMPLIANCE WITH THE
USE OF AMERICAN IRON AND STEEL LAW
enacted on 1/17/2014

(To be attached to each Utility Construction SRF requisition submitted for payment)

We, the Owner named, _____, having obtained funding from the Stateof Maine, State Revolving Fund (SRF), for the Utility Construction Project named _____, hereby submit to the SRF program, certification from each contractor working on the Utility Construction Project that the use of American Ironand Steel in the construction of the project complies with the law, or that a waiver has been obtained from the U.S. Environmental Protection Agency. Thereby, it is to the best of the Owner's knowledge that the costs being requested with this SRF requisition #_____are in compliance with the Use of American Iron and Steel Law.

_____	_____	_____
Signature of Official	Printed name	Date

Attachment: Certification by Contractor

CERTIFICATION BY CONTRACTOR
OF COMPLIANCE WITH THE
USE OF AMERICAN IRON AND STEEL LAW
enacted on 1/17/2014

(To be attached to each Utility Construction payment application)

We, the Prime Contractor and Subcontractors, as named below, hereby certify that the use of American iron and steel in the utility construction of the Project named _____, being requested in the Utility Construction payment application (or invoice) #_____and dated_____, complies with the Use of American Iron and Steel Law, or that a waiver been obtained from the U.S. Environmental Protection Agency.

Prime Contractor Name: _____

_____	_____	_____
Signature of Official	Printed name	Date

Subcontractor Name	Signature of Official	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Sample Step Manufacturer Certification

(Documentation must be provided on company letterhead)

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Manufacturer Certification

Project Name _____

I, _____ (company representative), certify that the _____ (melting, bending, coating, galvanizing, cutting, etc.) process for _____ (manufacturing or fabricating) the following products and/or materials shipped or provided for the project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. _____

2. _____

3. _____

Such process took place at the following location: _____(address)

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

_____	_____	_____
Company representative	Signature	Date

AIS De Minimis Tracking Form

AISDeMinimisReport Form.xlsx

This form is available electronically.

Form Approved – OMB No. 0505-0027
Expiration Date: 04/30/2022

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion AD-1048

Lower Tier Covered Transactions

The following statement is made in accordance with the Privacy Act of 1974 (5 U.S.C. § 552a, as amended). This certification is required by the regulationsimplementing Executive Order 12549, Debarment and Suspension, and 2 C.F.R. §§ 180.300, 180.335, Participants' responsibilities. The regulations were amended and published on August 31, 2005, in 70 Fed. Reg. 51865-51880. Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed covered transaction.

According to the Paperwork Reduction Act of 1995 an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0505-0027. The time required tocomplete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The provisions of appropriate criminal andcivil fraud privacy, and other statutes may be applicable to the information provided.

(Read instructions on page two before completing certification.)

The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presentlydebarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency;

Where the prospective lower tier participant is unable to certify to any of the statements in this certification, suchprospective participant shall attach an explanation to this proposal.

ORGANIZATION NAME	PR/AWARD NUMBER OR PROJECT NAME

NAME(S) AND TITLE(S) OF AUTHORIZED REPRESENTATIVE(S)	
SIGNATURE(S)	DATE

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for priorcivil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at How to File a Program Discrimination Complaint (https://www.ascr.usda.gov/filing-program-discrimination-complaint-usda-customer) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442.

Instructions for Certification

(1) By signing and submitting this form, the prospective lower tier participant is providing the certification set out on page 1 inaccordance with these instructions.

(2) The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, inaddition to other remedies available to the Federal Government, the department or agency with which this transaction originatedmay pursue available remedies, including suspension or debarment.

(3) The prospective lower tier participant shall provide immediate written notice to the person(s) to which this proposal is submitted ifat any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(4) The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set outin the Definitions and Coverage sections of the rules implementing Executive Order 12549, at 2 C.F.R. Parts 180 and 417. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of those regulations.

(5) The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into,it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

(6) The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "CertificationRegarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

(7) A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transactionthat is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the System for Award Management (SAM) database.

(8) Nothing contained in the foregoing shall be construed to require establishment of a system of records to render in good faith thecertification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(9) Except for transactions authorized under paragraph (5) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency withwhich this transaction originated may pursue available remedies, including suspension and/or debarment.

SECTION 01010B

SUMMARY OF WORK

1.1 DESCRIPTION:

A. Location: The Work locations include, but are not limited to, locations within the right-of-ways on the following streets and easements in the City of Old Town.
   1. Stillwater Avenue

B. Work Included: Replacing the sewer main on the Stillwater Avenue Bridges in Old Town. Work is included under the Maine Department of Transportation's replacement of the two bridges and adjacent highway work. Force main replacement includes installation of a temporary force main on the temporary bridge, a final force main on the new Stillwater Avenue Bridges, and replacement of the buried force main on each side of the bridge and the center island section. The Work includes, but is not limited to, the following:
   1. Remove and/or relocate equipment as indicated on the Drawings.
   2. Testing of sanitary sewers, valves and manholes for proper installation and performance.
   3. All related site work including trench excavation, ledge excavation, groundwater dewatering, disposal of excess excavated materials, filter fabric, bedding, backfill, compaction, loam/seed and landscaping.
   4. Other miscellaneous work shown in the Specifications for a complete and operational system.

C. Related Work Specified Elsewhere
   1. Coordination: Force main work outlined in these Specifications and Drawings is occurring as part of the Maine DOT Bridge replacement project. Contractor to coordinate work with Maine DOT contract documents
   2. Temporary Sewer Force Main: Section 02620
   3. Traffic Regulation: Maine DOT Specifications
   4. Site work, piping, structures, testing requirements are specified in Division 2.

D. Removals, Relocations and Rearrangements
   1. Examine the existing site for the work of all trades which will influence the cost of the work under the bid. This work shall include removals, relocations and rearrangements which may interfere with, disturb or complicate the performance of the work under the general bid involving systems, equipment and related service lines, which shall continue to be utilized as part of the finished project. The Contractor is responsible for all coordination in this regard.
   2. Provide in the bid a sufficient amount to include all removals, relocations, rearrangements and reconnections herein specified, necessary or required to provide approved operation and coordination of the combined new and existing systems and equipment.
   3. Provide in the bid a sufficient amount to include all temporary facilities required to maintain flows during the construction period, including bypass pumping, temporary piping, etc. The cost shall include the cost for all labor, tools, equipment and materials necessary.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

A. Continuous Operations Criteria:
   1. Refer to construction sequence below. Uninterrupted service shall be provided at all times during construction except for planned shutdown events.

B. Minimize Interference
   1. The Contractor shall at all times conduct his operations so as to interfere as little as possible with existing works. The Contractor shall develop a program, in cooperation with the Owner, Engineer, MDOT, sewer customers, and interested officials, which shall provide for the construction and putting into service of the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted
   2. Work of connecting with, cutting into and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time and when the demands on the facilities best permit such interference. It may be necessary to work outside of normal working hours to minimize interference. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand.

3.2 CONSTRUCTION SEQUENCE

A. Phase 1 Temporary Force Main Construction
   1. The existing sewer on the existing Stillwater Avenue Bridge must remain active at all times during Phase 1 construction.
   2. As part of Phase 1 bridge construction, the Contractor shall install the 6” temporary sewer main on the temporary bridge, and temporary sewer lines.
   3. Contractor shall assume all provisions for temporary freezing protection of the temporary sewer lines crossing the temporary Maine DOT bridge.

B. Phase 2 Permanent Sewer Force Main Construction
   1. Temporary 6” force main shall be active prior to commencing Phase 2.
   2. Demolish existing sewer
   3. Construct bridge crossing portion of the permanent sewer force main on the new Stillwater Avenue bridges and center island.
   4. Construct buried portion of the permanent sewer force main and connect to the bridge portion of the force main.

C. Phase 3 Permanent Sewer Force Main Connection
   1. Contractor shall bring the permanent sewer force main online.
   2. Following connection of permanent sewer force main, Contractor shall complete testing procedure as outline in the specifications.

D. Phase 4 Temporary Sewer Force Main Demolition
   1. Following Owner acceptance of the permanent sewer force main, the Contractor shall demolish the existing temporary sewer.

E. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of his proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for doing the work.

F. The Contractor must submit to the Engineer a written request to deviate from the above sequence, provided he can demonstrate to the Engineer that the continuity and degree of treatment will not be adversely affected.

END OF SECTION

SECTION 01150B

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. For lump sum items, payment shall be made to the contractor in accordance with an accepted progress schedule and schedule of values on the basis of actual work completed.

B. For unit-price items, payment shall be based on the actual amount of work accepted and for the actual amount of materials in place, as shown by final measurements.

1. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the Engineer.
2. At the end of each day's work, the Contractor's Superintendent or other authorized representative of the Contractor shall meet with the Resident Project Representative and determine the quantities of unit price work accomplished and/or completed during the workday.
3. The Resident Project Representative will then prepare two "Daily Progress Reports" which shall be signed by both the Resident Project Representative and Contractor's Representative.
4. Once each month the Resident Project Representative will prepare two "Monthly Progress Summation" forms from the month's accumulation of "Daily Progress Reports" which shall also be signed by both the Resident Project Representative and Contractor's Representative.
5. These completed forms will provide the basis of the Engineer's monthly quantity estimate upon which payment will be made. Items not appearing on both the Daily Progress Reports and Monthly Progress Summation will not be included for payment. Items appearing on forms not properly signed by the Contractor will not be included for payment.
6. After the work is completed and before final payment is made, the Engineer will make final measurements to determine the quantities of various items of work accepted as the basis for final settlement.

1.2 SCOPE OF PAYMENT

A. Payments to the Contractor will be made for the actual quantities of the Contract items performed and accepted in accordance with the Contract Documents. Upon completion of construction, if these actual quantities show either an increase or decrease from the quantities given in the Proposal Form, the Contract Unit Prices will still prevail.

B. The Contractor shall accept in compensation, as herein provided, in full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced by the Contract; also for all loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered

during the prosecution of the Work and until its final acceptance by the Engineer, and for all risks of every description connected with the prosecution of the work, except as provided herein, also for all expenses incurred in consequence of the suspension of the Work as herein authorized.

C. The payment of any partial estimate or of any retained percentage except by and under the approved final invoice, in no way shall affect the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.

1.3 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

A. When alterations in the quantities of work not requiring supplemental agreements, as hereinbefore provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract price for the actual quantities of work done. No allowance will be made for anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

1.4 OMITTED ITEMS

A. Should any items contained in the bid form be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract, and such action shall in no way invalidate the Contract, and no allowance will be made for items so eliminated in making final payment to the Contractor.

1.5 PARTIAL PAYMENTS

A. Partial payments shall be made monthly as the work progresses. Partial payments shall be made subject to the provisions of the Supplemental and General Conditions. Contractor's Partial Payment Requests shall be submitted in two parts; one part for grant eligible quantities and one part for non-eligible quantities. The breakdown of quantities will be determined by the Engineer.

1.6 PAYMENT FOR MATERIAL DELIVERED

A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable, non-perishable materials and equipment which are to be incorporated into bid items, have not been used and have been delivered to the construction site, or placed in storage places acceptable to the Owner. Payment shall be subject to the provisions of the General and Supplemental Conditions.

B. No payment shall be made upon fuels, supplies, lumber, false work, or other materials, or on temporary structures of any kind which are not a permanent part of the Contract.

1.7 FINAL PAYMENT

A. After final measurements are made by the Engineer, the Contractor will prepare a final quantity invoice of the amount of the Work performed and the value of such Work. Owner shall make final payments of the sum found due less retainages subject to provisions of the General and Supplemental Conditions.

1.8 INCIDENTAL WORK

A. Incidental work items for which separate payment will not be made includes, but is not limited to, the following items:
   1. Dewatering
   2. Clean-up and Erosion control
   3. Loam, seeding, grading, liming, fertilization, mulching, and watering
   4. Pipe bedding and backfill
   5. Compaction testing of backfill
   6. Restoration of property, and replacement of fences, curbs, structures, sign posts, guard rails, rock wall, mail boxes, traffic loop detectors and other minor items disturbed by the water main construction activities
   7. Utility crossings and relocations, unless payment is otherwise made
   8. Trench boxes, steel and/or wood sheeting as required, including that left in place
   9. Project record documents
   10. Cleaning and testing of all sewer lines and appurtenances
   11. Temporary construction and other facilities not to be permanently incorporated into the Work necessary for construction sequencing and maintenance of operations
   12. Weather protection
   13. Visits to the Project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required
   14. On-site and other facilities acceptable to Engineer for the storage of materials, supplies and equipment to be incorporated into the Work
   15. Removal of existing pavement and driveway restoration
   16. Trench Earthwork (except ledge and unsuitable materials)
   17. Pipe sleeves
   18. Connection to existing force main and manhole

1.9 DESCRIPTION OF PAY ITEMS

A. The following sections describe the measurement of and payment for the work to be done under the respective items listed in the Bid Form.

B. Each unit or lump-sum price stated in the Bid Form shall constitute full compensation, as herein specified, for each item of the work completed.

1. (DOT ID# 652.36) – MAINTENANCE OF TRAFFIC CONTROL DEVICES (CD)

A. Method of Measurement: Maintenance of traffic control devices will be paid for under this item based on the actual number of days that require maintenance of traffic control devices when only sewer work is being performed (No DOT Bridge related construction).

B. Basis of Payment: Payment for maintenance of traffic control devices shall constitute full compensation for all traffic regulation and control efforts and including all labor, materials, equipment, signage and supervision required to provide comprehensive and professional traffic regulation during construction of sewer force main, when no other DOT bridge or roadway work is being performed. This item excludes Flaggers which are covered under item 2 (DOT ID#652.38)

2. (DOT ID# 652.38) – FLAGGER (HR)Method of Measurement: Flaggers will be paid for based on the actual number of hours required for sewer force main construction, when no other DOT bridge or roadway work is being performed.

B. Basis of Payment: Payment for flaggers shall constitute full compensation for all labor, materials, equipment, signage and supervision required to provide comprehensive and professional flagging services for sewer force main specific work. Payment under this item will be made for full-time dedicated flaggers only. Part-time flaggers will not be considered adequate.

3. (DOT ID# 659.10) – MOBILIZATION (LS)

A. Method of Measurement: Lump sum.

Basis of Payment: Mobilization/demobilization costs are those costs of initiating and ending the contract. Payment for mobilization/demobilization shall be a lump sum at the price as stated in the Bid Form. Seventy-Five percent (75%) of the lump sum will be payable when the Contractor is operational on the site and the remaining 25% of the lump sum will be payable when the Contractor leaves the site following the completion of all contract work. For purposes of payment on this item, "Operational" shall mean the Contractor has provided all required and properly executed bonds and insurance certificates and the owner has approved the following: Construction Schedule, and Project Sign (and installed). Only one lump sum payment divided into the two partial payments described herein shall be made to cover all mobilization/demobilization costs throughout the entire contract.4. (DOT ID# 801.03) – TEST PITS (EA)

A. Method of Measurement: The quantity to be paid for under this item shall be the actual number of test pits performed as authorized by the Engineer.

B. Basis of Payment: Test pit excavations shall be paid for at the unit price per each test pit as stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, tools, and equipment; for sawcut and removal of pavement, excavation (except ledge excavation), dewatering, backfill including aggregate base and subbase, compaction, temporary pavement (if required by DOT); providing the test pit result information to the Engineer and for all other work and expenses incidental thereto for which payment is not provided under other items.

5./7. (DOT ID# 801.04/801.133) – PREINSULATED SEWER PIPE/6" FORCE MAIN (LF)

A. Method of Measurement: Force main pipe measured for payment shall be the number of linear feet installed measured along the center line of the pipe as laid including fittings.

B. Extent of this pay item includes buried sewer force main excluding portions inside the bridge abutment pipe casing which includes:
   1. Existing force main connection to the start of the pipe casing on Bridge No 1. South Abutment
   2. End of pipe casing on Bridge No 1. North Abutment to the start of pipe casing on Bridge No 2. South Abutment
   3. End of pipe casing on Bridge No 2. North Abutment to the terminus manhole

C. Basis of Payment:

1. The contract unit price per linear foot for force main pipe shall be full compensation for all labor, materials, and equipment necessary to complete this work including sawcut, management, removal and disposal of pavement; excavation (except ledge excavation), dewatering, bedding, furnishing and installing pipe and fittings, making connections to existing pipes and manholes, installation of impervious material dams, backfill including aggregate base and subbase material, compaction, cleaning, testing, and all else incidental thereto for which payment is not provided under other items.
2. Payment for this work on interim requisitions shall be according to the following percentages:
    a. Force main acceptably set in place and backfilled - 90 percent.
    b. Force main successfully tested - 10 percent.

6. (DOT ID# 801.071) – TEMPORARY SEWER BY-PASS (LS)

A. Method of Measurement: Temporary force main and bypass pumping will be paid for at the Lump Sum price as stated in the Bid Schedule.
B. Basis of Payment:
    1. The contract lump sum unit price for temporary force main and bypass pumping shall be full compensation for all labor, materials, and equipment necessary to complete this work including sawcut, management, removal and disposal of pavement; excavation (except ledge excavation), dewatering, bedding, furnishing and installing pipe and fittings, making connections to existing pipes and manholes, backfillcompaction, cleaning, testing, freeze protection, bypassing as needed during temporary pipe installation, maintaining existing flows during construction of new facilitiesand all else incidental thereto for which payment is not provided under other items.
    2. The lump sum shall be paid in partial payments over the course of the project, where the percentage paid is equal to the percentage of completion of the entire Contract.

8. (DOT ID# 812.162) – ADJUST SEWER MANHOLE TO GRADE (EA)

A. Method of Measurement: Manhole rim adjusted measured for payment shall be for the actual the actual number of manhole frames and covers replaced and adjusted as directed by the Engineer.
B. Basis of Payment: The unit price per each shall be full compensation for all labor, materials and equipment necessary to complete the work including excavation, removal of existing covers and frames, cleaning of castings and bedding surface on existing structures, furnishing and setting brickwork and mortar to meet final elevation, providing and setting castings, backfill, compaction, pavement, and all else incidental thereto for which payment is not provided under other items. City of Old Town retains salvage rights to existing frames and covers.

9. (DOT ID# 827.30) – ROCK EXCAV REMOV & REFILL (CY)

A. Method of Measurement:

1. Ledge excavation measured for payment shall be the number of cubic yards of ledge removed during construction. This quantity shall be determined by:
   a. Exposing the ledge profile for measurement. Excavation and backfill of the earth overburden shall be considered incidental, and no separate payment shall be made therefore.
   b. Should the Contractor elect to pre-drill and blast ledge without exposing the ledge surface for measurement, ledge depths shall be determined by the Resident Project Representative at the time of drilling or, when direct drilling observation is not conducted, the ledge profile shall be measured after excavation, and 20% of the ledge volume thus measured shall be deducted due to ledge expansion caused by the blasting operation.
2. The payment limit for trench width shall be between vertical planes which are a distance apart equal to the sum of 18 inches plus 1-1/3 times the nominal outside diameter of pipe which is to be installed in the trench (min. of 3 feet) and extending from the top of the ledge surface to a depth of 6 inches below the invert grade of the pipe.
3. Rocks or boulders greater than two cubic yards volume shall be considered as ledge excavation. Volume of rocks shall be determined from their average length, width, and depth as measured by the Engineer.

B. Basis of Payment:
1. The contract unit price per cubic yard for ledge excavation shall be full compensation for all labor, materials, tools and equipment necessary to complete the excavation including conducting the pre-blast survey, drilling, blasting, excavating, loading and disposing the excess or unusable material outside the work limits, suitable replacement backfill, and all else incidental thereto for which payment is not provided under other items.
2. Not all the potential ledge locations are identified on the Drawings and ledge could be encountered anywhere within the limits of work. Such ledge, if encountered, is not considered a Differing Subsurface or Physical Condition. The unit price in the bid form shall apply to all ledge encountered and removed.

10. (DOT ID# 827.31) – UNSUIT SOIL EXCAV REMOV & REFILL (CY)

A. Method of Measurement: Quantity to be paid for under this item shall be the number of cubic yards of material removed and replaced with materials from off-site as authorized by the Engineer. The payment limit for this item shall be between vertical planes that are a distance apart equal to a maximum of 6-feet extending from the top of the initial backfill layer to the bottom of the aggregate subbase layer as called out in the contract drawings for the length of the excavation as directed by the Engineer.

B. Basis of Payment:
1. Excavated unsuitable materials shall be paid for at the unit price per cubic yard stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, equipment, and tools necessary for the excavation of unsuitable material including the disposal of materials; furnishing installing and compacting replacement suitable backfill, and for all other work and expenses incidental thereto for which payment is not provided under other items.

2. Material excavated that could have, in the opinion of the Engineer, remained in place through the use of adequate dewatering efforts shall be replaced by the Contractor at no additional cost to the Owner.
3. Excess backfill material may be available during the Contract. This item shall be used to pay for excavation of unsuitable materials above the initial backfill layer only if no suitable backfill material previously excavated under this Contract is available.

11. (DOT ID# 827.312) – SELECT BACKFILL (CY)

C. Method of Measurement: Quantity to be paid for under this item shall be the number of cubic yards of material placed from off-site as authorized by the Engineer.
D. Basis of Payment:
1. Select Backfill shall be paid for at the unit price per cubic yard stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, equipment, and tools necessary to furnish install and compact select fill, and for all other work and expenses incidental thereto for which payment is not provided under other items.
2. Excess backfill material may be available during the Contract. This item shall be used to pay for offsite select backfill materials above the initial backfill layer only if no suitable backfill material previously excavated under this Contract is available.

12. (DOT ID# 827.331) – TRENCH INSULATION (SY)

A. Method of Measurement: Pipe trench insulation accepted for payment shall be the actual square yards of trench insulation installed and accepted complete in place.
B. Basis of Payment: The contract unit price per square yard for pipe trench insulation shall be full compensation for all labor, materials, tools and equipment necessary to complete this work including excavation, bedding, insulation, backfill, compaction and all else incidental thereto for which payment is not provided under other items.

13. (DOT ID# 830.13) – SEWER MAIN BRIDGE CROSSING (LS)

A. Method of Measurement: Sewer main bridge crossing will be paid for at the Lump Sum price listed in the Bid Schedule.
B. Basis of Payment:
1. The contract lump sum for sewer main bridge crossing shall be for full compensation for all labor, materials, and equipment necessary to complete this work including furnishing and installing pipe, fittings, hangers, casing and appurtenances, cleaning, testing, and all else incidental thereto for which payment is not provided under other items.
2. Lump sum shall be paid in partial payments over the course of the project where the percentage paid is equal to the extent of pipe installed along the bridges.
a. Payment for this work on interim requisitions shall be according to the following percentages:
i. Force main acceptably installed - 90 percent.
ii. Force main successfully tested - 10 percent.

END OF SECTION

SECTION 01340

SUBMITTALS

1.1 DESCRIPTION

A. Work Included:
   1. Submit all shop drawings, Manufacturers' certificates, project data, and samples required by the Specifications.

B. Related Work Specified Elsewhere:
   1. Project Record Documents: Section 01720

C. Submittals: This project shall utilize:
   1. Submittals – Electronic via Email/FTP
      a. The Contractor shall submit to the Engineer an electronic submittal of shop drawings in portable document format (PDF) transmitted via email or file transfer protocol (FTP). The Engineer shall return an electronic PDF of the submittal review comments to the Contractor for distribution to subcontractors, suppliers and manufacturers. The electronic submittals shall serve as the electronic record of the project.

1.2 SHOP DRAWINGS

A. Shop Drawings are required for each and every element of the work. Each shop drawing shall be assigned a sequential number for purposes of easy identification, and shall retain its assigned number, with appropriate subscript, on required resubmissions.

B. Shop Drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the Contractor, his subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.

C. The Contractor shall provide a completed Contractor Submittal Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of every shop drawing and signed by the Contractor and Manufacturer (where applicable). Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the work.

D. Shop Drawings shall be submitted as a complete package by specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials and samples associated with each specification section be included as a single submittal for the Engineer's review. Any deviation from this requirement, shall be requested in writing with an anticipated shop drawing breakdown/schedule prior to any associated submittal. An exception to this requirement are shop drawings for reinforcing steel, miscellaneous metals and structural steel, which shall be submitted separately for each structure unless otherwise permitted by the Engineer.

E. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence

of such drawings.

F. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.

G. Until the necessary review has been made, the Contractor shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.

H. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. Shop drawings shall be formatted to standard paper sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 24 inches by 36 inches; (b) 11 inches by 17 inches, and (c) 11 inches by 8-1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein may be returned for resubmittal without being reviewed.

I. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer.

J. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in the transmittal. Shop Drawings that contain significant deviations that are not brought to the attention of the Engineer may be subject to rejection.

K. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, he shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications.

L. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such review and checking, as determined by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be required by the Engineer in an accurate, complete, and timely fashion. Resubmittals

for the sole purpose of providing written responses to review comments will not be considered a resubmittal counting towards the two submission limit.

M. Shop Drawings that include drawings or other material that is illegible or too small may be returned without review.

1.3 SAMPLES

A. The Contractor shall submit samples when requested by the Engineer to establish conformance with the specifications, and as necessary to define color selections available. Submittals of "samples" shall be documented through the electronic submittal process by including a photograph of the item(s) and indicating the date the sample was mailed and/or delivered.

1.4 MANUFACTURER'S CERTIFICATES

A. Prior to accepting the installation, the Contractor shall submit manufacturer's certificates for each item specified.

B. Such manufacturer's certificates shall state that the equipment has been installed under either the continuous or periodic supervision of the manufacturer's authorized representative, that it has been adjusted and initially operated in the presence of the manufacturer's authorized representative, and that it is operating in accordance with the specified requirements, to the manufacturer's satisfaction. All costs for meeting this requirement shall be included in the Contractor's bid price.

1.5 SUBMISSION REQUIREMENTS

A. Accompany submittals with a transmittal cover sheet, containing:
   1. Date.
   2. Project title and number.
   3. Contractor's name and address.
   4. The sequential shop drawing number for each shop drawing, project data and sample submitted shall be:
      a. Specification Section number followed by a dash and then a sequential number beginning with 01 (e.g., 16000-01).
      b. Under limited situations when additional different pieces of equipment are submitted under the same specification section, those submittals shall be numbered sequentially (e.g. 05500-01, 05500-02, 05500-03, etc.).
      c. Resubmittals shall include an alphabetic suffix after the corresponding sequential number (e.g., 16000-01A).
   5. Notification of deviations from Contract Documents.
   6. Other pertinent data.

B. A completed Contractor Submittal Certification Form shall be attached to each shop drawing and must include:
   1. Project name
   2. Specification Section and sequential number with alphabet suffix for resubmittal
   3. Description
   4. Identification of deviations from Contract Documents.
   5. Contractor's stamp, initialed or signed, certifying review of the submittal, verification of field measurements and compliance with Contract Documents.

6. Where specified or when requested by the Engineer, manufacturer's certification that equipment, accessories and shop painting meet or exceed the Specification requirements.
7. Where specified, manufacturer's guarantee.

C. Additional Requirements for Electronic Submittals:
1. Each individual shop drawing shall be contained in one PDF.
2. The first page of the PDF shall be the Contractor Submittal Certification Form as described above.
3. The electronic PDF shall include an electronic table of contents that is bookmarked for each section of the submittal.
4. The electronic PDF shall be configured such that is fully searchable.
5. PDF versions of 24x36 drawings shall be converted to 24 x 36 PDFs so as not to lose the clarity of the original drawing.
6. Electronic PDF submittals that are not submitted in accordance with the requirements stated above will not be reviewed by the Engineer.
7. Electronic submittals shall be transmitted via the protocol established in Part 1 above.

1.6 RESUBMISSION REQUIREMENTS

A. Revise initial submittals as required and resubmit as specified for initial submittal.
B. Indicate on submittals any changes which have been made other than those required by Engineer. All renumbering of shop drawings, relabeling of individual pieces or assemblies or relocating of pieces or assemblies to other Drawings within the submittal shall be clearly brought to the attention of the Engineer. If relabeling of individual pieces or assemblies has taken place, the labels from the previous submittal shall be indicated to assist in comparing the original and resubmitted shop drawing.
C. All resubmittals shall include a summary of the previous submittal review comments with the vendors' written response as to how the previous comments were addressed.

1.7 ENGINEER'S REVIEW

A. The review of shop and working drawings hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.
B. The Engineer's review comments will be summarized on a Submittal Review Form, which includes an action code. A description of each action code is provided below.
1. No Exceptions Taken (Status 0 on shop drawing log). The shop drawing complies with the Contract Document requirements. No changes or further information are required. Where appropriate, the submittal review form will be used to alert the Contractor, Owner and Field personnel of remaining items within that specification section that still needs to be submitted.
2. Make Corrections Indicated (Status 1 on shop drawing log). The shop drawing complies with the Contract Document requirements except for minor changes, as indicated. Engineer requires that all comments will be addressed by the Contractor, unless otherwise notified in writing prior to execution of the relevant work.

3. Conditional to Remarks (Status 2 on shop drawing log). The shop drawing potentially complies with the Contract Document requirements, contingent upon satisfactory resolution of review comments. Remarks will explicitly list what information needs to be resubmitted. Resubmittal from the Contractor should include a cover letter or summary which indicates how each review comment has been addressed. This action code will not be used, or will be sparingly used, for electronic submittals.
4. Revise and Resubmit (Status 3 on shop drawing log). The shop drawing does not comply with the Contract Document requirement as submitted, but may with changes indicated and/or submission of additional information. The entire package must be resubmitted with the necessary information and a cover letter which indicates how each review comment has been addressed and where to find the information in the resubmittal.
5. Rejected (Status 4 on shop drawing log). The shop drawing does not comply with the Contract Document requirements, for the reasons indicated in the remarks, and is unacceptable.
6. In Review (Status 5 on shop drawing log). The shop drawing is currently under review.
7. For Information Only (Status 6 on shop drawing log). The shop drawing review was for information only.

CONTRACTOR SUBMITTAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

SHOP DRAWING NUMBER: _____ (SPECIFICATION SECTION OR DRAWING NO:) - _____ (SEQUENTIAL NUMBER (& ALPHA SUFFIX FOR RESUBMITTAL))

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the material and/or equipment meets or exceeds the project specification requirements with

☐ NO DEVIATIONS

or

☐ A COMPLETE LIST OF DEVIATIONS AS FOLLOWS[a]:

_____

_____

By: _____ Contractor[b] By: _____ Manufacturer[c]

Date: _____ Date: _____

a Any deviations not brought to the attention of the Engineer for review and concurrence shall be the responsibility of the Contractor to correct, if so directed.
b Required on all submittals
c When required by specifications Page ___ of ___

General Contractor's Stamp

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Keep accurate record documents for all additions, demolition, changes of material or equipment (from that shown on the Drawings), variations in work, and any other additions or revisions to the Contract (via Change Order, Work Change Directive, Field Order or Clarification).

B. Related Work Specified Elsewhere:
   1. Shop Drawings, Project Data, and Samples are specified in "General Conditions" and Section 01340, Submittals.

1.2 MAINTENANCE OF DOCUMENTS

A. Maintain at job site, one copy of:
   1. Contract Drawings
   2. Specifications
   3. Addenda
   4. Reviewed Shop Drawings
   5. Change Orders
   6. Any other modifications to the Contract
   7. Field Test Reports

B. Store documents in files and racks specifically identified for Record Drawing use, that are apart from documents used for construction.

C. File documents in a logical manner indexed for easy reference.

D. Maintain documents in clean, dry, legible condition.

E. Do not use record documents for construction purposes.

F. Make documents available at all times for inspection by the Engineer and Owner, and by the end of the project, transmit these documents to the Engineer.

G. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests.

1.3 RECORDING

A. Label each document "PROJECT RECORD" in large high printed letters.

B. Keep record documents current and do not permanently conceal any work until required information has been recorded.

C. General Field Recording Issues:
   1. All swing ties shall be taken from existing, permanent features such as utility poles, corners of buildings and hydrants. Porches, sheds or other house additions shall be avoided as they could be torn down. A minimum of two swing ties shall be taken. Survey grade GPS coordinates are also acceptable.
   2. Stations shall be recorded to the nearest foot.
   3. Inverts shall be recorded to the nearest hundredth of a foot.

4. Elevations shall be recorded to the nearest hundredth of a foot.
5. Building dimensions shall be recorded to the nearest 1/4".
6. Equipment and Piping shall be recorded to the nearest tenth of a foot, and the overall dimensions and layout of the equipment shall be adjusted to reflect the equipment provided.

D. Project Record Drawings - Legibly mark Contract Drawings to record existing utilities and actual construction of all work, including but not limited to the following (where applicable):
   1. Existing Utilities
      a. Water mains and services, water main gate valves, sewer mains and services, storm drains, culverts, steam lines, gas lines, tanks and other existing utilities encountered during construction must be accurately located and shown on the Drawings. In congested areas supplemental drawings or enlargements may be required.
      b. Show any existing utilities encountered in plan and profile and properly labeled showing size, material and type of utility. Ties shall be shown on plan. Utility shall be drawn to scale in section (horizontally and vertically) and an elevation shall be called out to the nearest hundredth of a foot.
      c. When existing utility lines are broken and repaired, ties shall be taken to these locations.
      d. If existing water lines are replaced or relocated, document the area involved and pipe materials, size, etc. in a note, and with ties.
   2. Manholes, Catch Basins, Valve Pits and other structures.
      a. Renumber structure stationing to reflect changes.
      b. Show ties to center of structure covers or hatches.
      c. In general, show inverts at center of structures. However, for manholes with drop structures, or steep channels (greater than 0.2' change on slope), show inverts at face of manhole.
      d. Show inverts for other structures at the face of the structure.
      e. Draw any new structures that are added on plan and profile.
      f. Show any field or office redesigns.
      g. Redraw plan if the structure's location is moved more than 5 feet in any direction. Note: It is important to show existing utilities, as outlined in Paragraph 1 above, especially if they were one reason for relocating the sewer, manholes and other structures.
      h. Redraw profile if inverts changed by more than 6 inches.
   3. Sewer Force Mains
      a. Show ties to the location of all valves, bends (horizontal and vertical), tees and other fittings. The use of thrust blocks shall be recorded.
      b. Revise elevations indicated on the Drawings to reflect actual construction.
   4. Ledge
      a. Ledge profiles shall be shown. Note whether the plotted ledge profile reflects undisturbed or expanded conditions.
   5. Yard Piping and Buried Electrical Conduit

a. Site piping and utilities shall be drawn to reflect the installed locations, with ties and elevation of all bends (horizontal and vertical).
b. Show routing for electrical conduits and pull boxes, especially in close proximity to buildings and when the conduits change direction or cross process piping.

6. Roads
   a. Show centerline road profile and level spot elevations.
   b. Show pavement widths.
   c. On road cross sections, show the pavement cross slope.
   d. Show any deviations from the design plans.
7. Buildings
   a. In general, small changes to structures shall not be redrawn. If any dimensional changes were made in the field, the numerical change shall be made on the Drawing and be properly labeled. Update dimensions and elevations on Drawings.
   b. Show finished concrete elevations (top of slab, top of wall, top of footing, etc.). Redraw any foundation, frost wall, etc. that was modified, deepened, or altered during construction.
   c. Adjust finished concrete horizontal dimensions that are shown on the Drawings.
   d. Adjust structural steel elevations and horizontal dimensions that are shown on the Drawings.
   e. Show location of anchors, construction and control joints, and waterstops, when they are different from those shown on Drawings.
   f. Any additions or major changes shall be shown in both plan and elevation (i.e. relocated doors, opposite door swings, change in wall location, relocation of floor drains).
   g. Show approximate location and routing of electrical conduits in walls, slabs and ceilings. Most conduits are run in groups, therefore, use range of measurements to define location for entire section of conduits.
   h. Special circuits for computers, alarms and instrumentation shall be shown.
   i. Show any changes in location and elevation of ductwork and devices, fuel piping and equipment, and heat piping and equipment.
   j. Location of gravity sewer system below slabs in buildings shall be shown, if changes are made in the configuration.
   k. If wall mounted electrical switches, control boxes, thermostats, etc. have been relocated significantly, (other side of door, or to a wall other than indicated diagrammatically on electrical plans) make the revision accordingly.
8. Utilities
   a. When encountered, additional utilities (e.g., gas, cable, telephone, fiber optic, etc.) shall be indicated on the Record Drawings.

E. Specifications and Addenda - Legibly mark up each section to record:
   1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
   2. Changes made by Change Order, Field Order, or other method.

1.4 SUBMITTALS

A. At the completion of the project, and prior to the release of retainage, deliver record documents to the Engineer.
   1. Record drawings shall be provided as a bound, red-line paper set and an electronic file (pdf format) consisting of a full scan of the bound paper set.

B. Accompany submittal with transmittal letter, in duplicate, containing:
   1. Date, project title and number.
   2. Contractor's name and address.
   3. Title and number of each record document with certification that each document is completed and accurate.
   4. Signature of Contractor, or his authorized representative.

C. Failure to supply all information on the Project Record Drawings as specified in Part 1.3 may result in withholding final completion and in non-approval of final payments of the Contract. If Contract Time has elapsed, this shall be grounds for imposing liquidated damages.

1.5 QUALITY ASSURANCE

A. All horizontal and vertical dimensions, swing-ties, and elevations shall be accurate to within one-tenth of a foot, unless greater accuracy is specified elsewhere in the Specifications (e.g., concrete elevations, weir elevations, etc.).

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION

3.1 MAINTAINING AND PROVIDING RECORDS

A. Records shall be kept current as the work progresses.

B. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.

C. Records shall be kept current as the work progresses. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests. Failure to provide records shall also be grounds for withholding of final payment and, if beyond contract time, shall be grounds for imposing liquidated damages.

3.2 AS-BUILT SURVEY PERFORMANCE

A. From established survey control, and construction baseline as shown on the drawings, conduct surveys of the project area during construction as needed to obtain information of buried and above ground items. Surveys shall include information outlined in Section 1.3.

B. Actual road alignments; walls; fence and guardrail; existing, new and relocated utility poles; traffic and warning sign locations; crosswalks, parking space and stop bar locations; retaining walls and foundations drains; all underground and overhead utility poles and lines within the project limits, including those installed on private property; all other new features and appurtenances and those existing features and appurtenances changed as a result of this project shall be included in the survey.

WRIGHT-PIERCE
Engineering a Better Environment

SANITARY SEWER SERVICE LOCATION

Project: _____ Date: _____
Date Installed: _____ Town, City of: _____

Type, Size of Service Pipe	_____	Street	_____
Connection at Sewer Main	_____	Dwelling No.	_____
Depth, End of Service	_____	Occupant	_____
Length of Service Pipe Laid	_____	Owner	_____
Measured, Located By	_____	House No.	_____
Project Contractor	_____	Complete	_____
		Incomplete	_____

N.T.S.

Comments: _____

_____

_____

_____

_____

Observed By:

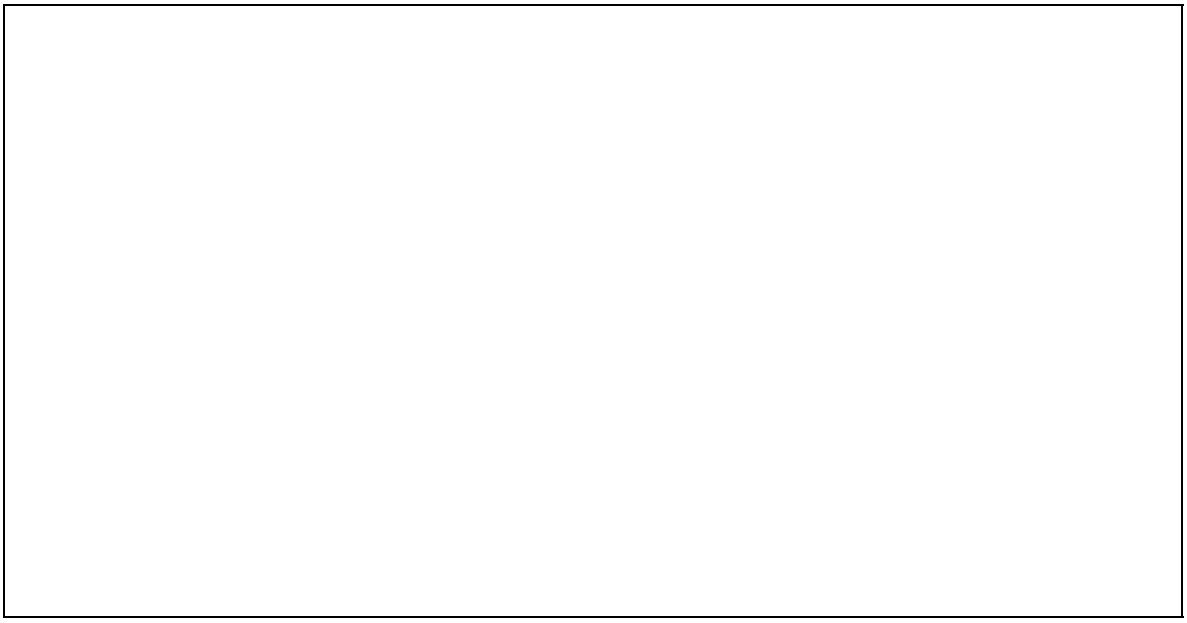
_____ _____
Contractor (Date)

_____ _____
Wright-Pierce (Date)

WRIGHT-PIERCE
Engineering a Better Environment

WATER SERVICE LOCATION

Project: _____ Date: _____
Date Installed: _____ Town, City of: _____
Type, Size of Service Pipe _____ Street _____
Connection at Water Main (STA) _____ Occupant _____
Depth to Cap _____ Owner _____
Elevation of Cap _____ House No. _____
Length of Service Pipe Laid _____ Complete _____
Measured, Located By _____ Incomplete _____
Project Contractor _____



N.T.S.

Comments: _____

_____

_____

_____

Observed By:

_____ _____
Contractor (Date)

_____ _____
Wright-Pierce (Date)

Location of Stub approved _____
(Owner)

END OF SECTION

SECTION 02140

TEMPORARY CONSTRUCTION DEWATERING SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Design, furnish, operate, maintain, and remove temporary dewatering system to lower and control ground water table levels and hydrostatic pressures to permit excavation, backfill, and construction to be performed in the dry; collect and dispose of ground and surface water where necessary to complete the work.

B. Related Work Specified Elsewhere: (When Applicable)
   1. Section 02200 Earthwork

1.2 DESIGN REQUIREMENTS

A. Dewatering system shall be of sufficient size and capacity necessary to lower and maintain ground water table to an elevation at least one foot below the lowest foundation subgrade or bottom of pipe trench to allow material to be excavated in a dry condition. Materials to be removed shall be sufficiently dry to permit excavation to grades shown and to stabilize excavation slopes where temporary excavation support systems are not required. Operate dewatering system continuously until backfill work has been completed.

B. Control of surface and subsurface water is part of dewatering system requirements. Maintain adequate control so that:
   1. The stability of excavated and constructed slopes are not adversely affected by saturated soil, including water entering prepared subbase and subgrades where underlying materials are not free draining or are subject to swelling or freeze-thaw action.
   2. Erosion is controlled.
   3. Flooding of excavations or damage to structures does not occur.
   4. Surface water drains away from excavations.
   5. Excavations are protected from becoming wet from surface water, or insure excavations are dry before additional work is undertaken
   6. Prevent loss of fines, seepage, boils, quick conditions or softening of foundation strata.
   7. Maintain stability of sides and bottom of excavation. Construction operations are performed in the dry.
   8. Any existing dewatering wells that can affect dewatering and excavation shall be sealed below the excavation subgrade.

C. Design shall include an assessment of how the dewatering operations will affect the stability of all adjacent structures

D. Contractor is responsible to perform whatever additional geotechnical investigations are needed to design the dewatering system to allow for proper construction of new facilities while protecting adjacent structures from damage due to settlement, and in accordance with this specification.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1 PERFORMANCE

A. General:
   1. Prior to any excavation below the ground water table, place system into operation to lower water table as required and operate it continuously 24 hours a day, 7 days a week until utilities and structures have been satisfactorily constructed, which includes the placement of backfill materials and dewatering is no longer required.
   2. Keep work areas dewatered until the structures, pipes, and appurtenances to be built there have been completed to such an extent that they will not be damaged by water.
   3. Thoroughly brace or otherwise protect against flotation all pipelines and structures which are not stable.
   4. Maintain standby backup equipment and power supply throughout the duration of the dewatering operation.
   5. Prevent soil particles from entering the discharge points.
   6. Ground water level shall be maintained at least one foot below the bottom of the excavation.

B. Disposal of Water:
   1. Dispose of water pumped or drained from the construction site in a suitable manner to avoid siltation of adjacent drainage structures and piping, wetlands or water bodies, injury to public health, damage to public and private property, and damage to the work completed or in progress.
   2. Provide suitable temporary channels for water that may flow along or across the construction site.
   3. Provide treatment as necessary to prevent discharge of contaminated ground water caused by Contractor's operations, or any contaminated ground water that may pass through the excavation support system selected by the Contractor.
   4. Contractor must obtain all necessary regulatory approvals for the disposal of dewatering flows. These may include, among others, approval by the USEPA under the National Pollutant Discharge Elimination System (NPDES) program for construction activities.

C. Damage:
   1. Avoid damage to and settlement of adjacent buildings, roads, structures, utilities and other facilities.
   2. Any damage to or settlement of structures resulting from the dewatering operations, or the failure of the Contractor to maintain the work in a suitably dry condition shall be repaired by the Contractor at no additional cost to the Owner.

D. Temporary Underdrains:
   1. When necessary, temporary underdrains may be placed in excavations.

2. Underdrain pipe shall be perforated corrugated metal, polyethylene or P.V.C. pipe.
3. Entirely surround the underdrain and fill the space between the underdrain and the pipe or structure with free draining material.

E. Excavation Sump Pumping:
1. When necessary and where appropriate to the geotechnical conditions encountered, excavations may be over excavated 6 to 12 inches and filled with screened stone to allow sump pumping of groundwater.
2. The system shall be installed with suitable screens and filters so that pumping of fines does not occur.

F. Well and Wellpoint System:
1. If necessary, dewater the excavations and trenches with an efficient well or wellpoint system to drain the soil and prevent saturated soil from flowing into the excavated wells and area.
2. Wellpoint and well system shall be of the type designed for dewatering work and shall be installed with suitable screens and filters so that pumping of fines does not occur.
3. Pumping units shall be capable of maintaining sufficient suction to handle large volumes of air and water at the same time.

END OF SECTION

TESTING SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Work described by this Section consists of all earthwork encountered and necessary for construction of the project as indicated in the Contract Documents, and includes but is not limited to the following:
   1. Excavation
   2. Backfilling and Filling
   3. Compaction
   4. Embankment Construction
   5. Grading
   6. Providing soil material as necessary
   7. Disposal of unsuitable materials
   8. Disposal of excess suitable material

B. Related Work Specified Elsewhere: (When Applicable)
   1. Pipe, fittings and valves are specified in Division 2.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:
   1. All work shall be performed and completed in accordance with all local, state and federal regulations.
   2. The General Contractor shall secure all other necessary permits unless otherwise indicated from, and furnish proof of acceptance by, the municipal and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.

B. Line and Grade:
   1. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the work.

C. Testing Methods:
   1. Gradation Analysis: Where a gradation is specified the testing shall be in accordance with ASTM C-117-90 and ASTM C-136-93 (or latest revision).
   2. Compaction Control:
      a. Unless otherwise indicated, wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place density divided by the maximum density and multiplied by 100. The maximum density shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture-Density Relations of Soil Using 10-lb. Hammer and 18-in. Drop, Designation D-1557-91 (Modified Proctor), or latest revision, unless otherwise indicated.
      b. The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone

method, Designation D 1556-90, (or latest revision) or Nuclear method Designation D6938.

c. Wherever specifically indicated, maximum density at optimum moisture may be determined by ASTM Standard Methods of Test for Moisture Density Relations of Soils, ASTM D-698-91 (Standard Proctor).

d. An Independent Testing Laboratory will be retained by the Owner to conduct all laboratory and field soil sampling and testing, and to observe earth work and foundation construction activities. Laboratory testing will consist of sieve analyses, natural water content determinations, and compaction tests. Field testing will consist of in-place field density tests and determination of water contents.

1.3 SUBMITTALS

A. Collection of samples and testing of all materials for submittals shall be performed by the Independent Testing Laboratory and paid for by the Contractor until the materials are approved by the Owner or Engineer.

B. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.

C. Submit test results (including gradation analysis) and source location for all borrow material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.

D. Submit moisture density curve for each type of soil (on site or borrow material) to be used for embankment construction or fill beneath structures or pavement.

1.4 TESTS

The Independent Testing Laboratory shall conform to the following procedures and standards:

A. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.

B. All testing shall be performed by a qualified Independent Testing Laboratory acceptable to the Engineer and Contractor at the Owner's expense unless otherwise indicated (see Section 01400 - Quality Control).

C. Field density tests on embankment materials shall be as follows:

D. Tests shall be taken on every 200 cubic yards of embankment material.

E. Paved Areas and Building Slab Subgrade: Make at least one field density test of subgrade for every 2,000 sq. ft. of paved area or building slab, but in no case less than 3 tests. In each compacted fill layer, make one field density test for every 2,000 sq. ft. of overlaying building slab or paved area, but in no case less than 3 tests.

F. Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.

G. Foundation Wall Backfill: Take at least one (1) field density tests per lift per wall at locations and elevations as designated by the Engineer.

H. In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the Engineer.

I. Additional density testing will be required by the Engineer if the Engineer is not satisfied with the apparent results of the Contractor's compaction operation.

1. If the test results fail to meet the requirements of these specifications, the Contractor shall undertake whatever action is necessary, at no additional cost to the Owner, to obtain the required compaction. The cost of retesting will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount for retesting will be deducted from the Contract Price. No allowance will be considered for delays in the performance of the work.
2. If the test results pass and meet the requirements of these Specifications, the cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

1.5 JOB CONDITIONS

A. Site Information:
   1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner and Engineer will not be responsible for interpretations or conclusions drawn there from by the Contractor. Data are made available for the convenience of Contractor.
   2. Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.

B. Existing Utilities and Structures:
   1. The locations of utilities and structures shown on the Drawings are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities or structures within the project area.

PART 2 - PRODUCTS

2.1 SOIL MATERIAL

A. Aggregate Base: Shall be screened or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. Type B Aggregate for base shall not contain particles of rock that will not pass the 4 inch square mesh sieve. The gradation of the part that passes a 3-inch sieve shall meet the following grading requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieves Type B Aggregate
1/2 inch	35-75
1/4 inch	25-60
No. 40	0-25
No. 200	0-5

B. Aggregate Leveling Course and Untreated Surface Course: Shall be screened or crushed gravel consisting of hard durable particles which are free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
1 inch	95-100
3/4 inch	90-100
No. 4	40-65
No. 10	10-45
No. 200	0-7

C. Common Borrow: Shall consist of approved material required for the construction of the work where designated. Common borrow shall be free from frozen material, perishable rubbish, peat, organic, and other unsuitable material.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
6-inch	100
No. 200	0-5

Common borrow may be used for embankments unless otherwise indicated and provided that the material is at a moisture content suitable for compaction to the specified density. No rocks shall exceed 3/4 of the depth of the specified lift thickness.

D. Crushed Stone: Shall be a uniform material consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, containing angular pieces, as are those which come from a mechanical crusher. Gradation requirements shall be as follows:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
1-1/2 inch	100
1 inch	95-100
1/2 inch	25-60
No. 4	0-10

E. Screened Stone: Shall be a well graded stone consisting of clean, hard, and durable

particles or fragments, free from vegetable or other objectionable matter, meeting the following gradation requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
1 inch	100
3/4 inch	90-100
3/8 inch	20-55
No. 4	0-10
No. 8	0-5

F. Select Fill (Structural Fill): Shall consist of well graded granular material free of organic material, loam, wood, trash, snow, ice, frozen soil and other objectionable material and having no rocks with a maximum dimension of over 4 inches and meeting the following gradation requirements, except where it is used for pipe bedding in which case the maximum size shall be 2 inches.

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
4 inch	100
3 inch	90-100
¼ inch	25-90
No. 40	0-30
No. 200	0-5

G. Sand: Shall be well graded durable material free of organic matter and conform to the following gradation requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
3/8 inch	100
No. 4	95-100
No. 16	50-85
No. 50	10-30
No.100	2-10
No.200	0-5

Sand conforming to the requirement for fine aggregate in ASTM Standard Specifications for Concrete Aggregate, Designation C-33, will meet the above requirement.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions under which excavating, backfilling, filling, compaction and grading are to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 EXCAVATION

A. General:
   1. Excavation consists of removal and disposal of all material encountered when establishing line and grade elevations required for execution of the work.
   2. The Contractor shall make excavations in such manner and to such widths as will give suitable room for building the structures or laying and jointing the piping; shall furnish and place all sheeting, bracing, and supports; shall do all cofferdamming, pumping, and draining; and shall render the bottom of the excavations firm, dry and acceptable in all respects.
   3. All excavation shall be classified as either earth or ledge.
      a. Earth Excavation shall consist of the removal, hauling and disposal of all earth materials encountered during excavation including but not limited to native soil or fill, pavement (bituminous or concrete), existing sewers and manholes, ashes, loam, clay, swamp muck, debris, soft or disintegrated rock or hard pan which can be removed with a backhoe, or a combination of such materials, and boulders that do not meet the definition of "Ledge" below.
      b. Ledge Excavation: Shall consist of the removal, hauling, and disposal of all ledge or rock encountered during excavation. "Ledge" and "rock" shall be defined as any natural compound, natural mixture that in the opinion of the Engineer can be removed from its existing position and state only by drilling and blasting, wedging, sledging, boring or breaking up with power operated tools. No boulder, ledge, slab, or other single piece of excavated material less than two cubic yards in total volume shall be considered to be rock unless, in the opinion of the Engineer it must be removed from its existing position by one of the methods mentioned above.
   4. The Contractor shall not have any right of property in any materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the Engineer. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Engineer to be unsuitable for backfilling. The Contractor shall dispose of unsuitable and excess material in accordance with the applicable sections of the Contract Documents.

B. Additional Excavation: When excavation has reached required subgrade elevations, notify the Engineer and Resident Project Representative who will observe the conditions.

1. If material unsuitable for the structure or paved area or pipeline (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the Drawings and/or Specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted select fill, screened stone, crushed stone, or concrete as directed by the Engineer.
2. All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor and disposed of at locations in accordance with all State and local laws and the provisions of the Contract Documents.

C. Unauthorized Excavation: Shall consist of removal of materials beyond indicated subgrade elevations or dimensions without specific authorization of Engineer. Unauthorized excavation, as well as remedial work required by the Engineer shall be at the Contractor's expense. Remedial work required is as follows:
1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation with select fill or screened stone compacted to 95%. Provide 12" minimum select fill or screened stone directly under footings. Concrete fill may be used to bring elevations to proper position, when acceptable to Engineer.
2. If the bottom of a trench is excavated beyond the limits indicated, backfill the resulting void with thoroughly compacted screened stone, unless otherwise indicated.
3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Engineer.

D. Structural Excavation:
1. Shall consist of the removal, hauling, disposal, of all material encountered in the excavation to permit proper installation of structures.
2. Excavations for structures shall be carried to the lines and subgrades shown on the Drawings.
3. Excavate areas large enough to provide suitable room for building the structures.
4. The extent of open excavation shall be controlled by prevailing conditions subject to any limits designated by the Engineer.
5. Provide, install, and maintain sheeting and bracing as necessary to support the sides of the excavation and to prevent any movement of earth which could diminish the width of the excavation or otherwise injure the work, adjacent structures, or persons and property in accordance with all state and OSHA safety standards.
6. Erect suitable fences around structure excavation and other dangerous locations created by the work, at no additional cost to the Owner.
7. Exposed subgrade surfaces shall remain undisturbed, protected, and maintained as uniform, plane areas and shape to receive the foundation components of the structure.
    a. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

b. In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade and trim bottoms to required lines and grades to leave solid base to receive the structure.
c. If a structure is to be constructed within the embankment, the fill shall first be brought to a minimum of 3 feet above the base of the footing. A suitable excavation shall then be made as though the fill were undisturbed earth.

E. Trench Excavation: Shall consist of removal, hauling and disposal of all material encountered in the excavation to the widths and depths shown on the Drawings to permit proper installation of underground utilities.
1. Excavate trenches to the uniform width shown on the Drawings sufficiently wide to provide sufficient space for installation, backfilling, and compaction. Every effort should be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.
2. Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one foot above the top of the pipe.
3. Grade bottoms of trenches as indicated for pipe and bedding to establish the indicated slopes and invert elevations, notching under pipe joints to provide solid bearing for the entire body of the pipe, where applicable.
4. If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least two feet above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.
5. Unless otherwise specifically directed or permitted by the Engineer, begin excavation at the low end of sewer and storm lines and proceed upgrade.
6. Perform excavation for force mains and water mains in a logical sequence.
7. The extent of open excavation shall be controlled by prevailing conditions subject to any limits prescribed by the Engineer.
8. As the excavation progresses, install such shoring and bracing necessary to prevent caving and sliding and to meet the requirements of the state and OSHA safety standards, as outlined in the appropriate section of this Specification.

F. Protection of Persons, Property and Utilities:
1. Barricade open excavations occurring as part of this work and post with warning lights in compliance with local and State regulations.
2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures that may be required.
3. Rules and regulations governing the respective utilities shall be observed in execution of all work. Active utilities and structures shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization

of the utility owner. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable.

4. Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Engineer, the utility, the property owner, and the Owner.

G. Use of Explosives:
   1. Do not bring explosives onto site or use in work without prior written permission from authorities having jurisdiction. Contractor is solely responsible for handling, storage, and use of explosive materials when their use is permitted.
   2. All blasting shall be performed in accordance with all pertinent provisions of the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, Inc.

H. Stability of Excavations:
   1. Slope sides of excavations to comply with all codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
   2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

I. Shoring and Bracing:
   1. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.
   2. Provide trench shoring and bracing to comply with local codes and authorities having jurisdiction. Refer to Specification Section 02156.
   3. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Install shoring and bracing as excavation progresses.

J. Material Storage:
   1. Stockpile excavated materials which are satisfactory for use on the work until required for backfill or fill. Place, grade and shape stockpiles for proper drainage and protect with temporary seeding or other acceptable methods to control erosion.
   2. Locate and retain soil materials away from edge of excavations.
   3. Dispose of excess soil material and waste materials as herein specified.

K. Dewatering:
   1. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) with which to intercept and/or remove promptly and dispose properly of all water entering trenches and other excavations (including surface and subsurface waters).
   2. Excavations shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged. Refer to Specification Section 02401.

L. Cold Weather Protection:

1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35*F.
2. No frozen material shall be used as backfill or fill and no backfill shall be placed on frozen material.

M. Separation of Surface Material:
1. The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the work.
2. Prior to excavation, existing pavement shall be cut where in the opinion of the Engineer it is necessary to prevent damage to the remaining road surface.
3. Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.
4. From areas within which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

N. Dust Control:
1. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, so as to minimize the creation and dispersion of dust. Refer to Specification Section 01562.
2. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, the contractor shall furnish and spread the material, as directed.

3.3 BACKFILL AND FILL

A. General:
1. Backfilling shall consist of replacing material removed to permit installation of structures or utilities, as indicated in the Contract Documents.
2. Filling shall consist of placing material in areas to bring them up to grades indicated on the Drawings.
3. The Contractor shall provide and place all necessary backfill and fill material, in layers to the required grade elevations.
4. Backfill excavations as promptly as work permits, but not until completion of the following:
   a. Acceptance by Engineer of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
   b. Inspection, approval, and recording locations of underground utilities.
   c. Removal of concrete formwork.
   d. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Temporary sheet piling driven below bottom of structures shall be removed in manner to prevent settlement of the structure or utilities, or cut off and left in place if required.
   e. Removal of trash and debris.
   f. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
   g. Density testing having results meeting requirements specified herein.

5. In general, and unless otherwise indicated, material used for backfill of trenches and excavations around structures shall be suitable excavated material which was removed in the course of making the construction excavation. Unless otherwise specified or allowed by the Engineer the backfill and fill shall be placed in layers not to exceed 8 inches in thickness.
6. All fill and backfill under structures and pavement, and adjacent to structures, shall be compacted crushed stone or select fill as specified or as indicated on the Drawings. The fill and backfill materials shall be placed in layers not exceeding 8 inches in thickness.
7. All structures (including manholes) shall be placed on a 6-inch mat of screened stone unless otherwise indicated.
8. Suitable excavated material shall meet the following requirements:
    a. Free from large clods, silt lumps or balls of clay.
    b. Free from stones and rock fragments with larger than 12 inch max. dimension.
    c. Free from organics, peat, etc.
    d. Free from frozen material.
9. If sufficient suitable excavated material is not available from the excavations, and where indicated on the Drawings, the backfill material shall be select fill or common borrow, unless otherwise indicated, as required and as directed by the Engineer.
10. Do not backfill with, or on, frozen materials.
11. Remove, or otherwise treat as necessary, previously placed material that has frozen prior to placing backfill.
12. Do not mechanically or hand compact material that is, in the opinion of the Engineer, too wet.
13. Do not continue backfilling until the previously placed and new materials have dried sufficiently to permit proper compaction.
14. The nature of the backfill materials will govern the methods best suited for their placement and compaction. Compaction methods and required percent compaction is covered in Compaction section.
15. Before compaction, moisten or aerate each layer as necessary to provide a water content necessary to meet the required percentage of maximum dry density for each area classification specified.
16. Do not allow large masses of backfill material to be dropped into the excavation in such a manner that may damage pipes and structures.
17. Place material in a manner that will prevent stones and lumps from becoming nested.
18. Completely fill all voids between stones with fine material.
19. Do not place backfill on or against new concrete until it has attained sufficient strength to support loads without distortion, cracking, and other damage.
20. Deposit backfill and fill material evenly on all sides of structures to avoid unequal soil pressures.
21. Keep stones or rock fragments with a dimension greater than two inches at least one foot away from the pipe or structure during backfilling.
22. Leave sheeting in place when damage is likely to result from its withdrawal.

23. Completely fill voids left by the removal of sheeting with screened stone which is compacted thoroughly.

B. Pipe Bedding, Initial Backfill and Trench Backfill

1. Place bedding and backfill in layers of uniform thickness specified herein, and as shown on the Drawings.
2. Thoroughly compact each layer by means of a suitable vibrator or mechanical tamper.
3. Install pipe bedding and initial backfill in layers of uniform thickness not greater than eight (8) inches.
4. Deposit the remainder of the backfill in uniform layers not greater than eight inches.
5. Provide underground utility marking tape for new utility trenches as shown on the Drawings. Refer to Section 02650 – Buried Utility Markings.
6. Where soft silt and clay soils are encountered the trench shall be excavated six inches below the normal bedding and backfilled with 6-inches of compacted sand.
7. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below the bottom of such footings, or which pass under wall footings. Place concrete to the level of the bottom of adjacent footings.
8. The following schedule lists the bedding materials for various types of pipe. Refer to the pipe trench detail for dimensional requirements.

BEDDING REQUIREMENTS

DI or Concrete Pipe	screened stone or select fill.
PVC or PE Pipe	screened stone.

9. The following schedule lists the initial backfill requirements for various types of pipes. Refer to the pipe trench detail for dimensional requirements.

INITIAL BACKFILL REQUIREMENTS

DI or Concrete, Pipe	Screened stone or select fill
PVC or PE Pipe	Screened stone

10. Special bedding and backfill requirements shown on the Drawings supersede requirements of this section.
11. Where pipes or structures pass through or under the impervious core of the lagoon embankments, bedding and backfill material shall consist of the impervious embankment material. Extra care should be given to properly and thoroughly compact the bedding material around the pipe.

C. Improper Backfill:
   1. When excavation and trenches have been improperly backfilled, and when settlement occurs, reopen the excavation to the depth required, as directed by the Engineer.
   2. Refill and compact the excavation or trench with suitable material and restore the surface to the required grade and condition.
   3. Excavation, backfilling, and compacting work performed to correct improper backfilling shall be performed at no additional cost to the Owner.

D. Ground Surface Preparation:
   1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, scarify or break-up sloped surface steeper than 1 vertical to 4 horizontal.
   2. When existing ground surface has a density less than that specified under "compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

3.4 COMPACTION

A. General:
   1. Control soil compaction during construction to provide not less than the minimum percentage of density specified for each area classification.

B. Percentage of Maximum Density Requirements:
   1. Compact soil to not less than the following percentages of maximum dry density determined in accordance with ASTM D1557 as indicated.
      a. Structures: Compact each layer of backfill or fill material below or adjacent to structures to at least 95% of maximum dry density (ASTM D1557).
      b. Off Traveled Way Areas: Compact each layer of backfill or fill material to at least 90% of maximum dry density (ASTM D1557).
      c. Walkways: Compact each layer of backfill or fill material to at least 93% of maximum dry density (ASTM D1557).
      d. Roadways, Drives and Paved Areas: Compact each layer of fill, subbase material, and base material to at least 95% of maximum dry density (ASTM D1557).
      e. Pipes: Compact bedding material and each layer of backfill to at least 90% maximum dry density (ASTM D1557). Where backfilling with excavated material, compact to native field density.
      f. Embankments: Compact each layer of embankment material to at least 95% of maximum dry density (ASTM D1557).

C. Moisture Control:
   1. Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, in quantities controlled to prevent free water appearing on surface during or subsequent to compaction operations.
   2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory level.

D. Embankment Compaction:
   1. After each embankment layer has been spread to the required maximum 8-inch thickness and its moisture content has been adjusted as necessary, it shall be rolled with a sufficient number of passes to obtain the required compaction. One pass is defined as the required number of successive trips which by means of sufficient overlap will insure complete coverage and uniform compaction of an entire lift. Additional passes shall not be made until the previous pass has been completed.
   2. When any section of an embankment sinks or weaves excessively under the roller or under hauling units and other equipment, it will be evident that the required degree of compaction is not being obtained and that a reduction in the moisture content is required. If at any place or time such sinking and weaving produces surface cracks which, in the judgment of the Engineer are of such character, amount, or extent to indicate an unfavorable condition, he will recommend operations on that part of the embankment to be suspended until such time as it shall have become sufficiently stabilized. The ideal condition of the embankment is that attained when the entire embankment below the surface being rolled is so firm and hard as to show only the slightest weaving and deflection as the roller passes.
   3. If the moisture content is insufficient to obtain the required compaction, the rolling shall not proceed except with the written approval of the Engineer, and in that event, additional rolling shall be done to obtain the required compaction. If the moisture content is greater than the limit specified, the material of such water content may be removed and stockpiled for later use or the rolling shall be delayed until such time as the material has dried sufficiently so that the moisture content is within the specified limits. No adjustment in price will be made on account of any operation of the Contractor in removing and stockpiling, or in drying the materials or on account of delays occasioned thereby.
   4. If because of insufficient overlap, too much or too little water, or other cause attributable to defective work, the compaction obtained over any area is less than that required, the condition shall be remedied, and if additional rollings are ordered, they will be done at no cost to the Owner. If the material itself is unsatisfactory or if additional rolling or other means fails to produce satisfactory results, the area in question shall be removed down to material of satisfactory density and the removal, replacement, and re-rolling shall be done by the Contractor, without additional compensation.
   5. Material compaction by hand¬-operated equipment or power-driven tampers shall be spread in layers not more than 6 inches thick. The degree of compaction obtained by these tamping operations shall be equal in every respect to that secured by the rolling operation.

E. Compaction Methods: The Contractor may select any method of compaction that is

suitable to compact the material to the required density.

1. General: Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material. All voids left by the removal of sheeting shall be completely backfilled with suitable materials and thoroughly compacted.
2. Tamping or Rolling: If the material is to be compacted by tamping or rolling, the material shall be deposited and spread in uniform, parallel layers not exceeding the uncompacted thicknesses specified. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. Care shall be taken that the material close to the excavation side slopes, as well as in all other portions of the fill area, is thoroughly compacted. When the excavation width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe or structure, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping or rolling, the rate at which backfilling material is deposited shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.

F. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.5 GRADING:

A. General:
1. Grading shall consist of that work necessary to bring all areas to the final grades.
2. Uniformly grade areas within limits of work requiring grading, including adjacent transition areas.
3. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

B. Grading Outside Building Lines:
1. Grade areas adjacent to building to drain away from structures and to prevent ponding.
2. Grade surfaces to be free from irregular surface changes, and as follows:
   a. Lawn or Unpaved Areas: Finish grade areas to receive topsoil to within not more than 1" above or below the required subgrade elevations.
   b. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/2" above or below the required subgrade elevation.
   c. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 3/8" above or below the required subgrade elevation.

C. Grading Surface of Fill Under Building Slabs:
1. Grade surface to be smooth and even, free of voids, and compacted as specified, to the required elevation.

2. Provide final grades within a tolerance of 1/2" when tested with a 10' straight edge.

D. Compaction:
   1. After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

E. Protection of Graded Areas:
   1. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
   2. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

3.6 BASE COURSE AND LEVELING COURSE

A. General:
   1. Base course consists of placing the specified materials in layers to support a leveling course or paved surface, as indicated in the Drawings.

B. Grade Control:
   1. During construction, maintain lines and grades including crown and cross-slope of base course and leveling course.

C. Placing:
   1. Place base course on prepared subbase conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting base materials.
   2. Place leveling course on prepared base course, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compaction.

D. Shaping and Compacting:
   1. All layers of aggregate base course and leveling course shall be compacted to the required density immediately after placing. As soon as the compaction of any layer has been completed, the next layer shall be placed.
   2. The Contractor shall bear full responsibility for and make all necessary repairs to the base leveling courses and the subgrade until the full depth of the base leveling courses is placed and compacted. Repairs shall be made at no additional cost to the Owner.
   3. If the top of any layer of the aggregate base or leveling course becomes contaminated by degradation of the aggregate or addition of foreign materials, the contaminated material shall be removed and replaced with the specified material at the Contractor's expense.

END OF SECTION

SECTION 02601

MANHOLES, COVERS AND FRAMES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Includes:
   1. Replacement of manhole frame and cover in the project area: Replacement of the manhole frame and cover includes, removing of the frame and installing a new frame and cover to grade including any required chimney adjustments, and restoring the disturbed area to grade by matching the pavement depth.
   2. Adjust (raise or lower) manhole frame and cover as required to match final DOT pavement grade.
   3. City of Old Town retains salvage rights of existing manhole frames and covers. Contractor to prove one day notice to City prior to removal of any frames and covers. Contractor to place frames and covers to the side of the road in a location accessible by the City to pickup the frames and covers. Contractor may provide a separate location for pickup of frames and covers if agreed to by the City.

B. Related Work Specified Elsewhere (when applicable):
   1. Earthwork is specified in Section 02200.
   2. Paving requirements are outlined in DOT specifications
   3. Refer to Drawings for additional information on Frame and Cover requirements.

1.2 QUALITY ASSURANCE

A. Frames and Covers:
   1. Acceptable Manufacturers:
      a. EJ Castings
      b. Neenah Foundry Company.
      c. Or equal

B. Masonry:
   1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick.
   2. Cement: ASTM C150.
   3. Hydrated Lime: ASTM C207
   4. Sand: ASTM C33

1.3 SUBMITTALS

A. Submit shop drawings and manufacturer's literature in conformance with Section 01340 and the Standard General Conditions of the Construction Contract.

PART 2 - PRODUCTS

2.1 FRAMES AND COVERS

A. Standard Units:
   1. Made of cast iron conforming to ASTM A48-76, Class 30 minimum.

2. Have machined bearing surfaces to prevent rocking.
3. Castings shall be smooth with no sharp edges.
4. Constructed to support an HS-20 wheel loading.
5. Dimensions and Style shall conform to the Drawings, Standard castings differing in non-essential details are subject to approval by the Engineer:
   a. Covers -solid with sewer in 3-inch letters diamond pattern.
   b. Frame - 24-inch diameter clear opening, with flange bracing ribs.
6. Minimum weight of frame and cover shall be 370 lbs.

2.2 MASONRY

A. Brick:
   1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.
   2. Immediately remove rejected brick from the work.

B. Mortar:
   1. Composition (by volume):
      a. 1 part Portland cement.
      b. 1/2 part hydrated lime.
      c. 4-1/2 parts sand.
   2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed 3 times the sum of the volume of cement and lime.

C. Cement shall be Type II Portland cement.

D. Hydrated lime shall be Type S.

E. Sand:
   1. Shall consist of inert natural sand.
   2. Grading:

Sieve	Percent Passing
No. 4	100
No. 8	95-100
No. 16	70-100
No. 30	40-75
No. 50	10-35
No. 100	2-15
No. 200	0-5

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Adjust to Grade:
   1. Adjust tops of manholes to grade with brick masonry.
   2. Concrete rings are not acceptable for adjusting to grade.
   3. In paved areas, set frame and cover to final grade after binder pavement is placed and the grade of surface pavement has been determined.

B. Masonry:
   1. Laying Brick:

a. Use only clean bricks in brickwork for manholes.
b. Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.
c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.
d. Construct all joints in a neat workmanlike manner. Construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.
e. Outside faces of brick masonry shall be plastered with mortar from ¼-inch to 3/8-inch thick.
f. Completed brickwork shall be watertight.

2. Curing:
a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.
b. Protect brick masonry from the weather and frost as required.

C. Frames and Covers:
1. Set all frames in a full bed of mortar, true to grade and concentric with the manhole opening.
2. Completely fill all voids beneath the bottom flange to make a watertight fit.
3. Place a ring of mortar at least one inch thick around the outside of the bottom flange, extending to the outer edge of the manhole all around its circumference.
4. Clean the frame seats before setting the covers in place.

D. Exterior Chimney Wrap/Seal
1. Clean frame's flange and chimney with a wire brush and a whisk broom.
2. Frame and chimney must be dry.
3. Apply an aerosol primer on frame flange and chimney per manufacturer's recommendations.
4. Install wrap/seal around chimney.
5. Remove tape from the butyl mastic on top section of wrap and seal it to the frame's flange.

E. Plugging and Patching:
1. Fill all exterior cavities with non-shrink grout and with bituminous waterproofing once the concrete and mortar has set.
2. Touch up damaged water proofing.

F. Cleaning:
1. Thoroughly clean manholes, frames, and covers of all debris and foreign matter.

G. Bedding and Backfilling:
1. Bedding of manholes shall be 6 inches of 3/4" screened stone.
2. Backfill a minimum of 18 inches all around manhole with gravel borrow.

H. Frost Protective Wrap:
1. Frost wrap chimney and manhole section exposed during excavation. If existing from wrap is present, contractor to tap new frost warp to existing.
2. The Contractor shall comply with the manufacturer's instructions for the particular conditions of installations in each case.
3. Clean each manhole exterior of all dirt and remove any sharp protrusions.

4. Apply two 6-inch wide vertical strips of bituminous waterproofing material and/or duct tape from the top to bottom of the manhole per layer.
5. Tuck and pleat the polyethylene wrap at the top of each manhole in a continuous manner, minimizing the size of each fold. Extend the polyethylene wrap past the top of the manhole frame and temporarily tuck the remainder inside the frame, until final backfill and paving.
6. In paved areas, cut the polyethylene wrap flush with the manhole rim after the pavement is in place.
7. Protect the installed frost barrier from harmful weather exposures and from possible physical abuses, where possible by prompt installation of concealing work or, where that is not possible, by temporary covering or enclosure.
8. Backfill around the manhole/frost barrier with material as outlined in Section 02200 - Earthwork.

END OF SECTION

SECTION 02614

PRE-INSULATED DUCTILE IRON PIPE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install pre-insulated pipe system and accessories where shown on the Drawings.

B. Related work specified elsewhere (when applicable):
   1. Trench excavation and backfill are specified in Division 2.
   2. Carrier pipe materials are specified elsewhere.

1.2 QUALITY ASSURANCE

A. Provide pipe and fittings manufactured in North America.

B. Acceptable Manufacturers:
   1. Tricon, Ltd.
   2. Or approved equal meeting all requirements of Part 2 of this Section.

C. Manufacturer shall submit shop drawings for approval.
   1. Shop drawings shall show jacket system, insulation, end seals, joint kits, etc.
   2. The entire system shall be factory engineered.
   3. The product shall be manufactured in accordance with ISO 9001-2000 Standards or approved equal.

D. A representative of the manufacturer shall be present for all critical periods.
   1. Critical periods shall include but not be limited to:
      a. Inspection of materials for damages after receipt at jobsite.
      b. Supervision of joint assembly.
      c. Supervision of hydrostatic testing.
      d. Other supervision as required to provide a complete integral system.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Core Pipe
   2. Ductile Iron Restrained Joint Pipe is detailed in Specification Section 02615.

B. Insulation
   1. Material: rigid polyurethane foam, factory applied.
   2. Thickness: *2.59 in.* minimum or as required.
   3. Density: (ASTM D 1622) 35 to 46 kg/m^3 *(2.2 to 3.0 lbs/ft^3).*
   4. Closed cell content: (ASTM D 2856) 90%, minimum.
   6. Thermal conductivity: (ASTM C-177) 0.16 (BTU/Hr.sq.ft°F/in)

C. Outer Jacket
   1. Material: Seamless, High Density Polyethylene in accordance with ASTM D-1248
   2. Thickness: 0.175 in. minimum or as required.
   3. Approximate Outer Diameter: 12.43 in.

D. Insulation Kits for Fittings

1. Insulation kits for fittings shall consist of rigid polyurethane foam with an oversized split HDPE sleeve for outer protective jacket consistent with that on the factory insulated pipe. All kits to be supplied complete with nylon zip ties.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All pre-insulated piping shall be installed per the manufacturer's recommendations.

B. Bridge crossing sewer pipe section shall be pressure tested by in accordance with Specification Section 02755 – Final Sewer Testing.

END OF SECTION

SECTION 02615

DUCTILE IRON PIPE & FITTINGS (BURIED APPLICATIONS)

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide and install ductile iron pipe and fittings of the type(s) and size(s) in the location(s) shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere:
   1. Pipe and Pipe Fittings - General is specified in the appropriate Section in this Division.
   2. Excavation, Bedding and Backfill are specified in this Division.
   3. Ductile Iron Pipe & Fittings for Interior Applications is specified in Section 15062.

1.2 SUBMITTALS

A. Submit shop drawings in accordance with the applicable section of Division 1 and the General Conditions of the Construction Contract.

B. Submit manufacturer's "Certification of Conformance" that pipe and fittings meet or exceed the requirements of these Specifications.

C. Submit manufacturers installation instructions and specifications for all pipe and fittings.

1.3 QUALITY ASSURANCE

A. Standards (As Applicable):
   1. Cement-mortar lining for water: ANSI A2l.4 (AWWA C104).
   2. Rubber gasket joints: ANSI A2l.ll (AWWA C111).
   3. Ductile iron pipe thickness: ANSI A2l.50 (AWWA C150).
   4. Ductile iron pipe centrifugally cast in metal or sand lined molds: ANSI A2l.51 (AWWA C151).
   5. Pipe flanges and fittings: ANSI Bl6.l and ANSI A21.10 (AWWA C110).
   6. Threaded, flanged pipe: ANSI A21.15 (AWWA C115).
   7. Cast and ductile iron fittings: ANSI A2l.l0 (AWWA C110).
   8. Ductile Iron Compact Fittings: ANSI 21.53 (AWWA C153).

B. Acceptable Manufacturers:
   1. Tyler
   2. Griffin
   3. Union
   4. US Pipe
   5. Or equivalent.

1.4 DELIVERY, STORAGE & HANDLING

A. Exercise extra care when handling ductile iron pipe because it is comparatively brittle.

B. Exercise extra care when handling cement lined pipe because damage to the lining will render it unfit for use.
C. Protect the spherical spigot ends and the plain ends of all pipe during shipment by wood lagging securely fastened in place.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. General:
1. All exterior (buried) ductile iron pipe shall have push-on or mechanical joints unless otherwise specified or shown on the Drawings. Pipe within valve pits and other structures is considered interior pipe and shall be flanged.
2. Unless otherwise shown on the Drawings or in the pipe schedule, the minimum thickness of ductile iron pipe shall be:
   a. For pipe 6 inches in diameter and larger: Class 52
   b. Pipe with flanges: Class 53.
3. Pipe for use with sleeve type couplings shall have plain ends (without bells or beads) cast or machined at right angles to the axis.
4. Pipe shall be double thickness cement lined and seal coated unless noted otherwise on the Drawings, and except for air piping lines which shall be completely unlined.
5. Pipe for use with split type couplings shall have ends with cast or machined shoulders or grooves that meet the requirements of the manufacturer of the couplings.
6. Factory applied bituminous coatings (in accordance with AWWA C151) shall be furnished on the exterior of all underground piping unless specified otherwise.
7. The outside of pipe within structures and exposed shall not be coated with bituminous coating, but shall be thoroughly cleaned and given one shop coat of Intertol Rustinhibitive Primer 621 by Koppers Co.; Multiprime by PPG Industries; Chromox 13R50 Primer made by Mobil Chemical Co.; or equivalent.

B. Joints (as shown on Drawings or as specified):
1. Push-on and Mechanical Joint:
   a. The plain ends of push-on pipes shall be factory machined to a true circle and chamfered to facilitate fitting the gasket.
   b. Provide gaskets manufactured from a composition material suitable for exposure to the fluid to be contained within the pipe. On high temperature applications such as air lines, the gaskets shall be suitable for service from 40*F to 250*F.
   c. Bolts and nuts for buried mechanical joints shall meet the AWWA C-111 requirements and be made of high strength, low alloy steel.
2. Flanged:
   a. Provide specially drilled flanges when required for connection to existing piping or special equipment.

b. Flanges shall be long-hub screwed tightly on pipe by machine at the foundry prior to facing and drilling.
c. Gaskets:
   i. Ring type of rubber with cloth insertion.
   ii. Thickness of gaskets l2 inches in diameter and smaller: l/l6 inch.
   iii. Thickness of gaskets larger than l2 inches in diameter: 3/32 inch.
   iv. On high temperature applications such as air lines, the gaskets shall be suitable for service from 40°F to 200°F.
d. Fasteners:
   i. Make joints with bolt, studs with a nut on each end, or one tapped flanged with a stud and nut.
   ii. The number and size of bolts shall meet the requirements of the applicable ANSI standard.
   iii. Nuts, bolts, and studs shall be Grade B meeting the requirements of ASTM A307.
   iv. After jointing, coat entire joint with bituminous material compatible with pipe coating.
e. When applicable, provide and install flange clamps as shown on the Drawings.

3. Joint Bracing:
   a. Provide joint bracing to prevent the piping from pulling apart under pressure as required and as shown on the Drawings.
   b. Types of bracing:
      i. Pipe and fittings furnished with approved lugs or hooks cast integrally for use with socket pipe clamps, tie rods, or bridles. Bridles and tie rods shall be a minimum of 3/4 inch diameter except where they replace flange bolts of a smaller size, in which case they shall be fitted with a nut on each side of the pair of flanges. The clamps, tie rods, and bridles shall be coated with bituminous paint in buried installations and shall be coated with the same coatings as the piping system in interior installations after assembly or, if necessary, prior to assembly.
      ii. Mechanical joint follower gland pipe restrainers.
         (1) Ductile iron gland and restraining ring.
         (2) Gasket shall be standard MJ gasket -ANSI/AWWA-C111/A21.11.
         (3) Working pressure 350 psi, up to 8 inches; 250 psi, 10 inches to 16 inches.
         (4) Test pressure two times working pressure.
         (5) Grip Rings™, Romac Industries, or other equivalent as approved by Engineer.
      iii. Other types of bracing as shown on the Drawings.

2.2 FITTINGS

A. Standard Fittings:

1. Pressure rating of 350 psi for D.I. compact fittings and 250 psi for all others unless indicated otherwise on the Drawings or as specified.
2. Joints the same as the pipe with which they are used or as shown on the Drawings.
3. Cement lining and seal coat as specified for pipe.
4. Factory applied bituminous coatings shall be furnished for all underground fittings.

PART 3 - EXECUTION

3.1 INSPECTION

A. Provide all labor necessary to assist the Engineer to inspect pipe, fittings, gaskets, and other materials.
B. Carefully inspect all materials at the time of delivery and just prior to installation.
C. Carefully inspect all pipe and fittings for:
   1. Defects, such as weak structural components, that adversely affect the execution and quality of work.
   2. Deviations beyond allowable tolerances for pipe clearances.
D. Immediately remove all rejected materials from the project site.

3.2 INSTALLATION

A. General:
   1. Install in strict accordance with the pipe and fitting manufacturer's instructions and recommendations and as specified or as shown on the Drawings.
   2. Concrete thrust blocks or other acceptable thrust resistant system is required at all fittings on pressure pipe. Where thrust blocks are used, these shall be placed against undisturbed soil or screened gravel compacted to 95 percent and shall be placed so that the joints are accessible for repairs.
B. Assembling Joints:
   1. Push-on Joints:
      a. Insert the gasket into the groove of the bell.
      b. Uniformly apply a thin film of special lubricant over the inner surface of the gasket that will contact the spigot end of the pipe.
      c. Insert the chamfered end of the plain pipe into the gasket and push until it seats against the bottom of the socket.
   2. Bolted Joints:
      a. Remove rust preventive coatings from machined surfaces prior to assembly.
      b. Thoroughly clean and carefully smooth all burrs and other defects from pipe ends, sockets, sleeves, housings and gaskets.
      c. After jointing coat all bolts with bituminous material compatible with the pipe coating required herein.
   3. Flanged Joints:
      a. Insert the nuts and bolts (or studs), finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.

b. Execute care when tightening joints to prevent undue strain upon valves, pumps, and other equipment.

4. Mechanical Joints:
   a. Thoroughly clean, with a wire brush, surfaces that will be in contact with the gaskets.
   b. Lubricate the gasket, bell, and spigot by washing with soapy water.
   c. Slip the gland and gasket, in that order, over the spigot and insert the spigot into the bell until properly seated.
   d. Evenly seat the gasket in the bell at all points, center the spigot, and firmly press the gland against the gasket.
   e. Insert the bolts, install the nuts finger tight, and progressively tighten diametrically opposite nuts uniformly around the joint to the proper tension with a torque wrench.
   f. The correct range of torque (as indicated by a torque wrench) and the length of wrench (if not a torque wrench) shall not exceed:
      i. Range or Torque: 60-90 ft.-lbs.
      ii. Length of Wrench: l0 inches.
   g. If effective joint sealing is not attained at the maximum torque specified above, disassemble, thoroughly clean, and reassemble the joint. Do not overstress the bolts to tighten a leaking joint.
5. Bell and Spigot Joints:
   a. Thoroughly clean the bell and spigots and remove excess tar and other obstructions.
   b. Insert the spigot firmly into place and hold securely until the joint has been properly completed.

C. Fabrication:
1. Tapped Connections:
   a. Make all tapped connections as shown on the Drawings or as required by the Engineer.
   b. Make all connections watertight and of adequate strength to prevent pullout.
   c. Drill and tap normal to the longitudinal axis of the pipe.
   d. Taps in fittings shall be located where indicated by the manufacturer for that particular type of fitting.
   e. The maximum sizes of taps in pipes and fittings without busses shall not exceed the sizes listed in the appendix of ANS A2l.51 based on 2 full threads for ductile iron and 3 full threads for cast iron.
2. Cutting:
   a. Perform all cutting as set forth in AWWA C600.
   b. Carefully chamfer all cut ends to be used with push-on joints to prevent damage to gaskets when pipe is installed.

D. Pipe Deflection:
1. Push-on and Mechanical Joints:
   a. The maximum permissible deflection of alignment at joints shall be limited to that given in AWWA C600.
2. Flexible Joints:

a. The maximum deflection in any direction shall not exceed the manufacturer's instructions and recommendations.

END OF SECTION

SECTION 02620

TEMPORARY SEWER FORCE MAIN

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: The Contractor shall design, furnish, install, test, operate, maintain and remove a 6-inch high-density polyethylene (HDPE) or polyvinylchloride (PVC) temporary sewer force main in order to divert sewage flow around the work area. Temporary sewer force main system shall be able to reliably convey the full range of wastewater flows, as shown on the Drawings and scheduled herein.

1.2 PROJECT CONDITIONS

A. The work includes the installation of a temporary sewer force main in order to by-pass an existing sewer force main that is to be removed and replaced. The temporary sewer main will be located on the temporary Stillwater Avenue Bridge, provide continuous wastewater collection service during construction, and discharge to the downstream sewer manhole.

B. The wastewater force main experiences pressures up to 100 psi in this area of the wastewater collection system.

C. The Contractor shall coordinate with the City of Old Town before making the connection of the temporary sewer main to the existing wastewater collection system.

D. Temporary sewer mains shall be in operation from when the existing force main is taken off line until the new force main has been tested and accepted for permanent service.

E. Contractor will need to provide bypass pumping of all sewer flows as needed when the existing force main or temporary force main are not in service.

1.3 QUALITY ASSURANCE

A. The temporary sewer force main system shall meet all applicable local, state and federal requirements.

B. Pressure rating or pressure class of pipe as detailed herein.

1.4 SUBMITTALS

A. Temporary Sewer Force Main Plans shall be submitted to Engineer for review and approval prior to installation. Bypass plans shall include and consider the following:

1. Proposed schedule for installing, testing, operating, and removing the temporary sewer force main.
2. Details of the materials, size, and location of temporary facilities including list of duty equipment, pumps, bypass mains, fittings, valves, connections, and materials to be utilized by the Contractor for the temporary sewer force main pumping system.
3. Catalog cut sheets/ technical data for equipment and appurtenances.
4. Performance curves for wastewater bypass pumps and suction lift, static head, headloss, and total dynamic head (TDH) calculations.

5. List of standby equipment and spare parts available on-site and off-site in order to ensure uninterrupted operation of the bypass pumping system in the event of a utility power failure.
6. Description of controls and alarm equipment to be utilized. Sample alarm log.
7. All plans shall include provision of twenty-four/seven contact information for operation and maintenance of the temporary sewer force main system.
8. Pressure testing shall comply with the requirements of Section 02755 prior to placing temporary sewer force main into service.

B. No construction related activities requiring the need for bypass pumping operations shall begin until the related project submittals are reviewed and all provisions of the work have been fully coordinated with the Owner, Agency, Engineer and any other parties having jurisdiction for the proposed work activities.

PART 2 - PRODUCTS

2.1 TEMPORARY FORCE MAIN

A. Materials
1. Polyethylene Pipe:
a. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black, well dispersed in a concentration of not less than 2%.
b. The polyethylene resin compound shall have a resistance to environmental stress cracking as determined by procedure detailed in ASTM D l693 with sample preparation by procedure C of ASTM D l928 of not less than 40 hours.
c. Pipe shall be homogeneous throughout and free of visible cracks, holes, foreign material, blisters, or other deleterious faults.
d. Polyethylene fittings shall have the same pressure rating as the pipe itself.
e. Adaptors: When applicable, provide adaptors for connecting polyethylene pipe to pipes constructed from other materials. All flanges shall have metal backing rings.
f. Pipe pressure rating shall be 150 psi (SDR-11) minimum.
g. Pipe interior diameter shall be 6-inches
2. Polyvinyl Chloride (PVC) Pipe:
a. PVC formulation shall contain impact modifiers and ultraviolet inhibitors for use in above-ground temporary applications.
b. Pipe pressure rating shall be 150 psi (SDR-18) minimum.
c. Pipe interior diameter shall be 6-inches.

B. Fabrication
1. Polyethylene Pipe:
a. Thermal Butt-Fusion:
i. Join the pipe to itself, or to the polyethylene fittings or to the flange connections by means of thermal butt-fusion.
ii. Have all fusion performed by personnel trained by the pipe supplier or other qualified persons, using tools approved by the pipe supplier.
iii. The polyethylene fittings and flanged connections to be joined by thermal butt-fusion shall be from the same type, grade and class of

polyethylene compound as the polyethylene pipe unless otherwise approved.

iv. Joint strength must be equal to that of the adjacent pipe.

b. Mechanical Connections: The mechanical connections of the polyethylene pipe to auxiliary equipment shall be in accordance with the pipe suppliers written instructions.

2. Polyvinyl Chloride (PVC) Pipe:
   a. Fittings shall be supplied with Teflon coated "O"-ring to minimize assembly and disassembly effort required to install, remove and reinstall the system.
   b. Mechanical Connections: The mechanical connections of the PVC pipe to auxiliary equipment shall be in accordance with the pipe suppliers written instructions.

PART 3 - EXECUTION

3.1 COORDINATION OF WORK

A. Provide all labor and equipment necessary to coordinate work of this section and maintain communications.

B. Notify all personnel, including but not limited to Owner, Engineer and Utility Companies, seven days in advance of any changes to the temporary bypass pumping work. The Owner will identify personnel to be notified in addition to those identified by the Contractor.

3.2 INSTALLATION OF TEMPORARY SEWER FORCE MAIN

A. Temporary sewer main shall be laid outside of the traveled and access ways whenever possible and trenched when crossing roadways. Temporary sewer force main shall be ramped when crossing driveways.

B. Temporary sewer main shall be installed so that it may be operated during freezing weather down to -25°F.

3.3 PERFORMANCE:

A. General
   1. The Contractor is responsible for maintaining continuous sewer conveyance.
   2. The Contractor shall install and test all sewer flow control methods to the satisfaction of the Owner and Engineer prior to proceeding with the Work.
   3. Contractor shall be responsible for cleanup, repairs, restoration and fines required to address spills or overflows from a failed temporary sewer force main system.
   4. Any temporary pumps, piping, fuel storage, or other appurtenances associated with the temporary sewer force main system shall be either located above the 100-year flood elevation or protected against flotation or other damage which would be caused by a flood event.

B. The temporary sewer force main system shall be furnished, installed, tested, operated, maintained and removed as follows:
   1. The Contractor shall furnish, install, and test temporary sewer force main pumping system and discharge pipelines.

2. The Contractor shall test and debug all systems and verify that all necessary equipment, materials, spare parts, and labor are available on-site prior to operation of the system and prior to the demolition of any part of the existing force main facilities.
3. The Contractor shall operate and maintain the system until the new Work is completed, demonstration tested and accepted by the Owner and Engineer.
4. Contractor shall be responsible for making regulatory reporting notifications for any release of wastewater or fuel to the environment. Contractor shall provide copies of notifications to the Owner and Engineer.
5. The Contractor shall anticipate that the Owner will require 7 calendar days of operation on the new, permanent Work following satisfactory completion of demonstration testing prior to beginning disassembly of the temporary sewer force main pumping system.
6. Upon receipt of approval by the Owner and Engineer, the Contractor shall disassemble and remove the temporary sewer force main pumping system, including all appurtenant piping. Contractor shall restore the area impacted by the temporary sewer force main pumping system to a like-new condition.

END OF SECTION

SECTION 02650

BURIED UTILITY MARKINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. This work shall consist of providing and installing utility line markings above all buried lines installed as part of this contract and replacing existing markings disturbed as part of this contract. Buried utilities are indicated on the Civil and Electrical Drawings.

B. Related Work Specified Elsewhere:
   1. Pipe, excavation, backfill, insulation are specified in the appropriate Sections in this Division.

1.2 SUBMITTALS

A. Submit shop drawings in accordance with the applicable section of Division 1 and the General Conditions of the Construction Contract.

B. Submit manufacturers specifications for utility markings.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials and color shall be in accordance with latest AASHTO specifications for pipe and utility marking.

B. Marking tape color shall be in accordance with latest American Public Works Association (APWA) Uniform Color Code and American National Standards Institute ANSI Standard Z535.1, Safety Color Code specifications for buried utility marking as noted in the Schedule below.
   1. Schedule

Marker Color	Buried Utility
Blue	Potable Water &Associated lines
Green	Sanitary Sewers, Storm Drain and other Drain lines
Orange	Telecommunication, signal, alarm
Purple	Reclaimed, Recycled, Irrigation Water and Slurry Lines
Red	Electric Power lines cables conduits and lighting cables
Yellow	Gas, Oil, Steam, Petroleum or Gaseous Material Lines

   2. Warning Information shall be in Black Letters with typical wording of:
      a. "CAUTION: BURIED (NAME OF UTILITY LINE) BELOW"

C. For ferrous pipe material use 0.004" minimum polyethylene film; 6" wide clearly marking type of buried utility.

D. For non-ferrous pipe material (e.g. Concrete, PVC, PE, etc.) use detection tape composite of polyethylene and metallic core 6" wide clearly marking type of buried

utility.

E. Seton Identification Products, New Haven, CT, Utility Safeguard LLC or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Marking tape shall be installed over utility lines centerline and buried 24" below grade.

B. Markings damaged during opening of trench shall be reinstalled with 2' overlap at broken sections.

END OF SECTION

SECTION 02655

COUPLINGS & CONNECTORS FOR BURIED APPLICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish and install couplings and connectors of the type and size in the location shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

A. Minimum pressure rating equal to that of the pipeline in which they are to be installed.

B. Couplings and connectors, other than those specified herein, are subject to the Engineer's approval. Acceptable Manufacturers:
   1. Romac Industries
   2. Krausz
   3. Smith Blair
   4. For Meter Box Company
   5. Or Equal

C. Reference Standards:
   1. AWWA C104 – Cement-Mortar Lining for Ductile-Iron Pipe and Fittings
   2. AWWA C111 – Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
   3. AWWA C116 – Protective Fusion-Bonded Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings
   4. AWWA C153 – Ductile-Iron Compact Fittings
   5. AWWA C213 – Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings
   6. AWWA C219 – Bolted, Sleeve-Type Couplings for Plain-End Pipe

1.3 SUBMITTALS

A. Submit shop drawings in accordance with the applicable section of Division 1 and the General Conditions of the Construction Contract.

B. Submit manufacturers product data and installation instructions.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All Couplings and Connectors:
   1. Gasket Materials: Composition suitable for exposure to the liquids to be contained within the pipes.
   2. Diameters to properly fit the specific types of pipes on which couplings and connectors are to be installed.

B. Sleeve Type Transition Couplings (for 4 – 12” pipe size)
   1. Buried Restrained Couplings:
      a. Two top facing bolt design
      b. Fusion bonded epoxy steel or ductile iron center sleeve and end rings.

c. Two wedge-section EPDM or NBR rubber gaskets compounded for water service and NSF-61 certified.
d. 304 Stainless Steel bridge or Armor over gasket in expansion zone.
e. Nuts and bolts shall be 304 Stainless Steel with rolled thread and anti-galling compound.
f. Couplings shall be long barrel type.
g. Coupling shall be fusion bonded epoxy coated meeting AWWA C213 and NSF-61 standards for potable water applications
h. Acceptable Manufacturers:
i. Romac Industries – Alpha™
ii. Krausz – Hymax Grip
iii. Smith Blair – Pipe Lock Coupling
iv. Or Equal

C. Solid Sleeve Couplings
1. Solid sleeves shall be ductile iron with mechanical joint ends.
2. Couplings shall meet AWWA/ANSI C-153/A21.53 and C-111/A21.11 for joints, and C-104/A21.4 for cement lining in sizes 3"-24".
3. Nuts and bolts shall be ductile iron low alloy steel per ANSI/AWWA A21.11/C-111.
4. Acceptable Manufacturers:
a. Romac – Model 501
b. Smith Blair – Model 441.
c. Ford – Model FC1 or FC2A
d. Or Equal

D. Mechanical Joint Adaptors (Foster Adaptor® – Infact Corporation)
1. Required to connect fittings and valves with mechanical joints
2. Ductile iron construction mechanical joint bolt pattern.
3. Bolts and nuts shall meet AWWA C-111.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Sleeve Type Couplings:
1. Thoroughly clean pipe ends a minimum of 12-inches from the ends prior to installing couplings and use soapy water as a gasket lubricant.
2. Slip an end ring and gasket over each pipe and place the center sleeve centered over the joint.
3. Insert the other pipe length into the center sleeve the proper distance.
4. Press the gaskets and end rings evenly and firmly into the center sleeve flares.
5. For two-bolt systems, insert or tighten the bolts, finger tighten and progressively tighten nuts on the top of the coupling with a torque wrench applying the torque recommended by the manufacturer. For multiple bolt systems, insert or tighten the bolts, finger tighten and progressively tighten diametrically opposite nuts around the coupling with a torque wrench applying the torque recommended by the manufacturer.
6. Insert and tighten the tapered threaded lock pins as needed.

B. Install thrust rods, supports, and other provisions to properly support pipe weight and axial equipment loads.

END OF SECTION

SECTION 02755

FINAL SEWER TESTING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Final sewer testing work includes the performance of testing and inspecting each and every length of sewer pipe, pipe joints and each item of appurtenant construction.
   2. Perform testing at a time acceptable to the Engineer, which may be during the construction operations, after completion of a substantial and convenient section of the work, or after the completion of all pipe laying operations.
   3. Provide all labor, pumps, pipe, connections, gages, measuring devices and all other necessary apparatus to conduct tests.

B. Related Work Specified Elsewhere (When Applicable):
   1. Excavation, backfill, dewatering, pipe, pipe fittings and manholes are specified in the appropriate Sections in this Division.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1 PERFORMANCE

A. General:
   1. All sewer force main and appurtenant work, in order to be eligible for acceptance by the Engineer, shall be subjected to tests that will determine the degree of watertightness and horizontal and vertical alignment.
   2. Thoroughly clean and/or flush all sewer force mains to be tested, in a manner and to the extent acceptable to the Engineer, prior to initiating test procedures.
   3. Perform all tests and inspections in the presence of the Engineer.
   4. Perform testing by test patterns determined by or acceptable to the Engineer.
   5. Remedial Work:
      a. Perform all work necessary to correct deficiencies discovered as a result of testing and/or inspections.
      b. Completely retest all portions of the original construction on which remedial work has been performed.
      c. Perform all remedial work and retesting in a manner and at a time acceptable to by the Engineer at no additional cost to the Owner.

B. Inspection of Appurtenant Installations:
   1. Completely inspect, at a time determined by the Engineer, all manholes and inlets to ascertain their compliance with the Drawings and Specifications.
   2. Provide access to each manhole and inlet and check the following characteristics:

a. Shape and finish of invert channels,
b. Watertightness and finish of masonry structures,
c. Location, type, and attachment of stops,
d. Elevation and attachment of frames, covers, and openings,
e. Pattern and machining of covers, and
f. Drop connection arrangements.

C. Testing Pressure Sewers:

1. The section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations backfilling and taps at such points and shall plug said holes after completion of the test.
2. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
3. Perform pressure and leakage test at 1-½ times the maximum system pressure or 100 psi whichever is greater (based on the elevation of the lowest point of the section under test and corrected to the gage location). Test duration shall be two hours.
4. While maintaining this pressure, the Contractor shall make a leakage test by metering the flow of water into the pipe. Leakage, if any, shall be equal to or less than the amounts as determined by Section 4.2 of AWWA C 600.

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

L = allowable leakage in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of pipe, in inches
P = average test pressure, in pounds per square inch

5. In addition to meeting the leakage testing above, all joints within chambers and all flanged joints shall have no visible leakage.
6. If the section fails to pass the pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, or joint, all at his own expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test.

END OF SECTION

SECTION 15094

PREFABRICATED PIPE HANGERS, SUPPORTS AND BRACING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Design, furnish and install prefabricated pipe hangers, supports, and braces to support pipes, maintain the necessary pitch, minimize vibration, prevent movement, and allow expansion and contraction of the pipes shown on the Drawings and as specified herein and as referenced. Supports shall be designed for all tributary gravity loads and lateral loads from operating pressures, seismic forces, and startup/shutdown water hammer thrust. This Specification covers hangers, supports, and braces for process and mechanical piping systems including ductile iron, carbon steel, galvanized steel, stainless steel, fiberglass, PVC and copper piping.

B. Structural steel for pipe support frame systems as required specifically for supporting prefabricated pipe hangers are detailed on the Structural Drawings and shall be supplied in accordance with MaineDOT Specification Section 504 as modified by the Project Special Provisions.

1.2 RELATED SECTIONS

A. DOT Section 504 for Galvanization notes

B. Pipe, pipe fittings and valves are specified in respective sections of Division 2.

1.3 REFERENCES

A. This section contains references that are applicable to this Specification Section. The applicable edition of the indicated references shall be the version that was the most current at the time of the Advertisement of Bids.

B. Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).

1. MSS SP-58 Pipe Hangers and Supports – Materials, Design and Manufacture
2. MSS SP-69 Pipe Hangers and Supports – Selection and Application
3. MSS SP-89 Pipe Hangers and Supports – Fabrication and Installation Practices
4. MSS SP-90 Guidelines on Terminology for Pipe Hangers and Supports

C. ASTM A123/A123M - Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron & Steel Products

D. ASTM A153/A153M - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

E. ASTM C881/C881M - Specification for Epoxy-Resin-Base Bonding Systems for Concrete

F. ASCE 7 – Minimum Design Loads for Buildings and Other Structures

G. International Building Code (2015)

1.4 DESIGN REQUIREMENTS

A. Contractor shall provide all necessary hangers, supports and braces as needed to provide a fully functional and adequately supported and restrained system.

B. This Specification requires the delegated design of pipe hangers, supports and

bracing. The performance criteria, design requirements and materials of construction are specified herein. Refer to the Structural Drawings for a list of prohibited and allowed structural components from which piping can be hung, supported or braced. The absence of specific pipe support details shall not relieve the Contractor of the responsibility for designing and providing a fully functional system meeting the requirements of this Specification. Specification Section 15050 identifies which piping systems will and will not require a pipe support design by a Professional Engineer.

C. Prefabricated pipe supports shall be provided for all pipes shown on the Contract Drawings. Unless otherwise indicated, the terms "pipe support", "pipe hanger" and "pipe guide" shall refer to prefabricated pipe supports, hangers, guides, and braces specified herein.

D. The term "Pipe Support Design Engineer" shall refer to the Professional Engineer hired by the General Contractor to design the pipe support system.

E. All structural steel pipe support frames and shop fabricated pipe support assemblies shown on the Contract Drawings are specified elsewhere and not required as part of this Specification.

F. Pipes supports shall be classified as one of the following:
   1. Type 1 – Supported from structural members over and under the proposed pipe connected to bridge cross frames as shown on the bridge plans using hangers, guides, clevises, rollers, clamps or other means as specified herein.
   2. Type 2 - Supported from structural members over and under the proposed pipe connected to the web of bridge main beams as shown on the bridge plans using hangers, guides, clevises, rollers, clamps or other means as specified herein.
   3. Additionally, each pipe support shall be classified as one of the following based on function:
      a. Type S - Simple Support
      b. Type G - Guide Support
      c. Type F - Fixed Support

G. Where flexible joints or couplings are indicated on the Contract Drawings at equipment, tanks, etc., the end opposite to the piece of equipment, tank, etc., shall be rigidly supported, to prevent transfer of system forces to the equipment. No fixed or restraining supports shall be installed between a flexible joint or coupling and the piece of equipment.

H. All pipe and appurtenances connected to the equipment shall be supported in a manner to prevent any strain or load from being imparted on the equipment or piping system.

I. Pipe supports shall be provided to minimize forces through valves, split and sleeve type couplings, flexible expansion joints and to minimize all pipe forces on equipment housings. Equipment housings shall not be utilized to support connecting pipes.

J. Unless otherwise indicated on the Drawings, maximum hanger and support spacing shall not exceed the following:
   1. Ductile and Cast Iron Pipe:
      a. All diameters – 10 feet
   2. The maximum support spacings listed above are based on the specific pipes being full of liquid without any additional vertical loads or thrusts. The actual

required support spacings may be limited to the hangers selected or the presence of additional loads.

3. Supports shall be spaced as shown on the Drawings unless otherwise approved.
4. Pipe alignment guides shall not be used as vertical support of the piping.
5. Wall penetration sleeves (link-seal type or equivalent) shall not be used as support of the piping.

K. Contractor shall provide pipe supports at the following locations:
1. At all locations indicated on the Contract Drawings.
2. At all locations such that the maximum support spacing listed above are not exceeded.
3. At all locations such that the allowable load capacity of the prefabricated hangers are not exceeded.
4. At the end of all pipe runs.
5. At all changes in pipe direction greater than 22 degrees.
6. Within 1 foot of all valves, couplings, expansion joints and pipe joints.
7. All other locations deemed necessary by the Contractor, Pipe Support Design Engineer or pipe manufacturer.
8. Spaced such that the deflection in the pipe under operating conditions does not exceed L/360, where L is the distance between supports.

L. Drilled anchors shall not be used.

M. All pipe supports shall be designed for the following loads:
1. Dead loads (including cement lining, insulation, etc)
2. Liquid Density – use a liquid specific gravity of 1.10 for water, wastewater and sludges and use the appropriate liquid specific gravity for chemicals, unless otherwise noted
3. Operational Thrust – refer to Specification Section 15050
4. Water Hammer Thrust – refer to Specification Section 15050
5. Thermal forces – refer to Specification Section 15050
6. Wind Load – In accordance with ASCE 7. Refer to the Structural Drawings for wind design parameters
7. Snow Load – In accordance with ASCE 7. Refer to the Structural Drawings for snow design parameters
8. Ice Load – In accordance with ASCE 7

1.5 SUBMITTALS

A. Submit a complete set of shop drawings of all items to be furnished under this Section and as required by Section 01340 and 15050.

B. For piping systems that require delegated design by a Professional Engineer, submit experience statement from the proposed Pipe Support Design Engineer to demonstrate compliance with the following criteria prior to submitting any technical information.
1. Engage the services of an independent registered Professional Engineer ordinarily engaged in the business of pipe support systems analysis, to analyze system piping and service conditions and to develop a detailed support system, specific to the piping material, pipe joints, valves and piping appurtenances proposed for use. The proposed Pipe Support Design Engineer shall have at least 5 years of experience in the analysis and design of similar systems,

including the use of commercial and custom pipe support and in the use of commercial pipe stress software programs. Firms meeting these criteria include: Newman Associates, LLC., Canton, MA; SAC Incorporated, Williston, VT; NEFCO Tech Sales, East Hartford, CT; or equivalent. The professional engineer shall be registered in the State of Maine

C. Technical submittals for all projects shall include the following information:
   1. Layout drawings with all pipe supports clearly labeled, located, and coordinated with the tabulated list noted below. Layout drawings shall include both Plan and Section views with the pipe supports clearly labeled in each view. All pipe layout changes proposed by the General Contractor shall be incorporated in the layout and identified as a proposed modification. Layout drawings shall address gravity loads and dynamic loads including thermal effects, pressure thrusts and seismic forces.
   2. Summary of Pipe Hangers, Supports and Bracing: Submit a tabulated list of pipe support information which includes the following information at a minimum:
      i. Hanger/Support/Brace Number
      ii. Location
      iii. Pipe Diameter (nominal ID)
      iv. Pipe centerline elevation
      v. Pipe material
      vi. Additional dead weight (Cement lining, insulation, etc)
      vii. Lineal foot dead weight of pipe
      viii. Contents of pipe
      ix. Total lineal foot weight (dead weight and live weight)
      x. Length of pipe tributary to support
      xi. Total gravity and dynamic load at support
      xii. Type of support (as identified in Section 1.4.B above)
      xiii. Fixity of support (as identified in Section 1.4.B above)
      xiv. Structure supporting pipe support (Section 1.4.F above)
   3. Representative catalog cut for each different type of pipe hanger, brace, or support indicating the materials of construction, material finishes, pipe sleeve or insulation information, protective shields, important dimensions and range of pipe sizes for which that hanger is suitable. Where standard hangers and/or supports are not suitable, submit detailed drawings showing materials and details of construction for each type of special hanger and/or support.
   4. Representative catalog cuts for accessories (e.g., threaded rod, insulation shields and saddles, never-seize compound, etc.)
   5. Letter from the General Contractor stating that the following has been coordinated:
      i. Each pipe support system will not interfere with the other pipe support, bridge framing or seismic bracing systems.
      ii. Components from the pipe support systems shall not extend below the flanges of bridge beams
      iii. Components from the pipe support systems shall not interfere with the normal maintenance or operation of a component or equipment.

D. Supplemental technical submittals for projects which require a Pipe Support Design Engineer, as identified in Section 15050, shall include the following information:
   1. Completed Certificate of Design (included at the end of this Section).
   2. Dead weight and dynamic load analysis, including system thermal effects and pressure thrusts. Computer-based software system equivalent to ADLPIPE or Autopipe . Each piping system shall be presented in an isometric graphic and shall show the resolved and resultant force and moment systems, as well as all recommended hangers, supports, anchors, restraints and expansion/flexible joints.
   3. After the work is installed, but before it is filled for start-up and testing, the Pipe Support Design Engineer shall inspect the work and shall certify its complete adequacy. Submit documentation for each piping system to demonstrate the inspection and certification of adequacy.

E. After the installation is completed and certified, submit as-built drawings for record purposes.

PART 2 - PRODUCTS

2.1 GENERAL

A. All insulated pipe shall be furnished with a pipe insulation shield and/or saddle at each pipe support location as specified herein.

B. Where pipe hangers and supports come in contact with copper piping, provide protection from galvanic corrosion by wrapping pipe with 1/16-inch thick neoprene sheet and galvanized protection shield; isolators similar to Eleen, Figure No. 228; or PVC-coated hangers and supports. All stainless steel piping shall be isolated from all ferrous materials, including galvanized steel, by use of neoprene sheet material and protection shields, similar to above methods.

C. Link-seal compression type wall penetration sleeves shall not be used to support static or dynamic loads. Additional supports shall be provided such that static gravity loads and horizontal dynamic loads are not transferred to these penetration sleeves.

2.2 MATERIALS

A. Unless otherwise specified herein, pipe hangers and supports shall be standard catalogued components, conforming to the requirements of MSS-SP-58, MSS SP-69 and MSS SP-89.

B. Pipe hangers, supports, braces and accessories shall be standard catalogued components as manufactured by Anvil International, Inc , Carpenter & Peterson, Inc. or equivalent (metallic pipe) or Jove (non-metallic pipe). Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product and shall not be considered as proprietary.

C. Materials of all prefabricated pipe hangers, supports, braces and accessories (including bolts, nuts, washers) shall be as follows:
   1. For steel, stainless steel, ductile iron, HDPE, FRP and PVC piping:
      a. Exposed interior or exterior and all other spaces not otherwise defined below shall be hot-dipped galvanized steel. Refer to DOT specifications.

b. Exposed interior spaces subjected to a damp or corrosive environment including the following spaces shall be hot dipped galvanized steel. Refer to DOT specifications.

D. Type 1
1. Metallic pipe (Steel, stainless steel and ductile iron):
a. Adjustable Clevis Type (Type S) (Pipes greater than 4" diameter):
i. Anvil International, Inc. (Fig 260)
ii. Carpenter & Patterson Inc. (Fig 100)
iii. Or equal
b. Adjustable Clevis Type (Type S) (Pipes 4" diameter or less):
i. Anvil International, Inc. (Fig 65)
ii. Carpenter & Patterson Inc. (Fig 200)
iii. Or equal
c. Adjustable Steel Yoke Pipe Roll (Type S):
i. Anvil International, Inc. (Fig 181)
ii. Carpenter & Patterson Inc. (Fig 140)
iii. Or equal
d. Adjustable Pipe Roll (Type S):
i. Anvil International, Inc. (Fig 177)
ii. Carpenter & Patterson Inc. (Fig 142)
iii. Or equal
e. Pipe Clamp (Type F):
i. Anvil International, Inc. (Fig 212, Fig 216 or Fig 295 Clamp w/ Fig 272 Eyerod)
ii. Carpenter & Patterson Inc. (Fig 175, Fig 298 or Fig 304 Clamp w/ Fig 93 Eyerod)
iii. Or equal
f. U-Bolt (Type S)
i. Anvil International, Inc. (Fig 137)
ii. Carpenter & Patterson Inc. (Fig 283)
iii. Or equal

E. Type 2
1. Metallic pipe (Steel, stainless steel and ductile iron):
a. Pipe Roll Stand (Type S) (Non Adjustable)
i. Anvil International, Inc. (Fig 271)
ii. Carpenter & Patterson Inc. (Fig 39)
iii. Or equal
b. Pipe Roll Stand (Type S) (Adjustable)
i. Anvil International, Inc. (Fig 274)
ii. Carpenter & Patterson Inc. (Fig 40)
iii. Or equal
c. Pipe Roll Chair (Type S)
i. Anvil International, Inc. (Fig 175)
ii. Carpenter & Patterson Inc. (Fig 67)
iii. Or equal
d. Adjustable Pipe Roll (Type S)

i. Anvil International, Inc. (Fig 177)
ii. Carpenter & Patterson Inc. (Fig 109)
iii. Or equal

e. Pipe Alignment Guide (Type G)
i. Anvil International, Inc. (Fig 255 or 256)
ii. Carpenter & Patterson Inc. (Fig 1006 or 1007)
iii. Or equal

f. Pipe Slide Assembly (welded to pipe) (Type G or F)
i. Anvil International, Inc. (Fig 257 or 436)
ii. Carpenter & Patterson Inc. (Fig 1010)
iii. Or equal

g. Pipe Slide Assembly (w/ welded clamp) (Type G or F)
i. Anvil International, Inc. (Fig 257 or 436 w/ Fig 432 clamp)
ii. Carpenter & Patterson Inc. (Fig 1010 w/ Fig 158 clamp)
iii. Or equal

h. Floor Mounted Stanchions w/ Adjustable Saddles (Type S)
i. Anvil International, Inc. (Fig 63 Stanchion w/ Fig 264 or Fig 265 Saddle)
ii. Carpenter & Patterson Inc. (Fig 138 Stanchion w/ Fig 101 or Fig 101U Saddle)
iii. Or equal

i. Concrete cradles
i. Provide as detailed on the Structural Drawings

F. Type 3 (Type S) (all pipes)
1. Wall Bracket
a. Anvil International, Inc. (Fig 194, Fig 195 or Fig 199)
b. Carpenter & Patterson Inc. (Fig 69, Fig 84 or Fig 139)
c. Or equal
d. Fabricated brackets may be used in lieu of pre-fabricated brackets. Material shall conform to Part C above.

G. Accessories:
1. Threaded Rods
i. Anvil International, Inc. (Fig 140, 142 or 146)
ii. Carpenter & Patterson Inc. (Fig 94 or 133)
iii. Or equal
2. Pipe Insulation Shield
i. Anvil International, Inc. (Fig 167 or Fig 168)
ii. Carpenter & Patterson Inc. (Fig 265GS or Fig 265P)
iii. Or equal
3. Pipe Insulation Saddle
i. Anvil International, Inc. (Figs 160-166A)
ii. Carpenter & Patterson Inc. (Figs 351-357Z)
iii. Or equal
4. Anti-seize compound
i. Never Seez by Bostik, Inc.
ii. Or equal

H. Miscellaneous Pipe Hangers, Supports and Braces (Type 4 or Custom):
   1. Contractor shall provide additional hangers, supports and braces as required that are not classified as Types 1, 2 or 3 above.
   2. Materials shall conform to Part C above.

I. Concrete Anchorage:
   1. Epoxy anchors. ASTM C881, non-expanding, two-component epoxy resin with AISC Type 316 Stainless Steel threaded road with washer nut. Manufactured by Hilti Fastening Systems (HIT RE500SD); Ramset Fastening Systems (Chemset Capsule Series); Power Fasteners (T308 Plus); or equivalent.
   2. Expansion anchors. Stainless steel AISI Type 316 for galvanized and aluminum fabrications; cadmium plated for painted steel fabrications. Manufactured by Hilti Fastening Systems (Kwik Bolt III); Ramset Fastening Systems (Tru Bolt Stud Anchor); Power Fasteners (Power Stud); or equivalent.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install prefabricated hangers and supports in accordance with the pipe support shop drawings, in accordance with MSS SP-89 and as specified herein. Deviations from the shop drawings shall not be permitted without written approval from the Pipe Support Design Engineer.

B. Hangers shall be used for their intended purpose only. They shall not be used for rigging or erection purposes.

C. General Contractor shall coordinate the installation of field run conduit, piping and other utilities to avoid interference with the pipe supports.

D. All pipe supports shall include features to permit adjustments of pipe elevations. Once all piping is properly aligned and at the correct elevations, the supports shall be locked into place. Locking nuts, cotter pins, temporary locking devices and other locking means should be properly engaged. Tack welding shall not be utilized to lock supports in place.

E. Type 1 hangers using threaded rods shall be attached to the building structure or supplemental framing. Connections to the building structure shall be with beam clamps, welded angles or embedded concrete weld plates or threaded inserts.

F. Install all drilled anchors in accordance with the anchor Manufacturer's instructions.

G. Secure Type 2 pipe support to structural supporting member. All pipe supports shall be rigidly anchored to their structural supporting members.

H. All surfaces of steel and aluminum in contact with or embedded in concrete or masonry shall be coated with epoxy paint (min 5 mils dry film thickness).

I. Drain, waste, and vent piping: Support by adjustable hangers.

J. Valves, Fittings & Specialties: Independently support pipe connected to pumps, equipment and piping systems.

K. Temporary pipe supports:
   1. General Contractor shall be responsible for providing all temporary pipe supports and rigging.
   2. Lay out each section of pipeline and make connections while the pipe is held in temporary supports.

3. After the completion of connections in each section of pipeline, hold the section in place with temporary clamps.
4. Do not remove the temporary clamps until the piping is correctly installed on the permanent supports.

3.2 TESTING

A. All permanent pipe supports shall be installed prior to testing.
B. Demonstrate compliance with the requirements of this section with respect to support, pitch, vibration, movement, and expansion and contraction during start-up testing of the equipment and associated piping systems as indicated in Section 01800.
C. Systems which do not meet the requirements of this section with respect to support, pitch, vibration, lateral movement, and expansion and contraction shall be supplemented with additional braces as required and re-demonstrated until compliance is achieved.

CERTIFICATE OF DESIGN

RE: Contract between
OWNER: _____

CONTRACTOR: _____

PROJECT: _____

The undersigned hereby certifies that the engineer listed below:

1. Is licensed or registered to perform professional engineering work in the State of _____; (Location of Project)

2. Is qualified by education and training to design the pipe support and bracing system as specified in Section 15094 of subject contract;

3. Has previously designed comparable pipe support and bracing systems;

4. Has prepared the design in full compliance with the requirements of subject contract documents, including all applicable laws, regulations, rules, and codes; and

5. Has confirmed by design that the static gravity loads and dynamic horizontal and vertical seismic, hydraulic pressure, and thrust forces tributary to each pipe support and the system as a whole have been determined, and that all supports and braces are designed to resist these forces within the allowable capacities of each component of the pipe support, including anchorage. (Excluding supports specifically designed by the Engineer-of-Record Wright-Pierce)

6. Will inspect the completed installation of the pipe support system to confirm that the system is installed and functions in accordance with the design.

CONTRACTOR	PIPE SUPPORT DESIGN ENGINEER
By: _____	By: _____
(Signature)	(Signature)
_____	_____
(Name)	(Name)
_____	_____
(Title)	(Professional Engineer No. and State)
_____	_____
(Date)	(Date)

END OF SECTION

HALEY WARD

ENGINEERING | ENVIRONMENTAL | SURVEYING

PROJECT MANUAL

FOR THE

OLD TOWN WATER DISTRICT
WATER SYSTEM IMPROVEMENTS
MDOT 22511.00, 22512.00 & 22950.00
OLD TOWN, MAINE

NOVEMBER 2021
JN: 10345.003

Prepared By:
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PROJECT MANUAL
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APPENDIX C

AIS Funding Agency Documents for an SRF Funded Utility Project Under a MaineDOT Project Contract

STATE REVOLVING FUND (SRF)

Utility Construction Contract Requirements To Supplement the Maine Department of Transportation (MDOT) General Conditions

Last Updates: October 2021

STATE REVOLVING FUND (SRF)
UTILITY CONSTRUCTION CONTRACT REQUIREMENTS
TO SUPPLEMNENT THE
MAINE DEPARTMENT OF TRANSPORTATION
GENERAL CONDITIONS

Last Updates: October 2021

Utility Construction Supplementary Conditions

Gratuities

If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract. In the event this Contract is terminated as provided in above paragraph, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

Environmental Requirements

When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:

1. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.
2. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted

pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

Utility Construction Project Sign

At the start of the project, the Contractor shall provide and erect a project sign as detailed and specified in the attachment to these supplementary conditions. The location of the sign shall be as directed by the Engineer. No other contractor, subcontractor, or material references will be permitted on the sign. The Contractor shall maintain and keep the project sign in good condition until the work is completed when the sign will be removed. Provide adequate supports for the sign as site conditions may require and keep sign a proper distance above prevailing grade to permit public viewing.

Alternate methods of publicizing may be considered on a project specific basis for projects with a contract value less than $250,000. Prior to the start of the project, the Contractor must obtain Agency approval, through the Owner, for use of a proposed method. Alternate methods that may be considered include: posters or wall signage on public buildings or at a public location, newspaper advertising, online signage, and press releases. Minimum public awareness requirements and sample language can be obtained from the Agency.

SRF Disadvantaged Business Enterprises Program

The contractor must maintain all records documenting its compliance with the requirements of this part, including documentation of its good faith efforts (such as copies of solicitation letters and emails) and data relied upon in formulating its fair share objectives.

1. During the bidding period, the Contractor is required to make the following good faith efforts if they will be awarding subcontracts:
   (a) Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. This will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
   (b) Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
   (c) Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
   (d) Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
   (e) Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.

(f) Employ the good faith efforts described above even if the prime contractor has achieved its fair share objectives under subpart D of this part.

2. The Contractor must comply with the following provisions when submitting their bid:

   (a) The contractor must complete and submit SRF Form 6100–4, 'DBE Program Subcontractor Utilization Form' (copy attached) as part of the prime contractor's bid or proposal package to the Owner. Note, only DBE subcontractors should be listed. If no DBE subcontractors are to be used, the contractor must still complete and submit the form.

   (b) The contractor must have each of its proposed DBE subcontractors complete the SRF Form 6100–3, 'DBE Program Subcontractor Performance Form' (copy attached). The completed forms must be submitted as part of the prime contractor's bid or proposal package to the Owner.

3. Prior to contract award, as the Successful Bidder, the Contractor must comply with the following provisions:

   (a) The contractor must submit to the Owner documentation of its good faith efforts (such as copies of solicitation letters and emails) and data relied upon in formulating its fair share objectives. Solicitation documentation must include proof of receipt. The records must be submitted to the Owner even if the goals were met.

   (b) The contractor must submit to the Owner a bidders list of all firms that bid or quote on subcontracts, including both MBE/WBEs and non-MBE/WBEs. The purpose of a bidders list is to provide contractors who conduct competitive bidding with as accurate a database as possible about the universe of MBE/WBE and non-MBE/WBE subcontractors. The list must include the following information:

      (1) Entity's name with point of contact;

      (2) Entity's mailing address, telephone number, and e-mail address;

      (3) The procurement on which the entity bid or quoted, and when; and

      (4) Entity's status as an MBE/WBE or non-MBE/WBE.

4. Following contract award, the Contractor must comply with the following additional provisions:

   (a) The contractor must provide SRF Form 6100–2, 'DBE Program Subcontractor Participation Form' (copy attached) to all DBE subcontractors listed on Form 6100-4. SRF Form 6100–2 gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have during the course of the project, for example, reasons why the DBE subcontractor believes it was terminated by the prime contractor. If DBE subcontractors choose to complete this form, the completed form should be given to the SRF Project Manager.

   (b) Complete the SRF Progress Report of DBE Subcontractor Utilization Form (copy attached) for all contractor pay applications whether or not they include invoiced amounts

from DBE subcontractors. The progress report should be attached to the corresponding pay application for processing through the Owner.

(c) Pay subcontractors for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Owner.

(d) Notify the Owner in writing prior to any termination of a DBE subcontractor for convenience by the prime contractor.

(e) If a DBE subcontractor fails to complete work under the subcontract for any reason, the prime contractor must employ the good faith efforts described above if soliciting a replacement subcontractor. Documentation of good faith efforts shall be submitted to the Owner upon request.

American Iron and Steel (AIS) Requirements

The Contractor acknowledges, to and for the benefit of the Owner and the State (Maine Department of Environmental Protection and the Maine Department of Health and Human Services), that it understands the goods and services under this Agreement are being funded with monies made available by the State Revolving Fund (SRF) that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. See attached Public Law 113-76, Section 436. The Contractor hereby represents and warrants, to and for the benefit of the Owner and the State, that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State. While the Contractor has no direct contractual privity with the State, as a lender to the Owner for the funding of its project, the Owner and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

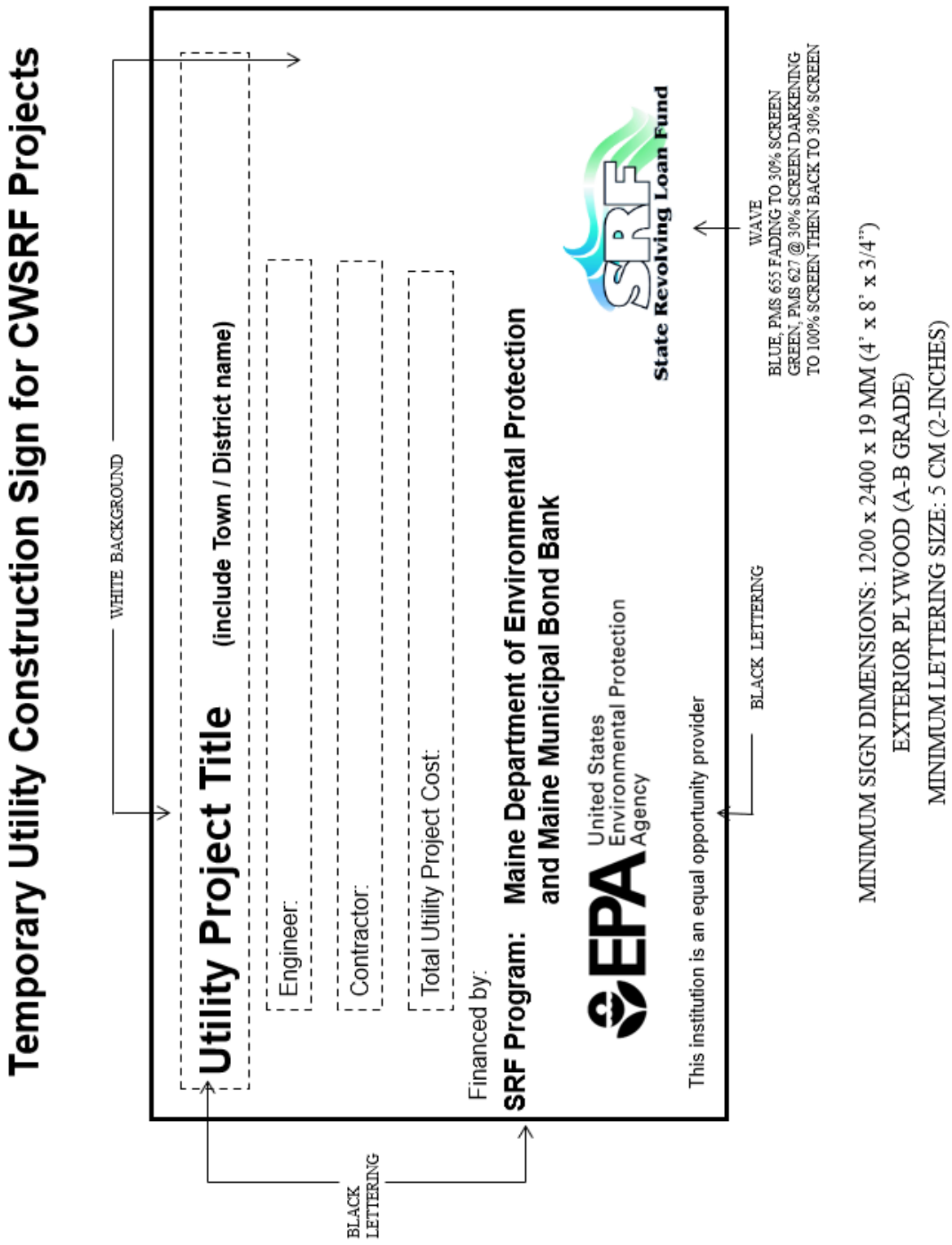
The Owner shall maintain files on the project site for American Iron and Steel (AIS) manufacturer certifications. The Contractor and subcontractors shall provide step manufacturer certifications to the Owner for each AIS item delivered to the site. The files shall be made available to State and Federal officials for inspection upon request. See sample Step Manufacturer Certification attachment for information that should be included. The Contractor and its subcontractors shall submit to the Owner, an AIS Compliance Certification (see form attached) with each contractor pay application. The Owner, shall in turn, submit this certification from the Contractor, with their AIS Compliance Certification (see form attached), to the State with the SRF pay requisition. The nationwide waiver to the American Iron and Steel law permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a

project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project. It is the State's interpretation that all SRF projects will contain incidental components that might not comply with the law and therefore it is likely that the Owner will use the de minimis waiver. The Contractor is required to provide the necessary documentation. See attached sample de minimis tracking form. Owners should, in consultation with their contractors, determine the items to be covered by this waiver, must retain relevant documentation (i.e., invoices) as to those items in their project files, and must summarize the items to which this waiver is applied, the total cost of incidental components covered by the waiver, and the calculations by which they determined the total cost of materials used in and incorporated into the project. The Owner shall maintain files on the project site for this documentation. The files shall be made available to State and Federal officials for inspection upon request.
The Contractor shall refer to the attached guidance taken from an EPA Memorandum. Additional information regarding the AIS requirements can be found on this website
http://water.epa.gov/grants_funding/aisrequirement.cfm

List of Attachments to the Utility Supplementary Conditions
(ALL attachments should follow this list)

- Utility Construction Project Sign Drawings
- Progress Report of DBE Subcontractor Utilization Form
- DBE Program Subcontractor Utilization Form - SRF 6100-2
- DBE Program Subcontractor Performance Form - SRF 6100-3
- DBE Program Subcontractor Participation Form - SRF 6100-4
- AIS Covered Products Q &A
- AIS Law
- AIS Certification by Owner
- AIS Certification by Contractor
- AIS Step Manufacturer Certification
- AIS De Minimis Tracking Form
- AD-1048 Certification Regarding Debarment

Select Utility Construction Project Sign Drawings As Appropriate



Temporary Utility Construction Sign for DWSRF Projects

MINIMUM SIGN DIMENSIONS: 1200 x 2400 x 19 MM (4' x 8' x 3/4")
EXTERIOR PLYWOOD (A-B GRADE)
MINIMUM LETTERING SIZE: 5 CM (2-INCHES)

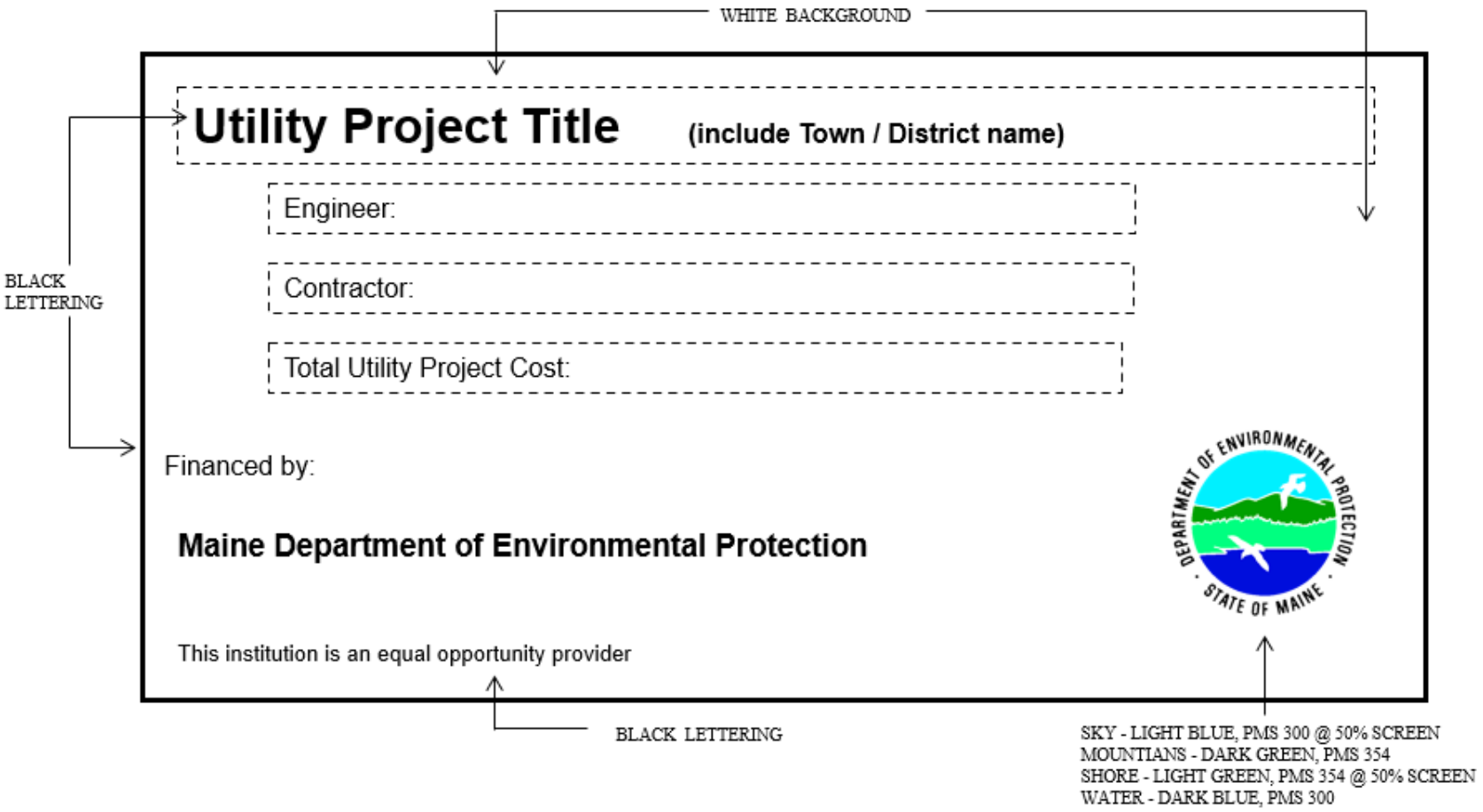
Temporary Utility Construction Sign for CWSRF & DWSRF Projects

MINIMUM SIGN DIMENSIONS: 1200 x 2400 x 19 MM (4' x 8' x 3/4")

EXTERIOR PLYWOOD (A-B GRADE)

MINIMUM LETTERING SIZE: 5 CM (2-INCHES)

Temporary Utility Construction Sign for DEP Grant Projects



MINIMUM SIGN DIMENSIONS: 1200 x 2400 x 19 MM (4' x 8' x 3/4")
EXTERIOR PLYWOOD (A-B GRADE)
MINIMUM LETTERING SIZE: 5 CM (2-INCHES)

Disadvantaged Business Enterprise Program

(DBE)PROGRESS REPORT OF DBE SUBCONTRACTOR UTILIZATION FORM

TO ENSURE PROMPT PAYMENT THE FOLLOWING INFORMATION MUST BE SUBMITTED WITH ALL REIMBURSEMENT REQUESTS WHETHER THEY INCLUDE INVOICED AMOUNTSFROM A QUALIFYING WBE OR MBE PARTICIPANT OR NOT:

Municipality/District:_____ SRF #:_____

Name of Project:_____ Contractor:_____

Contractor's Payment Request No._____Period covered by the request_____

The accompanying Reimbursement Request includes the following WBE/MBE participation:

Name & Address of WBE/MBE firm to be paid	WBE	MBE	Source of Certification, i.e., DOT, EPA or SBA	Amount to be paid this request	Type of Work
	☐	☐			
	☐	☐			
	☐	☐			

This attachment must be signed by an authorized representative of the contractor.

Signature:_____Date: _____

Name:_____ Title: _____

Address: _____

Phone:_____ E-Mail: _____

Disadvantaged Business Enterprise Program (DBE)Subcontractor Participation Form

DBE Subcontractor Participation Form) SRF FORM 6100-2, Page 1 of 2

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form toits DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and /or report any concerns regarding the EPA-funded project (e.g. in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the DEP DBE Coordinator at any time during the project period of performance.

Subcontractor Name	Project Name	
Bid /Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Received from the Prime ContractorInvolving Construction, Services, Equipment or Supplies	Amount Receivedby Prime Contractor

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA acceptscertifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

Please use the space below to report any concerns regarding the above EPA-funded project:

Subcontractor Signature	**Print Name**
Title	**Date**

Disadvantaged Business Enterprise Program (DBE)Subcontractor Participation Form

DBE Subcontractor Performance Form) SRF FORM 6100-3, Page 1 of 2

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the priceof the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name	Project Name	
Bid /Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor

DBE Certified By: ☐ DOT ☐ SBA ☐ Other:_____	Meets/exceeds EPA certification standards? ☐ YES ☐ NO ☐ Unknown

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA acceptscertifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provideservices pursuant to an EPA award of financial assistance.

DBE Subcontractor Performance Form) SRF FORM 6100-3, Page 2 of 2

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form doesnot signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33Section 33.202 (c).

Prime Contractor Signature	**Print Name**
Title	**Date**

Subcontractor Signature	**Print Name**
Title	**Date**

Disadvantaged Business Enterprise Program (DBE)Subcontractor Participation Form

DBE Subcontractor Utilization Form) SRF FORM 6100-4, Page 1 of 2

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certifiedDBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial AssistanceAgreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid /Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity:		

I have identified potential DBEcertified subcontractors	☐ _ YES	☐ _ NO
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/Company Name	Company Address/Phone/Email	Est. Dollar Amt.	Currently DBE Certified ?

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuantto an EPA award or financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacementof a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Section 33.202 (c).

Prime Contractor Signature	**Print Name**
Title	**Date**

Link to AIS Covered Products Q & A

https://www.epa.gov/cwsrf/american-iron-and-steel-requirement-guidance-and-questions-and-answers

From the "Consolidated Appropriations Act, 2014"

H.R. 3547 (PL113-76, enacted 1/17/2014)

USE OF AMERICAN IRON AND STEEL

"SEC. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorizedby section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a projectfor the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipalcastings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administratorof the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public inputon the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act."

CERTIFICATION BY THE OWNER

OF COMPLIANCE WITH THE

USE OF AMERICAN IRON AND STEEL LAW

enacted on 1/17/2014

(To be attached to each Utility Construction SRF requisition submitted for payment)

We, the Owner named, _____, having obtained funding from the Stateof Maine, State Revolving Fund (SRF), for the Utility Construction Project named _____, hereby submit to the SRF program, certification from each contractor working on the Utility Construction Project that the use of American Ironand Steel in the construction of the project complies with the law, or that a waiver has been obtained from the U.S. Environmental Protection Agency. Thereby, it is to the best of the Owner's knowledge that the costs being requested with this SRF requisition #_____are in compliance with the Use of American Iron and Steel Law.

_____	_____	_____
Signature of Official	Printed name	Date

Attachment: Certification by Contractor

CERTIFICATION BY CONTRACTOR
OF COMPLIANCE WITH THE
USE OF AMERICAN IRON AND STEEL LAW
enacted on 1/17/2014

(To be attached to each Utility Construction payment application)

We, the Prime Contractor and Subcontractors, as named below, hereby certify that the use of American iron and steel in the utility construction of the Project named _____, being requested in the Utility Construction payment application (or invoice) #_____and dated_____, complies with the Use of American Iron and Steel Law, or that a waiver been obtained from the U.S. Environmental Protection Agency.

Prime Contractor Name: _____

_____	_____	_____
Signature of Official	Printed name	Date

Subcontractor Name	Signature of Official	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Sample Step Manufacturer Certification

(Documentation must be provided on company letterhead)

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Manufacturer Certification

Project Name _____

I, _____ (company representative), certify that the _____ (melting, bending, coating, galvanizing, cutting, etc.) process for _____ (manufacturing or fabricating) the following products and/or materials shipped or provided for the project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. _____

2. _____

3. _____

Such process took place at the following location: _____(address)

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

_____	_____	_____
Company representative	Signature	Date

AIS De Minimis Tracking Form

State Revolving Fund (SRF) & Rural Development Projects

American Iron and Steel - De Minimis Tracking Form

The EPA has issued a public interest waiver for De Minimis incidental components. An Owner wishing to use this waiver should consult with their contractor(s) to maintain an itemized list to track the components covered under De Minimis. The Owner may create their own format for the list or use this sample form.

Owner: _____ Loan #: _____

Project Name: _____

NOTE: The De Minimis waiver is only applicable to the cost of materials for the entire project. Do not include other project costs (labor, installation costs, etc.) in the "Total Cost of Materials". The total cost of a material may be based on estimated, or if available, actual costs.

Funds used for de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

Total Cost of Materials: _____ 5% Limit: _____ 1% limit: _____

Manufacturer & Component Description	Part/Model #	Quantity (if applicable)	Cost per Unit (if applicable)	Component's Total Cost	Invoice or receipt attached	Backup Link

Use additional sheets as necessary

Total Cost of Components deemed to be De Minimis: _____

Completed by:

Company: _____

Name: _____ Title: _____

Signature: _____ Date: _____

This form is available electronically. Form Approved – OMB No. 0505-0027

Expiration Date: 04/30/2022

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion AD-1048

Lower Tier Covered Transactions

The following statement is made in accordance with the Privacy Act of 1974 (5 U.S.C. § 552a, as amended). This certification is required by the regulationsimplementing Executive Order 12549, Debarment and Suspension, and 2 C.F.R. §§ 180.300, 180.335, Participants' responsibilities. The regulations were amended and published on August 31, 2005, in 70 Fed. Reg. 51865-51880. Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed covered transaction.

According to the Paperwork Reduction Act of 1995 an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0505-0027. The time required tocomplete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The provisions of appropriate criminal andcivil fraud privacy, and other statutes may be applicable to the information provided.

(Read instructions on page two before completing certification.)

The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presentlydebarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency;

Where the prospective lower tier participant is unable to certify to any of the statements in this certification, suchprospective participant shall attach an explanation to this proposal.

ORGANIZATION NAME	PR/AWARD NUMBER OR PROJECT NAME

NAME(S) AND TITLE(S) OF AUTHORIZED REPRESENTATIVE(S)	
SIGNATURE(S)	DATE

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for priorcivil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at How to File a Program Discrimination Complaint (https://www.ascr.usda.gov/filing-program-discrimination-complaint-usda-customer) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442.

Instructions for Certification

(1) By signing and submitting this form, the prospective lower tier participant is providing the certification set out on page 1 inaccordance with these instructions.

(2) The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, inaddition to other remedies available to the Federal Government, the department or agency with which this transaction originatedmay pursue available remedies, including suspension or debarment.

(3) The prospective lower tier participant shall provide immediate written notice to the person(s) to which this proposal is submitted ifat any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(4) The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set outin the Definitions and Coverage sections of the rules implementing Executive Order 12549, at 2 C.F.R. Parts 180 and 417. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of those regulations.

(5) The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into,it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

(6) The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "CertificationRegarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

(7) A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transactionthat is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the System for Award Management (SAM) database.

(8) Nothing contained in the foregoing shall be construed to require establishment of a system of records to render in good faith thecertification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(9) Except for transactions authorized under paragraph (5) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency withwhich this transaction originated may pursue available remedies, including suspension and/or debarment.

SPECIAL PROVISION
SECTION 801 – TEST PITS

Description: This work shall consist of furnishing of all labor, materials, testing, submittals, tools, and equipment necessary to perform the excavation and restoration, if required, of test pits for the purpose of locating underground utilities and investigating soil types and conditions. These test pits shall be excavated to a depth not to exceed 10 feet, where shown on the drawings, or as directed by the Engineer.

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Test pits to located underground utilities.

B. Test pits to investigate soil conditions.

1.2 MATERIALS

A Where test pits have been ordered or as directed by the Engineer, restoration materials, as required, shall be in conformance with all applicable requirements.

1.3 SUBMITTALS

A. Contractor to submit information gathered from the test pit to the Owner and Engineer. Information shall include but not limited to: utility size, material, and elevation; soil classification, condition, and elevations.

PART 2 – EXECUTION

2.1 GENERAL

A. Contractor shall be responsible for means and method necessary to excavate the test pit to the depth indicated by the Engineer.

B. Restoration
1. Test pits in paved areas shall be restored to their original condition and shall match existing gravel and pavement depth.
2. Test pits in lawn areas shall be restored to the original condition with a minimum of 4-inches of loam.
3. Where permanent restoration is not required due to impending construction activities, the area will be maintained at grade using materials necessary to provide a safe surface for pedestrian and vehicular traffic, as approved by the Engineer. Contractor shall be responsible for maintaining test pit restoration throughout the construction of the project.

PART 3 – MEASUREMENT AND PAYMENT

Method of Measurement: Each Test Pit shall be measured for payment as one unit, for providing all labor and equipment to perform the test pits, as required for the project.

Basis of Payment: Payment for the Test Pit shall be at the contract unit price for full compensation for all labor, equipment, materials, and incidentals required to perform the test pit. This item shall include the removal and disposal of the pavement, excavating, recording pertinent information, backfilling and compacting the test pit, surface restoration, maintaining the test pit during construction activities and all other operations as may be necessary to satisfactory complete the bid item. Test pits must be authorized by the Engineer prior to performing. Failure to receive authorization from the Engineer prior to performing the test pit will result in no payment for the test pit.

Payment will be made under:

	Pay Item	Pay Unit
801.03	Test Pit	Each

SPECIAL PROVISION
SECTION 822 - PUBLIC WATER UTILITY DISTRIBUTION PIPING

Description: This work shall consist of the installation of public water utility distribution piping in reasonably close conformity with the lines and grades shown on the plans or established. The installation shall include the assembly of all components, materials, and the completion of incidental work in accordance with the plans and specifications.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Installation of water mains and fittings.

B. Flushing.

C. Disinfection of distribution system.

D. Testing.

1.2 REFERENCE STANDARDS

A. ANSI A21.4 Cement-mortar lining for ductile iron pipe and fittings for water.

B. ANSI A21.10 Ductile iron and gray iron fittings 2 in. through 48 in. for water and other liquids.

C. ANSI A21.11 Rubber-gasket joints for ductile iron and gray iron pressure pipe fittings.

D. ANSI A21.50 Thickness design for ductile iron pipe.

E. ANSI A21.51 Ductile iron pipe, centrifugally cast in metal molds or sand-lined molds, for water and other liquids.

F. ANSI A21.53 Ductile iron compact fittings, 3 in. through 16 in. for water and other liquids.

G. ANSI B18.2.1 Square and hex bolts and screws, including askew head bolts, hex cap screws, and lag screws.

H. ANSI/AWWA C110/A21.10 Ductile Iron Tapping Saddles.

N. AWWA C600 Installation of ductile iron water mains and their appurtenances.

O. AWWA C651- Standard for Disinfecting Water Mains.

1.3 SUBMITTALS

A. Manufacturer's Literature: Supply copies of descriptive literature and recommendations for installation.

B. Certificates: Supply copies of manufacturer's certification that supplied products comply with specification requirements.

C. Contractor to submit a Temporary Water Plan, outlining the temporary water systems, as required to provide potable water to the residents/businesses throughout the construction. The Temporary Water Plan must be approved by the Owner and Engineer prior to installation.

D. Testing Procedure: Indicate proposed methodology in advance for approval of Engineer and local utility district.

E. Test Reports: Indicate results comparative to specified requirements.
   1. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids, or in original unopened protective packaging. Remove materials by lifting or skidding. Do not drop any materials.

B. Store materials in the areas to prevent physical damage.

C. Protect material during transportation and installation to avoid physical damage.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record location of pipe runs, elbows, valves, and other appurtenances.

B. Disinfection report:
   1. Type and form of disinfectant used.
   2. Date and time of disinfectant injection start and time of completion.
   3. Test locations.
   4. Initial and 24-hour disinfectant residuals (quantity in treated water) in parts per million (ppm) for each outlet tested.
   5. Date and time of flushing start and completion.
   6. Disinfectant residual after flushing in ppm for each outlet tested.

C. Bacteriological report; record:
   1. Date issued, project name, and testing laboratory name, address, and telephone number.
   2. Time and date of water sample collection.
   3. Name of person collecting samples.
   4. Test locations.
   5. Initial and 24-hour disinfectant residuals in ppm for each outlet tested.
   6. Certification that water conforms, or fails to conform, to bacterial standards of State Public Health Department.
   7. Bacteriologist's signature and authority.

PART 2 – PRODUCTS

2.1 GENERAL

A. All materials, components, products, systems and coatings that come into contact with drinking water must be certified to meet NSF/ANSI Standard 61.

B. The Contractor will supply the required pipe, fitting, and mechanical joint fasteners for the water distribution piping. It is the responsibility of the Contractor to adequately store the materials.

2.2 PIPE (BURIED)

A. Ductile Iron: Class 52, double cement lined pipe, conforming to ANSI A21.50, A21.51, and A21.4.
   1. Joints shall be rubber gasketed push-on or mechanical joint type. Gaskets shall be made of SBR Rubber. For water main located within petroleum hydrocarbon and/or chlorinated solvent contaminated soils, gaskets shall be made of oil resistant Buna-N (Nitrile) Rubber. When contaminated soil is encountered unexpectedly in the field, Contractor shall immediately notify the Engineer. All joints shall be in conformance with requirements of ANSI/AWWA C111/A21.11.
   2. All pipe and fittings: Cement and mortar lined and bituminous seal coated per ANSI A21.4 except:
      a. Cement lining thickness of 1/8 inch with plus 1/8 inch tolerance.
   3. Pipe and fitting exteriors: Zinc coated in accordance with ISO 8179-1 with Asphaltic Top Coat per AWWA C151, C110, and C153.
   4. Nominal Size: As indicated on Contract Drawings.

2.3 FITTINGS

A. Ductile Iron:
   1. Conform to ANSI A21.10 or A21.53, mechanical joint (MJ) with GripRing ™ restraints or equal.
   2. Rubber Gasket Joints: Conform to ANSI A21.11.
   3. Fitting exteriors: Zinc coated in accordance with ISO 8179-1 with Asphaltic Top Coat per AWWA C151, C110, and C153.
   4. Mechanical Joint Accessories: "T" type bolts, 3/4 inch, COR-TEN or equal.

2.4 RETAINER GLANDS

A. Mechanical joint retainer glands shall be heavy duty ductile iron body, UL or FM approved, and shall have a minimum working pressure rating as follows:

4-inch	350 psi
6-inch	350 psi
8-inch and larger	250 psi

Set screws shall be either "Cor-Ten" steel, ductile iron, or approved equal. The number of set screws shall be equal to or greater than the number of nominal diameter of the gland (i.e. four- inch, four sets of screws; six-inch, six set of screws). GripRings are

acceptable replacements for retainer glands for sizes 4" - 12". Larger than 12", Romac RomaGrips may be used. GripRings are not a replacement for thrust blocks. Megalugs are NOT acceptable.

2.5 BEDDING MATERIAL

A. Bedding material for ductile iron water main shall be the following:
   1. Sand: Shall be well graded coarse sand without excessive fines and free from loam, clay, and organic matter. Beach sand shall not be used. The grading requirements are as follows:

Sieve Size	Weight Passing (%)
3/8"	100
No. 4	95-100
No. 16	50- 85
No. 50	0-30
No. 100	2-10

PART 3 - EXECUTION

3.1 GENERAL

A. Locate no water line in same trench as sewer line unless:
   1. Water line rests on solid upper shelf at trench side.
   2. 18-inch vertical separation between top of sewer pipe and bottom of water pipe.
   3. Horizontal separation between pipes:
      a. 10-feet minimum typically.
      b. 5-feet under extenuating circumstances such as trench ledge, providing required vertical separation occurs.

B. Contractor to furnish swing tie measurements for all services. Swing ties shall be measured from permanent structures; i.e. buildings, utility poles, hydrants, etc.

3.2 INSTALLATION

A. Conform to Manufacturer's recommendation and AWWA Standard C600, unless otherwise noted.

B. Water Main Trenches: In accordance to details as shown by Contract Drawings unless otherwise directed.
   1. Backfill compaction: 95% of modified proctor.
   2. Select material: Notice soil classified as suitable material from trench excavation free of rocks, foreign material, and frozen earth.

C. Lay no pipe directly on ledge or rock.

D. Provide bells with bell-hole to remove stress of backfill on unsupported pipe lengths.

E. Place no rocks or ledge larger than 2-inches within 6 inches of DI pipe.

F. Place backfill in maximum 12-inch compacted lifts

G. Increase compaction of successive lifts.

H. Do not displace or damage pipe during compaction.

I. Continue backfill placement to grade.

J. Top of trench to be finished and or prepared for paving.

K. Protect pipes against impact shocks and free falls.
   1. Remove and replace damaged pipe.
   2. Place and tamp sufficient bedding material over and around pipe to prevent damage and movement.

L. Watertight plug open pipe ends when pipe laying not in progress.

M. Joint deflection not to exceed 5 degrees.

N. Install additional fittings as required for utility crossings.

O. Use solid sleeves only with Engineer's approval.

P. Cut pipe by mechanical methods without damage to pipe or cement lining leaving smooth end at right angles to axis of pipe.

Q. Bevel cut pipe ends for use with a rubber joint conforming to manufactured spigot end.

R. Install (4) four bronze wedges at all bell and spigot joints.

S. Install concrete thrust blocks at fittings.
   1. Pour concrete backfill directly against undisturbed earth.
   2. Utilize retainer glands on branch line side of fittings.
   3. Schedule for thrust stock size provided on Contract Drawings.

T. Clean pipe of all debris, e.g. rocks, gravel, etc., prior to making connection to existing water main.

3.3 JOINTING PIPE

A. Joint pipe according to manufacturer's instruction.

B. Mechanical joint fittings.
   1. Place gland and gasket over insertion pipe end.
   2. Mechanically fasten to bell end with "T" bolts.
   3. Deflect joints after assembly and before bolt tightening.

4. Tighten bolts to 75-90 ft-lbs of torque (normal range for 4 to 24 inch diameter pipe with ¾ inch bolt size).
   a. Tighten to normal bolt torque range.
   b. Maintain same distance between gland and face of flange by partially tightening bolts on opposite sides of the joint until all bolts are within the appropriate range of torque.

3.4 VALVE INSTALLATION

A. Set and join valves to pipe in accordance with manufacturer's instructions.

B. Set valve box plumb with cover flush with finish grade or as otherwise directed.

3.5 FLUSHING

A. Prior to testing and disinfection, flush the main to remove particulates. The flushing velocity in the main shall be no less than 2.5 feet/second unless the Engineer determines that conditions do no permit the required flow.

B. The following table indicates rates of flow required to produce a velocity of 2.5 feet /second in pipes of various sizes.

REQUIRED FLOW and OPENINGS to FLUSH PIPELINES
(40 psi residual pressure in water main)*

Pipe Size	Flow Required to Produce 2.5 ft/s (approx.) Velocity in Main	Size of Tap (Inches)			Number of 2.5 in. Hydrant Outlets*
		1"	1.5"	2"	
		Number of Taps on Pipe†			
4"	100 gpm	1	-	-	1
6"	200 gpm	-	1	-	1
8"	400 gpm	-	2	1	1
10"	600 gpm	-	3	2	1
12"	900 gpm	-	-	2	2
16"	1600 gpm	-	-	4	2

* With a 40-psi pressure in the main with the hydrant flowing to atmosphere, a 2½" hydrant outlet will discharge approximately 1,000 gpm and a 4½" hydrant outlet will discharge approximately 2,500 gpm.

† Number of taps on pipe based on discharge through 5 feet of galvanized pipe with one 90° elbow.

C. Accomplish flushing by partially opening and closing valves and hydrants several times under expected line pressure.

D. Contractor shall coordinate energizing the main for flushing with the Old Town Water District.

3.6 TESTING

A. Contact local utility prior to all testing. Provide all labor, equipment, material, gauges, pumps, etc., to test for leaks in accordance with AWWA Standard C600 as follows:
   1. Test newly laid pipe and valved sections at hydrostatic pressure of at least 1.5 times working pressure at test location.
      a. Test pressure: Not less than 1.25 times working pressure at highest point along line.
      b. Test pressure: Not to exceed pipe or thrust restraint design pressures.
      c. Test duration: 2 hours, minimum.
      d. Pressure variation tolerance: less than +5 psi.
      e. Test pressure not to exceed valve or hydrant pressure ratings on sections including closed valves or hydrants.
   2. Pressurization of Pipe
      a. Fill each valved pipe section slowly with water at specified test pressure.
      b. Apply by means of pump or other approved method.
   3. Air Removal
      a. Expel all air from pipe, valves, and hydrants before applying test pressure.
      b. Install corporation stops at high point to vent air if no release valves available.
      c. After air removal close stops and apply test pressure.
      d. After test, remove stops and plug holes or leave stops in place permanently if directed by Engineer. Test water to be removed from site and not allowed to remain in trench or on site or cause erosion.
   4. Examination
      a. Examine exposed pipe, fittings, valves, hydrants, and joints during test.
      b. Repair or replace defective appurtenances discovered during test.
   5. Leakage Test
      a. Leakage: Quantity of water supplied to pipe test section to maintain pressure within +5 psi.
      b. Leakage shall not exceed the following limits:

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

      L = allowable leakage, in gallons per hour (gph)
      S = length of pipe tested in feet
      D = nominal pipe diameter, in inches
      P = average pressure during test, in pounds per square inch (gauge)
      c. When testing against closed Metal-seated valves, an additional leakage per closed valve of 0.0078 gph/inch of nominal valve size shall be allowed.
      d. Repair visible leaks regardless of leakage amount.
      e. If failing leakage tests:
         1. Locate and correct leak.
         2. Repeat leakage test until passing test attained.

3.7 DISINFECTION OF PIPELINE

A. Conform to State Public Health Department code or regulation for performing the work of this Section.

B. Provide certificate of compliance from local Utility District indicating approval of water system.

C. Verify that piping system has been cleaned, inspected, and pressure tested.

D. Perform scheduling and disinfection activity with start-up, testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

E. Disinfect all new pipelines prior to being placed in service. Contact local Utility prior to disinfection and provide plan of action. Perform disinfection of water system in accordance with AWWA C651.

F. Provide and attach required equipment to perform the work of this Section.

G. Inject treatment disinfectant into piping system.

H. Maintain disinfectant in system for 24 hours.

I. Test samples in accordance with AWWA C651. The Old Town Water District will collect samples for testing. Contractor to coordinate collection of water samples with the Old Town Water District.

J. Flush, circulate and clean until required cleanliness is achieved; use municipal domestic water.

K. Replace permanent system devices removed for disinfection.

L. Dechlorinate wasted water as directed by the Engineer to thoroughly neutralize the residual chlorine.

M. Following a successful round of disinfection testing the Contractor shall coordinate opening the new main with the Old Town Water District.

PART 4 – MEASUREMENT AND PAYMENT

Method of Measurement: Pipe measured for payment shall be the number of linear feet as measured horizontally along the centerline, including fittings, of the size and type accepted.

Basis of Payment: Payment for water main shall be made at the Contract price. The contract unit price per linear foot of pipe shall be full compensation for installing the pipe including all labor, materials, and equipment required to satisfactorily complete the water main. Satisfactory completion shall include performing test pits for burial depth of existing main as determined by the Engineer, removing pavement or topsoil as required, excavating the trench, removal and replacement of concrete roadway as necessary, removal and replacement of unsuitable material as necessary, sheeting and bracing, removal and disposal of the existing main as required, capping and filling abandoned pipe with flowable fill, removal and replacement of unsuitable material as necessary, providing necessary bedding material, installing the pipe, fittings and wedges, furnishing and installing thrust blocks, installing marker tape, backfilling the trench, compacting the trench, maintaining the trench, disposal of surplus materials, handling surface and groundwater, testing, chlorination/de-chlorination, and all other operations as may be necessary, including installing all fittings as may be required to complete the bid item as shown

on the Drawings and in accordance with Contract Specifications. Connection of the proposed water main to the existing water main shall be incidental to this item. All chlorination, de-chlorination and testing required shall be considered incidental to this bid item. The Contractor shall supply the required pipe, fitting, and mechanical joint fasteners to complete this Bid item. Bid item includes backfilling trench to subgrade elevation. Furnishing and installing materials above subgrade elevation shall not be included in this bid item.

Temporary Erosion Control shall be considered an incidental to this item for providing all labor, equipment, materials to establish proper erosion control protection during any and all construction associated with the proposed water system construction, and to remove the temporary erosion controls once the proposed water system construction has been completed and stabilization has occurred. Temporary erosion control shall include stone check dams, sediment control barriers, silt fence, and other control measures as required by the MDEP Bureau of Land and Water Quality, "Maine Erosion and Sedimentation Control BMP's" latest edition to ensure erosion protection during and after project completion.

Maintaining and repairing damage to any public or private utility encountered including, but not limited to, water, drainage, sanitary, electric, cable, services, and other pipes shall be considered incidental to the item, regardless if pipes are shown on the plan with the exception of direct on-grade conflicts.

Payment for this work on interim requisitions shall be according to the following percentages:

a. Pipe acceptably set in place and backfilled - 80 percent.
b. Pipe successfully cleaned and tested - 10 percent.
c. As-builts provided and accepted – 10 percent.
d. All payments shall be subject to pertinent retainage.

Payment will be made under:

	Pay Item	Pay Unit
822.322	6-inch Ductile Iron Pipe	Linear Foot
822.35	10-inch Class 52 Ductile Iron Pipe	Linear Foot
822.36	12-inch Ductile Iron Pipe	Linear Foot
822.37	16-inch Ductile Iron Pipe	Linear Foot

SPECIAL PROVISION
SECTION 823 - WATER UTILITY DISTRIBUTION VALVES

Description: This work shall consist of furnishing all labor, equipment, and incidentals required and provide all buried valves and all accessories as shown on the plans and as specified herein.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Furnish all labor, materials, equipment and incidentals required and provide all buried valves and all accessories as shown on the Drawings and as specified herein.

1.3 SUBMITTALS

A. Submittals shall include the following:
   1. Manufacturer's literature, illustrations, specifications and engineering data including:
      a. Dimensions.
      b. Size.
      c. Materials of construction.
      d. Weight.
      e. Protection coating.

B. Test Reports
   1. Four copies of all certified shop test results specified herein.

C. Operation and Maintenance Manuals
   1. Submit complete operation and maintenance manuals including copies of all approved Shop Drawings.

D. Certificates
   1. Certificates of compliance where required by referenced standards: For each valve specified to be manufactured and/or installed in accordance with AWWA and other standards, submit an affidavit of compliance with the appropriate standards, including certified results of required tests and certification of proper installation.

1.4 REFERENCE STANDARDS

A. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

B. American Water Works Association (AWWA)
   1. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron and Pressure Pipe and Fittings.
   2. AWWA C500 - Metal-Seated Gate Valves, for Water Supply Service.
   3. AWWA C502 - Dry-Barrel Fire Hydrants.
   4. AWWA C504 - Rubber-Seated Butterfly Valves.

5. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.

C. American National Standards Institute (ANSI)
   1. ANSI B16.1 – Cast Iron Pipe Flanges and Flanged Fittings.

D. American Society for Testing and Materials (ASTM)
   1. ASTM A48 - Standard Specification for Gray Iron Castings.
   2. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings
   3. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
   4. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
   5. ASTM A536 - Standard Specification for Ductile Iron Castings.

E. Steel Structure Painting Council (SSPC)
   1. SSPC SP-6 - Joint Surface Standard Commercial Blast Cleaning

F. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications
   1. Valves and appurtenances provided under this Section shall be the standard product in regular production by manufacturers whose products have proven reliable in similar service for at least 5 years. If required, the manufacturer shall furnish evidence of installation in satisfactory operation.
   2. All units of the same type shall be the product of one manufacturer.

B. Design Criteria
   1. All valves and appurtenances shall be new and in perfect working condition. Valves shall be designed for continuous use with a minimum of maintenance and service required and shall perform the required function without exceeding the safe limits for stress, strain or vibration. In no case will used or damaged valves be acceptable. The selection of equipment to meet the specified design conditions is the responsibility of the Contractor. Both workmanship and material shall be of the very best quality and shall be entirely suitable for the service conditions specified.

C. Source Quality Control
   1. Valves shall be shop tested in accordance with the following:
      a. Gate valves: AWWA C500.
   2. Obtain each type of valve from no more than one manufacturer.

1.6 SYSTEM DESCRIPTION

A. General
   1. All valves and appurtenances shall be suitable for use on potable water systems and must be certified to meet NSF/ANSI Standard 61.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the site to ensure uninterrupted progress of the work.

B. Protect threads and seats from corrosion and damage. Rising stems and exposed stem valves shall be coated with a protective oil film which shall be maintained until time of use.

C. Furnish covers for all openings.
   1. All valves 3-in and larger shall be shipped and stored on site until time of use with wood or plywood covers on each valve end.
   2. All valves smaller than 3-in shall be shipped and stored as above except that heavy card board covers may be furnished instead of wood.

D. Store equipment to permit easy access for inspection and identification. Any corrosion in evidence at the time of Owner acceptance shall be removed, or the valve shall be removed from the job.

E. Store all equipment in covered storage off the ground.

1.8 COORDINATION

A. Review installation procedures under other Sections and coordinate with the work which is related to this Section including buried piping installation, site utilities, control building construction, storage tank construction, heating, ventilating and air conditioning, and plumbing.

B. Coordinate the location and placement of concrete thrust blocks when required.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials, components, products, systems and coatings that come into contact with drinking water must be certified to meet NSF/ANSI Standard 61.

B. The Contractor will supply the required valves, mechanical joint fasteners, and valve boxes for the water utility distribution valves. It is the responsibility of the Contractor to adequately store the materials.

C. All buried valves shall open counter-clockwise (left).

D. The use of a manufacturer's name and/or model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

E. Valves shall be of the size shown on the Drawings or as noted and as far as possible equipment of the same type shall be identical and from one manufacturer.

F. Valves shall have the name of the maker, nominal size, flow directional arrows, working pressure for which they are designed and standard to which they are manufactured cast in raised letters on some appropriate part of the body.

G. Unless otherwise noted, valves shall have a minimum working pressure of 200 psi or be of the same working pressure as the pipe they connect to, whichever is higher, and suitable for the pressures noted where they are installed.

H. Valves shall be of the same nominal diameter as the pipe or fittings they are connected to. Except as otherwise noted, joints shall be mechanical joints, with joint restraint where the adjacent piping is required to be restrained.

I. Valves shall be especially constructed for buried service.

2.2 VALVE BOXES

A. All gate and butterfly valves shall be provided with, operating nuts and valve boxes as follows:
   1. Valve boxes shall be a heavy-pattern cast iron, three-piece, telescoping type box with dome base suitable for installation on the buried valves. Inside diameter shall be at least 4-1/2-in. Barrel length shall be adapted to the depth of cover, valve box bottom section shall be 5-feet long and valve box top section shall be 2-feet long, with a lap of at least 6-inches when in the most extended position. Covers shall be cast iron with "WATER" clearly cast into the cover. Aluminum or plastic are not acceptable.
   2. The upper section of each box shall have a top flange of sufficient bearing area to prevent settling. The bottom of the lower section shall enclose the stuffing box and operating nut of the valve and shall be oval.

2.3 RESILIENT SEATED GATE VALVES

A. End connections: Mechanical joint (MJ) conforming to AWWA Standard C509. Provide tapping end connections at tapping sleeves.

B. Dual O-ring seals and bronze stem, exceeding AWWA C500 requirements.

C. Epoxy coated inside and outside.

D. Ductile iron body.

E. AVK Series 45 resilient wedge gate valve, or approved equal.

F. Size: As indicated on Contract Drawings.

G. Operation: Counter-clockwise (left) opening and non-rising stem (NRS).
H. Operating Nut: 2-inch square shafts shall be designed to provide a factor of safety of not less than four operating nuts shall be pinned to the shafts.

2.4 BEDDING MATERIAL

A. Bedding material for water utility distribution valves shall be the following:
   1. Crushed Stone: shall be durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock and reasonably free from thin, flat, elongated, or other objectionable pieces. The crushed stone shall be reasonably free from sand, clay, loam, chemical decay, or deleterious materials and not more than one percent of material passing a No. 200 sieve will be allowed to adhere to the crushed stone. The crushed stone shall be uniformly blended according to the grading requirements listed in the following table:

      3/4" inch crushed stone:

Sieve Size	Weight Passing (%)
1"	100
3/4"	95-100
1/2"	35-70
3/8"	0-25

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION

A. During installation of all valves and appurtenances, verify that all items are clean, free of defects in material and workmanship and function properly.

B. All valves shall be closed and kept closed until otherwise directed by the Engineer.

3.2 INSTALLATION OF BURIED VALVES AND VALVE BOXES

A. Buried valves shall be cleaned and manually operated before installation. Buried valves and valve boxes shall be set with the stem vertically aligned in the center of the valve box. Valves shall be set on a firm foundation and supported by tamping pipe bedding material under the sides of the valve. The valve box shall be supported during backfilling and maintained in vertical alignment with the top flush with finish grade. The valve box shall be set so as not to transmit traffic loads to the valve.

B. Before backfilling, all exposed portions of any bolts shall be coated with two coats of bituminous paint.

3.3 FIELD TESTS AND ADJUSTMENTS

A. Conduct a functional field test of each valve, including actuators and valve control equipment, in presence of Engineer to demonstrate that each part and all components together function correctly. All testing equipment required shall be furnished by the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

Method of Measurement: Each valve shall be measured for payment as one unit of the specific size and type, as installed and accepted in accordance with the plans and specifications.

Basis of Payment: Payment for valves shall be made at the contract price per valve of specific size and type, including full compensation for all labor, materials, and equipment required to satisfactorily complete the installation of the valve, installed and accepted in accordance with the plans and specifications.

Satisfactory completion shall include all excavation, sheeting and bracing, removal and replacement of unsuitable material as necessary, installing valve, installing mechanical joint fasteners, providing and compaction of the specified bedding, backfilling the trench, compacting the trench, maintaining the trench, disposal of surplus materials, installing valve box, testing and chlorination/de-chlorination of the valve and all other operations as may be required to complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications. Connecting valve to the existing or proposed water main shall be incidental to this Bid item. The Contractor shall supply the required valves, mechanical joint fasteners, and valve boxes to complete this Bid item. Bid item includes backfilling trench to subgrade elevation. Furnishing and installing materials above subgrade elevation shall not be included in this bid item.

Payment for this item on interim requisitions shall be according to the following percentages.

a. Valve acceptably set in place and backfilled - 80 percent.
b. Valve successfully cleaned and tested - 10 percent.
c. As-builts provided and accepted - 10 percent.
d. All payments shall be subject to pertinent retainage.

Payment will be made under:

	Pay Item	Pay Unit
823.31	12-inch Gate Valve	Each
823.331	6-inch Gate Valve	Each
823.374	16-inch Gate Valve	Each

SPECIAL PROVISION
SECTION 824 - WATER UTILITY DISTRIBUTION FIRE HYDRANT

Description: This work shall consist of furnishing all labor, equipment and incidentals required and provide and test all fire hydrant assemblies and all accessories as shown on the plans and as specified herein.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Removal of existing fire hydrants.

B. Installation of fire hydrants.

C. Removal and Resetting of existing fire hydrants.

D. Testing of fire hydrants.

1.2 QUALITY ASSURANCE

A. American National Standards Institute (ANSI)
   1. B18.2.1 Standard Specification for Square and Hex Bolts and Screws, Including Askew Head Bolts, Hex Cap Screws and Lag Screws.
   2. A21.10 Ductile Iron and Gray Iron Fittings, 3 in. Through 48 in. for Water and Other Liquids
   3. A21.56 Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand Lined Molds, for Water and Other Liquids.
   4. A21.11 Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings.

B. American Water Works Association (AWWA)
   1. C600 Installation of Ductile Iron Watermains and Their Appurtenances.
   2. M17 Installation, Operation, and Maintenance of Fire Hydrants.
   3. C502-85 Dry Barrel Fire Hydrants.

C. National Fire Protection Association (NFPA)
   1. NFPA 1963 Standard Specifications for National (American) Fire Hose Coupling Screw Threads.

1.3 SUBMITTALS

A. Manufacturer's Literature: Supply copies of descriptive literature and recommendations for installation.

B. Certificates: Supply copies of manufacturer's certification that supplied products comply with Specification Requirements.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids, or in original unopened protective packaging. Do not drop products while unloading.

B. Store materials in secure areas to prevent physical damage.

C. Protect material during transportation and installation to avoid physical damage.

PART 2 – PRODUCTS

2.1 GENERAL

A. All materials, components, products, systems, and coatings that come into contact with drinking water must be certified to meet NSF/ANSI Standard 61.

B. The Contractor shall supply the required hydrants and mechanical joint fasteners for the water distribution fire hydrant. It is the responsibility of the Contractor to adequately store the materials.

2.2 FIRE HYDRANTS

A. Fire Hydrants shall be American Flow Control Waterous Classic, 4½" main valve, CW open, 6" opening, with drain, 6'-6" buried depth or approved equal.

B. Hydrant shall be compression type with the main valve opening with the water pressure and have a rising stem to positively indicate open or closed position.

C. Hydrant shall be furnished with frangible break flange and break coupling at the ground line.

D. Hydrants shall conform to ANSI/AWWA C-502 Standards, and FM or UL listed All hydrants shall be capable of 250 psi maximum working pressure and have a static testing of 500 psi. All hydrants shall be hydrostatically tested.

E. Hydrants shall have two 2 ½" hose nozzles and one 4½" pumper nozzle threaded in accordance with Old Town Water Districts thread specifications with chained caps. Hydrants shall be equipped with O-ring packing. Each nozzle cap shall be provided with a Buna-N rubber washer.

F. Hydrants shall have 6" inlet and 4½" main valve opening. Inlets shall be mechanical joint.

G. Operating nuts shall be 1 5/8” pentagon measured from point to opposite flat. Hydrants shall open clockwise. An arrow and the word "Open" shall be cast in relief on the top of each hydrant.

H. Hydrants shall be so arranged that the direction of outlets may be turned 90 degrees without interference with the drip mechanism or obstructing the discharge from any outlet.

I. A bronze or rustproof steel nut and check nut shall be provided to hold the main hydrant valve on its stem.

J. Hydrant valve opening shall have an area at least equal to that area of a 4½" minimum diameter circle and be obstructed only by the valve rod. Each hydrant shall be able to deliver 500 gallons minimum through its two 2½ inch hose nozzles when opened together with a loss of not more than 2 psi in the hydrant.

K. Hydrants shall be designed for installation in a trench that will provide minimum cover as noted on Contract Drawings. Hydrant extensions shall be as manufactured by the company furnishing the hydrants and of a style appropriate for the hydrants as furnished.

L. Hydrants shall open by turning operating nut to the right (clockwise) and shall be marked with a raised arrow and the work "open" to indicate the direction to turn stem to open hydrant.

M. Hydrants shall be furnished with caps, double galvanized steel hose cap chain, galvanized steel pumper hose cap chain, a galvanized steel chain holder and any other hooks and/or appurtenances required for proper use.

N. All iron work to be set below ground, after being thoroughly cleaned, shall be epoxy coated and attached with 316 stainless steel nuts and bolts. All hydrants shall be non-drain type. Iron work to be left above ground shall be shop painted with two coats of paint of quality and color to correspond to the present standard of the Owner.

2.3 PAINT

A. Body
1. "Hydrant-Hide" #9032 Old Yeller, as manufactured by Pennsbury Coatings Corp., or equal. Paint to be 40 to 48% solids by volume and have a dry film thickness of 1.5 to 2.5 mils per coat.

B. Nozzles and Cap
1. Conform with AWWA Uniform Color Scheme for Fire Hydrants as follows:

Flow Capacity (gpm)	Color
>1000	Green
500 - 1000	Orange
<500	Red

2. Colors shall be "Hydrant-Hide" as manufactured by Pennsbury Coatings Corp., or equal.

C. Primer
1. "Bulldog Primer" as manufactured by Pennsbury Coatings Corp., or equal.

2.4 BEDDING MATERIAL

A. Bedding material for water distribution fire hydrant shall be the following:
   1. Crushed Stone: shall be durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock and reasonably free from thin, flat, elongated, or other objectionable pieces. The crushed stone shall be reasonably free from sand, clay, loam, chemical decay, or deleterious materials and not more than one percent of material passing a No. 200 sieve will be allowed to adhere to the crushed stone. The crushed stone shall be uniformly blended according to the grading requirements listed in the following table:

      3/4" inch crushed stone:

Sieve Size	Weight Passing (%)
1"	100
3/4"	95-100
1/2"	35-70
3/8"	0-25

PART 3 - INSTALLATION

3.1 CONNECTION PIPE

A. All trench work and pipe jointing shall meet the installation requirements of special Provision 822.

3.2 HYDRANT INSTALLATION

A. Inspect the hydrant before installation to ensure proper nozzle threading, operating-nut, and cap-nut dimensions, tightness of pressure containing bolting, cleanliness of inlet elbow. Inspect for handling damage and cracks. Notify the Engineer of any deficiencies.

B. All hydrants shall stand plumb and have their nozzles parallel with or at right angles to the curb, with the pumper nozzle facing the curb unless otherwise directed by the engineer.

C. Fire hydrants shall be set at the locations as shown on the Contract Drawings and where directed by the Engineer. Fire hydrants shall be bedded on a firm foundation. Hydrants and connecting pipe shall have at least the same depth of cover as the distributing pipe. Screened gravel shall be installed and compacted around the hydrant base as shown on the drawings. Each hydrant shall be set in true vertical alignment and properly braced.

D. Face of the fire hydrant shall be a minimum of 3’-0” behind the face of curb or 4’-0” behind edge of pavement.

E. Install precast thrust block behind all fire hydrants as shown on the Contract Drawings.

F. Hydrant tees and bends shall be installed with restrained mechanical joints, Grip Ring by Romac Industries or equal.

G. Hydrants shall be set to the established grade, with the centerline of the lowest nozzle at least 18 inches above the ground or as directed by the Engineer.

H. Where practicable, the connecting pipe shall be 6'-6" deep, thus providing 6'-0" of cover to the pipe.

I. All bends in the connecting pipe shall be properly supported against thrust.

J. Granular backfill shall be placed and tamped around the hydrant in six (6) inch lifts to 95% of a modified proctor.

K. Place 2" thick 2' x 8' rigid insulation plank over connection pipe where minimum cover is less than 6'-0".

L. All hydrants not in service shall be "bagged" or covered with burlap or other suitable material.

3.3 TESTING

A. Provide all equipment, material, gauges, pumps, etc., to test for leaks in accordance with AWWA Standard C601 as follows:
   1. Subject all newly laid pipe and any valved section to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing.
      a. The test pressure shall not be less than 1.25 times the working pressure at the highest point along the line.
      b. The test pressure shall not exceed pipe or thrust restraint design pressures.
      c. The test shall last at least 2 hours.
      d. The pressure may not vary be more than + 5 psi.
      e. Do not exceed twice the rated pressure of the valves or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants.
   2. Pressurization of Pipe
      a. Each valved section of pipe shall be filled with water slowly and at the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gate. The test pressure shall be applied by means of a pump or other method satisfactory to the Engineer.
   3. Air Removal
      a. Before the test, pressure is applied and all air shall be expelled completely from the pipe, valves, and hydrants. In the event that release valves are not available at the high points, the Contractor shall install corporation stops at these points to vent air.

b. After all air has been removed, the corporation stops shall be closed and the test pressure applied.
c. After the test, the corporation stops shall be removed and the holes plugged, or the stop may be permanently left in place at the discretion of the Engineer.

3.4 FIRE FLOW TEST

A. Perform hydrant fire flow test to determine the available fire flow rate at each new hydrant by the following procedure:
   1. Static pressures at each hydrant must be measured first with the use of a pressure gauge.
   2. Next, one hydrant is chosen as the residual hydrant where pressure measurements will be taken. A pressure gauge should be connected to this hydrant.
   3. A hydrant downstream of the residual hydrant should be utilized as the flowing hydrant. A pitot gauge should be connected to this hydrant and the flow measured. The residual hydrant and the flowing hydrant should be at approximately the same elevation; otherwise, test results shall be corrected for elevation.

   4. The pressure at the residual hydrant should be measured while the flowing hydrant is operation.
   5. The test should be run for at least a 10 psi drop and preferably a 20 psi drop at the residual hydrant.
   6. The following formula will be used to determine the flow at 20 psi residual pressure:

$$Qf = Qt \frac{(Ps-Pf)^{0.54}}{(Ps-Pt)^{0.54}}$$

Where
Qf = flow available at desirable residual pressure (20 psi), in gallons per minute.
Qt = flow during test, in gallons per minute.
Ps = static pressure with no hydrants open, in pounds per square inch.
Pt = residual pressure during test, in pounds per square inch.
Pf = desirable residual pressure, in pounds per square inch (20 psi).

PART 4 – MEASUREMENT AND PAYMENT

Method of Measurement: Each hydrant assembly shall be measured for payment as one unit installed, removed, or removed/reset and accepted in accordance with the plans and specifications.

Basis of Payment: Payment for the fire hydrant shall be at the contract price for all labor, materials, and equipment required to satisfactorily complete the installation, removal, or removal/reset of the fire hydrant, as accepted in accordance with the Contract Documents.

Satisfactory completion shall include all excavation, sheeting and bracing, removal of existing fire hydrant assembly, storing or disposal of existing fire hydrant assembly as needed, removal and replacement of unsuitable material as necessary, installing new fire hydrant, resetting of existing fire hydrant, installing fire hydrant tee, furnishing and installing concrete thrust block,

providing and compaction of the specified bedding, backfilling the trench, compacting the trench, maintaining the trench, disposal of surplus materials, testing and chlorination/de-chlorination of the fire hydrant assembly and all other operations as may be required to complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications. Connecting fire hydrant assembly to the water main and all labor, materials, and equipment required shall be incidental to this bid item. The Contractor shall supply the required hydrants, fittings and mechanical joint fasteners to complete this Bid item. Bid item includes backfilling trench to subgrade elevation. Furnishing and installing materials above subgrade elevation shall not be included in this bid item.

Payment for this item on interim requisitions shall be according to the following percentages.

a. Fire Hydrant acceptably set in place and backfilled - 80 percent.
b. Fire Hydrant successfully cleaned and tested - 10 percent.
c. As-builts provided and accepted - 10 percent.
d. All payments shall be subject to pertinent retainage.

Payment will be made under:

	Pay Item	Pay Unit
824.30	Fire Hydrant	Each
824.31	Remove Fire Hydrant	Each
824.32	Remove/Reset Hydrant	Each

SPECIAL PROVISION
SECTION 825 – TEMPORARY WATER SERVICE

Description: This work shall consist of furnishing all labor, equipment, and incidentals required and provide and temporary water services as necessary to complete the proposed water system improvements on the plans and as specified herein.

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Installation of temporary water system.

B. Disinfection of temporary water system.

1.2 REFERENCE STANDARDS

A. AWWA C600 - Installation of ductile iron water mains and their appurtenances.

B. AWWA C800 - Underground Service Line Valves and Fittings

C. AWWA C651- Standard for Disinfecting Water Mains.

1.3 SUBMITTALS

A. Contractor to submit a Temporary Water Plan, outlining the temporary water systems, as required to provide potable water to the residents/businesses throughout the construction. The Temporary Water Plan must be approved by the Owner and Engineer prior to installation.

B. Testing Procedure: Indicate proposed methodology in advance for approval of Engineer and local utility district.

C. Test Reports: Indicate results comparative to specified requirements.
   1. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids, or in original unopened protective packaging. Remove materials by lifting or skidding. Do not drop any materials.

B. Store materials in the areas to prevent physical damage.

C. Protect material during transportation and installation to avoid physical damage.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record location of pipe runs, elbows, valves, and other appurtenances.

B. Disinfection report:
1. Type and form of disinfectant used.
2. Date and time of disinfectant injection start and time of completion.
3. Test locations.
4. Initial and 24 hour disinfectant residuals (quantity in treated water) in parts per million (ppm) for each outlet tested.
5. Date and time of flushing start and completion.
6. Disinfectant residual after flushing in ppm for each outlet tested.

C. Bacteriological report; record:
1. Date issued, project name, and testing laboratory name, address, and telephone number.
2. Time and date of water sample collection.
3. Name of person collecting samples.
4. Test locations.
5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
6. Certification that water conforms, or fails to conform, to bacterial standards of State Public Health Department.
7. Bacteriologist's signature and authority.

PART 2 – PRODUCTS

2.1 GENERAL

A. All materials, components, products, systems and coatings that come into contact with drinking water must be certified to meet NSF/ANSI Standard 61.

B. The Contractor shall supply the required pipe, fitting, and appurtenances for the temporary water system. The Contractor shall be responsible for coordination and delivery of materials. Once delivered it is the responsibility of the Contractor to adequately store the materials.

2.2 PIPE

A. High Density Polyethylene (HDPE) Pipe, Conforming to ASTM 3035 and 3350.
1. Class: PE 3408. PE 345434C
2. SDR 11.
3. Joints: Butt fusion weld or Electrofusion coupling
4. Nominal Size: As indicated on Contract Drawings.

2.2 FITTINGS

A. High Density Polyethylene (HDPE)
1. Fittings: Same material as pipe, molded or formed to suit pipe size and end design, in required "T", bends, elbows, cleanouts, reducers, traps, and other configurations

required. Polyethylene fittings to be minimum SDR 11 if fabricated rather than molded.

2. All PE pipe connections to fittings or valves of differing materials shall be by an Engineer approved PE Mechanical Joint Adapter.

PART 3 – EXECUTION

3.1 GENERAL

A. Conform to Manufacturer's recommendation and AWWA Standard C600 and C800, unless otherwise noted.

B. Contractor shall be responsible for installing and maintaining temporary water system.
   1. Contractor shall protect temporary water from damage during construction.
   2. Contractor shall be responsible for all repairs to the temporary water system.

C. Clean pipe of all debris, e.g. rocks, gravel, etc., prior to making connection to existing water main.

3.2 DISINFECTION OF PIPELINE

A. Conform to State Public Health Department code or regulation for performing the work of this Section.

B. Provide certificate of compliance from local Utility District indicating approval of water system.

C. Verify that piping system has been cleaned, inspected, and pressure tested.

D. Perform scheduling and disinfection activity with start-up, testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

E. Disinfect all new pipelines prior to being placed in service. Contact local Utility prior to disinfection and provide plan of action. Perform disinfection of water system in accordance with AWWA C651.

F. Provide and attach required equipment to perform the work of this Section.

G. Inject treatment disinfectant into piping system.

H. Maintain disinfectant in system for 24 hours.

I. Test samples in accordance with AWWA C651. The Old Town Water District will collect samples for testing. Contractor to coordinate collection of water samples with the Old Town Water District.

J. Flush, circulate and clean until required cleanliness is achieved; use municipal domestic water.

K. Replace permanent system devices removed for disinfection.
L. Dechlorinate wasted water as directed by the Engineer to thoroughly neutralize the residual chlorine.

M. Following a successful round of disinfection testing the Contractor shall coordinate opening the temporary water system with the Old Town Water District.

PART 4 – MEASUREMENT AND PAYMENT

Method of Measurement: Temporary Water Main shall be considered a lump sum item as accepted in accordance with the plans and specifications.

Basis of Payment: Payment for Temporary Water Main shall be made at the contact price for full compensation for all labor, equipment, materials, and incidentals required for furnishing, installing and removing temporary water systems as approved by Owner and Engineer to provide potable water to the residents/businesses throughout construction, including the testing and chlorination/de-chlorination of the temporary system and all other operations as may be necessary to satisfactory complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications. Item shall be payable at a maximum rate of 50% when required facilities have been provided, installed and tested and the Contractor has provided temporary water to the residents/businesses. The remaining 50% shall be paid once the temporary water is no longer needed and the Contractor has removed the system from the site. Providing a temporary water service plan for approval by Owner and Engineer shall be considered incidental to this item.

Payment will be made under:

	Pay Item	Pay Unit
825.5411	Temporary Water Main	Lump Sum

SPECIAL PROVISION
SECTION 825 - PUBLIC WATER UTILITY SERVICE PIPING

Description: This work shall consist of installation of public water utility service piping in reasonably close conformity with the lines and grades shown on the plans or established. The installation shall include the assembly of all components, materials, and the completion of incidental work in accordance with the plans and specifications.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Installation of water service and fittings.

B. Disinfection of distribution system.

C. Testing.

1.2 REFERENCE STANDARDS

A. AWWA C600 - Installation of ductile iron water mains and their appurtenances.

B. AWWA C800 - Underground Service Line Valves and Fittings

C. AWWA C651- Standard for Disinfecting Water Mains.

1.3 SUBMITTALS

A. Manufacturer's Literature: Supply copies of descriptive literature and recommendations for installation.

B. Certificates: Supply copies of manufacturer's certification that supplied products comply with specification requirements.

C. Product Data: Submit data on pipe materials, pipe fittings, corporation stop assemblies, curb stop assemblies, meters, meter setting equipment, service saddles, backflow preventer, and accessories.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids, or in original unopened protective packaging. Remove materials by lifting or skidding. Do not drop any materials.

B. Store materials in the areas to prevent physical damage.

C. Protect material during transportation and installation to avoid physical damage.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record location of pipe runs, elbows, valves, and other appurtenances.

B. Provide swing tie measurements corporations, curb stops and connections to existing services.

PART 2 – PRODUCTS

2.1 GENERAL

A. All materials, components, products, systems and coatings that come into contact with drinking water must be certified to meet NSF/ANSI Standard 61.

B. The Contractor will supply the required pipe, fittings, curb stops, service boxes, and corporations for the water services. The Contractor shall be responsible for the coordination and delivery of materials. Once delivered it is the responsibility of the Contractor to adequately store the materials.

2.2 SERVICE LINES

A. All water service materials shall meet or exceed current ANSI/AWWA-C800 specifications and shall be made in accordance with ASTM B-62. The manufacturer shall furnish a certificate indicating all new materials meet the specifications. All valves, fittings, and pipe shall be inspected several times during the manufacturing process and pressure tested with air under water before shipment. All water service materials shall be visually inspected before installation. Brass and copper are soft metals and care in handling shall be exercised to avoid damaging threads or distorting piping, valves, or fitting bodies.

B. All copper water service line material shall be new 1" diameter Type "K" copper piping, unless otherwise noted and comply with ASTM B88. Piping shall be supplied in coils. No couplings or connections will be permitted under the paving.
   1. Provide swing ties to all services.
   2. Cap any unconnected services.
   3. Bend pipe with suitable tools to provide smooth bends, free of any cracks or buckles.
   4. Test services in accordance with the requirements of the Old Town Water District.

C. All HDPE water service line material shall be new HDPE CTS SDR 9 piping, ASTM D3350 Cell Classification, and comply with ASTM D2737, AWWA C901. Piping shall be supplied in coils or straight lengths. No couplings or connections will be permitted under the paving. Size as indicated on drawings. All fittings used shall be the same material as the piping. Provide and install tracer wire for all HDPE services, connected to water main and service box.
   1. Provide swing ties to all services.
   2. Cap any unconnected services.
   3. Bend pipe with suitable tools to provide smooth bends, free of any cracks or buckles.

4. Test services in accordance with the requirements of the Old Town Water District.

D. All corporation and curb stops shall be brass with ball type valves. Corporations and curb stops shall comply with ASTM B62.

E. Products manufacturers that are acceptable include:
   1. Mueller.
   2. McDonald.
   3. or approved equal

F. Service Boxes shall be Erie Style with Plug Covers and service boxes.

G. Rods for services boxes must be 24-inches long, ½-inch stainless steel with brass pins.

2.3 BEDDING MATERIAL

A. Bedding material for copper and HDPE water service shall be the following:
   1. Sand: Shall be well graded coarse sand without excessive fines and free from loam, clay, and organic matter. Beach sand shall not be used. The grading requirements are as follows:

Sieve Size	Weight Passing (%)
3/8"	100
No. 4	95-100
No. 16	50- 85
No. 50	0-30
No. 100	2-10

PART 3 - EXECUTION

3.1 GENERAL

A. Locate no water line in same trench as sewer line unless:
   1. Water line rests on solid upper shelf at trench side.
   2. 18-inch vertical separation between top of sewer pipe and bottom of water pipe.
   3. Horizontal separation between pipes:
      a. 10-feet minimum typically.
      b. 5-feet under extenuating circumstances such as trench ledge, providing required vertical separation occurs.

B. Contractor to furnish swing tie measurements for all services. Swing ties shall be measured from permanent structures; i.e. buildings, utility poles, hydrants, etc.

3.2 INSTALLATION

A. Conform to Manufacturer's recommendation and AWWA Standard C800, unless otherwise noted.

B. Water Service Trenches: In accordance to details as shown by Contract Drawings unless otherwise directed.
   1. Backfill compaction: 95% of modified proctor.
   2. Select material: Notice soil classified as suitable material from trench excavation free of rocks, foreign material, and frozen earth.

C. Corporation Stop Assemblies:
   1. Make connection for each different kind of water main using suitable materials, equipment, and methods as approved by Engineer.
   2. Provide service clamps for mains constructed of materials other than cast iron or ductile iron.
   3. Location:
      a. Screw corporation stops directly into tapped and threaded iron main at 10 and 2 o'clock positions along main's circumference.
      b. Locate and stagger corporation stops at least 12 inches (300 mm) apart longitudinally.
   4. Use proper seals or other devices such that no leaks are present in mains at points of tapping.
   5. Do not backfill and cover service connections until installation is approved by Engineer.

D. Pipe and Fittings:
   1. Maintain separation of water main from sewer mains.
   2. Route pipe in straight line.
   3. Install pipe to allow for expansion and contraction without stressing pipe or joints.
   4. No couplings or connections will be permitted under the paving.
   5. Install marker ribbon tape continuous 2’-0" over top of pipe.

E. Curb Stop Assemblies:
   1. Set curb stops on compacted soil.
   2. Boxes:
      a. Center and plumb curb boxes over curb stops.
      b. Set box cover flush with finished grade.

3.3 TESTING

A. Contact local utility prior to all testing. Provide all labor, equipment, material, gauges, pumps, etc., to test for leaks in accordance with AWWA Standard C600 as follows:
   1. Test newly laid pipe and valved sections at hydrostatic pressure of at least 1.5 times working pressure at test location.
      a. Test pressure: Not less than 1.25 times working pressure at highest point along line.
      b. Test pressure: Not to exceed pipe or thrust restraint design pressures.
      c. Test duration: 2 hours, minimum.
      d. Pressure variation tolerance: less than +5 psi.
      e. Test pressure not to exceed valve or hydrant pressure ratings on sections including closed valves or hydrants.
   2. Pressurization of Pipe
      a. Fill each valved pipe section slowly with water at specified test pressure.

b. Apply by means of pump or other approved method.

3. Air Removal
   a. Expel all air from pipe, valves, and hydrants before applying test pressure.
   b. Install corporation stops at high point to vent air if no release valves available.
   c. After air removal close stops and apply test pressure.
   d. After test, remove stops and plug holes or leave stops in place permanently if directed by Engineer. Test water to be removed from site and not allowed to remain in trench or on site or cause erosion.
4. Examination
   a. Examine exposed pipe, fittings, valves, hydrants, and joints during test.
   b. Repair or replace defective appurtenances discovered during test.
5. Leakage Test
   a. Leakage: Quantity of water supplied to pipe test section to maintain pressure within +5 psi.
   b. Leakage shall not exceed the following limits:

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

   L = allowable leakage, in gallons per hour (gph)
   S = length of pipe tested in feet
   D = nominal pipe diameter, in inches
   P = average pressure during test, in pounds per square inch (gauge)
   c. When testing against closed Metal-seated valves, an additional leakage per closed valve of 0.0078 gph/inch of nominal valve size shall be allowed.
   d. Repair visible leaks regardless of leakage amount.
   e. If failing leakage tests:
      1. Locate and correct leak.
      2. Repeat leakage test until passing test attained.

3.4 DISINFECTION OF PIPELINE

A. Conform to State Public Health Department code or regulation for performing the work of this Section.

B. Provide certificate of compliance from local Utility District indicating approval of water system.

C. Verify that piping system has been cleaned, inspected, and pressure tested.

D. Perform scheduling and disinfection activity with start-up, testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

E. Disinfect all new pipelines prior to being placed in service. Contact local Utility prior to disinfection and provide plan of action. Perform disinfection of water system in accordance with AWWA C651.

F. Provide and attach required equipment to perform the work of this Section.

G. Inject treatment disinfectant into piping system.

H. Maintain disinfectant in system for 24 hours.
I. Test samples in accordance with AWWA C651. The Old Town Water District will collect samples for testing. Contractor to coordinate collection of water samples with the Old Town Water District.

J. Flush, circulate and clean until required cleanliness is achieved; use municipal domestic water.

K. Replace permanent system devices removed for disinfection.

L. Dechlorinate wasted water as directed by the Engineer to thoroughly neutralize the residual chlorine.

M. Following a successful round of disinfection testing the Contractor shall coordinate opening the new main with the Old Town Water District.

PART 4 – MEASUREMENT AND PAYMENT

Method of Measurement: Pipe measured for payment shall be the number of linear feet as measured horizontally along the centerline, including fittings, of the size and type accepted.

Basis of Payment: Payment for water service shall be made at the Contract price. The contract unit price per linear foot of pipe shall be full compensation for installing the pipe including all labor, materials, and equipment required to satisfactorily complete the water service. Satisfactory completion shall include removing pavement and or topsoil as required, excavation, sheeting and bracing, removal and replacement of concrete roadway as necessary, removal and replacement of unsuitable material as necessary, installing water service pipe and fittings, installing curb stop and service box, installing corporation, installing marker tape, providing and compaction of the specified bedding, backfilling the trench, compacting the trench, maintaining the trench, disposal of surplus materials, testing and chlorination/de-chlorination, restore landscape as prior to disturbance and all labor, materials, and equipment required to satisfactorily complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications. Connection of the water service to the main and the existing water service at the property line and providing swing ties shall be incidental to this bid item. The Contractor shall supply the required pipe, fittings, curb stops, service boxes, and corporations required to complete this Bid item. Bid item includes backfilling trench to subgrade elevation. Furnishing and installing materials above subgrade elevation shall not be included in this bid item.

Maintaining and repairing damage to any public or private utility encountered including, but not limited to, water, drainage, sanitary, electric, cable, services, and other pipes shall be considered incidental to the item, regardless if pipes are shown on the with the exception of direct on-grade conflicts.

Payment for this work on interim requisitions shall be according to the following percentages:
a. Pipe acceptably set in place and backfilled - 80 percent.
b. Pipe successfully cleaned and tested - 10 percent.
c. As-builts provided and accepted – 10 percent.

d. All payments shall be subject to pertinent retainage.

Payment will be made under:

	Pay Item	Pay Unit
825.4222	2-inch HDPE CTS Service	Linear Foot
825.43	1-inch Copper Service(Type K)	Linear Foot

SPECIAL PROVISION
SECTION 827 – ABANDONMENT OF WATER MAINS

Description: This work shall consist of furnishing all labor, equipment, and incidentals required and provide the abandonment of existing water mains, as necessary, to complete the proposed water system improvements on the plans and as specified herein.

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Abandonment in place, by cutting and capping, of existing water mains, service lines, and valves.

B. Abandonment in place of water mains using flowable fill. Flowable fill will be utilized when abandoning water mains underneath roadways and paved areas, at the direction of the Engineer, or as specified on the Drawings.

1.2 SUBMITTALS

A. Contractor to submit manufacturers data for proposed pipe caps or plugs.

B. Contractor to submit manufacturers proposed mix design report for flowable fill.

C. Contractor to submit a plan for abandonment, describing proposed grouting sequence and other information pertinent to completion of Work. The abandonment plan must be approved by the Owner and Engineer prior to commencing flowable fill abandonment activities.

D. Abandonment plan shall include: Technical information for equipment and operations procedures including projected injection rate, grout pressure, method of controlling grout pressure, bulkhead and vent design and number of stages of grout application.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids, or in original unopened protective packaging. Remove materials by lifting or skidding. Do not drop any materials.

B. Store materials in the areas to prevent physical damage.

C. Protect material during transportation and installation to avoid physical damage.

PART 2 – PRODUCTS

2.1 FLOWABLE FILL

A. Cement-based grout/ flowable fill with self-leveling and non-shrink characteristic
   1. Cement Content: 75-100 lb/cu yd

2. Fly Ash: none
3. Air Entrainment: 5-35%
4. 28-Day Compressive Strength: min 75 psi and 150psi max
5. Unit Mass (Wet): 75-110 lb/cu ft
6. Cellular concrete mix additive meeting the requirements of ASTM C869, and shall be CMX Foam Concentrate by Richway Industries, or approved equal.

2.2 PIPE CAPS AND PLUGS

A. Ductile Iron:
   1. Conform to ANSI A21.10 or A21.53, mechanical joint (MJ) with GripRing ™ restraints or equal.
   2. Rubber Gasket Joints: Conform to ANSI A21.11.
   3. Mechanical Joint Accessories: "T" type bolts, 3/4 inch, COR-TEN or equal.

B. The Contractor shall supply the required pipe, fitting, and appurtenances for the water main abandonment. The Contractor shall be responsible for coordination and delivery of materials. Once delivered it is the responsibility of the Contractor to adequately store the materials.

PART 3 – EXECUTION

3.1 GENERAL

A. Do not begin cut, plug, and abandonment operations until replacement water main has been constructed and tested, all service connections have been installed, and replacement main is approved for use.

B. The Contractor will be responsible for the satisfactory coordination of the pipe abandonments with other construction and activities in the area.

C. Excavate area, make cut of the water main and install pipe plug, cap, and concrete thrust block at the location shown on Drawings.

D. Remove any free-standing water prior to starting flowable fill placement.

E. Place grout/flowable fill using concrete or grout pumps capable of continuous delivery at planned placement rate to fill volume between placement points not to exceed 500 linear feet at a time.

F. Pump flowable fill through bulkheads constructed for placement of pipes or other methods to contain grout in line to be abandoned. These pipes will be used for injection points or vents during placement.

G. Place grout under pressure into property vented open system until grout emerges from vent pipes indicating pipe is completely filled. Pumping grout must be completed under sufficient pressure to overcome friction and to fill water main from downstream to upstream end.

H. Remediate areas where flowable fill did not fill voids in water main by pressure grouting from inside water main or from surface if necessary.

I. Plug each end of the water main being abandoned.

J. The method of installation must be able to meet the requirement of completely filling the existing water main and any voids adjacent to it.

K. Backfill excavation and restore area to the original condition, or as directed by the Engineer.

PART 4 – MEASUREMENT AND PAYMENT

Method of Measurement: Abandon Existing Water Mains In-Place shall be considered a lump sum item as accepted in accordance with the plans and specifications.

Basis of Payment: Payment for Abandon Existing Water Mains In-Place shall be made at the contact price for full compensation for all labor, equipment, materials, and incidentals required for the abandonment of the existing water mains. Satisfactory abandonment shall include excavating the trench, cutting the existing water main, furnishing and installing the pipe cap or plug, furnishing and installing thrust block, furnishing and installing the flowable fill and all other operations as may be necessary to satisfactory complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications. Providing an abandonment plan for approval by Owner and Engineer shall be considered incidental to this item.

Payment will be made under:

	Pay Item	Pay Unit
827.321	Abandon Existing Water Mains In-Place	Lump Sum

SPECIAL PROVISION
SECTION 827 – TRENCH INSULATION

Description: This work shall consist of furnishing all labor, equipment and incidentals required and provide and install trench insulation and all accessories as shown on the plans and as specified herein.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Installation of trench insulation.

1.2 REFERENCES

A. ANSI/ASTM D2842 - Water Absorption of Rigid Cellular Plastics.

B. ASTM C578 - Preformed Cellular Polystyrene Thermal Insulation.

C. ASTM E96 - Test Methods for Water Vapor Transmission of Materials.

D. FS HH-I-530 - Insulation Board, Thermal, Unfaced, Polyurethane or Polyisocyanurate.

1.3 SUBMITTALS

A. Product Data: Provide data on product characteristics, performance criteria and limitations.

B. Manufacturer's Installation Instructions: Indicate special environmental conditions required for installation and installation techniques.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not install insulation adhesives when temperatures or weather conditions are detrimental to successful installation.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Polystyrene Perimeter Board Insulation: ASTM C578 Type VI extruded cellular type, conforming to the following:

Thermal Resistance:	10
Thickness:	Thickness 2 inches
Board Size:	4 feet wide by 8 feet long
Compressive Strength:	Minimum 30 psi
Water Absorption:	In accordance with ANSI/ASTM D2842 0.3 percent by volume maximum
Edges:	Shiplap

2.2 ADHESIVES

A. Adhesive: Type recommended by insulation manufacturer for application.

2.3 ACCESSORIES

A. Tape: Self-adhering tape, mesh reinforced 2 inches wide.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation boards are dry and ready to receive insulation.

3.2 INSTALLATION - TRENCH INSULATION

A. Insulate all pipe installation with less than 6 feet of cover to obtain the equivalent of 6 feet of cover, or as directed by the Resident Inspector. For determination of required thickness of insulation, two inch of insulation is considered equivalent to one and a half feet of soil cover.

B. Install per manufacturer instructions and according to detail on Contract Drawings.

C. Install horizontal insulation on top of minimum three inch layer of compacted select bedding material above top of pipe.

D. Backfill by hand for first 6-8 inches over insulation and compact prior to placing remaining backfill.

E. Install each type of insulation in accordance with manufacturers' recommendations.

F. Rigid insulation shall be clean, dry and free of any material which can dissolve plastic, such as asphalt.

3.3 SCHEDULE

A. Water Main:
   1. Two feet wide for pipes smaller than six inches in diameter, or as directed by the Resident Project Representative.
   2. Four feet wide for pipes six inches in diameter and greater, or as directed by the Resident Project Representative.

PART 4 – MEASUREMENT AND PAYMENT

Method of Measurement: Measurement for Trench Insulation shall be made at the contract unit price per square yard measured by the Engineer, installed, and accepted in accordance with the plans and specifications.

Basis of Payment: Payment for Trench Insulation shall be made at the contract unit price. The contract price per square foot shall be full compensation for all labor, testing, materials, and equipment required to complete the Trench Insulation as installed and accepted in accordance with the Contract Documents.

Payment will be made under:

	Pay Item	Pay Unit
827.331	Trench Insulation	Square Yard

SPECIAL PROVISION
SECTION 827 – TRENCH ROCK EXCAVATION

Description: This work shall consist of all labor, equipment and incidentals required to remove, dispose of and replace trench rock as required for the proposed water main system installation as shown on the plans and as specified herein.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Removal of rock uncovered during excavation.

B. Explosives to assist rock removal.

1.2 REFERENCES

A. NFPA 495 - Code for Explosive Materials.

B. MDOT Standard Specifications - Highway and Bridges, current revision.

1.3 DEFINITIONS

A. Rock is defined as any stone, boulder, or pieces of concrete or masonry, two cubic yards or more in volume, and any hard natural material or rock ledge that will withstand removal by the usual mechanical excavation methods such as, power shovels or toothed bulldozer blades, and such that normally requires blasting or continuous drilling, wedging, sledging, or barring for removal. No soft or disintegrated rock which can be removed with a hand pick or power operated excavator shovel; no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere; and no rock exterior to the maximum limits of measurements allowed, which may fall into the excavation, will be measured or allowed. The Engineer shall be sole judge as to whether the material encountered shall be classified as rock in accordance with the above description.

1.4 QUALIFICATIONS

A. Seismic Survey Firm: Company specializing in seismic surveys with five years documented experience.

B. Explosives Firm: Company specializing in explosives for disintegration of rock, with five years documented experience.

1.5 REGULATORY REQUIREMENTS

A. Conform to applicable code for explosive disintegration of rock and to NFPA 495 for handling explosive materials.

B. Obtain permits from authorities having jurisdiction before explosives are brought to site or drilling is started.

1.7 SCHEDULING

A. Schedule Work to avoid disruption to buildings or structures nearby.

B. No blasting is to occur until the Contractor and Engineer agree to the quantity of rock that is to be removed. If blasting occurs otherwise, Engineer will compute quantities and those quantities will be considered final.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Explosives: Type recommended by explosive firm following seismic survey and required by authorities having jurisdiction.

B. Delay Device: Type recommended by explosive firm.

C. Blast Mat Materials: Type recommended by explosives firm.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify site conditions and note subsurface irregularities affecting work of this section.

B. Beginning of work of this Section means acceptance of existing conditions.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Conduct survey and document conditions of buildings near locations of rock removal and prior to blasting, photograph existing conditions identifying existing irregularities.

3.3 ROCK REMOVAL - EXPLOSIVE METHOD

A. If rock is uncovered requiring the explosives method for rock disintegration, notify the Engineer and execute as follows.

B. Advise owners of adjacent buildings or structures in writing, prior to executing seismographic survey. Explain planned blasting and seismic operations.

C. Obtain a seismic survey prior to rock excavation to determine maximum charges that can be used at different locations in area of excavation without damaging adjacent properties or other work.

D. Provide seismographic monitoring during progress of blasting operations.

E. Disintegrate rock and remove from excavation.

F. Remove rock at excavation bottom to form level bearing.

G. Remove shaled layers to provide a sound and unshattered base.

H. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter; and 12 inches below base elevation of structures and 24 inches wider than structures.

I. Remove excess excavated material from site after obtaining Engineers permission.

J. Correct unauthorized rock removal in accordance with backfilling and compacting requirements.

K. Perform no blasting without informing Engineer, governing authorities, and other concerned parties. Conform to all local, State, and Federal regulations concerning blasting and pertinent provisions of the "Manual of Accident Contractors of America, inc., of the "Construction Safety Rules and Regulations, as adopted by the State Board of Construction Safety, Augusta, Maine, and Maine Department of Transportation "Standard Specifications" Section 107.12, Use of Explosives.

L. Blast only with such quantities and strength of explosives and in such manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not to be excavated in an unshattered condition. Avoid excessive cracking of the rock upon or against which any structure will be built and to prevent injury to existing pipes or other structures and property above or below ground. Cover rock where necessary.

M. Blast no closer than 20 feet from completed pipes, manholes, or other structure. Any damages to the work resulting from blasting shall be repaired at the Contractor's expense.

N. The Contractor shall maintain and submit (if requested) to the Engineer accurate record of each blast. Show the general location of the blast, the depth and number of drill holes, the kind and quantity of explosive used, and other data required for a complete record.

3.4 FIELD QUALITY CONTROL

A. Provide for visual inspection of foundation bearing surfaces and cavities formed by removed rock.

PART 4 – MEASUREMENT AND PAYMENT

Method of Measurement: Trench Rock Excavation shall be measured by the in-place cubic yard prior to disturbance as required for construction of the proposed water system improvements, as measured by the Engineer and accepted in accordance with the Contract Documents.

Basis of Payment: Payment for Trench Rock Excavation shall be at the contract price for all labor, materials, and equipment required to satisfactorily complete the removal and disposal of the trench rock for the proposed water system improvements as accepted by the Engineer in accordance with the Contract Documents.

Satisfactory completion shall be full compensation for all labor, equipment, blasting, material, notification, survey and other incidentals required to complete the work, including removal and disposal of waste from the site, in the areas necessary to complete the project as shown on the Contract Documents. The pay width for trench rock removal for mains shall be 24 inches wider than the pipe diameter and the depth to 6 inches below pipes, and structures shall be width of structure plus 2 feet and the depth to 12 inches below structure. Costs associated with over blasting, removal beyond pre-determined volume, or fill requirement to replace over excavation will be considered incidental to the pay item and will be the responsibility of the Contractor to correct.

Payment will be made under:

	Pay Item	Pay Unit
827.304	Trench Rock Excavation	Cubic Yard

SPECIAL PROVISION
SECTION 830 - PUBLIC WATER UTILITY DISTRIBUTION-BRIDGE CROSSING

Description: This work shall consist of the installation of public water utility distribution piping associated with the bridge crossing shown on the plans or established. The installation shall include the assembly of all components, materials, and the completion of incidental work in accordance with the plans and specifications. This work also includes the temporary water main for the temporary bridge.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Installation of water mains and fittings.

B. Installation of the pipe insulation.

C. Installation of the water main hangers and supports.

D. Flushing, Disinfection and Testing of distribution system.

E. Installation of the temporary water main on the temporary bridge.

1.2 REFERENCE STANDARDS

A. ANSI A21.4 Cement-mortar lining for ductile iron pipe and fittings for water.

B. ANSI A21.10 Ductile iron and gray iron fittings 2 in. through 48 in. for water and other liquids.

C. ANSI A21.11 Rubber-gasket joints for ductile iron and gray iron pressure pipe fittings.

D. ANSI A21.50 Thickness design for ductile iron pipe.

E. ANSI A21.51 Ductile iron pipe, centrifugally cast in metal molds or sand-lined molds, for water and other liquids.

F. ANSI A21.53 Ductile iron compact fittings, 3 in. through 16 in. for water and other liquids.

G. ANSI B18.2.1 Square and hex bolts and screws, including askew head bolts, hex cap screws, and lag screws.

H. ANSI/AWWA C110/A21.10 Ductile Iron Tapping Saddles

N. AWWA C600 Installation of ductile iron water mains and their appurtenances.

O. AWWA C651- Standard for Disinfecting Water Mains.

P. ASTM A992/A992M Standard Specification for Structural Steel Shapes. 2019

Q. ASTM F3125 – Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength. 2019.

R. ASTM A563 – Standard Specification for Carbon and Alloy Steel Nuts. 2015.

S. ASTM A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products. 2017.

T. AWS A2.4 – Standard Symbols for Welding, Brazing, and Nondestructive Examination. American Welding Society. 2020.

U. AWS D1.1/D1.1M – Structural Welding Code – Steel; American Welding Society. 2020.

V. ASTM A536 – Standard Specification for Ductile Iron Castings. 2019.

W. ASTM A307 – Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength. 2014.

X. ASTM F2320 – Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

1.3 SUBMITTALS

A. Manufacturer's Literature: Supply copies of descriptive literature and recommendations for installation for pipe, fittings, expansion joints, insulation, hangers and supports.

B. Certificates: Supply copies of manufacturer's certification that supplied products comply with specification requirements.

C. Contractor to submit a Temporary Water Plan, outlining the temporary water systems, to be installed on the temporary bridge to provide potable water throughout the construction of the new bridge. The Temporary Water Plan must be approved by the Owner and Engineer prior to installation.

D. Testing Procedure: Indicate proposed methodology in advance for approval of Engineer and local utility district.

E. Test Reports: Indicate results comparative to specified requirements.
   1. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.

F. Steel Shop Drawings: Contractor to submit steel fabrication drawings prior to

installation. Steel fabrication drawings to show structural steel lengths, connections, and locations. Refer to Contract Drawings for details.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids, or in original unopened protective packaging. Remove materials by lifting or skidding. Do not drop any materials.

B. Store materials in the areas to prevent physical damage.

C. Protect material during transportation and installation to avoid physical damage.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record location of pipe runs, elbows, valves, and other appurtenances.

B. Disinfection report:
1. Type and form of disinfectant used.
2. Date and time of disinfectant injection start and time of completion.
3. Test locations.
4. Initial and 24-hour disinfectant residuals (quantity in treated water) in parts per million (ppm) for each outlet tested.
5. Date and time of flushing start and completion.
6. Disinfectant residual after flushing in ppm for each outlet tested.

C. Bacteriological report; record:
1. Date issued, project name, and testing laboratory name, address, and telephone number.
2. Time and date of water sample collection.
3. Name of person collecting samples.
4. Test locations.
5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
6. Certification that water conforms, or fails to conform, to bacterial standards of State Public Health Department.
7. Bacteriologist's signature and authority.

PART 2 – PRODUCTS

2.1 GENERAL

A. All materials, components, products, systems and coatings that come into contact with drinking water must be certified to meet NSF/ANSI Standard 61.

B. The Contractor will supply the required pipe, fitting, and mechanical joint fasteners for the temporary and proposed water distribution piping associated with the bridge. It is the responsibility of the Contractor to adequately store the materials.

2.2 PIPE (BRIDGE CROSSING)

A. Ductile Iron: Class 53, double cement lined pipe, conforming to ANSI A21.50,

A21.51, and A21.4 and AWWA C153.

1. Restrained joint ductile iron pipe shall be American Flex-Ring Restrained Joint Ductile Iron Pipe or approved equal. Gaskets shall be made of SBR Rubber. The only joint components needed to assemble the pipe are a gasket and a single ductile iron ring.
2. All pipe and fittings: Cement and mortar lined and bituminous seal coated per ANSI A21.4 except:
   a. Cement lining thickness of 1/8 inch with plus 1/8 inch tolerance.
3. Pipe and fitting exteriors: Zinc coated in accordance with ISO 8179-1 with Asphaltic Top Coat per AWWA C151, C110, and C153.
4. Nominal Size: As indicated on Contract Drawings.

B. Fittings
   1. Ductile Iron Fittings:
      a. Conform to ANSI A21.10 or A21.53, mechanical joint (MJ) with GripRing ™ restraints or equal.
      b. Rubber Gasket Joints: Conform to ANSI A21.11.
      c. Fitting exteriors: Zinc coated in accordance with ISO 8179-1 with Asphaltic Top Coat per AWWA C151, C110, and C153.
      d. Mechanical Joint Accessories: "T" type bolts, 3/4 inch, COR-TEN or equal.

   2. Expansion Joints
      a. Flanged, double ball, ductile iron, restraint expansion joint conforming to AWWA C213 and NSF 61 certified.
      b. Body: The casing, ball and sleeve are cast of ductile (nodular) iron, meeting or exceeding ASTM A 536, Grade 65-45-12
      c. Flange: Compatible with ANSI Class 125 bolt circle
      d. Bolts and Nuts: Trackhead bolts, heavy hex nuts, 5/8" UNC rolled thread, high strength, low allow, corrosion resistant Stainless steel per AWWA C111.
      e. Locking Ring: Series 400 stainless steel. Limits expansion and contraction up to maximum working pressure.
      f. Ring Gasket: Ring gaskets are made of dual Ethylene Propylene Diene Methylene (EPDM) compounded for water service.
      g. Exterior Coating: Fusion bonded epoxy.
      h. Nominal Size: As indicated on Contract Drawings.
      i. Expansion Joint to be Double Ball, Flanged, Romac FJ Restraint Flexible Expansion Joint (221-01-1629) or approved equal.

2.3 PIPE SLEEVE

A. Provide pipe wall sleeves and seal penetrations as indicated or required to complete the Work. All pipe sleeves shall be constructed of 304L stainless steel. Pipe sleeves shall have a 2-inch (minimum) circumferential water stop welded or integrally molded to the exterior of the sleeve at its midpoint. Pipe wall sleeve shall be Schedule 40, min. Refer to drawings for pipe sleeve diameter.

B. The pipe wall sleeve shall be specifically coordinated with bridge abutment. The ends of sleeves shall extend a minimum of 4-inches beyond face of abutment wall on the water side to allow for the installation of a neoprene rubber boot seal and 6-feet beyond

the face of the abutment wall on the land side to extend past the sidewalk approach slab.

1. Boot to be Pull-on type constructed of 1/8-inch thick neoprene rubber and connected to the sleeve and pipe with 1/2-inch wide T304 stainless steel bands.
2. Boots to be BWM Company Model BWM-PO, CCI Pipeline Systems Model ESC Pull-on, or approved equal.

C. Casing Spacer: Casing spacer shall be GPT Model S12GN2 17.40”x25.25” CR, or approved equal.

D. Refer to the piping penetration details on the Drawings for additional information and requirements.

2.4 PIPE INSULATION (BRIDGE CROSSING)

A. Pipe insulation for bridge crossing shall be a factory installed pre-insulated pipe, jacket and associated components to insulate joints and fittings. Insulation product shall be manufactured in accordance with ISO 9001 Standard, or approved equal.

B. Insulation shall meet the following requirements:
   1. Material: Factory applied, rigid polyurethane foam.
   2. Thickness: 2-inches
   3. Density: 2.2 to 3.0 lbs/cf (ASTM D1622)
   4. Closed Cell Content: 90% min. (ASTM D6226)
   5. Water Absorption: 4.0% by volume (ASTM D2842)
   6. Thermal Conductivity: 0.14 to 0.17 Btu-in/ft2-hr-deg F (ASTM C518)
   7. Temperature Range: Cryogenic to 200 deg F
   8. Outer protective jacket shall be factory applied, black polyethylene, UV inhibited.
      a. Casing shall be extruded from polyethylene resin with cell class requirements 334360C as defined in ASTM D3350-12;
      b. Polyethylene compound shall be of color and UV stabilizer Code C (black) as specified in ASTM D3350, with a target range of 2 to 2.5% well dispersed carbon black (max. 2.8%).
   9. Joints: Provide insulation kits consisted of pre-formed rigid polyurethane foam shells matching pipe insulation thickness with polymer coating, fabricated metal jacket matching pipe jacket system, and stainless-steel gear clamps. Kits shall match pipe joint types.
   10. Insulation Shield shall be Newman Associates Model 170, Shield Type D, 24-inches long, 14 gauge, or approved equal.
   11. Pre-insulated pipe system shell be provided by Urecon, or approved equal.

2.5 SUPPORTS AND HANGERS

A. Beams:
   1. Material: ASTM A36.
   2. Finish: Galvanized according to ASTM A123.
   3. Size and Shape: In accordance with Contract Drawings.

B. Cast-Iron Rollers
   1. Material: ASTM A536.
   2. Type: Cast-Iron Rollers shall be Newman Associates adjustable double pipe roller support or approved equal.

C. Threaded Rod: In accordance to details as shown in Contract Drawings. Material to conform to ASTM A307.

D. Bolts: In accordance to details as shown in Contract Drawings. Material to conform to ASTM F3125.

E. Nuts In accordance to details as shown in Contract Drawings. Material to conform to ASTM A563.

2.6 TEMPORARY BRIDGE WATER MAIN SYSTEM

A. Contractor to furnish and install temporary water main system on temporary bridge. The Contractor is responsible for the design, installation, testing and maintenance of the temporary bridge water main system throughout the construction of the new bridges.
   1. Temporary Bridge Water Main System:
      a. Pipe Material and Nominal Diameter: 12-inch SDR 11 HDPE or 10-inch CL 52 Ductile Iron.
      b. Insulation: 2-inches thick, min.

B. Contractor shall be responsible for installing and maintaining temporary water system.
   1. Contractor shall protect temporary water from damage during construction.
   2. Contractor shall be responsible for all repairs to the temporary water system.

C. All materials, components, products, systems and coatings that come into contact with drinking water must be certified to meet NSF/ANSI Standard 61.

D. The Contractor shall supply the required pipe, fittings, valves, hangers, supports, insulation and appurtenances for the temporary water system. The Contractor shall be responsible for coordination and delivery of materials. Once delivered it is the responsibility of the Contractor to adequately store the materials.

E. The temporary bridge water main system shall be installed, tested and activated prior to the demolition of the water main on the existing bridges.

F. Contractor shall perform testing and disinfection of the temporary bridge water system per the requirements of Section 3.3, 3.4 and 3.5.

B. Contractor to submit a Temporary Bridge Water Plan, outlining the temporary water system for the temporary bridge, including supports and insulation to provide potable water throughout the construction of the new bridges. The Temporary Bridge Water Plan shall include but not limited to, plans, calculations and specifications, and must be approved by the Owner and Engineer prior to installation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install pipe, hangers, supports, fittings, expansion joints, insulation in accordance with manufacturer's instructions.

B. Conform to Manufacturer's recommendation and AWWA Standard C600, unless otherwise noted.

C. Use solid sleeves only with Engineer's approval.

D. Cut pipe by mechanical methods without damage to pipe or cement lining leaving smooth end at right angles to axis of pipe.

3.2 JOINTING PIPE

A. Joint pipe according to manufacturer's instruction.

B. Mechanical joint fittings.
1. Place gland and gasket over insertion pipe end.
2. Mechanically fasten to bell end with "T" bolts.
3. Deflect joints after assembly and before bolt tightening.
4. Tighten bolts to 75-90 ft-lbs of torque (normal range for 4 to 24 inch diameter pipe with ¾ inch bolt size).
   a. Tighten to normal bolt torque range.
   b. Maintain same distance between gland and face of flange by partially tightening bolts on opposite sides of the joint until all bolts are within the appropriate range of torque.

3.3 FLUSHING

A. Prior to testing and disinfection, flush the main to remove particulates. The flushing velocity in the main shall be no less than 2.5 feet/second unless the Engineer determines that conditions do no permit the required flow.

B. The following table indicates rates of flow required to produce a velocity of 2.5 feet /second in pipes of various sizes.

REQUIRED FLOW and OPENINGS to FLUSH PIPELINES
(40 psi residual pressure in water main)*

Pipe Size	Flow Required to Produce 2.5 ft/s (approx.) Velocity in Main	Size of Tap (Inches)			Number of 2.5 in. Hydrant Outlets*
		1"	1.5"	2"	
		Number of Taps on Pipe†			
4"	100 gpm	1	-	-	1
6"	200 gpm	-	1	-	1
8"	400 gpm	-	2	1	1
10"	600 gpm	-	3	2	1

REQUIRED FLOW and OPENINGS to FLUSH PIPELINES (40 psi residual pressure in water main)*					
12"	900 gpm	-	-	2	2
16"	1600 gpm	-	-	4	2

* With a 40-psi pressure in the main with the hydrant flowing to atmosphere, a 2½" hydrant outlet will discharge approximately 1,000 gpm and a 4½" hydrant outlet will discharge approximately 2,500 gpm.

† Number of taps on pipe based on discharge through 5 feet of galvanized pipe with one 90° elbow.

C. Accomplish flushing by partially opening and closing valves and hydrants several times under expected line pressure.

D. Contractor shall coordinate energizing the main for flushing with the Old Town Water District.

3.4 TESTING

A. Contact local utility prior to all testing. Provide all labor, equipment, material, gauges, pumps, etc., to test for leaks in accordance with AWWA Standard C600 as follows:
   1. Test newly laid pipe and valved sections at hydrostatic pressure of at least 1.5 times working pressure at test location.
      a. Test pressure: Not less than 1.25 times working pressure at highest point along line.
      b. Test pressure: Not to exceed pipe or thrust restraint design pressures.
      c. Test duration: 2 hours, minimum.
      d. Pressure variation tolerance: less than +5 psi.
      e. Test pressure not to exceed valve or hydrant pressure ratings on sections including closed valves or hydrants.
   2. Pressurization of Pipe
      a. Fill each valved pipe section slowly with water at specified test pressure.
      b. Apply by means of pump or other approved method.
   3. Air Removal
      a. Expel all air from pipe, valves, and hydrants before applying test pressure.
      b. Install corporation stops at high point to vent air if no release valves available.
      c. After air removal close stops and apply test pressure.
      d. After test, remove stops and plug holes or leave stops in place permanently if directed by Engineer. Test water to be removed from site and not allowed to remain in trench or on site or cause erosion.
   4. Examination
      a. Examine exposed pipe, fittings, valves, hydrants, and joints during test.
      b. Repair or replace defective appurtenances discovered during test.
   5. Leakage Test
      a. Leakage: Quantity of water supplied to pipe test section to maintain pressure within +5 psi.
      b. Leakage shall not exceed the following limits:

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

L = allowable leakage, in gallons per hour (gph)
S = length of pipe tested in feet
D = nominal pipe diameter, in inches

P = average pressure during test, in pounds per square inch (gauge)

c. When testing against closed Metal-seated valves, an additional leakage per closed valve of 0.0078 gph/inch of nominal valve size shall be allowed.
d. Repair visible leaks regardless of leakage amount.
e. If failing leakage tests:
   1. Locate and correct leak.
   2. Repeat leakage test until passing test attained.

3.5 DISINFECTION OF PIPELINE

A. Conform to State Public Health Department code or regulation for performing the work of this Section.

A. Provide certificate of compliance from local Utility District indicating approval of water system.

B. Verify that piping system has been cleaned, inspected, and pressure tested.

C. Perform scheduling and disinfection activity with start-up, testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

D. Disinfect all new pipelines prior to being placed in service. Contact local Utility prior to disinfection and provide plan of action. Perform disinfection of water system in accordance with AWWA C651.

E. Provide and attach required equipment to perform the work of this Section.

F. Inject treatment disinfectant into piping system.

G. Maintain disinfectant in system for 24 hours.

H. Test samples in accordance with AWWA C651. The Old Town Water District will collect samples for testing. Contractor to coordinate collection of water samples with the Old Town Water District.

I. Flush, circulate and clean until required cleanliness is achieved; use municipal domestic water.

J. Replace permanent system devices removed for disinfection.

K. Dechlorinate wasted water as directed by the Engineer to thoroughly neutralize the residual chlorine.

L. Following a successful round of disinfection testing the Contractor shall coordinate opening the new main with the Old Town Water District.

PART 4 – MEASUREMENT AND PAYMENT

Method of Measurement:
Water Main Bridge Crossing shall be considered a lump sum item as accepted in accordance with the plans and specifications.

Basis of Payment:
Payment for Water Main Bridge Crossing shall be made at the contact price for full compensation for all labor, equipment, materials, and incidentals required for furnishing, installing the proposed water main bridge crossing including the pipe and fittings, expansion joints, water main hanger and support assemblies, pipe insulation, and temporary water system.

Satisfactory completion water main bridge crossing piping shall include sheeting and bracing, removal and disposal of the existing main as required, installing the restrained joint pipe and fittings, furnishing and installing the abutment pipe sleeve, casing spacer and boots, testing, chlorination/de-chlorination, and all other operations as may be necessary, including installing all fittings as may be required to complete the bid item as shown on the Drawings and in accordance with Contract Specifications. Connection of the proposed water main to the existing water main shall be incidental to this item. All chlorination, de-chlorination and testing required shall be considered incidental to this bid item. The Contractor shall supply the required pipe, fitting, and mechanical joint fasteners to complete this Bid item.

Satisfactory completion of the bridge crossing pipe insulation shall include furnishing and installing the pre-insulated pipe, furnishing and installing the joint and fitting insulation kits and all other operations as may be necessary, including installing all fittings as may be required to complete the bid item as shown on the Drawings and in accordance with Contract Specifications. Payment for Water Main Bridge Crossing Pipe Insulation will be made once the pre-insulated pipe is set into place and the joints and fittings have been insulated.

Satisfactory completion of the bridge crossing expansion joints shall include furnishing and installing the expansion joint, furnishing and installing mechanical joint fasteners, testing and chlorination/de-chlorination of the expansion joint and all other operations as may be required to complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications. The Contractor shall supply the required expansion joints and mechanical joint fasteners to complete this Bid item.

Satisfactory completion of the bridge crossing water main hanger and support assembly shall include furnishing and installing the beams, braces, clips fasteners, hanger, rods, rollers, insulation shields and all other operations as may be required to complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications. The Contractor shall supply the required hangers and supports to complete this Bid item. Connection of the water main hanger and support assemblies to the new bridges shall be incidental to this item.

Satisfactory completion of the temporary bridge water main system shall include furnishing, installing and removing temporary water systems as approved by Owner and Engineer to provide potable water throughout construction of the new bridge, including the testing and

chlorination/de-chlorination of the temporary system and all other operations as may be necessary to satisfactory complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications. Providing a temporary bridge water main system plan for approval by Owner and Engineer shall be considered incidental to this item.

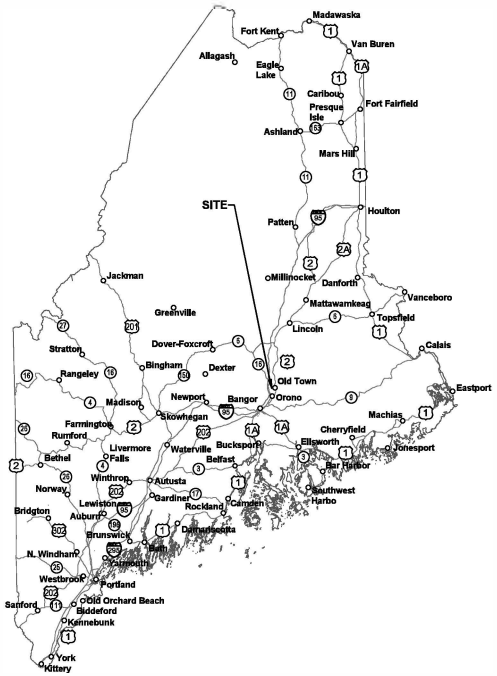
Payment for this item on interim requisitions shall be according to the following percentages.

a. Temporary bridge water main installed and tested - 10 percent
b. Water main bridge crossing Hangers and Support Assemblies acceptably set in place - 10 percent.
c. Water main bridge crossing Pipe acceptably set in place - 50 percent.
d. Water main bridge crossing Expansion Joint acceptably set in place - 5 percent.
e. Water main bridge crossing acceptably Insulated - 5 percent.
f. Water main bridge crossing Pipe successfully cleaned and tested - 10 percent.
g. Temporary bridge water main Removed - 5 percent
h. As-builts provided and accepted - 5 percent.

Payment will be made under:

	Pay Item	Pay Unit
830.10	Water Main Bridge Crossing	Lump Sum

OLD TOWN WATER DISTRICT
STILLWATER AVENUE WATERMAIN REPLACEMENT
MDOT WIN 22511.00, 22512.00 & 22950.00



OLD TOWN, MAINE

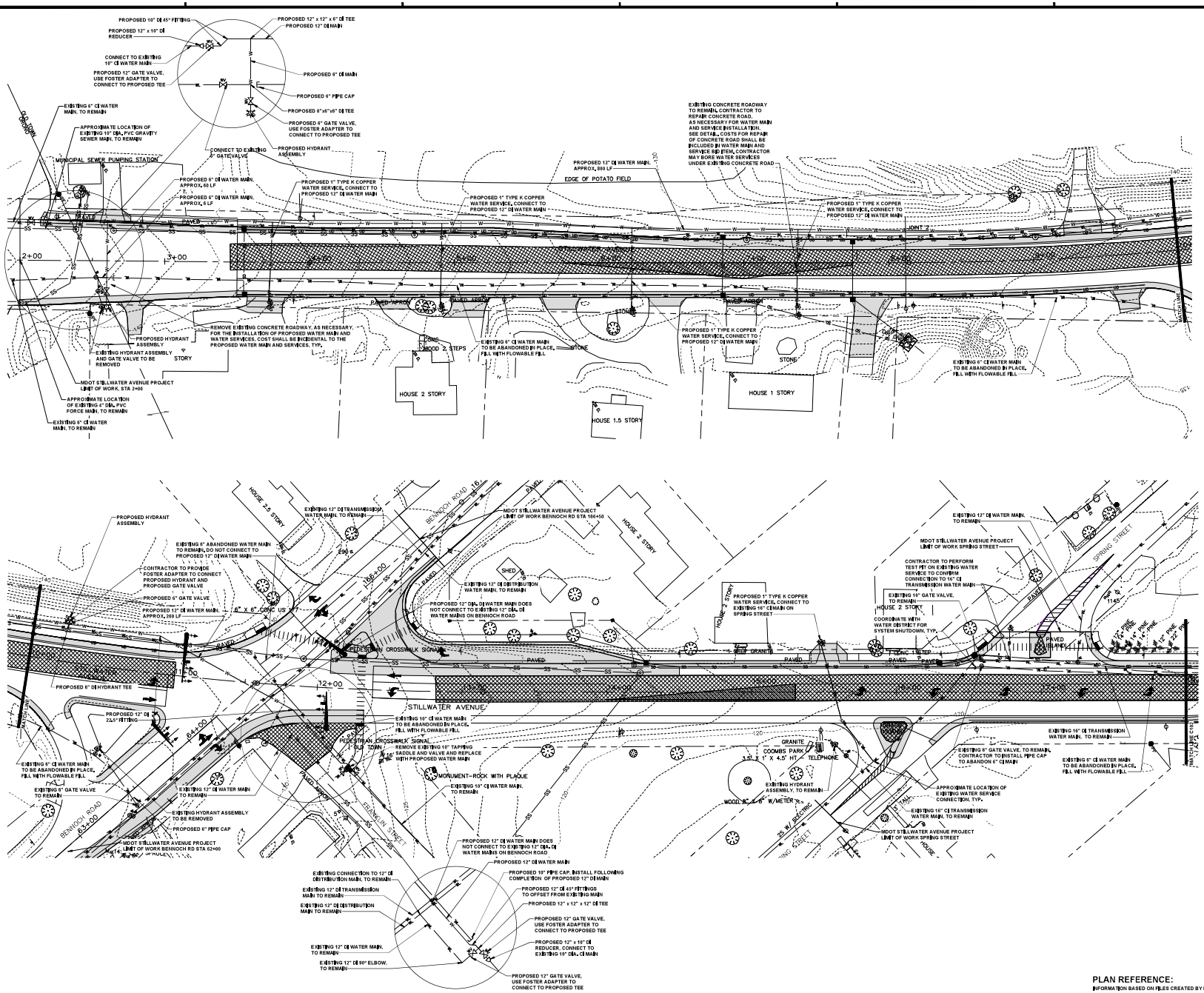
STATE OF MAINE
Nathan Gustafson
11589
11/17/2021
LICENSED
PROFESSIONAL ENGINEER

NOVEMBER 17, 2021

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
www.haleyward.com

INDEX OF DRAWINGS

G001	COVER SHEET
C101	PROPOSED WATER SYSTEM IMPROVEMENTS
C102	PROPOSED WATER SYSTEM IMPROVEMENTS
C103	PROPOSED WATER SYSTEM IMPROVEMENTS
C501	PROPOSED WATER SYSTEM NOTES & DETAILS
S101	PROPOSED WATER MAIN BRIDGE CROSSING PLAN & DETAILS
S102	PROPOSED WATER MAIN BRIDGE CROSSING PLAN & DETAILS



PLAN REFERENCE:
INFORMATION BASED ON FILES CREATED BY MAINE DOT.

GRAPHIC SCALE

30 0 15 30 60 90

(IN FEET)
1 inch = 30 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING/ISSUE STATUS

FOR CONSTRUCTION

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

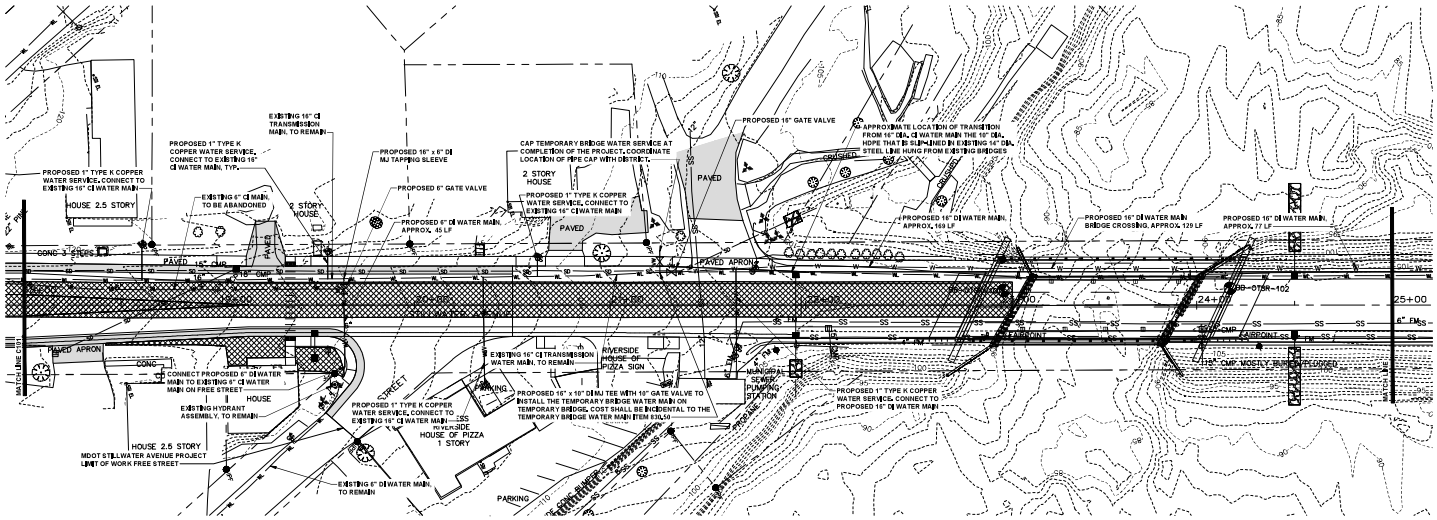
OLD TOWN WATER DISTRICT
OLD TOWN, MAINE
STILLWATER AVE WATER MAIN REPLACEMENT
MDOT WIN 22511.00, 22512.00 & 22950.00

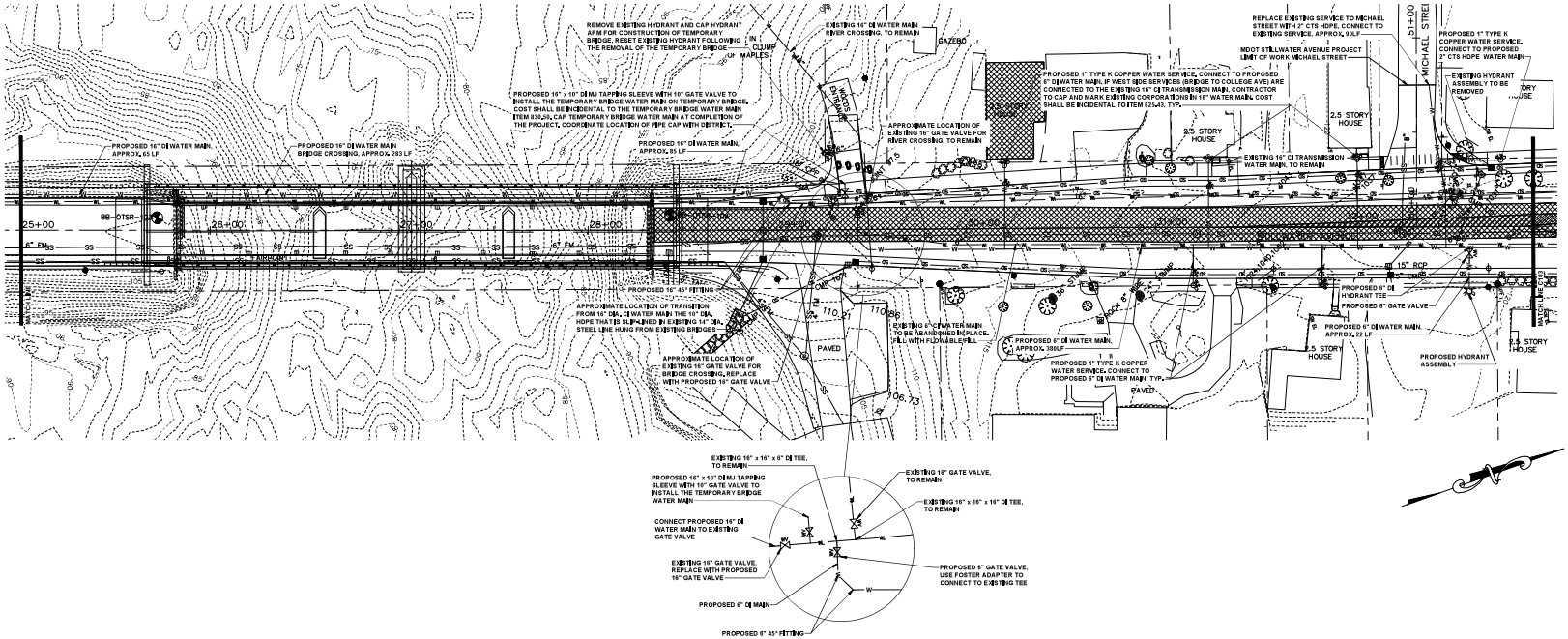
TITLE

PROPOSED WATER SYSTEM IMPROVEMENTS

STATE OF MAINE
Nathan Susiapsky
13589
11/17/2021
LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2021.11.17	1"=30'
DRAWN BY: WAB	DESIGNED BY: NAG	CHECKED BY: NAG
PROJECT NO.: 10345.003	
DRAWING NO.: C101	REV.





PLAN REFERENCE:
INFORMATION BASED ON FILES CREATED BY MAINE DOT.

GRAPHIC SCALE
30 0 15 30 60 90
(IN FEET)
1 inch = 30 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING/ISSUE STATUS
FOR CONSTRUCTION

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
One Merchants Plaza, Suite 701
Bangor, Maine 04401
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PROJECT
OLD TOWN WATER DISTRICT
OLD TOWN, MAINE
STILLWATER AVE WATER MAIN REPLACEMENT
MDOT WIN 22511.00, 22512.00 & 22950.00

TITLE
PROPOSED WATER SYSTEM IMPROVEMENTS

STATE OF MAINE
Nathan Gustafson
13589
11/17/2021
LICENSED
PROFESSIONAL ENGINEER

DATE	SCALE
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DRAWN BY	DESIGNED BY	CHECKED BY
WAB	NAG	NAG

PROJECT NO.
10345.003

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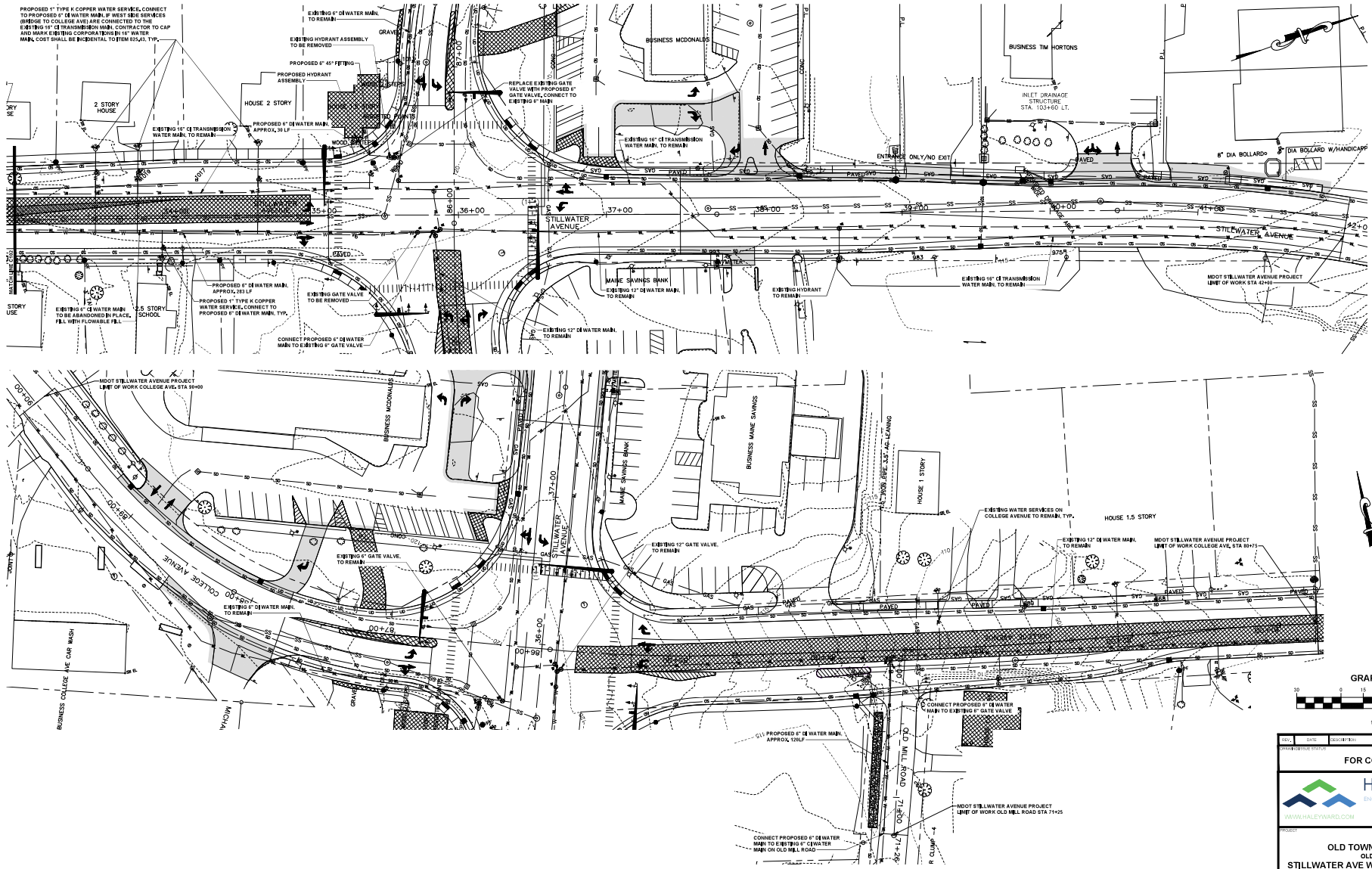

PLAN REFERENCE:
INFORMATION BASED ON FILES CREATED BY MAINE DOT.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS
FOR CONSTRUCTION

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
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207.989.4824

PROJECT
OLD TOWN WATER DISTRICT
OLD TOWN, MAINE
STILLWATER AVE WATER MAIN REPLACEMENT
MDOT WIN 22511.00, 22512.00 & 22950.00

TITLE
PROPOSED WATER SYSTEM IMPROVEMENTS

STATE OF MAINE
Nathan Busiahn
13589
11/17/2021
LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
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DRAWN BY	DESIGNED BY	CHECKED BY
WAB	NAG	NAG

PROJECT NO.
10345.003

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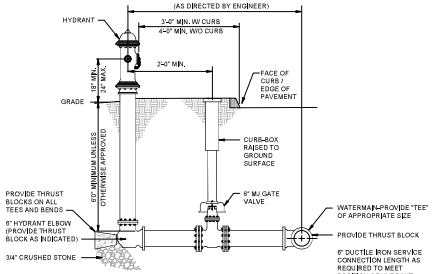
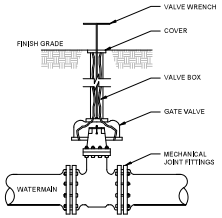


TYPICAL HYDRANT ASSEMBLY DETAIL

N.T.S.



TYPICAL GATE VALVE DETAIL

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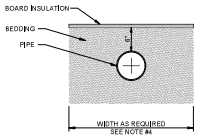


NOTES:

1. WATER AND SEWER PIPING SHALL BE INSULATED WITH 2" RIGID INSULATION BLUE BOARD BY DOW CO. SM. EXTRUDED POLYSTYRENE, (OR APPROVED EQUAL) TO BE USED IF EARTHEN COVER IS LESS THAN 6'-0".
2. CONTRACTOR MAY HAVE TO SUPPLY MORE THAN ONE LAYER OF BLUE BOARD INSULATION IN AREAS THAT HAVE MINIMAL EARTHEN COVER TO MAINTAIN THE INSULATION VALUE OF 6'-0" COVER, 2" BLUE BOARD INSULATION HAS THE INSULATION VALUE OF APPROXIMATELY 1'-0" OF EARTHEN COVER. INSULATE PIPE TO EQUAL 6'-0" OF COVER.
3. MAINTAIN A MINIMUM OF 12" OF EARTHEN COVER OVER INSULATION AS A MECHANICAL PROTECTION. LOAM AND SEED AS NECESSARY TO PREVENT EROSION.
4. INSULATION TO BE 2 FEET WIDE FOR PIPES LESS THAN 6 INCHES IN DIAMETER AND 4 FEET WIDE FOR PIPES 6 INCHES IN DIAMETER AND LARGER, OR AS DIRECTED BY THE ENGINEER.
5. CENTER INSULATION OVER PIPES.
6. WHERE EARTHEN COVER IS LESS THAN 3'-0" INSULATE TRENCH WALLS TO BOTTOM OF TRENCH.

TYPICAL TRENCH PIPE INSULATION DETAIL

N.T.S.

LEGEND:

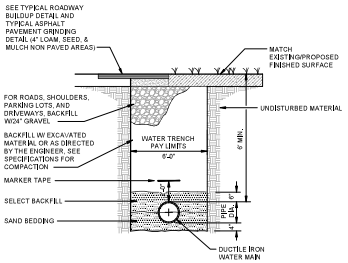
GATE VALVE	GV
WATER SHUTOFF	WS
HYDRANT	
WATERLINE	W
CONCRETE ROAD	

ABBREVIATIONS:

CI	CAST IRON
DI	DUCTILE IRON
LF	LINEAR FEET
DIA.	DIAMETER
CL	CENTER LINE

GENERAL CONSTRUCTION NOTES

1. THIS PROJECT IS FUNDED IN PART BY USDA RURAL DEVELOPMENT, THE MAINE DRINKING WATER PROGRAM STATE REVOLVING FUND PROGRAM (SRF) AND THE OLD TOWN WATER DISTRICT. THE CONTRACTOR MUST FOLLOW ALL APPLICABLE FUNDING AGENCY REGULATIONS AND REQUIREMENTS.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY CONSTRUCTION WITH THE OLD TOWN WATER DISTRICT, UTILITY COMPANIES, DIG SAFE, EMERGENCY SERVICES AND MAINE DEPARTMENT OF TRANSPORTATION (MDOT) WHERE APPLICABLE. CONTRACTOR SHALL NOTIFY ALL UTILITIES PRIOR TO COMMENCING WORK TO ALLOW SUFFICIENT TIME TO LOCATE AND MARK THE LOCATION OF ALL BURIED UTILITIES. CONTRACTOR SHALL ALSO CONTACT "DIG SAFE", TELEPHONE NO 811 OR 888-DIG-SAFE. REPAIR OF ANY DAMAGED UTILITY WILL BE INCIDENTAL TO THIS PROJECT
3. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IN WRITING OF ANY CONDITION OR OCCURRENCE THAT REPRESENTS A CHANGE IN THE SANITARY SEWER SYSTEM AND WATER SYSTEM PROJECT SCOPE. VERBAL NOTIFICATION IS REQUIRED PRIOR TO PROCEEDING WITH THE WORK OF THE PROJECT AND WRITTEN NOTIFICATION MUST BE PROVIDED. REQUESTS FOR FEE ADJUSTMENTS WILL NOT BE CONSIDERED UNLESS PROPER NOTICE IS GIVEN
4. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING PIPE SIZES, INVERTS, AND LOCATIONS, AND SHALL INCLUDE IN SUBMITTAL PRIOR TO ORDERING.
5. ALL WATER MAINS AND SERVICES WILL HAVE A MINIMUM 6.0 FEET OF COVER UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER.
6. DECHLORINATION OF DISINFECTION WATER WILL BE A REQUIREMENT DURING THE PIPE DISINFECTION PROCESS.
7. THE CONTRACTOR SHALL PROVIDE THRUST BLOCKS AT ALL TEES AND BENDS IN THE NEW WATER MAIN PIPING UNLESS NOTED OTHERWISE.
8. CONTRACTOR SHALL BACKFILL TRENCH FOLLOWING EACH DAYS CONSTRUCTION. NO OPEN TRENCHES WILL BE ALLOWED OVERNIGHT UNLESS APPROVED BY ENGINEER AND PROPERLY BARRICADED (IE. SNOW FENCING, CHAIN LINK FENCING, JERSEY BARRIER OR APPROVED EQUAL. CAUTION RIBBON AND EQUIPMENT PLACEMENT WILL NOT BE APPROVED AS BARRICADING. CONTRACTOR IS RESPONSIBLE TO MAINTAIN TRENCH AS DIRECTED BY THE ENGINEER
9. ALL UTILITY MATERIALS SCHEDULED FOR REMOVAL SHALL BE DISPOSED OF IN A LEGAL MANNER BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE OWNER HAS THE FIRST RIGHT AND REFUSAL FOR ANY DEMOLITION MATERIALS.
10. DISPOSAL OF SURPLUS SOIL MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SURPLUS MATERIAL SHALL NOT BE DISPOSED OF ON THE PROJECT SITE. DISPOSAL SHALL BE MADE ONLY AT WASTE AREAS WHICH ARE LICENSED TO ACCEPT SUCH MATERIALS. UNLESS THE MATERIAL IS ACCEPTABLE FOR USE AS FILL IN OTHER AREAS OF THE PROJECT. THE OWNER HAS THE FIRST RIGHT AND REFUSAL FOR ANY SURPLUS SOIL MATERIALS.
11. ALL PROPOSED WATER MAIN PIPING SHALL BE CLASS 52 DUCTILE IRON.
12. ALL PROPOSED WATER SERVICE PIPING SHALL BE 1" TYPE K COPPER UNLESS OTHERWISE NOTED.
13. INSTALL FOUR BRONZE WEDGES AT ALL DUCTILE IRON BELL & SPIGOT JOINTS IN WATER MAIN. COST INCIDENTAL TO WATER MAIN INSTALLATION.
14. ALL MATERIALS, COMPONENTS, PRODUCTS, SYSTEMS AND COATINGS THAT COME INTO CONTACT WITH DRINKING WATER MUST BE CERTIFIED TO MEET NSF/ANSI STANDARD 61.
15. JOINTS SHALL BE RUBBER GASKETED PUSH-ON OR MECHANICAL JOINT TYPE. GASKETS SHALL BE MADE OF SBR RUBBER, FOR WATER MAIN LOCATED WITHIN PETROLEUM HYDROCARBON AND/OR CHLORINATED SOLVENT CONTAMINATED SOILS, GASKETS SHALL BE MADE OF OIL RESISTANT BUNA-N (NITRILE) RUBBER. WHEN CONTAMINATED SOILS ENCOUNTERED UNEXPECTEDLY IN THE FIELD, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER. ALL JOINTS SHALL BE IN CONFORMANCE WITH REQUIREMENTS OF ANSI/AWWA C111/A21.11.
16. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING TEMPORARY WATER SERVICE TO THE RESIDENCES, AS NEEDED, TO MAINTAIN WATER SERVICE DURING THE CONSTRUCTION OF THE PROJECT. THE CONTRACTOR SHALL MAINTAIN TEMPORARY WATER THROUGHOUT CONSTRUCTION OF THE PROJECT. A PAY ITEM HAS BEEN PROVIDED FOR THIS WORK. THE CONTRACTOR SHALL PROVIDE A TEMPORARY WATER SERVICE PLAN TO THE OWNER AND ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. THE COST TO PROVIDE PLAN SHALL BE INCIDENTAL TO ITEM. TEMPORARY WATER SERVICE PLAN SHALL INCLUDE PIPE MATERIAL, PIPE ROUTING, BURIAL DEPTHS WHERE NEEDED, DISINFECTION PROCESS AND ANY OTHER INFORMATION THAT MAY BE REQUIRED FOR APPROVAL.
17. EXISTING FIRE HYDRANTS TO REMAIN ACTIVE AT ALL TIMES, UNTIL REPLACEMENT WITH NEW HYDRANT.
18. AT THE END OF EACH DAYS WORK, THE CONTRACTOR SHALL SPRAY THE INSIDE OF THE END OF WATER PIPE WITH SODIUM HYPOCHLORITE AND BLOCK PIPE OVERNIGHT WITH SANITARY WATERTIGHT PLUG TO PREVENT ANIMALS FROM ENTERING PIPE.
19. WHERE THERE IS LESS THAN TEN FEET OF HORIZONTAL SEPARATION BETWEEN THE SANITARY SEWER MAIN AND THE WATER MAIN, PROVIDE 18" OF VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE WATER MAIN AND THE TOP OF THE SEWER.
20. PROPOSED SERVICES SHALL BE PROVIDED FROM THE NEW MAIN TO THE RIGHT-OF-WAY, OR AS INDICATED ON THE PLANS.
21. THE CONTRACTOR SHALL PROVIDE MECHANICAL JOINT CAPS ON ALL EXISTING WATER MAINS THAT ARE TO BE ABANDONED FOR THIS PROJECT. THE CAP SHALL BE INCLUDED ON THE EXISTING WATER MAIN AFTER THE EXISTING MAIN HAS BEEN CUT FOR THE CONNECTION OF THE NEW WATER MAIN AND BEFORE THE TRENCH IS BACKFILLED.
22. CONTRACTOR SHALL MAINTAIN WATER SERVICE TO RESIDENTS AT ALL TIMES. CONTRACTOR SHALL COORDINATE CONNECTION OF SERVICES TO THE NEW MAINS WITH THE OLD TOWN WATER DISTRICT.
23. THE CONTRACTOR SHALL ASSUME THAT ALL BUILDINGS HAVE A WATER SERVICE, WHETHER SHOWN ON THE DRAWINGS OR NOT. SERVICE LOCATIONS WHERE SHOWN ARE APPROXIMATE AND HAVE BEEN COMPILED FROM FIELD SURVEY, TOWN RECORDS AND WATER DISTRICT RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATION OF ALL SERVICE LOCATIONS.
24. COORDINATE DISRUPTION OF PRIVATE UTILITY SERVICES WITH LANDOWNERS AT LEAST TWO DAYS (48 HOURS) PRIOR TO DISRUPTION. ALL UTILITY COORDINATION IS RESPONSIBILITY OF CONTRACTOR.
25. WATER SERVICES SHALL NOT BE DISCONTINUED AT ANY HOUSE PRIOR TO 10:00 AM WITHOUT WRITTEN NOTIFICATION TO THE PROPERTY OWNER.
26. ALL EXISTING WATER MAINS ABANDONED SHALL BE CAPPED AND FILLED WITH FLOWABLE FILL. COST SHALL BE INCIDENTAL TO PROJECT.
27. THE CONTRACTOR SHALL RAISE ALL EXISTING UTILITY COVERS AND BOXES TO MATCH NEW ELEVATIONS AS INDICATED ON THE DRAWINGS.
28. THE OLD TOWN WATER DISTRICT REQUIRES THAT UPON COMPLETION OF CONSTRUCTION, A COMPLETE SET OF "AS-BUILT" DRAWINGS THAT REFLECT ANY AND ALL MODIFICATIONS WITHIN THE PUBLIC RIGHT OF WAY INCLUDING MODIFICATIONS TO THE WATER SYSTEM WITHIN THE PROJECT LIMITS BE SUBMITTED TO THE OLD TOWN WATER DISTRICT. THESE DRAWINGS SHALL BE SUBMITTED IN BOTH DIGITAL (CAD) DRAWING AND HARD COPY FORMAT. A CAD FILE WILL BE AVAILABLE TO THE CONTRACTOR.

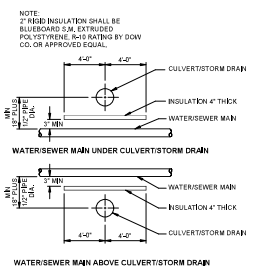


NOTE:

1. MATCH EXISTING SURFACE FINISH, EXCEPT WHERE NOTED. IN LAWN AREAS INSTALL 4" OF LOAM AND SEED AND MULCH.

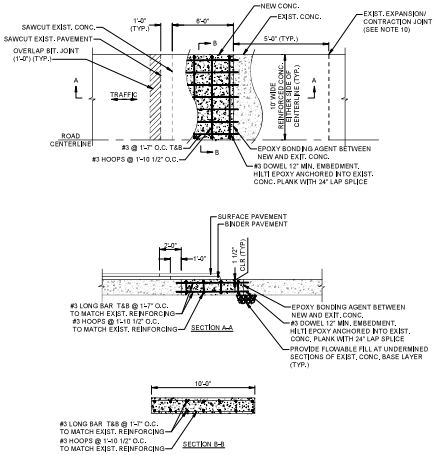
TYPICAL TRENCH DETAIL - DUCTILE IRON WATER MAIN

N.T.S.



TYPICAL PIPE CROSSING INSULATION DETAIL

N.T.S.

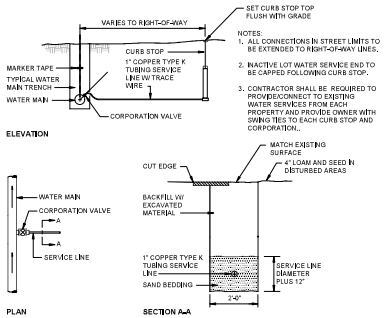


NOTES:

1. DESIGN INTENT IS TO REPLACE EXISTING CONCRETE ROAD BASE "IN KIND" AND MATCH EXISTING DIMENSIONS, THICKNESS, AND REINFORCEMENT.
2. THE EXISTING CONCRETE ROAD BASE REPAIR WORK SHALL BE PERFORMED ONE LANE AT A TIME TO MAINTAIN TRAFFIC.
3. THE EXISTING PAVEMENT AND CONCRETE ROAD BASE MATERIALS SHALL BE CUT TO FULL DEPTH AND REMOVED AS REQUIRED TO COMPLETE NEW UTILITY INSTALLATION. A DIAMOND BLADE SAW SHALL BE REQUIRED TO INDUCE A CLEAN AND NEAT CUT OF THE EXISTING CONCRETE.
4. EXISTING ROAD AGGREGATES AND NATIVE SUB SOILS SHALL BE REMOVED AS REQUIRED FOR NEW UTILITY INSTALLATION AND KEPT SEGREGATED FOR REPLACEMENT IN-PLACE AND COMPACTED TO REQUIRED FIELD DENSITIES.
5. REINFORCEMENT SHALL BE #3 ASTM A 615, GRADE 60, DEFORMED BARS PLACED AS SHOWN ON DETAIL INCLUDING DRILLING AND DOWELING EPOXY ANCHORED DOWELS AS SHOWN. LONGITUDINAL BARS AS SHOWN, AND REINFORCEMENT HOOPS AS SHOWN. ALL REINFORCEMENT SHALL BE WIRED TIED TOGETHER PER APPLICABLE AMERICAN CONCRETE INSTITUTE (ACI) AND CONCRETE REINFORCING STEEL INSTITUTE (CRSI) STANDARDS.
6. PROVIDE EPOXY BONDING AGENT BETWEEN NEW AND EXISTING CONCRETE SURFACES.
7. CONCRETE SHALL BE 5000 PSI, CLASS LP APPROVED MDOT MIX DESIGN WITH ACCELERATOR ADMIXTURE TO PROVIDE A MINIMUM 3000 PSI CONCRETE STRENGTH FOR SUCCEEDING PAVING AND TRAFFIC.
8. CONCRETE SHALL BE CURED A MINIMUM OF 24 HOURS BY EITHER MOISTURE CURED WATER AND POLYBURLAP COVER OR APPLICABLE DISSIPATING CURING COMPOUND MEETING ASTM C 309, AASHTO M 148, EQUAL TO HARRIS EMULSION KURSEAL 309.
9. TEST SPECIMENS SHALL BE COORDINATED TO VERIFY MINIMUM 3000 PSI CONCRETE STRENGTH FOR APPLICATION OF BITUMINOUS PAVEMENT AND TRAFFIC LOADS.
10. THIS DETAIL IS APPLICABLE FOR CONCRETE ROAD BASE REPAIR SECTIONS WITH NO EXPANSION/CONTRACTION JOINTS. PROVIDE MINIMUM 5'-0" OFFSET BETWEEN SAW CUT JOINTS FOR PIPE CROSSINGS AND EXISTING EXPANSION/CONTRACTION JOINTS.

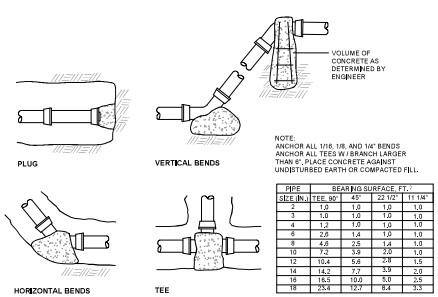
CONCRETE ROAD REPAIR DETAIL

N.T.S.



TYPICAL WATER SERVICE DETAIL

N.T.S.



NOTE:
ANCHOR ALL 1/16, 1/8, AND 1/4" BENDS ANCHOR ALL TEES W/ BRANCH LARGER THAN 6", PLACE CONCRETE AGAINST UNDISTURBED EARTH OR COMPACTED FILL.

PIPE	BEARING SURFACE, FT.²			
SIZE (IN.)	TEE, 90°	45°	22 1/2°	11 1/4°
2	1.0	1.0	1.0	1.0
3	1.0	1.0	1.0	1.0
4	1.3	1.0	1.0	1.0
6	2.8	1.4	1.0	1.0
8	4.8	2.5	1.4	1.0
10	7.2	3.9	2.0	1.0
12	10.4	5.8	2.9	1.5
14	14.2	7.7	3.9	2.0
16	18.5	10.0	5.0	2.5
18	23.4	12.7	6.4	3.3

ANCHORAGE DETAILS

N.T.S.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

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PROJECT

OLD TOWN WATER DISTRICT
OLD TOWN, MAINE
STILLWATER AVE WATER MAIN REPLACEMENT
MDOT WIN 22511.00, 22512.00 & 22950.00

TITLE

PROPOSED WATER SYSTEM NOTES & DETAILS

STATE OF MAINE
Nathan Gustafson
13689
11/17/2021
LICENSED
PROFESSIONAL ENGINEER

DATE	SCALE
2021.11.17	NTS
DRAWN BY	DESIGNED BY	CHECKED BY
WAB	NAG	NAG

PROJECT NO.
10345.003

DRAWING NO. **C501** REV.

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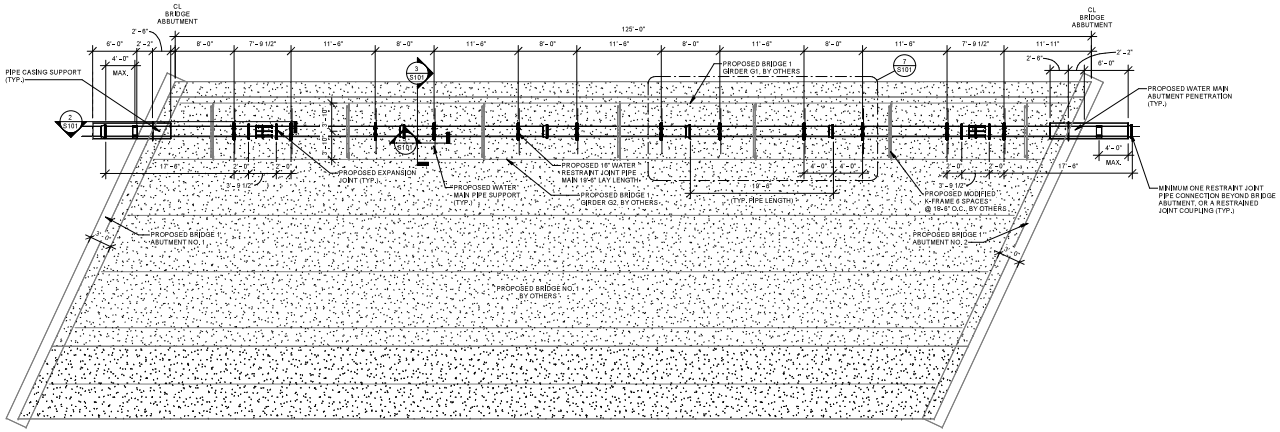
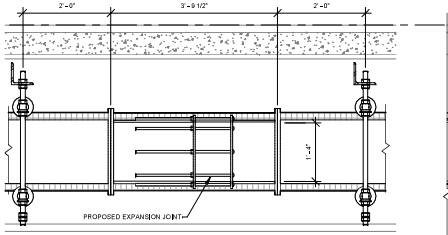


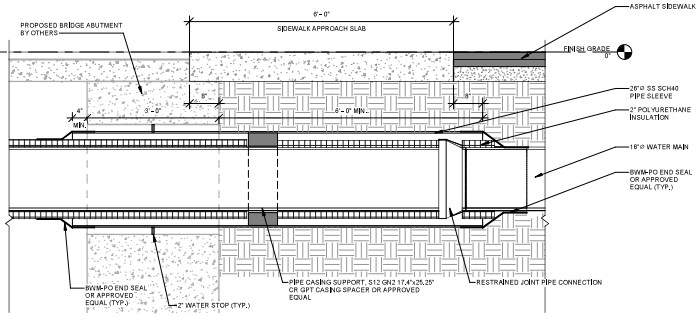
1 S101 **BRIDGE 1 WATER MAIN PIPE SUPPORT PLAN**
SCALE: 1/8" = 1'-0"

GENERAL NOTES:
1. DESIGN BASED ON INFORMATION PROVIDED BY MAINE DEPARTMENT OF TRANSPORTATION (MDOT) AND VANASSE HANGEN BRUSTLIN (VHB).
2. PIPE SUPPORT SYSTEM DESIGN BASED ON DEAD LOAD OF 90 PLF AND LIVE LOAD OF 90 PLF, ALONG THE LENGTH OF THE PIPE.

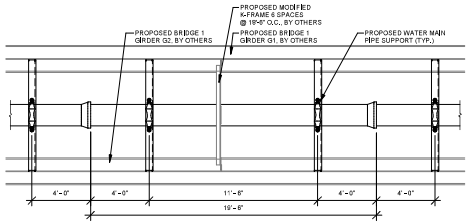
GENERAL CONSTRUCTION NOTES:
1. SELECTED CONTRACTOR SHALL BE RESPONSIBLE FOR FABRICATION OF PIPE SUPPORT HANGER BEAM AND ITS COMPONENTS AS SHOWN ON THE DRAWINGS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ERECTION PROCEDURES, SEQUENCING, AND FOR COMPLYING WITH ALL APPLICABLE SAFETY REGULATIONS DURING THE WORK.

STRUCTURAL STEEL NOTES:
1. ALL STRUCTURAL STEEL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" AND THE "AISC CODE OF STANDARD PRACTICE."
2. PIPE SUPPORT BEAMS: STRUCTURAL STEEL ANGLES CONFORMING TO ASTM A36 WITH A MINIMUM YIELD STRESS OF Fy = 36,000 PSI
3. CONNECTION PLATES: STEEL PLATES CONFORMING TO ASTM A36 WITH A MINIMUM YIELD STRESS OF Fy = 36,000 PSI.
4. ALL CONNECTION BOLTS SHALL CONFORM TO ASTM A325.
5. ALL WELDING SHALL CONFORM TO AWS D1.1, LATEST EDITION, WELDING ELECTRODES SHALL BE E70XX.
6. ALL STEEL BEAMS SHALL BE CUT FROM FULL LENGTH STOCK, UNAUTHORIZED SPLICES WILL BE CAUSE FOR REJECTION.

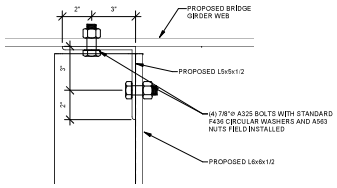




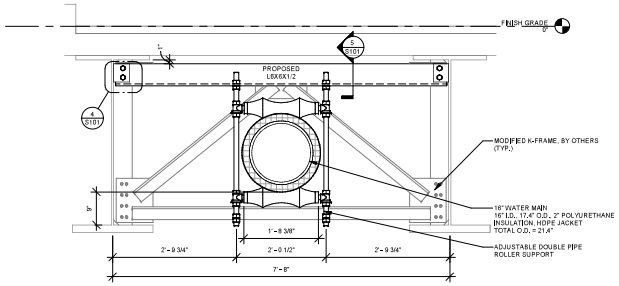
2 S101 **TYPICAL EXPANSION JOINT & ABUTMENT PENETRATION DETAIL**
SCALE: 3/4" = 1'-0"



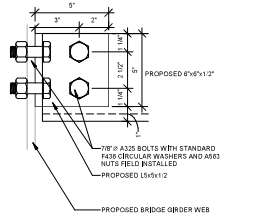
7 S101 **TYPICAL PIPE SUPPORT SPACING KEY**
SCALE: 1/4" = 1'-0"



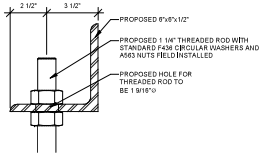
6 S101 **TYPICAL STEEL CONNECTION PLAN VIEW**
SCALE: 3" = 1'-0"



3 S101 **TYPICAL WATER MAIN PIPE SUPPORT DETAIL - BRIDGE 1**
SCALE: 3/4" = 1'-0"



4 S101 **TYPICAL STEEL FRAMING CONNECTION DETAIL**
SCALE: 3" = 1'-0"



5 S101 **TYPICAL HANGAR TO ANGLE CONNECTION DETAIL**
SCALE: 3" = 1'-0"

REV.	DATE	DESCRIPTION	BY	CHK'D

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PROJECT
OLD TOWN WATER DISTRICT
OLD TOWN, MAINE
STILLWATER AVE WATER MAIN REPLACEMENT
MDOT WIN 22511.00, 22512.00 & 22950.00

TITLE
PROPOSED BRIDGE WATER MAIN PIPE SUPPORT PLAN AND DETAILS

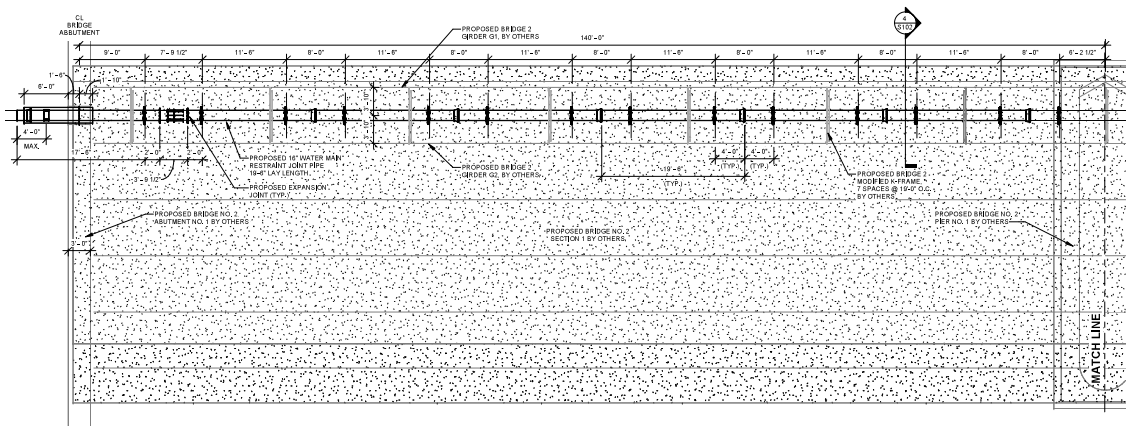
STATE OF MAINE — CHRISTOPHER W. SNOWDEAL — 11/17/2021 — No. 10148 — LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2021.11.17	As indicated

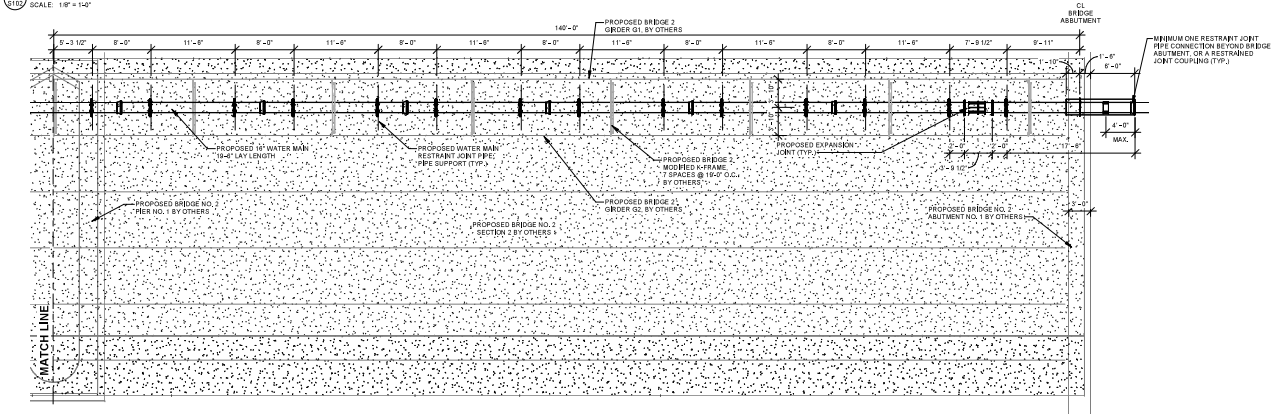
DRAWN BY	DESIGNED BY	CHECKED BY
BTH/JNB	CDL	CWS

PROJECT NO.: 10345.003

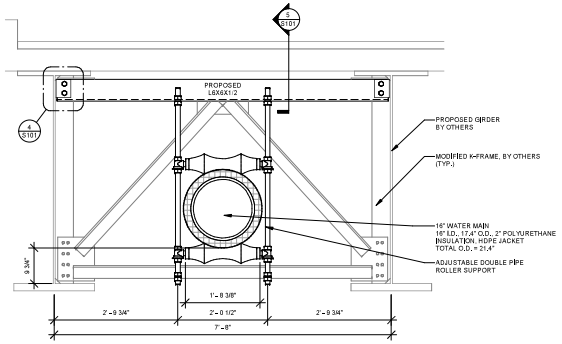
DRAWING NO.: **S101** REV.:



1 S102 **BRIDGE 2 WATER MAIN PIPE SECTION 1 SUPPORT PLAN**
SCALE: 1/8" = 1'-0"



2 S102 **BRIDGE 2 WATER MAIN PIPE SECTION 2 SUPPORT PLAN**
SCALE: 1/8" = 1'-0"



4 S102 **TYPICAL WATER MAIN PIPE SUPPORT DETAIL - BRIDGE 2**
SCALE: 3/4" = 1'-0"

REV.	DATE	DESCRIPTION	BY	CHK

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PROJECT
OLD TOWN WATER DISTRICT
OLD TOWN, MAINE
STILLWATER AVE WATER MAIN REPLACEMENT
MDOT WIN 22511.00, 22512.00 & 22950.00

TITLE
PROPOSED BRIDGE WATER MAIN PIPE SUPPORT PLAN AND DETAILS

STATE OF MAINE — CHRISTOPHER W. SNOWDEAL — 17/17/2021 — No. 10769 — LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2021.11.17	As indicated

DRAWN BY	DESIGNED BY	CHECKED BY
BTH/JNB	CDL	CWS

PROJECT NO.: 10345.003

DRAWING NO.: **S102** REV.:

December 08, 2021
Supersedes August 13, 2021

2020 STANDARD DETAIL UPDATES

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

Detail #	Description	Revision Date
502(19)	Bridge Drains	12/08/2021
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
603(10)	Concrete Pipe Ties	6/10/2021
605(01)	Underdrain	8/13/2021
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
643(11)	ATCC Cabinet	12/14/2020
801(11)	Pedestrian Ramp Notes	6/10/2021
801(12)	Pedestrian Ramp Requirements	8/13/2021
801(13)	Ramp Length Table	6/10/2021
801(14)	Parallel Pedestrian Ramp	6/10/2021
801(15)	Perpendicular Pedestrian Ramp – Option 1	6/10/2021
801(16)	Parallel Pedestrian Ramp – Option 2A	6/10/2021
801(17)	Perpendicular Pedestrian Ramp – Option 2A	6/10/2021

801(18)	Parallel Pedestrian Ramp – Option 2B	6/10/2021
801(19)	Perpendicular Pedestrian Ramp – Option 2B	6/10/2021
801(20)	Parallel Pedestrian Ramp – Option 3	6/10/2021
801(21)	Perpendicular Pedestrian Ramp – Option 3	6/10/2021
801(22)	Side Street Pedestrian Ramp	6/10/2021
801(23)	Parallel Pedestrian Ramp – Esplanade	6/10/2021
801(24)	Perpendicular Pedestrian Ramp – Esplanade	6/10/2021
801(25)	Island Crossings	6/10/2021
801(26)	Blended Transition	6/10/2021
801(27)	Pedestrian Ramp Adjacent to Driveway or Entrance	6/10/2021
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

Holidays Amend this paragraph by adding "**Juneteenth**" between 'Memorial Day' and 'Independence Day'.

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 104
GENERAL RIGHTS AND RESPONSIBILITIES

104.2.1 Furnishing of Right-of-Way Revise the last sentence in the first paragraph by removing "105.4.5 – Special Detours" and replacing it with "**105.4.5 – Maintenance of Existing Structures**.".

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"

SECTION 107
TIME

107.3.1 General Amend this paragraph by adding "**Juneteenth**" between 'Patriot's Day' and 'the Friday after Thanksgiving'.

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:**
  - **Below a plane parallel with and 12 inches below the bottom of the drainage or minor structure or**
  - **Below the excavation limits shown in the Bid Documents; whichever is greater.**

- **Horizontal pay limits – The maximum allowable horizontal dimensions shall not exceed those bounded by vertical surfaces 18 inches outside the base, or extreme limits of, the structure, and to the vertical neat lines of underdrain trenches, as shown in the Contract Documents.**

SECTION 401
HOT MIX ASPHALT PAVEMENT

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

SECTION 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: "

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

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

(Also see 535.24 and 535.25 for related changes)

SECTION 503
REINFORCING STEEL

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

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

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

- **Normal weight concrete**
- **Minimum 28-day concrete compressive strength from 4,000 psi to 10,000 psi**

- **Class B tension lap splice**
- **Minimum center-to-center spacing between bars of 6 inches**
- **Minimum clear cover of 2 inches**
- **Nominal reinforcing steel yield strengths**
  - **Low-carbon Chromium = 100 ksi**
  - **Stainless = 75 ksi**
  - **All others = 60 ksi**
- **Reinforcement with yield strengths greater than 75 ksi shall have beam transverse reinforcement and column ties provided over the required lap splice length in accordancewith the current edition of the AASHTO LRFD Bridge Design Specifications**

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

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:

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

SECTION 527
ENERGY ABSORBING UNIT

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

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

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

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

SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPESTRUCTURE

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

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

SECTION 606
GUARDRAIL

Amend this section by replacing it with the following:

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

31" W-Beam Guardrail - Mid-Way Splice
Galvanized steel w-beam, 8" wood or composite offset blocks, galvanized steel posts

Thrie Beam
Galvanized steel thrie beam, 8" wood or composite offset blocks, galvanized steel posts

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

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

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

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

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

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

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

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

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

Reflectorized beam guardrail ("butterfly"-type) delineators shall be mounted on all "w"-beam guardrail. The delineators shall be mounted within the guardrail beam at guardrail posts. Delineators shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Reflectorized beam guardrail delineators shall be placed at approximately 62.5 ft intervals or every tenth post on tangents and at approximately 31.25 ft intervals or every fifth post on curves. Exact locations of the delineators shall be as directed by the Resident. On divided highways, the left-hand delineators shall be yellow, and the right-hand delineators shall be silver/white. On two directional highways, the right-hand side shall be silver/white, and no reflectorized delineator used on the left. All reflectors shall have reflective sheeting applied to only one side of the delineator facing the direction of traffic as shown in the Standard Details. Reflectorized sheeting for guardrail delineators shall meet the requirements of Section 719.01.

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.

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

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

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

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

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

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

Modify guardrail will be paid for at the contract unit price per linear foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams; removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals where required.

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

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

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel

necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or "w"-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition 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.

Payment will be made under:

Pay Item		Pay Unit
606.1301	31" W-Beam Guardrail - Mid-Way Splice – Single Faced	Linear Foot
606.1302	31" W-Beam Guardrail - Mid-Way Splice – Double Faced	Linear Foot
606.1303	31" W-Beam Guardrail - Mid-Way Splice, 15' Radius and Less	Linear Foot
606.1304	31" W-Beam Guardrail - Mid-Way Splice, Over 15' Radius	Linear Foot
606.1305	31" W-Beam Guardrail - Mid-Way Splice Flared Terminal	Each
606.1306	31" W-Beam Guardrail - Mid-Way Splice Tangent Terminal	Each
606.1307	Bridge Transition (Asymmetrical) – Type IA	Each
606.1721	Bridge Transition - Type I	Each
606.1722	Bridge Transition - Type II	Each
606.1731	Bridge Connection - Type I	Each
606.1732	Bridge Connection - Type II	Each
606.178	Guardrail Beam	Linear Foot
606.25	Terminal Connector	Each
606.257	Terminal Connector - Thrie Beam	Each
606.259	Anchorage Assembly	Each
606.265	Terminal End-Single Rail - Galvanized Steel	Each
606.266	Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275	Terminal End-Double Rail - Galvanized Steel	Each
606.276	Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.353	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
606.47	Single Wood Post	Each
606.48	Single Galvanized Steel Post	Each

606.50	Single Steel Pipe Post	Each
606.51	Multiple Mailbox Support	Each
606.568	Guardrail, Modify - Double Rail	Linear Foot
606.63	Thrie Beam Rail Beam	Linear Foot
606.64	Guardrail Thrie Beam - Double Rail	Linear Foot
606.65	Guardrail Thrie Beam - Single Rail	Linear Foot
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 15 ft radius and less	Linear Foot
606.72	Guardrail Thrie Beam - over 15 ft radius	Linear Foot
606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	Linear Foot
606.74	Guardrail - Single Rail Bridge Mounted	Linear Foot
606.753	Widen Shoulder for Low Volume Guardrail End	Each
606.754	Widen Shoulder for Flared Guardrail Terminal	Each
606.78	Low Volume Guardrail End	Each
606.80	Buried-in-Slope Guardrail End	Each

SECTION 608
SIDEWALKS

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

SECTION 609
CURB

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

626.034 Concrete Foundations Revise this Section by changing '626.037' to '**626.036**' in the Second Paragraph which begins with "Foundations shall consist of cast-in-place…".

Revise the 10th paragraph beginning with "Before placing concrete, the required elbows…" by removing "…**in accordance with Standard Specification 633**."

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

SECTION 627
PAVEMENT MARKINGS

627.06 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."

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."

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

And by removing the paragraphs beginning with " A service ground rod shall be installed…" and "A total of 4, 10' service…" and replace them with "**A total of 4, 10' service ground rods shall be installed and properly connected together on the outside of the cabinet foundation. One ground rod shall be located at each corner and shall be either flush or slightly below finished grade. The connection between the ground rod and the ground wire shall be an**

exothermic connection such as a Cadweld. The ground wire from the interconnected ground rods shall be routed through a conduit in the foundation and into the base of the cabinet".

SECTION 645
HIGHWAY SIGNING

Section 645.023 Sign Support Structures. Under letter "c.", revise the fifth paragraph beginning with "In addition to the required details…" by removing the words "**and foundation**" from the 5th sentence.

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

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

SECTION 652
MAINTENANCE OF TRAFFIC

Amend this Section by adding the following new subsection:

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

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

Category 2 (Barricades, Portable Sign Supports, Category 1 devices with attachments, and similar devices that are not expected to produce significant vehicular velocity change but may be otherwise hazardous) – All Category 2 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2025. Current Category 2 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2024.

Category 3 (Portable Concrete Barrier, Portable Crash Cushions, Truck Mounted Attenuators, Category 2 devices weighing more than 100 pounds, and similar devices that are expected to produce significant vehicular velocity change or other harmful reactions) – All Category 3 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to

NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029. (See Standard Specification 526 for additional Portable Concrete Barrier information).

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

652.4 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 703
AGGREGATES

Add the following to Section 703 - Aggregates

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

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

Fine aggregate shall have a sand equivalent value of not less than 75 when tested in accordance with AASHTO T 176.
Fine aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

The fineness modulus shall not be less than 2.26 or more than 3.14. If this value is exceeded, the fine aggregate will be rejected unless suitable adjustments are made in proportions of coarse and fine

aggregate. The fineness modulus of fine aggregate shall be determined by adding the cumulative percentages of material by weight retained on the following sieves: Nos. 4, 8, 16, 30, 50, 100 and dividing by 100.

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

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5.0

703.02 Coarse Aggregate for Concrete Coarse aggregate for concrete shall consist of crushed stone or gravel having hard, strong, durable pieces, free from adherent coatings and of which the composite blend retained on the ⅜ inch sieve shall contain no more than 15 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

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

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

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

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

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves			
Grading	A	AA	S	LATEX
Aggregate Size	1 inch	¾ inch	1½ inch	½ inch
2 inch			100	
1½ inch	100		95-100	
1 inch	95-100	100	-	
¾ inch	-	90-100	35-70	100
½ inch	25-60	-	-	90-100
⅜ 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
⅜ inch	85-100
No. 200	0-5.0

703.06 Aggregate for Base and Subbase The following shall apply to Sections (a.) and (c.) below. The material shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro- Deval value exceeds 25.0, the Washington State Degradation DOT Test Method T113, Method of Test for Determination of Degradation Value (January 2009 version) shall be performed, except that the test shall be performed on the portion of the sample that passes the ½ in sieve and is retained on the No. 10 sieve. If the material has a Washington Degradation value of less than 15, the material shall be rejected.
The material used in Section (b.) below shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0 the material may be used if it does not exceed 25 percent loss on AASHTO T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 4: Maximum Percent RAP According to Test Results

The Department will monitor RAP asphalt content and gradation during production by testing samples from the stockpile at approximately 15,000 T intervals (in terms of mix production). The

allowable variance limits (from the numerical average values used for mix designs) for this testing are determined based upon the maximum allowable RAP percentage and are shown below in Table 5.

Table 5: RAP Verification Limits

Classification	Asphalt content (compared to aim)	Percent passing 0.075 mm sieve (compared to aim)
Class III	± 1.5	± 2.0
Class II	± 1.0	± 1.5
Class I	± 0.5	± 0.7

For specification purposes, RAP will be categorized as follows:

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

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

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

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

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

SECTION 710
FENCE AND GUARDRAIL

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

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

Remove the fourth paragraph which starts " That portion of wood posts…".

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

"Braces shall be of spruce, eastern hemlock, Norway pine, pitch pine, or tamarack timbers or other AWPA approved species, or spruce, cedar, tamarack or other AWPA approved species round posts of sufficient length to make a diagonal brace between adjacent posts. All wood posts and braces shall be pressure-treated in accordance with AASHTO M 133 and AWPA U1, UC4A Commodity Specification B: Posts. "

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

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

Revise the next paragraph so that it reads:

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

710.08 Guardrail Hardware Revise this subsection by replacing "**AASHTO M 298**" with "**ASTM B965**"

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 ofASTM 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 AWPA approved species, free from loose knots or other structurally weakening defects of importance, such as shake or holes or heart rot.

Revise the third paragraph that starts with "When pressure treated…" so that it reads:

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

APPENDIX A TO DIVISION 100

SECTION 1 - BIDDING PROVISIONS

A. Federally Required Certifications By signing and delivering a Bid, the Bidder certifies as provided in all certifications set forth in this Appendix A - Federal Contract Provisions Supplement including:

- Certification Regarding No Kickbacks to Procure Contract as provided on this page 1 below.
- Certification Regarding Non-collusion as provided on page 1 below.
- Certification Regarding Non-segregated Facilities as provided by FHWA Form 1273, section III set forth on page 21 below.
- "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion" as provided by FHWA Form 1273, section XI set forth on page 32 below.
- "Certification Regarding Use of Contract Funds for Lobbying" as provided by FHWA Form 1273, section XII set forth on page 35 below.

Unless otherwise provided below, the term "Bidder", for the purposes of these certifications, includes the Bidder, its principals, and the person(s) signing the Bid. Upon execution of the Contract, the Bidder (then called the Contractor) will again make all the certifications indicated in this paragraph above.

CERTIFICATION REGARDING NO KICKBACKS TO PROCURE CONTRACT Except expressly stated by the Bidder on sheets submitted with the Bid (if any), the Bidder hereby certifies, to the best of its knowledge and belief, that it has not:

(A) employed or retained for a commission, percentage, brokerage, contingent fee, or other consideration, any firm or person (other then a bona fide employee working solely for me) to solicit or secure this contract;

(B) agreed, as an express or implied condition for obtaining this contract, to employ or retain the services of any firm or person in connection with carrying out the contract, or;

C) paid, or agreed to pay, to any firm, organization, or person (other than a bona fide employee working solely for me) any fee, contribution, donation, or consideration of any kind for, or in connection with, procuring or carrying out the contract;

By signing and submitting a Bid, the Bidder acknowledges that this certification is to be furnished to the Maine Department of Transportation and the Federal Highway Administration, U.S. Department of Transportation in connection with this contract in anticipation of federal aid highway funds and is subject to applicable state and federal laws, both criminal and civil.

CERTIFICATION REGARDING NONCOLLUSION Under penalty of perjury as provided by federal law (28 U.S.C. §1746), 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 the Contract.

For a related provisions, see Section 102.7.2 (C) of the Standard Specifications - "Effects of Signing and Delivery of Bids" - "Certifications", Section 3 of this Appendix A entitled "Other Federal Requirements" including section XI - "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion" and section XII. - "Certification Regarding Use of Contract Funds for Lobbying."

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B. Bid Rigging Hotline To report bid rigging activities call: **1-800-424-9071**

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

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SECTION 2 - FEDERAL EEO AND CIVIL RIGHTS REQUIREMENTS

Unless expressly otherwise provided in the Bid Documents, the provisions contained in this Section 2 of this "Federal Contract Provisions Supplement" are hereby incorporated into the Bid Documents and Contract.

A. Nondiscrimination & Civil Rights - Title VI The Contractor and its subcontractors shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Department deems appropriate. The Contractor and subcontractors shall comply with Title VI of the Civil Rights Act of 1964, as amended, and with all State of Maine and other Federal Civil Rights laws.

For related provisions, see Subsection B - "Nondiscrimination and Affirmative Action - Executive Order 11246" of this Section 2 and Section 3 - Other Federal Requirements of this "Federal Contract Provisions Supplement" including section II - "Nondiscrimination" of the "Required Contract Provisions, Federal Aid Construction Contracts", FHWA-1273.

B. Nondiscrimination and Affirmative Action - Executive Order 11246 Pursuant to Executive Order 11246, which was issued by President Johnson in 1965 and amended in 1967 and 1978, this Contract provides as follows.

The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its efforts to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

Ensure and maintain a working environment free of harassment, intimidations, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all forepersons, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its union have employment opportunities available, and to maintain a record of the organization's responses.

Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

Provide immediate written notification to the Department's Civil Rights Office when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Design-Builder's efforts to meet its obligations.

Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under B above.

Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligation; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Forepersons, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractor's and Subcontractors with whom the Contractor does or anticipates doing business.

Direct its recruitment efforts, both orally and written to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later that one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above describing the openings, screenings, procedures, and test to be used in the selection process.

Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth, both on the site and in other areas of a Contractor's workforce.

Validate all tests and other selection requirements.

Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

Ensure that all facilities and company activities are non segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction Contractor's and suppliers, including circulation of solicitations to minority and female Contractor associations and other business associations.

Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

C. Goals for Employment of Women and Minorities Per Executive Order 11246, craft tradesperson goals are 6.9% women and .5% minorities employed. However, goals may be adjusted upward at the mutual agreement of the Contractor and the Department. Calculation of these percentages shall not include On-the-Job Training Program trainees, and shall not include clerical or field clerk position employees.

For a more complete presentation of requirements for such Goals, see the federally required document "Goals for Employment of Females and Minorities" set forth in the next 6 pages below.

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Start of GOALS FOR EMPLOYMENT OF FEMALES AND MINORITIES
Federally Required Contract Document

§60-4.2 Solicitations

(d) The following notice shall be included in, and shall be part of, all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of $10,000 to be performed in geographical areas designated by the Director pursuant to §60-4.6 of this part (see 41 CFR 60-4.2(a)):

Notice of Requirement for Affirmative Action to Ensure Equal Opportunity (Executive Order 11246)

1. The Offeror's or bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

Goals for female participation in each trade	6.9%

Goals for minority participation for each trade

Maine	
001 Bangor, ME	0.8%
Non-SMSA Counties (Aroostook, Hancock, Penobscot, Piscataquis, Waldo, Washington)	
002 Portland-Lewiston, ME	
SMSA Counties: 4243 Lewiston-Auburn, ME (Androscoggin)	0.5%
6403 Portland, ME (Cumberland, Sagadahoc)	0.6%

Non-SMSA Counties: 0.5%
(Franklin, Kennebec, Knox, Lincoln, Oxford, Somerset, York)

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non federally involved construction.

The contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be in violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor, employer identification number of the subcontractor, estimated dollar amount of the subcontract; estimated started and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the Contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any).

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department form 941;

   d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of the North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the contractor, is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors for Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a. through p. of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical areas where the work is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specific.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant, thereto.

6. In order for the non working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as expensive as the following:

   a. Ensure and maintain a working environment free of harassment, intimidation, coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, when possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

   b. Establish and maintain a current list of minority and female recruitment sources provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization's responses.

   c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment sources or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

   d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

   e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment, efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing prior to the date for the acceptance of applications for apprenticeship or the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitation to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7 a through p.). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7 a through p. of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program and reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions take on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both make and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, specific minority group of women is underutilized.)

10. The Contractor shall not use the goals and timetables or affirmative action even through the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementation regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.6.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g. mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and location sat which the work was performed. Records be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

End of GOALS FOR EMPLOYMENT OF FEMALES AND MINORITIES
Federally Required Contract Document

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D. Section '**D Disadvantaged Business Enterprise (DBE) Requirements**' is removed in its entirety. The DBE material is in:

Section 105.10 EQUAL OPPORTUNITY AND CIVIL RIGHTS.

SECTION 3 - OTHER FEDERAL REQUIREMENTS

Unless expressly otherwise provided in the Bid Documents, the provisions contained in this Section 3 of this "Federal Contract Provisions Supplement" are hereby incorporated into the Bid Documents and Contract.

A. Buy America

If the cost of products purchased for permanent use in this project which are manufactured of steel, iron or the application of any coating to products of these materials exceeds 0.1 percent of the contract amount, or $2,500.00, whichever is greater, the products shall have been manufactured and the coating applied in the United States. The coating materials are not subject to this clause, only the application of the coating. In computing that amount, only the cost of the product and coating application cost will be included.

Ore, for the manufacture of steel or iron, may be from outside the United States; however, all other manufacturing processes of steel or iron must be in the United States to qualify as having been manufactured in the United States.

United States includes the 50 United States and any place subject to the jurisdiction thereof.

Products of steel include, but are not limited to, such products as structural steel, piles, guardrail, steel culverts, reinforcing steel, structural plate and steel supports for signs, luminaries and signals.

Products of iron include, but are not limited to, such products as cast iron grates.

Application of coatings include, but are not limited to, such applications as epoxy, galvanized and paint.

To assure compliance with this section, the Contractor shall submit a certification letter on its letterhead to the Department stating the following:

> "This is to certify that products made of steel, iron or the application of any coating to products of these materials whose costs are in excess of $2,500.00 or 0.1 percent of the original contract amount, whichever is greater, were manufactured and the coating, if one was required, was applied in the United States."

B. Materials

a. Convict Produced Materials References: 23 U.S.C. 114(b)(2), 23 CFR 635.417
Applicability: FHWA's prohibition against the use of convict material only applies to Federal-aid highways. Materials produced after July 1, 1991, by convict labor may only be incorporated in a Federal-aid highway construction project if: 1) such materials have been produced by convicts who are on parole, supervised release, or probation from a prison; or
2) such material has been produced in a qualified prison facility, e.g., prison industry, with the amount produced during any 12-month period, for use in Federal-aid projects, not exceeding the amount produced, for such use, during the 12-month period ending July 1, 1987.

Materials obtained from prison facilities (e.g., prison industries) are subject to the same requirements for Federal-aid participation that are imposed upon materials acquired from other sources. Materials manufactured or produced by convict labor will be given no preferential treatment.

The preferred method of obtaining materials for a project is through normal contracting procedures which require the contractor to furnish all materials to be incorporated in the work. The contractor selects the source, public or private, from which the materials are to be obtained (23 CFR 635.407). Prison industries are prohibited from bidding on projects directly (23 CFR 635.112e), but may act as material supplier to construction contractors.

Prison materials may also be approved as State-furnished material. However, since public agencies may not bid in competition with private firms, direct acquisition of materials from a

prison industry for use as State-furnished material is subject to a public interest finding with the Division Administrator's concurrence (23 CFR 635.407d). Selection of materials produced by convict labor as State-furnished materials for mandatory use should be cleared prior to the submittal of the Plans Specifications & Estimates (PS&E).

b. Patented/Proprietary Products References: 23 U.S.C. 112, 23 CFR 635.411

FHWA will not participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project, unless:

- the item is purchased or obtained through competitive bidding with equally suitable unpatented items,
- the STA certifies either that the proprietary or patented item is essential for synchronization with the existing highway facilities or that no equally suitable alternative exists, or
- the item is used for research or for a special type of construction on relatively short sections of road for experimental purposes. States should follow FHWA's procedures for "Construction Projects Incorporating Experimental Features" (expermnt.htm) for the submittal of work plans and evaluations.

The primary purpose of the policy is to have competition in selection of materials and allow for development of new materials and products. The policy further permits materials and products that are judged equal may be bid under generic specifications. If only patented or proprietary products are acceptable, they shall be bid as alternatives with all, or at least a reasonable number of, acceptable materials or products listed; and the Division Administrator may approve a single source if it can be found that its utilization is in the public interest.

Trade names are generally the key to identifying patented or proprietary materials. Trade name examples include 3M, Corten, etc. Generally, products identified by their brand or trade name are not to be specified without an "or equal" phrase, and, if trade names are used, all, or at least a reasonable number of acceptable "equal" materials or products should be listed. The licensing of several suppliers to produce a product does not change the fact that it is a single product and should not be specified to the exclusion of other equally suitable products.

c. State Preference References: 23 U.S.C. 112, 23 CFR 635.409

Materials produced within Maine shall not be favored to the exclusion of comparable materials produced outside of Maine. State preference clauses give particular advantage to the designated source and thus restrict competition. Therefore, State preference provisions shall not be used on any Federal-aid construction projects.

This policy also applies to State preference actions against materials of foreign origin, except as otherwise permitted by Federal law. Thus, States cannot give preference to in-State material sources over foreign material sources. Under the Buy America provisions, the States are

permitted to expand the Buy America restrictions provided that the STA is legally authorized under State law to impose more stringent requirements.

d. State Owned/Furnished/Designated Materials References: 23 U.S.C. 112, 23 CFR 635.407

Current FHWA policy requires that the contractor must furnish all materials to be incorporated in the work, and the contractor shall be permitted to select the sources from which the materials are to be obtained. Exceptions to this requirement may be made when there is a definite finding, by MaineDOT and concurred in by Federal Highway Administration's (FHWA) Division Administrator, that it is in the public interest to require the contractor to use materials furnished by the MaineDOT or from sources designated by MaineDOT. The exception policy can best be understood by separating State-furnished materials into the categories of manufactured materials and local natural materials.

Manufactured Materials When the use of State-furnished manufactured materials is approved based on a public interest finding, such use must be made mandatory. The optional use of State-furnished manufactured materials is in violation of our policy prohibiting public agencies from competing with private firms. Manufactured materials to be furnished by MaineDOT must be acquired through competitive bidding, unless there is a public interest finding for another method, and concurred in by FHWA's Division Administrator.

Local Natural Materials When MaineDOT owns or controls a local natural materials source such as a borrow pit or a stockpile of salvaged pavement material, etc., the materials may be designated for either optional or mandatory use; however, mandatory use will require a public interest finding (PIF) and FHWA's Division Administrator's concurrence.

In order to permit prospective bidders to properly prepare their bids, the location, cost, and any conditions to be met for obtaining materials that are made available to the contractor shall be stated in the bidding documents.

Mandatory Disposal Sites Normally, the disposal site for surplus excavated materials is to be of the contractor's choosing; although, an optional site(s) may be shown in the contract provisions. A mandatory site shall be specified when there is a finding by MaineDOT, with the concurrence of the Division Administrator, that such placement is the most economical or that the environment would be substantially enhanced without excessive cost. Discussion of the mandatory use of a disposal site in the environmental document may serve as the basis for the public interest finding.

Summarizing FHWA policy for the mandatory use of borrow or disposal sites:

- mandatory use of either requires a public interest finding and FHWA's Division Administrator's concurrence,
- mandatory use of either may be based on environmental consideration where the environment will be substantially enhanced without excessive additional cost, and
- where the use is based on environmental considerations, the discussion in the environmental document may be used as the basis for the public interest finding.

Factors to justify a public interest finding should include such items as cost effectiveness, system integrity, and local shortages of material.

C. Standard FHWA Contract Provisions - FHWA 1273

Unless expressly otherwise provided in the Bid Documents, the following "Required Contract Provisions, Federal Aid Construction Contracts", FHWA-1273, are hereby incorporated into the Bid Documents and Contract.

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Cargo Preference Act : Contractor and Subcontractor Clauses. "Use of United States-flag vessels: The contractor agrees—"(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels."(2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590."(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."(Reorganization Plans No. 21 of 1950 (64 Stat. 1273) and No. 7 of 1961 (75 Stat. 840) as amended by Pub. L. 91-469 (84 Stat. 1036) and Department of Commerce Organization Order 10-8 (38 FR 19707, July 23, 1973)) [42 FR 57126, Nov. 1, 1977]

The Cargo Preference Act requirements apply to materials or equipment that are acquired for a specific Federal-aid highway project. In general, the requirements are not applicable to goods or materials that come into inventories independent of an FHWA funded-contract. For example, the requirements would not apply to shipments of Portland cement, asphalt cement, or aggregates, as industry suppliers and contractors use these materials to replenish existing inventories. In general, most of the materials used for highway construction originate from existing inventories and are not acquired solely for a specific Federal-aid project. However, if materials or equipment are acquired solely for a Federal-aid project, then the Cargo Preference Act requirements apply."

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Start of FHWA 1273 REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS (As revised through May 1, 2012)

FHWA-1273 -- Revised May 1, 2012

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment,

termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability.

The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women.

Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even

though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act),

daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a

different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

End of FHWA 1273

The United States Department of Transportation (USDOT) Standard Title VI/Non-Discrimination Assurances

DOT Order No. 1050.2A

The ***Maine Department of Transportation*** (herein referred to as the "Recipient"), **HEREBY AGREES THAT**, as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation (DOT), through the ***Federal Highway Administration (FHWA***), is subject to and will comply with the following:

Statutory/Regulatory Authorities

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- 49 C.F.R. Part 21 (entitled Non-discrimination In Federally-Assisted Programs Of The Department Of Transportation-Effectuation Of Title VI Of The Civil Rights Act Of 1964);
- 28 C.F.R. Section 50.3 (U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964);

The preceding statutory and regulatory cites hereinafter are referred to as the "Acts" and "Regulations," respectively.

General Assurances

In accordance with the Acts, the Regulations, and other pertinent directives, circulars, policy, memoranda, and/or guidance, the Recipient hereby gives assurance that it will promptly take any measures necessary to ensure that:

> *"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity, "for which the Recipient receives Federal financial assistance from DOT, including the* ***FHWA****.*

The Civil Rights Restoration Act of 1987 clarified the original intent of Congress, with respect to Title VI and other Non-discrimination requirements (The Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973), by restoring the broad, institutional-wide scope and coverage of these non-discrimination statutes and requirements to include all programs and activities of the Recipient, so long as any portion of the program is Federally assisted.

Specific Assurances

More specifically, and without limiting the above general Assurance, the Recipient agrees with and gives the following Assurances with respect to its Federally assisted ***Highway Program***:

1. The Recipient agrees that each "activity," "facility," or "program," as defined in §§ 21.23(b) and 21.23(e) of 49 C.F.R. § 21 will be (with regard to an "activity") facilitated, or will be (with regard

E

to a "facility") operated, or will be (with regard to a "program") conducted in compliance with all requirements imposed by, or pursuant to the Acts and the Regulations.

2. The Recipient will insert the following notification in all solicitations for bids, Requests For Proposals for work, or material subject to the Acts and the Regulations made in connection with all ***Federal-Aid Highway Program activities*** and, in adapted form, in all proposals for negotiated agreements regardless of funding source:

> "The ***Maine Department of Transportation***, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 US.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."

3. The Recipient will insert the clauses of Appendix A and E of this Assurance in every contract or agreement subject to the Acts and the Regulations.

4. The Recipient will insert the clauses of Appendix B of this Assurance, as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Recipient.

5. That where the Recipient receives Federal financial assistance to construct a facility, or part of a facility, the Assurance will extend to the entire facility and facilities operated in connection therewith.

6. That where the Recipient receives Federal financial assistance in the form, or for the acquisition of real property or an interest in real property, the Assurance will extend to rights to space on, over, or under such property.

7. That the Recipient will include the clauses set forth in Appendix C and Appendix D of this Assurance, as a covenant running with the land, in any future deeds, leases, licenses, permits, or similar instruments entered into by the Recipient with other parties:

   a. for the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
   b. for the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.

8. That this Assurance obligates the Recipient for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the Assurance obligates the Recipient, or any transferee for the longer of the following periods:

a. the period during which the property is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits; or
b. the period during which the Recipient retains ownership or possession of the property.

9. The Recipient will provide for such methods of administration for the program as are found by the Secretary of Transportation or the official to whom he/she delegates specific authority to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the Acts, the Regulations, and this Assurance.

10. The Recipient agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the Acts, the Regulations, and this Assurance.

By signing this ASSURANCE, the ***Maine Department of Transportation*** also agrees to comply (and require any sub-recipients, sub-grantees, contractors, successors, transferees, and/or assignees to comply) with all applicable provisions governing the ***FHWA and USDOT*** access to records, accounts, documents, information, facilities, and staff. You also recognize that you must comply with any program or compliance reviews, and/or complaint investigations conducted by the ***FHWA and USDOT***. You must keep records, reports, and submit the material for review upon request to ***FHWA and USDOT***, or its designee in a timely, complete, and accurate way. Additionally, you must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

The ***Maine Department of Transportation*** gives this ASSURANCE in consideration of and for obtaining any Federal grants, loans, contracts, agreements, property, and/or discounts, or other Federal-aid and Federal financial assistance extended after the date hereof to the recipients by the U.S. Department of Transportation under the ***Federal Aid Highway Program***. This ASSURANCE is binding on [***insert State***], other recipients, sub-recipients, sub-grantees, contractors, subcontractors and their subcontractors', transferees, successors in interest, and any other participants in the ***Federal Aid Highway Program***. The person(s) signing below is authorized to sign this ASSURANCE on behalf of the Recipient.

MAINE DEPARTMENT OF TRANSPORTATION
(*Name of Recipient*)

by _____
Bruce A. Van Note, Commissioner

DATED 2/13/19

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations**: The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, ***Federal Highway Administration (FWHA)***, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination**: The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment**: In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports**: The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the ***FHWA*** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the ***FHWA***, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance**: In the event of a contractor's noncompliance with the Non discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the ***FHWA*** may determine to be appropriate, including, but not limited to:

    a. withholding payments to the contractor under the contract until the contractor complies; and/or
    b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions**: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the ***FHWA*** may direct as a means of enforcing such provisions including sanctions for

noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX B

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the ***Maine Department of Transportation*** will accept title to the lands and maintain the project constructed thereon in accordance with ***23 U.S. Code § 107***, the Regulations for the Administration of ***the Federal Aid Highway Program***, and the policies and procedures prescribed by the ***FHWA*** of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the ***Maine Department of Transportation*** all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto ***Maine Department of Transportation*** and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the ***Maine Department of Transportation***, its successors and assigns.

The ***Maine Department of Transportation***, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the ***Maine Department of Transportation*** will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended [, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

APPENDIX C

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the ***Maine Department of Transportation*** pursuant to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

   1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, ***Maine Department of Transportation*** will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the ***Maine Department of Transportation*** will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the ***Maine Department of Transportation*** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by the ***Maine Department of Transportation*** pursuant to the provisions of Assurance 7(b):

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non discrimination covenants, the ***Maine Department of Transportation*** will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*

C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, the ***Maine Department of Transportation*** will there upon revert to and vest in and become the absolute property of the ***Maine Department of Transportation*** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Environmental Summary Sheet

WIN: **22511.01/22512.01** **Date Submitted:** February 14, 2022
Town: Old Town
CPD Team Leader: Andrea Brady
ENV Field Contact: Ryan Annis

NEPA Complete: 3/8/21 – Individual Categorical Exclusion: 771.117.d.13

☐ **Section 106**
SHPO Concurrence – No effect
Section 106 Resources: None

☐ **Section 4(f) and 6(f)**
Section 4(f)
No 4f properties.
Section 6(f)
No Takes

☒ **Maine Department of Inland Fisheries and Wildlife Essential Habitat**
Threatened yellow lampmussel and tidewater mucket were observed in July 2019. Mussel survey and relocation completed in July 2021. No followup monitoring required.

☒ **Section 7**
Species of Concern: Atlantic Salmon – Located within DPS and Critical Habitat
Comments/References: Formal Consultation with USFWS - Biological Opinion (BO) from USFWS was issued on March 3, 2021. **Special Conditions apply; see Special Provision 105**

Species of Concern: Northern Long-Eared Bat – Not Likely to Adversely Affect
Comments/References: Streamlined 4(d) Consultation Complete

☒ **Essential Fish Habitat**
EFH consultation for Atlantic Salmon was completed on March 5, 2021

☐ **Maine Department of Conservation/Public Lands, Submerged Land Lease**
Not Applicable

☐ **Maine Land Use Regulation Commission**
Not Applicable

☒ **Maine Department of Environmental Protection**
Permit by Rule (PBR) signed 8/27/2021
**Applicable Standards and Permit are included with the contract*

☒ **Army Corps of Engineers, Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.**
Individual Permit
- Work Start Notification Form and Compliance Certification Form to be completed by ENV Field Contact and submitted to ACOE with copy to Andrea Brady
- **Special Conditions apply; see Special Provision 105**

**Applicable Standards and Permit are included with the contract*

☐ **Stormwater Review**
N/A – Within regulated MS4 area but will not disturb more than one acre.

☒ **Special Provisions Required**

Special Provision 105-Environmental Requirements	**N/A**☐	**Applicable**☒
Special Provision 656-Minor Soil Disturbance	**N/A**☒	**Applicable**☐
Standard Specification 656-Erosion Control Plan	**N/A**☐	**Applicable**☒
Special Provision 203-Dredge Material	**N/A**☐	**Applicable**☒
Special Provision 203-Special Fill-Streambed Materials	**N/A**☒	**Applicable**☐
Special Provision 610-Stream Channel Rock	**N/A**☒	**Applicable**☐
General Note for Hazardous Waste	**N/A**☒	**Applicable**☐
Special Provision 203-Hazardous Waste	**N/A**☒	**Applicable**☐

**All permits and approvals based on plans/scope as of: 8/27/21*

DEPARTMENT OF THE ARMY PERMIT

Permittee Maine Department of Transportation, 16 State House Station, Augusta, Maine 04333-0016

Permit No. NAE-2021-2324

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Place temporary and permanent fill in order to replace two existing deteriorated Stillwater Avenue bridges. The project will result in approximately 14,015SF of permanent and 15,905SF of temporary stream bed impact.

The work is shown on the enclosed plans titled, “OLD TOWN – STILLWATER BRIDGES in one sheet dated “4/21/2021”, STILLWATER AVENUE, OLD TOWN, PENOBSCOT COUNTY in one sheet undated; “OLD TOWN PENOBSCOT COUNTY STILLWATER BRIDGES OVER STILLWATER RIVER, STILLWATER AVENUE” in one sheet dated “5/12/2021”; and “STILLWATER BRIDGES OVER STILLWATER RIVER, OLD TOWN, PENOBSCOT COUNTY” in five sheets dated “5/12/2021”.

Project Location:

In the Stillwater River at Old Town, Maine

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2027. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit is at the work site (and the project office) authorized by this permit whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit shall be made a part of any and all contracts and sub-contracts for work that affects areas of Corps jurisdiction at the site of the work authorized by this permit. This shall be achieved by including the entire permit in the specifications for work. The term "entire permit" means this permit (including its drawings, plans, appendices and other attachments) and also includes permit modifications.

If the permit is issued after the construction specifications, but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, the entire permit shall be included in the contract or sub-contract. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

2. The permittee shall complete and return the enclosed [Work Start Notification Form] and [Mitigation Work Start Notification Form] to this office at least two weeks before the anticipated starting date.

3. The permittee shall complete and return the enclosed Compliance Certification Form to this office at least within one month following the completion of the authorized work.

4. Adequate sedimentation and erosion control devices, such as geo-textile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.

5. No additional fill (e.g., access roads, cofferdams) may be placed in waters or wetlands unless specifically authorized by this permit. If temporary fill is used, it shall be disposed of at an upland site and suitably contained to prevent its subsequent erosion into a water of the U.S., and the area shall be restored to its original contours (but not higher) and character upon completion of the project. During use, such temporary fill must be stabilized to prevent erosion or, in the case fill placed in flowing water (rivers or streams), clean washed stone should be used.

6. Except where stated otherwise, reports, drawings, correspondence and any other submittals required by this permit shall be sent to the U.S. Army Corps of Engineers at , cenae-r-me@usace.army.mil with the subject line "Permit No. NAE-2021-2324" Documents which are not marked and addressed in this manner may not reach their intended destination and do not comply with the requirements of this permit.

7. All in-water work (e.g., the installation and removal of temporary bridge and cofferdam construction) will be conducted during the work windows outlined in the Formal Endangered Species Act Consultation between the Federal Highway Administration and the U.S. Fish & Wildlife Service date March 3, 2021. The work windows are designed to minimize effects on the most sensitive life stages of Atlantic salmon.

Permit Special Conditions Resulting From Formal Endangered Species Act Consultation Between the Federal Highway Administration (FHWA) and the U.S. Fish & Wildlife Service (USFWS) (Reference USFWS Biological Opinion (BO) dated "March 3, 2021")

1. The Maine DOT will hold a pre-construction meeting for appropriate Environmental Office staff from the Maine DOT, other Maine DOT staff, and the Maine DOT construction crew or contractor(s) to review all procedures and requirements for avoiding and lessening effects to Atlantic salmon and to ensure the protection of Atlantic salmon and its critical habitat. The Corps, the FHWA, and the Service will be provided an invitation to attend this meeting as well.

2. The Contractor will be required to submit a Soil Erosion and Water Pollution Control Plan (SEWPCP) for review and approval by the Maine DOT staff prior to the start of work. The plan includes the review of the implementation of any AMMs proposed.

3. As a component of the Soil Erosion and Water Pollution Control Plan (SEWPCP) for each project, the Maine DOT or their contractor will develop and implement a Spill Prevention Control and Countermeasure Plan (SPCCP) designed to avoid any stream impacts from hazardous chemicals associated with construction activities, such as diesel fuel, oil, lubricants, and other hazardous materials. All refueling or other construction equipment maintenance will be done at a location consistent with SPCCP and in a manner that avoids chemical or other hazardous materials getting into the stream. These measures include the following:
a. All vehicle and equipment refueling activities shall occur more than 100 feet (30.5 meters) from any water source.
b. All vehicles carrying fuel shall have specific equipment and materials needed to contain or clean up any incidental spills at the project site. Equipment and materials would include spill kits appropriately sized for specific quantities of fuel, shovels, absorbent pads, straw bales, containment structures and liners, and/or booms.

c. During use, all pumps and generators shall have appropriate spill containment structures and/or absorbent pads in place.
d. All equipment used for in-stream work shall be cleaned of external oil, grease, dirt, and mud. Any leaks or accumulations of these materials would be corrected before entering streams or areas that drain directly to streams or wetlands.

4. The Maine DOT will implement their BMPs in accordance with the Maine DOT: Best Management Practices for Erosion and Sedimentation Control (Maine DOT 2008). This BMP manual outlines means and methods to prevent sedimentation into streams from construction activities or storm events. This document is included by reference. These BMP measures include many filtering and sedimentation control techniques designed to dissipate water discharge energy (flow), filtering out sediments, and allowing particulate matter to settle out from suspension to the greatest extent practicable.

5. Vegetation clearing adjacent to the stream will be minimized to the maximum extent practicable. All areas of disturbed soil will be mulched and seeded with an approved native or noninvasive herbaceous seed mix following construction and/or planted with native woody vegetation and trees appropriate during the first available planting season, except where riprap has been placed.

6. To minimize the spread of noxious weeds into the riparian zone, all off-road equipment and vehicles (operating off of existing open and maintained roads) must be cleaned prior to entering the construction site to remove all soil, seeds, vegetation, or other debris that could contain seeds or reproductive portions of plants. All equipment will be inspected prior to off-loading to ensure that they are clean.

7. All in-water work (e.g., the installation and removal of temporary bridge and cofferdam construction) will be conducted during the work windows outlined in Table 1 of the BO. The work windows are designed to minimize effects on the most sensitive life stages of Atlantic salmon:

Table 1. In-water work windows and associated activities.

Activity	Window
Fill placement for temporary bridge	July 1 to March 30
Installation of work trestle	July 1 to March 30
Pier demolition	July 1 to March 30
Pile driving	July 1 to March 30
Cofferdam construction	July 1 to March 30
Work within cofferdam	Any time
Cofferdam removal	Any time
Placement of riprap	Any time
Temporary fill removal	Any time
Temporary structure removal	Any time

8. Construction of temporary approaches and abutments will be contained within turbidity curtains.

9. Fill for temporary approaches will be limited to no more than 25 percent of the width of the river.

10. Temporary fill will consist of non-erodible material on top of a geotextile fabric filter layer.

11. All areas of temporary waterway or wetland fill will be restored to their original contour and character upon the completion of the project.

12. Demolition and debris removal and disposal will comply with Section 202.03 of the Maine Dot's Standard Specifications. The Contractor will contain all demolition debris, including debris from wearing surface removal, saw cut slurry, dust, etc., and will not allow it to discharge to any resource. The Contractor will dispose of debris in accordance with the Maine Solid Waste Law (Title 38 M.R.S.A., Section 1301 et. seq.). The demolition plan, containment, and disposal of demolition debris will be addressed in the Contractor's SEWPCP.

13. Temporary bridge piles will be removed with a vibratory hammer.

14. Demolition of concrete piers of existing bridge will occur within containment such as turbidity curtains.

15. If piles are removed by cutting, they must be cut to one foot below the substrate level. If piles are removed by pulling, the work will be completed using a BMP to minimize turbidity.

16. Sheet pile installation and removal will be completed using a vibratory hammer.

17. To minimize fish stranding inside the cofferdam when dewatering, the Maine DOT environmental staff or similarly qualified consultants will adhere to the Maine DOT's Fish Check Protocol. Closure of the cofferdam will be delayed if any fish are observed inside. The Maine DOT will contact the Service's Maine Fish and Wildlife Complex at 207/902- 1586 (Patrick Dockens) any time an Atlantic salmon is observed.

18. Any concrete in contact with water must have a pH between 6.0 and 8.5, must be within one pH unit of the background pH level of the stream, and must have a turbidity level no greater than the receiving resource. Disposal or treatment of water not meeting release criteria will be addressed in the SEWPCP. Discharging impounded water to the stream must take place in a manner that does not disturb the stream bottom or cause erosion. The Contractor shall be responsible for monitoring pH with a calibrated meter accurate to 0.1 units. A record of pH measurements shall be kept in the Environmental Field Representative's log. This requirement is applicable to concrete that is placed or spilled (including leakage from forms) as well as indirect contact via tools or equipment.

19. If adult Atlantic salmon are observed within the action area during pile driving, cofferdam construction, or fill or riprap placement in the water; the Maine DOT will follow procedures described in the Maine DOT's Fish Check Protocol to encourage the adult Atlantic salmon to leave the action area.

20. Steel H-pile size is limited to less than 14 inches and steel pipe pile size is limited to less than 30 inches.

21. A vibratory hammer will be used as much as possible for all pile driving activities.

22. Pile driving will occur during the day when fish are less active and Atlantic salmon migrations are minimized.

23. Any use of an impact hammer during pile driving will require the use of passive attenuation measures (changing hammer type, reducing driving duration, reducing force settings) and active measures (cushions and bubble curtains).

24. Hydroacoustic monitoring will be completed for all in-water pile driving with an impact hammer. Preliminary results of monitoring event(s) will be reported to the Service within five business days. Submittal of final data/report will occur within two months.

25. Minimize the adverse effects to and incidental take of Atlantic salmon by employing construction techniques and Atlantic salmon handling methods that avoid or minimize adverse effects to water quality, aquatic and riparian habitats, and all aquatic organisms.

26. Minimize the adverse effects to, and incidental take of Atlantic salmon related to aquatic habitat connectivity and fish passage by ensuring that the project is built as proposed.

27. Ensure the completion of a monitoring, evaluation, and reporting program to monitor project implementation and compliance with conservation and best management practices measures and to confirm that this project has been effective in minimizing incidental take from the FHWA funded and the Corps authorized activity. Efforts to minimize incidental take shall be conducted in accordance with BMPs, conservation measures, and as the action is further described in Section 2 of the BO, and such that the amount of allowable incidental take is not exceeded.

28. Construction impacts shall be confined to the minimum area necessary to complete the project.

29. Fish passage through the project area will be available at all times. The cofferdams or netting will never close off the stream, and flow will continue between the devices on either side of the stream.

30. Movement effects and other effects created from cofferdam use will be minimized by limiting cofferdam placement to the time necessary to complete instream activities, assuring that the cofferdam will be placed in the stream as shown in submitted drawings, and by maintaining a flow channel throughout the instream construction period. The cofferdams will be removed as soon as practicable after the completion of instream construction.

31. All Atlantic salmon mortalities from electrofishing or any other project related activities shall be reported to the Service's Maine Field Office at 207-902-1586 (Patrick Dockens) within 48 hours of occurrence. Any Atlantic salmon death(s) shall be immediately preserved (refrigerate or freeze) for delivery to the Service's office in East Orland, Maine. If the Service is not available, contact the National Marine Fisheries Service in Orono, Maine at 207-866-3755 (Dan Tierney) to arrange for delivery.

32. The Maine DOT Fish Check Protocol will be extended to any actions that lead to fill or riprap placed in the water to review the work area for adult Atlantic salmon before fill or riprap placement activities begin.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
( ) Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408).
(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d, This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from Natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interested decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

(Permittee) _____ (Date) 2/14/2022

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

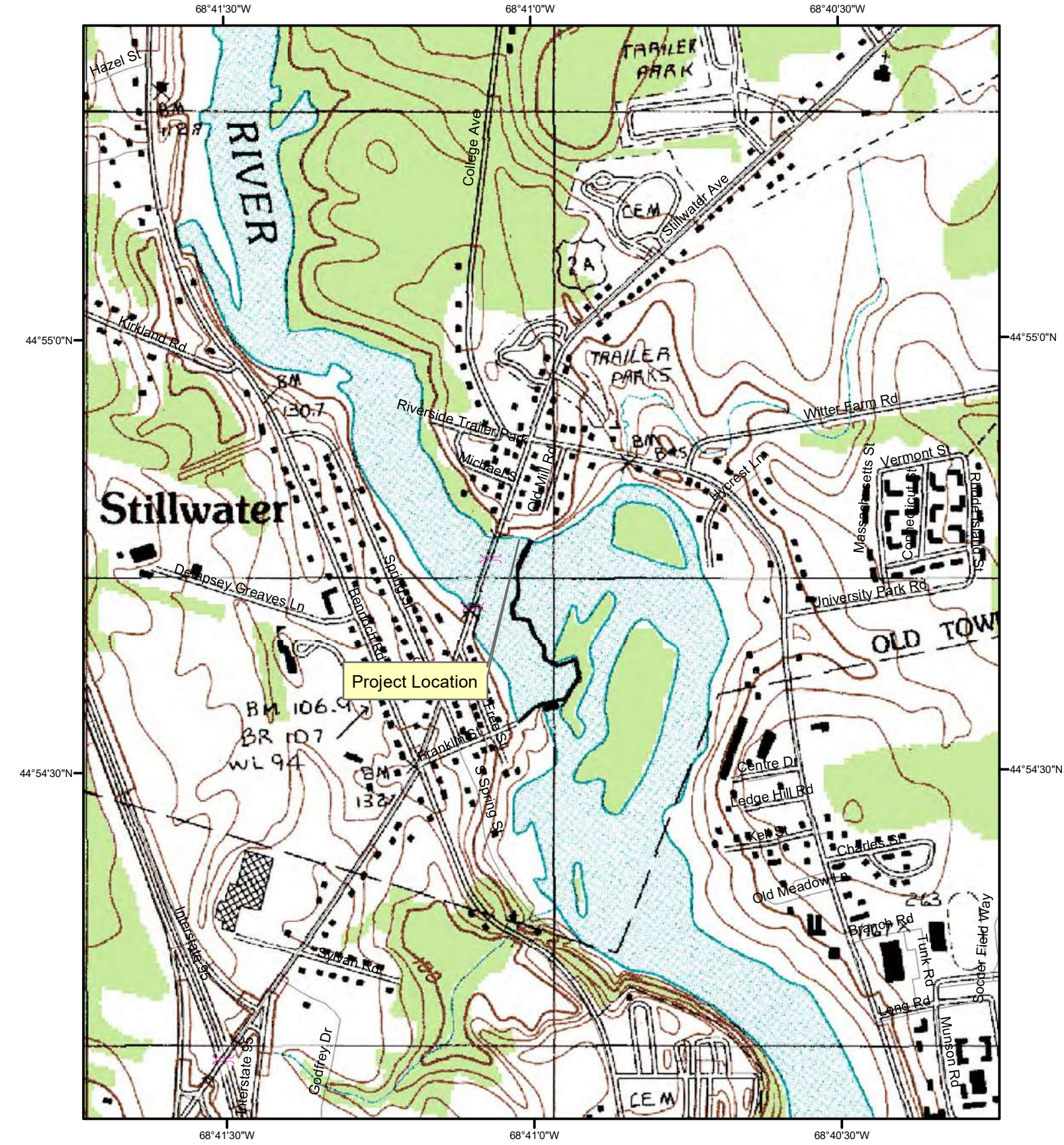
Frank J Del Giudice Digitally signed by Frank J Del Giudice Date: 2022.02.14 11:10:29 -05'00' _____ (Date) 14 FEB 2022

(District Engineer) Frank J. Del Giudice
Chief, Permits & Enforcement Branch
Regulatory Division
For: District Engineer

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(Transferee) (Date)



-68.68471
44.91206

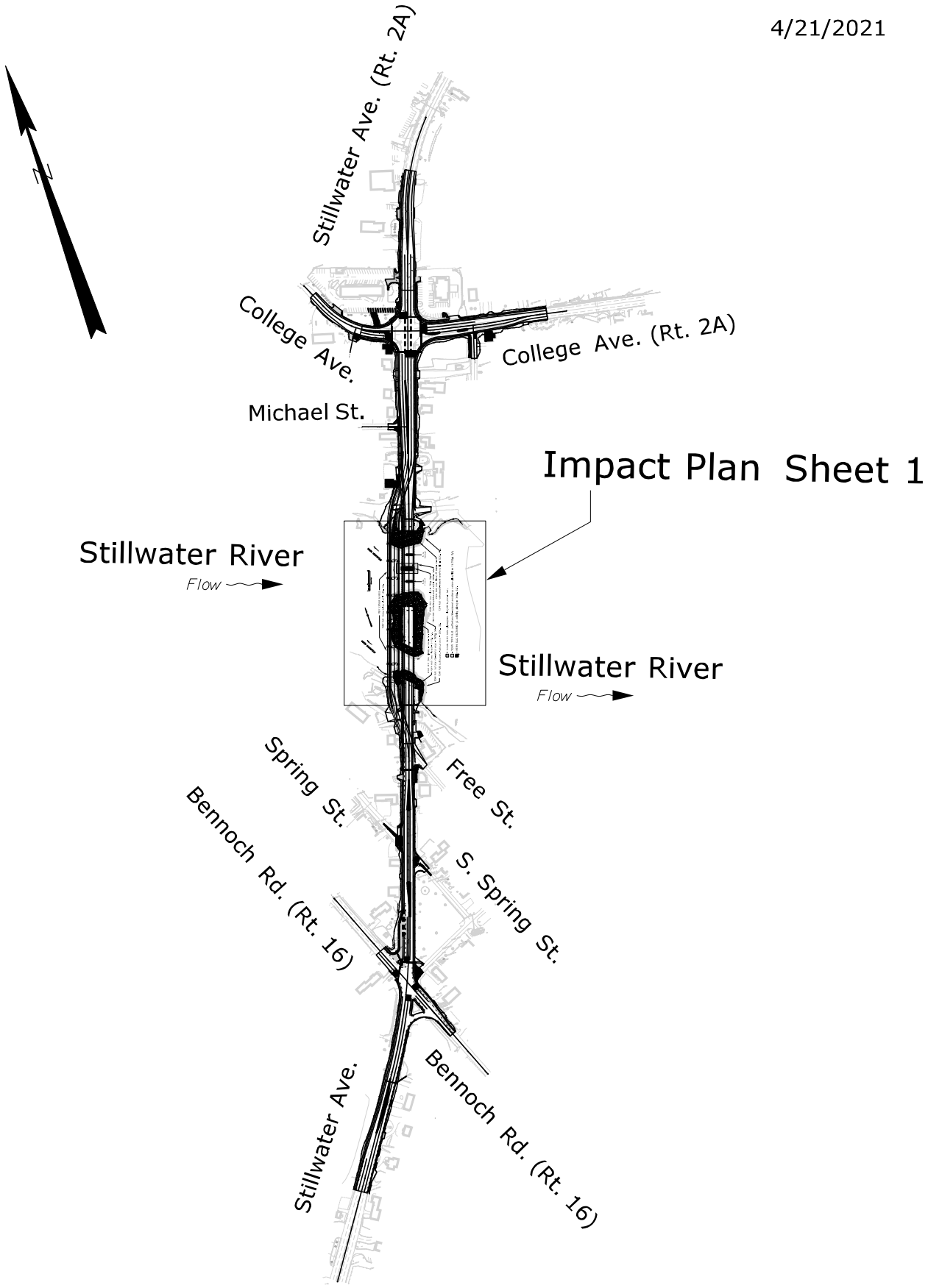
0 145 290 580 870 1,160 Feet

MDOT WIN 202511.00 & 22512.00
Old Town- Stillwater Bridges
bridge improvements

N
W E
S

Old Town - Stillwater Bridges
WIN 22511.00 / 22512.00

4/21/2021



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	Stillwater Ave OLD TOWN PENOBSCOT COUNTY	SHEET NUMBER 1 OF1
22511.00 & 22512.00	PLANS	

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PLANS PREPARED BY:
vhb
500 Southborough Drive, Suite 105B
South Portland, Maine 04106

SPECIFICATIONS

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Ninth Edition 2020.

DESIGN LOADING

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

TRAFFIC DATA

Current (2023) AADT	16360
Future (2043) AADT	18000
DHV - % of AADT	11%
Design Hour Volume	1907
% Heavy Trucks (AADT)	5%
% Heavy Trucks (DHV)	3%
Directional Distribution (DHV)	51%
18 kip Equivalent P 2.0	339
18 kip Equivalent P 2.5	323
Design Speed (mph)	25
Functional Class	Minor Arterial
Highway Corridor Priority	2

HYDROLOGIC DATA

Drainage Area	326 sq mi
Design Discharge (Q50)	43,050 cfs
Check Discharge (Q100)	52,540 cfs
Headwater Elevation (Q1.1)	93.7 ft
Headwater Elevation (Q25)	98.4 ft
Headwater Elevation (Q50)	98.6-98.7 ft
Headwater Elevation (Q100)	100.2-100.3 ft
Discharge Velocity (Q1.1)	5.6-5.9 fps
Discharge Velocity (Q50)	14.3-16.0 fps
Discharge Velocity (Q100)	16.2-17.7 fps

MATERIALS

Concrete:	
Curbs, Sidewalks, and Pier Subfooting	Class "S"
All Other	Class "A"
Reinforcing Steel:	
Mild Stainless	ASTM A615/A615M, Grade 60
Stainless	ASTM A955/A995M, Grade 75
Structural Steel:	
All Material (except as noted)	ASTM A709, Grade 50 (Metallized)
High Strength Bolts	ASTM F3125, Grade A325, Type 3

BASIC DESIGN STRESSES

Class "S" Concrete	f 'c = 3000 psi
Class "A" Concrete	f 'c = 4000 psi
Mild Reinforcing Steel	f y = 60,000 psi
Stainless Reinforcing Steel	f y = 75,000 psi
Structural Steel:	
ASTM A 709, Grade 50	F y = 50,000 psi
ASTM F 3125, Grade A 325	F u = 120,000 psi

OLD TOWN
PENOBSCOT COUNTY
STILLWATER BRIDGES
OVER
STILLWATER RIVER
STILLWATER AVENUE

FEDERAL AID PROJECT NO.
STP-02251(100) & STP-02251(200)

PROJECT LENGTH 0.106 mi.
BRIDGE REPLACEMENTS
BRIDGE NO.1 (1472)
&
BRIDGE NO.2 (2806)

85% SUBMISSION
NOT FOR
CONSTRUCTION
5/12/2021

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UTILITIES

Emera Maine	Spectrum
Fairpoint Communications	Maine Fiber
Old Town Water and Sewer District	

MAINTENANCE OF TRAFFIC

Temporary two-lane bridge with a minimum curb to curb width of 30'-0" on the upstream side of proposed bridges, with temporary 5'-0" sidewalk on west side of temporary bridge.

PROJECT LOCATION	Bridges are located 0.69 miles north east of I-95 Exit 193 N and Stillwater Ave. Bridge No. 1 Coordinates of Latitude 44°54'41.50"N Longitude 68°41'5.70"W Bridge No. 2 Coordinates of Latitude 44°54'45"N Longitude 68°41'4.0"W
PROGRAM AREA	Bridge Program "Highway Bridges - Traditional"
OUTLINE OF WORK	Bridge Construction: Bridge replacement and related approach work.

WIN 022512.00
WIN 022511.00

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
APPROVED
DATE
COMMISSIONER:
CHIEF ENGINEER:

PRELIMINARY
NOT FOR CONSTRUCTION
5/12/2021

PROJECT INFORMATION

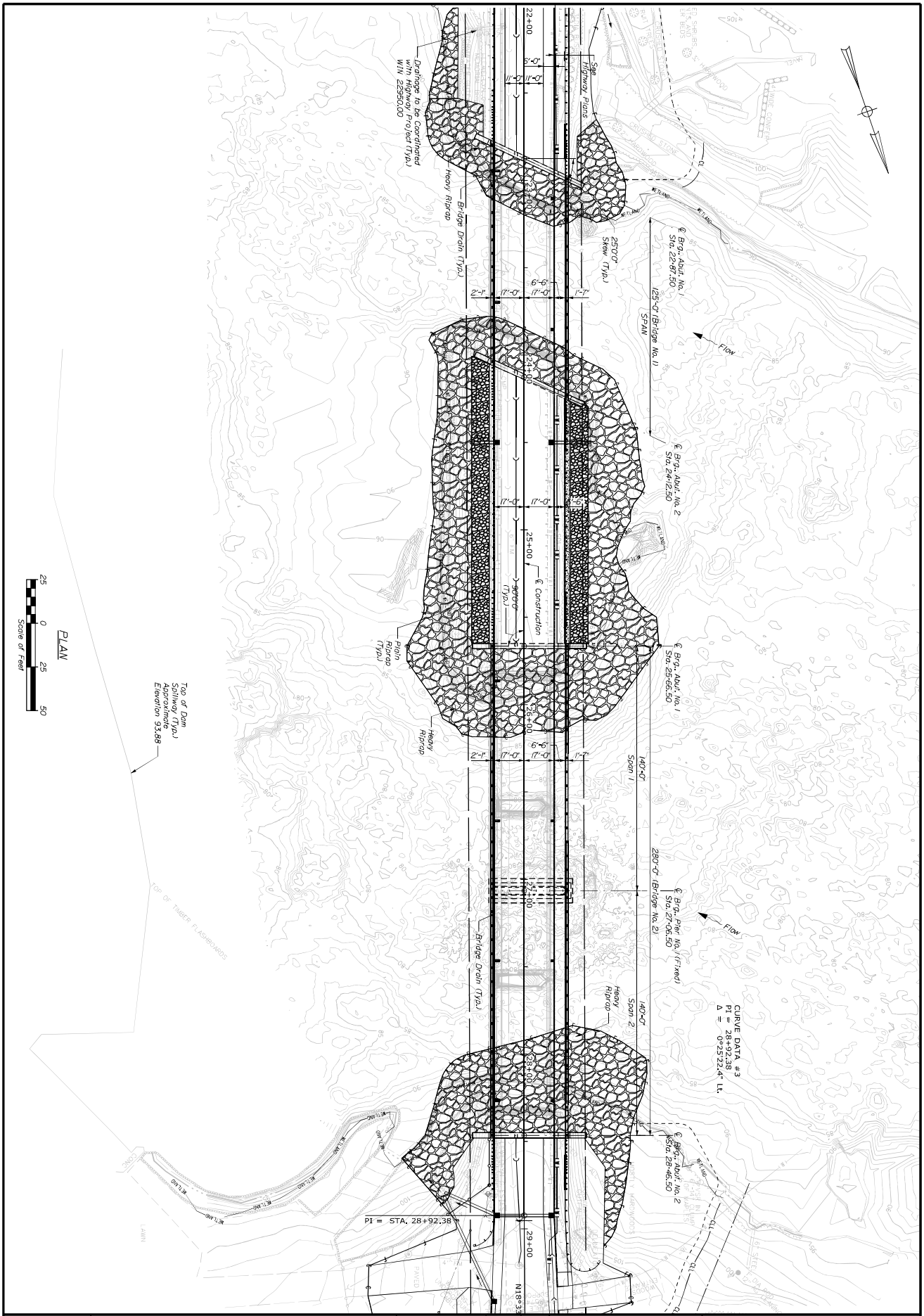
PROGRAM	BRIDGE
PROJECT MANAGER	MICHAEL WIGHT
DESIGNER	ROBERT BLUNT
CONSULTANT	VHB
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

OLD TOWN
STILLWATER BRIDGES

TITLE SHEET

SHEET NUMBER
1
OF 51

Filename: ...\OOB\BRIDGE\MSTA\001_Title.dgn Division: HIGHWAY Username: kwentworth Date:5/12/2021



STILLWATER BRIDGES OVER STILLWATER RIVER OLD TOWN PENOBSCOT COUNTY	PROJ. MANAGER MICHAEL WIGHT	BY	DATE
	DESIGN-DETAILED CJ COOK	P. DONOVAN	5/12/21
	CHECKED-REVIEWED CT AYERS	RS BLUNT	5/12/21
	DESIGN2-DETAILED2		
	DESIGN3-DETAILED3		
	REVISIONS 1		
	REVISIONS 2		
	REVISIONS 3		
	REVISIONS 4		
	FIELD CHANGES		

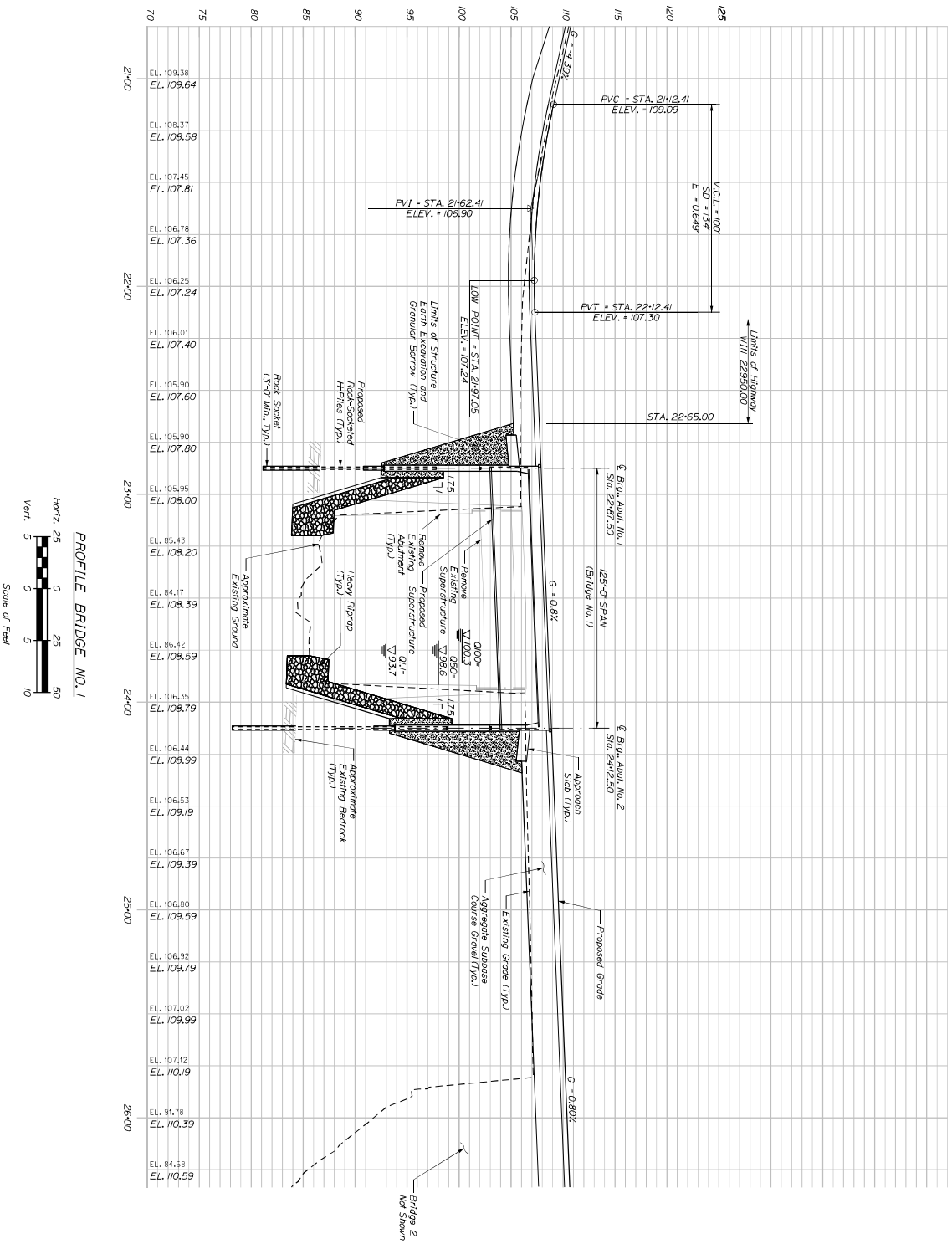
PRELIMINARY
NOT FOR CONSTRUCTION
5/12/2021

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 1472 WIN 022512.00
BRIDGE NO. 2806 WIN 022511.00
BRIDGE PLANS

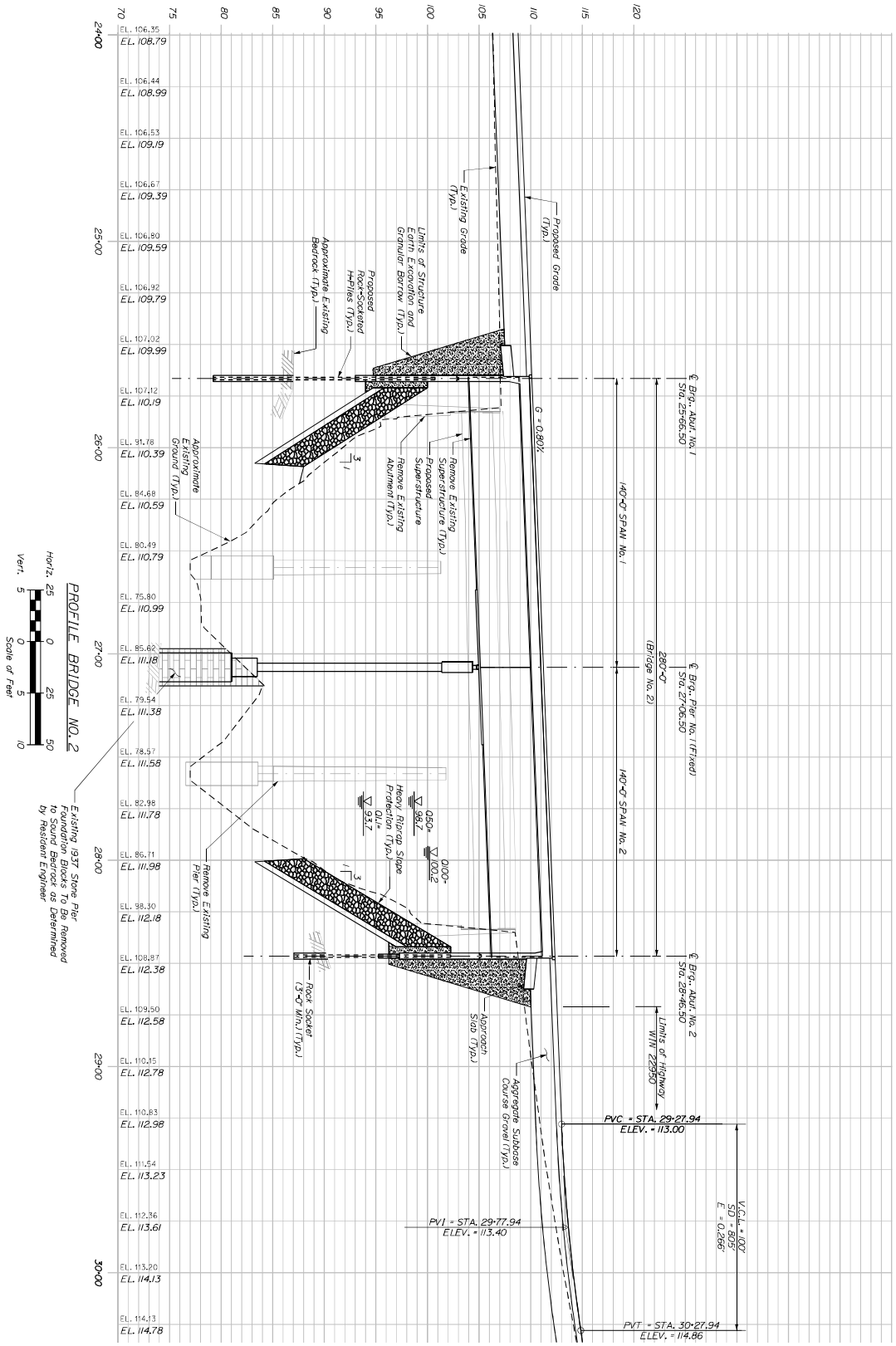
GENERAL PLAN

SHEET NUMBER 4 OF 51



SHEET NUMBER 5 OF 51	STILLWATER BRIDGES OVER STILLWATER RIVER OLD TOWN PENOBSCOT COUNTY PROFILE (1 OF 2)	PROJ. MANAGER MICHAEL WIGHT / BY / DATE DESIGN-DETAILED: CJ COOK / P. DONOVAN / 5/12/21 CHECKED-REVIEWED: CT AYERS / RS BLUNT / 5/12/21 DESIGN2-DETAILED2 DESIGN3-DETAILED3 REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4 FIELD CHANGES	PRELIMINARY NOT FOR CONSTRUCTION 5/12/2021	STATE OF MAINE DEPARTMENT OF TRANSPORTATION BRIDGE NO. 1472 WIN 022512.00 BRIDGE NO. 2806 WIN 022511.00 BRIDGE PLANS

519



SHEET NUMBER 6 OF 51	STILLWATER BRIDGES OVER STILLWATER RIVER OLD TOWN PENOBSCOT COUNTY PROFILE (2 OF 2)	PROJ. MANAGER MICHAEL WIGHT / BY / DATE DESIGN-DETAILED: CJ COOK / P. DONOVAN / 5/12/21 CHECKED-REVIEWED: CT AYERS / RS BLUNT / 5/12/21 DESIGN2-DETAILED2 DESIGN3-DETAILED3 REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4 FIELD CHANGES	PRELIMINARY NOT FOR CONSTRUCTION 5/12/2021	STATE OF MAINE DEPARTMENT OF TRANSPORTATION BRIDGE NO. 1472 WIN 022512.00 BRIDGE NO. 2806 WIN 022511.00 BRIDGE PLANS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PRELIMINARY
NOT FOR CONSTRUCTION
5/12/2021

BRIDGE NO. 1472 WIN 022512.00
BRIDGE NO. 2806 WIN 022511.00
BRIDGE PLANS

DESIGN-DETAILED	C.J. COOK	P. DONOVAN	5/12/21
CHECKED-RECMED	CT. AYERS	RS. BLUNT	5/12/21
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

PROJ. MANAGER MICHAEL WIGHT BY DATE

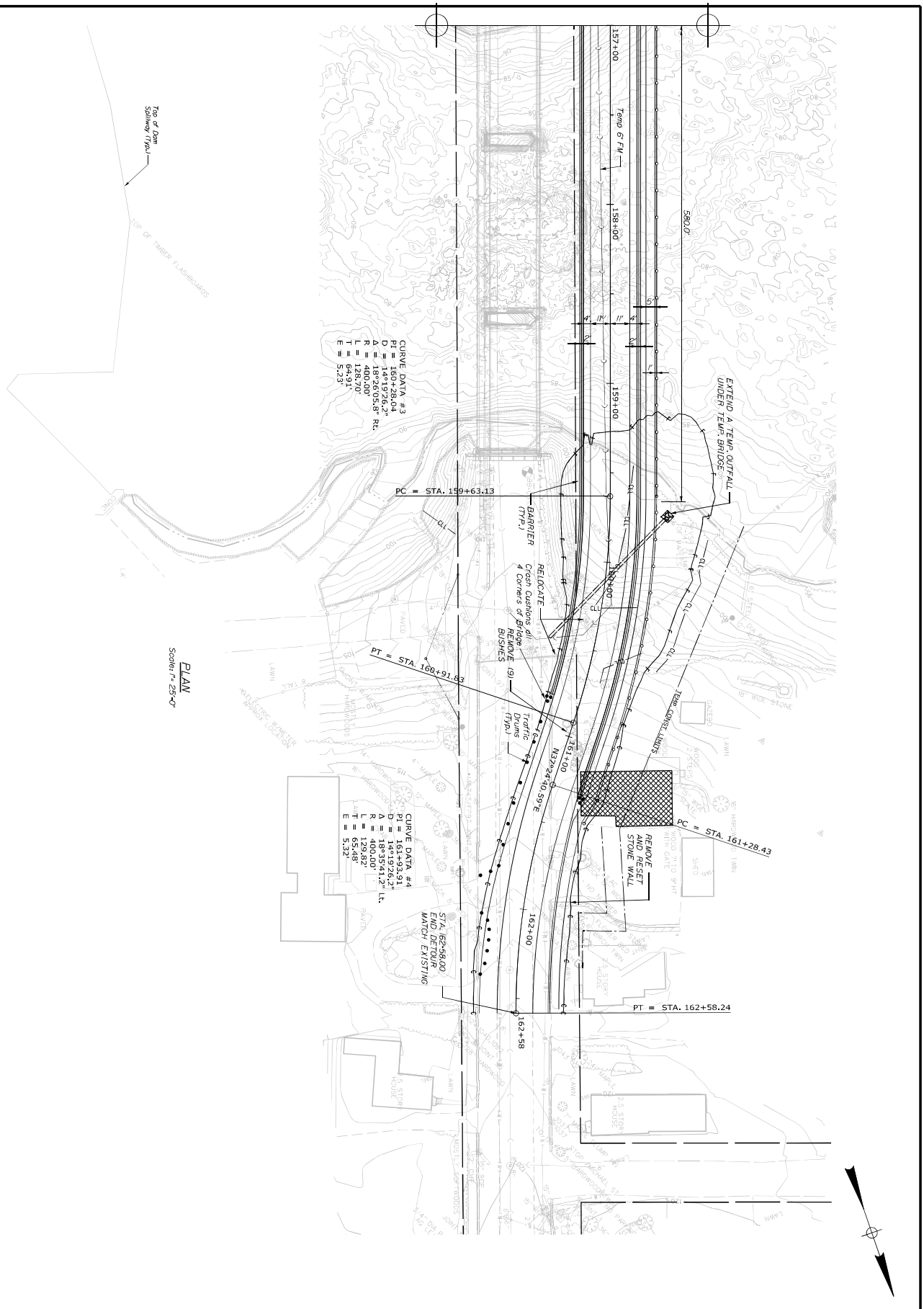
STILLWATER BRIDGES
OVER STILLWATER RIVER
OLD TOWN PENOBSCOT COUNTY

TEMPORARY BRIDGE PLAN
(1 OF 2)

SHEET NUMBER 16 OF 51

PLAN
Scale: 1" = 25'-0"

Filename: ...\BRIDGE\MSTA\016_Temp-Brg1.dgn Division: HIGHWAY Date: 5/12/2021



SHEET NUMBER 17 OF 51	STILLWATER BRIDGES OVER STILLWATER RIVER OLD TOWN PENOBSCOT COUNTY TEMPORARY BRIDGE PLAN (2 OF 2)	PROJ. MANAGER MICHAEL WIGHT / BY / DATE DESIGN-DETAILED: CJ COOK / P. DONOVAN / 5/12/21 CHECKED-REVIEWED: CT AYERS / RS BLUNT / 5/12/21 DESIGN2-DETAILED2 DESIGN3-DETAILED3 REVISIONS 1 REVISIONS 2 REVISIONS 3 REVISIONS 4 FIELD CHANGES	PRELIMINARY NOT FOR CONSTRUCTION 5/12/2021	STATE OF MAINE DEPARTMENT OF TRANSPORTATION BRIDGE NO. 1472 WIN 022512.00 BRIDGE NO. 2806 WIN 022511.00 BRIDGE PLANS

PBR # 73187, $256.00 Internl Bill, 8/27/21

DEPARTMENT OF ENVIRONMENTAL PROTECTION

PERMIT BY RULE NOTIFICATION FORM

(For use with DEP Regulation, Natural Resources Protection Act - Permit by Rule Standards, Chapter 305)

APPLICANT INFORMATION (Owner)		AGENT INFORMATION (If Applying on Behalf of Owner)	
Name:	MaineDOT	Name:	Andrea Brady, MaineDOT ENV
Mailing Address:	15 Station House Station	Mailing Address:	
Mailing Address:		Mailing Address:	
Town/State/Zip:	Augusta, ME 04344	Town/State/Zip:	
Daytime Phone #:	(207) 624-3000 Ext:	Daytime Phone #:	(207) 592-0523 Ext:
Email Address:	Andrea.F.Brady@maine.gov	Email Address:	andrea.f.brady@maine.gov

PROJECT INFORMATION

Part of a larger project? (check 1):	❑ Yes ☑ No	After the Fact? (check 1):	❑ Yes ☑ No	Project involves work below mean low water? (check 1):	❑ Yes ❑ No	Name of waterbody:	Stillwater River
Project Town:	Oldtown, ME		Town Email Address:			Map and Lot Number:	
Brief Project Description:	Replacement of 2 structurally deficient bridges with a 125 ft span on Bridge 1 and 2 140-ft spans on Bridge 2. Traffic will be maintained via a 2-lane temp bridge on the upstream side. Temporary work trestle supported by temp pile bents on downstream side						
Project Location & Brief Directions to Site:	Stillwater Bridges #1472 & 2806 , carrying Stillwater Avenue over the Stillwater River, located 0.69 miles north east of I-95 Exit 193 N and Stillwater Ave.						

PERMIT BY RULE (PBR) SECTIONS (Check at least one): I am filing notice of my intent to carry out work that meets the requirements for Permit-by-Rule (PBR) under DEP Rules, Chapter 305. I and my agent(s), if any, have read and will comply with all of the standards in the Sections checked below.

- ❑ **Sec. (2) Act. Adj. to Prot. Natural Res.**
- ❑ **Sec. (3) Intake Pipes**
- ❑ **Sec. (4) Replacement of Structures**
- ❑ **Sec. (6) Movement of Rocks or Veg.**
- ❑ **Sec. (7) Outfall Pipes**
- ❑ **Sec. (8) Shoreline Stabilization**
- ❑ **Sec. (9) Utility Crossing**
- ❑ **Sec. (10) Stream Crossing**
- ☑ **Sec. (11) State Transportation Facilities**
- ❑ **Sec. (12) Restoration of Natural Areas**
- ❑ **Sec. (13) F&W Creat./Water Qual. Improv.**
- ❑ **Sec. (15) Public Boat Ramps**
- ❑ **Sec. (16) Coastal Sand Dune Projects**
- ❑ **Sec. (17) Transfer/Permit Extension**
- ❑ **Sec. (18) Maintenance Dredging**
- ❑ **Sec. (19) Act. Near SVP Habitat**
- ❑ **Sec. (20) Act. Near Waterfowl/Bird Habitat**

NOTE: Municipal permits also *may* be required. Contact your local code enforcement office for information. Federal permits may be required for stream crossings and for projects involving wetland fill. Contact the Army Corps of Engineers at the Maine Project Office for information.

NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS AND FEE

- ☑ ***Attach*** **all required submissions for the PBR Section(s) checked above. The required submissions for each PBR Section are outlined in Chapter 305 and may differ depending on the Section you are submitting under.**
- ☑ ***Attach*** a location map that clearly identifies the site (U.S.G.S. topo map, Maine Atlas & Gazetteer, or similar).
- ❑ ***Attach*** *Proof of Legal Name* if applicant is a corporation, LLC, or other legal entity. Provide a copy of Secretary of State's *registration information* (available at http://icrs.informe.org/nei-sos-icrs/ICRS?MainPage=x). Individuals and municipalities are not required to provide any proof of identity.

FEE: Pay by credit card at the **Payment Portal**. The Permit-by-Rule fee may be found here https://www.maine.gov/dep/feeschedule.pdf and is currently $256.

Internal Billing-State Agency : WIN 22511_22512

- ❑ **Attach payment confirmation from the Payment Portal when filing this notification form.**

Signature & Certification:

- I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules.
- I understand that this PBR becomes effective 14 calendar days after receipt by the Department of this completed form, the required submissions, and fee, *unless the Department approves or denies the PBR prior to that date.*

By signing this Notification Form, I represent that the project meets all applicability requirements and standards in Chapter 305 rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.

Signature of Agent or Applicant (may be typed):	Andrea F. Brady	Date:	8/27/2021

Keep a copy as a record of permit. Email this completed form with attachments to DEP at: DEP.PBRNotification@maine.gov
DEP will send a copy to the Town Office as evidence of DEP's receipt of notification. No further authorization will be issued by DEP after receipt of notice. A PBR is valid for two years, except Section 4, "Replacement of Structures," are valid for three years. **Work carried out in violation of the Natural Resources Protection Act or any provision in Chapter 305 is subject to enforcement.**

Accepted 9/12/2021

11. State transportation facilities

A. Applicability

(1) This section applies to the maintenance, repair, reconstruction, rehabilitation, replacement or minor construction of a State Transportation Facility carried out by, or under the authority of, the Maine Department of Transportation (MaineDOT) or the Maine Turnpike Authority, including any testing or preconstruction engineering, and associated technical support services.

(2) This section does not apply to an activity within a coastal sand dune system.

NOTE: The construction of a transportation facility other than roads and associated facilities may be subject to the Storm Water Management Law, 38 M.R.S.A. Section 420-D.

B. Standards

(1) Photographs of the area to be altered by the activity must be taken before work on the site begins. The photographs must be kept on file and be made available at the request of the DEP.

(2) The activity must be reviewed by the Department of Inland Fisheries and Wildlife and the Department of Marine Resources, as applicable. The applicant must coordinate with the reviewing agencies and incorporate any recommendations from those agencies into the performance of the activity.

(3) All construction activities undertaken must be detailed in a site-specific Soil Erosion and Water Pollution Control Plan and conducted in accordance with MaineDOT's Best Management Practices for Erosion and Sediment Control, dated January 2000, and Standard Specifications, dated December 2002.

(4) Alignment changes may not exceed a distance of 200 feet between the old and new center lines in any natural resource.

(5) The activity may not alter more than 300 feet of shoreline (both shores added together) within a mile stretch of any river, stream or brook, including any bridge width or length of culvert.

(6) The activity may not alter more than 150 feet of shoreline (both shores added together) within a mile stretch of any outstanding river segment identified in 38 M.R.S.A. 480-P, including any bridge width or length of culvert.

(7) The activity must minimize wetland intrusion. The activity is exempt from the provisions of Chapter 310, the Wetland and Waterbodies Protection Rules, if the activity alters less than 15,000 square feet of natural resources per mile of roadway (centerline measurement) provided that the following impacts are not exceeded within the 15,000 square foot area:

(a) 1,000 square feet of coastal wetland consisting of salt tolerant vegetation or shellfish habitat; or

(b) 5,000 square feet of coastal wetland not containing salt tolerant vegetation or shellfish habitat; or

(c) 1,000 square feet of a great pond.

All other activities must be performed in compliance with all sections of Chapter 310, the Wetland Protection Rules, except 310.2(C), 5(A), 9(A), 9(B) and 9(C).

(8) The activity may not permanently block any fish passage in any watercourse containing fish. The applicant must coordinate with the reviewing agencies listed in paragraph 2 above to improve fish passage and incorporate any recommendations from those agencies into the performance of the activity.

NOTE: For guidance on meeting the design objectives for fish passage, including peak flow, maximum velocity, mining depth and gradient, see the MaineDOT Waterbody and Wildlife Crossing Policy and Design Guide (July 2008), developed in conjunction with state and federal resource and regulatory agencies.

(9) Rocks may not be removed from below the normal high water line of any coastal wetland, freshwater wetland, great pond, river, stream or brook except to the minimum extent necessary for completion of work within the limits of construction.

(10) If work is performed in a river, stream or brook that is less than three feet deep at the time and location of the activity, the applicant must isolate the work area from the resource and divert stream flows around the work area, maintaining downstream flows while work is in progress.

(11) Wheeled or tracked equipment may not operate in the water. Equipment operating on the shore may reach into the water with a bucket or similar extension. Equipment may cross streams on rock, gravel or ledge bottom. If avoiding the operation of wheeled or tracked equipment in the water is not possible, the applicant must explain the need to operate in the water. Approval from the DEP to operate in the water must be in writing, and any recommendations from the DEP must be incorporated into the performance of the activity.

(12) All wheeled or tracked equipment that must travel or work in a vegetated wetland area must travel and work on mats or platforms.

(13) Any debris or excavated material must be stockpiled either outside the wetland or on mats or platforms. Erosion and sediment control best management practices must be used, where necessary, to prevent sedimentation. Any debris generated during the activity must be prevented from washing downstream and must be removed from the wetland or water body. Disposal of debris must be in conformance with the Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Section 1301 *et seq.*

(14) Work below the normal high water line of a great pond, river, stream or brook must be done at low water except for emergency work or work agreed to by the resource agencies listed in paragraph 2 above.

(15) Perimeter controls must be installed before the work starts. Disturbance of natural resources beyond the construction limits shown on the plans is not allowed under this rule.

NOTE: Guidance on the location of construction limits can be obtained from the on site Construction Manager.

(16) The use of untreated lumber is preferred. Lumber pressure treated with chromated copper arsenate (CCA) may be used only if necessary and only if use is allowed under federal law and not prohibited from sale under 38 M.R.S.A. 1682, and provided it is cured on dry land in a manner that exposes all surfaces to the air for a period of at least 21 days prior to construction. Wood treated with creosote or pentachlorophenol may not be used where it will contact water.

(17) A temporary road for equipment access must be constructed of crushed stone, blasted ledge, or similar materials that will not cause sedimentation or restrict fish passage. Such roads must be completely removed at the completion of the activity. In addition, any such temporary roads which are in rivers, streams or brooks, must allow for a passage of stormwater flows associated with a 10-year storm.

(18) Non-native species may not be planted in restored areas.

(19) Disposal of debris must be in conformance with Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Sections 1301 *et seq.*

(20) Disturbance of vegetation must be avoided, if possible. Where vegetation is disturbed outside of the area covered by any road or structure construction, it must be reestablished immediately upon completion of the activity and must be maintained.

(21) A vegetated area at least 25 feet wide must be established and maintained between any new stormwater outfall structure and the high water line of any open water body. A velocity reducing structure must be constructed at the outlet of the stormwater outfall that will create sheet flow of stormwater, and prevent erosion of soil within the vegetated buffer. If the 25 foot vegetated buffer is not practicable, the applicant must explain the reason for a lesser setback in writing. Approval from the DEP must be in writing and any recommendations must be incorporated into the activity.

C. Definitions. The following terms, as used in this chapter, have the following meanings, unless the context indicates otherwise:

(1) Diversion. The rerouting of a river, stream or brook around a construction site and then back to the downstream channel.

(2) Fill. a. (verb) To put into or upon, supply to, or allow to enter a water body or wetland any earth, rock, gravel, sand, silt, clay, peat, or debris; b. (noun) Material, other than structures, placed in or immediately adjacent to a wetland or water body.

(3) Floodplain wetlands. Freshwater wetlands that are inundated with flood water during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Agency or other site specific information.

(4) Riprap. Heavy, irregularly shaped rocks that are fit into place, without mortar, on a slope as defined in the MaineDOT Standard Specifications, dated **November 2014**.

Town: Old Town
WIN #: 22511.01/22512.01
Date: 2/14/2022

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

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

I. In-Water Work is allowed for specific activities as follows:

Activity	In-Water Work Window
Temporary fill placement for temporary bridge	July 1 to March 30
Installation of work trestle	July 1 to March 30
Pier demolition	July 1 to March 30
Pile driving	July 1 to March 30
Cofferdam construction	July 1 to March 30
Work within cofferdam	Any time
Cofferdam removal	Any time
Permanent placement of riprap (no excavation)	Any time
Temporary fill removal	Any time
Temporary structure removal	Any time

II. In-Water work window applies to the following water bodies at the following station #'s:

1. Stillwater River at proposed bridge replacement project

III. Additional Requirements for In-Water Pile Driving

1. Piles driven by impact hammer may not exceed the following pile sizes:
    i. Pipe pile: 30 inch
    ii. Steel H-pile: 14-inch
2. The contractor shall contact Eric Ham of MaineDOT Environmental Office (207-215-7356) at least two weeks prior to pile driving with an impact hammer to coordinate monitoring for presence of Atlantic Salmon during pile driving activities.
3. The MaineDOT will implement its **Fish Check Protocol (appended to this Special Provision)** to review the work area for adult Atlantic salmon before pile driving activities begin.
4. The contractor shall use a vibratory hammer for all pile driving activities as much as practicable.
5. Pile driving shall occur during the day
6. Any use of an impact hammer during pile driving shall require the use of passive attenuation measures (changing hammer type, reducing driving duration, reducing force settings) and active measures (cushions and bubble curtains).
7. The contractor shall employ a bubble curtain for all in-water impact pile driving. The bubble curtain shall meet the design specifications and performance requirements in the attached **Bubble Curtain Specification (appended to this Special Provision).** The contractor shall complete a performance test of the bubble curtain prior to any impact pile driving. The performance test shall confirm the calculated pressures and flow rates at each manifold ring.
8. **Hydroacoustic monitoring for impact pile driving shall be completed as follows for at least <u>two piles</u>:**
    i. Largest pile driven in-water (in at least two feet of water)
    ii. A minimum of three hydrophones must be used, located approximately 33, 66, and 100 feet from the in-water sound producing activity.
9. The Contractor shall retain the services of a qualified person or firm to prepare and implement a hydroacoustic monitoring plan following the attached **"Underwater Noise Monitoring Plan" template (appended to this Special Provision)**. The Contractor shall provide MaineDOT a completed draft

hydroacoustic monitoring plan at least 45 days prior to implementation for review. **No in-stream noise-generating activities may commence until MaineDOT has approved the monitoring protocol.**

10. The Contractor shall provide Hydroacoustic monitoring data to the Department. A preliminary data report shall be submitted within 5 business days of pile driving activity. A final summary report of all of the data must be submitted within 2 months of completion of in-water construction.
11. The contractor shall be responsible for implementing noise monitoring and noise attenuation as described above. Payment shall be made as a lump sum under Pay Item 501.237.

IV. Special Conditions:

1. Special Conditions of Army Corps of Engineers (ACOE) Individual Permit apply (see permit and other conditions in this SP 105).
2. Special Conditions of Formal Endangered Species Act (Section 7) Consultation with U.S. Fish and Wildlife Service apply (summarized in this Special Provision 105 and ACOE permit).
3. The Contractor shall hold a pre-construction meeting with appropriate MaineDOT Environmental Office staff, other MaineDOT staff, and the Contractor(s) to review all procedures and requirements for avoiding and minimizing effects to Atlantic salmon (ATS). The following individuals/agencies shall be invited: ACOE (Jay Clement, jay.l.clement@usace.army.mil); FHWA (Eva Birk, eva.birk@dot.gov) and U.S. Fish and Wildlife Service (Patrick Dockens, patrick_dockens@fws.gov; Nicole Pauley, nicole_pauley@fws.gov).
4. Construction of temporary approaches and abutments will be contained within turbidity curtains.
5. The Contractor shall contact Eric Ham of MaineDOT Environmental Office (207-215-7356, eric.ham@maine.gov) at least two weeks prior to installation of cofferdams to coordinate fish evacuation.
    a. To minimize fish stranding inside the cofferdam when dewatering, the MaineDOT environmental staff or similarly qualified consultants will inspect the cofferdams after completion and before a seal placement for presence of adult Atlantic salmon. If adult Atlantic salmon are observed during active construction, all activities will cease and the MaineDOT environmental staff or similarly qualified consultants will immediately contact the Service's Maine Fish and Wildlife Complex 207/469-7300.
6. Sheet pile installation and removal shall be completed using a vibratory hammer.
7. All in-water excavation shall be completed in a cofferdam.
8. Fill for temporary approaches will be limited to no more than 25 percent of the width of the river.
9. Temporary fill will consist of non-erodible material on top of a geotextile fabric filter layer.
10. All areas of temporary stream or wetland fill must be within the specified limits on the plans and shall be restored to their original contour and character upon completion of the project. Temporary fill includes fill that received authorization and fill that mistakenly enters a resource (i.e., from slope failures, accidental broken sandbag cofferdams, miscellaneous construction materials, etc.)
11. Demolition and debris removal and disposal will comply with Section 202.03 of the MaineDOT's Standard Specifications. The Contractor will contain all demolition debris, including debris from wearing surface removal, saw cut slurry, dust, etc., and will not allow it to discharge to any resource. The Contractor will dispose of debris in accordance with the Maine Solid Waste Law (Title 38 M.R.S.A., Section 1301 et. seq.). The demolition plan, containment, and disposal of demolition debris will be addressed in the Contractor's Soil Erosion and Water Pollution Control Plan (SEWPCP).
12. Demolition of concrete piers of existing bridge will occur within containment such as turbidity curtains.
13. Temporary bridge piles will be removed with a vibratory hammer.
14. If piles are removed by cutting, they must be cut to one foot below the substrate level. If piles are removed by pulling, the work will be completed using a BMP to minimize turbidity.
15. Any concrete that has been in contact with water must have a pH between 6.0 and 8.5, must be within one pH unit of the background pH level of the stream, and must have a turbidity level no greater than the receiving resource. Disposal or treatment of water not meeting release criteria will be addressed in the SEWPCP. Discharging impounded water to the stream must take place in a manner that does not disturb the stream bottom or cause erosion. The Contractor shall be responsible for monitoring pH with a calibrated meter accurate to 0.1 units. A record of pH measurements shall be kept in the Environmental Field Representative's log.
16. The Contractor shall conduct all construction activities in accordance with the MEDOT-approved SEWPCP.

17. No equipment, materials, or machinery shall be stored, cleaned, fueled, or repaired within any wetland or stream resource. These activities shall occur more than 100 feet from any wetland or stream resource and shall follow the specifications of the SEWPCP.
18. All pumps and generators required for in-stream work shall be cleaned of external oil, grease, dirt, and mud such that turbid water does not drain to any wetland or stream. Any leaks of this equipment shall be fixed prior to entering streams or areas that drain directly to streams or wetlands. Operation shall follow the specifications of the SEWPCP.
19. The contractor shall minimize vegetation clearing and soil disturbance adjacent to the river to the maximum extent practicable. Areas of disturbed soil adjacent to the waterways will be stabilized and re-vegetated with a seed mix appropriate for riparian areas in Maine.
20. All off-road equipment working within 25-feet of a stream (RUS) shall be cleaned to remove all soil, seeds, vegetation, or other debris that could contain seeds or reproductive portions of plants prior to entering the area to minimize the spread of noxious weeds. All equipment shall be inspected prior to offloading to ensure they are clean.
21. The contractor shall fully remove all cofferdams from the stream immediately following completion of in-stream work using techniques to minimize turbidity releases.
22. To minimize the spread of noxious weeds into the riparian zone, all off-road equipment and vehicles (operating off of existing open and maintained roads) shall be cleaned prior to entering the construction site to remove all soil, seeds, vegetation, or other debris that could contain seeds or reproductive portions of plants. All equipment shall be inspected prior to off-loading to ensure that they are clean.

V. Approvals:

1. Temporary Soil Erosion and Water Pollution Control Plan
2. Permitted Resource Impacts (square feet), see ACOE permit for locations:

Stream:	Wetland: None
Permanent RUS: 14,015	
Temporary RUS: 15,905	

VI. All activities are prohibited (including placement and removal of cofferdams unless otherwise permitted by Regulatory Agencies) below the normal high water mark if outside the prescribed in-water work window (see Section I), except for the following:

1. Work within a cofferdam constructed according to MaineDOT's Standard Specifications and in adherence with the contractors approved "Soil Erosion and Water Pollution Control Plan".

VI. No work is allowed that completely blocks a river, stream, or brook without providing downstream flow.

NOTE: Regulatory Review and Approval is required to modify the existing In-Water work window. Requests for work window extensions must be submitted to the MaineDOT Environmental Office. Approval of requests for work window extensions is not guaranteed and may result in delays in construction schedule that are the sole responsibility of the contractor.

Town: Old Town
WIN #: 22511.01/22512.01
Date: 2/14/2022

SPECIAL PROVISION 105 - ATTACHMENTS:

FISH CHECK PROTOCOL

BUBBLE CURTAIN SPECIFICATION

UNDERWATER NOISE MONITORING PLAN (TEMPLATE)

Town: Old Town
WIN #:
22511.01/22512.01 Date:
12/7/2021

FISH CHECK PROTOCOL

1. Contractor shall supply MaineDOT with a boat and a driver to survey the bridge area for the presence of Atlantic salmon. The boat should be safe for the driver and two staff members from MaineDOT to be aboard.
2. MaineDOT will provide a sonar device to search for fish with the appropriate power.
3. The team will search 250 feet around the planned activity for 15 minutes prior to be able to being. The activities that require a search are as follows:
    a. Pile driving with an impact hammer
    b. Removal of old pier elements
    c. Closure of sheetpile cofferdam
4. Searches will take place prior to each of the activities listed above. If there is a 4-hour lapse because any of the noise producing events, the search must be completed again prior to the event.
5. In the event that an Atlantic salmon is found in the work area, MaineDOT staff will immediately contact USFWS. The contractor will than be asked to undertake activities to scare the Atlantic salmon out of the work site by using tactics such as running a vibratory hammer attached to a pile or completing other activities that could startle a fish but not result in injury.

Appendix I–Bubble Curtain Specification

These specifications are verbatim from National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), Western Washington Fish and Wildlife Office Impact Pile Driving Sound Attenuation Specification

Unconfined Bubble Curtain Specifications:

1. General - An unconfined bubble curtain is composed of an air compressor(s), supply lines to deliver the air, distribution manifolds or headers, perforated aeration pipe, and a frame. The frame facilitates transport and placement of the system, keeps the aeration pipes stable, and provides ballast to counteract the buoyancy of the aeration pipes in operation.

2. The aeration pipe system shall consist of multiple layers of perforated pipe rings, stacked vertically in accordance with the following:

Water Depth (m)	No. of Layers
0 to less than 5	2
5 to less than 10	4
10 to less than 15	7
15 to less than 20	10
20 to less than 25	13

3. The pipes in all layers shall be arranged in a geometric pattern which shall allow for the pile being driven to be completely enclosed by bubbles for the full depth of the water column and with a radial dimension such that the rings are no more than 0.5 meters from the outside surface of the pile.

4. The lowest layer of perforated aeration pipe shall be designed to ensure contact with the substrate without burial and shall accommodate sloped conditions.

5. Air holes shall be 1.6 mm (1/16-inch) in diameter and shall be spaced approximately 20 mm (3/4 inch) apart. Air holes with this size and spacing shall be placed in four adjacent rows along the pipe to provide uniform bubble flux.
6. The system shall provide a bubble flux of 3.0 cubic meters per minute per linear meter of pipe in each layer (32.91 cubic feet per minute per linear foot of pipe in each layer). The total volume of air per layer is the product of the bubble flux and the circumference of the ring:

   $V_t = 3.0\ m^3/min/m$ * Circum of the aeration ring in m

   or

   $V_t = 32.91\ ft^3/min/ft$ * Circum of the aeration ring in ft

7. Meters shall be provided as follows:

a. Pressure meters shall be installed at all inlets to aeration pipelines and at points of lowest pressure in each branch of the aeration pipeline.

b. Flow meters shall be installed in the main line at each compressor and at each branch of the aeration pipelines at each inlet. In applications where the feed line from the compressor is continuous from the compressor to the aeration pipe inlet the flow meter at the compressor can be eliminated.

c. Flow meters shall be installed according to the manufactures recommendation based on either laminar flow or non-laminar flow.

Confined Bubble Curtain Specifications:

1. General - A confined bubble curtain is composed of an air compressor(s), supply lines to deliver the air, distribution manifolds or headers, perforated aeration pipe(s), and a means of confining the bubbles.

   a. The confinement (e.g. fabric, plastic or metal sleeve, or equivalent) shall extend from the substrate to a sufficient elevation above the maximum water level expected during pile installation such that when the air delivery system is adjusted properly, the bubble curtain does not act as a water pump (i.e., little or no water should be pumped out of the top of the confinement system).

   b. The confinement shall contain resilient pile guides that prevent the pile and the confinement from coming into contact with each other and do not transmit vibrations to the confinement sleeve and into the water column (e.g. rubber spacers, air filled cushions).

2. In water less than 15 meters deep, the system shall have a single aeration ring at the substrate level. In waters greater than 15 meters deep, the system shall have at least two rings, one at the substrate level and the other at mid-depth.

3. The lowest layer of perforated aeration pipe shall be designed to ensure contact with the substrate without sinking into the substrate and shall accommodate for sloped conditions.

4. Air holes shall be 1.6 mm (1/16-inch) in diameter and shall be spaced approximately 20 mm (3/4 inch) apart. Air holes with this size and spacing shall be placed in four adjacent rows along the pipe to provide uniform bubble flux.

8. The system shall provide a bubble flux of 3.0 cubic meters per minute per linear meter of pipe in each layer (32.91 cubic feet per minute per linear foot of pipe in each layer). The total volume of air per layer is the product of the bubble flux and the circumference of the ring:

   $V_t = 3.0\ m^3/min/m$ * Circ of the aeration ring in m

or

$V_t = 32.91\ ft^3/min/ft$ * Circ of the aeration ring in ft

5. Meters shall be provided as follows:

   a. Pressure meters shall be installed at all inlets to aeration pipelines and at points of lowest pressure in each branch of the aeration pipeline.

   b. Flow meters shall be installed in the main line at each compressor and at each branch of the aeration pipelines at each inlet. In applications where the feed line from the compressor is continuous from the compressor to the aeration pipe inlet the flow meter at the compressor can be eliminated.

   c. Flow meters shall be installed according to the manufactures recommendation based on either laminar flow or non-laminar flow.

UNDERWATER NOISE MONITORING PLAN

TEMPLATE*

Replace underlined blue italic text with project information.
Blue italic text is guidance.
Plain, black text *is template language.*
All blue italic text should be replaced or omitted for final production.

Prepared by:
Name and full contact information
Signature Block

Date

INTRODUCTION *(This section will be project specific)*

The *full agency name* proposes to *detailed project description*. See vicinity map (Figure 1).

Figure 1. Vicinity map of *name project*.

PROJECT AREA *(This section will be project specific)*

Describe the location of the project, including all water bodies that are affected. Identify the USGS hydrologic unit, both the name and code, where the project is located. Include detailed maps and figures, when available, relative to environmental features that influence monitoring (e.g., geology, bathymetry, etc.).

PERMIT/ESA CONDITIONS *(This section will be project specific and is applicable only when the ESA consultation is complete or Federal/State/local permits have been issued. Each agency should modify this section to reflect the various types of permit/ESA conditions that they see.)*

> *Summarize the Federal/State/local permit conditions and the ESA requirements that relate to the underwater noise. Permit conditions include monitoring requirements, timing restrictions, etc. The ESA requirements are found in the Incidental Take Statement and Terms and Conditions sections of the biological opinion. These requirements vary between biological opinions, but can include monitoring requirements, timing restrictions, limits on cumulative sound exposure level (cSEL) at a given distance, description of the area where the thresholds must not be exceeded, the allowable number of piles driven per day, the allowable number of pile strikes per day, or a limit on the single strike SEL.*

PILE INSTALLATION LOCATION *(This section will be project specific)*

Figure 2 indicates the location of the *provide location of the structure(s) in need of pile driving*. There will be a total of *XX* piles driven as part of the *name structure(s)*.

Figure 2. Location of *name structure(s)* where pile driving activity will take place. *This information must be in enough detail to allow the reader to assess the monitoring locations.*

PILE INSTALLATION

Impact Pile Driving for Fish Consultations

Provide pile installation information. For example:

Hydroacoustic monitoring will be conducted for *X* piles struck with an impact hammer. Piles chosen to be monitored are driven in water depths that are representative of mid-channel or typical water depths at the project location where piles will be driven.

The number of piles to be monitored will depend on a variety of factors – some projects may require that all piles be monitored, while others may require a representative sample of piles be monitored. If a sample of piles is to be monitored, provide the considerations taken and the rationale used in choosing a representative number of piles, such as, bathymetry, total number of piles to be driven, substrate type, depth of water, distance from shore, river, or stream bank, and any other considerations, as appropriate. When monitoring a subset, a minimum of 5 piles should be monitored. Additional monitoring to produce a representative sample may be warranted when projects are driving a large number of piles, driving multiple piles of varying diameters in differing substrates, driving different types of piles, or driving piles in widely differing depths.

Hydroacoustic monitoring of *type of pile* with impact driving will include:

- Monitoring *X piles, out of a total of Y piles driven for the project*.
- Testing sound attenuation system effectiveness.

Figure 3 indicates the location of the piles to be monitored and the approximate hydrophone locations for each pile being monitored. All hydrophones will be placed at least 1 m (3.3 feet) below the surface. *If only one hydrophone at one distance is to be used it is acceptable for the hydrophone to be placed 10 meters from the pile at midwater depth. If hydrophones will be placed at more than one distance from the pile and used to calculate transmission loss over distance, water depth should be at least 4m (13 ft) and it is suggested that the additional hydrophone nearest the pile be placed at least 3H from the pile where H is the water depth at the pile and at 0.7 to 0.85H depth from the surface. In waters less than 4m (13 ft) deep, a single hydrophone at midwater depth is sufficient*[1]. Hydrophones will be located *X* meters from each pile with a clear acoustic line-of-sight between the pile and the hydrophone. *Additional distances measured concurrently are desirable, if possible, to estimate the site specific range to the threshold boundary. Include any additional distances or depths where hydrophones will be located. If airborne noise monitoring is required, the primary measurement microphone shall be placed 50 feet (e.g. 15 meters) from the pile at least 6 feet above the ground or water, and shall have an unobstructed view of the length of the pile.*

[1] Some projects may need or require more than one hydrophone to collect real time measurements at multiple locations or multiple distances. In these situations multiple hydrophones can be placed at midwater depths.

Figure 3. Location of the piles that will be monitored on the *name structure(s)*.

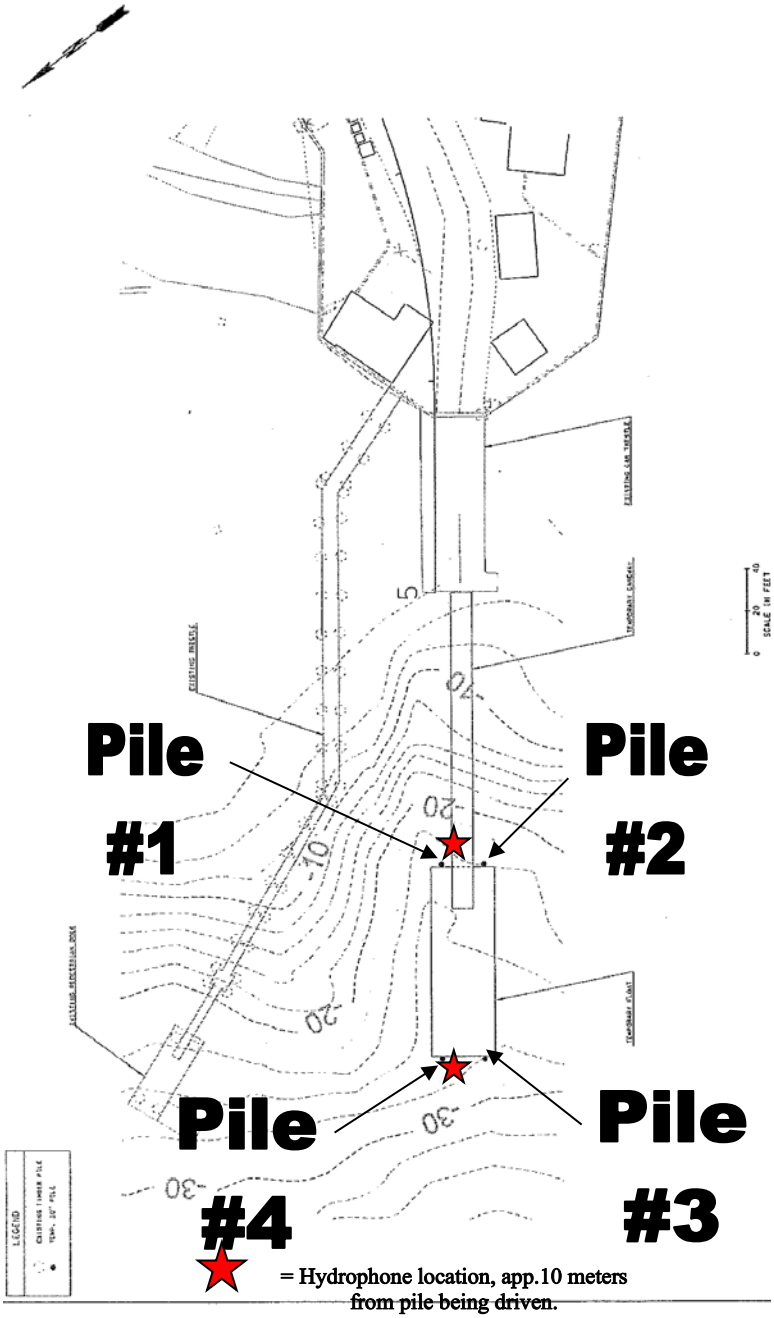


Table 1 lists the *name structure(s)* to be installed, the water depth, and the number and size of piles that will be installed.

Table 1
Depth, Number Piles to be Monitored

Structure	Water Depth	Structural Components Installed
Name structure	*X feet to X feet*	*X - XX-inch diameter type of pile*

CONTRACTOR REQUIREMENTS

The contractor will submit a detailed description of their qualifications, which must include a minimum of a bachelor's degree in a related field[2] and 3 years' experience in noise monitoring and analysis, and monitoring plan based on this template for approval by [INSERT AGENCY NAME]. A list of the contractors' proposed sound level monitoring equipment shall be included along with specifications and a description of the purpose. The measurement range in terms of amplitude (in dB referenced to one micropascal (re: 1 uPa)), sensitivity and frequency shall be stated. A minimum frequency range of 20 Hz to 20 kHz and a minimum sampling rate of 48,000 Hz will be used when monitoring. Sampling rates higher than 48 kHz are preferred. Table 2 describes the minimum requirements of the equipment to be used. In addition to the equipment selection, quality control/quality assurance procedures should be described (e.g., how will system responses be verified and how will data be managed).

Table 2.

Equipment for underwater sound monitoring (hydrophone, signal amplifier, and calibrator). All have current National Institute of Standards and Technology (NIST) traceable calibration. *This table is intended as a guideline and exact specifications can be adjusted to meet the needs of the individual project or contractors' equipment.*

Item	Specifications	Minimum Quantity	Usage
Hydrophone	*Receiving Sensitivity- -211dB re 1V/µPa*	*1*	*Capture underwater sound pressures near the source and convert to voltages that can be recorded/analyzed by other equipment.*
Hydrophone	*Receiving Sensitivity – -200dB re 1/µPa*	*1*	*Capture underwater sound pressures for background levels and convert to voltages that can be recorded/analyzed by other equipment.*

[2] This can include Institute of Noise Control Engineering of the USA (INCE/USA) certification or related fields such as acoustics, physics, oceanography, geology or other physical sciences that have required coursework in physics.

Signal Conditioning Amplifier	*Amplifier Gain-* *0.1 mV/pC to 10 V/pC* *Transducer Sensitivity Range-* *10-12 to 103 C/MU*	*1*	*Adjust signals from hydrophone to levels compatible with recording equipment.*
Calibrator (pistonphone-type)	*Accuracy-* *IEC 942 (1988) Class 1*	*1*	*Calibration check of hydrophone in the field.*
Digital Signal Analyzer	*Sampling Rate-* *48kHz or greater*	*1*	*Analyzes and transfers digital data to laptop hard drive.*
Microphone (free field type)	*Range- 30 – 120 dBA* *Sensitivity-* *-29 dB ± 3 dB (0 dB = 1 V/Pa)* *Wind Screen*	*1*	*Monitoring airborne sounds from pile driving activities (if not raining).*
If water velocity ~> 1m/s, Flow shield	*Open cell foam cover or functional equivalent*	*1/hydrophone*	*Eliminate flow noise contamination.*
Laptop computer *or* *Digital Audio Recorder*	*Compatible with digital signal analyzer*	*1*	*Record digital data on hard drive or digital tape.*
Real Time and Post-analysis software	-	*1*	*Monitor real-time signal and post-analysis of sound signals.*

To facilitate further analysis of data full bandwidth, time-series underwater signal shall be recorded as a text file (.txt) or wave file (.wav) or similar format. Recorded data shall not use data compression algorithms or technologies (e.g. MP3, compressed .wav, etc.).

METHODOLOGY

Impact Pile Driving for Fish Consultations (and listed US FWS, diving sea bird, if relevant)

Underwater background sound level measurements are optional, however, if desired then the NMFS (2012a) guidance should be followed.

If one hydrophone at one distance is to be used it is acceptable for the hydrophone to be placed 10 meters from the pile and at midwater depth. If hydrophones will be placed at more than one distance from the pile it is suggested that the hydrophone nearest the pile be placed at least 3H from the pile where H is the water depth at the pile and 0.7 to 0.85H depth from the surface. The hydrophone*(s)* will be placed at *X meters* depth at a distance of *X meters* from each pile being monitored, in waters of *X meters* depth. *If water velocity is 1 meter/second or greater, 1-3 meters off the bottom may be recommended for near field hydrophones and greater than 5 meters from the surface may be recommended for any far field hydrophones.* A weighted tape measure will be used to determine the depth of the water. The hydrophone*(s)* will be attached to a nylon cord, a steel chain, or other proven anti-strum features if the current is swift enough to cause strumming of the line. The nylon cord or chain will be attached to an anchor that will keep the line the appropriate distance from each pile. The nylon cord or chain will be attached to a float or tied

to a static line at the surface. The distances will be measured by a tape measure, where possible, or a range-finder. The acoustic path (line of sight) between the pile and the hydrophone*(s)* should be unobstructed in all cases.

When collecting sound measurements in an area with currents (i.e., in rivers or tidally influenced areas), appropriate measures will be taken, when necessary, to ensure that the flow-induced noise at the hydrophone will not interfere with the recording and analysis of the relevant sounds (NMFS, 2012a). As a general rule, current speeds of 1.5 meters/second or greater are expected to generate significant flow-induced noise, which may interfere with the detection and analysis of low-level sounds such as the sounds from a distant pile driver or background sounds. If such measures are necessary, include a description of those measures. For example:

> *If it becomes necessary to reduce the flow-induced noise at the hydrophone, a flow shield will be described and installed around the hydrophone to provide a barrier between the irregular, turbulent flow and the hydrophone. If no flow shield is used in these situations, the current velocity will be measured and a correlation between the levels of the relevant sounds (background or pile driving) and current speed will be made to determine whether the data is valid and can be included in the analysis.*

The hydrophone calibration*(s)* will be checked at the beginning of each day of monitoring activity. *The method of calibration and calibration equipment used will be described.* NIST traceable calibration forms shall be provided for all relevant monitoring equipment. Prior to the initiation of pile driving, the hydrophone will be placed at the appropriate distance and depth as described above.

The onsite inspector/contractor will inform the acoustics specialist when pile driving is about to start to ensure that the monitoring equipment is operational. Underwater sound levels will be continuously monitored during the entire duration of each pile being driven with a minimum one-third octave band frequency resolution. The wideband instantaneous absolute peak pressure and Sound Exposure Level (SEL) values of each strike, and daily cumulative SEL should be monitored in real time during construction to ensure that the project does not exceed its authorized take level. Peak and rms pressures will be reported in dB (re:1 µPa). SEL will be reported in dB (re: 1 $\mu Pa^2 \cdot sec$). Wideband time series recording is strongly recommended during all impact pile driving.

Prior to, and during, the pile driving activity, environmental data will be gathered, such as water depth and tidal level, wave height, and other factors that could contribute to influencing the underwater sound levels (e.g. aircraft, boats, etc.). Start and stop time of each pile driving event and the time at which the bubble curtain or functional equivalent[3] is turned on and off will be logged.

The contractor or agency will provide the following information, in writing, to the contractor conducting the hydroacoustic monitoring for inclusion in the final monitoring report: a description of the substrate composition, approximate depth of significant substrate layers, hammer model and size, pile cap or cushion type, hammer energy settingsand any changes to those settings during the piles being monitored, depth pile driven, blows per foot for the piles monitored, and total number of strikes to drive each pile that is monitored.

Sound Attenuation Monitoring

All monitored piles may be tested with the sound attenuation system on and off (or presence and absence) to test its effectiveness[4]. To account for varying resistance as the pile is driven; the sound attenuation device will be turned off

[3] A functional equivalent must function as well as or better than the attenuation device that was proposed during consultation or required by the ESA consultation or applicable permits. It must achieve the same or better sound level reductions that were used in the calculations during ESA consultation or the permitting process.
[4] Note: There may be circumstances where the U.S. Fish and Wildlife Service determines that unattenuated pile driving (striking the pile with the bubble curtain turned off) would pose a significant risk of injury to species. In those situations, the Service may request that unattenuated pile driving does not occur and that hydroacoustic monitoring be conducted to determine the extent at which certain thresholds are met instead. This will need to be determined on a case by case basis for projects that may affect listed species.

for *(describe schedule for turning on and off)* periods during the beginning, the middle third, and near the end of the drive. After turning off the attenuation system, pile driving should not resume for at least 2 minutes to allow time for air bubbles to completely disperse. *For piles that require less than 5 minutes to drive, pile driving should occur for only two periods with the bubbles off, one near the beginning and once near the end of the drive.*

SIGNAL PROCESSING

Impact Pile Driving for Fish Consultations (and any US FWS listed, diving sea bird)

Post-analysis of the underwater pile driving sounds will include:

- Number of pile strikes per pile and per day.
- For each recorded strike (or each strike from a subset), determine the following:
    - The peak pressure, defined as the maximum absolute value of the instantaneous pressure (overpressure or underpressure).
    - The root mean squared sound pressure across 90% of the strikes energy ($RMS_{90\%}$).
    - Sound exposure level, measured across 90% of the accumulated sound energy ($SEL_{90\%}$). Calculation methodology is provided in Appendix A.
- Maximum, mean, and range of the peak pressure, with, and if applicable, without attenuation.
- Maximum, mean, range, and Cumulative Distribution Function (CDF) of the $RMS_{90\%}$, both with and if applicable, without attenuation where the CDF is used to report the percentage of $RMS_{90\%}$ values above the thresholds.
- Maximum, mean, and range of the $SEL_{90\%}$, both with and if applicable, without attenuation.
- Cumulative SEL (cSEL) across all of the pile strikes. If SEL was calculated for all strikes, cSEL is estimated as indicated in Appendix A. If SEL was calculated for a subset of strikes, cSEL is estimated as follows: $cSEL = SEL_{mean} + 10*\log(\text{total \# strikes})$.
- Where surrogate piles are monitored to represent a larger project, an estimate of the cSEL during a typical day of construction driving must be reported by summing the SEL over the expected number of pile strikes in a typical day for the larger project: $cSEL = SEL_{mean} + 10*\log(\#\text{strikes})$. The SEL_{mean} used in this calculation must correspond with the actual sound attenuation measures that will be used during construction of the larger project.
- A frequency spectrum both with and, *if applicable*, without attenuation, between a minimum of 20 and 20 kHz for up to eight successive strikes with similar sound levels.

If airborne noise monitoring is required, both A-weighted and unweighted measurements will be acquired. Broadband back-to-back RMS L_{max} (peak) and L_{eq} (average) 5-minute measurements will be made over the duration of pile driving,. L_{max} measurements should be taken with a portable analyzer set for "fast" response (125 msec). For at least one full pile sequence of each pile size and substrate type, frequency spectrum measurements (L_{max} and L_{eq}) using a minimum resolution of one-third octave bands shall be taken to show the spectral content of the impact pile. If measuring background sound levels in the absence of construction is not possible, then report the L_{95} statistic.

ANALYSIS

Impact Pile Driving for Fish Consultations

Analysis of the data from the San Francisco-Oakland Bay Bridge Pile Installation Demonstration project (PIDP) indicated that 90 percent of the acoustic energy for most pile driving impulses occurred over a 50 to 100 millisecond period with most of the energy concentrated in the first 30 to 50 milliseconds (Illingworth and Rodkin, 2001). The RMS values computed for this project will be computed over the duration between where 5% and 95% of the energy of the pulse occurs. The SEL energy plot will assist in interpretation of the single strike waveform. The single strike

SEL associated with the highest absolute peak strike along with the total number of strikes per pile and per day will be used to calculate the cumulative SEL for each pile and each 24-hour period.

In addition a waveform analysis of the individual absolute peak pile strikes will be performed to determine any changes to the waveform with the *name type of noise attenuation device*. A comparison of the frequency content with and without noise attenuation will be conducted. Units of underwater sound pressure levels will be dB (re:1 µPa)and units of SEL will be re:1 $\mu Pa^2 \bullet sec$.

REPORTING

If sound attenuation devices are used during the monitoring, include the following text and analysis:

An analysis of the change in the waveform and sound levels with and without the *name type of noise attenuation device for impact driving* operating will be conducted.

Preliminary results for the daily monitoring activities, if required, will be submitted/reported to the primary point of contact[5] at each of the Services within *X hours* after monitoring concludes for the day. In addition a final draft report including data collected and summarized from all monitoring locations will be submitted to the Services within 90 days of the completion of hydroacoustic monitoring. The results will be summarized in graphical form and include summary statistics and time histories of impact sound values for each pile. A final report will be prepared and submitted to the Services within 30 days following receipt of comments on the draft report from the Services. The report shall include:

1. Size and type of piles.
2. A detailed description of the *name type of noise attenuation device*, including design specifications *(if applicable)*.
3. The impact hammer energy rating used to drive the piles, make and model of the hammer.
4. A description of the sound monitoring equipment.
5. The distance between hydrophone*(s) or microphone(s)* and pile.
6. The depth of the hydrophone*(s)* and depth of water at hydrophone locations.
7. The distance from the pile to the water's edge.
8. The depth of water in which the pile was driven.
9. The depth into the substrate that the pile was driven.
10. The physical characteristics of the bottom substrate into which the piles were driven.
11. The total number of strikes to drive each pile and for all piles driven during a 24-hour period.
12. The underwater wideband background sound pressure level reported as the 50% CDF *(if applicable)*.
13. The results of the hydroacoustic monitoring, as described under Signal Processing. An example table is provided in Appendix C for reporting the results of the monitoring.
14. The distance at which peak, cSEL, and rms values exceed the respective threshold values.
15. A description of any observable fish, marine mammal, or bird behavior in the immediate area will and, if possible, correlation to underwater sound levels occurring at that time.
16. *If airborne noise monitoring is required, broadband A-weighted and unweighted maximum, minimum, and average Lmax and Leq levels shall be tabulated for every pile. For each pile size and substrate type*

[5] The primary point of contact is the biologist that conducted the Section 7 consultation for the Service(s). In the event that the consulting biologist is not available, communication regarding monitoring results and reports should be addressed to the manager of the consultation branch or division with a reference to the consultation title.

frequency spectra (one-third octave minimum frequency resolution) charts will be included to show the frequency content of Lmax and Leq signatures. The frequency content of airborne noise background levels shall also be shown. Background sound levels or L95 surrogate for background sound shall be reported.

REFERENCES

Illingworth and Rodkin, Inc. 2001. Noise and Vibration Measurements Associated with the Pile Installation Demonstration Project for the San Francisco-Oakland Bay Bridge East Span, Final Data Report, Task Order 2, Contract No. 43A0063.

NMFS, 2012a. Guidance Document: Data Collection Methods to Characterize Underwater Background Sound Relevant to Marine Mammals in Coastal Nearshore Waters and Rivers of Washington and Oregon. Memorandum: NMFS Northwest Fisheries Science Center – Conservation Biology Division and Northwest Regional Office – Protected Resources Division, January 31, 2012.

NMFS, 2012b. Guidance Document: Data Collection Methods to Characterize Impact and Vibratory Pile Driving Source Levels Relevant to Marine Mammals. Memorandum: NMFS Northwest Fisheries Science Center – Conservation Biology Division and Northwest Regional Office – Protected Resources Division, January 31, 2012.

NMFS, 2012c. Guidance Document: Sound Propagation Modeling to Characterize Pile Driving Sounds Relevant to Marine Mammals. Memorandum: NMFS Northwest Fisheries Science Center – Conservation Biology Division and Northwest Regional Office – Protected Resources Division, January 31, 2012.

Southall, B.L., A.E. Bowles, W.T. Ellison, J.J. Finneran, R.L. Gentry, C.R. Greene, D. Kastak, D.R. Ketten, J.H. Miller, P.E. Nachtigall, W.J. Richardson, J.A. Thomas, and P.L. Tyack. 2007. Marine Mammal Noise Exposure Criteria: Initial Scientific Recommendations. Aquatic Mammals 33(4): 411-521.

APPENDIX A

Calculation of Cumulative SEL

An estimation of individual SEL values can be calculated for each pile strike by calculating the following integral, where T is T_{90}, the period containing 90% of the cumulative energy of the pulse (eq. 1).

$$SEL = 10\log\left(\int_0^T \frac{p^2(t)}{{p_0}^2}dt\right) \quad dB \qquad \text{(eq. 1)}$$

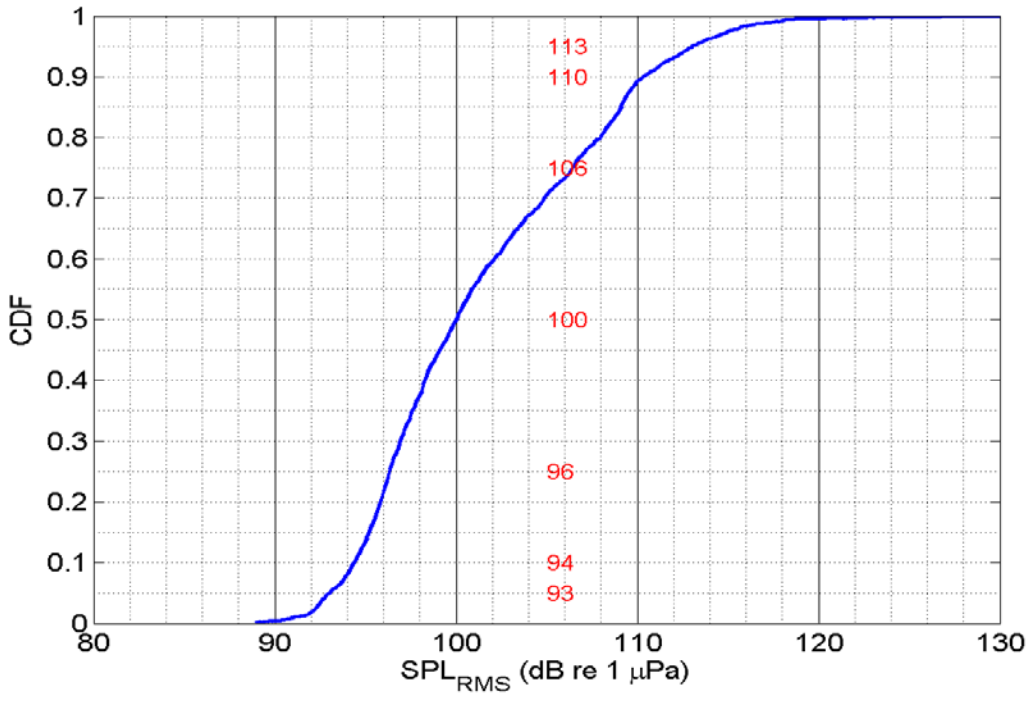
Calculating a cumulative SEL from individual SEL values cannot be accomplished simply by adding each SEL decibel level arithmetically. Because these values are logarithms they must first be converted to antilogs and then accumulated. Note, first, that if the single strike SEL is very close to a constant value (within 1 dB), then cumulative SEL = single strike SEL + 10 times log base 10 of the number of strikes N, i.e, $10Log_{10}(N)$. However if the single strike SEL varies over the sequence of strikes, then a linear sum of the energies for all the different strikes needs to be computed. This is done as follows: divide each SEL decibel level by 10 and then take the antilog. This will convert the decibels to linear units (or $uPa^2 \bullet s$). Next compute the sum of the linear units and convert this sum back into dB by taking $10Log_{10}$ of the value. This will be the cumulative SEL for all of the pile strikes.

APPENDIX B

Calculation of a Cumulative Distribution Function and Plot for Background Sound Level Analysis

Data from three full 24-hour underwater measurement cycles (minimum) are used to calculate a 30-second Root Mean Square (RMS) value for each 30-second period for the entire dataset. The RMS should be calculated for both the full frequency range recorded as well as a separate dataset which has been passed through a high pass filter thus eliminating those frequencies below 1000 Hz. These datasets are then grouped into 24-hour periods. To determine if the data is approximately log-normal in distribution, each 24-hour period is plotted as a Probability Density Function (PDF). Each 24-hour period can be plotted on the same PDF plot. The plots should be approximately log normal in distribution and thus can be used in the further analysis. Each day of data should have an approximately Gaussian sigmoid shape, the differences between them and the ideal might be hard to spot, but the sigmoid from day to day will show noticeable variation. Data which does not approximate a log normal distribution should be excluded from further analysis.

The Cumulative Distribution Function (CDF) plot is obtained by plotting the normalized cumulative sum vs. the bin location. You can also get the PDF from plotting the normalized bin count vs. the bin location. The normalized bin count is obtained by dividing the count column by (number of data points multiplied by the space between 2 consecutive bins). This provides the integral of the PDF equal to 1. For instructions on creating a histogram in Microsoft Excel, see: http://www.vertex42.com/ExcelArticles/mc/Histogram.html



APPENDIX C

Table 1. Example table for required information for reporting the results of hydroacoustic monitoring of pile driving.

Date and Time	Pile ID	Hammer Impact or Vibratory	# Strikes or Vibratory Seconds	Distance to Pile from Hydrophone (m)	Water Depth (m)		Peak (dB)			$SEL_{90\%}$ (dB)				$RMS_{90\%}$ (dB)			Notes
					At Pile	At H-phone	Max	Min	Mean	Max	Min	Mean	$cSEL_{90\%}$	Max	Min	Mean	

Environmental Summary Sheet

WIN: 22950.00, 22950.01 **Date Submitted: 2/10/2022**
Town: Old Town
CPD Team Leader: Danielle Tetreau
ENV Field Contact: Ryan Annis

NEPA Complete: Individual Categorical Exclusion (CE) 23 CFR 771.117.d.13 signed on 3/8/2021

☒ **Section 106**
Review Complete: SHPO Concurrence- - No adverse effect 10/28/2019
Section 106 Resources: Sta. 14+10 – 15+80 Left 1113 Stillwater Ave

☒ **Section 4(f) and 6(f)**

Section 4(f)	Section 6(f)
Review Complete - Temporary use -	Not Applicable - No takes

☐ **Maine Department of Inland Fisheries and Wildlife Essential Habitat**
Not Applicable **Timing Window:** Not Applicable

☒ **Section 7**
Species of Concern: northern long-eared bat: Informal Consultation - may affect, no clearing restrictions
Atlantic salmon CH: Formal Consultation - for bridge replacement
**See WIN# 22511.00 and 22512.00 for consultation documentation*

☒ **Essential Fish Habitat**
Adverse effect, not substantial – for bridge replacement
Species of Concern: Atlantic salmon

☐ **Maine Department of Conservation/Public Lands, Submerged Land Lease**
Not Applicable

☐ **Maine Land Use Regulation Commission**
Not Applicable

☐ **Maine Department of Environmental Protection**
Not Applicable – NRPA Permit for bridge replacement only. See WIN# 22511.00 & 22512.00
**Applicable Standards and Permits are included with the contract*

☐ **Army Corps of Engineers: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.**
Not Applicable - Corps Permit for bridge replacement only. See WIN# 22511.00 & 22512.00
-Work Start Notification form to be completed by ENV Field Contact and submitted to ACOE with copy to Team Leader.
-Compliance Certification Form to be completed by ENV Field Contact and submitted to ACOE with copy to Team Leader.
**Applicable Standards and Permits are included with the contract*

☐ **Stormwater Review**
Not Applicable

☒ **Hazardous Material Review**
Complete – Area of interest identified; General Note provided

☒ **Special Provisions Required**

General Note for Hazardous Waste	N/A☐	Applicable☒
Special Provision 105-Timing of Work Restriction	N/A☒	Applicable☐
Special Provision 656-Minor Soil Disturbance	N/A☒	Applicable☐
Special Provision 203-Dredge Spec	N/A☒	Applicable☐
Special Provision 203-Hazardous Waste	N/A☒	Applicable☐
Standard Specification 656-Erosion Control Plan	N/A☐	Applicable☒

**All permits and approvals based on plans/scope as of: 10/2/2020*

Old Town, ME
Stillwater Avenue
Intersection Reconstruction
WIN 22950.01

GENERAL NOTE

A review of the Maine Department of Environmental Protection (MDEP) File Room Databases specific to Old Town, ME indicates some documented petroleum product storage associated with properties adjacent to the project area – specifically the property at the northeast corner of the intersection of Stillwater Avenue and Free Street – currently Riverside House of Pizza, and the property at the northeast corner of Stillwater Avenue and College Avenue – currently Maine Savings. Subsequent on-site subsurface exploration in the vicinity of the Riverside House of Pizza failed to unearth any soil and/or groundwater contamination issues within the area of concern. However, in consideration of existing environmental data, the Contractor shall remain alert for evidence of petroleum product and/or hazardous material contamination. In the event the Contractor encounters evidence of soil and/or groundwater contamination, the Contractor shall immediately stop work in the impacted area, secure the excavation, and notify the Resident. In addition, the Contractor shall employ appropriate health and safety measures to protect its workers against hazards associated with working near petroleum / hazardous materials impacted soil and/or groundwater. The Resident shall contact the Senior Geologist in MaineDOT's Environmental Office at 207-624-3000, and the MDEP at 800-482-0777. Work may only continue with authorization from the Resident.